Quantitative Review of U.S. Equities

4Q 2021

- U.S. equity markets were mostly higher again in the fourth quarter despite concerns over the latest COVID-19 wave and various economic issues. The S&P 500 gained 11.0% this quarter and was up 28.7% for the year.
- The small-cap factor was negative this quarter, reflected in the Russell's Index 2000 fourth quarter gain of only 2.3%. The factor was mixed for the year, and the Russell 1000 Index outperformed the Russell 2000 Index.
- Value factors were weaker among large caps this quarter but generally did better among small caps. For the year, value performed well across the market but especially in small caps. The Russell 2000 Value Index, up 28.3%, outperformed the Russell 1000 Index's 26.5% gain in 2021.
- Growth factors were mixed for the quarter and year, with high sales and earnings growth producing positive returns while returns to high estimate growth were negative. For small caps this year, strong value returns coupled with weak growth performance led to a significant gap between the Russell 2000 Value Index with its 28.3% return while the Russell 2000 Growth Index gained a mere 3.2%.
- Even though the U.S. stock market was strong for the quarter and the year, quality factors generally did well in both periods. As expected, given the annual returns, higher beta stocks did well for the year, but perhaps surprisingly, lagged in the quarter.
- High price momentum performed well for the quarter and the year, except the factor was negative for the Russell 1000 Index for the year.
- **Research Spotlight: ESG Returns over the Last 10 Years:** Environmental, social, and governance (ESG) investing has grown dramatically in Europe and is garnering significant attention globally, including in the U.S. We examine the returns for stocks since 2012 based on their MSCI ESG ratings.

Figure 1 Fourth Quarter 2021 Russell 1000 Index Factor Returns
QTD; % Return Difference Between Factor's[1] High and Low Quartile; Russell 1000 Index; As of 12/31/2021

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.

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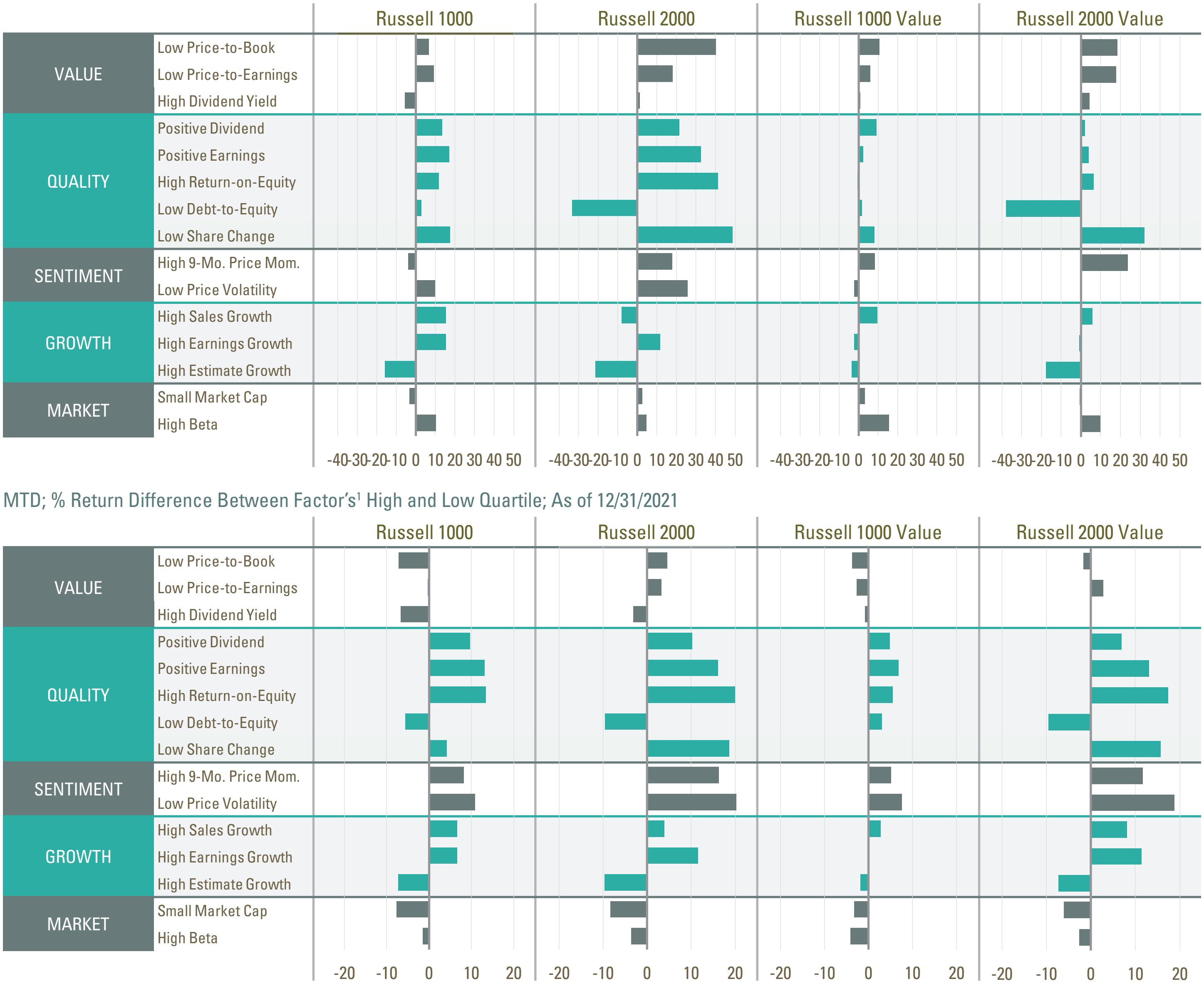
Figure 2 Russell Index Factor Returns

