VALUE VS. GROWTH: THE NEW BUBBLE

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QMA began managing multi-asset portfolios for institutional investors in 1975. Today, we manage systematic quantitative equity and global multi-asset strategies as part of PGIM, the global investment management businesses of Prudential Financial, Inc. Our investment processes, based on academic, economic and behavioral foundations, serve a global client base with $123.2 billion in assets under management as of 6/30/2019.

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HIGHLIGHTS

1. We have been through an extraordinary period of value factor underperformance over the last 18 months. The only comparable periods over the last 30 years are the Tech Bubble and the GFC.

2. Historically, we would expect a very sharp reversal of value performance to follow. This was the case in each of the two previous extreme periods.

3. We tested the drivers of recent value underperformance to see if we are in a "value trap." Historically, fundamentals have somewhat deteriorated, but prices expected a bigger deterioration, so the bounce-back more than offset the fundamental deterioration. In a value trap environment, we would expect a greater deterioration in fundamentals. In the last 18 months, we have actually seen an improvement in fundamental earnings for value stocks, but a deterioration in pricing. This combination is unprecedented, and signals the opposite of a value trap environment.

4. To illustrate this in a fundamental context, $1000 invested in cheap, high quality stocks within the Russell 1000® Index would currently yield $83 of earnings, compared to $61 at the start of 2018. This represents an increase of 36%.

5. Separately, we examined the behavior of corporate insiders (a signal we generally use in our models). The relative conviction of insiders regarding cheaper stocks is higher than ever, which reinforces our conviction about the magnitude of the performance opportunity from here.

6. It is never easy to predict what it will take to pop a bubble, but there are multiple scenarios that we envisage as potential catalysts, including both growth and recessionary conditions.

7. QMA processes naturally increase the tilt to value in conditions like these, so we seek to gain more on the swings than we lose on the roundabouts within our mandate. Investors who share our view may want to consider adding their own tilt at a total portfolio level.

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INTRODUCTION

Cheap stocks have been underperforming for the last 18 months, while expensive stocks are overperforming. In fact, current value performance parallels the Tech Bubble and Global Financial Crisis (GFC). This comes as a surprise to many. We have been living through an extraordinary return environment that has, largely, fallen under the radar.

Stocks with attractive fundamental attributes (attractive valuations, high quality, improving growth expectations) typically outperform the broader market. Recently, however, stocks with the opposite attributes have outperformed. This has been especially true with respect to value. Expensive stocks with weaker fundamentals have delivered substantially better performance than stocks with much more attractive fundamentals and valuations. This dynamic has resulted in historically weak value factor performance.

Such extreme levels should not be alarming. Rather, we view this as the backdrop for incredible investment opportunities. The current market environment is poised to generate some of the best returns in a quarter century. The magnitude of both cheap stocks' underperformance and the outperformance of expensive stocks (in particular, fundamentally weak expensive stocks) is, from our perspective, an unjustified and irrational overreaction. Historically, overreactions like this have led to massive corrections. Following the Tech Bubble and GFC, corrections were in excess of +30% for value factors!

The recent change in performance dynamics associated with value is clearly unusual. Some say that value is "broken" (i.e., something has fundamentally changed) or that value stocks currently represent a "trap." Our research does not support these conclusions. Fundamentals for cheap stocks have remained resilient. Current earnings and earnings expectations for the most attractively valued stocks have held up better than the historical norm. But earnings yields have also increased considerably, both in absolute terms and relative to their broad market benchmarks.

Recent dynamics within the market reflect investor overreaction and price action. Unless fundamentals ultimately don't matter, which we don't believe to be the case, the relative attractiveness of value stocks is reaching extreme levels. We believe that our portfolios are well positioned to gain more from the rebound than they would lose in the downswing due to our adaptive investment processes.

VALUE PERFORMANCE – THE FACTS

Over the last 18 months, value factors have performed poorly. As shown in Figure 1, the months of March, May and August 2019 were among the worst months for value factors since 1996. Specifically, May's performance was the second worst (out of 294 months) for value factors, August was the seventh worst, and March was the tenth worst.
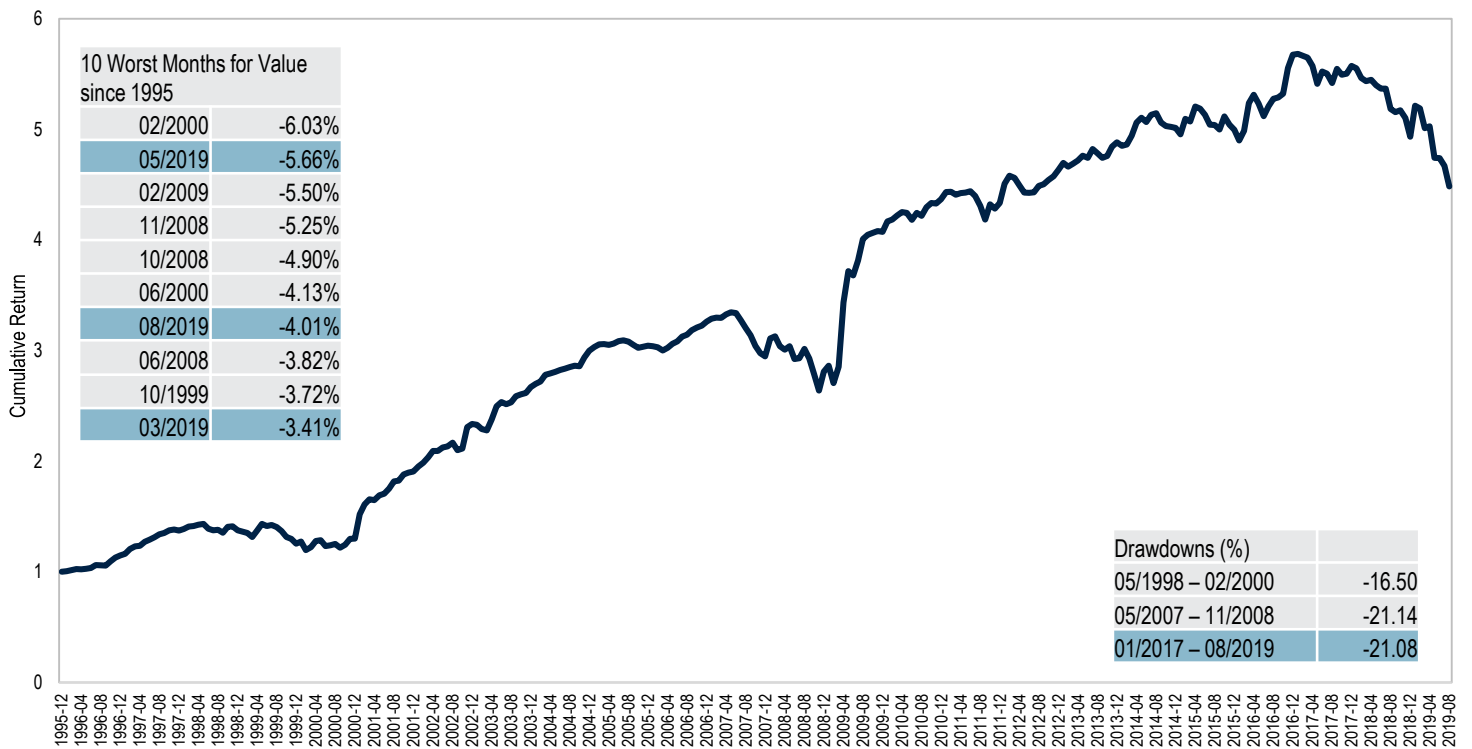
Figure 1: Monthly Returns to Value
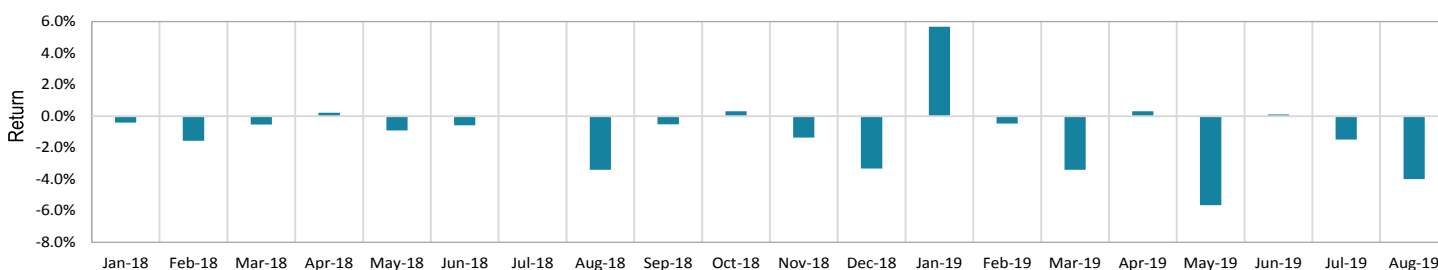
Source: QMA, FactSet, FTSE Russell. Universe = Russell 3000® Index. As of 8/31/2019.

