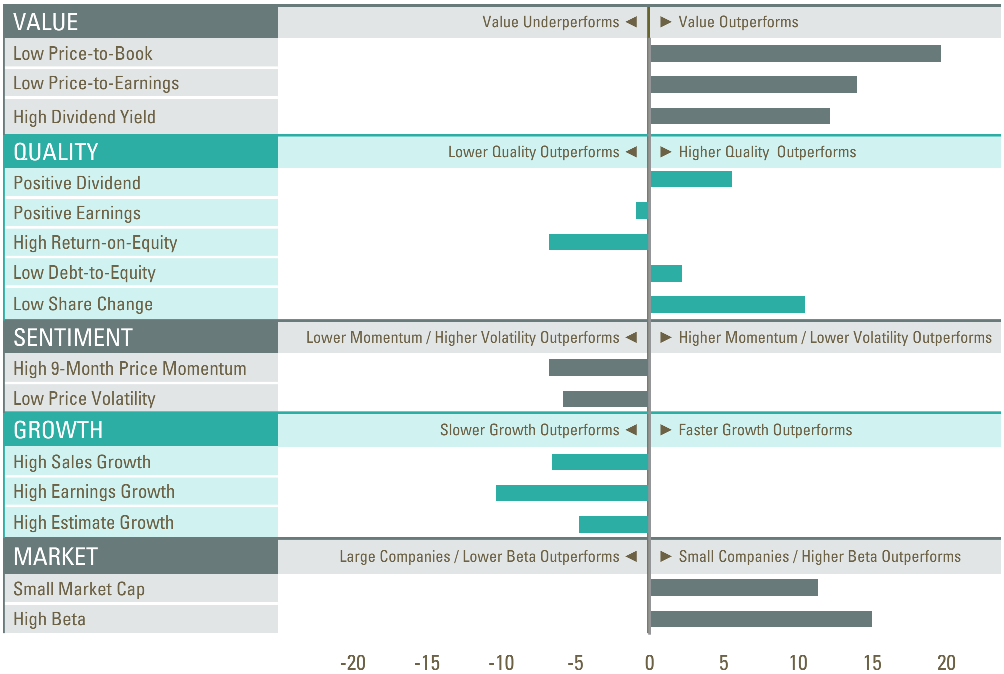
Quantitative Review of U.S. Equities

1Q 2021

- U.S. equity markets continued their rise in the first quarter of 2021 with the S&P 500 up 6.2%. The S&P 500 gained 80.7% since its low in March 2020 and 19.2% from its pre-pandemic highs, based on accelerating vaccination progress and hopes for full economic reopening.
- Value factors continued their recent revival, with low price-to-earnings and low price-to-book stocks outperforming by even more than in the fourth quarter of 2020.
- Growth stocks, meanwhile, continued their recent slump, underperforming by more than their 2020 fourth quarter lag.
- As stocks continued to move higher, more defensive factors again performed poorly, with high-quality, lower-volatility stocks and larger-cap stocks generally lagging the rest of the market.
- Higher price momentum stocks did well within value stocks but trailed in the broader market. High momentum was strongly negative last quarter as the value/growth reversal began.
- **Research Spotlight: Update on Valuation Spreads and the Interest Rate Impact on Value/Growth Returns** Given recent strong value returns, particularly compared to growth stocks, we update the valuation spread between the two groups. We also examine the recent relationship between interest rate movements and the relative returns of these two groups.

