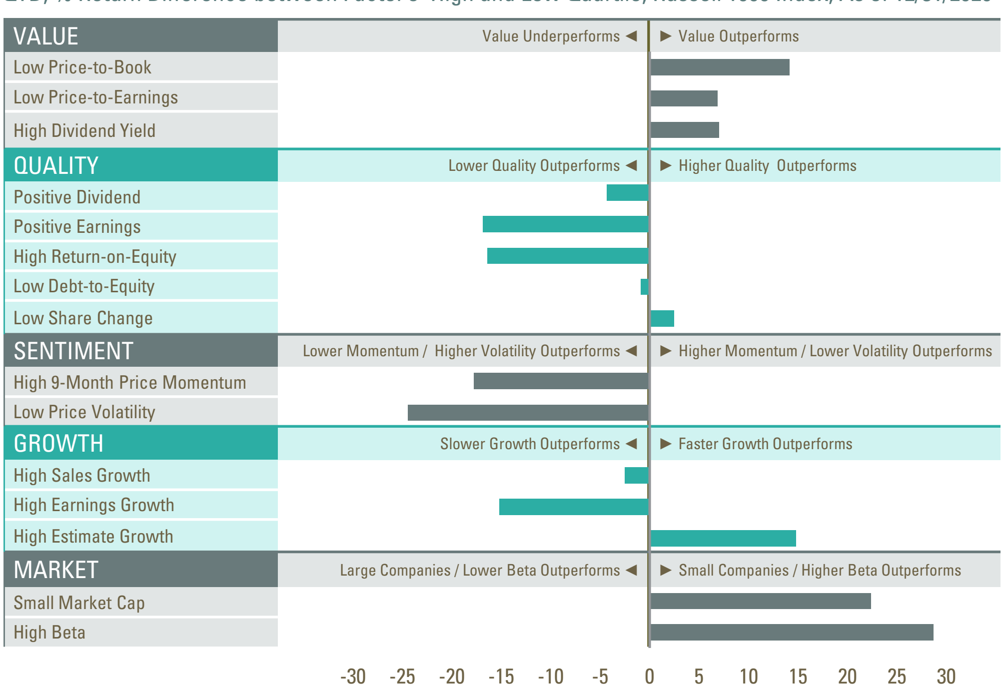
Quantitative Review of U.S. Equities

4Q 2020

- U.S. equity markets closed 2020 with a strong fourth quarter despite a renewed wave of COVID-19 cases and deaths. The S&P 500 rose 12.2%, and despite 2020's turbulence and tragedy, the S&P 500 gained 18.4% for the year. All the major U.S. Russell indices reviewed here finished 2020 with positive returns.
- Among growth factors, only estimated future earnings growth was a positive factor this quarter. For the year, sales growth and estimated future earnings growth were both strongly positive, while earnings growth was neutral to negative.
- Value factors rebounded significantly this quarter but still were overwhelmingly negative for the full year.
- Positive stock price momentum underperformed in the fourth quarter as many of the stocks and industries that lagged for much of the year rebounded. For the year, the factor was positive to neutral after performing well earlier in the year.
- Higher quality and more defensive factors performed poorly as the market rose from its March lows. Given the market's gains this quarter and in 2020, these factors also lagged during both periods.
- Higher beta and smaller market cap, both generally pro-cyclical factors, did well this quarter. Beta also outperformed for the year, while smaller companies mostly erased their poor performance from earlier in 2020.
- **Research Spotlight: Update on Market Returns During a Crisis and Valuation Spreads**
  We update two pieces of analysis from earlier in the year to evaluate how this year's market conformed to historical crisis precedents and how value's fourth quarter rally impacted the growth/value valuation spread.

