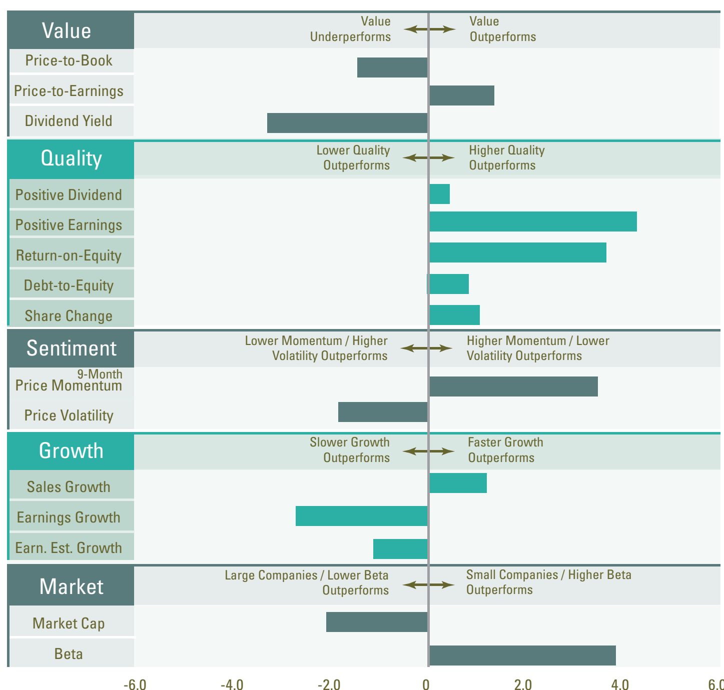
Quantitative Review of U.S. Equities

Fourth Quarter 2017

- With another quarter of strong returns, U.S. equities finished 2017 with significant gains. The S&P 500 was up 21.8% for the year and rose 52.0% from its recent low in February 2016. Large-cap stocks and growth stocks dominated both the fourth quarter and the year. The Russell 1000 Growth index returned 30.2% in 2017 while the Russell 2000 Value Index only achieved a 7.8% gain.
- Value factors lagged for the quarter and the year within most Russell domestic indices while growth factors performed well in 2017, though their results were more mixed in the last quarter.
- Smaller caps did poorly in both the quarter and year, with the smallest large-cap stocks particularly lagging the largest stocks, which were led higher by such mega-cap standouts as Apple, Alphabet, Amazon, Microsoft, and Facebook.
- Quality factors, which can be defensive, generally performed very well in the fourth quarter and the year. More consistent with the historical pattern in bull markets, higher volatility and higher beta stocks performed better in both periods as did stocks with strong price momentum.
- The U.S. 10-year Treasury note fell slightly, but the 2-year Treasury rate moved sharply higher as the Federal Reserve (Fed) raised the fed funds target rate three times in 2017. As a result, higher-yielding stocks were some of the worst performers among U.S. equities.
- The major fourth quarter policy event was the passage of significant revisions to the U.S. tax code, particularly for corporations. We look briefly at how certain provisions might impact publicly traded companies.

Figure 1 Broad Market U.S. Equity Factor Returns
QTD; % Return Difference between Factor's[1] High and Low Quartile; Russell 1000 Index



As of 12/31/2017; Source: Brandywine Global, FactSet, FTSE Russell

A NOTE FROM BRANDYWINE GLOBAL'S DIVERSIFIED EQUITY TEAM

This paper is the quarterly report by Brandywine Global's Diversified Equity team on quantitative factors impacting the U.S. equity markets. In each publication, we will provide a standardized report on factor behavior for the quarterly and year-to-date periods. In addition, we will provide brief comments highlighting important and interesting trends in factor behavior and discuss recent work we are engaged in to better understand these trends. Understanding market performance through the unique lens of factor returns often brings early illumination to equity opportunities as well as areas of risk concentration. We use a longer-term perspective on the behavior of various factor returns to develop Diversified Equity strategies at Brandywine Global.