Aside from the extreme underperformance seen in March, May and August 2019, the broader episode of value underperformance also parallels the Tech Bubble and GFC. Figure 2 shows the long-run cumulative performance of our value factors.[1] There have been three main episodes of value underperformance. The drawdown seen in the Tech Bubble was -16.50%. During the GFC, the drawdown was -21.14%. Currently the drawdown is -21.08! This may be an unexpected result to investors. Markets do not feel as frothy as the Tech Bubble, nor as overwhelmed with systemic concerns as in the GFC. However, the relative dislocations today are comparable with both episodes.

[1] Using the QMA composite value factor, we compute factor spread returns on a monthly basis. Specifically, each month the universe is sorted into thirds. The top third represents the stocks with factor attributes expected to produce the highest return in the future, and the lowest third the stocks with factor attributes expected to produce the lowest return in the future. The equal weighted return of stocks in each tercile is computed. The spread return is the difference in return between tercile 1 and tercile 3. We then cumulate the value factor spread through time.

Figure 2: Long-Run Value Performance

10 Worst Months for Value since 1995	
02/2000	-6.03%
05/2019	-5.66%
02/2009	-5.50%
11/2008	-5.25%
10/2008	-4.90%
06/2000	-4.13%
08/2019	-4.01%
06/2008	-3.82%
10/1999	-3.72%
03/2019	-3.41%

Drawdowns (%)	
05/1998 – 02/2000	-16.50
05/2007 – 11/2008	-21.14
01/2017 – 08/2019	-21.08

Source: QMA, FactSet, FTSE Russell. Universe = Russell 3000® Index. As of 8/31/2019.

The current episode of value weakness is much more broadly based than the Tech Bubble or GFC, in which value weakness was largely concentrated within the technology or financial sectors. In Figures 3 and 4, we see that value factors have been broadly ineffective across the market capitalization spectrum.[2]

Figure 3: Factor Spread Returns (Universe = Russell 1000®)
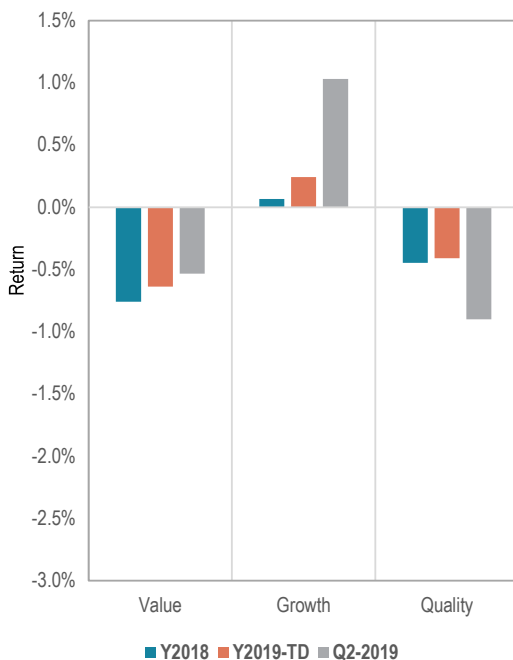
Figure 4: Factor Spread Returns (Universe = Russell 2000®)
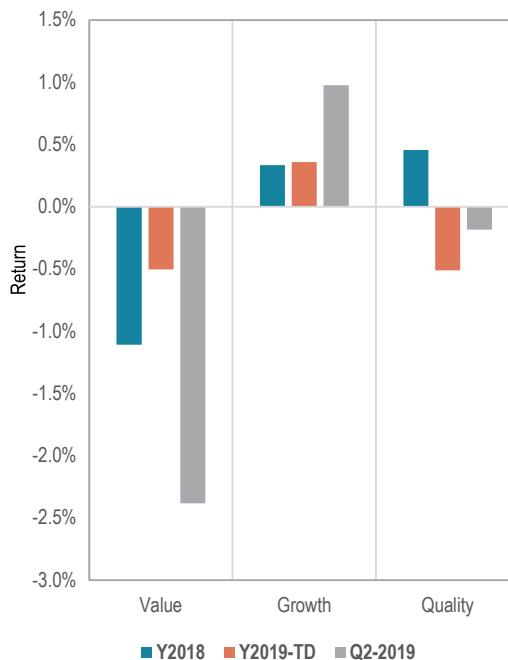
Source: QMA, FactSet, FTSE Russell. Index (Russell 1000® Index, Russell 2000® Index). As of 6/30/2019.

[2] Using the QMA composite value, growth and quality factors, we compute factor spread returns on a monthly basis. Specifically, each month the respective universe is sorted into thirds. The top third represents the stocks with factor attributes expected to produce the highest return in the future, and the lowest third the stocks with factor attributes expected to produce the lowest return in the future. The equal weighted return of stocks in each tercile is computed. The spread return is the difference in return between tercile 1 and tercile 3. In the charts we average the monthly spread return over the respective time periods shown.

Consistent with the previous observation, value factors have been ineffective across most sectors (see Figure 5).[3] Most recently, in the second quarter of 2019, value factors were ineffective in 10 of 11 sectors.