YTD; % Return Difference Between Factor's[1] High and Low Quartile; As of 12/31/2021

MTD; % Return Difference Between Factor's[1] High and Low Quartile; As of 12/31/2021



Source: Brandywine Global, FactSet, FTSE Russell

FOURTH QUARTER AND YEAR-END 2021 FACTOR RETURNS

Political, economic, inflationary, and pandemic uncertainty seemed to increase in the fourth quarter led by the COVID-19 omicron variant wave, sustained inflation, and evolving Federal Reserve policy. While the U.S. equity market faltered somewhat in the third quarter amid these concerns, in the fourth quarter investors appeared to shrug off these issues as they drove the market to new highs. The S&P 500 rose 11.0% in the quarter. Its 103.4% gain since the pandemic market bottom on March 19, 2020 triggered talk of an overextended market, which also did not slow down the market's advance this quarter.

In such a strong market rally, smaller-cap, higher beta, and higher volatility stocks often lead the market advance. This relationship generally held for the year overall, however, in this quarter these factors all had negative returns. Higher beta stocks slightly underperformed in the large-cap market due to the relatively high exposure to financials in the high beta segment and these stocks were weaker in the fourth quarter. The low beta and low volatility groups had a significant weighting in Microsoft, which performed well in the quarter. For the market-cap factor, smaller-cap financials, industrials, and consumer discretionary stocks underperformed large-cap technology, healthcare, and consumer discretionary. **Figure 3** shows how the Russell index returns reflected the fourth quarter's negative returns to the small-cap factor. Even though this market-cap factor was neutral for the year, the large-cap Russell indices still outperformed in 2021, mostly due to the fourth quarter gains.

Figure 3
As of 12/31/2021

	4Q 2021	Year-end 2021
Russell 1000 Index	9.8%	26.5%
Russell Midcap Index	6.4%	22.6%
Russell 2000 Index	2.1%	14.8%
Russell Microcap Index	-2.7%	19.3%

Source: FTSE Russell

In a rapidly rising equity market, we might also expect lower quality stocks to perform best, but this was not the case this quarter or in 2021. For the quarter, the strong returns to higher-quality stocks, such as those with high a return-on-equity or high share buy backs, were driven by strong technology returns, particularly from Microsoft and Apple. For the year, better quality's positive returns in the weak third quarter coupled with the factors' fourth quarters strength led higher-quality factors to outperform. High debt-to-equity's positive return was the main exception to this trend as the higher debt to equity group included Apple and the outperforming home improvement suppliers Lowes and Home Depot.

Value factors, such as low price-to-earnings and low price-to-book fared poorly among large-cap stocks due to the poor relative performance, from large-cap financials. Within small caps, financials performed only slightly better than large-cap financials on an absolute basis (5.8% versus 4.9%), but relative to the Russell 2000 Index, they were above-benchmark performers. Also, small-cap technology stocks, with higher average valuations, did not outperform in the same way large-cap technology stocks, rising only 6.4% while large-cap technology stocks gained 14.2%. Value stocks had outperformed earlier in the year as rising interest rates greatly benefited financials and rising energy prices benefited oil and gas companies. The earlier value outperformance coupled with difference in recent value returns between large caps and small caps led to the Russell 2000 Value Index outperforming the Russell 1000 Value index year to date as seen in **Figure 4**.