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 3/31/2021



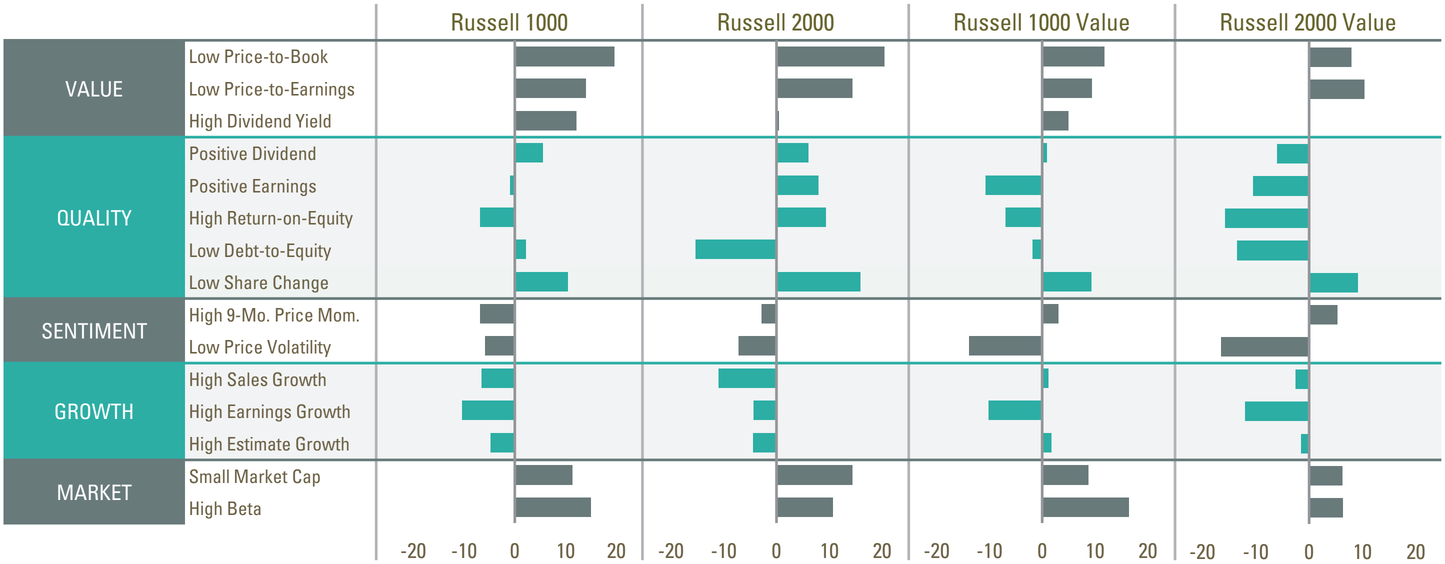
Source: Brandywine Global, FactSet, FTSE Russell

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.

Brandywine Global Investment Management, LLC
1735 Market Street, Suite 1800 / Philadelphia, PA 19103
North America: 215 609 3500 (U.S.)
416 860 0616 (Canada)
Europe: +44 20 7786 6360
Asia: +65 6536 6213
brandywineglobal.com

Figure 2 U.S. Equity Factor Returns
YTD; % Return Difference Between Factor's[1] High and Low Quartile; As of 3/31/2021



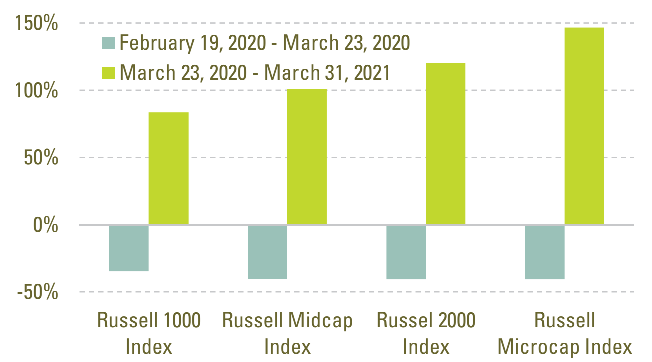
Source: Brandywine Global, FactSet, FTSE Russell

FIRST QUARTER 2021 FACTOR RETURNS

Late in the first quarter, daily U.S. vaccinations averaged 3 million per day and the federal government predicted that by early summer a vaccine would be available for everyone eligible in the U.S. While the situation was not as positive in other parts of the world, including much of Europe, U.S. equities continue to respond optimistically to the domestic developments. The S&P 500 rose 6.2% in the first quarter after gaining 18.4% in 2020, one of the most extraordinary years in recent memory. Value, which experienced a revival late last year after extended underperformance, again outperformed growth this quarter. Less defensive factors, such as lower quality, smaller cap, and higher beta continued to do well in the rally after suffering in early 2020 when the U.S. market collapsed.