Figure 5: Value Returns by Sector
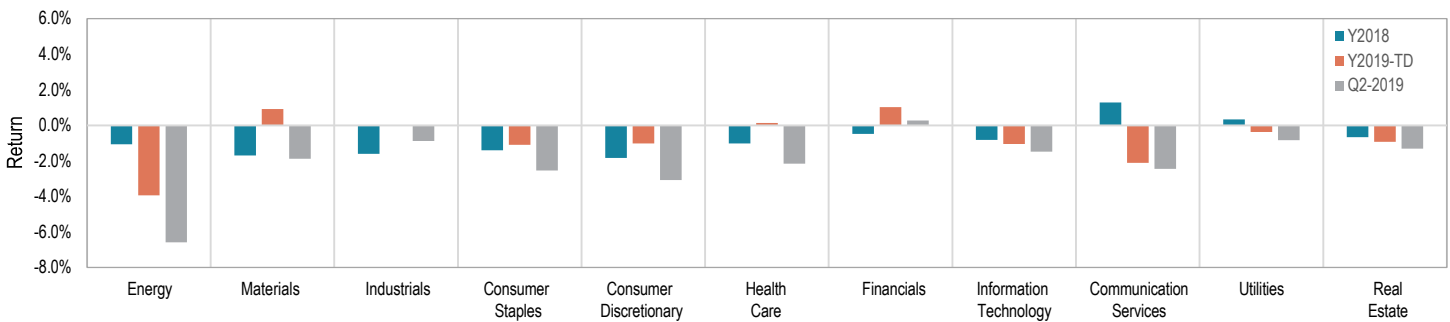
Source: QMA, FactSet, FTSE Russell. Universe = Russell 3000® Index. As of 6/30/2019.

A GROWING VALUE OPPORTUNITY

With value factor performance at extreme, even unjustified levels, the resulting market dislocations arguably represent the biggest investment opportunities of the last decade—if not the last 25 years!

Valuation spreads[4] support our reasoning, here. Wide differences in the valuations of cheap and expensive stocks suggest that stock prices have significantly deviated from fundamentals. We plot the raw valuation spread as percentile rankings in Figure 6, shown monthly over the last 25 years. It is clear that the valuation spread has, indeed, increased over the past year. It is now near the 90th percentile. The implication is that the expected returns to value are meaningfully above average.

Figure 6: Percent Ranking of Earnings/Price Spread of Russell 3000® Stocks
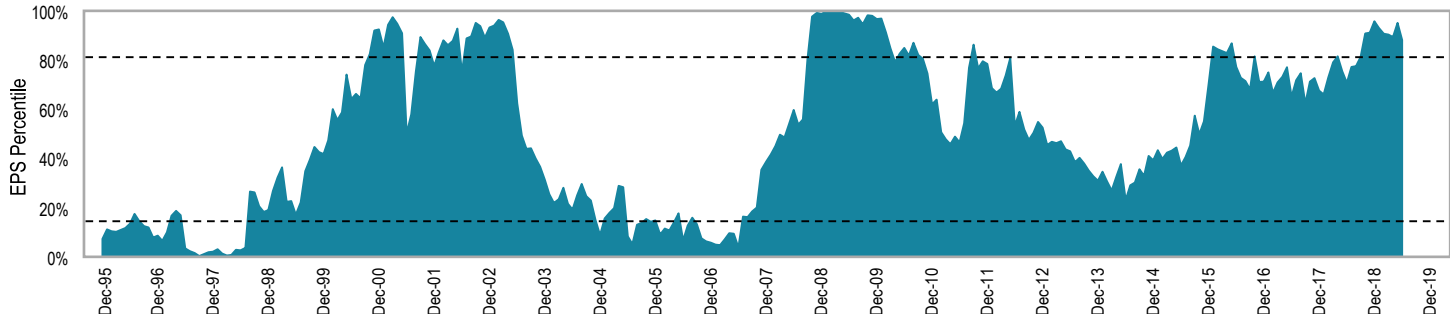
Source: QMA, FTSE Russell. Data from 12/31/1995 - 6/30/2019.

Figure 7: Value Factor Spread Returns by Year
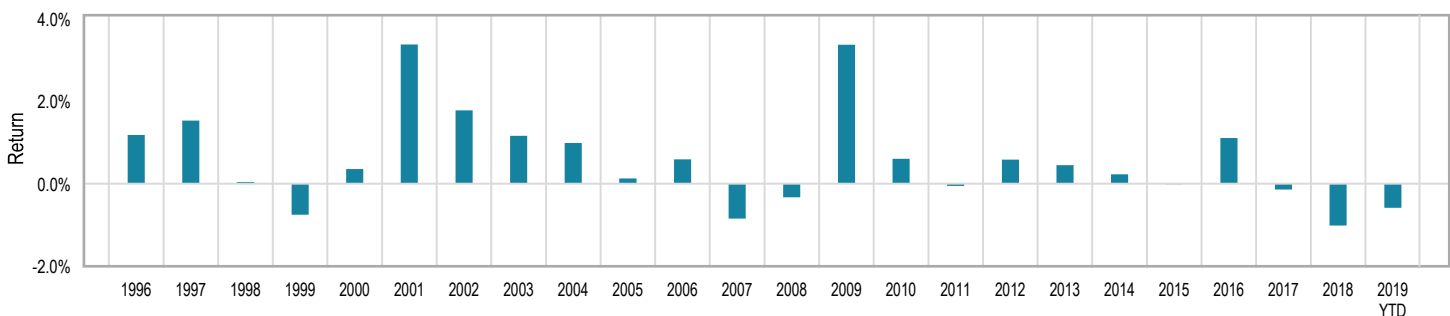
Source: QMA using data provided by FactSet. As of 6/30/2019. Data: average monthly spread returns are shown.

[3] Using the QMA composite value, growth and quality factors, we compute factor spread returns on a monthly basis. Specifically, each month the respective universe is sorted into thirds. The top third represents the stocks with factor attributes expected to produce the highest return in the future, and the lowest third the stocks with factor attributes expected to produce the lowest return in the future. The equal weighted return of stocks in each tercile is computed. The spread return is the difference in return between tercile 1 and tercile 3. In the charts we average the monthly spread return over the respective time periods shown.
[4] The difference in valuations, as measured by earnings yield, between the cheapest and most expensive stocks.

Historically, when the valuation spread is stretched, value factors have paid off handsomely. Figure 7 shows the average monthly value factor returns on a calendar year basis. Large payoffs in 2001 and 2009 correspond to periods following significant dislocations. Recall that May 2019 was the second-worst month for value since 1996. The worst month was February 2000, and the third-worst was February 2009 (lining up with episodes of wide valuation spreads). Following these extreme months in 2000 and 2009, the return to value over the next 12 months was +34% and +54%, respectively. While history does not necessarily repeat, there is evidence that significant outperformance follows large factor underperformance as fundamentals and valuations revert to more normal levels.

Even when we look at more general definitions of value, we find evidence of significant returns to value once dislocations correct in the market. We see the greatest similarities to today's value episode in the Tech Bubble. At the height of the Tech Bubble, the geometric return differential between the Russell 1000® Value Index and the Russell 1000® Growth Index was -17% in 1998 and -19% in 1999. But performance completely reversed over the following three years, as the bubble imploded. The geometric return differential between the Russell 1000® Value Index and the Russell 1000® Growth Index was +38% in 2000, +19% in 2001 and +17% in 2002. Since the beginning of 2017 through June of this year, the Russell 1000® Value Index again underperformed the Russell 1000® Growth Index, this time by a cumulative +35% (and by +38% through mid-August).

