Equity Strategy Focus Point

A stock investor's interest rate F.A.Q.

Bank of America Merrill Lynch

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Equity and Quant Strategy
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We're fielding many interest rate questions from investors

With the increased focus on rates and inflation, we compiled a list of the most common questions asked by clients we speak to. Are rising rates bad for stocks? Not necessarily: periods of rising interest rates have coincided with positive stock returns close to 90% of the time. And since 2009, the best year for stock performance was 2013, which saw a 100bp+ move higher in rates. While we do not see a set level at which interest rates have begun to hurt equities, we may be getting closer to exiting the "sweet spot." Historically, the probability of loss for the S&P 500 increases when the 10-year Treasury yield rises above 3%.

What should we care about, real or nominal?

The relationship between stocks and interest rates has varied considerably over time, whether you look at nominal or real rates. Over the long term, inflation expectations have been the bigger driver of the relationship, particularly for PE multiples. But even there, the relationship breaks down when inflation levels are low, as they are today. For S&P 500 returns, the inflation "sweet spot" has historically been 1-3%.

DCF says: higher rates = higher discount rate, right?

All else being equal, higher interest rates imply higher discount rates and lower valuations for all financial assets. But all else tends not to be equal. One common offset to a rising risk-free rate (which drives the denominator in a discounted cash flow framework) is stronger growth (a higher numerator). Meanwhile, stocks remain cheap relative to bonds, suggesting that there may still be some buffer for valuations to absorb higher rates.

What about the yield curve?

In general, bear flatteners have historically been the best environment for the S&P 500, and bull steepeners the worst. But sector relationships have been far from clear cut and have changed over time. And the conventional view that Financials benefit from a steepening yield curve does not apply: the sector has underperformed more than outperformed during steepening periods. In our view, the yield curve is best used as a forecasting tool – especially for volatility (47% correlation with a three-year lead), and it currently suggests to us that volatility could trend higher for some time.

Will the great unwind crush equities?

This question is hard to answer, as we are in uncharted territory in terms of the unprecedented magnitude of monetary stimulus. But in the few historical instances during which the Fed shrunk its balance sheet, stocks outperformed bonds, large caps outperformed small caps, and Value outperformed Growth.

Higher rates could hurt margins, but not right away

While rising interest rates could eventually hurt margins, the impact should be gradual as large cap debt is mostly long-term and fixed-rate. Our BofAML Corporate Misery Indicator — a macro proxy for profitability — suggests inflation may be the biggest risk to margins.

No "magic numbers" but some strategies for how to position

Investors should consider avoiding both short-duration equites (bond proxies) and long-duration equities (secular growth stocks). Cash-rich large caps should outperform levered stocks and credit-sensitive small caps. Stick with high quality stocks if volatility continues to rise, and stick with stocks over bonds. Lastly, avoid Consumer Discretionary.

Refer to important disclosures on page 51 to 53.
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Contents

FAQs on rates and stocks

With the increased focus on interest rates, we have compiled a list of the most common questions we have been fielding:

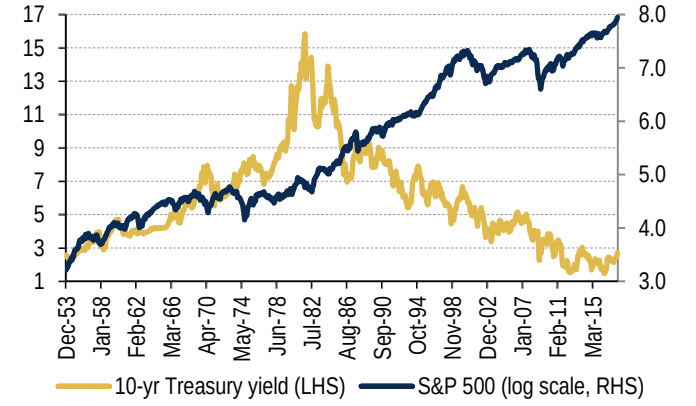
1) Are rising rates bad for stocks?

Stocks have exhibited a weak and inconsistent correlation with interest rates over time

Inconsistent relationship over time

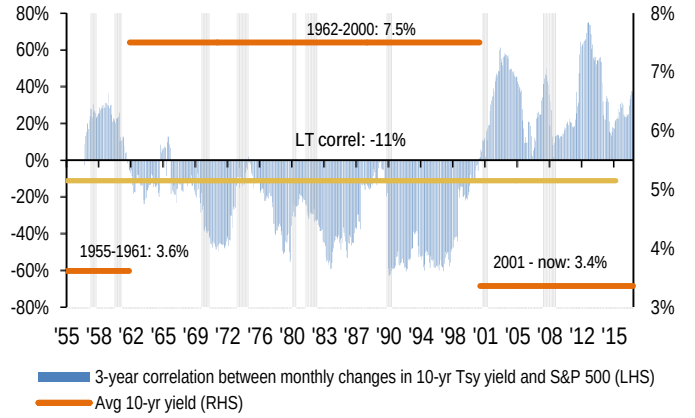
Over the past 64 years, stocks have exhibited a weak and inconsistent correlation with interest rates (-11%). See Chart 1. Over this period, the correlation has seen a wide range from -63% to 75%. The relationship was generally negative for most of the 1960s through the 1990s (higher yields bad for stocks), a period during which the average level of rates was 7.5%. But since the turn of the century, the relationship was generally positive (higher yields good for stocks) a period during which the average level of rates was 3%. The relationship with rates and stock returns peaked about five years ago, but has remained positive and has been trending higher since the recent trough of 13% in late 2015 (Chart 2).

Chart 1: 10-year Treasury yield vs. S&P 500 (log scale) since 1953



Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 2: Rolling 3-yr correlation between S&P 500 and 10-yr Tsy yields



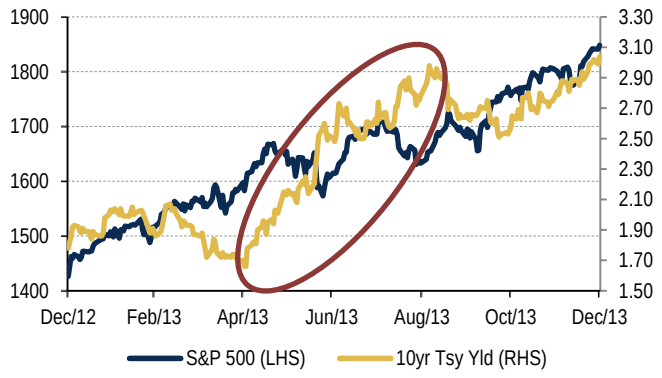
Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

The best year for stocks was 2013, during which the S&P 500 returned 32% despite a 100bp+ rise in 10-year yields

2013's "taper tantrum" was the best year for the S&P 500 of this bull market

While last year's 22% S&P 500 total return was impressive, it was actually only the third-best year of returns during this cycle. The best year— eclipsing even the initial 26% bounce in 2009 — was 2013, during which the S&P 500 returned 32% despite the 100bp+ rise in the yield on 10-year Treasuries (Table 1). In fact, historically, periods of rising interest rates have coincided with positive stock returns nearly 90% of the time (see Table 4 later in this report).

Chart 3: S&P 500 vs. the 10-year Treasury yield, 2013-2014



Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Table 1: S&P 500 returns vs. change in the 10yr Tsy. yield, 2009-now

Year	S&P 500 Total Return	Change in 10yr Tsy. Yld. (bp)
2009	26%	160
2010	15%	-55
2011	2%	-141
2012	16%	-11
2013	32%	126
2014	14%	-87
2015	1%	10
2016	12%	18
2017	22%	-5
YTD 2018	0%	46

Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

2) What is the level of rates that hurts stocks?

While average historical stock returns are still positive until interest rates get above 6%, the probability of loss starts to go up as interest rates move above 3%

There is no "magic number"

Our analysis failed to reveal a "magic number", or a level at which interest rates unequivocally hurt equity returns. We have seen equivalently strong equity market returns with a starting point of rates at 2%, 4%, and 6%. A confluence of other factors appears to matter more than simply the level.

But we may be exiting the interest rate "sweet spot"

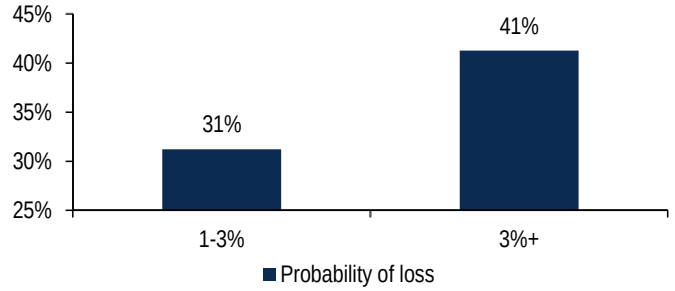
The distribution of returns does reveal that we have been in the sweet spot for equities, as rates have risen from low levels. Historically, the best S&P 500 returns have occurred when the 10-yr Treasury yields has ranged from 2% to 3%, particularly when yields have been rising (Table 2). While average historical stock returns remain positive until interest rates cross above 6%, the probability of losing money begins to increase as interest rates cross above 3% (Chart 4). And recall that stocks were most negatively correlated with Treasury yields from the 1960s through the 1990s, when rates ranged from 4% to 16% (Chart 2, previous section).

Table 2: Average monthly S&P 500 returns based on ranges and direction of the 10-year Treasury yield (1953-present)

10-yr yield range	Rising	Falling
1-2%	1.4%	-0.5%
2-3%	1.9%	1.2%
3-4%	1.2%	-0.4%
4-5%	0.7%	0.4%
5-6%	0.6%	0.1%
6-7%	-0.2%	2.5%
7%+	-0.6%	1.8%

Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 4: Probability of loss (based on monthly S&P 500 returns) in terms of ranges of the 10-year Treasury yield (1953-present)



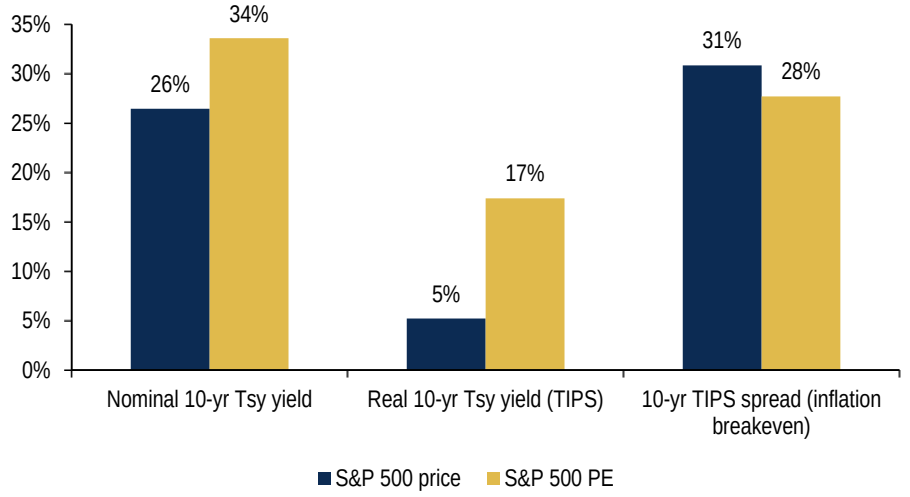
Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

3) What matters more, nominal or real interest rates?

Inflation expectations are more correlated with both S&P 500 returns and PE ratios than real rates.

All else equal, inflation expectations have been more correlated with both S&P 500 prices and PE multiples than real rates (as measured by Treasury Inflation-Protected Securities, or TIPS) since 1997 (Chart 5).

Chart 5: Correlation b/w S&P 500 price & trailing PE with interest rate components since March '97

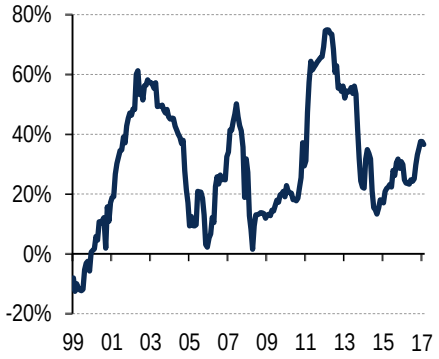


Source: BofAML US Equity & Quant Strategy, FRB, S&P

Relationships have varied depending on the period

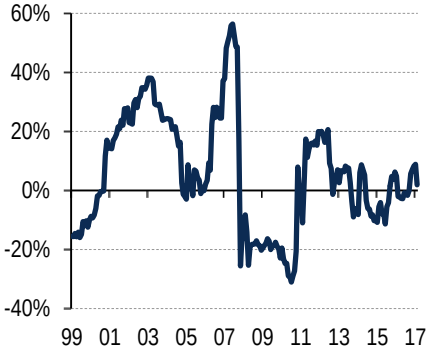
Relationships have differed during different market cycles. For example, the positive correlation between stocks and rates since 2001 was initially a function of the real rates (Chart 7), which were likely a reflection of the growth environment during this era. But following the global financial crisis, the positive correlation appears to be more attributable to inflation expectations—S&P 500 stocks have been positively correlated with changes in CPI amid fears of deflation, and more recently (such as throughout much of 2017), expectations of inflation.

Chart 6: Rolling 3yr correlation: S&P 500 return vs. chg. in nominal 10yr yield (2000-1/2018)



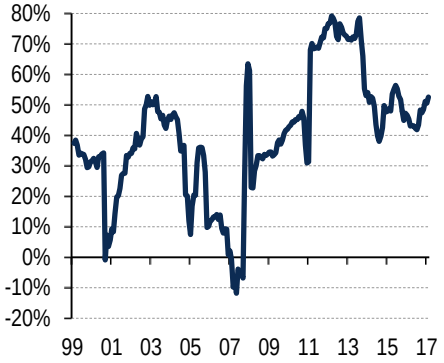
Source: FRB, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 7: Rolling 3yr correlation: S&P 500 return vs. chg. in real 10yr yield (2000-1/2018)



Note: Based on TIPS 2003-now and Bloomberg constant maturity real 10yr Tsy. yield 1997-2003
Source: FRB, Bloomberg, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 8: Rolling 3yr correlation: S&P 500 return vs. 10yr breakeven (2000-1/2018)



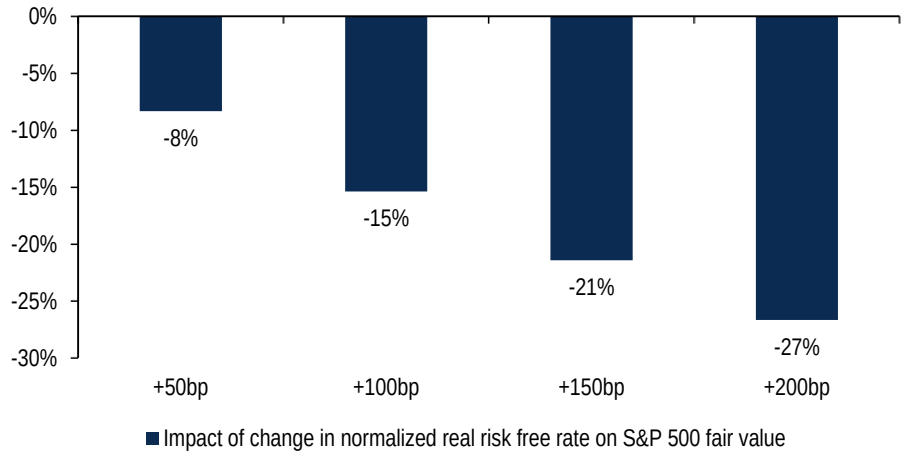
Source: BLS, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

4) Don't higher discount rates imply lower valuations?

> ...all else equal, every 50bp increase in the normalized real risk-free rate reduces the fair value of the S&P 500 by roughly 6-8%

From a valuation perspective, higher interest rates imply higher discount rates and lower valuations for all financial assets, all else being equal. In our fair value model, we currently assume a normalized real risk-free rate of 1.5%, but all else equal, every 50bp increase in the normalized real risk-free rate reduces the fair value of the S&P 500 by roughly 6-8% (Chart 9).

Chart 9: Impact of change in normalized real risk free rate on 2018 S&P 500 fair value



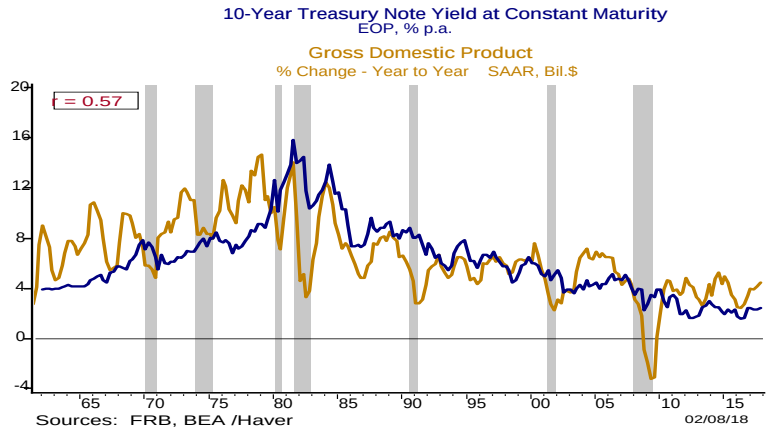
Source: BoofAML US Equity & Quant Strategy

> One common offset to a rising risk-free rate (which drives the denominator in a discounted cash flow framework) is stronger growth (a higher numerator)

But all else tends not to be equal. One offset to rising rates: better growth

One common offset to a rising risk-free rate (which drives the denominator in a discounted cash flow framework) is stronger growth (a higher numerator). Note that during most periods of rising interest rates, growth has increased as well (Chart 10). If long-term earnings growth tracks nominal GDP growth as has been the case historically, a gradual increase in rates accompanied by a gradual increase in growth may not be as negative for stocks as Chart 9 would imply. Our economics team has recently increased their GDP forecasts for this year and next on the back of an increased government spending outlook. While longer term, this increases the risk of overheating the economy, in the near-term, this provides upward risks to the growth outlook, particularly if Congress is eventually able to pass an infrastructure bill.

Chart 10:10-yr Treasury yield vs. US nominal GDP growth y/y%

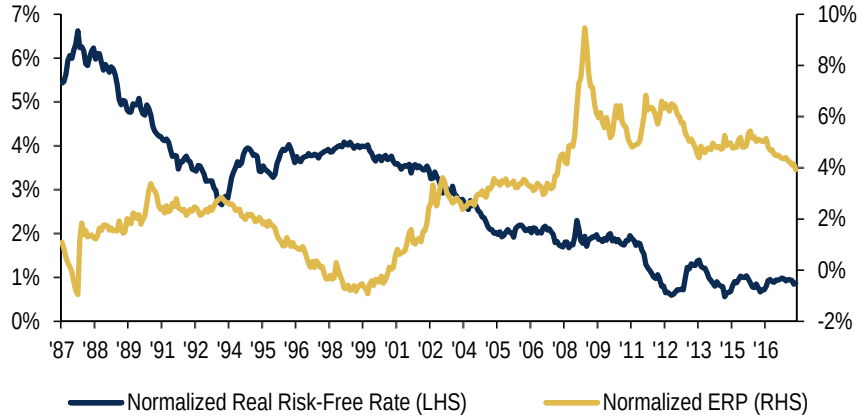


Source: BofAML US Equity & Quant Strategy, Haver, FRB, BEA

Equity risk premiums and interest rates are negatively correlated

In our normalized equity risk premium model, there is a clear inverse relationship between interest rates and the premium that investors require to own equity-specific risk (Chart 11). As interest rates increase, is seems that the improved earnings outlook causes investors to require less compensation for taking on equity-specific risk. In a simple Gordon Growth model, [Dividend ÷ (Discount Rate – Growth)], the discount rate and the long-term growth rate have a 1:1 offsetting relationship, such that there is no change to the fair value if the change in the discount rate and the growth rate are equivalent.

Chart 11: Normalized real risk-free rate & normalized ERP



Source: BofAML US Equity & Quant Strategy, FRB, S&P

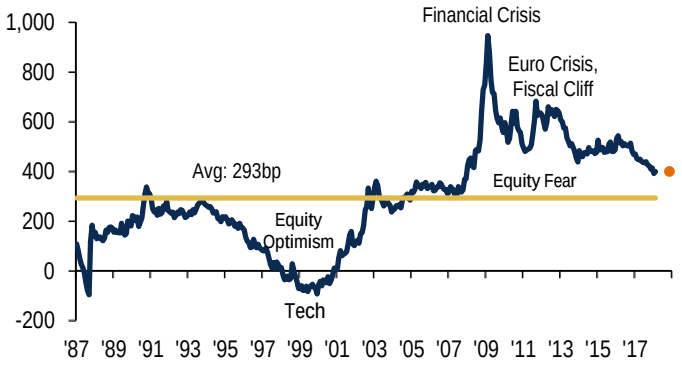
> … stocks are still attractively valued relative to bonds…[but] there is now less of a "buffer" between stock and bond valuations to absorb higher rates

A big valuation buffer has absorbed higher rates during this cycle

While S&P 500 valuations on most measures appear elevated relative to history, stocks are still attractively valued relative to bonds using our equity risk premia (ERP) models. It may not be a coincidence that interest rates flipped from being negatively correlated with stocks in the 1980s and 1990s, when the ERP was lower, to being positively correlated since then amid an elevated ERP. But with the ERP having dropped nearly

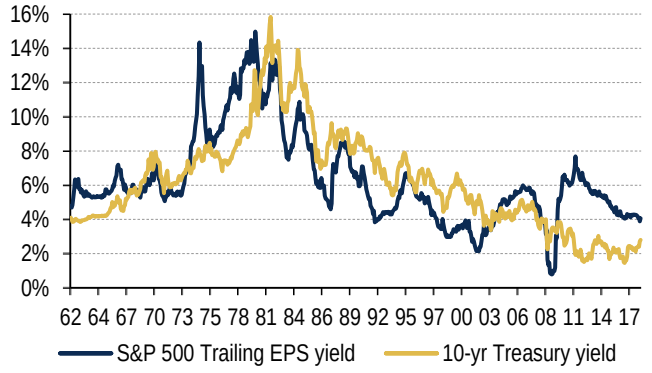
500bp since its 2009 peak based on our normalized risk premium model (and by 150bp since the 2012 peak in our market-derived risk premium model), there is now less of a "buffer" between stock and bond valuations to absorb higher rates. This is coming at a time when rising rates could cause stocks' relative valuations to look less attractive absent growth (Chart 13).