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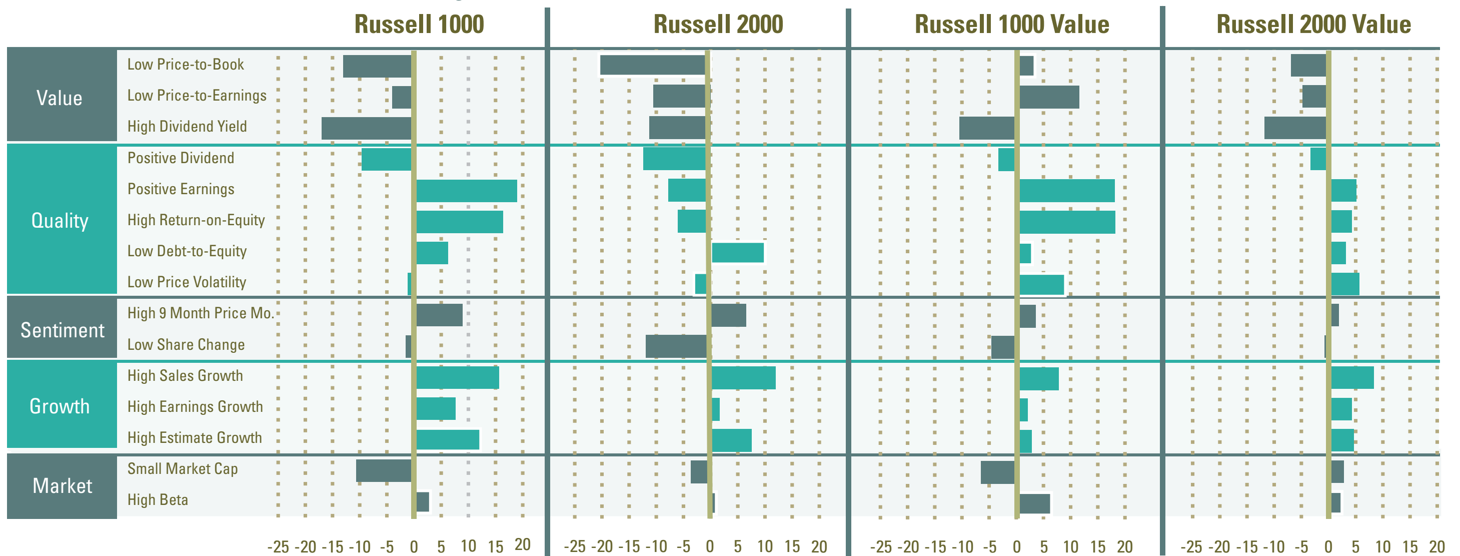
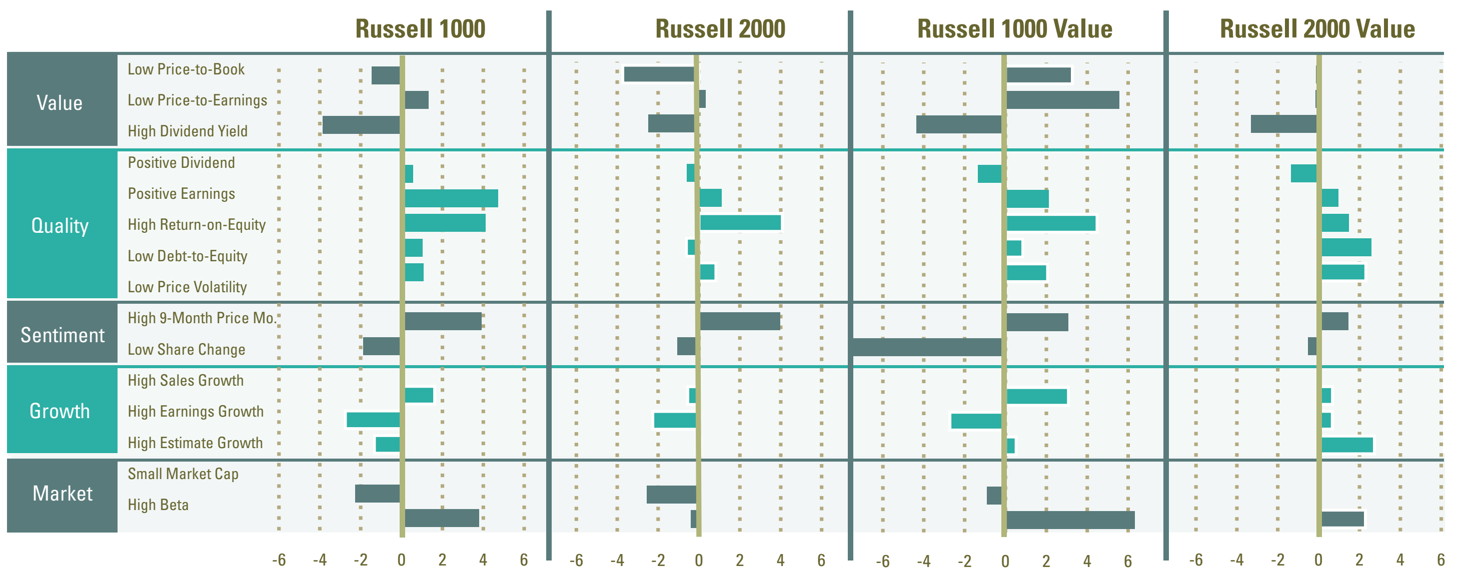
Figure 2 U.S. Equity Factor Returns
YTD; % Return Difference between Factor's[1] High and Low Quartile