Figure 8: Russell 1000® Value Index vs. Russell 1000® Growth Index
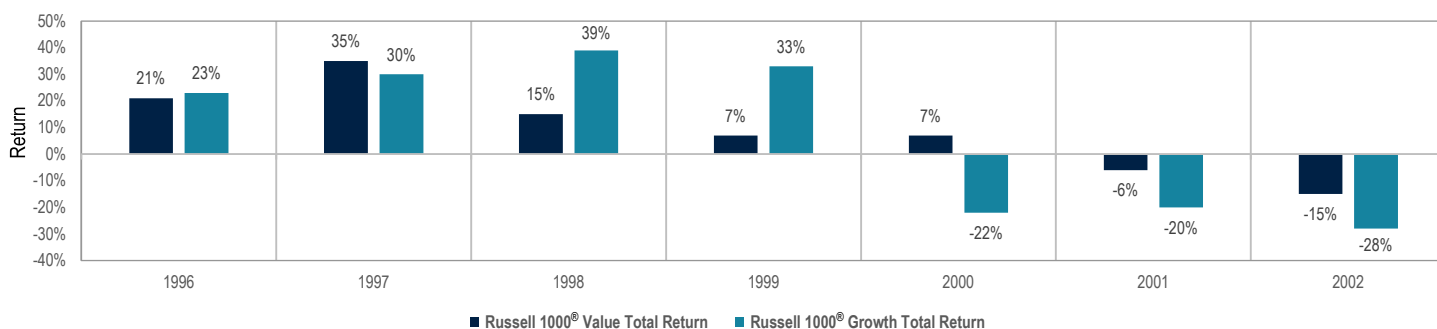
Source: QMA, FTSE Russell. As of 12/31/2002.

Using value factors from Citi based on the MSCI USA Index universe (see Figure 9), we show that value factors in 1998 and 1999 went from producing roughly -20% to delivering a +60% return in 2000 and 2001. Pricing corrections more than compensated for the initial journey away from fundamentals.

Figure 9: Value Factor Performance Within the MSCI USA Index Universe
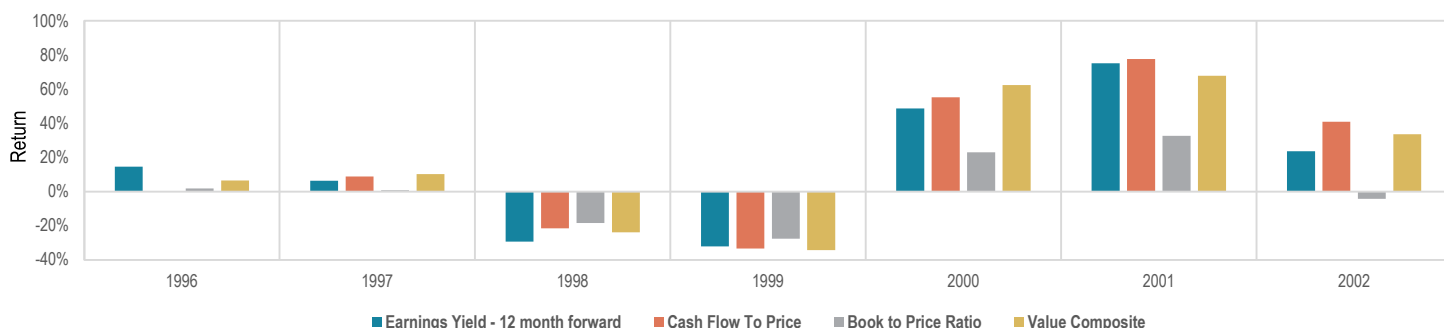

Source: QMA, Citi, MSCI. As of 12/31/2002. Equal-weighted excess returns based on long-short quintile spreads (long top quintile, short bottom quintile).

QMA's adaptive processes help us exploit such expected returns to value. Our models adapt to the market environment and the amount of value available. When opportunities in value are abundant (e.g., the value spread is wide) we look to increase our value exposure, while we simultaneously decrease the weights we place on growth factors.

Figure 10 shows the returns to three simple factor groups across the valuation spread. When the valuation spread is wide, the returns to a deeper value factor (earnings/price plus book/price) are stronger than earnings/price or an earnings/price factor blended with a growth factor (e.g., estimate revisions). In contrast, when the valuation spread is narrow (i.e., fewer value opportunities are available), the return to the earnings/price factor blended with a growth factor is superior. In this environment, dedicated value factors are less effective. Our portfolios are currently well positioned with increased exposure to value factors.

Figure 10: Factor Returns and Valuation Spread Levels

Average Monthly Long/Short Returns for Russell 1000® Stocks
1/1996 – 6/2019
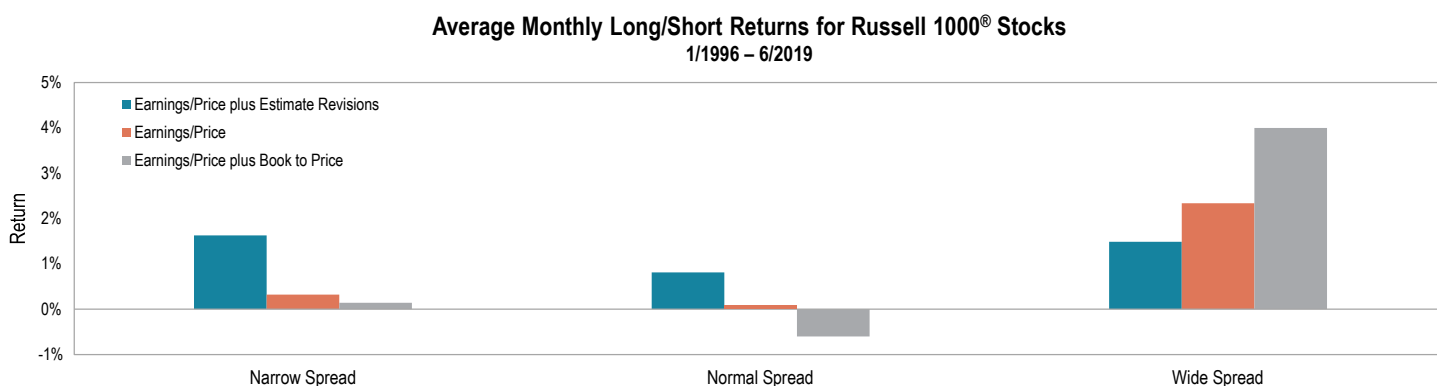
Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

As we look to exploit fundamental dislocations, we do not try to time the market. When value corrects, such a correction can be dramatic. To illustrate the impact of explosive returns, and the potential cost in mistiming value investing, we look at long-run returns to a generic value factor across various geographic regions (Figure 11). We exclude the best 12 months of value performance in each region. We set value to zero in each of these months. The impact of missing the best 12 months of value performance is clear. Discipline is key. Timing a correction is difficult. Recognizing that there are significant dislocations and positioning for a correction may be the most effective way to perform in the long run.