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 12/31/2020



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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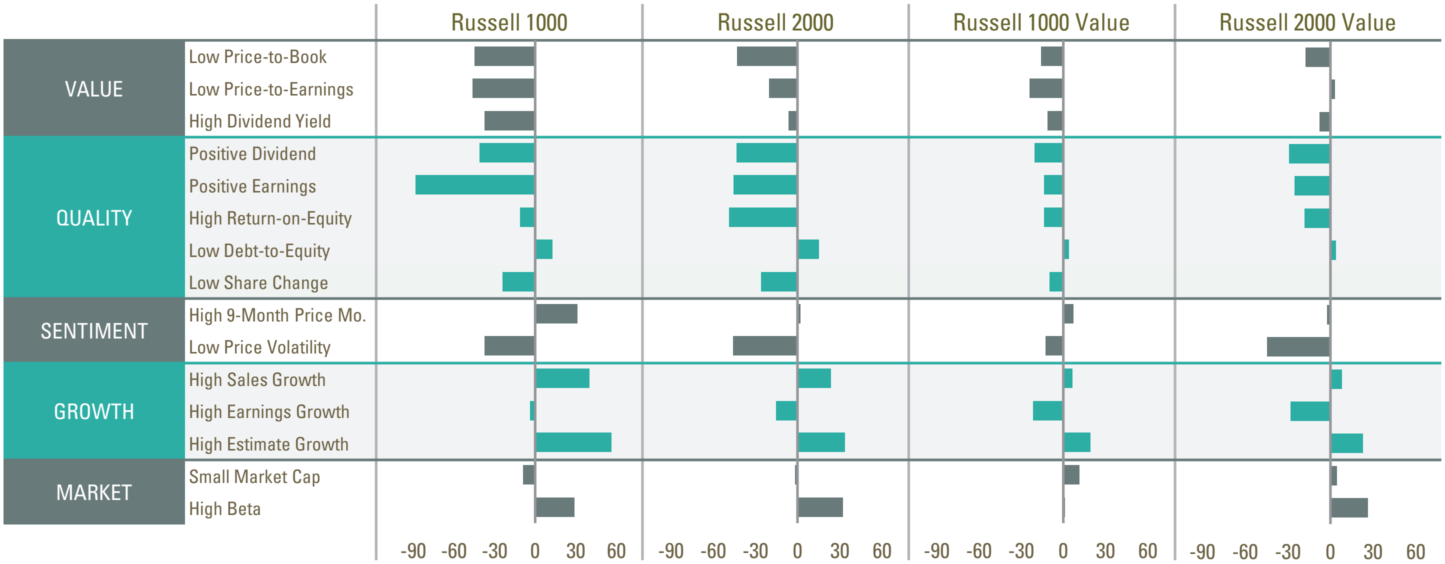
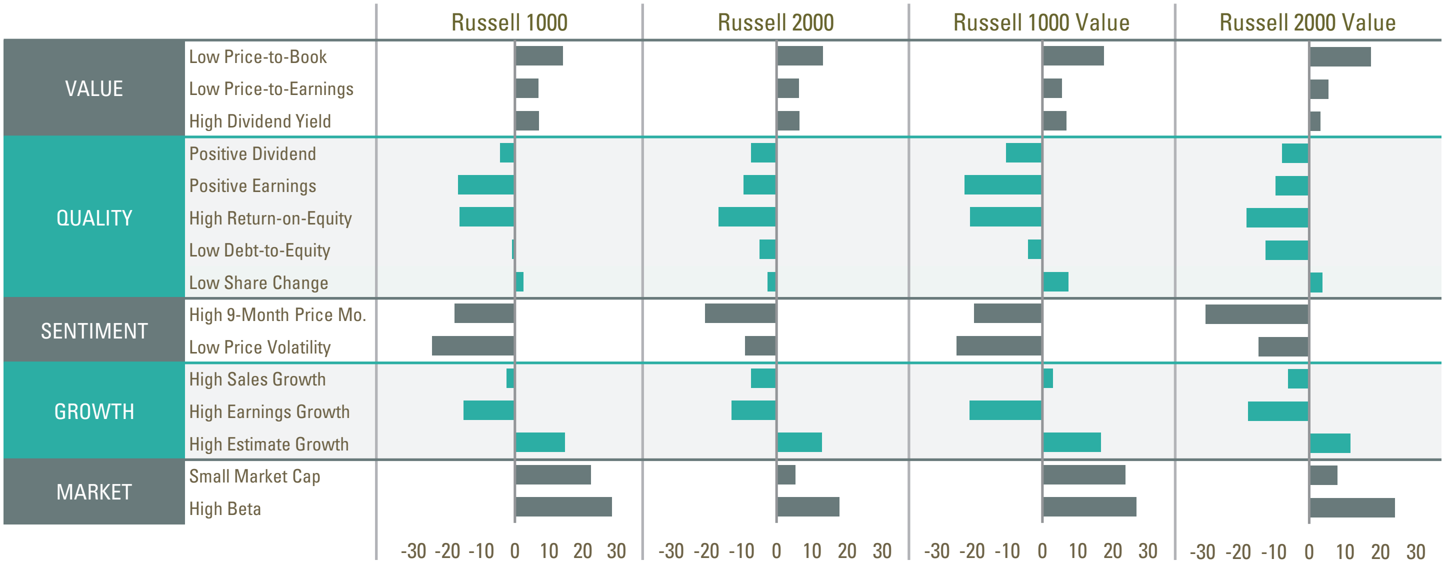
Figure 2A U.S. Equity Factor Returns
YTD; % Return Difference between Factor's[1] High and Low Quartile; As of 12/31/2020