Last 3 Months; % Return Difference between Factor's[1] High and Low Quartile



As of 12/31/2017; Source: Brandywine Global, FactSet, FTSE Russell

FOURTH QUARTER 2017 FACTOR RETURNS

The U.S. equity markets have experienced a steady rise since November 2016 with relatively little return volatility. We suspect these strong returns are the result of investors' anticipation of increased economic growth, resulting from the new presidential administration's policies. One such significant new policy, corporate tax and individual tax reform, was enacted late in the year. Based on stock and factor performance, the expected beneficiaries from better economic growth changed at the start of 2017. Immediately following last November's election, companies with more attractive valuations, based on either low P/E or low P/B, outperformed while stocks with positive growth characteristics, such as high sales, earnings, or expected earnings growth, lagged the market. Smaller caps also did well in the fourth quarter of 2016—the Russell 2000 Value index gained 14.1% while the Russell 1000 Growth Index managed only a 1.0% return. Such a performance pattern is not unusual early in an anticipated recovery as the most undervalued and smallest companies often outperform in that part of the cycle. While the market continued its steady rise in 2017, many factors completely reversed their performance pattern relative to the fourth quarter of 2016. Higher-valuation stocks and strong growth

stocks were now the best performers and larger stocks did better than small-cap stocks. This factor performance reversal is evident in the returns for the Russell domestic equity indices in **Figure 3** with clear outperformance from the large-cap and growth benchmarks this year.

Figure 3
As of 12/31/2017

	Fourth Quarter 2016		2017	
	GROWTH	VALUE	GROWTH	VALUE
Russell 1000 Index	1.0%	6.7%	30.2%	13.7%
Russell Midcap Index	0.5%	5.5%	25.3%	13.3%
Russell 2000 Index	3.6%	14.1%	22.2%	7.8%
Russell Microcap Index	1.5%	16.3%	16.7%	11.1%

Source: FTSE Russell

The underperformance of value factors, including low P/B and low P/E, and the superior returns in the growth factors, such as high sales growth and high expected earnings growth, all contributed to growth indices outperforming value benchmarks. The significant differences in P/B positioning between the indices had the greatest impact on these returns. For instance, within large caps, 91.4% of the Russell 1000 Growth names have a P/B above the market median while only 28.1% of Russell 1000 Value stocks have such a high valuation. No other factor we review has such little overlap. The performance spread between the highest and lowest quartile on P/B was also among the largest of the quantitative factors at 1.4% in the quarter and 13.0% for the full year. Not surprising, the Russell 1000 Growth Index high P/B stocks were concentrated in consumer discretionary, for example Amazon and Netflix, and technology—Facebook, Google, Apple, Microsoft—and these prominent growth names produced very strong returns. Meanwhile, the lower P/B positioning in the Russell 1000 Value Index was driven by a much greater weight in financials, with its 20% return that couldn't keep pace with the 30.0% return from high P/B stocks, and energy, which significantly underperformed, despite the oil prices' fourth quarter rally.

The growth variables also contributed significantly to return differences between the growth and value indices. The return spread between the Russell 1000 Index's high and low sales growth quartiles was similar to the fourth quarter's spread for P/B and slightly higher than P/B for the year. However, index characteristics were not as differentiated for the growth variables as they were for low P/B. For instance, 60.5% of the Russell 1000 Growth stocks had sales growth above the market median while 36.2% of the Russell 1000 Value Index stocks had the higher sales growth. This a sizeable difference and it was driven in part by the same mega-cap growth names that led to the valuation differences. However, the gap is still much smaller than the difference for P/B, and as a result, the growth factors had a smaller contribution to the value and growth indices' return differences.