Chart 12: S&P 500 normalized equity risk premium (1987-1/2018 with year-end 2018 forecast in orange dot)



Source: BofA Merrill Lynch US Equity & US Quant Strategy

Chart 13: S&P 500 trailing EPS yield vs. 10yr Treasury yield (1962-now)



Source: S&P, FRB, BofA Merrill Lynch US Equity & US Quant Strategy

Table 3: S&P 500 Valuations -- borders denote metrics trading above their historical average (as of 1/31/18)

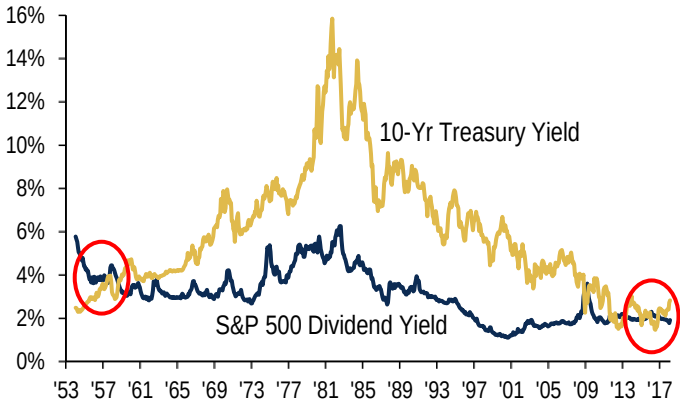
Metric	Current	Average	Avg. ex. Tech Bubble	Min	Max	% Above (below) avg	Z-Score	History
Trailing PE	22.0	16.1	15.4	6.7	30.5	37%	1.3	1960-present
Trailing GAAP PE	26.4	19.2	18.3	6.7	122.4	38%	0.6	1960-present
Forward Consensus PE	18.1	15.3	14.3	9.8	25.1	19%	0.8	1986-present
Trailing Normalized PE	22.5	19.0	17.5	9.2	33.9	19%	0.7	9/1987-present
Median Forward PE	18.2	15.1	14.8	10.0	20.5	21%	1.5	1986-present
Shiller PE	33.8	16.8	16.2	4.8	44.2	101%	2.5	1881-present
P/BV	3.54	2.49	2.27	0.98	5.34	42%	1.1	1978-present
EV/EBITDA	13.3	10.0	9.6	6.0	15.0	33%	1.5	1986-present
Trailing PEG	1.55	1.45	1.43	0.93	2.21	7%	0.4	1986-present
Forward PEG	1.28	1.23	1.20	0.82	1.67	4%	0.3	1986-present
P/OCF	15.1	10.6	9.8	5.4	19.0	43%	1.5	1986-present
P/FCF	27.4	28.2	24.9	12.9	65.7	-3%	-0.1	1986-present
EV/Sales	2.58	1.84	1.74	0.86	2.91	40%	1.5	1986-present
ERP (Market-Based)	731	471	486	136	880	55%*	1.4	11/1980-present
Normalized ERP	392	293	338	-96	947	34%*	0.5	1987-present
S&P 500 Div. Yld. vs. 10yr Tsy. Yld.	0.7	0.6	0.6	0.2	2.3	4%*	0.1	1953-present
S&P 500 in WTI terms	44.3	23.7	21.0	2.7	109.0	87%	1.3	1960-present
S&P 500 in Gold terms	2.10	1.58	1.33	0.17	5.48	33%	0.4	1968-present
S&P 500 vs. R2000 Fwd. PE	0.98	1.00	0.94	0.76	1.71	-1%	-0.1	1986-present
S&P 500 Market Cap/GDP	1.22	0.59	0.55	0.22	1.29	107%	2.3	1964-present

*Above average implied equities are attractive relative to bonds. Note: Trailing PE based on GAAP EPS from 1960-77, Operating EPS from 1978-87, Pro forma EPS 1988-now. Trailing GAAP PE based on GAAP PE for entire series. Market-based ERP based on DDM-implied S&P 500 return less AAA corp bond yield. Normalized ERP based on normalized EPS yield less normalized real risk-free rate.
Source: S&P, Compustat, Bloomberg, FactSet/First Call, BofA Merrill Lynch US Equity & US Quant Strategy

Dividend yields versus bond yields back to normal

The recent period of ultra-low interest rates made other sources of income much more attractive. In fact, in 2008 the S&P 500 dividend yield exceeded the 10-year Treasury yield for the first time since the late-1950s. Today, at close to 100bp, the spread of the Treasury yield vs. the S&P 500 dividend yield is the widest since 2013 and is now back to its six-decade average. And only 23% of stocks in the S&P 500 trade at a dividend yield that exceeds the 10-year Treasury yield — the lowest since the Taper Tantrum in 2013 — compared to 63% at the peak in 2016 (Chart 15).

Chart 14: S&P 500 dividend yield vs. 10-year Treasury yield (1953-present)



Source: S&P, FRB, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 15: % of S&P 500 companies with dividend yield > 10-yr Tsy yield

Source: S&P, FRB, BofA Merrill Lynch US Equity & US Quant Strategy

5) What's the historical relationship between rates and multiples?

An examination of the historical relationship between PE multiples and interest rates suggests that there is no specific threshold or pace at which rising rates start to pressure multiples

What relationship?

Prior to the recent equity market pullback, PE multiples for the S&P 500 had been steadily expanding despite the 100bp+ run-up in 10-year Treasury yields since July of 2016. An examination of the historical relationship between PE multiples and interest rates suggests that there is no specific threshold or pace at which rising rates start to pressure multiples.

Chart 16: S&P 500 Trailing PE vs. 10yr Treasury yield 1953-now (as of 2/14/18)

Source: S&P, FRB, BofAML US Equity & Quant Strategy

Of the 15 historical periods of rising rates that we identified, stocks generated positive returns nearly 90% of the time, while the S&P 500 trailing PE ratio expanded just over half the time

PE fell in <50% of rising rate periods…and usually because of higher EPS

We identified 15 distinct periods of rising 10-year Treasury yields since 1954, of which most saw interest rates rise by over 100bp (Table 4). Of those 15 observations, stocks generated positive returns nearly 90% of the time (13 of 15), and the S&P 500 trailing PE ratio expanded just over half the time (seven of 15). In the seven instances of multiple compression, four instances were due to EPS growth outpacing positive or flat market returns. The other three saw multiples compress because of falling prices (-8% to -15%) but in two of these instances, strong EPS growth was still a bigger contributor to multiple compression than price decline.

Table 4: Historical periods of rising rates: Change in S&P 500 multiple, performance, and EPS change
(Shading denotes periods when PE contracted, and boxes show periods when EPS growth was driving that PE contraction while the market was flat or up)

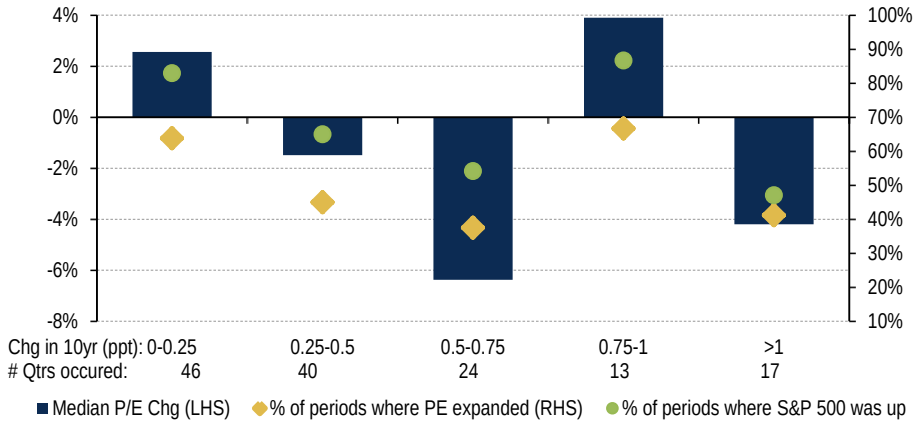
Start Date	End Date	Starting 10yr Tsy. Yld.	Ending 10yr Tsy. Yld.	Change in 10yr Tsy. Yld. (bp)	Starting PE	Ending PE	Change in S&P 500 Trailing PE	Price Change	EPS Change	S&P 500 Total Return
4/30/1954	10/31/1957	2.3	4.0	168	11.1	11.8	7%	45%	36%	68%
4/30/1958	1/31/1960	2.9	4.7	184	13.8	16.4	19%	28%	8%	36%
5/31/1961	8/31/1966	3.7	5.2	151	22.0	14.0	-36%	16%	82%	37%
3/31/1967	5/31/1970	4.5	7.9	337	16.6	13.9	-16%	-15%	1%	-6%
10/31/1971	9/30/1975	5.9	8.4	250	16.5	10.8	-35%	-11%	36%	3%
12/31/1976	9/30/1981	6.9	15.3	845	10.8	7.7	-29%	8%	53%	38%
4/30/1983	5/31/1984	10.4	13.4	301	12.8	9.0	-30%	-8%	30%	-4%
8/31/1986	9/30/1987	7.2	9.4	225	15.1	17.3	15%	27%	11%	32%
9/30/1993	11/30/1994	5.4	8.0	260	18.1	14.3	-21%	-1%	25%	2%
12/31/1995	8/31/1996	5.7	6.6	93	16.3	17.0	4%	6%	2%	7%
9/30/1998	1/31/2000	4.8	6.7	185	22.4	28.7	28%	37%	7%	39%
5/31/2003	6/30/2006	3.6	5.1	154	19.6	16.7	-15%	32%	55%	39%
12/31/2008	4/30/2010	2.4	3.9	143	11.9	19.1	61%	31%	-19%	35%
7/31/2012	12/31/2013	1.5	2.9	137	13.8	17.4	26%	34%	7%	38%
7/31/2016	1/31/2018	1.5	2.6	108	18.6	22.0	18%	30%	10%	34%

Source: FRB, S&P, FactSet, BofA Merrill Lynch US Equity & US Quant Strategy

Does the pace of rate cycles matter?

Chart 17 below debunks the notion that a quick rise in rates is worse for multiples than a gradual rise: the PE has expanded more when rates rose quickly (75-100bp in a six-month timeframe) than when rates increased by less than that amount. Even when rates jumped by >100bp in six months, multiples still expanded almost half of the time. This is similar to our analysis of historical Fed tightening cycles, which also failed to reveal consistent trends in multiples before, during or after hiking cycles. The answer may lie in a more complex confluence of growth, positioning, sentiment and other factors.

Chart 17: 6m change in S&P 500 trailing PE based on 6m change in the 10-year Treasury yield, (based on quarterly data from 1954-12/31/17)



Source: S&P, FRB, BofA Merrill Lynch US Equity & Quant Strategy

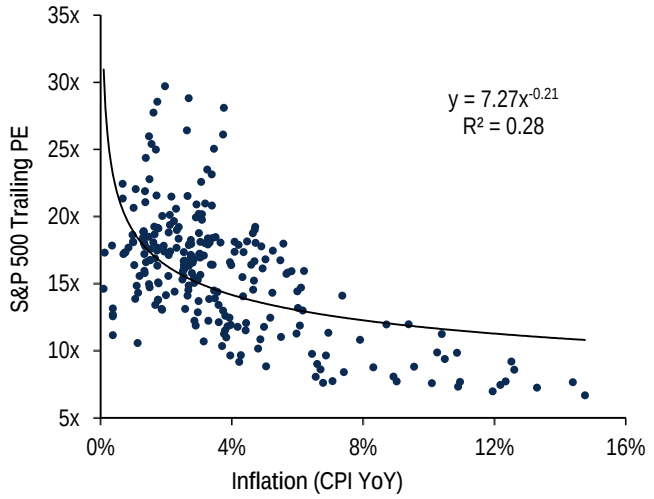
Inflation matters more to multiples than real rates

The long-term correlation between the 10-year Treasury yield and the S&P 500 trailing PE has been negative, but we note several important caveats. The relationship has been quite weak (r-squared of 0.2) and inconsistent over time. Additionally, the correlation has tended to be positive when interest rates have been low. Lastly, in some cases, multiples have contracted amid rising rates, not because prices were falling, but because earnings growth was outpacing prices.

> ...we found that inflation has historically greater explanatory power on multiples than rates

The correlation between real rates and multiples since 1997 is positive, but we found that inflation has historically greater explanatory power on multiples than rates (Chart 18). With today's rising inflation but lofty multiples, the risk is that multiples de-rate lower.

Chart 18: Inflation (CPI) vs. S&P 500 trailing PE, 1953-present



Note: excludes negative inflation values
Source: S&P, BLS, BofA Merrill Lynch US Equity & Quant Strategy

The historical relationship between CPI and the S&P 500 trailing PE is stronger than that of real yields, but tends to have less information content at sub-3% levels of inflation.

Today's CPI of 2.1% YoY suggests the trailing PE ratio should be nearly four multiples points lower today (16.2x vs. 20.1x currently) but the historical range of multiples at these levels of inflation has been wide: 13x to 30x.

Table 5: S&P 500 returns based on CPI ranges (quintiles) historically (1928-present)

Inflation (CPI) Range (Quintiles)	S&P 500 Average Return	S&P 500 Median Return	Probability of Negative Returns
-11% to 1%	4%	6%	44%
1% to 2%	12%	14%	22%
2% to 3%	12%	12%	16%
3% to 5%	8%	8%	26%
5% to 20%	2%	0%	50%
Deflation only (<0%)	-2%	-5%	56%

Source: BLS, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

Sweet spot for S&P 500 returns: 1-3% inflation

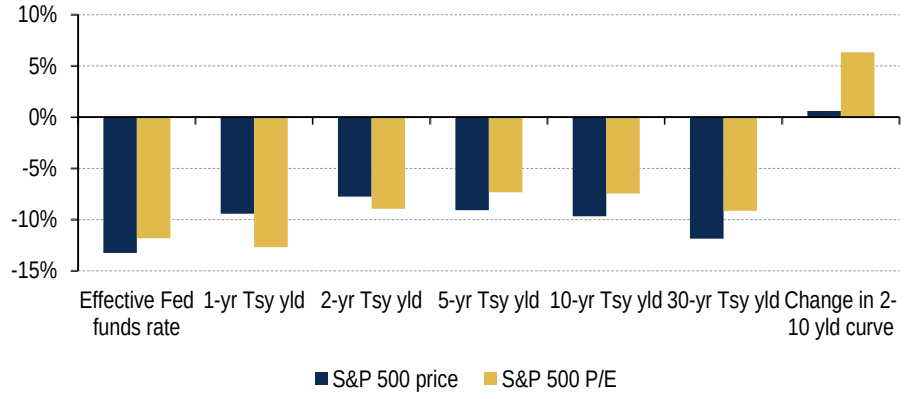
Historically, the S&P 500 has seen the highest average returns and the lowest probability of loss when inflation (based on CPI) is in the 1-3% range, where we are today.

6) Does the shape of the curve matter?

The relationship between interest rates and stocks over the past 40 years suggests that the short and long ends of the curve matter more for the stock market than the middle (Chart 19). And while interest rates have been negatively correlated with PE multiples and stock prices since 1977 (but generally positive since 2001), PE multiples have been

slightly positively correlated with the yield curve. But as with the relationship with 10-year Treasury yields, the correlations of stocks and multiples with interest rates across the curve as well as the shape of the curve itself, have been incredibly inconsistent over time.

Chart 19: Correlation b/w S&P 500 price & trailing PE interest rates by maturities since March '77

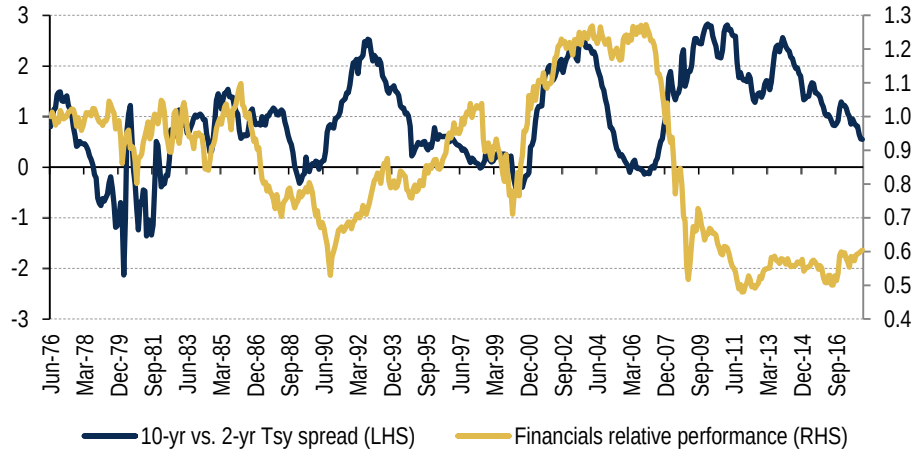


Source: BofAML US Equity & Quant Strategy, FRB, S&P

Financials and the yield curve

Ignore the conventional wisdom that Financials benefit from a steepening yield curve: the sector has underperformed more than outperformed during steepening periods. In our view, the yield curve is best used as a forecasting tool – especially for volatility (47% correlation with a three-year lead), and it currently suggests that volatility could trend higher for some time.

Chart 20: Yield curve vs. S&P 500 Financials relative performance

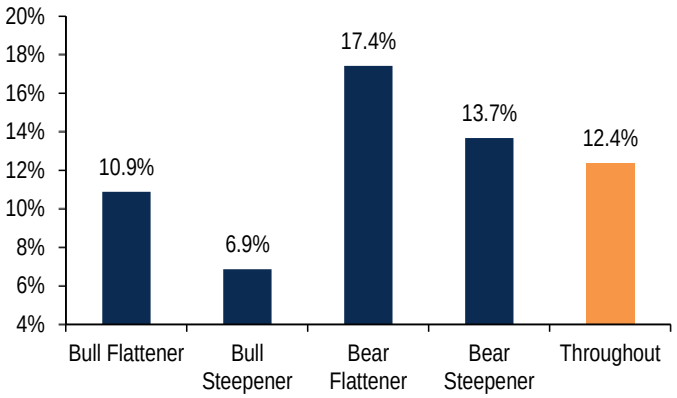


Source: BofA Merrill Lynch US Equity & US Quant Strategy, S&P

Bull & Bear flatteners & steepeners

We took a closer look at the performance of the market and sectors during different types of yield curve steepening and flattening periods. The market tends to do best during bear flattening (short end of the yield curve rising faster than the long end) and bear steepening (long end rising faster).

Chart 21: S&P 500 average annualized performance during the periods of each yield curve shift
6/1976-1/2018



Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

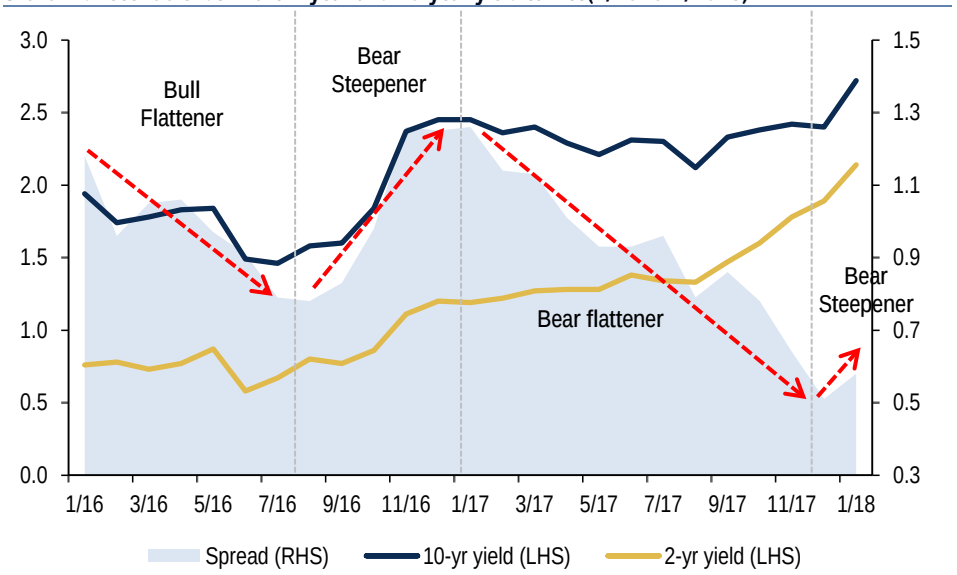
Table 6: Yield curve shift descriptions

Yield curve shift	Definition
Bull flattener	Long term rates fall faster than short term rates
Bull steepener	Short term rates fall faster than long term rates
Bear flattener	Short term rates rise faster than long term rates
Bear steepener	Long term rates rise faster than short term rates

Note: if short and long term rates move in the opposite directions, the change with the bigger magnitude defines the shift.
Source: BofA Merrill Lynch US Equity & US Quant Strategy

Throughout 2017, we saw an extended period of bear flattening, which coincided with the best year for US equities in years.

Chart 22: Recent trends in the 2-year and 10-year yield curves(1/2016-1/2018)

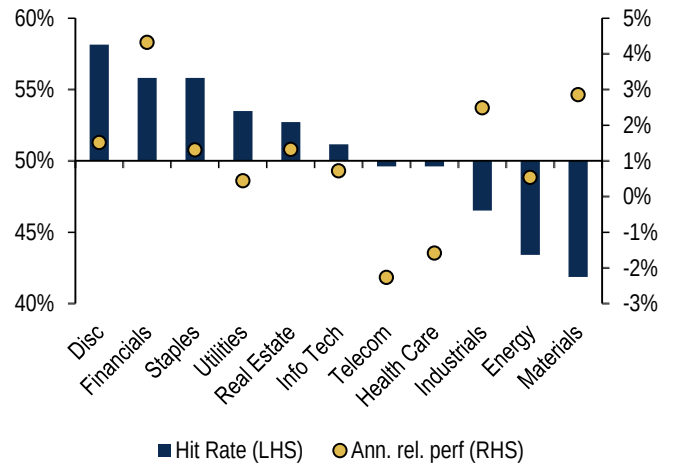


Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

Bull & bear flatteners vs. sectors

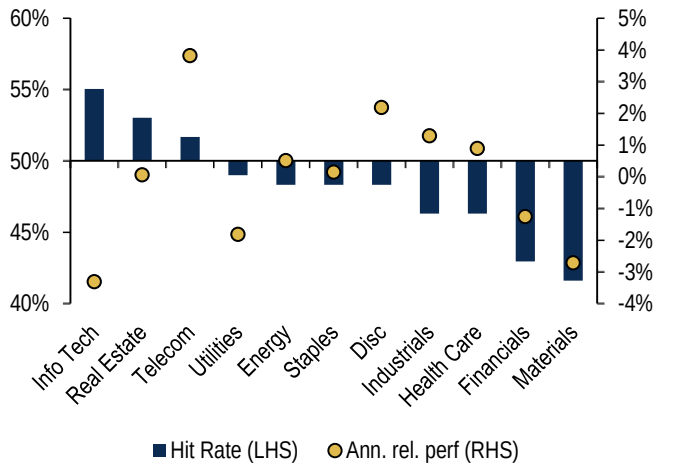
No sector has a perfect track record during any specific type of yield curve shift, but among the sectors, Financials has one of the higher outperformance rates during bull flattening periods (56%), while Energy and Materials have the lowest (43% and 42%, respectively). But during bear flattening periods (short end rising faster), Financials has one of the worst hit rates (43%) and Tech has the best (55%).

Chart 23: Sector relative performance during periods of bull flattening
6/1976-1/2018



Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

Chart 24: Sector relative performance during periods of bear flattening
6/1976-1/2018

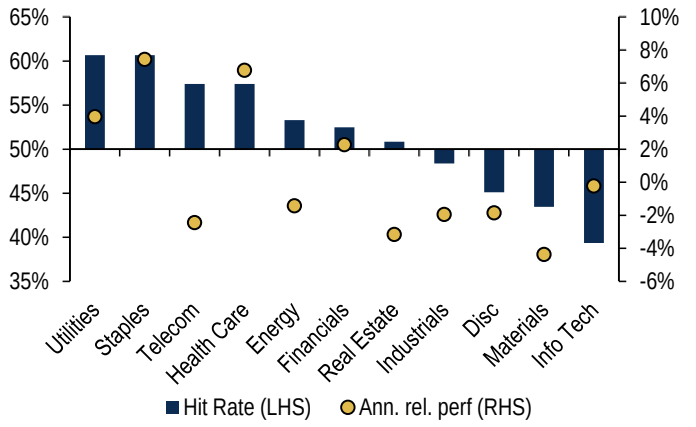


Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

Bull & bear steepeners vs. sectors

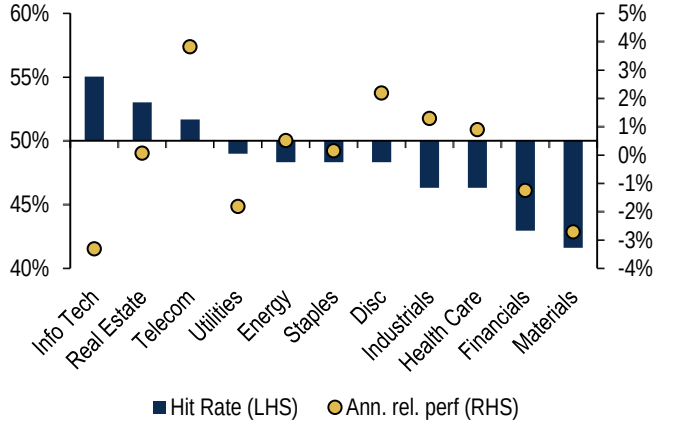
In addition to Financials' relative performance being negatively correlated with the yield curve, as noted previously, the sector has a particularly weak track record during bear steepening periods, with a hit rate of 43% and average relative performance of -1.3% per annum. Utilities and Staples have the best track record during bull steepening periods (61%), while Tech has the worst (39%).

Chart 25: Sector relative performance during periods of bull steepening
6/1976-1/2018



Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

Chart 26: Sector relative performance during periods of bear steepening
6/1976-1/2018



Source: BofA Merrill Lynch US Equity & US Quant Strategy, Federal Reserve Board

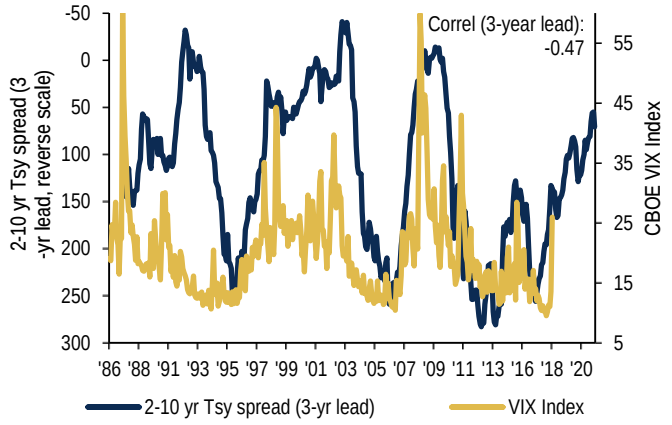
> While the VIX implied volatility index has come down from the recent peak, the yield curve suggests that it will continue to trend higher over the next several years

Flatter yield curves precede volatility spikes

While the yield curve has had an inconsistent coincident relationship with equities, flattening yield curves tend to lead periods of higher volatility by about three years (Chart 27). While the VIX implied volatility index has come down from the recent peak, the yield curve suggests that it will continue to trend higher over the next several years.