Source: Brandywine Global, FactSet, FTSE Russell

Figure 2B U.S. Equity Factor Returns
QTD; % Return Difference between Factor's[1] High and Low Quartile; As of 12/31/2020



Source: Brandywine Global, FactSet, FTSE Russell

FOURTH QUARTER 2020 FACTOR RETURNS

During the quarter, multiple vaccines reached key milestones, followed by rapid FDA approval. This critical pandemic turning point and the conclusion of the 2020 election coincided with the fourth quarter equity rally even as U.S. COVID-19 cases continued to rise. This quarter's rally followed the substantial gains from March's low, but several factors performed quite differently than they had earlier in the market's upward surge. Growth, value, and momentum factors all reversed from their second and third quarter performance trends. Quality and defensive factors, as well as the pro-cyclical beta and small market cap factors, were more consistent throughout the market's rally.

VALUE FACTORS REBOUND WHILE GROWTH FACTORS LAG

After a difficult first three quarters and several years of trailing returns, value factors finally outperformed in the fourth quarter. Growth factors, having dominated for most of the year, produced generally negative returns this quarter. As the Russell Index returns in **Figure 3** indicate, the growth factors' earlier outperformance this year was so significant that this quarter's growth/value reversal hardly dented growth's overwhelming advantage in 2020.

Figure 3
As of 12/31/2020

	Fourth Quarter		Year Ending 12/31/2020	
	Growth	Value	Growth	Value
Russell 1000 Index	11.4%	16.3%	38.5%	2.8%
Russell Midcap Index	19.0%	20.4%	35.6%	5.0%
Russell 2000 Index	29.6%	33.4%	34.6%	4.6%
Russell Microcap Index	29.7%	32.8%	40.1%	6.3%

Source: FTSE Russell

High sales growth produced the biggest performance swing this quarter from 2020's first three quarters. Many high sales growth stocks which significantly outperformed for the full year trailed the market in the fourth quarter. Sectors and stocks that reversed performance included internet retailing (Amazon up just 3.4% in the fourth quarter but 76.3% for 2020), tech stocks (NVIDIA -3.5%/122.3% and Salesforce -11.5%/36.8%), and digital entertainment (Netflix 8.1%/67.1% and Facebook 4.3%/33.1%). These reversals offset the continued strong fourth quarter returns from high sales growth auto manufacturer Tesla, up 64.5% for the quarter and an astounding 743.4% in 2020. Also, in the fourth quarter, some low sales growth stocks rebounded after underperforming through September, including energy (up 26.5% in the fourth quarter and down 34.6% for 2020) and autos (Ford 32%/-3.9% and General Motors 40.7%/15.2%). High earnings growth stocks lagged in both the quarter and the year, as many of the same high sales growth stocks noted above also hurt this factor's fourth quarter returns. For the year, some technology and internet stocks that performed well in 2020 did not reach the top earnings growth tier until later in the year. The high earnings growth group also was dragged down by weak full-year health care returns. High estimate growth stocks, on the other hand, did well in both the quarter and full year. High estimate growth tech, internet retail, autos, and digital entertainment all contributed to the strong year, and high estimate growth tech and autos were aided by financials and energy stocks moving into the group for the fourth quarter.

Value stocks reversal in the fourth quarter stemmed from market leading performance by energy and financial stocks and at least a temporary pause in the upward surge for tech and consumer discretionary stocks. **Figure 4** shows the returns in the quarter and year for these value and growth sectors. The table highlights the fourth quarter performance reversal for these sectors and how, despite the value sectors' improvement, they still significantly underperformed for the year, impacting the low price-to-earnings, low price-to-book, and high dividend yield value factors.

Figure 4 Capitalization-Weighted Sector Returns within the Russell 1000 Index

Fourth Quarter				Year Ending 12/31/2020			
Value Sectors		Growth Sectors		Value Sectors		Growth Sectors	
Financials	Energy	Tech	Consumer Disc.	Financials	Energy	Tech	Consumer Disc.
23.8%	28.0%	13.2%	13.6%	-2.0%	-33.2%	46.5%	48.1%

Source: FTSE Russell

This strong fourth quarter value and growth sector reversal also underlies the strong negative returns to the high price momentum factor. Price momentum factor was positive through the first three quarters as many of the same stocks continued to outperform even as the market moved from its steep decline in March and into its subsequent recovery. In the fourth quarter, the leadership finally rotated with the strongest stocks now trailing the market and the laggards providing the greatest returns. For the year, positive momentum stocks were still the best performers within the Russell 1000, but were only neutral performers in the other Russell indices.