Within the Russell 1000 Index, dividend yield had a greater return spread between the high and low quartiles than low P/B for both the quarter and the year. The dividend yield impact on Russell index returns was smaller than the P/B effect because the dividend yield weighting was not as different between the growth and value indices. The U.S. 10-year Treasury yield actually fell four basis points in 2017, but the 2-year yield was up 70 basis points for the year, which hurt higher-dividend stocks. Sector contributors to low returns from high-dividend stocks included poor returns in energy, where some large oil and gas companies have maintained their dividends despite lower earnings and stock prices, as well as tobacco and beverage companies, which can lag in strong markets. Utilities and real estate investment trusts (REITs) also provided lower returns, suggesting that investors have reduced their focus on the yield producing benefits of these stocks. Investor interest may be switching from generating stable income to participating in the market's strength, particularly in the outsized returns from the large-cap growth names. Investors appear to be increasing their risk appetite as the memories of the financial crisis fade amid the excitement of the ongoing bull market.

Also somewhat surprising is the strong showing by the higher quality variables in 2017's bull market. Higher return-on-equity (ROE) does tend to be associated with growth stocks as 84.1% of the Russell 1000 Growth Index holdings have an ROE above the market median, compared with only 35.5% of the Russell 1000 Value Index stocks. However, the value index has a greater weighting in other quality measures such as low debt-to-equity, lower share change, and the proportion of stocks with positive earnings. All of these quality factors did well in 2017 and the fourth quarter, except for a few quality factors in the Russell 2000 Index. The greatest exception to this quality return trend was the strong performance from stocks without a dividend. However, this outcome is consistent with poor returns to higher-yielding stocks—this "no dividend group" is dominated by Amazon, Alphabet, Facebook, and Netflix.

These large growth stocks also are characterized by high price momentum, and they drove the excess returns to this variable. At the same time, the low momentum group included energy stocks, brick and mortar retailers, and struggling industrials, such as General Electric, which led to continued underperformance for low-momentum stocks.

Given the market's large returns in 2017, the outperformance by higher beta stocks was expected. We might anticipate a similar result for small caps, which tend to do better in up markets, but smaller caps lagged in 2017 as shown in **Figure 4**. The return differences between the Russell 1000 Index were not keyed by differences in sector weightings but instead by the lower returns within similar sectors. For instance, the Russell 1000 Index had a 22.2% weight technology, and that sector gained 38.5%. The Russell 2000 Index did have a lower weight at 17.4%, but the important difference was the 17.0% return for the smaller technology names. Among financials, the large-cap group returned 21.5% while the Russell 2000 Index financials gained only 6.3%. A similar return pattern held for eight of the 11 sectors. These return differences were not due to weaker growth characteristics for the smaller-cap stocks; for example, a higher proportion of technology stocks in the Russell 2000 Index had top quartile sales growth than in the Russell 1000 Index.

Figure 4
As of 12/31/2017

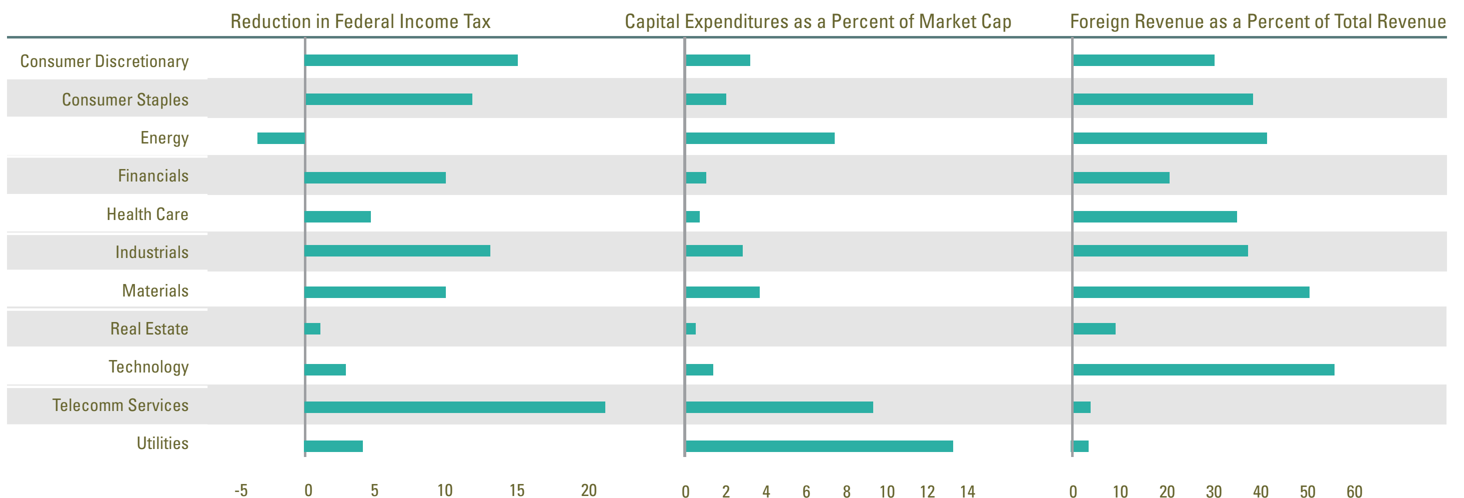
	Fourth Quarter	2017
Russell 1000 Index	6.6%	21.7%
Russell Midcap Index	6.1%	18.5%
Russell 2000 Index	3.3%	14.7%
Russell Microcap Index	1.8%	13.2%