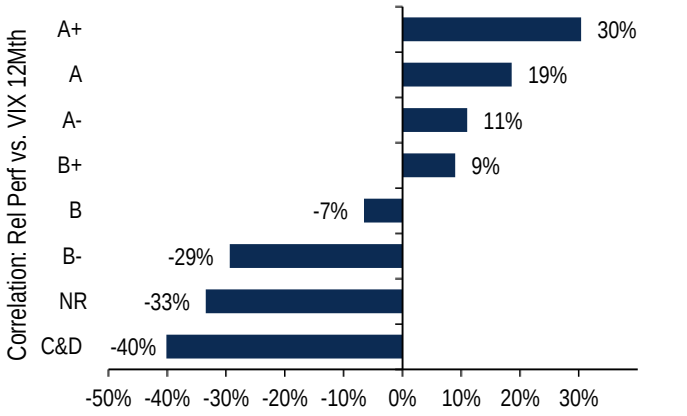
That suggests that investors should tilt their portfolios toward higher quality stocks as a hedge against rising volatility (Chart 28).

Chart 27: Yield curve vs. VIX: 2-10yr spread (inverted) leads VIX by 3 years (1986-now as of 2/14/18)



Source: CBOE, FRB, BofA Merrill Lynch US Equity & US Quant Strategy

Chart 28: BofAML US covered stocks by quality rank: 12m performance correlation to 12m change in the CBOE VIX (1987-present)



Source: S&P, CBOE,FactSet, BofA Merrill Lynch US Equity & US Quant Strategy

7) How do stocks perform when the Fed is tightening?

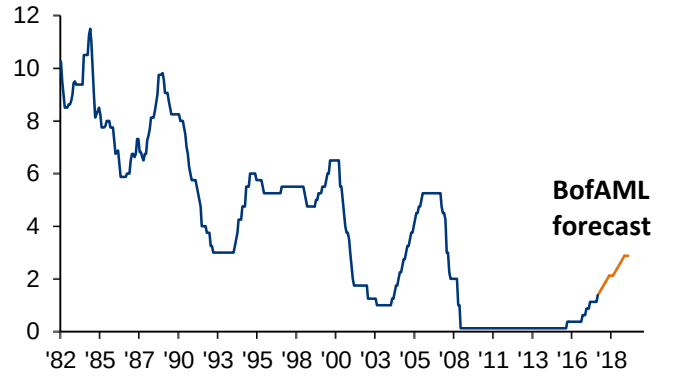
Our economists expect the Fed to hike three times per year in 2018 and 2019. This equates to ~75bp / year, less than a third of the pace of previous cycles. Gradual tightening cycles have historically been friendly to market multiples.

Table 7: Change in Fed funds rate/year within tightening cycles including BofAML forecast through 2019

	Chg in Fed funds rate/year (bp)
Jan-87 - Sep-87	192
Mar-88 - May-89	264
Feb-94 - Feb-95	278
Jun-99 - May-00	175
Jun-04 - Jun-06	204
Dec-15 - Dec-19 (BofAML)	68

Source: BofAML Global Research, Federal Reserve Board

Chart 29: Fed funds target rate



Source: BofAML Global Research, Federal Reserve Board

> Historically, the market has generated solid returns during tightening cycles, with average annualized S&P 500 returns of 17% and positive returns 100% of the time

Market performance during tightening cycles

Historically, the market has generated solid returns during tightening cycles, with average annualized S&P 500 returns of 17% and positive returns 100% of the time. While average returns have also been strong after the last rate hike (+10%), the market was down double-digits over the subsequent 12 months following two of the past five hiking cycles (Table 8).

Table 8: S&P 500 annualized returns around tightening cycles

	12 months prior	12 months from start	Throughout	Last 12 months	12 months after last hike
Jan-87-Sep-87	24%	6%	43%	40%	-12%
Mar-88-May-89	-8%	18%	25%	29%	15%
Feb-94-Feb-95	7%	5%	3%	1%	39%
Jun-99-May-00	23%	7%	9%	11%	-11%
Jun-04-Jun-06	19%	6%	8%	8%	20%
Dec-15- ?	7%	11%	NA	NA	NA
Average	12%	9%	17%	18%	10%
Positive %	83%	100%	100%	100%	60%

Source: BofAML US Equity & Quant Strategy, S&P, Federal Reserve Board

The Consumer Discretionary sector has underperformed the market in each of the last three Fed rate hiking cycles, as has underperformed since the Fed started hiking at the end of 2015

Sector performance during tightening cycles

The Consumer Discretionary sector has underperformed the market in each of the last three Fed rate hiking cycles, as has underperformed since the Fed started hiking at the end of 2015 (Table 9 and Table 10). Globally-oriented cyclical sectors such as Tech and Energy have historically fared best, although Energy has fared poorly in this tightening cycle while Tech underperformed in the 2004-2006 cycle. Dividend-focused sectors such as Telecom, Utilities, Staples and Real Estate have are the most negatively correlated with interest rates, and have also tended to underperform during Fed tightening cycles.

Table 9: Relative total returns of sectors during Fed tightening

Relative Performance	'94-'95	'99-'00	'04-'06	'15- now	o/p %
Discretionary	-11%	-7%	-8%	-3%	0%
Staples	11%	-19%	-5%	-16%	25%
Energy	0%	6%	58%	-24%	75%
Financials	-3%	-7%	3%	12%	50%
Health Care	20%	0%	-14%	-11%	25%
Industrials	-5%	-1%	5%	6%	50%
Technology	14%	27%	-18%	23%	75%
Materials	-6%	-21%	10%	2%	50%
Real Estate	-2%	-4%	29%	-32%	25%
Telecom	-5%	-20%	8%	-17%	25%
Utilities	-5%	4%	31%	-14%	50%
S&P 500	1%	5%	15%	42%	

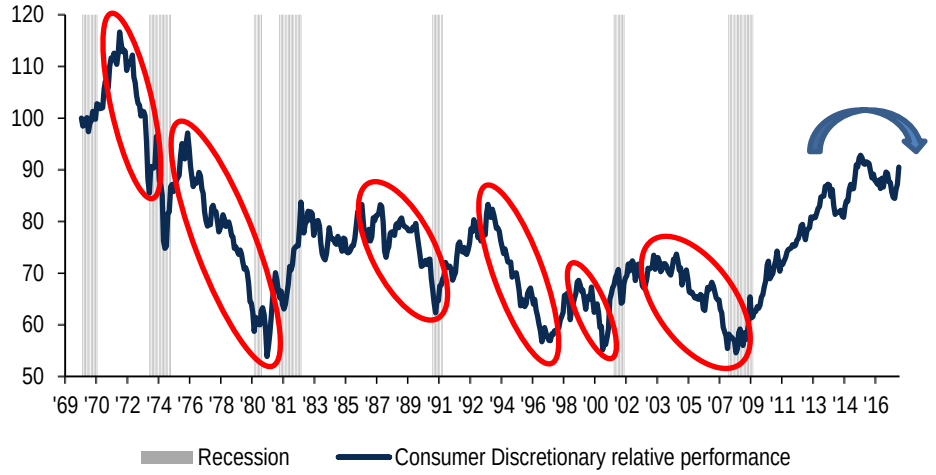
Source: BofAML US Equity & Quant Strategy, S&P, Federal Reserve Board

Table 10: Relative total returns of sectors 12 months before last rate hike

Relative Performance	'94-'95	'99-'00	'04-'06	o/p %
Discretionary	-11%	-7%	-6%	0%
Staples	11%	-26%	0%	33%
Energy	0%	1%	16%	100%
Financials	-3%	-9%	4%	33%
Health Care	20%	-1%	-10%	33%
Industrials	-5%	0%	6%	67%
Technology	14%	37%	-8%	67%
Materials	-6%	-22%	12%	33%
Real Estate	-2%	-12%	7%	33%
Telecom	-5%	-20%	4%	33%
Utilities	-5%	-5%	-3%	0%
S&P 500	10%	10%	9%	

Source: BofAML US Equity & Quant Strategy, S&P, Federal Reserve Board

Chart 30: Consumer Discretionary consistently underperforms mid to late cycle

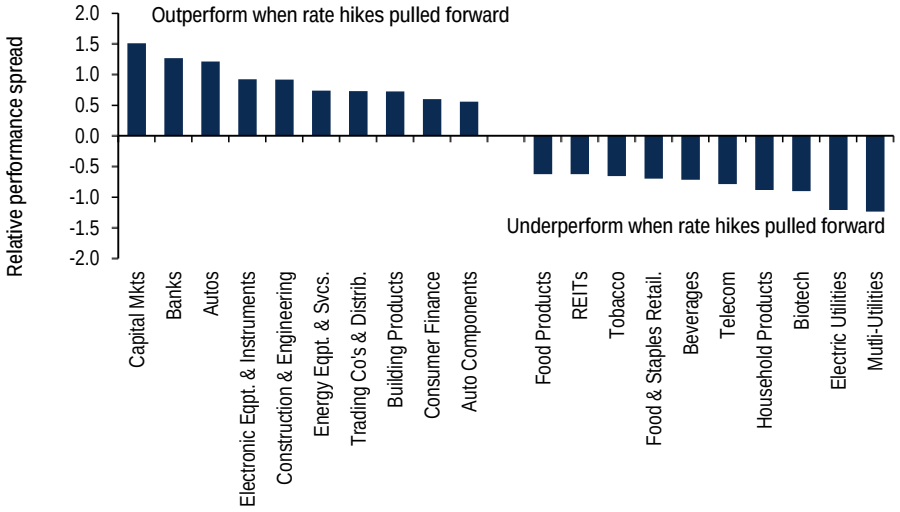


Source: BofAML US Equity & Quant Strategy
Note: based on historical sector returns 1990-present and historical constituents using 1990 sector classifications prior to 1990

Who's helped and hurt by a hawkish Fed?

Fed surprises are likely to drive more returns differentiation than what the market is expecting. We analyzed the impact to industries of changes in market expectations for Fed hikes. Capital Markets and Banks have been the best performers this cycle when expectations around rate hikes have been pulled forward, along with Autos/Auto Components and industries across generally more cyclical sectors. Conversely, the worst performers when expectations around rate hikes have been pulled forward have been defensive bond-proxy sectors (Utilities, Telecom, Tobacco, REITs, and several Staples industries), as well as longer duration Biotech.

Chart 31: Industries ranked by performance sensitivity to chgs in market-implied timing of Fed hikes



Note: Based on Top 10 industries with most positive and most negative relative performance spreads and hit rates on dates when market implied probability of Fed hike was pushed forward vs. dates when Fed hike was pushed back, since 2008.
Source: BofA Merrill Lynch US Equity & US Quant Strategy

> ...there is no ironclad rule for what happens to valuation multiples before, during or after hiking cycles

Fed tightening does not mean multiple contraction

We often hear that PE multiples cannot expand when the Fed is tightening. A look back at the five major Fed tightening cycles over the past 30 years suggests that there is no ironclad rule for what happens to valuation multiples before, during or after hiking cycles (Table 11).

Table 11: Forward PE during Fed tightening

Tightening Cycle	Before*	During	After*
Jan-87 - Sep-87	Flat	Expansion	Contraction
Mar-88 - May-89	Contract./Expansion	Contract./Expansion	Expansion
Feb-94 - Feb-95	Flat	Contraction	Expansion
Jun-99 - May-00	Flat	Flat/Contraction	Contraction
Jun-04 - Jun-06	Contraction	Contraction	Expansion
Dec-15 - now	Flat	Expansion	NA

*before and after indicate the general trend in the months immediately preceding and following the start and end of each tightening period.
Source: BofAML US Equity & Quant Strategy, Federal Reserve Board

Monetary policy alone doesn't drive returns / multiples

During the course of the past five tightening cycles, the range of outcomes has been quite wide, from -2.5 to +2.2 multiple points (Table 13), with only two instances in which the multiple peaked prior to the first Fed hike. On average, the multiple peaked six months into the tightening cycle, with the peak coming as early as five months before the first hike to as late as seven months after the last hike (Table 12). Since the Fed started hiking rates in December of 2015, the forward PE multiple has expanded from 16x to 17x (peaking at 18.3x in November 2017). Growth and investor sentiment appear to be more important determinants than Fed policy.

Table 12: Timing of peak forward PE multiple

Tightening Cycle	Months into tightening
Jan-87 - Sep-87	8
Mar-88 - May-89	22
Feb-94 - Feb-95	0
Jun-99 - May-00	7
Jun-04 - Jun-06	-5
Average	6

Source: BofAML US Equity & Quant Strategy, Federal Reserve

Table 13: Change in S&P 500 PE during Fed tightening

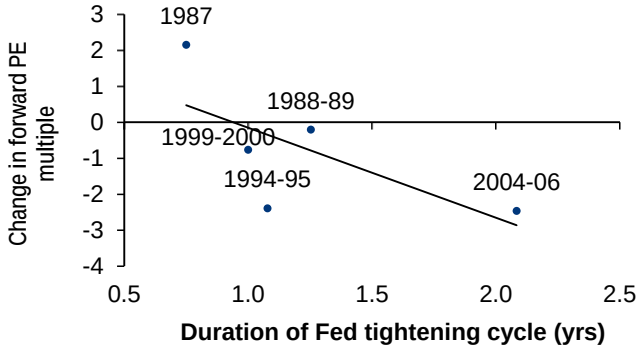
	Yrs	Beg Sentiment	Beg PE	End PE	Chg
Jan-87 – Sep-87	0.75	51.3	11.8	14.0	+2.2
Mar-88 – May-89	1.25	49.5	11.1	10.9	-0.2
Feb-94 – Feb-95	1.08	58.2	14.9	12.5	-2.4
Jun-99 – May-00	1.00	55.5	23.6	22.8	-0.8
Jun-04 – Jun-06	2.08	62.5	16.4	13.9	-2.5

Source: BofAML US Equity & Quant Strategy, Federal Reserve
Notes: Sentiment is based on the BofAML Sell Side Indicator and indicates the average recommended equity allocation by Wall street strategists. PE is based on next 12m bottom-up S&P 500 EPS.

Multiple contraction may be more likely during longer cycles

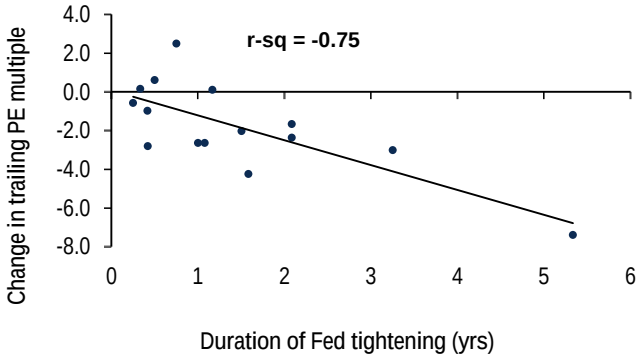
What may be more important than whether or not the Fed is tightening is the duration and magnitude of the tightening cycle. Looking back at the last five Fed tightening cycles — admittedly not the most robust sample set — longer tightening cycles tended to coincide with greater multiple contraction (Chart 32). Indeed, the longest period of tightening in 2004-2006, during which the Fed raised the Fed funds target rate from 1.00% to 5.25%, saw the S&P 500 forward PE multiple contract by 2.5 points. In contrast, the shortest hiking cycle in 1987, which lasted less than a year, saw the multiple expand by 2.2 points. We found the same results simulating a longer sample set back to the 1960s, using the effective Fed funds rate and trailing PE data, the relationship between the PE multiple and the duration of the tightening still holds with a correlation of -0.75 (Chart 33).

Chart 32: Chg in fwd PE vs. duration of Fed tightening since 1985



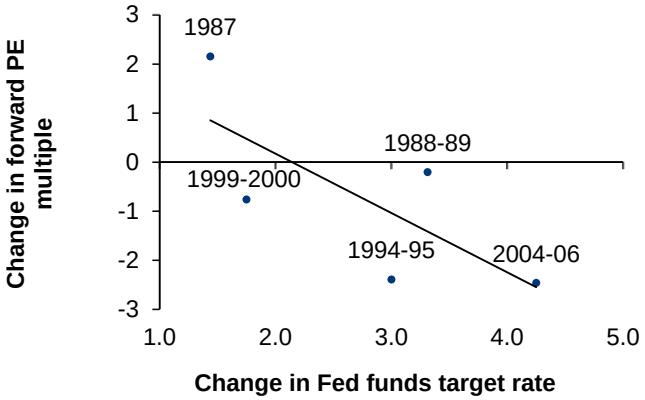
Source: BofAML US Equity & Quant Strategy, Federal Reserve, First Call, S&P

Chart 33: Chg in trailing PE vs. duration of Fed tightening since 1960



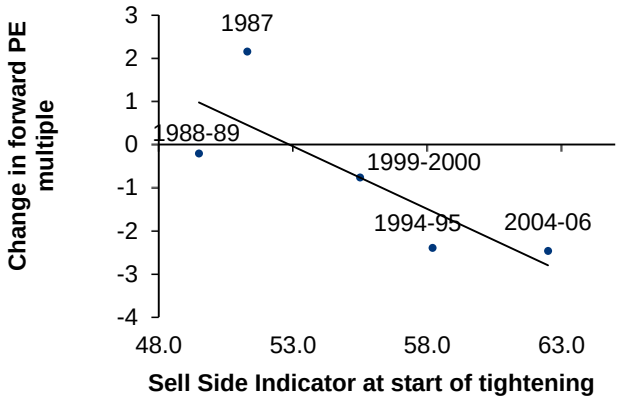
Source: BofAML US Equity & Quant Strategy, Federal Reserve, First Call, S&P

Chart 34: Change in forward PE ratio vs. magnitude of Fed tightening



Source: BofAML US Equity & Quant Strategy, Federal Reserve, First Call, S&P

Chart 35: Chg in fwd PE vs. investor sentiment at start of Fed tightening



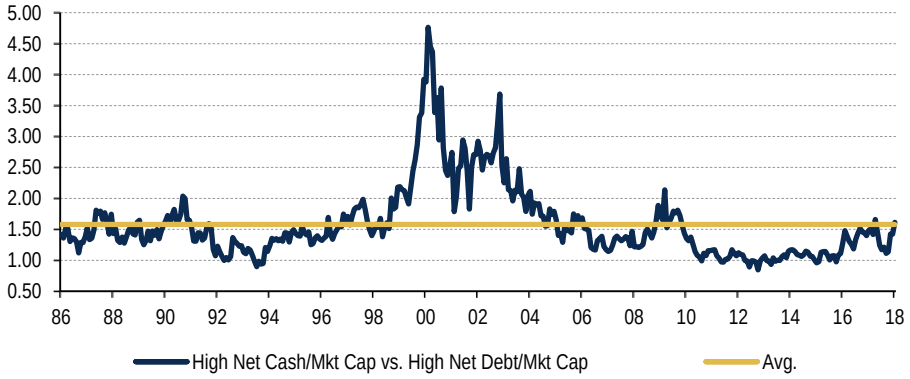
Source: BofAML US Equity & Quant Strategy, Federal Reserve, First Call, S&P

Higher short rates should benefit cash-rich stocks

Stocks with high levels of net cash have traded at an historical relative discount to levered stocks for most of this market cycle, given that leverage has not been penalized in the post-crisis backdrop of low rates and quantitative easing. If cash yields increase, cash-rich stocks could re-rate even higher—which has begun to occur in recent months (Chart 36).

Chart 36: Relative Forward PE of cash-rich vs. levered companies

Based on top decile by High Net Cash to Market Cap vs. High Net Debt to Market Cap, 1986-1/2018

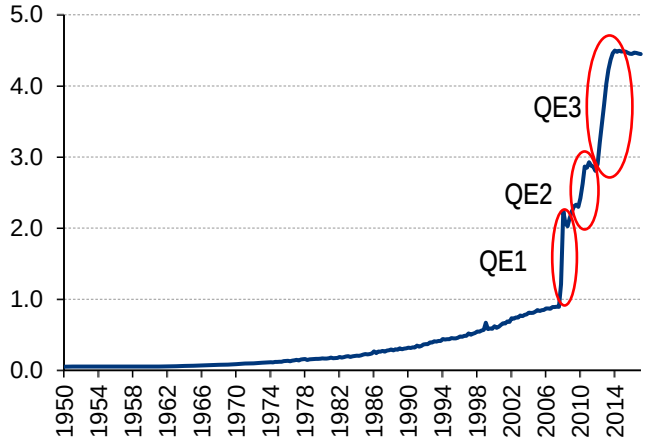


Source: FactSet, BofA Merrill Lynch US Equity & US Quant Strategy

8) What happens when the Fed shrinks its balance sheet?

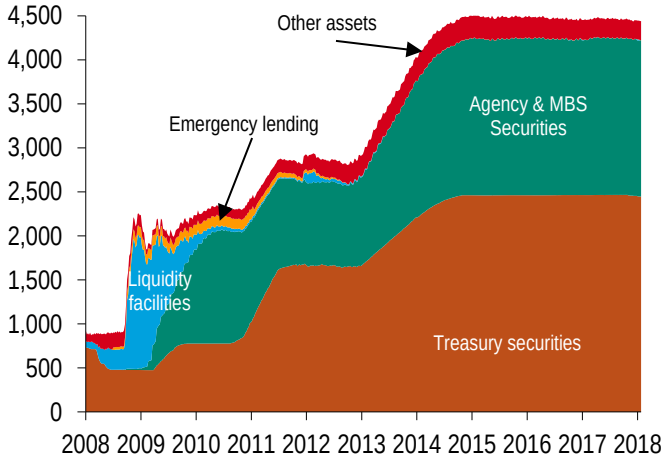
In the wake of the Global Financial Crisis, the Fed brought short term rates to 0% and expanded its balance sheet to $4.5tn (25% of GDP) through purchases of Treasuries and mortgage bonds. The unprecedented magnitude of stimulus lowered credit costs and provided support to an ailing housing market and to the US economy overall. But it also pushed investors out on the risk curve in search of higher returns. Bears argue that the Fed unwind will be painful. And admittedly, we have no comparable environment to analyze.

Chart 37: Federal Reserve balance sheet since 1950



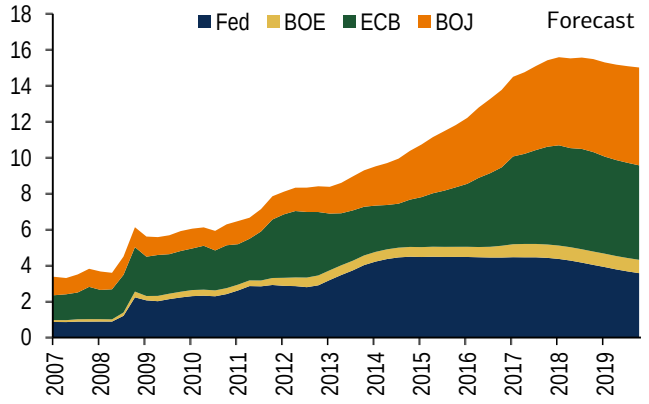
Source: BofAML US Equity & Quant Strategy, Federal Reserve Board

Chart 38: Federal Reserve balance sheet



Source: BofAML US Equity & Quant Strategy, Federal Reserve Board

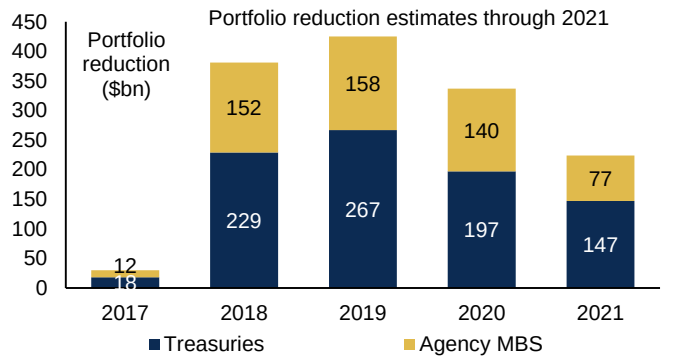
Chart 39: Aggregate G4 balance sheet (USD tn)



Source: BofA Merrill Lynch Global Research, Federal Reserve Board, Bank of England, European Central Bank, Bank of Japan, Bloomberg, Haver Analytics

Our economists believe that the size of the aggregate G4 central bank balance sheet will peak in 1Q 2018 and decline slowly thereafter.