Not surprising since the market closed with a nearly 20% return for 2020, more defensive factors trailed for the year and during the market's 13% fourth quarter gain. Positive dividends, positive earnings, higher return-on-equity, low debt-to-equity, and low share change were mostly weaker for the quarter and the year. Negative earnings stocks in particular did much better than stocks with positive earnings for the year, outperforming by almost 90%. While defensive stocks lagged, pro-cyclical stocks outperformed this quarter. Smaller caps and higher beta stocks, which often outperform in strong rallies, led the market higher. Smaller caps were sharply lower during the markets decline early in the year but recovered most of the relative loss as seen in the market cap factor and the Russell index returns in **Figure 5**.

Figure 5 As of 12/31/2020

	Fourth Quarter	Year Ending 12/31/2020
Russell 1000 Index	13.7%	21.0%
Russell Midcap Index	19.9%	17.1%
Russell 2000 Index	31.4%	20.0%
Russell Microcap Index	31.4%	21.0%

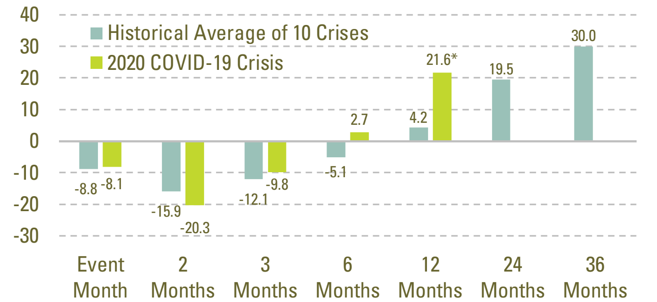
Source: FTSE Russell

RESEARCH SPOTLIGHT: UPDATE ON MARKET RETURNS DUING A CRISIS AND VALUATION SPREADS

In the first quarter 2020, we had entered what we now know as the first stages of an extended global pandemic crisis. The S&P 500 had plunged 33.8% from its all-time high in February and had recovered slightly by quarter end. In our letter that quarter, we reviewed our long-standing work on equity market behavior at times of crisis (political, economic, military, and others) over the past almost 60 years. We focused our research on the 10 such events prior to 2020 that triggered at least a 10% market drop in the two months after the onset of the crisis. Perhaps surprisingly, we have found that the stock market demonstrated a remarkable resiliency, often recouping its losses in only a matter of months. U.S. equity markets achieved full recovery on average within a year of the event, including in 8 of the 10 periods. In **Figure 6**, we compare the historical average returns to the Russell 1000 Index returns starting in February 2020 when concern about the virus began spreading and markets began their decline. The recent experience matched the historical averages to a significant degree. The market fell further after two months than in the prior crises (down 20.3% compared to the 15.9% historical average decline), but the recovery has been somewhat swifter than typical. We are not quite yet a full 12 months into this crisis cycle, but as of January 15, 2021, the index had a total return of 21.6%, including the early losses, in the face of social unrest, political turmoil, and a deep medical crisis. There are concerns that valuations are stretched and the market does not reflect our current economic situation. On the other hand, this rapid recovery may also point to the resilience and long-term strength of our economy and markets. The stock market incorporates forward expectations and currently appears to be pricing in a substantial post-vaccine economic recovery.

As mentioned earlier, value stocks lagged growth stocks over a number of years. In our second quarter letter we looked at diverging valuation trends for these two market segments, finding that the spread between growth stock valuations versus value stock valuations was greater than existed during the 1999–2000 tech stock bubble. In **Figure 7**, we update our analysis to show how the recent improved performance from value stocks impacted the relationship. While this quarter's value/growth reversal noticeably narrowed the valuation gap, the spread remains above the prior peak from the tech stock bubble. As value investors, we believe there is still tremendous room for continued value outperformance after only one quarter of a potential longer-term reversal.

Figure 6 Russell 1000 Index Returns
Following a Crisis



*Period shown is 11 ½ months to-date.
Source: FTSE Russell

Figure 7 Ratio of Average Price-to-Books
December 1997 – November 2020

Source: FTSE Russell

[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.

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