Figure 4
As of 12/31/2021

	4Q 2021		Year-end 2021	
	Growth	Value	Growth	Value
Russell 1000 Index	11.6%	7.8%	27.6%	25.2%
Russell Midcap Index	2.9%	8.5%	12.7%	28.3%
Russell 2000 Index	0.0%	4.4%	2.8%	28.3%
Russell Microcap Index	-8.0%	1.2%	0.9%	34.8%

Source: FTSE Russell

For the fourth quarter and the year, the growth factors of high sales and high earnings growth generally were positive while high estimate growth was negative. The main contributor to this difference was that some high-performing technology stocks, including Apple and Microsoft, were among the top quartile on sales and earnings growth but not on estimated growth. Apple is actually in the bottom quartile on estimate growth, helping to drive low estimate growth's outperformance. The even greater underperformance by high estimate growth stocks in small cap, coupled with value outperforming among small caps reversed the growth and value index performance between large and small caps as seen in **Figure 4**. In addition, the Russell 1000 Growth Index's outperformance in the third and fourth quarters offset the Russell 1000 Value Index's advantage in the first two quarters, so that the growth index came out ahead for the year. However, in small caps, the continued outperformance by low value and low growth later in the year compounded the earlier advantage, leading to the extraordinary dominance of value over growth for small caps in 2021. The Russell 2000 Value Index rose 28.3% while the Russell 2000 Growth Index eked out only a 2.8% gain.

Price momentum was positive across the cap spectrum as those stocks that did well last quarter continued to well this quarter. The factor was also strong in small caps this year given the consistency of growth and value returns over the year. Within large caps, the swing from growth outperformance last year, to early value gains in 2021, followed by growth leadership again late this year, left the price momentum variable with no meaningful direction for the year.

RESEARCH SPOTLIGHT: ESG RETURNS OVER THE LAST 10 YEARS

ESG investing has grown dramatically in Europe and is garnering significant attention globally, including in the U.S.. As ESG investing has grown in popularity, we would expect that the increasing investor demand for stocks with higher ESG rankings would lead to outperformance by these companies. We examine the returns for stocks since 2012 based on their MSCI ESG ratings.

Several organizations have been providing evaluation of publicly traded companies' ESG risks, exposures, and opportunities over the last decade or more. MSCI's ESG manager began publishing such scores in 2007 with a significant increase in coverage in 2012. MSCI provides stocks with an industry-based weight for each of the three categories (summing to 100%) as well as a score for each based on a variety of sub-category evaluations. Our analysis considers the period of broad MSCI coverage, 2013-2021, to determine if the higher-rated companies did indeed outperform in the stock market. In our study, we rebalance the theoretical portfolios by their MSCI ESG score monthly.

MSCI provides two related overall scores, a simple weighted average of its E, S, and G scores along with a version which standardizes this simple score relative to the scores within a company's industry. In practice, these two scores are highly correlated, with an r-squared of .80 across stocks in the Russell 1000 Index as of September 30, 2021.

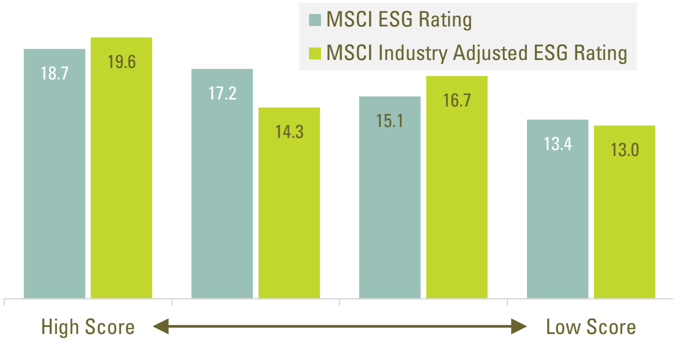
Figure 5 shows the returns, quartiled by the two MSCI ESG scores, for the R1000 Index from December 31, 2012 through December 31, 2021. As expected, given their tight relationship, the two scores give similar results. In both cases, the quartile of poorest ranked stocks significantly underperformed over this period while the other quartiles of better ranked stocks, produced better returns. The differences are large, greater than 5.0% annualized, and the monthly return differences are statistically significant (t-stat above 2.0).

Figure 6 charts the cumulative monthly return difference between the highest ESG quartile and the lowest ESG quartile. The largest returns gain came in the last four years, the period in which interest in ESG investing has grown the fastest.

The return pattern in those last four years bears some resemblance to the return pattern between growth and value returns over that period. In fact, the correlation between the monthly return difference of high ESG stocks to low ESG stocks and the return difference between the Russell 1000 Growth and Value Indices is .42, suggesting that there is some relationship between ESG returns and the growth/value performance spread. This notion is reinforced looking at the sector weightings in the high and low ESG quartiles, which show a heavy overweight in technology stocks in the high ESG quartile (**Figure 7**). Of course, technology was one of the primary drivers of growth stock outperformance over the last few years.