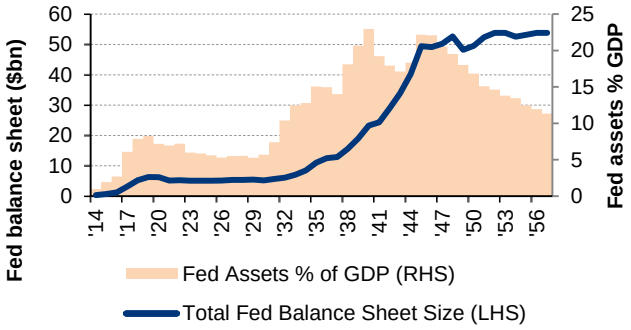
Chart 40: The planned balance sheet compression at the Fed will likely peak at $425bn in 2019



Source: BofA Merrill Lynch Global Research, Federal Reserve

2018 and 2019 will mark a significant acceleration in the pace of the Fed balance sheet reduction.

Chart 41: Fed balance sheet 1914 - 1957



Source: BofAML US Equity & Quant Strategy, Federal Reserve Board, Bureau of Economic Analysis

The last time the Fed's balance sheet exceeded 20% of GDP was in the early 1940s. But this ratio fell, even as the balance sheet continued to grow, for a good reason: faster GDP growth.

Historically, we have found little relationship between the Fed balance sheet and equity returns (r-squared = 2%; Table 2). But in prior periods, limited as they may be, during which the Fed balance sheet has shrunk, stocks have generally outperformed bonds (which generally outperformed commodities), value outperformed growth, and large caps outperformed small caps (Table 14).

> Prior periods of Fed balance sheet shrinkage suggest owning stocks over bonds, Value over Growth, and large caps over small caps

Table 14: Relationship between annual changes in Fed balance sheet and asset class returns

	Trailing 12m returns		Future 12m returns	
	Correlation	r-squared	Correlation	r-squared
L/T (15+) Govt Bonds	20%	4%	1%	0%
Corp Bonds	4%	0%	-8%	1%
Gold	0%	0%	-11%	1%
Small caps Index (Ibbotson)	-1%	0%	-24%	6%
Growth (Fama French)	-6%	0%	-19%	4%
Value (Fama French)	-12%	1%	-20%	4%
Large Growth (Fama French)	-12%	2%	-7%	0%
S&P 500 Index	-14%	2%	-6%	0%
Cash (3m T-bill) TR Index	-15%	2%	-7%	1%
Large Value (Fama French)	-15%	2%	-19%	4%
WTI	-18%	3%	-1%	0%

Source: BofAML US Equity & Quant Strategy, Federal Reserve Board, Ibbotson, BofAML Bond Indices, Bloomberg, Standard & Poor's, Russell

Table 15: Total return performance by asset class during periods of Fed balance sheet shrinkage

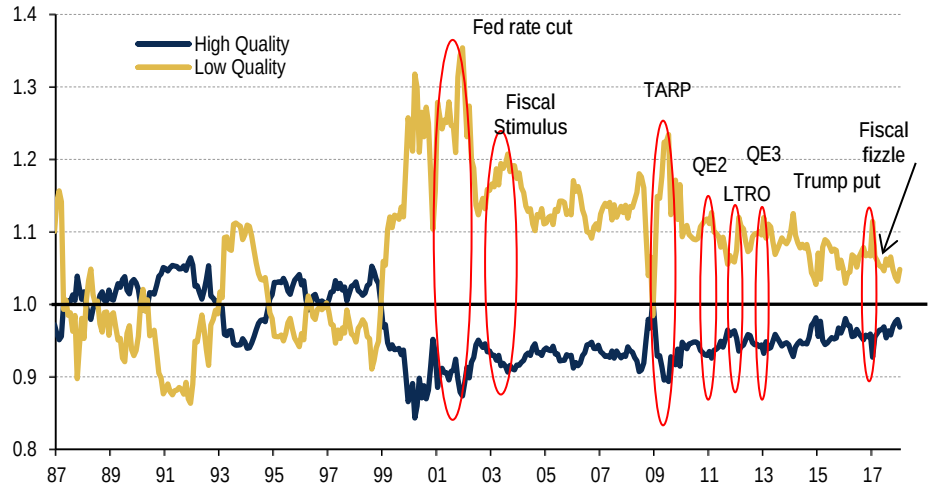
Peak	Trough	Total Fed assets ($mn)	S&P 500 Index	Small caps Index (Ibbotson)	L/T (15+) Govt Bonds	Corp Bonds	Gold	WTI	Cash (3m T-bill) TR Index	Growth (Fama French)	Value (Fama French)	Large Growth (Fama French)	Large Value (Fama French)
1919	1921	-18.5%	-3%										
1922	1923	-3.5%	1%				3%						
1929	1930	-4.7%	-24%	-38%	5%	8%	0%		2%	-31%	-45%	-26%	-43%
1945	1946	-0.7%	-8%	-12%	0%	2%	0%		0%	-10%	-8%	-8%	-8%
1948	1949	-8.5%	19%	20%	6%	3%	0%	0%	1%	23%	20%	23%	19%
1952	1954	-2.3%	51%	50%	11%	9%	1%	10%	3%	47%	59%	51%	65%
1957	1958	-0.5%	44%	65%	-6%	-2%	0%	0%	2%	58%	71%	42%	72%
1959	1960	-2.0%	0%	-3%	14%	9%	0%	0%	3%	-2%	-7%	-2%	-9%
1999	2000	-8.7%	-9%	-4%	21%	13%	-5%	5%	6%	-18%	3%	-14%	6%
2008	2009	-0.2%	26%	26%	-15%	3%	24%	78%	0%	31%	55%	28%	39%
Median since 1929*			10%	8%	6%	6%	0%	2%*	2%	11%	11%	10%	12%
Median since 1948			23%	23%	9%	6%	0%	2%	2%	27%	37%	26%	29%

Source: BofAML US Equity & Quant Strategy, Federal Reserve Board, Ibbotson, BofAML Bond Indices, Bloomberg, Standard & Poor's, Russell
*Median since 1929 does not include WTI crude oil performance for the 1929-1930 and 1945-1946 periods

What can do well in the great unwind? Quality

Valuations of risky stocks have been buoyed by decades of fiscal and monetary stimulus. Since the early 2000s, every sign of mean reversion between the relative multiples of high and low quality stocks was thwarted by liquidity. But low quality stocks have been slowly de-rating and high quality stocks have been slowly re-rating. We expect multiples to continue to normalize as we unwind the liquidity via balance sheet normalization and tightening. Not only are high quality stocks less expensive, by our measure, but they are also underweight by long-only funds.

Chart 42: Relative forward PE of high quality (B+ or better) vs. low quality (B or worse) stocks, 1987-1/31/18



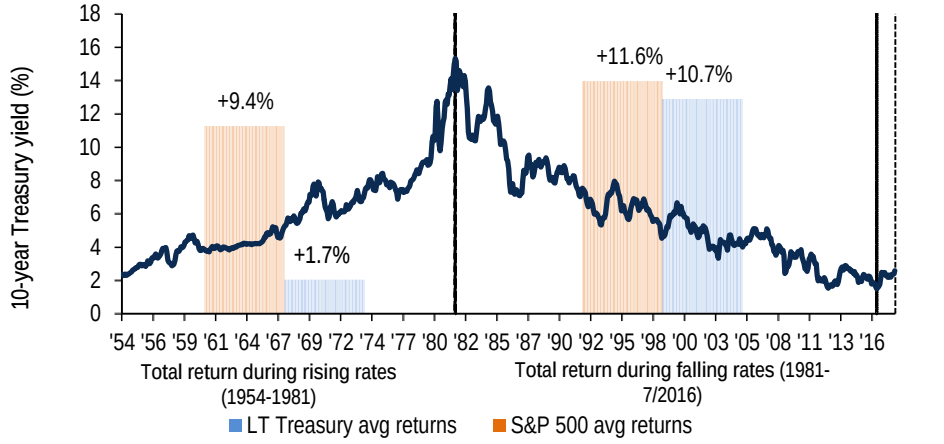
Note: Based on BofAML US coverage universe and S&P Quality Ranks, rebalanced monthly.
Source: BofA Merrill Lynch US Equity & US Quant Strategy, Standard & Poor's

9) How should you invest when in a rising rate regime?

Stocks over bonds

There have really only been two major interest rate regimes in the past 65 years: interest rates went from 2% in 1954 to 16% in 1981 and then back down to just above 1% in 2016. During the initial period of rising rates, stocks averaged 9.4% vs. just 1.7% for long-term Treasuries. But in the subsequent period of falling rates, returns were more competitive, with stocks averaging 11.6% returns vs. 10.7% for Treasuries.

Chart 43: Treasury bond vs. stock returns when rates are rising & falling



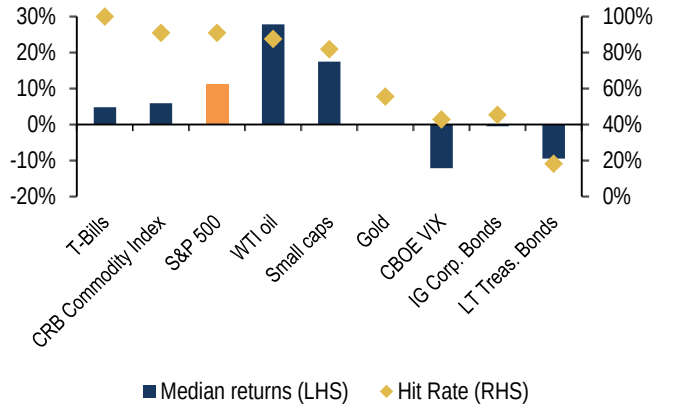
Source: BofAML US Equity & Quant Strategy, BofAML Indices, Bloomberg, FRB, Ibbotson, S&P
Note: Treasury returns based on Ibbotson data before 1980; BofAML data from 1980

10) What has worked well in previous rising rate regimes?

When nominal rates have been rising:

Based on the 15 previously identified periods of rising nominal rates in Table 4. See Appendix.

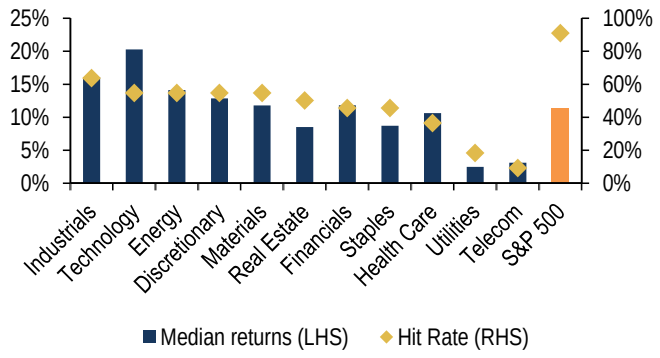
Chart 44: Annualized total returns during periods of rising nominal rates by asset class



Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Other than cash (T-Bills), commodities and stocks have done best when nominal interest rates have risen, while bonds (both corporate and long-term Treasuries) have fared worst.

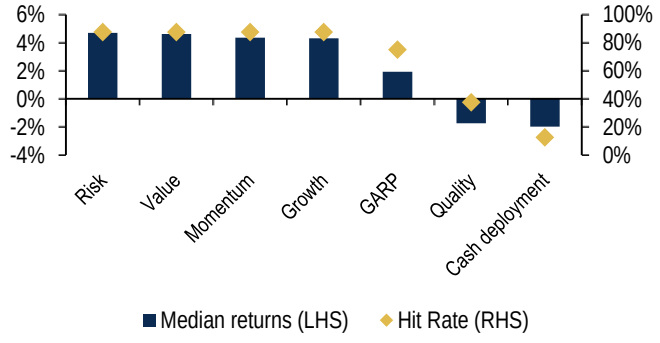
Chart 45: Annualized total returns during periods of rising nominal rates by sector



Source: BofAML US Equity & Quant Strategy, FactSet

Among the S&P 500 sectors, the global cyclical sectors have done best while the defensive bond proxies have had the highest probability of loss and lowest average returns.

Chart 46: Annualized relative total returns during periods of rising nominal rates by factor group

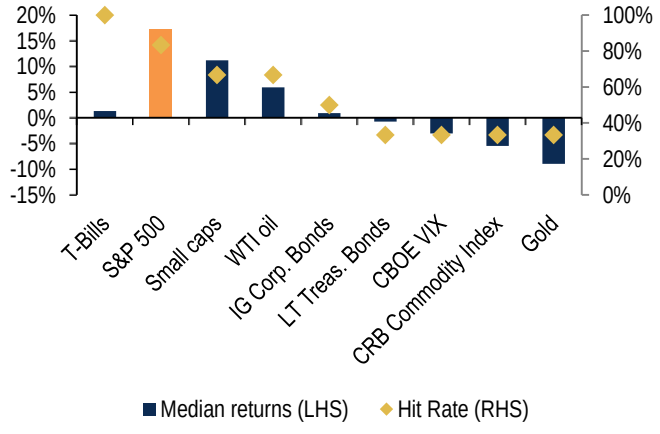


Note: see Appendix for factor group definitions
Source: BofAML US Equity & Quant Strategy, FactSet

Among the factor groups, Risk, Value, Momentum and Growth all outperformed in 13 of the 15 periods of rising rates, while cash deployment factors only outperformed twice.

When real rates (TIPS yields) have been rising:
Based on the six historical periods of rising TIPS yields indicated in the Appendix.

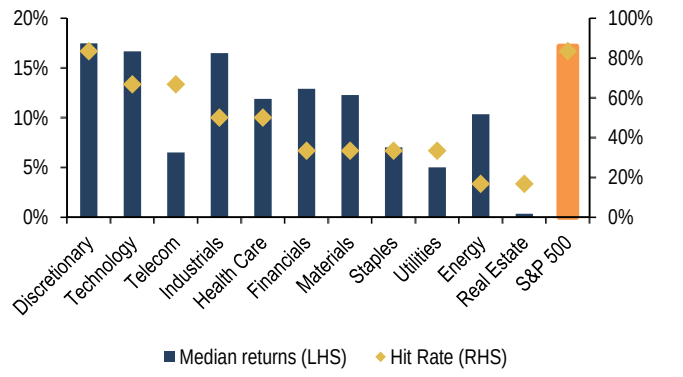
Chart 47: Annualized total returns during periods of rising real rates by asset class



Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Outside of cash (T-Bills), stocks fared best during periods of rising rates, generating positive returns in all but one of the six periods (February – October of 2008). Gold and commodities saw the worst returns.

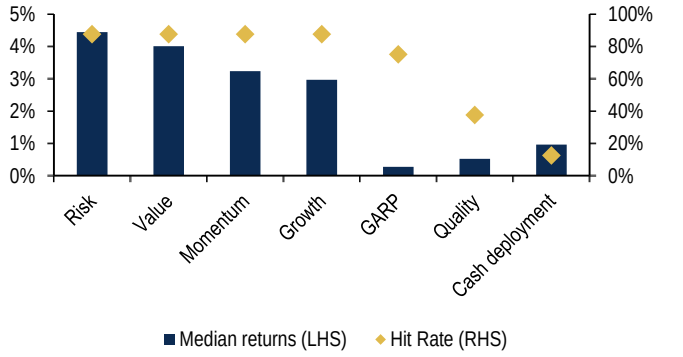
Chart 48: Annualized total returns during periods of rising real rates by sector



Source: BofAML US Equity & Quant Strategy, FactSet

Among the sectors, Discretionary actually had the best track record, outperforming the S&P 500 all but one instance with median annualized returns of 17%. Technology was the next best, outperforming four of six periods also with median returns of 17%. Real Estate and Energy underperformed the S&P 500 in all but one period each.

Chart 49: Annualized relative total returns during periods of rising real rates by factor group

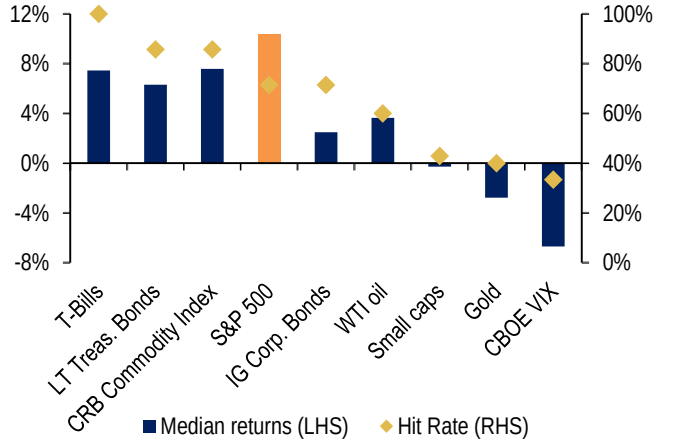


Note: see Appendix for factor groupings
Source: BofAML US Equity & Quant Strategy, FactSet

As with nominal rates, Risk, Value, Momentum and Growth were the best performing factors during the periods of rising real rates, all outperforming in five of six periods. Cash deployment factors only outperformed in one of the six periods.

When inflation (core CPI) was rising:
Based on the nine historical periods of rising core CPI indicated in the Appendix.

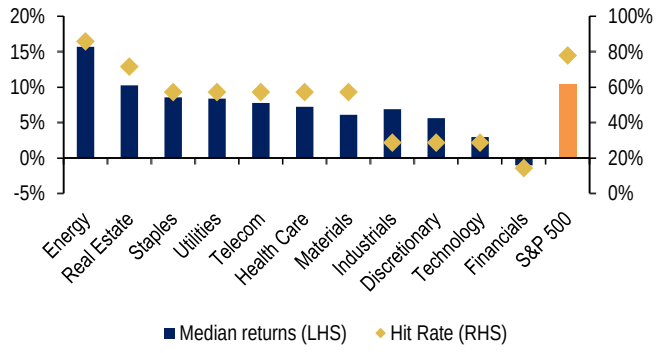
Chart 50: Annualized total returns during periods of rising inflation by asset class



Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Outside of cash (T-Bills), long-term Treasuries and commodities had the highest hit rates during periods of rising inflation, but stocks tended to generate the highest returns. Somewhat surprisingly, VIX and gold had the worst returns.

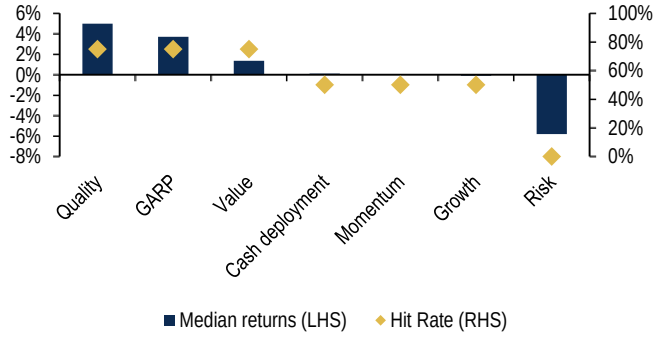
Chart 51: Annualized total returns during periods of rising inflation by sector



Source: BofAML US Equity & Quant Strategy, FactSet

Energy and Real Estate had the best outperformance rates and returns when core inflation was rising, while Financials and Technology had the worst performance.

Chart 52: Annualized relative total returns during periods of rising inflation by factor group



Note: see Appendix for factor groupings
Source: BofAML US Equity & Quant Strategy, FactSet

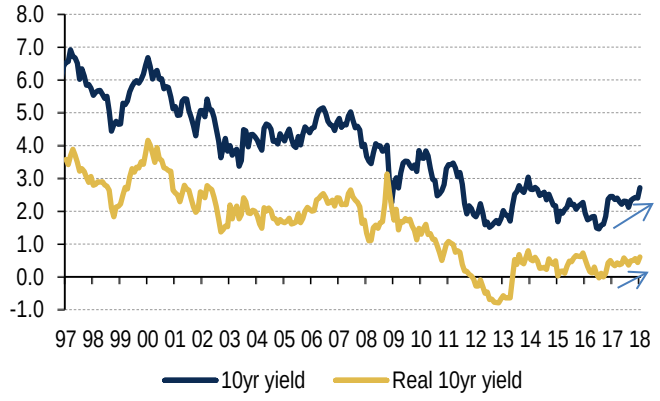
In contrast to the periods of rising real and nominal interest rates, Quality, GARP and Value strategies did best when inflation was picking up and Risk did the worst.

11) What sectors are most correlated with interest rates?

The historical sector playbook

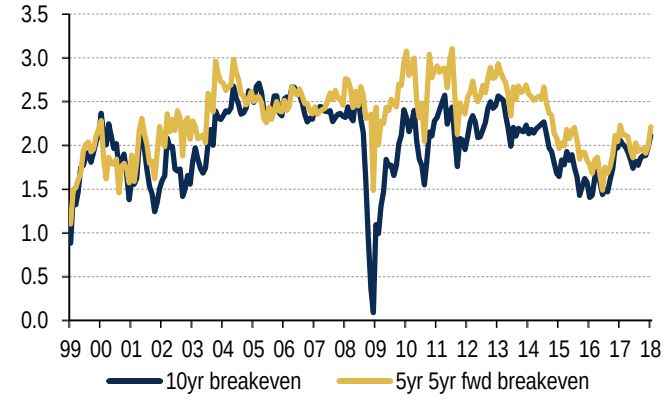
Today, both nominal and real interest rates are rising as inflation expectations are also rising. We examine sectors' historical performance sensitivities to changes in nominal rates, real rates and inflation below.

Chart 53: 10-year nominal and real Treasury yields, 1997-1/2018



Source: Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

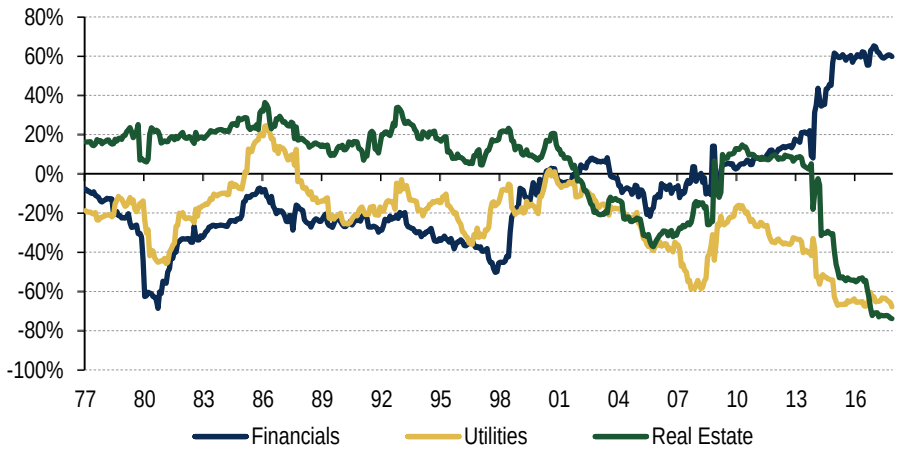
Chart 54: Inflation expectations: breakevens (1999-1/2018)



Source: Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

Similarly, no sector has had a consistently positive or negative relationship with changes in rates. But Financials has seen the most persistent increase in correlations (as well as the highest rolling three-year relative performance correlation with interest rates today), while Real Estate and Utilities have seen correlations grow persistently more negative over time (and have the most negative three-year correlations today). See Chart 55.

Chart 55: Rolling 3yr correlations: sector relative returns vs. change in 10yr Tsy. yield (1977-2017)



Source: FRB, FactSet, S&P, BofA Merrill Lynch US Equity & US Quant Strategy

- **Rising real rates: buy Discretionary, avoid Utilities.** Discretionary has the second highest "real interest rate betas" and have outperform most when real rates are rising. The bond-proxy sectors of Utilities and Real Estate have tended to underperform most.

- **Rising inflation: buy Energy, avoid Discretionary:** While Energy has historically outperformed most when nominal interest rates or rising, this is due to the fact that it has the highest sensitivity to rising inflation, and is actually negatively correlated with real rates. Energy, Real Estate and Materials have the most positive "inflation betas", while Consumer Discretionary has historically underperformed most when inflation picks up.