Figure 3 underscores how extraordinary this period has been. The first bar represents the Russell index returns from February 19, 2020, the S&P 500's then all-time high, to March 23, 2020, the market lows. In just over a month the various market sectors fell from 35% to 40% as the pandemic's severity became clear. From that market bottom, the various indices gained from 83% to 147%, and all these indices are above their February 2020 high as of quarter-end.

Figure 3 Russell Index Returns
2/19/2020 to 3/31/2021



Source: FTSE Russell

VALUE FACTORS MAINTAIN THEIR RECENT DOMINANCE OVER GROWTH

Value factors experienced a strong rebound in the fourth quarter of 2020 and their performance accelerated in 2021's first quarter. For instance, within the Russell 1000 Index, the lowest quartile of stocks by price-to-book (P/B) outperformed the highest quartile by 19.6% this quarter versus 14.1% last quarter. For low price-to-earnings (P/E) stocks, the difference was 13.4% this quarter compared to 6.8% in 2020's fourth quarter. This reversal comes after the first three quarters of 2020 where low P/B stocks underperformed high P/B by 50% and low P/E stocks trailed by -46.6%. Higher dividend stocks also did well this quarter, but less dramatically than for P/B or P/E.

The particularly strong returns from low P/B stocks, even compared to low P/E stocks, is not surprising in a market rally driven by the anticipation of an economic recovery after the pandemic-induced shutdown. Low P/B stocks tend to be more economically sensitive and have higher volatility and beta. Thus, they react the most positively to optimistic economic news. Both the lowest P/E and the low P/B quartiles in the Russell 1000 had very high financial weights, but the low P/B had more energy stocks, which performed very well, and low P/E had more lagging health care stocks.

While value did well, growth also continued its reversal, lagging over the last two quarters. The return to high sales growth, high earnings growth, and high estimate growth were for some factors better than last quarter and for others worse, but they were all negative in the Russell 1000 and in most other indices as well. These negative returns were a sharp change from the first three quarters of 2020 when these three high growth factors gained 37.2%, 9.3%, and 35.8%, respectively, in the Russell 1000.

The strong differences between the growth and value factors' performance this quarter is apparent in the Russell index returns. **Figure 4** shows the significant value outperformance in 1Q 2021 as well as over the last two quarters and compares them to the index performance in the first three quarters of 2020. While value staged a strong comeback and growth lagged, the Russell growth indices have still outperformed since the start of 2020 and from the market bottom in March 2020 through this quarter-end. **Figure 4** also highlights the swing in small-cap underperformance early in 2020 to the more recent small-cap relative gains—smaller caps are now mostly ahead for the December 31, 2019 through March 31, 2021 period.

Figure 4
As of 3/31/2021

	First Quarter 2021		9/30/2020 - 3/31/2021		12/31/2019 - 9/30/2020	
	Growth	Value	Growth	Value	Growth	Value
Russell 1000 Index	0.9%	11.3%	12.4%	29.3%	24.3%	-11.6%
Russell Midcap Index	-0.6%	13.1%	18.4%	36.2%	13.9%	-12.8%
Russell 2000 Index	4.9%	21.2%	35.9%	61.6%	3.9%	-21.5%
Russell Microcap Index	16.9%	29.4%	51.5%	71.8%	8.1%	-20.0%

