Quantitative Review of U.S. Equities

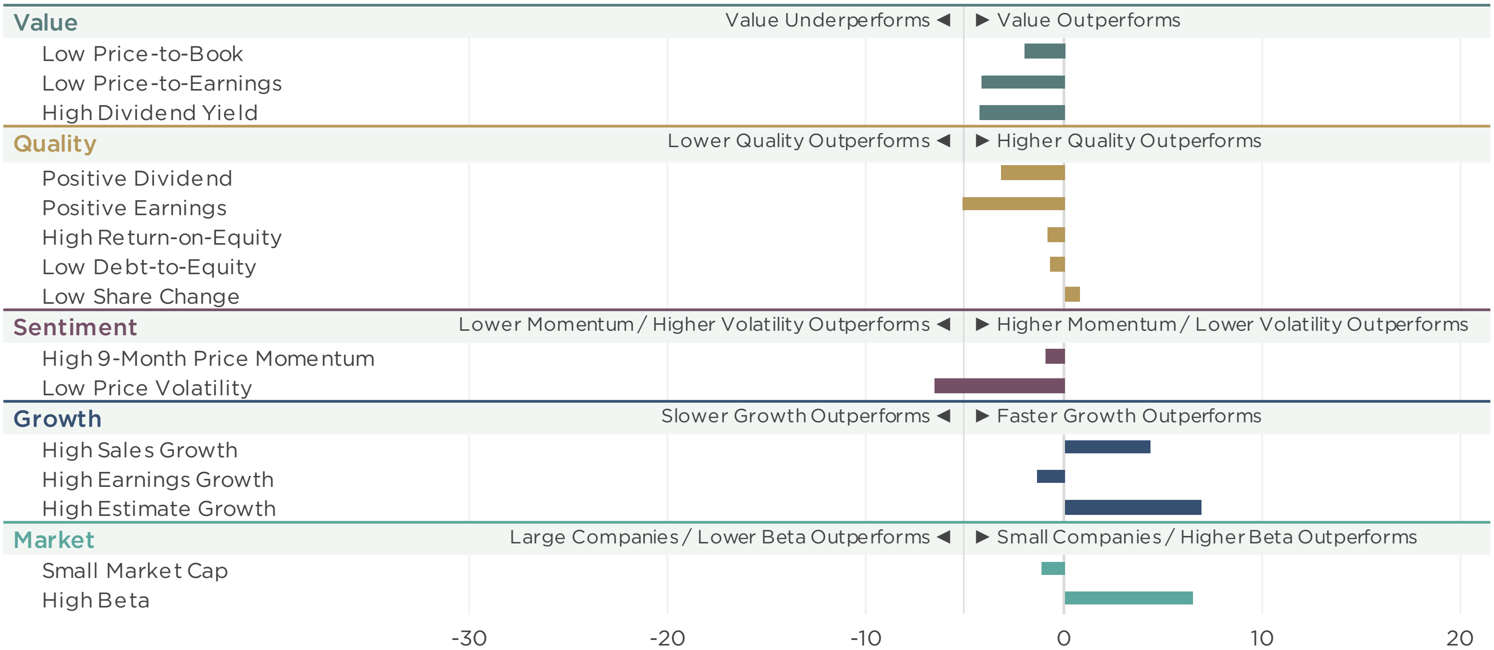
- U.S. equity markets rallied early in the quarter but ended with a loss, including a 4.9% decline for the S&P 500. Year to date the S&P 500 is off 23.9%, confirming we are in a bear market.
- Even though the stock market fell this quarter, some defensive factors underperformed including the quality factors positive earnings and high return-on-equity as well as low price volatility and low beta stocks.
- More consistent with historical expectation, defensive factors performed better year to date, including low share change, high return-on-equity (at least in large cap), positive earnings, and low stock price volatility.
- Stocks with lower valuations lagged this quarter but are still well ahead for the year.
- Stocks with stronger growth characteristics generally performed better this quarter but still trail significantly for the year to date.
- With the performance reversal from earlier in the year for both value and growth stocks, price momentum was a modestly negative factor in most equity segments this quarter though still very positive for the year.
- This quarter the Russell 1000 Value Index, with a 5.6% decline, fell more than the Russell 1000 Growth Index (down 3.6%). The Russell 1000 Value index is still well ahead for the year, off only 17.8% versus the Russell 1000 Growth's 30.7% decline.
- **Research Spotlight:** By mid-June, the S&P 500 Index was down over 20% from its January 3, 2022 peak, indicating that U.S. equities entered a bear market. We examine past stock market returns over various time periods following a similar 20% equities decline.