Figure 11: Global Value Performance (With and Without 12 Best Months)
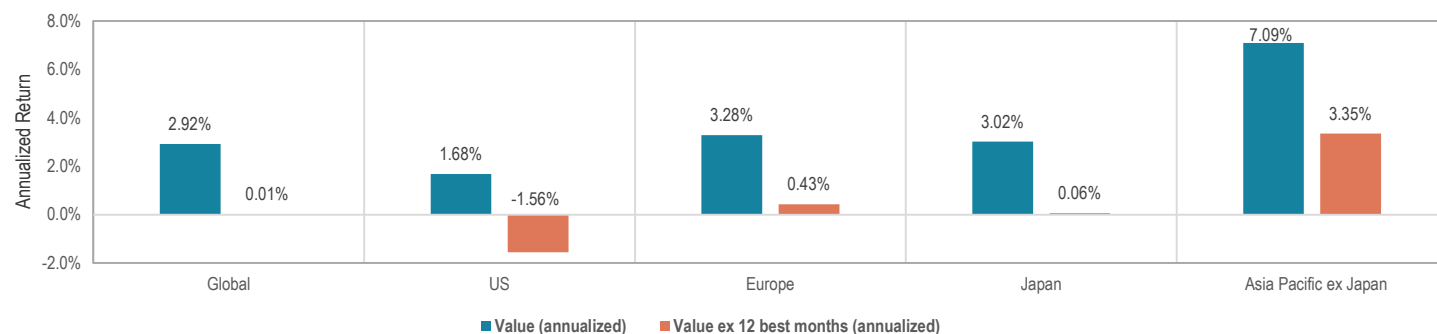
Source: QMA, Fama-French Data Library. As of 4/30/2019.
The chart uses HML factor from Fama-French. Data from January 1990 - April 2019.

DRIVERS OF VALUE PERFORMANCE

When the value of a stock goes down, investment managers need to weigh whether the stock itself is mispriced, or whether the market has knowledge of future fundamentals that have not yet been factored into their own valuation. If fundamentals are likely to deteriorate, current prices may already reflect these weaker fundamentals. In other words, such cheap prices may actually be a trap. Is the current situation a value trap?

To address this concern, we conducted research into the drivers of value factor performance. We decomposed the returns to value into two components: multiple expansion (e.g., changes in the price-to-forward earnings ratio over a specified time period) and changes in fundamentals (as measured by forecasted earnings growth). If the market knows something we do not, we would expect to see value returns being driven by changes in fundamentals. However, if returns are driven by multiple change, then investor overreaction is a more likely explanation.

We performed this return decomposition for all constituents of the Russell 1000® Index universe, using data going back to 1996 for longer-run perspectives on the drivers of value and for what could be considered normal returns. (See Appendix for details). The examination period for returns, multiples and earnings was one-month, three-months and 12-months ahead. For instance, for a portfolio formed as of December 31, 2017, we computed the return over the next 12 months. Over this same time period, we looked at the changes in the price-earnings ratio and the levels of expected earnings growth. For ease of understanding, in charts and figures we provide date labels corresponding to the end of the measurement period (e.g., December 31, 2018).

# ESTABLISHING A BASELINE FOR NORMAL VALUE BEHAVIOR

Before examining the drivers of value today, and determining whether or not current value opportunities are actually a trap, we need to establish a point of reference. What is normal "behavior" for value?

Intuitively, one would expect that multiple expansion is the primary return driver for stocks trading at a discount: a correction to investors overreacting to dramatic news. When the overreaction corrects, prices will correct—leading to multiple expansion. However, expensive stocks are already trading at higher multiples, due to expectations of stronger earnings growth in the future. As growth materializes, multiples begin to moderate, dampening the performance of expensive stocks.

Figure 12 plots the rolling 12-month return for the cheapest[5] stocks in the Russell 1000® Index, along with the corresponding changes in price-earnings ratio and forecasted earnings. The results show that over this 20-year period, the cheapest stock returns have primarily been driven by multiple expansion from depressed levels. While there are signs that earnings deteriorate for cheaper stocks, such multiple expansion suggests that the deterioration is not nearly as severe as what the market was expecting.

Returns for expensive companies (see Figure 13) are primarily driven by growth in earnings expectations. Multiples typically contract from elevated levels, as actual growth fails to meet overly optimistic market expectations.

Figure 12: Long-Run Return Drivers of Cheap Stocks (Russell 1000® Index)
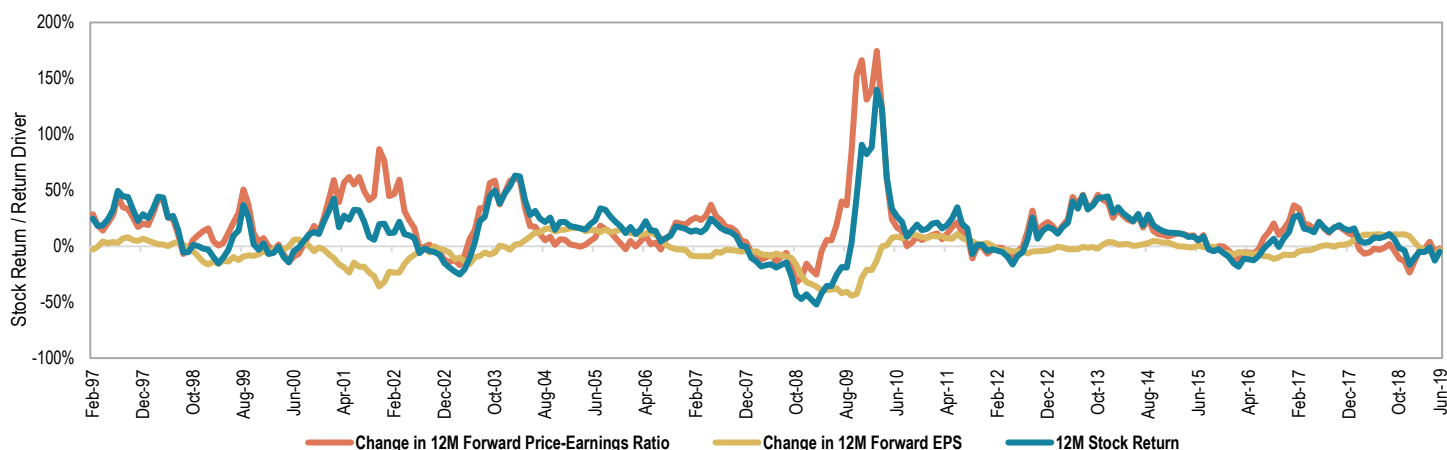
Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