Source: FTSE Russell

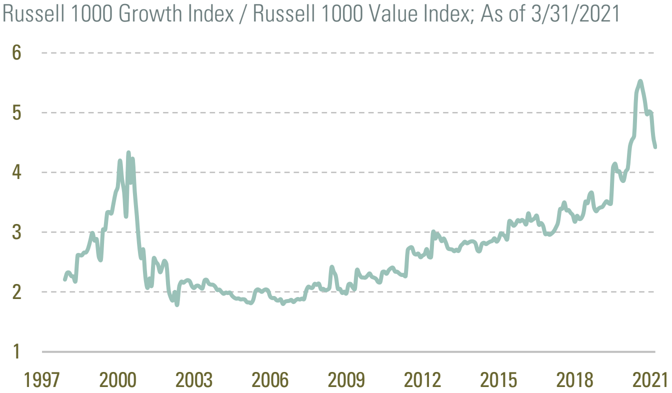
Many defensive factors lagged in the first quarter as they have since the market began to rally from the lows in late March 2020. Positive earnings, high return-on-equity (ROE), low debt-to-equity, and low price volatility were generally negative this quarter (some of these factors did perform better within the Russell 2000). Within the Russell 1000, the high ROE stocks, for instance, are heavily weighted toward tech and health care, which were weak performers this quarter, while low ROE has a greater weight in rallying energy stocks. At the same time, factors that tend to do well in market rallies, such as high beta and smaller-cap stocks, continued to perform well. The one high quality factor that did perform well this quarter was low share change. High share change has a larger weight in tech, health care, and internet retailing, which lagged this quarter, while low share change has more of the outperforming financials and industrials. In addition, within industries, the stocks with lower share change did better, such as in consumer discretionary where the highest share quartile fell 3.9% but the lowest share change gained 13.7%.

High price momentum stocks underperformed in the broad large- and small-cap indices (the Russell 1000 and 2000 Indices) but outperformed in the value indices. With their recent outperformance, value stocks are moving up from the lowest momentum quartile, where many bucketed six months ago. For the Russell 1000 and 2000 Indices, the high momentum quartile is still dominated by tech stocks, which were weak again this quarter. For the Russell 1000 Value and Russell 2000 Value Indices financials and industrials, two recent strong outperforming value groups, have already become a significant weight in the highest momentum group, while many tech and health care stocks are moving down to lower momentum groups.

RESEARCH SPOTLIGHT: VALUATION SPREADS AND THE INTEREST RATE IMPACT ON VALUE/GROWTH

For an extended period before 2020 and through the first three quarters of last year, growth stocks significantly outperformed. As a result, the relative valuation spread between large-cap growth and value stocks reached beyond extremes achieved during the 1999-2000 tech bubble. Despite the strong recent shift in value and growth returns the last two quarters, growth stocks, as seen in **Figure 5**, remain at very extended valuations relative to value stocks above the tech bubble high.

Figure 5 Relative Valuation Based on Average Price-to-Book
Russell 1000 Growth Index / Russell 1000 Value Index; As of 3/31/2021

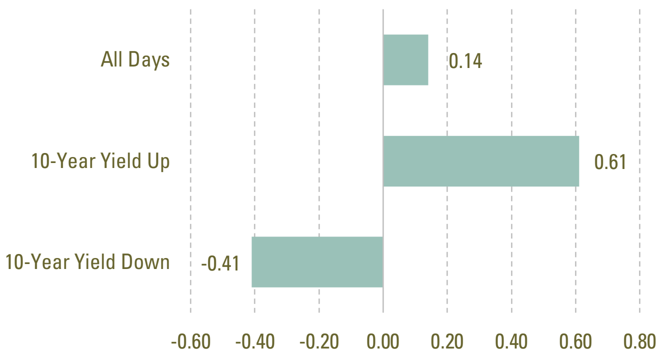


Source: FTSE Russell

Movements in long-term interest rates can have a strong link to the relative performance for growth and value stocks. First, growth stock prices tend to rely on their growing future sales and earnings. These future benefits become more heavily discounted as long-term rates rise. Second, cyclical stocks generally (but not always) tend to carry lower valuations. Thus, increased economic activity often will lead to increased interest rates and higher cyclical stock prices. Finally, financials also are often (but again, not always) value stocks and their revenues and earnings tend to benefit from rising long-term rates. This relationship may hold particularly when rates are low and rising and less so when rates move to extremely high levels.