Table 16: Sectors' relative performance sensitivity to changes in nominal interest rates

Nominal Rates	Interest rate beta	Correlation
Energy	2.1	16%
Materials	1.3	14%
Information Technology	1.3	11%
Industrials	0.6	9%
Real Estate	0.5	4%
Consumer Discretionary	0.4	4%
Health Care	-0.5	-5%
Telecom Services	-0.9	-7%
Financials	-1.0	-10%
Consumer Staples	-1.5	-17%
Utilities	-2.4	-19%

Note: Data from 1972-Dec. 2017. Real Estate based on S&P 500 Real Estate from 11/01-now and S&P REITs index 8/89-11/01).
Source: FRB, BofA Merrill Lynch US Equity & US Quant Strategy

Table 17: Sectors' relative performance sensitivity to changes in real interest rates

Real Rates	Interest rate beta	Correlation
Financials	2.2	14%
Consumer Discretionary	1.0	10%
Industrials	0.8	8%
Information Technology	0.7	4%
Telecom Services	-0.2	-1%
Energy	-0.8	-4%
Materials	-0.9	-6%
Consumer Staples	-1.6	-10%
Health Care	-2.1	-13%
Real Estate	-2.9	-13%
Utilities	-3.0	-14%

Note: Data from 1997-Dec. 2017. Real Estate based on S&P 500 Real Estate from 11/01-now and S&P REITs index prior to 11/01). Real 10yr yield based on TIPS 2003-now and Bloomberg's constant maturity real 10yr Tsy. Yield 1997-2003
Source: FRB, Bloomberg, BofAML US Equity & US Quant Strategy

Table 18: Sectors' relative performance sensitivity to changes in inflation (CPI)

Inflation (CPI)	Inflation beta	Correlation
Energy	1.8	14%
Real Estate	0.5	4%
Materials	0.5	5%
Utilities	0.0	0%
Financials	-0.2	-2%
Health Care	-0.3	-2%
Telecom Services	-0.3	-3%
Consumer Staples	-0.4	-4%
Industrials	-0.5	-6%
Information Technology	-0.5	-4%
Consumer Discretionary	-1.2	-15%

Note: Data from 1972-Dec. 2017. Real Estate based on S&P 500 Real Estate from 11/01-now and S&P REITs index 8/89-11/01).
Source: BLS, BofA Merrill Lynch US Equity & US Quant Strategy

The low explanatory power of interest rates vs. sector returns is also often a function of varying relationships within sectors – see the table below.

- **Industries to buy when real rates rise:** Industries which have historically had the strongest statistically significant positive correlations with changes in real rates are Banks, Capital Markets, Diversified Financial Services, and Distributors.

- **Industries to avoid when real rates rise:** Industries with the most negative statistically significant correlations with changes in real interest rates are Personal Products, Tobacco, REITs, Health Care Technology, Pharmaceuticals, Building Products, Metals & Mining, Electric Utilities, and Independent Power & Renewable Electricity Producers.

- **Industries to buy when inflation picks up:** Industries which have historically had the strongest statistically significant positive correlations with changes in CPI are Energy Equipment & Services, Real Estate Management & Development, and Life Science Tools & Services.

- **Industries to avoid when inflation picks up:** Industries which have historically had the strongest statistically significant negative correlations with changes in CPI are Hotels Restaurants & Leisure, Household Durables, Specialty Retail, Air Freight & Logistics, Commercial Services & Supplies, Construction Materials and Containers & Packaging.

Table 19: S&P 500 industries: relative performance sensitivity to changes in nominal interest rates, real interest rates and inflation (CPI)

		Nominal 10yr Tsy				Real 10yr Tsy				Inflation (CPI)			
Sector	Industry	Slope	R-sq'd	Correl	Signif	Slope	R-sq'd	Correl	Signif	Slope	R-sq'd	Correl	Signif
Consumer Discretionary	Auto Components	3.00	0.02	15%	1	1.63	0%	6%		-1.40	0%	6%	
Consumer Discretionary	Automobiles	4.46	0.02	16%	1	3.66	1%	9%		-0.87	0%	3%	
Consumer Discretionary	Distributors	-1.25	0.01	8%		2.65	3%	16%	1	-1.43	1%	12%	
Consumer Discretionary	Diversified Consumer Services	-2.83	0.01	8%		1.57	0%	4%		-3.63	2%	14%	
Consumer Discretionary	Hotels Restaurants & Leisure	-0.78	0.00	6%		0.89	0%	6%		-3.46	5%	23%	1
Consumer Discretionary	Household Durables	-0.68	0.00	4%		-2.19	1%	10%		-2.95	3%	17%	1
Consumer Discretionary	Internet & Catalog Retail	3.59	0.01	11%		0.46	0%	1%		2.47	1%	10%	
Consumer Discretionary	Leisure Products	0.72	0.00	4%		0.39	0%	2%		-0.97	0%	5%	
Consumer Discretionary	Media	1.12	0.01	10%		1.76	2%	12%		-0.28	0%	2%	
Consumer Discretionary	Multiline Retail	0.93	0.00	5%		-0.01	0%	0%		-1.58	1%	8%	
Consumer Discretionary	Specialty Retail	0.76	0.00	5%		1.75	1%	9%		-2.30	2%	13%	1
Consumer Discretionary	Textiles Apparel & Luxury Goods	0.11	0.00	1%		-2.41	1%	10%		-1.70	1%	9%	
Consumer Staples	Beverages	-1.92	0.02	14%	1	-1.72	1%	9%		-0.81	0%	5%	
Consumer Staples	Food & Staples Retailing	-1.01	0.01	7%		-0.84	0%	5%		-0.67	0%	5%	
Consumer Staples	Food Products	-3.05	0.05	22%	1	-0.66	0%	4%		0.47	0%	3%	
Consumer Staples	Household Products	-3.00	0.04	20%	1	-0.98	0%	5%		-0.54	0%	3%	
Consumer Staples	Personal Products	-1.84	0.01	10%		-3.79	2%	14%	1	1.89	1%	9%	
Consumer Staples	Tobacco	-4.53	0.04	21%	1	-6.11	4%	21%	1	0.40	0%	2%	
Energy	Energy Equipment & Services	3.38	0.02	14%	1	-3.41	1%	11%		4.25	3%	16%	1
Energy	Oil Gas & Consumable Fuels	1.65	0.01	11%	1	-0.31	0%	2%		1.57	1%	10%	
Financials	Banks	-0.30	0.00	2%		4.13	3%	18%	1	-1.62	1%	8%	
Financials	Capital Markets	6.15	0.17	41%	1	2.77	2%	16%	1	1.66	2%	14%	
Financials	Consumer Finance	3.38	0.02	14%	1	2.73	1%	10%		0.83	0%	4%	
Financials	Diversified Financial Services	3.35	0.02	15%		4.97	3%	18%	1	1.69	1%	9%	
Financials	Insurance	-1.30	0.01	10%		-0.13	0%	1%		-0.80	0%	5%	
Real Estate	Real Estate Investment Trusts (REITs)	-3.42	0.04	19%	1	-3.62	3%	17%	1	0.67	0%	4%	
Real Estate	Real Estate Management & Development	14.42	0.10	31%	1	4.74	1%	9%		6.06	3%	17%	1
Health Care	Biotechnology	-1.66	0.00	6%		0.05	0%	0%		-0.51	0%	2%	
Health Care	Health Care Equipment & Supplies	-0.58	0.00	4%		-1.62	1%	10%		1.21	1%	8%	
Health Care	Health Care Providers & Services	-0.28	0.00	2%		-1.14	0%	5%		0.31	0%	2%	
Health Care	Health Care Technology	-4.98	0.03	18%	1	-6.05	4%	19%	1	1.07	0%	5%	
Health Care	Life Sciences Tools & Services	2.52	0.02	14%		0.00	0%	0%		2.69	4%	19%	1
Health Care	Pharmaceuticals	-3.15	0.05	22%	1	-2.72	2%	15%	1	-0.76	0%	5%	
Industrials	Aerospace & Defense	0.82	0.00	6%		0.44	0%	2%		-1.05	1%	7%	
Industrials	Air Freight & Logistics	1.81	0.01	9%		1.41	0%	6%		-2.23	1%	11%	1
Industrials	Airlines	2.19	0.01	9%		1.18	0%	4%		0.27	0%	1%	
Industrials	Building Products	-1.95	0.01	8%		-4.91	2%	15%	1	-2.58	1%	9%	
Industrials	Commercial Services & Supplies	0.39	0.00	4%		1.65	1%	12%		-1.63	2%	14%	1
Industrials	Construction & Engineering	1.40	0.00	5%		-0.77	0%	2%		0.63	0%	2%	
Industrials	Electrical Equipment	2.19	0.03	17%	1	0.58	0%	3%		-0.59	0%	4%	

Table 19: S&P 500 industries: relative performance sensitivity to changes in nominal interest rates, real interest rates and inflation (CPI)

		Nominal 10yr Tsy				Real 10yr Tsy				Inflation (CPI)			
Sector	Industry	Slope	R-sq'd	Correl	Signif	Slope	R-sq'd	Correl	Signif	Slope	R-sq'd	Correl	Signif
Industrials	Industrial Conglomerates	0.07	0.00	1%		0.70	0%	4%		-0.38	0%	3%	
Industrials	Machinery	2.94	0.04	19%	1	-0.21	0%	1%		-0.19	0%	1%	
Industrials	Professional Services	1.31	0.01	9%		1.21	1%	8%		-1.51	2%	13%	
Industrials	Road & Rail	1.47	0.01	9%		0.93	0%	4%		1.70	1%	10%	
Industrials	Trading Companies & Distributors	2.33	0.01	11%		2.19	1%	9%		0.72	0%	4%	
Information Technology	Communications Equipment	2.42	0.01	12%	1	2.05	1%	8%		0.23	0%	1%	
Information Technology	Electronic Equipment Instruments & Components	3.98	0.03	18%	1	1.17	0%	4%		0.99	0%	4%	
Information Technology	Internet Software & Services	7.67	0.03	18%	1	5.64	1%	12%		0.33	0%	1%	
Information Technology	IT Services	-0.05	0.00	1%		-0.65	0%	6%		-0.22	0%	3%	
Information Technology	Semiconductors & Semiconductor Equipment	4.27	0.02	15%	1	1.41	0%	4%		-1.16	0%	4%	
Information Technology	Software	1.19	0.00	6%		1.70	0%	7%		0.65	0%	3%	
Information Technology	Technology Hardware Storage & Peripherals	2.44	0.01	12%	1	-1.56	0%	6%		-0.22	0%	1%	
Materials	Chemicals	2.12	0.03	17%	1	0.09	0%	1%		0.29	0%	2%	
Materials	Construction Materials	-1.60	0.00	6%		-0.25	0%	1%		-3.36	2%	14%	1
Materials	Containers & Packaging	2.43	0.02	15%	1	2.40	1%	12%		-2.08	1%	12%	1
Materials	Metals & Mining	3.93	0.03	16%	1	-5.17	3%	16%	1	1.64	0%	6%	
Telecommunication Services	Diversified Telecommunication Services	-1.99	0.02	13%	1	-0.37	0%	2%		-1.35	1%	8%	
Utilities	Electric Utilities	-5.12	0.09	30%	1	-3.31	2%	15%	1	-0.57	0%	3%	
Utilities	Independent Power and Renewable Electricity Producers	0.38	0.00	1%		-6.56	5%	23%	1	2.96	2%	16%	
Utilities	Multi-Utilities	-4.20	0.02	14%	1	-0.31	0%	1%		-0.63	0%	2%	

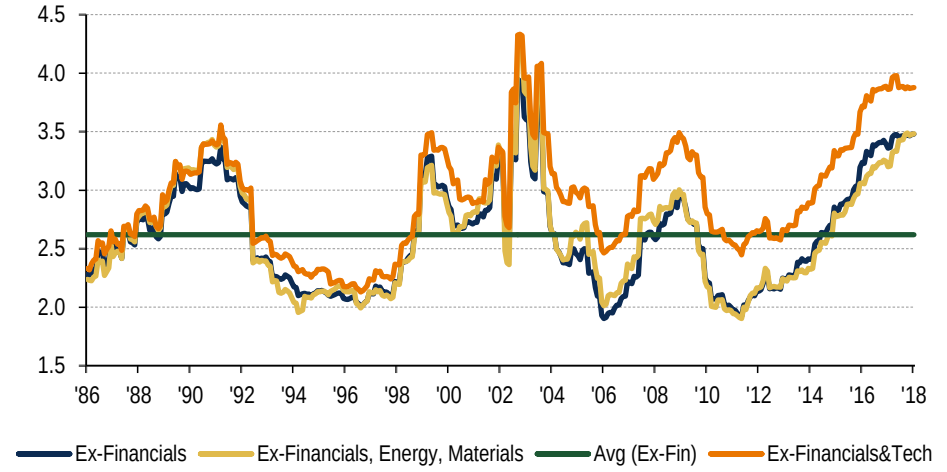
Note: Data from 1986-Dec. 2017 for nominal 10 year yield and inflation, and from 1997--Dec. 2017 for real 10 year yield.. Real 10yr yield based on TIPS 2003-now and Bloomberg's constant maturity real 10yr Tsy. Yield 1997-2003. Real Estate based on S&P 500 Real Estate from 11/01-now and S&P REITs index prior to 11/01.

Source: FRB, Bloomberg, BLS, BofA Merrill Lynch US Equity & US Quant Strategy

12) How sensitive are small caps to higher interest rates?

Even with some balance sheet relief from tax reform, overall small cap leverage is likely to remain very elevated at a time when interest rates are rising and the Fed may tighten more aggressively

Chart 56: Russell 2000 Net Debt/EBITDA near all-time highs (Jan '18)



Source: FactSet Research Systems; BofA Merrill Lynch US Equity and US Quant Strategy

Fewer small caps have debt, but the ones that do are really levered

Small caps tend to have less stable earnings and cash flows (over 20% have negative EBITDA over the past 12 months), and as a result, fewer small caps utilize debt (over 40% hold more cash than debt). But the companies that do rely on debt are currently much more levered than their large cap counterparts, with net debt/EBITDA of 4.2x vs. 2.5x for large caps.

Table 20: Trailing 12-month leverage statistics for S&P 500 and Russell 2000 Non-Financials

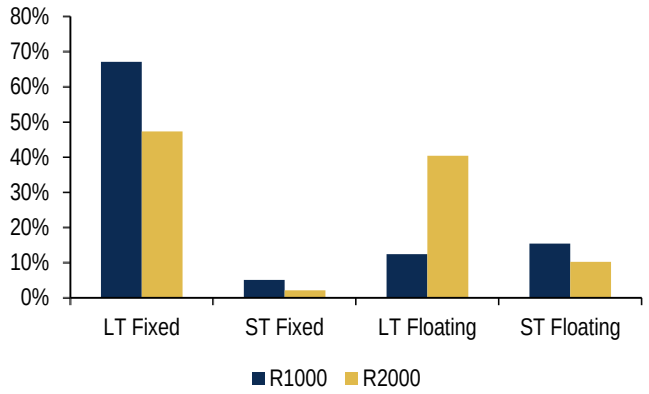
	Russell 2000 Non-Financials		S&P 500 Non-Financials	
	% companies	Mkt cap %	% companies	Mkt cap %
Negative trailing 12m EBITDA	22%	21%	1%	0%
Positive trailing 12m EBITDA	78%	79%	100%	100%
Net cash	41%	34%	19%	31%
Net debt	59%	66%	81%	69%
	Net debt/ Trailing 12m EBITDA		Net debt/ Trailing 12m EBITDA	
Companies with net debt	4.2x		2.5x	
Total	3.3x		1.6x	

Source: BofAML US Equity & Quant Strategy, FactSet, Compustat, Russell, S&P
Note: We also exclude Managed Health Care (Health Care insurance companies) from this analysis

More variable rate debt and lower credit ratings

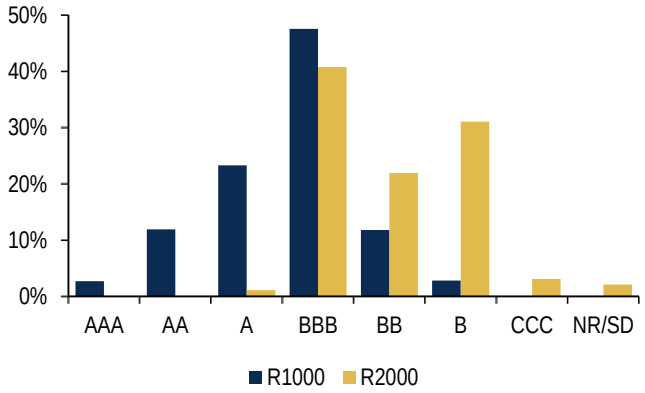
Small caps also tend to have a higher proportion of variable rate debt and lower credit ratings, which tends to make them more sensitive to both rising rates and widening credit spreads (Chart 58).

Chart 57: Russell 1000 vs. Russell 2000 debt composition by type



Source: BofAML US Equity & Quant Strategy, FactSet

Chart 58: Russell 1000 vs. Russell 2000 debt by S&P LT issuer credit ratings

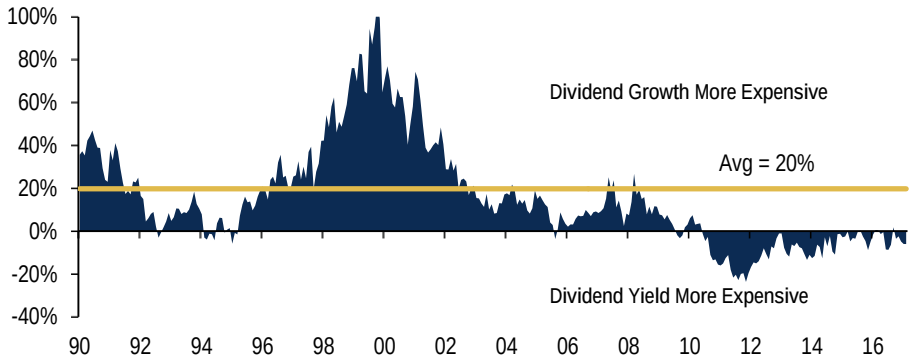


Source: BofAML US Equity & Quant Strategy, FactSet
NR: not rated; SD: selective default

13) Can you own dividend stocks when rates are rising?

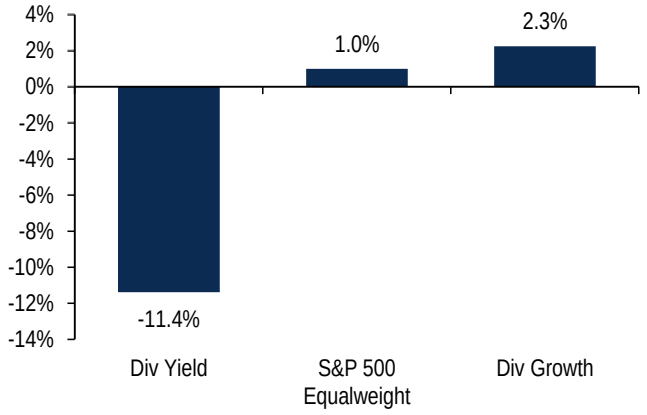
In a rising rate environment, we prefer stocks with strong dividend growth potential over the stocks with simply the highest dividend yields, especially with dividend growth stocks still trading at a discount to dividend yield stocks. High dividend growers have historically traded at a 20% premium to high dividend yielders, but they are currently trading at a discount despite the building momentum in rising interest rates (Chart 59). Stocks with the highest dividends generally have higher payout ratios and lower growth, and many of these stocks are still trading at stretched valuations.

Chart 59: Relative premium (discount) of High Dividend Growth vs. High Dividend Yield, based on median forward PE of top decile of S&P 500 by each factor



Source: BofAML US Equity & Quant Strategy, FactSet, Compustat

Chart 60: Correlation of monthly total returns for S&P 500 top decile factors vs. changes in 10-year Treasury yields, 1986-present



Source: Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

High dividend yielding stocks are likely to live up to their nickname as "bond proxies," underperforming as interest rates are expected to rise. In contrast, dividend growth stocks have historically fared much better during rising rate environments.

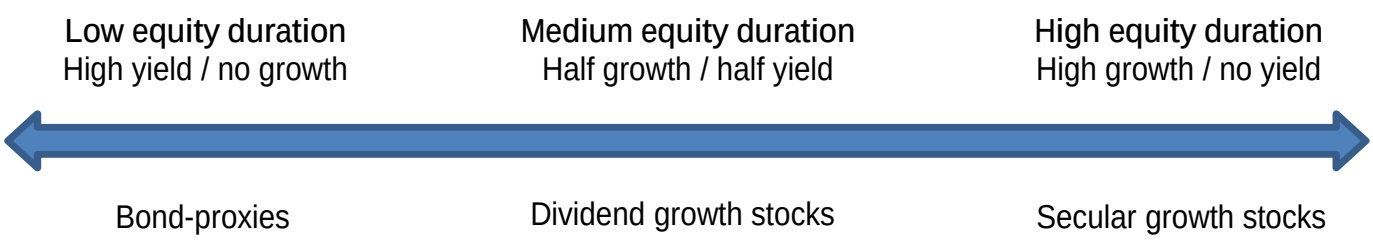
Equities have duration. And both long- and short duration stocks are at risk

Not just bonds have duration. If duration is a measure of how long it takes to recover your initial investment, short duration stocks pay high dividends and have no growth, whereas long duration stocks pay no dividends (and may not even have earnings) but offer strong growth in the distant future.

Short duration stocks are hurt by the availability of yield. These stocks should underperform as interest rates rise, as their yields become less competitive and they offer little growth. One of the worst performing factors during 2013—the year of the "Taper Tantrum" – was High Dividend Yield, which also was the worst performing factor that we track last month as the 10-year yield rose over 30bp.

At the other end of the spectrum, long duration secular growth stocks (like smaller Biotech and select Internet stocks) could be negatively impacted by rising rates. Given their deferred profits streams, a higher risk-free rate would, all else being equal, depress valuations. And In a backdrop of globally synchronized growth, investors are likely to move toward economically sensitive stocks or medium-duration equities that may still offer income but with the ability to growth their dividends. We like medium duration, cyclical yield. Our work has shown that dividend growth stocks typically fare better than the highest dividend yield stocks in rising rate environments—see the previous FAQ.

Exhibit 1: Equity duration

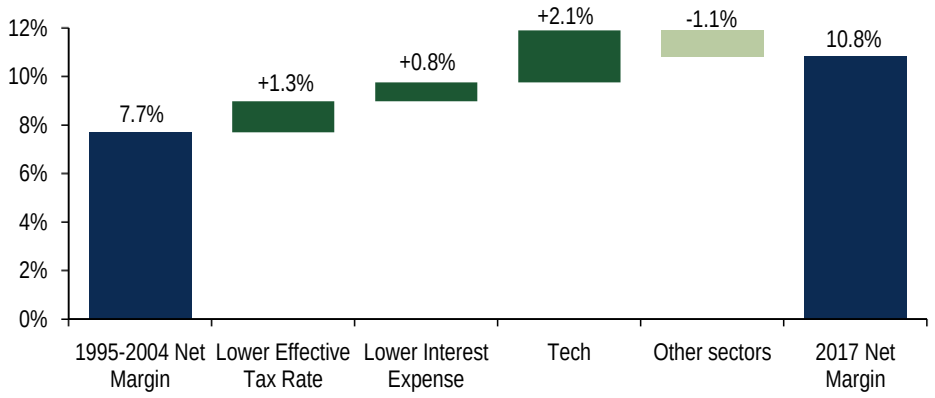


Source: BofA Merrill Lynch US Equity & US Quant Strategy

14) Won't higher credit costs hurt profitability & growth?

Higher interest rates mean higher borrowing costs. The combination of less debt and declining rates boosted S&P 500 net margins by ~80bp over the last decade. A higher cost of debt marks a reversal in what has been a 30-year tailwind to profits.

Chart 61: Contribution to increase in S&P 500 Non-Financials Net Margin since 2004



Note: Based on margins for the current constituents of the S&P 500 index
Source: BofA Merrill Lynch US Equity & US Quant Strategy

Chart 62: S&P 500 interest coverage ratio (1969-current)

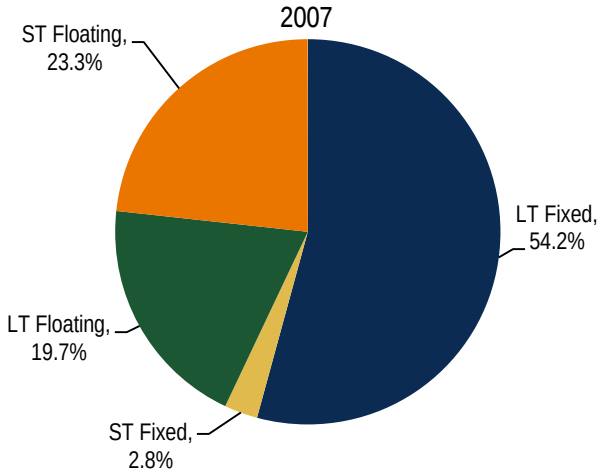
Note: Interest coverage ratio is calculated as LTM operating income (EBIT) divided by LTM net interest expense
Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

The weighted average maturity of the Russell 1000 debt is 8 years, with over 70% in fixed rate debt, a 15ppt increase since 2007.