Figure 13: Long-Run Return Drivers of Expensive Stocks (Russell 1000® Index)
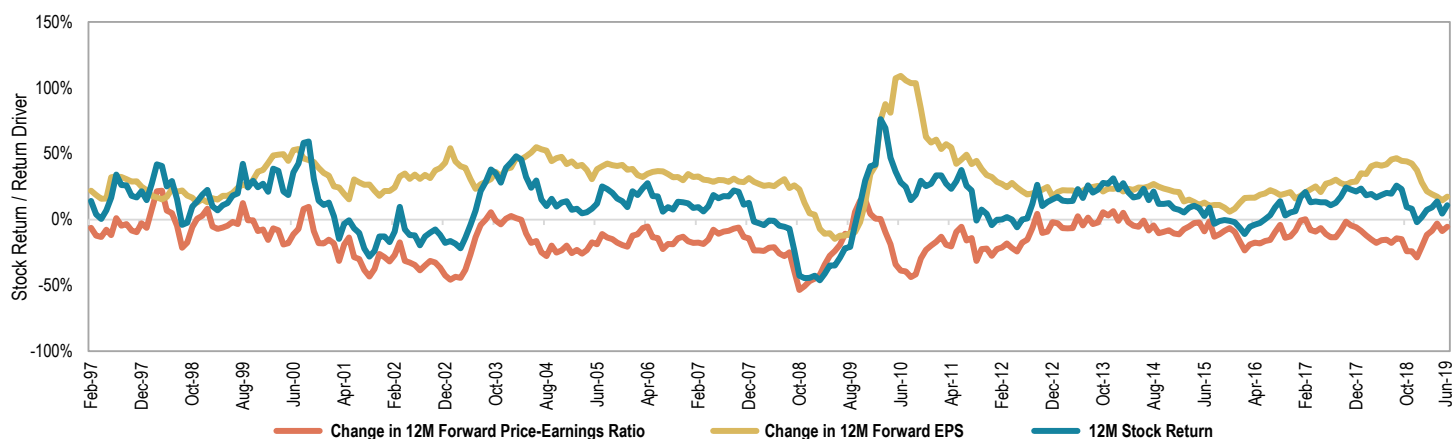
Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

[5] Each month, data was split into quintiles based on sector-neutral Forward Earnings Yield. The quintile containing the highest earnings yield stocks was classified as cheap; the quintile containing the lowest earning yield stocks was classified as expensive.

Table 1 decomposes one-month returns, looking at performance drivers for both cheap and expensive stocks. It reveals a similar result. In the long run (from Jan 1996–June 2019) cheap stocks generated a monthly return of +0.78%. The underlying return drivers show that the change in EPS returned -1.49%. Cheap stocks experienced a weakening of fundamentals. However, changes in price-earnings ratios contributed +2.30%. While fundamentals weakened, the weakness was not as severe as the market was expecting, resulting in a positive surprise and multiple expansion. In contrast, expensive stocks generated a return of +0.60%, trailing the performance of cheap stocks. The underlying return drivers show that the change in EPS contributed +3.11%. Expensive stocks delivered stronger earnings growth, consistent with their elevated valuations. However, the earnings growth was less than the market expected, resulting in a re-rating of price-earnings multiples, with price-earnings ratios declining -2.44% and overall performance of expensive stocks trailing cheap stocks.

Table 1: Long-Run Value Factor Return Decomposition (Russell 1000® Index)

Benchmark Russell 1000®	Cheap			Expensive		
Period 1 month	Change in Price-Earnings Ratio	Change in EPS	Stock Return	Change in Price-Earnings Ratio	Change in EPS	Stock Return
1996-2019/06	2.30%	-1.49%	0.78%	-2.44%	3.11%	0.60%
1996-2006	2.72%	-1.50%	1.18%	-2.43%	3.09%	0.59%
2000-2007	2.52%	-1.45%	1.03%	-3.16%	3.49%	0.22%
2008-2009	5.24%	-5.51%	-0.56%	-4.37%	3.80%	-0.73%
2010-2015	1.58%	-0.64%	0.93%	-2.13%	3.01%	0.81%
2016-2019/06	1.05%	-0.63%	0.42%	-1.96%	3.06%	1.05%

Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

This long-term perspective gives us a solid point of reference for our current situation. Which leads us to our next research query: have multiples lately continued to drive cheap stock returns?

CURRENT DRIVERS OF VALUE: A TRAP OR OPPORTUNITY?

Our analysis has shown that value is on the brink of an extraordinary bounce-back. To confirm that cheap stocks are, in fact, tremendous investment prospects rather than a trap, we examined the performance drivers for cheap stocks. In recent years (see Figures 14 and 15 and Table 2), multiples have meaningfully contracted for cheap stocks. This is quite different from historical value behavior. Recent earnings have held up better than they did in the past, but the market has been less willing to reward them. Investors are concerned about the sustainability, quality or riskiness of the earnings. This provides support for our view that increased risk aversion, or overreaction to macro/earnings uncertainties, is driving value weakness.

Figure 14: Recent Return Drivers of Cheap Stocks (Russell 1000® Index)
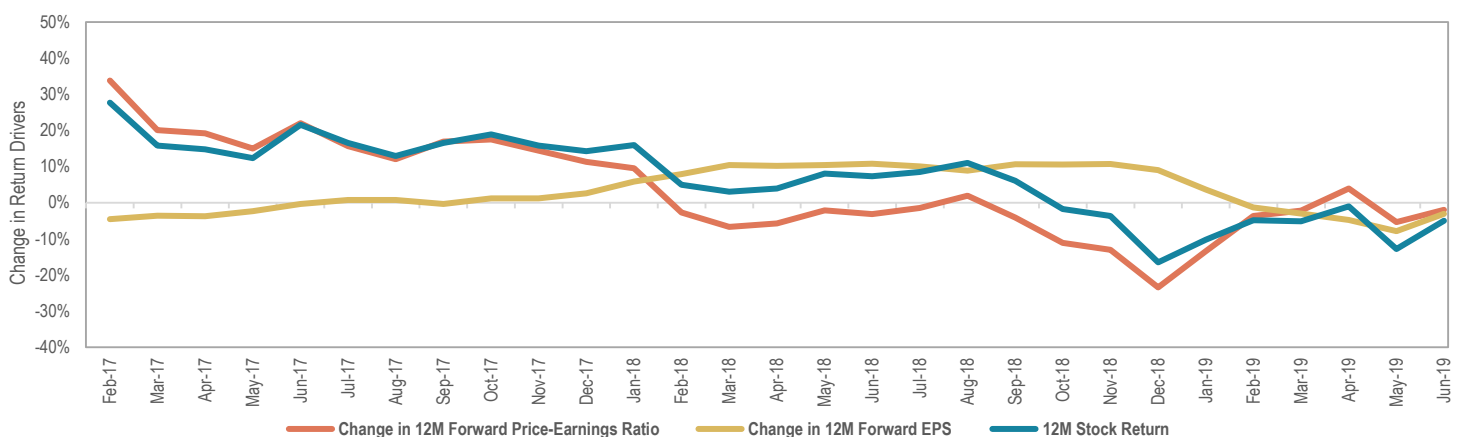
Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