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 quarter 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.

1 | Third Quarter 2022 Russell 1000 Index Factor Returns

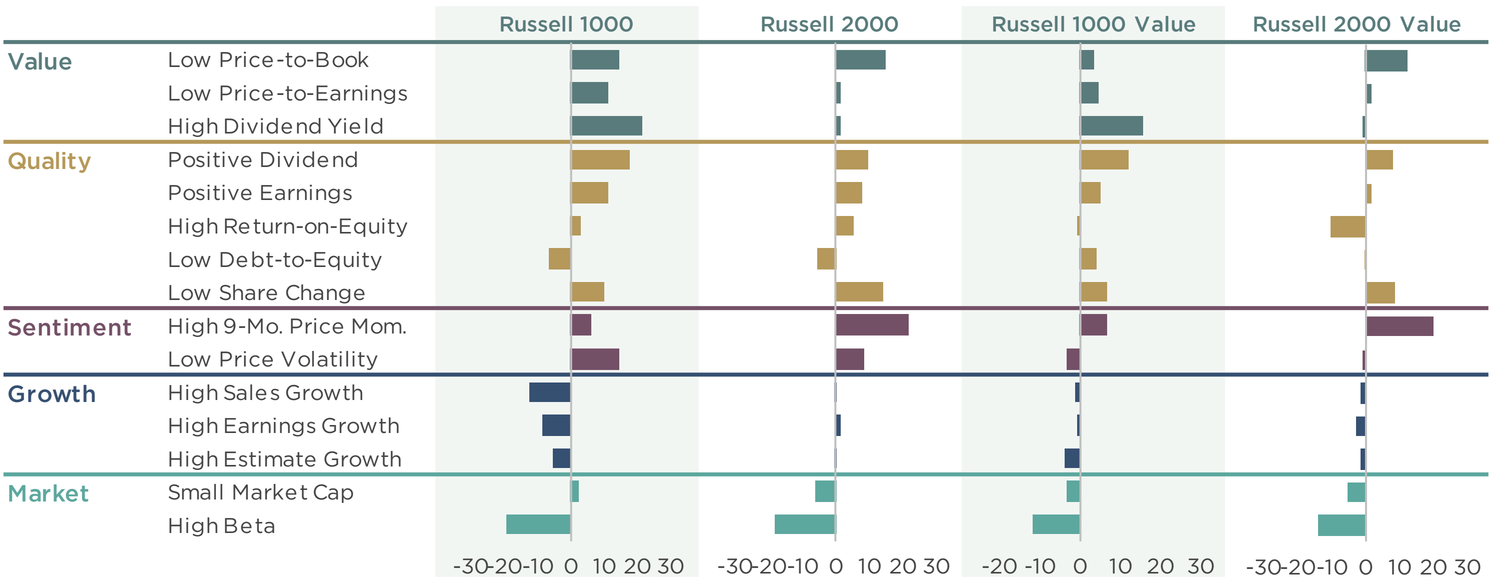
QTD; % Return Difference Between Factors[1] High and Low Quartiles; Russell 1000 Index; As of 9/30/2022