Rising interest rates could hurt margins but not anytime soon

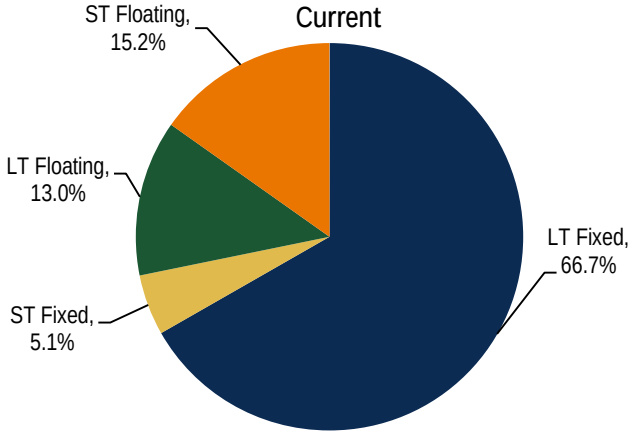
But the impact on margins should be gradual as it will take time for current debt to roll over and refinance at higher rates. Moreover, much of floating rate risk has been removed from S&P 500 balance sheets from pre-crisis levels. S&P 500 Non-Financials have over $1.7tn of net debt, such that every 1ppt increase in borrowing rates equates to roughly 20bp in margin pressure. But we estimate that over 70% of the debt is fixed-rate, with just 33% either floating-rate or maturing within the next year. Thus, there would likely be a significant delay before a significant move in interest rates had a big impact on overall S&P 500 profitability.

Chart 63: R1000 debt composition by type and maturity (Dec 2007)



Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

Chart 64: R1000 debt composition by type and maturity (Jan 2018)

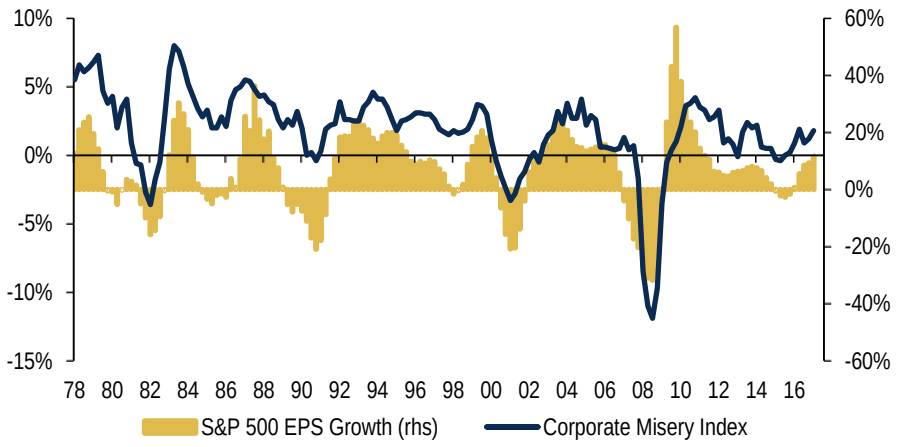


Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

What to watch: BofAML Corporate Misery Indicator

The biggest risk to margins is, in our view, inflation pressure. At a very basic level, the three drivers of corporate profits are prices less costs (or margins) multiplied by units sold. One important driver of record profit margins today has been the falling cost of labor. Our BofAML Corporate Misery Indicator, a macro proxy for profitability, incorporates unit sales (Conference Board coincident indicators), selling prices (CPI) and input costs (average hourly earnings which dominate a service-oriented economy). This indicator has been strongly correlated with, and sometimes leads, the profits cycle (see Appendix for details). This indicator has been volatile in recent months, but wage growth has generally outpaced CPI. A margin squeeze could be in the works, unless demand and/or pricing pick up. If this indicator turns south, profits are likely to decelerate. For more details, see our 2018 Year Ahead.

Chart 65: BofAML Corporate Misery Indicator (lower = more miserable) (as of 12/31/17)

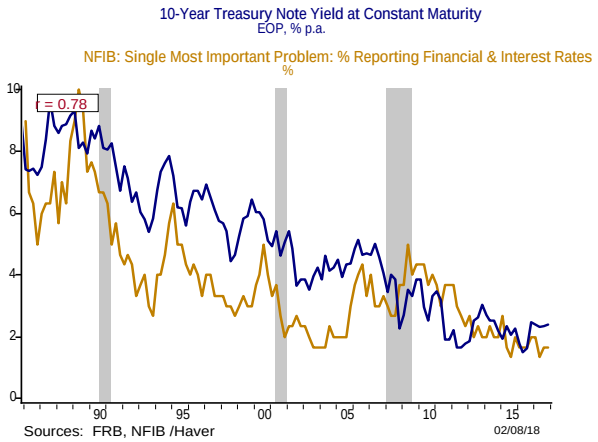


Source: BofAML US Equity & Quant Strategy, Conference Board, BLS

Don't forget about the economy

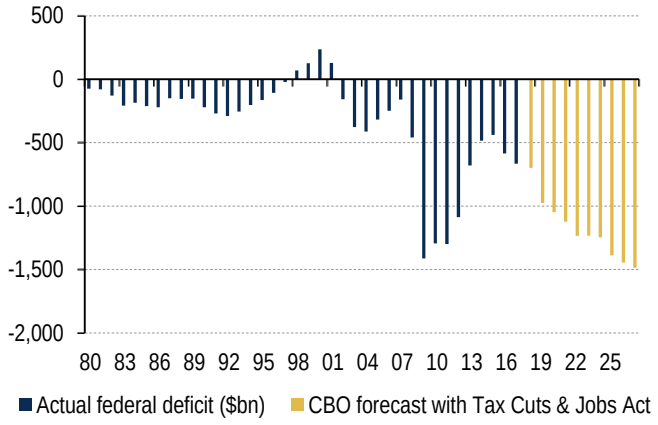
The impact on the overall economy would likely be the biggest risk for stocks, calling into question the growth outlook and the longevity of the cycle. If not offset by stronger growth, higher borrowing costs result in less investment, less consumption and more credit defaults (Chart 66). And while growth is indeed accelerating, other forces could continue — such as lower central bank demand, increased Treasury supply (from higher deficits, see Chart 67) and higher inflation expectations — to put upward pressure on rates. Not only does higher inflation push longer-term interest rates up, but it also increase the likelihood of more aggressive Fed tightening.

Chart 66: Small business citing financing as most important problem



Source: BofAML US Equity & Quant Strategy, FRB, NFIB

Chart 67: Federal deficit (1980-2017) and CBO forecasts (2018-2027), $mn



Source: CBO, OMB

Rates are positively correlated with growth, which is good for stocks, but also increase the cost of borrowing (bad for stocks).

Screens

Stocks most sensitive to changes in rates

Below we provide four screens:

- S&P 500 stocks with the **most positive** and the **most negative "nominal interest rate betas"**, based on a regression of stocks' monthly excess returns vs. monthly changes in the nominal 10yr yield from 1972-12/2017.

- S&P 500 stocks with the **most positive** and **most negative "real interest rate betas"**, based on a regression of stocks' monthly excess returns vs. monthly changes in the real 10yr yield from 1997-12/2017.

We include only those stocks with beta (slope) that is statistically significant at the 5% level and which have at least 20 years of monthly returns.

Stocks helped by rising nominal interest rates

Table 21: Stocks helped by rising nominal interest rates

Ticker	Company	Sector	Industry	Nominal interest rate beta
QRVO	Qorvo, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	16.9
EQIX	Equinix, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	16.2
AKAM	Akamai Technologies, Inc.	Information Technology	Internet Software & Services	14.2
SBAC	SBA Communications Corp. Class A	Real Estate	Equity Real Estate Investment Trusts (REITs)	13.5
CBG	CBRE Group, Inc. Class A	Real Estate	Real Estate Management & Development	12.3
FFIV	F5 Networks, Inc.	Information Technology	Communications Equipment	12.0
URI	United Rentals, Inc.	Industrials	Trading Companies & Distributors	11.3
SIG	Signet Jewelers Limited	Consumer Discretionary	Specialty Retail	10.0
VRSN	VeriSign, Inc.	Information Technology	Internet Software & Services	9.3
FCX	Freeport-McMoRan, Inc.	Materials	Metals & Mining	9.2
A	Agilent Technologies, Inc.	Health Care	Life Sciences Tools & Services	8.2
MU	Micron Technology, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	8.0
TIF	Tiffany & Co.	Consumer Discretionary	Specialty Retail	8.0
LRCX	Lam Research Corporation	Information Technology	Semiconductors & Semiconductor Equipment	7.9
MS	Morgan Stanley	Financials	Capital Markets	7.8
AMD	Advanced Micro Devices, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	7.7
STX	Seagate Technology PLC	Information Technology	Technology Hardware Storage & Peripherals	7.5
IVZ	Invesco Ltd.	Financials	Capital Markets	7.4
ADBE	Adobe Systems Incorporated	Information Technology	Software	7.2
RHI	Robert Half International Inc.	Industrials	Professional Services	7.2
MGM	MGM Resorts International	Consumer Discretionary	Hotels Restaurants & Leisure	7.0
GS	Goldman Sachs Group, Inc.	Financials	Capital Markets	6.4
QCOM	QUALCOMM Incorporated	Information Technology	Semiconductors & Semiconductor Equipment	6.1
CME	CME Group Inc. Class A	Financials	Capital Markets	5.9
HOG	Harley-Davidson, Inc.	Consumer Discretionary	Automobiles	5.9
WDC	Western Digital Corporation	Information Technology	Technology Hardware Storage & Peripherals	5.5
RCL	Royal Caribbean Cruises Ltd.	Consumer Discretionary	Hotels Restaurants & Leisure	5.5
TEL	TE Connectivity Ltd.	Information Technology	Electronic Equipment Instruments & Components	5.4
PRU	Prudential Financial, Inc.	Financials	Insurance	5.2
DFS	Discover Financial Services	Financials	Consumer Finance	5.2
EMN	Eastman Chemical Company	Materials	Chemicals	5.0
ADS	Alliance Data Systems Corporation	Information Technology	IT Services	4.9
AMG	Affiliated Managers Group, Inc.	Financials	Capital Markets	4.8
MOS	Mosaic Company	Materials	Chemicals	4.7
ZION	Zions Bancorporation	Financials	Banks	4.5
FAST	Fastenal Company	Industrials	Trading Companies & Distributors	4.5
APH	Amphenol Corporation Class A	Information Technology	Electronic Equipment Instruments & Components	4.1
VLO	Valero Energy Corporation	Energy	Oil Gas & Consumable Fuels	3.7
FLS	Flowserve Corporation	Industrials	Machinery	3.6
MAR	Marriott International, Inc. Class A	Consumer Discretionary	Hotels Restaurants & Leisure	3.6
FOXA	Twenty-First Century Fox, Inc. Class A	Consumer Discretionary	Media	3.4
ANDV	Andeavor	Energy	Oil Gas & Consumable Fuels	3.4
DHR	Danaher Corporation	Health Care	Health Care Equipment & Supplies	3.4
XRX	Xerox Corporation	Information Technology	Technology Hardware Storage & Peripherals	3.3
FDX	FedEx Corporation	Industrials	Air Freight & Logistics	3.1

Table 21: Stocks helped by rising nominal interest rates

Ticker	Company	Sector	Industry	Nominal interest rate beta
JBHT	J.B. Hunt Transport Services, Inc.	Industrials	Road & Rail	3.1
MSI	Motorola Solutions, Inc.	Information Technology	Communications Equipment	3.1
SLB	Schlumberger NV	Energy	Energy Equipment & Services	2.9
ADI	Analog Devices, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	2.8
TXN	Texas Instruments Incorporated	Information Technology	Semiconductors & Semiconductor Equipment	2.7
GT	Goodyear Tire & Rubber Company	Consumer Discretionary	Auto Components	2.6
CMI	Cummins Inc.	Industrials	Machinery	2.5
PCAR	PACCAR Inc	Industrials	Machinery	2.5
DWDP	DowDuPont Inc.	Materials	Chemicals	2.4
IPG	Interpublic Group of Companies, Inc.	Consumer Discretionary	Media	2.4
IR	Ingersoll-Rand Plc	Industrials	Machinery	2.4
AME	AMETEK, Inc.	Industrials	Electrical Equipment	2.2
COP	ConocoPhillips	Energy	Oil Gas & Consumable Fuels	2.2
PH	Parker-Hannifin Corporation	Industrials	Machinery	2.0
HPQ	HP Inc.	Information Technology	Technology Hardware Storage & Peripherals	2.0
HON	Honeywell International Inc.	Industrials	Industrial Conglomerates	2.0
TXT	Textron Inc.	Industrials	Aerospace & Defense	2.0
BBT	BB&T Corporation	Financials	Banks	1.9
CAT	Caterpillar Inc.	Industrials	Machinery	1.8
VMC	Vulcan Materials Company	Materials	Construction Materials	1.8
IBM	International Business Machines Corporation	Information Technology	IT Services	1.6
CVX	Chevron Corporation	Energy	Oil Gas & Consumable Fuels	1.5

Source: FactSet, Federal Reserve Board, Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decisions.

Stocks hurt by rising nominal interest rates

Table 22: Stocks hurt by rising nominal interest rates

Ticker	Company	Sector	Industry	Nominal interest rate beta
AGN	Allergan plc	Health Care	Pharmaceuticals	-8.5
O	Realty Income Corporation	Real Estate	Equity Real Estate Investment Trusts (REITs)	-7.2
VTR	Ventas, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-6.7
DLR	Digital Realty Trust, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-6.6
RMD	ResMed Inc.	Health Care	Health Care Equipment & Supplies	-6.4
LEN	Lennar Corporation Class A	Consumer Discretionary	Household Durables	-6.2
NEE	NextEra Energy, Inc.	Utilities	Electric Utilities	-5.6
PLD	Prologis, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.6
REG	Regency Centers Corporation	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.4
RE	Everest Re Group, Ltd.	Financials	Insurance	-5.4
MDLZ	Mondelez International, Inc. Class A	Consumer Staples	Food Products	-5.1
WEC	WEC Energy Group Inc	Utilities	Multi-Utilities	-5.0
SCG	SCANA Corporation	Utilities	Multi-Utilities	-4.9
AIZ	Assurant, Inc.	Financials	Insurance	-4.6
SO	Southern Company	Utilities	Electric Utilities	-4.2
MAA	Mid-America Apartment Communities, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-4.2
D	Dominion Energy Inc	Utilities	Multi-Utilities	-4.1
CMS	CMS Energy Corporation	Utilities	Multi-Utilities	-4.1
WLTW	Willis Towers Watson Public Limited Company	Financials	Insurance	-4.0
HCP	HCP, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-3.9
ALL	Allstate Corporation	Financials	Insurance	-3.9
IRM	Iron Mountain, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-3.8
YUM	Yum! Brands, Inc.	Consumer Discretionary	Hotels Restaurants & Leisure	-3.7
MAS	Masco Corporation	Industrials	Building Products	-3.7
AEE	Ameren Corporation	Utilities	Multi-Utilities	-3.7
BRK.B	Berkshire Hathaway Inc. Class B	Financials	Diversified Financial Services	-3.6
XEL	Xcel Energy Inc.	Utilities	Electric Utilities	-3.6
ED	Consolidated Edison, Inc.	Utilities	Multi-Utilities	-3.6
PNW	Pinnacle West Capital Corporation	Utilities	Electric Utilities	-3.4
FE	FirstEnergy Corp.	Utilities	Electric Utilities	-3.4
NI	NiSource Inc	Utilities	Multi-Utilities	-3.3
UPS	United Parcel Service, Inc. Class B	Industrials	Air Freight & Logistics	-3.3
EXC	Exelon Corporation	Utilities	Electric Utilities	-3.2
HCN	Welltower, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-3.2

Table 22: Stocks hurt by rising nominal interest rates

Ticker	Company	Sector	Industry	Nominal interest rate beta
BXP	Boston Properties, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-3.1
K	Kellogg Company	Consumer Staples	Food Products	-3.1
AEP	American Electric Power Company, Inc.	Utilities	Electric Utilities	-3.1
ES	Eversource Energy	Utilities	Electric Utilities	-3.1
TRV	Travelers Companies, Inc.	Financials	Insurance	-3.0
AET	Aetna Inc.	Health Care	Health Care Providers & Services	-3.0
MCK	McKesson Corporation	Health Care	Health Care Providers & Services	-3.0
ESS	Essex Property Trust, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-3.0
PFE	Pfizer Inc.	Health Care	Pharmaceuticals	-2.9
AON	Aon plc	Financials	Insurance	-2.9
DUK	Duke Energy Corporation	Utilities	Electric Utilities	-2.9
AJG	Arthur J. Gallagher & Co.	Financials	Insurance	-2.8
PPL	PPL Corporation	Utilities	Electric Utilities	-2.8
TMK	Torchmark Corporation	Financials	Insurance	-2.7
CNP	CenterPoint Energy, Inc.	Utilities	Multi-Utilities	-2.7
EIX	Edison International	Utilities	Electric Utilities	-2.7
DTE	DTE Energy Company	Utilities	Multi-Utilities	-2.6
T	AT&T Inc.	Telecommunication Services	Diversified Telecommunication Services	-2.5
PCG	PG&E Corporation	Utilities	Electric Utilities	-2.4
VZ	Verizon Communications Inc.	Telecommunication Services	Diversified Telecommunication Services	-2.4
BDX	Becton, Dickinson and Company	Health Care	Health Care Equipment & Supplies	-2.4
JNJ	Johnson & Johnson	Health Care	Pharmaceuticals	-2.4
GIS	General Mills, Inc.	Consumer Staples	Food Products	-2.3
ABT	Abbott Laboratories	Health Care	Health Care Equipment & Supplies	-2.3
CTL	CenturyLink, Inc.	Telecommunication Services	Diversified Telecommunication Services	-2.2
ADM	Archer-Daniels-Midland Company	Consumer Staples	Food Products	-2.2
CL	Colgate-Palmolive Company	Consumer Staples	Household Products	-2.1
CLX	Clorox Company	Consumer Staples	Household Products	-2.0
CPB	Campbell Soup Company	Consumer Staples	Food Products	-1.9
MKC	McCormick & Company, Incorporated	Consumer Staples	Food Products	-1.9
SHW	Sherwin-Williams Company	Materials	Chemicals	-1.9
KMB	Kimberly-Clark Corporation	Consumer Staples	Household Products	-1.8
PEP	PepsiCo, Inc.	Consumer Staples	Beverages	-1.8
BMY	Bristol-Myers Squibb Company	Health Care	Pharmaceuticals	-1.7
LLY	Eli Lilly and Company	Health Care	Pharmaceuticals	-1.7
BF.B	Brown-Forman Corporation Class B	Consumer Staples	Beverages	-1.7
MCD	McDonald's Corporation	Consumer Discretionary	Hotels Restaurants & Leisure	-1.6
MRK	Merck & Co., Inc.	Health Care	Pharmaceuticals	-1.6

Source: FactSet, Federal Reserve Board, Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decisions.

Stocks helped by rising real interest rates

Table 23: Stocks helped by rising real interest rates

Ticker	Company	Sector	Industry	Real interest rate beta
MU	Micron Technology, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	12.3
ZION	Zions Bancorporation	Financials	Banks	10.9
ICE	Intercontinental Exchange, Inc.	Financials	Capital Markets	10.3
HBAN	Huntington Bancshares Incorporated	Financials	Banks	9.7
RHI	Robert Half International Inc.	Industrials	Professional Services	9.7
JPM	JPMorgan Chase & Co.	Financials	Banks	9.2
SCHW	Charles Schwab Corporation	Financials	Capital Markets	8.2
BBT	BB&T Corporation	Financials	Banks	7.7
RF	Regions Financial Corporation	Financials	Banks	7.6
COF	Capital One Financial Corporation	Financials	Consumer Finance	7.1
NDAQ	Nasdaq, Inc.	Financials	Capital Markets	6.6
STI	SunTrust Banks, Inc.	Financials	Banks	6.6
CME	CME Group Inc. Class A	Financials	Capital Markets	6.4
IVZ	Invesco Ltd.	Financials	Capital Markets	6.1
DFS	Discover Financial Services	Financials	Consumer Finance	5.8
JBHT	J.B. Hunt Transport Services, Inc.	Industrials	Road & Rail	5.8
CMA	Comerica Incorporated	Financials	Banks	5.3
AXP	American Express Company	Financials	Consumer Finance	4.8

Table 23: Stocks helped by rising real interest rates

Ticker	Company	Sector	Industry	Real interest rate beta
BK	Bank of New York Mellon Corporation	Financials	Capital Markets	4.7
MTB	M&T Bank Corporation	Financials	Banks	4.3
MMC	Marsh & McLennan Companies, Inc.	Financials	Insurance	3.8

Source: FactSet, Federal Reserve Board, Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decisions.

Stocks hurt by rising real interest rates

Table 24: Stocks hurt by rising real interest rates

Ticker	Company	Sector	Industry	Real interest rate beta
NEM	Newmont Mining Corporation	Materials	Metals & Mining	-22.0
WDC	Western Digital Corporation	Information Technology	Technology Hardware Storage & Peripherals	-10.9
CXO	Concho Resources Inc.	Energy	Oil Gas & Consumable Fuels	-10.7
VTR	Ventas, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-9.5
COO	Cooper Companies, Inc.	Health Care	Health Care Equipment & Supplies	-9.3
HIG	Hartford Financial Services Group, Inc.	Financials	Insurance	-9.3
NOV	National Oilwell Varco, Inc.	Energy	Energy Equipment & Services	-8.6
REG	Regency Centers Corporation	Real Estate	Equity Real Estate Investment Trusts (REITs)	-8.1
PEG	Public Service Enterprise Group Inc	Utilities	Multi-Utilities	-8.0
PLD	Prologis, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-7.7
NBL	Noble Energy, Inc.	Energy	Oil Gas & Consumable Fuels	-7.5
HCP	HCP, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-7.3
HCN	Welltower, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-7.1
FRT	Federal Realty Investment Trust	Real Estate	Equity Real Estate Investment Trusts (REITs)	-7.1
MO	Altria Group Inc	Consumer Staples	Tobacco	-7.0
NEE	NextEra Energy, Inc.	Utilities	Electric Utilities	-6.9
XEL	Xcel Energy Inc.	Utilities	Electric Utilities	-6.8
HUM	Humana Inc.	Health Care	Health Care Providers & Services	-6.7
O	Realty Income Corporation	Real Estate	Equity Real Estate Investment Trusts (REITs)	-6.7
FE	FirstEnergy Corp.	Utilities	Electric Utilities	-6.6
ETR	Entergy Corporation	Utilities	Electric Utilities	-6.5
DTE	DTE Energy Company	Utilities	Multi-Utilities	-6.5
CMS	CMS Energy Corporation	Utilities	Multi-Utilities	-6.3
SO	Southern Company	Utilities	Electric Utilities	-6.3
MYL	Mylan N.V.	Health Care	Pharmaceuticals	-6.2
LNT	Alliant Energy Corp	Utilities	Electric Utilities	-6.2
LEN	Lennar Corporation Class A	Consumer Discretionary	Household Durables	-6.1
APC	Anadarko Petroleum Corporation	Energy	Oil Gas & Consumable Fuels	-6.1
AIZ	Assurant, Inc.	Financials	Insurance	-6.0
BHGE	Baker Hughes, a GE Company Class A	Energy	Energy Equipment & Services	-5.9
ES	Eversource Energy	Utilities	Electric Utilities	-5.9
CNP	CenterPoint Energy, Inc.	Utilities	Multi-Utilities	-5.9
AEE	Ameren Corporation	Utilities	Multi-Utilities	-5.9
ED	Consolidated Edison, Inc.	Utilities	Multi-Utilities	-5.8
PPL	PPL Corporation	Utilities	Electric Utilities	-5.8
SCG	SCANA Corporation	Utilities	Multi-Utilities	-5.7
SLB	Schlumberger NV	Energy	Energy Equipment & Services	-5.7
MAA	Mid-America Apartment Communities, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.7
D	Dominion Energy Inc	Utilities	Multi-Utilities	-5.6
RL	Ralph Lauren Corporation Class A	Consumer Discretionary	Textiles Apparel & Luxury Goods	-5.6
STZ	Constellation Brands, Inc. Class A	Consumer Staples	Beverages	-5.6
EXC	Exelon Corporation	Utilities	Electric Utilities	-5.5
BDX	Becton, Dickinson and Company	Health Care	Health Care Equipment & Supplies	-5.5
SPG	Simon Property Group, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.4
AIV	Apartment Investment and Management Company Class A	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.4
PNW	Pinnacle West Capital Corporation	Utilities	Electric Utilities	-5.3
EQT	EQT Corporation	Energy	Oil Gas & Consumable Fuels	-5.3
DLR	Digital Realty Trust, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.3
WEC	WEC Energy Group Inc	Utilities	Multi-Utilities	-5.2
KIM	Kimco Realty Corporation	Real Estate	Equity Real Estate Investment Trusts (REITs)	-5.1
AEP	American Electric Power Company, Inc.	Utilities	Electric Utilities	-5.1
NOC	Northrop Grumman Corporation	Industrials	Aerospace & Defense	-5.1

Table 24: Stocks hurt by rising real interest rates

Ticker	Company	Sector	Industry	Real interest rate beta
LLY	Eli Lilly and Company	Health Care	Pharmaceuticals	-5.1
ARE	Alexandria Real Estate Equities, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-4.9
PSA	Public Storage	Real Estate	Equity Real Estate Investment Trusts (REITs)	-4.9
ABT	Abbott Laboratories	Health Care	Health Care Equipment & Supplies	-4.8
OXY	Occidental Petroleum Corporation	Energy	Oil Gas & Consumable Fuels	-4.8
UDR	UDR, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	-4.8
OKE	ONEOK, Inc.	Energy	Oil Gas & Consumable Fuels	-4.6
NI	NiSource Inc	Utilities	Multi-Utilities	-4.6
DUK	Duke Energy Corporation	Utilities	Electric Utilities	-4.5
ZBH	Zimmer Biomet Holdings, Inc.	Health Care	Health Care Equipment & Supplies	-4.3
SRE	Sempra Energy	Utilities	Multi-Utilities	-4.2
CHD	Church & Dwight Co., Inc.	Consumer Staples	Household Products	-4.1
KO	Coca-Cola Company	Consumer Staples	Beverages	-4.0

Source: FactSet, Federal Reserve Board, Bloomberg, BofA Merrill Lynch US Equity & US Quant Strategy

This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decisions.