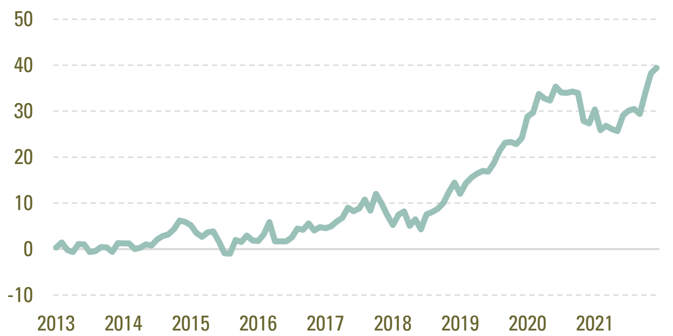
This analysis is our initial phase of a larger research project related to ESG investing. Additional work will focus on the returns to the individual E, S, & G rankings, further investigation of sector and industry impacts, the relationship between ESG returns and other common factors involved with equity returns (value, growth, momentum, etc.), and the possible source of the ESG-based return differences—whether from greater investor demand for highly-rated stocks versus better fundamental company performance from higher rated companies.

Figure 5 Return by MSCI ESG Rating
2013 - 2021



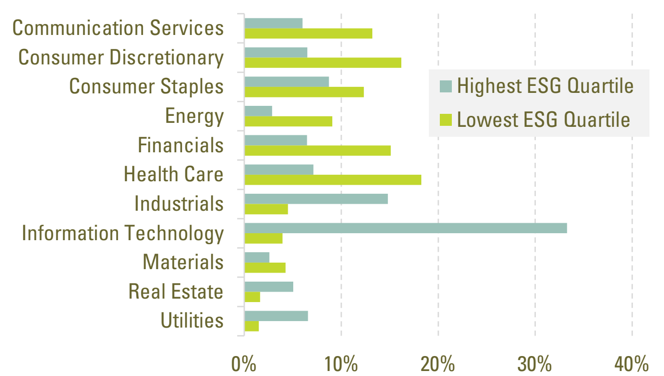
Source: MSCI ESG Research, Factset, Brandywine Global

Figure 6 Cumulative Monthly Difference
High ESG Quartile less Low ESG Quartile, 2013 - 2021



Source: MSCI ESG Research, Factset, Brandywine Global

Figure 7 Sector Weights in Highest and Lowest ESG Quartile
2013 - 2021



Source: MSCI ESG Research, Factset, Brandywine Global

[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).

Data for Russell Index simulation prior to 1985 is obtained from Compustat (©2022) through FactSet Research (©2022) 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. Rebalancing occurs annually at the end of June to maintain consistency with the Russell methodology. FTSE Russell was not involved in the simulation of the index prior to 1985. The views expressed represent the opinions of certain portfolio managers at Brandywine Global Investment Management, LLC ("Brandywine Global") and are not intended as a forecast or guarantee of future results. The opinions expressed above may be contrary to active positioning within one or more of Brandywine Global's strategies managed by a separate investment team. Data contained in this report is obtained from sources believed to be accurate and reliable. Brandywine Global will not undertake to supplement, update or revise such information at a later date. This information should not be considered a solicitation or an offer to provide any Brandywine Global service in any jurisdiction where it would be unlawful to do so under the laws of that jurisdiction. It should not be assumed that investments in any of the sectors or industries listed were or will prove profitable. The Russell 1000 Index measures the performance of the large-cap value segment of the U.S. equity universe. The Russell 2000 Index measures the performance of the small-cap value segment of the U.S. equity universe. The Russell 1000 Value Index and Russell 2000 Value Index include those companies with lower price-to-book ratios and lower forecasted growth values. The Russell 1000 Growth Index and Russell 2000 Growth Index include companies with higher price-to-book ratios and higher forecasted earnings growth values within their respective broad universes. The Russell Midcap Index measures the performance of the mid-cap segment of the U.S. equity universe. The Russell Microcap Index measures the performance of the microcap segment of the U.S. equity market. There is no guarantee that holding securities with relatively high (or low) price-to-earnings, price-to-book, or price-to-cash flow ratios will cause a security to outperform its benchmark or index. Standard and Poor's 500 Index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. Standard & Poor's S&P 500® Index is a registered trademark of Standard & Poor's, a division of the McGraw-Hill Companies Inc. Indices are unmanaged and not available for direct investment. **Past performance is no guarantee of future results.**