Source: FTSE Russell

2017 CORPORATE TAX REFORM

The tax reform law approved in December made three key changes to corporate tax rules: 1) reduced the federal corporate tax rate from a 35% top marginal tax rate to a flat 21% rate, 2) increased the capital investments eligible for immediate expensing for tax purposes, and 3) moved to a territorial tax system where future foreign earnings for U.S. companies will not be taxed by the U.S., though all existing non-repatriated foreign earnings will be subject to a mandatory one-time 15.5% tax on cash and 8.0% on assets. Here, we take a broad sector look at how each of these changes may impact the operation of companies in the Russell 1000 Index. For the change in the overall corporate tax rate, we look at current tax rates paid as defined as the latest 12-month taxes divided by pre-tax income, to see where the tax burden will drop the most. We calculate average capital expenditures as a percent of latest 12-month revenue to identify which sectors will best take advantage of the accelerated depreciation. Finally, we look at the percent of sales outside the U.S. by sector to see which sectors may have the highest short-term tax bill as well as who will benefit from both an ability to repatriate existing foreign cash holdings and from a lower tax on all future foreign income. **Figure 5** provides the average results for each of these variables by sector.

Figure 5
As of 12/31/2017



Source: Brandywine Global, FactSet, FTSE Russell

These numbers seem broadly consistent with expectations. For instance, utilities have little foreign income and have large capital expenditures. Energy companies also have significant foreign sales but will see little benefit in the near future from lower corporate tax rates because their current profitability is low. Note that there are no strong correlations among these three measures, either on a sector or individual stock level. For instance, companies with high foreign sales do not tend to have current lower tax rates or higher capital expenditures.

To provide a quick analysis of market perception of the tax law's impact on corporation valuations, we regressed the December 2017 individual stocks returns for the Russell 1000 Index holdings against these three variables for each company. Only the percent of non-U.S. sales had a statistically significant relationship (T-statistic equal to 2.45) with the December returns: the higher the percent of revenues from outside the U.S., the weaker the sector's performance. The performance impact was relatively small as on average, a company with 50% of sales outside the U.S. underperformed a purely domestic company by just under 1.0%. Similar statistical significance does not exist in regressions on fourth quarter 2017 returns excluding December, which makes sense given that both the exact design of the reform and the probability of passage were highly uncertain until December. This simple analysis implies the market believes that the immediate liability of the mandatory 15.5% tax on un-repatriated foreign cash will have the most significant impact on corporate valuations. This cost is more important to those companies' valuations than the benefit from removing federal taxation of income earned outside the U.S. These results seem consistent with the claims that any short-term profitability gains from the tax reform will likely be competed away rather than providing a permanent boost to corporate margins. Under this view, competition within industries for market share and workers will force down prices and move up wages so that margins return to their prior levels and, therefore, stock prices receive no tax reform benefit. On the other hand, the one-time foreign cash tax payment looks to have a real, though small, negative impact on companies' market values.

[1]Factor returns represent return differences between top quartile (75%) and low quartile (25%) equities by each characteristic. **Market**: Market Capitalization and Market Beta (*Market Sensitivity Coefficient*); **Value**: Price-to-Earnings *(PE based on trailing 12-month operating earnings)*, Price-to-Book, Dividend Yield *(Among dividend-paying stocks)*; **Quality**: Positive Earnings *(Positive earnings stocks - Stocks with no earnings)*, Positive Dividend (Dividend-paying stocks - Stocks with no dividend), Share Change *(12-month change in shares outstanding)*, Return-on-Equity, Debt-to-Equity; **Sentiment**: Price Momentum *(9-month price change)*, Price Volatility, and **Growth**: Earnings Growth *(1-year earnings growth)*, Sales Growth *(1-year sales growth).*

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