Pro-Inflation and Anti-Inflation Screens

Below we provide our Pro- and Anti-Inflation screens. The relative performance of these screens historically tracks inflation closely, with the strongest relationship with a one-month lead.

- **Pro-Inflation Screen:** S&P 500 companies whose relative performance has a strong positive relationship (Beta>1) with our inflation composite, with statistically significant relationship at the 95% confidence level.
- **Anti-Inflation Screen:** S&P 500 companies whose relative performance has a strong negative relationship (Beta<-1) with our inflation composite, with statistically significant relationship at the 95% confidence level.

Screens are based on a regression of monthly YoY relative performance and inflation data from 1975-12/31/16, excluding stocks with less than 20 years of data. (We update these lists every 1-2 years). We last rebalanced these screens as of 1/31/17 as published in the following report: Strategy Snippet: Reflategate 13 February 2017. For full details/methodology, please see the Appendix.

Table 25: Pro-Inflation Screen

Ticker	Company	Sector	Industry	Inflation Beta (Slope)
GGP	GGP, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	9.75
CHK	Chesapeake Energy Corporation	Energy	Oil Gas & Consumable Fuels	4.23
MOS	Mosaic Company	Materials	Chemicals	3.79
FCX	Freeport-McMoRan, Inc.	Materials	Metals & Mining	3.33
WDC	Western Digital Corporation	Information Technology	Technology Hardware Storage & Peripherals	2.77
AMAT	Applied Materials, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	2.76
PXD	Pioneer Natural Resources Company	Energy	Oil Gas & Consumable Fuels	2.73
APA	Apache Corporation	Energy	Oil Gas & Consumable Fuels	2.64
HP	Helmerich & Payne, Inc.	Energy	Energy Equipment & Services	2.60
NBL	Noble Energy, Inc.	Energy	Oil Gas & Consumable Fuels	2.60
HAL	Halliburton Company	Energy	Energy Equipment & Services	2.53
SWN	Southwestern Energy Company	Energy	Oil Gas & Consumable Fuels	2.48
RRC	Range Resources Corporation	Energy	Oil Gas & Consumable Fuels	2.43
MUR	Murphy Oil Corporation	Energy	Oil Gas & Consumable Fuels	2.35
RIG	Transocean Ltd.	Energy	Energy Equipment & Services	2.31
CELG	Celgene Corporation	Health Care	Biotechnology	2.24
NTAP	NetApp, Inc.	Information Technology	Technology Hardware Storage & Peripherals	2.19
HES	Hess Corporation	Energy	Oil Gas & Consumable Fuels	2.16
MU	Micron Technology, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	2.12
SLB	Schlumberger NV	Energy	Energy Equipment & Services	2.07
CMI	Cummins Inc.	Industrials	Machinery	2.04
AAPL	Apple Inc.	Information Technology	Technology Hardware Storage & Peripherals	2.00
DE	Deere & Company	Industrials	Machinery	1.93

Table 25: Pro-Inflation Screen

Ticker	Company	Sector	Industry	Inflation Beta (Slope)
ORCL	Oracle Corporation	Information Technology	Software	1.91
NFX	Newfield Exploration Company	Energy	Oil Gas & Consumable Fuels	1.87
BHI	Baker Hughes Incorporated	Energy	Energy Equipment & Services	1.85
ADSK	Autodesk, Inc.	Information Technology	Software	1.81
FLS	Flowserve Corporation	Industrials	Machinery	1.77
COG	Cabot Oil & Gas Corporation	Energy	Oil Gas & Consumable Fuels	1.77
URBN	Urban Outfitters, Inc.	Consumer Discretionary	Specialty Retail	1.75
EOG	EOG Resources, Inc.	Energy	Oil Gas & Consumable Fuels	1.75
HUM	Humana Inc.	Health Care	Health Care Providers & Services	1.74
WMB	Williams Companies, Inc.	Energy	Oil Gas & Consumable Fuels	1.72
KSU	Kansas City Southern	Industrials	Road & Rail	1.72
ADI	Analog Devices, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	1.71
MAC	Macerich Company	Real Estate	Equity Real Estate Investment Trusts (REITs)	1.71
TSO	Tesoro Corporation	Energy	Oil Gas & Consumable Fuels	1.70
NUE	Nucor Corporation	Materials	Metals & Mining	1.67
LRCX	Lam Research Corporation	Information Technology	Semiconductors & Semiconductor Equipment	1.65
DVN	Devon Energy Corporation	Energy	Oil Gas & Consumable Fuels	1.64
APH	Amphenol Corporation Class A	Information Technology	Electronic Equipment Instruments & Components	1.62
SWKS	Skyworks Solutions, Inc.	Information Technology	Semiconductors & Semiconductor Equipment	1.62
FMC	FMC Corporation	Materials	Chemicals	1.58
NEM	Newmont Mining Corporation	Materials	Metals & Mining	1.51
BWA	BorgWarner Inc.	Consumer Discretionary	Auto Components	1.50
GLW	Corning Inc	Information Technology	Electronic Equipment Instruments & Components	1.49
APC	Anadarko Petroleum Corporation	Energy	Oil Gas & Consumable Fuels	1.49
CAT	Caterpillar Inc.	Industrials	Machinery	1.46
HOLX	Hologic, Inc.	Health Care	Health Care Equipment & Supplies	1.42
COP	ConocoPhillips	Energy	Oil Gas & Consumable Fuels	1.41
KLAC	KLA-Tencor Corporation	Information Technology	Semiconductors & Semiconductor Equipment	1.40
AES	AES Corporation	Utilities	Independent Power and Renewable Electricity Producers	1.38
MRO	Marathon Oil Corporation	Energy	Oil Gas & Consumable Fuels	1.37
HST	Host Hotels & Resorts, Inc.	Real Estate	Equity Real Estate Investment Trusts (REITs)	1.35
EMN	Eastman Chemical Company	Materials	Chemicals	1.29
VAR	Varian Medical Systems, Inc.	Health Care	Health Care Equipment & Supplies	1.25
ADBE	Adobe Systems Incorporated	Information Technology	Software	1.24
RCL	Royal Caribbean Cruises Ltd.	Consumer Discretionary	Hotels Restaurants & Leisure	1.22
OXY	Occidental Petroleum Corporation	Energy	Oil Gas & Consumable Fuels	1.20
ROK	Rockwell Automation, Inc.	Industrials	Electrical Equipment	1.19
DOV	Dover Corporation	Industrials	Machinery	1.13
PKI	PerkinElmer, Inc.	Health Care	Life Sciences Tools & Services	1.11
ALB	Albemarle Corporation	Materials	Chemicals	1.10
PRGO	Perrigo Co. Plc	Health Care	Pharmaceuticals	1.09
PH	Parker-Hannifin Corporation	Industrials	Machinery	1.09
TIF	Tiffany & Co.	Consumer Discretionary	Specialty Retail	1.08
BA	Boeing Company	Industrials	Aerospace & Defense	1.07
FAST	Fastenal Company	Industrials	Trading Companies & Distributors	1.04
R	Ryder System, Inc.	Industrials	Road & Rail	1.02
INTC	Intel Corporation	Information Technology	Semiconductors & Semiconductor Equipment	1.02
OKE	ONEOK, Inc.	Energy	Oil Gas & Consumable Fuels	1.02
EQT	EQT Corporation	Energy	Oil Gas & Consumable Fuels	1.01
HRS	Harris Corporation	Information Technology	Communications Equipment	1.00

Source: FactSet, Haver Analytics, BofA Merrill Lynch US Equity & US Quant Strategy

Note: This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decision

Table 26: Anti-Inflation screen

Ticker	Company	Sector	Industry	Inflation Beta (Slope)
BBY	Best Buy Co., Inc.	Consumer Discretionary	Specialty Retail	-3.26
TWX	Time Warner Inc.	Consumer Discretionary	Media	-2.50
GPS	Gap, Inc.	Consumer Discretionary	Specialty Retail	-2.36
ORLY	O'Reilly Automotive, Inc.	Consumer Discretionary	Specialty Retail	-2.30
LOW	Lowe's Companies, Inc.	Consumer Discretionary	Specialty Retail	-1.74
TSS	Total System Services, Inc.	Information Technology	IT Services	-1.69
PHM	PulteGroup, Inc.	Consumer Discretionary	Household Durables	-1.69
ROST	Ross Stores, Inc.	Consumer Discretionary	Specialty Retail	-1.68
HD	Home Depot, Inc.	Consumer Discretionary	Specialty Retail	-1.60
WM	Waste Management, Inc.	Industrials	Commercial Services & Supplies	-1.59
CTAS	Cintas Corporation	Industrials	Commercial Services & Supplies	-1.57
DLTR	Dollar Tree, Inc.	Consumer Discretionary	Multiline Retail	-1.48
AZO	AutoZone, Inc.	Consumer Discretionary	Specialty Retail	-1.42
EFX	Equifax Inc.	Industrials	Professional Services	-1.41
CLX	Clorox Company	Consumer Staples	Household Products	-1.38
TJX	TJX Companies Inc	Consumer Discretionary	Specialty Retail	-1.35
STZ	Constellation Brands, Inc. Class A	Consumer Staples	Beverages	-1.32
SCHW	Charles Schwab Corporation	Financials	Capital Markets	-1.29
BMY	Bristol-Myers Squibb Company	Health Care	Pharmaceuticals	-1.26
DRI	Darden Restaurants, Inc.	Consumer Discretionary	Hotels Restaurants & Leisure	-1.24
HRB	H&R Block, Inc.	Consumer Discretionary	Diversified Consumer Services	-1.21
KR	Kroger Co.	Consumer Staples	Food & Staples Retailing	-1.19
PFE	Pfizer Inc.	Health Care	Pharmaceuticals	-1.15
NTRS	Northern Trust Corporation	Financials	Capital Markets	-1.15
TGT	Target Corporation	Consumer Discretionary	Multiline Retail	-1.12
SHW	Sherwin-Williams Company	Materials	Chemicals	-1.09
KSS	Kohl's Corporation	Consumer Discretionary	Multiline Retail	-1.07
AGN	Allergan plc	Health Care	Pharmaceuticals	-1.07
CPB	Campbell Soup Company	Consumer Staples	Food Products	-1.05
CSCO	Cisco Systems, Inc.	Information Technology	Communications Equipment	-1.05
FISV	Fiserv, Inc.	Information Technology	IT Services	-1.05
PAYX	Paychex, Inc.	Information Technology	IT Services	-1.04
MHK	Mohawk Industries, Inc.	Consumer Discretionary	Household Durables	-1.01
ED	Consolidated Edison, Inc.	Utilities	Multi-Utilities	-1.01
UNH	UnitedHealth Group Incorporated	Health Care	Health Care Providers & Services	-1.01
JNJ	Johnson & Johnson	Health Care	Pharmaceuticals	-1.00

Source: FactSet, Haver Analytics, BofA Merrill Lynch US Equity & US Quant Strategy

Note: This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decision

Appendix

Performance during periods of rising rates and inflation

We provide below performance of each sector, asset class and factor group during periods of rising nominal interest rates, real interest rates and inflation.

Table 27: Annualized total returns during periods of rising nominal interest rates (1971-current)

Sector	10/71-9/75	12/76-9/81	4/83-5/84	8/86-9/87	9/93-11/94	12/95-8/96	9/98-1/00	5/03-6/06	12/08-4/10	7/12-12/13	7/16-1/18	Average	Median	Hit Rate
Discretionary	-5%	1%	-13%	33%	-1%	13%	35%	9%	46%	38%	23%	16%	13%	55%
Staples	3%	5%	3%	29%	14%	16%	-2%	9%	15%	17%	7%	10%	9%	45%
Energy	10%	14%	14%	43%	0%	13%	13%	30%	14%	19%	10%	16%	14%	55%
Financials	-10%	6%	-21%	1%	-10%	19%	16%	12%	22%	41%	38%	10%	12%	45%
Health Care	0%	8%	-12%	29%	21%	11%	6%	4%	14%	32%	14%	11%	11%	36%
Industrials	-6%	7%	-5%	34%	-1%	16%	22%	16%	30%	33%	23%	16%	16%	64%
Technology	-2%	3%	-7%	34%	20%	21%	84%	7%	47%	20%	35%	24%	20%	55%
Materials	8%	0%	-10%	52%	11%	12%	10%	18%	38%	25%	21%	17%	12%	55%
Real Estate		18%	12%	5%	-9%	18%	-5%	18%	29%	-1%	-2%	8%	8%	50%
Telecom	-2%	8%	-10%	14%	-11%	-17%	34%	11%	3%	4%	-2%	3%	3%	9%
Utilities	-2%	8%	6%	-5%	-15%	-2%	2%	18%	8%	5%	1%	2%	2%	18%
S&P 500	1%	7%	-4%	29%	2%	11%	28%	11%	25%	26%	21%	14%	11%	91%*

Asset class	10/71-9/75	12/76-9/81	4/83-5/84	8/86-9/87	9/93-11/94	12/95-8/96	9/98-1/00	5/03-6/06	12/08-4/10	7/12-12/13	7/16-1/18	Average	Median	Hit Rate
T-Bills	26%	56%	11%	7%	4%	3%	6%	7%	0%	0%	1%	11%	6%	100%
LT Treas. Bonds	9%	-17%	-11%	-12%	-11%	-8%	-9%	3%	-14%	-17%	-10%	-9%	-11%	18%
IG Corp. Bonds	14%	-6%	-4%	-1%	-4%	-2%	-1%	6%	25%	1%	2%	3%	-1%	45%
CBOE VIX					23%	36%	-39%	-33%	-45%	-28%	14%	-10%	-28%	43%
WTI oil				23%	-4%	14%	71%	150%	93%	12%	56%	52%	39%	88%
CRB Commodity Index	112%	31%	14%	8%	6%	3%	4%	47%	21%	-6%	9%	23%	9%	91%
Small Caps	3%	65%	-12%	19%	-4%	6%	36%	64%	43%	48%	29%	27%	29%	82%
Gold			-10%	19%	8%	0%	-4%	70%	36%	-26%	0%	10%	0%	56%

Factor group**	10/71-9/75	12/76-9/81	4/83-5/84	8/86-9/87	9/93-11/94	12/95-8/96	9/98-1/00	5/03-6/06	12/08-4/10	7/12-12/13	7/16-1/18	Average	Median	Hit Rate
GARP				1%	13%	1%	-10%	17%	-17%	5%	3%	2%	2%	75%
Value				3%	5%	0%	-7%	34%	34%	25%	8%	13%	6%	88%
Cash deployment				-5%	-2%	-2%	-8%	-1%	-13%	1%	-1%	-4%	-2%	13%
Momentum				34%	2%	2%	57%	23%	-29%	8%	3%	13%	5%	88%
Growth				12%	4%	1%	37%	13%	-3%	9%	7%	10%	8%	88%
Quality				-10%	22%	-1%	29%	-18%	-10%	-3%	5%	2%	-2%	38%
Risk				8%	3%	-5%	35%	5%	59%	15%	3%	15%	7%	88%

*hit rate indicates positive S&P 500 total returns during the period

**relative performance vs. equal-weighted S&P 500

Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Table 28: Annualized total returns during periods of rising real interest rates (1997-current)

Sector	1/97-12/99	3/04-6/07	2/08-10/08	11/12-12/13	1/15-12/15	7/16-1/18	Average	Median	Hit Rate
Discretionary	33%	8%	-37%	40%	10%	25%	13%	17%	83%
Staples	7%	8%	-13%	21%	7%	6%	6%	7%	33%
Energy	13%	31%	-41%	24%	-21%	8%	2%	10%	17%
Financials	17%	9%	-51%	44%	-3%	39%	9%	13%	33%
Health Care	19%	7%	-24%	37%	7%	17%	11%	12%	50%
Industrials	19%	14%	-43%	40%	-3%	25%	9%	16%	50%
Technology	55%	7%	-35%	26%	6%	40%	16%	17%	67%
Materials	8%	17%	-51%	27%	-8%	24%	3%	12%	33%
Real Estate	-2%	14%	-43%	2%	1%	-1%	-5%	0%	17%
Telecom	37%	18%	-30%	10%	3%	-1%	6%	7%	67%
Utilities	9%	20%	-29%	12%	-5%	1%	1%	5%	33%
S&P 500	26%	11%	-37%	31%	1%	23%	9%	17%	83%*
Asset class	**1/97-12/99**	**3/04-6/07**	**2/08-10/08**	**11/12-12/13**	**1/15-12/15**	**7/16-1/18**	**Average**	**Median**	**Hit Rate**
T-Bills	5%	4%	2%	0%	0%	1%	2%	1%	100%
LT Treas. Bonds	6%	3%	0%	-14%	-1%	-5%	-2%	-1%	33%
IG Corp. Bonds	6%	3%	-23%	-1%	-1%	2%	-2%	1%	50%
CBOE VIX	8%	-1%	239%	-13%	-5%	-9%	37%	-3%	33%
WTI oil	2%	23%	-46%	10%	-30%	20%	-3%	6%	67%
CRB Commodity Index	-5%	3%	-48%	-6%	-23%	2%	-13%	-5%	33%
Small Caps	11%	11%	-31%	38%	-6%	22%	8%	11%	67%
Gold	-6%	14%	-35%	-28%	-12%	1%	-11%	-9%	33%
Factor group**	**1/97-12/99**	**3/04-6/07**	**2/08-10/08**	**11/12-12/13**	**1/15-12/15**	**7/16-1/18**	**Average**	**Median**	**Hit Rate**
GARP	-4%	4%	-6%	5%	0%	2%	0%	1%	50%
Value	0%	8%	-12%	17%	-8%	7%	2%	3%	50%
Cash deployment	-3%	1%	1%	2%	-4%	0%	0%	1%	67%
Momentum	25%	3%	2%	6%	8%	0%	7%	4%	83%
Growth	14%	2%	-4%	7%	4%	4%	5%	4%	83%
Quality	16%	-2%	4%	0%	3%	3%	4%	3%	83%
Risk	11%	-1%	-16%	9%	-14%	2%	-2%	0%	50%

*hit rate indicates positive S&P 500 total returns during the period

**relative performance vs. equal-weighted S&P 500

Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Table 29: Annualized total returns during periods of rising inflation (1973-current)

Sector	1/73-2/75	11/77-6/80	6/83-5/84	2/87-2/91	11/03-9/06	10/10-1/12	2/14-2/16	Average	Median	Hit Rate
Discretionary	-23%	1%	-17%	6%	6%	16%	7%	-1%	6%	29%
Staples	-10%	6%	6%	22%	9%	12%	13%	8%	9%	57%
Energy	-7%	30%	9%	16%	32%	17%	-16%	12%	16%	86%
Financials	-15%	12%	-20%	1%	12%	-4%	-1%	-2%	-1%	14%
Health Care	-8%	12%	-15%	17%	7%	14%	7%	5%	7%	57%
Industrials	-18%	12%	-11%	7%	12%	12%	3%	2%	7%	29%
Technology	-18%	5%	-16%	-1%	3%	11%	8%	-1%	3%	29%
Materials	1%	13%	-13%	6%	12%	9%	-4%	4%	6%	57%
Real Estate	-12%	21%	10%	1%	20%	15%	6%	9%	10%	71%
Telecom	-8%	5%	-13%	15%	17%	8%	10%	5%	8%	57%
Utilities	-9%	8%	7%	8%	21%	12%	11%	8%	8%	57%
S&P 500	-12%	13%	-7%	10%	11%	11%	4%	4%	10%	71%*
Asset class	**1/73-2/75**	**11/77-6/80**	**6/83-5/84**	**2/87-2/91**	**11/03-9/06**	**10/10-1/12**	**2/14-2/16**	**Average**	**Median**	**Hit Rate**
T-Bills	7%	10%	10%	8%	3%	0%	0%	5%	7%	100%
LT Treas. Bonds	3%	1%	-9%	7%	6%	19%	13%	6%	6%	86%
IG Corp. Bonds	-1%	2%	-2%	8%	4%	6%	2%	3%	2%	71%
CBOE VIX					-10%	-7%	21%	1%	-7%	33%
WTI oil			-2%	4%	29%	16%	-43%	1%	4%	60%
CRB Commodity Index	12%	16%	15%	1%	8%	3%	-27%	4%	8%	86%
Small Caps	-12%	18%	-23%	0%	11%	10%	-7%	-1%	0%	43%
Gold			-8%	-3%	16%	23%	-4%	5%	-3%	40%
Factor group**	**1/73-2/75**	**11/77-6/80**	**6/83-5/84**	**2/87-2/91**	**11/03-9/06**	**10/10-1/12**	**2/14-2/16**	**Average**	**Median**	**Hit Rate**
GARP				5%	5%	3%	-1%	3%	4%	75%
Value				2%	9%	0%	-5%	1%	1%	75%
Cash deployment				-1%	1%	3%	-1%	1%	0%	50%
Momentum				-1%	1%	-5%	3%	-1%	0%	50%
Growth				2%	0%	0%	-1%	0%	0%	50%
Quality				6%	-4%	6%	4%	3%	5%	75%
Risk				-7%	-3%	-5%	-14%	-7%	-6%	0%

*hit rate indicates positive S&P 500 total returns during the period

**relative performance vs. equal-weighted S&P 500

Source: BofAML US Equity & Quant Strategy, ICE BofAML Indices, Ibbotson, FactSet

Inflation Baskets Methodology

In December 2010, we created two baskets of stocks: the Pro-Inflation Basket, comprised of S&P 500 stocks whose historical relative performance is positively correlated with inflation, and the Anti-Inflation Basket, comprised of S&P 500 stocks whose historical relative performance is negatively correlated with inflation.

To examine the effects of inflation on the performance of stocks, we modeled excess stock returns vs. the percentage change in our Inflation composite (defined on pg 4) by using the regression analysis shown below. We used the stocks' 12-month return minus the S&P 500 return as the dependent variable and the 12-month changes in the inflation composite as the independent variable, using monthly data since 1975. The resulting regression coefficient can be interpreted as the "inflation beta", or the sensitivity of the stock to inflation.

$$\text{Return}_{\text{stock}} - \text{Return}_{\text{S\&P500}} = \beta_{\text{Inflation}} * \Delta_{\text{Inflation Composite}} + \varepsilon$$

We included only stocks with statistically significant inflation betas in our analysis by selecting results which were significant at the 95% confidence level and where the stock had more than 20 years of data available. Finally, we screened those stocks with inflation betas greater than one for the Pro-Inflation screen, and those stocks with inflation betas less than one for the Anti-Inflation screen. This resulted in 70 stocks for the Pro-Inflation screen, and 48 stocks for the Anti-Inflation screen.