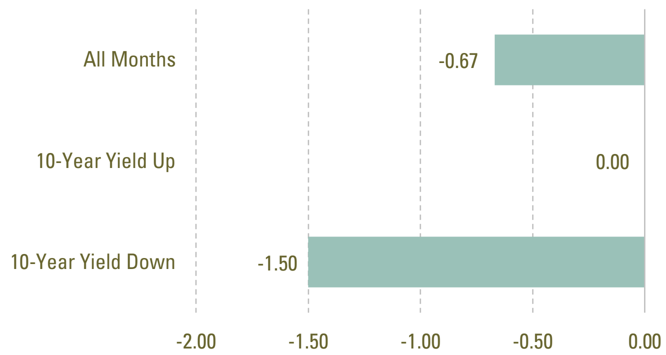
Figures 6 and 7 confirm the significant relationship between long-term rates and the value/growth performance spread, measured here by the difference between the Russell 1000 Growth and Value Indices' returns—similar results also hold for the Russell 2000 Index. For both daily data over the last six months and monthly data for the last five years, value stocks performed much better relative to growth stocks when the 10-year Treasury rate rose, while growth stocks excelled when the rate fell. The correlation between this Treasury rate and the growth/value spread is .53 for the six-month daily data and .45 for the five-year monthly returns. Loosely speaking, these correlations suggest that interest rate movements have explained around 50% of the difference in growth and value returns over these periods.

Figure 6 Russell Value Index - Russell 1000 Growth Index Returns
Daily; 9/30/2020 to 3/31/2021



Source: FTSE Russell

Figure 7 Russell Value Index - Russell 1000 Growth Index Returns
Monthly; 3/31/2017 to 3/31/2021



Source: FTSE Russell

The significant deficit spending already incurred by the federal government and the potential for additional expenditures would seem to lend a strong bias for higher long-term interest rates. Expanding economic activity, triggered by accelerating coronavirus vaccinations, should also tend to push rates higher. Higher rates, and their beneficial impact on value stock returns, coupled with the still extreme growth overvaluation, would seem to set up value stocks for continued outperformance beyond what we have experienced the last six months.

[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 (P/E 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).

[2] Crisis events since 1963 include Kennedy Assassination 11/21/1963; Martin Luther King Assassination 4/4/1968; U.S. Bombs Cambodia and Kent State Shooting 4/29/1970; Olympic Athlete Hostage Crisis 9/15/1972; Arab Oil Embargo 10/18/1973; Nixon Resignation 8/9/1974; USSR in Afghanistan 12/24/1979; Hunt Silver Crisis 2/13/1980; Ronald Reagan Shot 3/30/1981; Falkland Islands War 4/1/1982; U.S. Invades Grenada 10/24/1983; U.S. Bombs Libya 4/15/1986; Stock Market Crash 10/2/1987; Invasion of Panama 12/15/1989; Iraq Invades Kuwait 8/2/1990; Gorbachev Coup 8/16/1991; ERM U.K. Currency Crisis 9/14/1992; First World Trade Center Bombing 2/26/1993; Russia-Mexico-Orange County Crisis 10/11/1994; Oklahoma City Bombing 4/19/1995; Asian Stock Market Crisis 10/7/1997; Russian Debt/Long-Term Capital Management 8/7/1998; Al-Qaeda - Sept. 11 Terrorist Attacks 9/11/2001; Lehman Brothers Failure - Global Financial Crisis 9/15/2008; European Sovereign Debt Crisis and 2010 Flash Crash 5/6/2010; 2011 Stock Market Crash 8/1/2011; 2018 Global Stock Market Decline 10/1/2018. The coronavirus and Saudi-Russian Oil Price War 3/9/2020 are not included in test data set. Returns start with the first whole month after event. Research performed by Brandywine Global Investment Management, LLC., Philadelphia, PA.

Data for Russell Index simulation prior to 1985 is obtained from Compustat (©2021) through FactSet Research (©2021) using Alpha Tester and CRSP NYSE Market Capitalization Decile information, all of which is believed to be reliable and accurate. FactSet provides fundamental stock and return calculations. Compustat provides fundamental stock information and price history. CRSP (Center for Research in Security Pricing) provides historical market capitalization groupings based on NYSE listed companies. Backtest simulation of index first calculates the top 1,000 stocks by market capitalization or the equivalent NYSE market cap decile cut point to produce the same relative market capitalization range in earlier years when there were fewer listed companies. The value index is calculated using the lower half of companies in the market-cap range when ranked by price-to-book value.

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