Figure 15: Recent Return Drivers of Expensive Stocks (Russell 1000® Index)
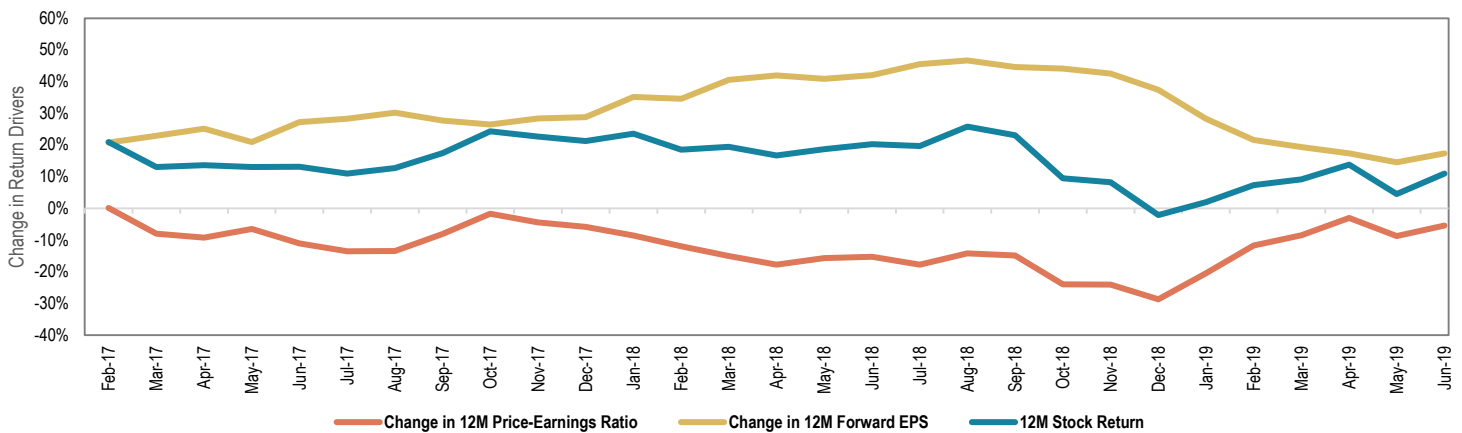
Source: QMA, FactSet, FTSE Russell and IBES. As of 6/30/2019.

Table 2 decomposes one-month returns over the last three calendar years and the first half of 2019. The results are even more striking.

In 2018, the change in performance drivers for cheap stocks is evident. The change in price-earnings multiples was negative (-2.13%) in 2018, which contrasts with the long-run expansion in multiples seen for cheap stocks (+2.53% for the time period 1996—2015). At the same time, EPS growth was positive in 2018 (+0.32%)! This is not consistent with the view that value stocks are currently value traps. Value traps are normally accompanied by significant declines in fundamentals (i.e., they are cheap for a reason). When EPS growth is positive, which is actually quite rare for cheap stocks, and multiples are contracting, all signs point to elevated risk concerns and an overreaction by the market.

Even realized negative fundamental growth (as seen in 2019) does not support value being a trap. Cheap stocks are largely expected to deliver weaker earnings. Remember that the market tends to extrapolate bad news. Past bad news is expected to continue to compound in the future—something closer to a catastrophe for these stocks. When cheap stocks deliver negative fundamental growth—growth that is just "bad," not a full-on catastrophe—the market will be pleasantly surprised, re-rating the stock (with multiple expansion evident). In this context, the negative fundamental growth seen in 2019 (-1.43%) is comparable to the long-run average (-1.64%). Changes in multiples have contributed positively to cheap stocks' performance in 2019. This was driven more by a bounce-back in January with multiples again contracting in March. The changes in fundamentals seen for cheap stocks in 2019 is comparable to what we have seen in the past. There does not appear to be evidence of a catastrophic outcome for cheap stocks. Instead, once more, signs of overreaction by the market are evident.

Interestingly, we also see evidence of expensive stocks getting more expensive in 2019. Their multiples are expanding, as well. This is rare for expensive stocks, with fundamental growth below the long-run average. During the first half of 2019, expensive stocks experienced meaningful multiple expansion (+1.20%) which contrasts with typical long-term multiple contraction (-2.53%). At the same time, fundamental growth was less positive (+2.24%) compared to more meaningful growth seen in the long run (+3.13%). Despite expensive stocks' disappointing delivery on expected fundamental growth, the market still bid up their price. While risk concerns have contributed to overreaction on the downside, there also appears to be a clear dislocation on the upside among expensive stocks, as the market chases what could best be described as speculative growth.

Table 2: Decomposition of Recent Value Factor Returns (Russell 1000® Index)

Benchmark Russell 1000®	Cheap			Expensive		
Period 1 months	Change in Price-Earnings Ratio	Change in EPS	Stock Return	Change in Price-Earnings Ratio	Change in EPS	Stock Return
1996-2015	2.53%	-1.64%	0.85%	-2.53%	3.13%	0.52%
2016	2.42%	-1.27%	1.12%	-2.21%	2.88%	0.62%
2017	1.46%	-0.54%	0.92%	-1.29%	2.90%	1.57%
2018	-2.13%	0.32%	-1.81%	-3.78%	3.71%	-0.21%
2019 (6 months)	4.04%	-1.43%	2.55%	1.20%	2.24%	3.47%

This analysis highlights a unique disconnect between price and fundamentals. What we have seen then is price action, and negligible fundamental action. To reinforce this disconnect, we look at interactions between our value factor and quality factor (which provides a proxy for fundamentals). Figure 16 shows results for the Russell 1000® Index and Figure 17 for the Russell 2000® Index. While expensive stocks have, on average, outperformed across the market capitalization spectrum, low quality expensive stocks have been the strongest performers in 2019.

Value deterioration, both on an absolute and relative basis, continues to drive performance. Earnings and earnings expectations for the most attractively valued, high quality stocks have held up better than the historical norm. Earnings yields have widened considerably, both in absolute terms and relative to their broad market benchmarks. For example, at the end of 2017, the average earnings yield (the inverse of P/E) of cheap, high quality stocks in the Russell 1000® Index was 6.1%, as compared to 4.6% for the index. By the middle of 2019, the earnings yield of cheap, high quality stocks had expanded by over 36%, to 8.3%, while the yield for the index only expanded by 12% to 5.2%. In fundamental terms, a $1,000 investment in cheap, high quality stocks during that time period would have increased earnings purchased from $61 to $83—an earnings increase of more than a third. A similar expansion took place within the Russell 2000® Index, as the earnings yield of cheap-high quality stocks expanded by over 38% vs. 22% for the index as a whole. This extreme widening of the relative earnings yields has been driven by the extreme divergence of price performance over the last eighteen months.

Figure 16: Value and Quality Factor Interactions (Universe = Russell 1000®)
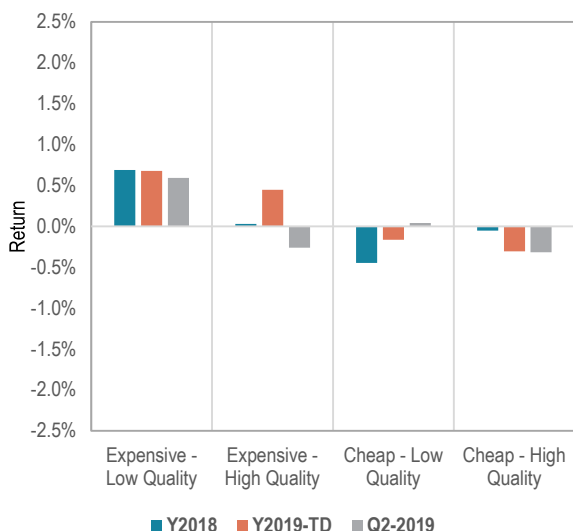
Figure 17: Value and Quality Factor Interactions (Universe = Russell 2000®)
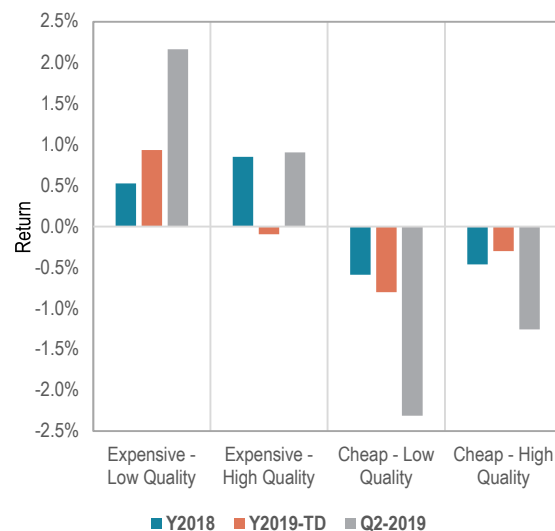
SUPPORT FROM THE INSIDE

Actions of company management and boards of directors can also shed light on whether or not prices are reflecting fundamentals, as they are in a unique position to gauge the current and future fundamental strength of their companies. We look at the relation between the trading activity in their own stock,[6] as well as valuation metrics for their stock. If company management and boards of directors see significant value in their stock, we can be more confident in our identification of value opportunities.