We rebalance these screens based on constituents as of 1/31/17 in Strategy Snippet: Reflategate 13 February 2017, subject to the same methodology outlined above, which results in 74 stocks on the Pro-Inflation screen and 38 stocks on the Anti-Inflation screens. They were previously rebalanced as of 9/30/15 and published in US Equity Strategy in Pictures: Murky signals, but clear opportunities 30 October 2015 . This resulted in a list of 75 stocks for the Pro-Inflation screen and 45 stocks for the Anti-Inflation screen. Our prior rebalance was in our February 15 2013 "Inflation Fixation" report (Equity Strategy Focus Point, 15 February 2013), based on current constituents of the S&P 500 index as of 1/31/2013, which resulted in 75 stock in the Pro-Inflation screen and 45 stocks in the Anti-Inflation screen. Rebalancing is conducted on an ad-hoc basis subject to our discretion; we seek to rebalance the baskets every one to two years.

Performance Calculation

Performance calculations for each basket are conducted each month, using data and closing prices corresponding to the market's close on the last business day of each month. The performance of each basket is computed on the basis of equal-weighted price return, and does not include dividends. The performance presented within this report is the performance of the Pro-Inflation Basket relative to the Anti-Inflation Basket. The performance since inception is as of December 29, 2010. See the performance table below.

The performance results do not reflect transaction costs, tax withholdings or any investment advisory fees. The baskets followed here may differ from the S&P 500 in that each is significantly less diversified, and as such, the performance is more exposed to specific stock or sector results. Investors following the strategy may therefore experience greater volatility in their returns.

The performance results of individuals following the strategy presented here will differ from the performance contained in this report for a variety of reasons, including differences related to incurring transaction costs and/or investment advisor fees, as well as differences in the time and price that securities were acquired and disposed of, and differences in the weighting of such securities.

- This report includes the performance of the Pro Inflation and Anti Inflation baskets for informational or descriptive purposes, and inclusion here is not equivalent to a recommendation of the strategy.

Table 30: Price performance of BofAML Pro-Inflation and Anti-Inflation Baskets (as of 2/16/18)

	Pro-Inflation Screen	Anti-Inflation Screen	Relative Performance (Pro-Inflation Screen vs. Anti-Inflation Screen (ppt)	S&P 500 Index	Equal-Weighted S&P 500 Index
1 month	-6.0%	-2.3%	-3.7	-3.2%	-100.0%
3 months	0.3%	5.2%	-4.9	3.2%	-100.0%
6 months	12.2%	16.7%	-4.5	10.5%	-100.0%
12 months	9.7%	19.2%	-9.5	15.6%	-100.0%
YTD	-2.4%	2.2%	-4.5	2.2%	-100.0%
5 years	43.1%	98.3%	-55.3	80.4%	-100.0%
Since inception on 12/31/10	59.4%	160.9%	-101.5	116.9%	-100.0%

Source: BofA Merrill Lynch US Equity & US Quant Strategy

BofAML Corporate Misery Indicator Methodology

The Corporate Misery Indicator is our macro-based predictor of the profits cycle and is based on the CPI, Average Hourly Earnings, and the Coincident Indicators. Our theory is that corporate profits are a function of how many units a company sells and their margin per unit. Implicitly, these factors incorporate productivity because enhanced productivity will result in either better margins or more units sold for the same inputs.

We use the year-to-year change in the Coincident Indicators as a proxy for units, because the Coincident Indicators are a proxy for Real GDP, a measure of unit growth. We use the spread between the year-to-year change in the CPI and the year-to-year change in Average Hourly Earnings to approximate margins:

Corporate Misery Indicator = CPI (y/y) – Average Hourly Earnings (y/y) + Coincident Indicators (y/y)

When the indicator declines, it implies that profits are being squeezed. This has historically coincided with a decelerating profits cycle.

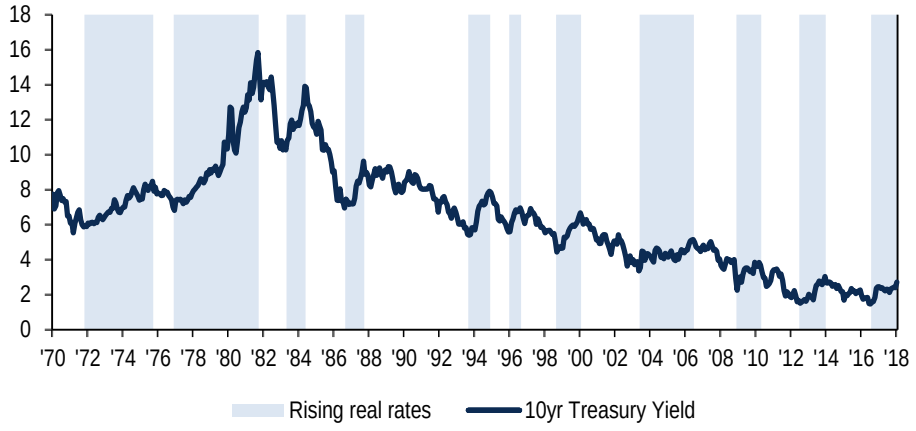
Disclaimer: The indicator identified as an indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Merrill Lynch Global Research. This indicator was not created to act as a benchmark.

Rising interest rate regimes

Periods of rising nominal interest rates

We have identified 11 periods of significant increases in the 10-year nominal Treasury yield since 1971, indicated in the chart below.

Chart 68: Periods of rising nominal interest rates (1971-current)

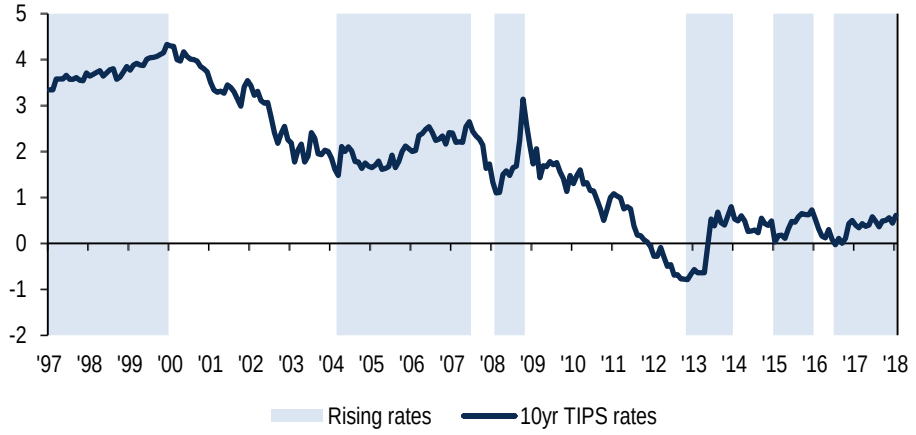


Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

Periods of rising real interest rates

We have identified six periods of significant increases in the 10-year TIPS yield since 1997, indicated in the chart below.

Chart 69: Periods of rising real interest rates (1997-current)

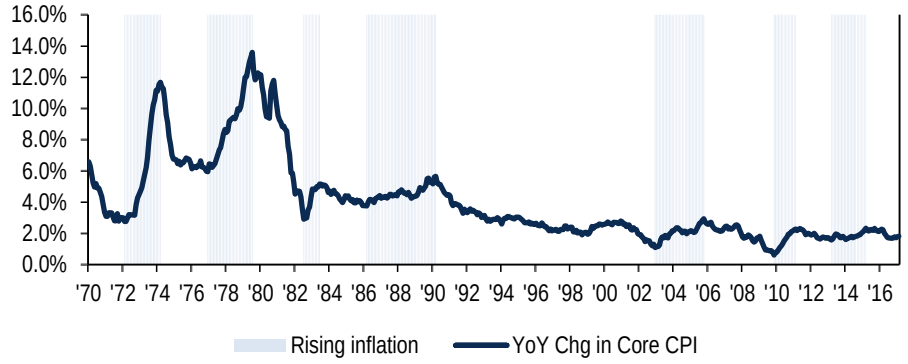


Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

Periods of rising inflation

We have identified seven periods of significant increases in the core inflation (CPI ex-food and energy y/y%) since 1970, indicated in the chart below.

Chart 70: Periods of rising inflation (1970-current)



Source: BofA Merrill Lynch US Equity & US Quant Strategy, FactSet

Factor Performance Methodology

For each of the factors represented in this report, rebalancing and performance calculations are conducted each month, using data and closing prices corresponding to the market's close on the last business day of each month. The performance of each index is computed on the basis of price return.

The results of quantitative strategies presented here may differ from the S&P 500 in that they are significantly less diversified, and, as such, their performance is more exposed to specific stock or sector results. Therefore investors following these strategies may experience greater volatility in their returns.

The performance results do not reflect transaction costs, tax withholdings or any investment advisory fees. Had these costs been reflected, the performance would have been lower. The performance results of individuals following the strategies presented here will differ from the performance contained in this report for a variety of reasons, including differences related to incurring transaction costs and/or investment advisory fees, as well as differences in the time and price that securities were acquired and disposed of, and differences in the weighting of such securities. The performance results of individuals following these strategies will also differ based on differences in treatment of dividends received, including the amount received and whether and when such dividends were reinvested.

Table 31: Quantitative Strategies Performance as of 1/31/2018

Strategies (Universe based on the S&P 500)		1 M	3 M	6 M	12 M	YTD	2 Yr Perf. Gross	2 Yr Perf. Anlzd	3 Yr Perf. Gross	3 Yr Perf. Anlzd	5 Yr Perf. Gross	5 Yr Perf. Anlzd	Inception Date
Price Returns (12-Month plus 1-Month Reversal)	Technical	8.3	10.9	19.4	30.3	8.3	51.4	23.1	49.8	14.4	125.5	17.7	1/31/2010
Price Returns (11-Month since 1 year ago)	Technical	8.2	8.8	17.6	26.6	8.2	35.2	16.3	33.5	10.1	99.6	14.8	1/31/2010
Price Returns (12-Month)	Technical	7.9	9.5	16.6	22.2	7.9	31.8	14.8	34.3	10.3	108.5	15.8	1/31/2010
Relative Strength (30wk/75wk)	Technical	7.7	8.2	17.7	26.7	7.7	42.0	19.2	38.5	11.5	96.3	14.4	8/31/1995
Low EV/EBITDA	Value	7.0	21.9	21.2	20.1	7.0	52.2	23.4	23.6	7.3	54.0	9.0	9/30/2001
Upward Estimate Revisions	Growth	7.0	12.3	20.5	24.0	7.0	52.7	23.6	39.8	11.8	106.3	15.6	12/31/1988
High Projected 5-Yr Growth	Growth	6.8	11.6	17.6	24.9	6.9	54.9	24.4	47.8	13.9	127.7	17.9	12/31/1988
ROE (5-Yr Average)	Quality	6.8	14.3	19.4	29.3	6.8	50.0	22.5	45.7	13.4	101.2	15.0	4/30/1997
High Duration	Growth	6.8	9.7	14.2	28.0	6.8	46.5	21.0	41.2	12.2	91.6	13.9	12/31/1988
Relative Strength (10wk/40wk)	Technical	6.7	10.6	20.8	25.6	6.7	47.3	21.4	48.9	14.2	127.9	17.9	1/31/2010
High Free Cash Flow to EV	Value	6.7	18.2	20.7	25.7	6.7	53.3	23.8	35.2	10.6	116.8	16.7	7/31/2010
Low Price to Free Cash Flow	Value	6.6	16.0	15.8	21.3	6.6	42.4	19.3	22.2	6.9	83.8	13.0	7/30/2003
Most Active	Technical	6.4	11.7	14.9	18.6	6.4	68.0	29.6	42.7	12.6	95.5	14.3	8/31/2003
Price Returns (3-Month)	Technical	6.3	13.2	18.1	27.5	6.3	50.3	22.6	37.1	11.1	96.5	14.5	1/31/2010
ROA	Quality	6.3	12.2	18.8	28.2	6.3	42.9	19.5	34.9	10.5	95.7	14.4	4/30/1997
ROE (1-Yr Average)	Quality	6.2	12.9	18.4	25.2	6.2	41.8	19.1	33.6	10.1	98.2	14.7	4/30/1997
Price Returns (9-Month)	Technical	6.1	7.9	15.9	23.8	6.1	36.1	16.7	39.2	11.7	118.1	16.9	1/31/2010
Low Price to Sales	Value	6.0	18.4	17.3	21.1	6.0	54.6	24.3	32.0	9.7	109.5	15.9	12/31/1988
High Foreign Exposure	Miscellaneous	5.8	6.3	15.6	27.8	5.8	71.9	31.1	55.7	15.9	100.1	14.9	12/31/1988
S&P 500 Index (Price Return)	Benchmark	5.6	9.7	14.3	23.9	5.6	45.5	20.6	41.6	12.3	88.5	13.5	
Relative Strength (Price/200-Day Moving Avg)	Technical	5.6	8.9	14.8	23.5	5.6	36.2	16.7	36.2	10.9	102.8	15.2	1/31/2010
Relative Strength (5wk/30wk)	Technical	5.5	10.7	18.7	22.4	5.5	42.8	19.5	41.5	12.3	105.5	15.5	1/31/2010
ROC	Quality	5.4	12.3	19.4	28.0	5.4	46.6	21.1	40.4	12.0	106.6	15.6	4/30/1997
Forward Earnings Yield	Value	5.1	13.1	15.1	18.5	5.1	61.3	27.0	35.1	10.6	86.7	13.3	12/31/1988
ROE (5-Yr Avg. Adj. by Debt)	Quality	5.1	11.8	13.5	19.0	5.1	36.3	16.7	34.6	10.4	91.3	13.9	4/30/1997
Share Repurchase	Corp Cash Deployment	5.0	13.3	11.9	17.1	5.1	43.8	19.9	24.4	7.6	89.7	13.7	12/31/2004
Low PE to GROWTH	GARP	5.0	14.3	21.4	25.5	5.0	72.2	31.2	49.6	14.4	95.0	14.3	12/30/1988
ROE (1-Yr Avg. Adj. by Debt)	Quality	4.9	12.1	16.8	27.9	4.9	47.2	21.3	40.2	11.9	103.4	15.3	4/30/1997
High Beta	Risk	4.8	10.3	13.5	19.3	4.8	67.7	29.5	32.2	9.7	67.4	10.9	12/31/1988
Price Returns (12-Month plus 1-Month)	Technical	4.7	6.8	10.9	16.9	4.7	25.7	12.1	22.7	7.1	68.5	11.0	1/31/2010
Short Interest	Miscellaneous	4.6	8.9	14.0	22.5	4.6	45.6	20.7	37.6	11.2			10/31/2013
S&P 500 Equal Weighted (Total Return)	Benchmark	4.5	9.9	13.2	21.4	4.5	51.3	23.0	43.9	12.9	104.9	15.4	
S&P 500 Equal Weighted (Price Return)	Benchmark	4.4	9.4	12.1	19.0	4.4	45.3	20.5	35.0	10.5	84.8	13.1	
High EPS Estimate Dispersion	Risk	4.2	10.0	11.2	2.2	4.2	52.3	23.4	3.0	1.0	17.8	3.3	12/31/1988
EPS Momentum	Growth	4.1	6.1	8.3	18.9	4.1	39.3	18.0	29.2	8.9	79.0	12.4	12/31/1988
Forecast Positive Earnings Surprise	Growth	4.1	9.4	12.3	19.0	4.1	45.3	20.6	35.3	10.6	86.6	13.3	12/31/1988
Earnings Yield	Value	3.9	13.8	14.4	16.4	3.9	59.4	26.3	45.4	13.3	95.7	14.4	12/31/1988
Analyst Coverage Neglect	Miscellaneous	3.8	6.2	8.2	17.6	3.8	37.9	17.4	33.6	10.1	97.2	14.6	6/30/1989
Small Size	Miscellaneous	3.6	12.3	10.7	7.3	3.7	46.6	21.1	23.3	7.2	73.4	11.6	12/31/1988
Forecast Negative Earnings Surprise	Growth (Negative)	3.6	8.1	11.4	20.2	3.7	39.2	18.0	29.6	9.0	90.1	13.7	12/31/1988
Low Price to Cash Flow	Value	3.6	13.0	12.3	13.9	3.6	46.3	21.0	18.1	5.7	52.4	8.8	12/31/1988
Low Price	Risk	3.4	11.7	6.7	6.8	3.4	65.4	28.6	31.1	9.4	85.7	13.2	12/31/1988
High Dividend Growth (Total Return)	Corp Cash Deployment	3.2	8.6	13.6	23.3	3.2	48.4	21.8	36.4	10.9	81.6	12.7	12/31/2004
Low Price to Book Value	Value	3.2	8.1	9.6	10.6	3.2	65.1	28.5	35.9	10.8	75.2	11.9	12/31/1988
High Dividend Growth (Price Return)	Corp Cash Deployment	3.1	8.1	12.6	21.1	3.1	42.4	19.3	27.9	8.5	63.0	10.3	12/31/2004
High Variability of EPS	Risk	3.0	5.6	7.2	17.6	3.0	52.5	23.5	36.3	10.9	84.7	13.1	12/31/1988
Low EPS Torpedo	Growth (Negative)	2.6	9.0	8.7	8.7	2.6	40.0	18.3	3.0	1.0	25.2	4.6	12/31/1988
Institutional Neglect	Miscellaneous	2.5	6.2	11.0	12.0	2.5	33.5	15.6	27.2	8.4	66.9	10.8	12/31/1988
DDM Valuation	Value	1.7	7.0	8.4	13.2	1.7	30.9	14.4	28.3	8.7	89.8	13.7	12/31/1988
Dividend Yield (Total Return)	Corp Cash Deployment	1.4	8.5	10.3	11.3	1.4	57.5	25.5	48.4	14.1	110.0	16.0	12/31/1988
Dividend Yield (Price Return)	Corp Cash Deployment	1.2	7.3	7.8	6.3	1.2	43.5	19.8	28.8	8.8	66.3	10.7	12/31/1988

Source: BofA Merrill Lynch US Equity and US Quant Strategy

The performance does not reflect transaction costs or tax withholdings or any applicable advisory fees. Had these costs been reflected, the performance would have been lower. Performance is calculated on the basis of price return unless noted. Total return performance calculations assume that dividends paid on securities in a portfolio are deposited in a cash account on the ex-dividend date, and are not reinvested. Please see Performance Calculation methodology from our Quantitative Profiles report.

†For screens that have less than 5 years history, the performance is since inception.

Past performance should not and cannot be viewed as an indicator of future performance. A complete performance record is available upon request.

Table 32: Advances and Declines as of 1/31/2018

	1M		3M		6M		12M		YTD		2Yr		3Yr		5Yr	
Quantitative Strategies	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.
Price Returns (12-Month plus 1-Month Reversal)	46	4	101	49	204	96	384	215	46	4	713	480	1015	776	1744	1244
Price Returns (11-Month since 1 year ago)	42	8	92	58	189	111	354	246	42	8	665	531	959	836	1685	1304
Price Returns (12-Month)	42	8	93	57	187	113	350	250	42	8	678	519	977	819	1708	1281
Relative Strength (30wk/75wk)	40	9	90	59	187	112	360	239	40	9	687	510	972	824	1686	1306
Low EV/EBITDA	44	6	126	24	198	102	348	252	44	6	681	517	931	867	1626	1367
Upward Estimate Revisions	43	7	101	49	196	104	359	239	43	7	707	491	990	806	1727	1267
High Projected 5-Yr Growth	37	13	98	53	197	113	386	233	37	13	742	481	1024	802	1769	1272
ROE (5-Yr Average)	42	8	117	33	215	85	406	194	42	8	743	457	1020	780	1744	1252
High Duration	41	9	97	53	192	108	392	207	41	9	713	483	997	798	1713	1280
Relative Strength (10wk/40wk)	42	8	103	47	211	89	374	226	42	8	707	488	1016	777	1725	1261
High Free Cash Flow to EV	33	8	92	29	161	80	293	188	33	8	585	389	792	678	1437	1022
Low Price to Free Cash Flow	42	8	114	36	194	106	359	240	42	8	707	490	960	837	1714	1279
Most Active	43	7	102	48	183	116	337	262	43	7	709	488	979	816	1706	1285
Price Returns (3-Month)	42	8	114	36	213	86	394	204	42	8	731	463	1007	785	1708	1279
ROA	43	7	105	45	206	94	381	219	43	7	707	492	977	822	1700	1299
ROE (1-Yr Average)	41	9	116	34	216	84	394	206	41	9	723	476	996	803	1736	1260
Price Returns (9-Month)	40	10	96	54	192	108	359	241	40	10	679	517	987	807	1717	1268
Low Price to Sales	42	8	119	31	198	102	359	241	42	8	698	499	967	830	1706	1287
High Foreign Exposure	40	10	91	59	189	110	380	219	40	10	751	446	1002	795	1712	1281
Relative Strength (Price/200-Day Moving Avg)	40	10	99	51	197	103	377	223	40	10	695	502	991	804	1716	1272
Relative Strength (5wk/30wk)	42	8	106	44	211	88	374	224	42	8	704	490	1005	786	1711	1272
ROC	40	10	112	38	217	83	391	209	40	10	728	471	1005	794	1746	1252
Forward Earnings Yield	43	7	111	39	197	103	358	241	43	7	743	456	1014	785	1756	1239
ROE (5-Yr Avg. Adj. by Debt)	41	9	107	43	191	109	367	233	41	9	695	505	977	823	1715	1284
Share Repurchase	42	8	114	36	195	105	365	234	42	8	718	480	962	835	1722	1275
Low PE to GROWTH	37	13	114	36	212	88	379	220	37	13	775	424	1033	766	1754	1242
ROE (1-Yr Avg. Adj. by Debt)	39	10	105	44	192	107	377	222	39	10	711	488	986	813	1723	1276
High Beta	38	13	108	44	198	107	372	243	38	13	751	480	1003	845	1718	1353
Price Returns (12-Month plus 1-Month)	37	13	94	56	183	116	362	237	37	13	686	512	975	822	1687	1304
Short Interest	39	11	98	51	199	100	385	214	39	11	748	447	1025	768	1679	1250
High EPS Estimate Dispersion	25	8	69	37	126	94	232	235	25	8	541	462	749	782	1246	1207
EPS Momentum	35	15	96	54	180	120	368	232	35	15	717	482	1000	799	1717	1280
Forecast Positive Earnings Surprise	46	21	124	62	243	147	496	336	46	21	994	679	1409	1117	2533	1819
Earnings Yield	39	11	116	34	200	100	363	236	39	11	754	445	1034	765	1779	1217
Analyst Coverage Neglect	29	12	83	44	153	90	291	180	29	12	578	390	859	707	1562	1109
Small Size	36	14	103	47	182	118	329	270	36	14	670	528	922	874	1620	1368
Forecast Negative Earnings Surprise	55	26	145	84	263	165	519	334	55	26	987	700	1365	1166	2338	1765
Low Price to Cash Flow	35	15	109	41	185	115	340	260	35	15	694	504	938	860	1627	1363
Low Price	33	17	101	49	166	134	315	284	33	17	677	521	917	879	1620	1366
High Dividend Growth (Total Return)	35	15	107	43	199	101	382	217	35	15	741	457	1024	774	1770	1226
Low Price to Book Value	39	12	107	46	187	119	352	256	39	12	752	457	1032	780	1784	1231
High Dividend Growth (Price Return)	35	15	106	44	196	104	378	221	35	15	725	472	1001	796	1735	1260
High Variability of EPS	38	22	107	73	195	155	422	285	38	22	890	584	1256	985	2187	1556
Low EPS Torpedo	33	17	95	55	173	127	315	285	33	17	669	530	901	898	1578	1416
Institutional Neglect	30	20	92	59	189	129	354	264	30	20	699	516	966	848	1696	1313
DDM Valuation	20	24	75	57	142	116	322	243	20	24	701	528	981	846	1870	1378
Dividend Yield (Total Return)	28	22	96	54	176	124	333	267	28	22	707	492	974	824	1738	1256
Dividend Yield (Price Return)	28	22	93	57	170	130	321	279	28	22	677	521	929	868	1655	1338

Source: BofA Merrill Lynch US Quantitative Strategy

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