Figure 18 shows the monthly cross-sectional correlation of management and director trading activity with earnings yield. The correlation is now at a maximum in the time we have data available. As of June 30, 2019, the correlation between corporate insider activity and earnings yield was more than two standard deviations above the average. Corporate insiders seem to agree with us that there are meaningful value opportunities available.

Figure 18: Correlation between Corporate Insider Activity and Stock Valuation
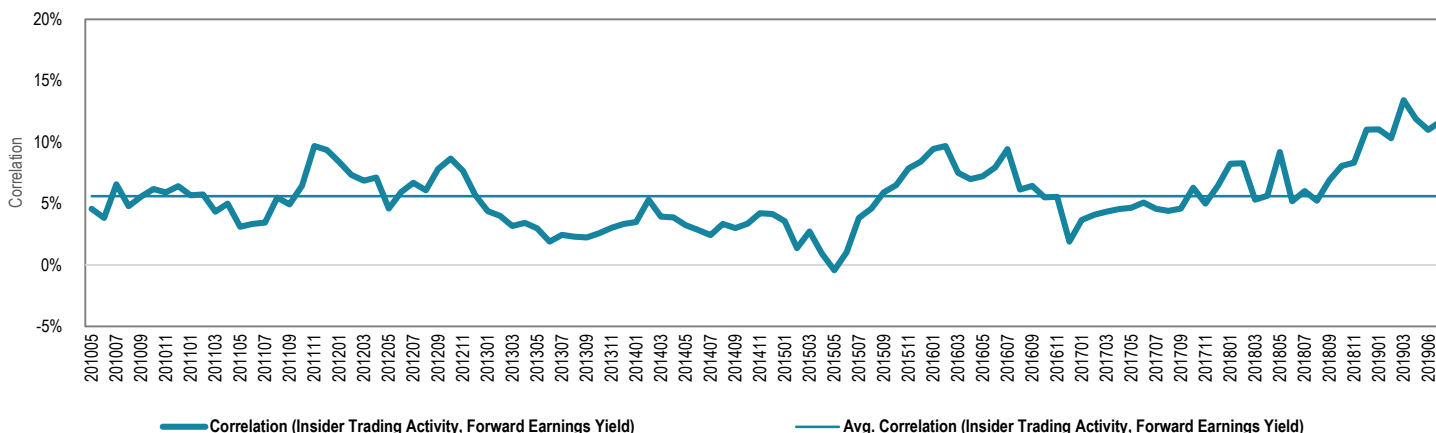
Source: QMA, FactSet, Washington Service. As of 6/30/2019.

CATALYSTS FOR A VALUE REBOUND

We see significant opportunities to benefit from pricing dislocations. What, then, could cause a correction in the fortunes of cheap value stocks? Among other possibilities, we believe that the following catalysts could contribute to a rebound in value:

1. Less policy uncertainty
    -   This would reduce concerns stemming from trade-related issues and investor aversion to cheaper economically sensitive stocks.
    -   Reduced policy uncertainty would also give corporations more confidence to invest in R&D/CAPEX, contributing to a reduction of takeover sentiment in the market.

2. A sustained reacceleration of global growth or a full-blown recession
    -   Acceleration of global growth would contribute to investors' preferences likely shifting towards cheaper economically sensitive stocks. Scarce growth stocks would likely suffer as growth becomes more abundant. With accelerating growth, conditions would also be more favorable for a normalization of interest rates (i.e., the favorable monetary conditions for growth stocks would weaken).
    -   Alternately, a full-blown recession would likely bring about a reality check in growth stocks. Cheap, economically sensitive stocks are largely priced for an expected recession. As such, an actual recession would likely have less impact on cheap stocks.

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[6] Company management and directors disclose their trading activity on Form 4, which is subsequently filed with the Securities and Exchange Commission. QMA uses data from these filings. The universe is the Russell 3000® Index.

3. Regulations that foster competition
    - Regulations would contribute to the market realization that the growth of disruptive innovators is not sustainable; they have been benefiting from monopolistic conditions. Regulations would likely change sentiment to the broader space of disruptive innovators, allowing investors to realize traditional businesses are not facing an existential threat.

A rebound in value could also stem from something as simple as a single growth stock having a significant earnings miss, leading investors to reevaluate the whole space (e.g., Netflix?). It could also occur as investors finally acknowledge and begin to trust the earnings yield differential.

As previously noted, we do not speculate on the timing of any potential catalysts. Timing value can be a costly endeavor. We believe that maintaining our exposure to value is the best approach, and that we are prepared to benefit once a catalyst arises.

CONCLUSION

Weak value underperformance over the last 18 months is comparable to the Tech Bubble and the GFC. A sharp reversal of value performance followed each of those two previous events. We also expect outperformance to follow the current period of underperformance as valuations revert to more normal levels. To confirm that this environment is not a value trap, we analyzed the drivers of recent value underperformance. In the last 18 months, fundamental earnings have remained stable, while pricing deteriorated. This is the opposite of a value trap environment. Corporate insiders, too, seem to agree that there are meaningful value opportunities available, as they see significant value in their own stock. Among other catalysts, we believe that macro changes such as global growth, recession, policy stability and regulations that foster competition could contribute to a rebound in value. Our adaptive investment processes naturally tilt to value in conditions like these, so we are well-positioned to gain from the impending rally.

APPENDIX

The return decomposition is straightforward, mathematically:

(i) $Price\ Return\ PR = \frac{(P_{t+1} - P_t)}{P_t}$ $\qquad Log\ Return = \ln\left(\frac{P_{t+1}}{P_t}\right) = \ln(P_{t+1}) - \ln(P_t)$

(ii) $P = P * \frac{E}{E} = \frac{P}{E} * E$

(iii) $Log\ Return = \ln\left(\left(\frac{P_{t+1}}{E_{t+1}}\right) * E_{t+1}\right) - \ln\left(\left(\frac{P_t}{E_t}\right) * E_t\right) = \ln\left(\frac{P_{t+1}}{E_{t+1}}\right) - \ln\left(\frac{P_t}{E_t}\right) + \ln(E_{t+1}) - \ln(E_t)$

(iv) $Log\ Return = Changes\ in \log Multiple + Changes\ in \log Earnings$

Multiple Expansion	Earnings Growth

Notes to Disclosure