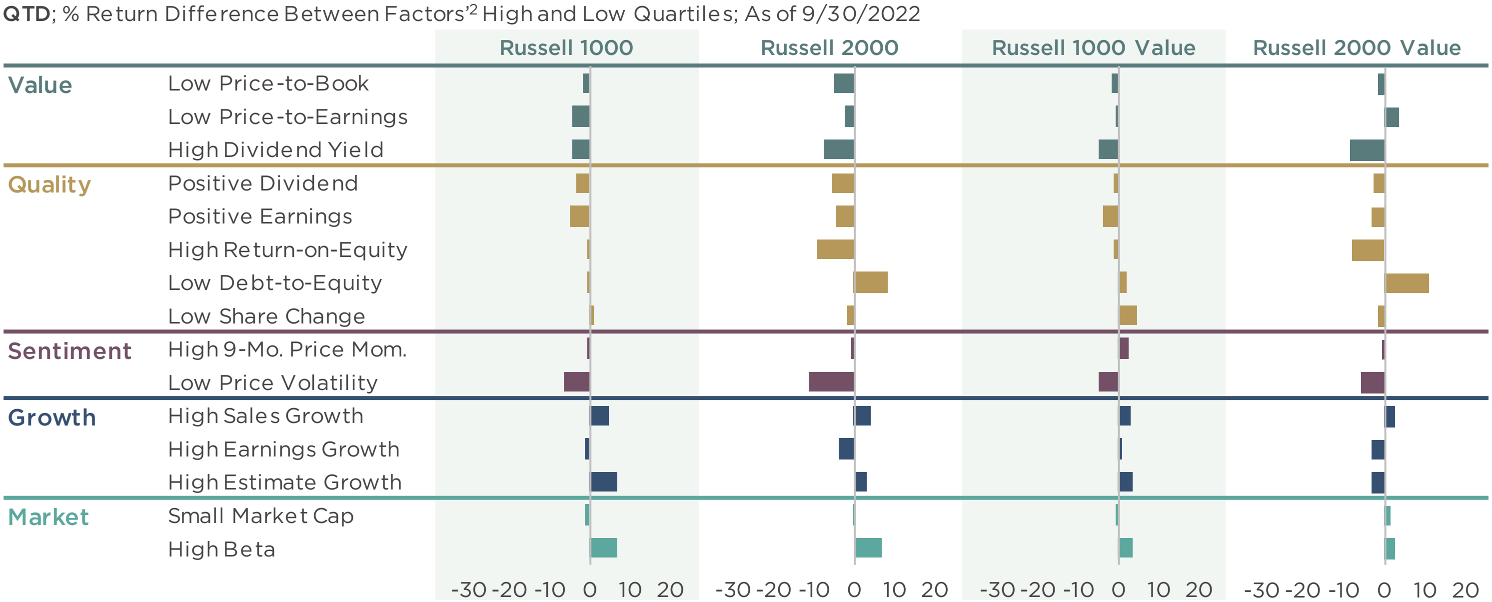
Source: Brandywine Global, FactSet, FTSE Russell

2 Russell Index 2022 Factor Returns

YTD; % Return Difference Between Factors[1] High and Low Quartiles; As of 9/30/2022



QTD; % Return Difference Between Factors[2] High and Low Quartiles; As of 9/30/2022



Source: Brandywine Global, FactSet, FTSE Russell

Third Quarter 2022 Factor Returns

The Federal Reserve Board's (Fed's) resolve to stamp out inflation, currently at a 40-year high, led the Fed to raise short-term rates five times so far this year from near-zero to a 3.0% target. Long-term rates also rose sharply, with 10-Year U.S. Treasury briefly yielding 4.0% for the first time in 15 years. Rising interest rates and higher energy prices sparked by the Russia-Ukraine war threatened to slow the U.S. and global economies. By one definition—two consecutive quarters of negative growth—the U.S. is already in a recession. However, the official decision by the National Bureau of Economic Research on whether this is a recession may not occur for some time. Fed Chair Jerome Powell disappointed investors' hopes that the recession threat would force the Fed to slow its interest rate increases when he declared that the Fed would press on until inflation was defeated.

Those initial investor hopes of a moderating Fed helped the U.S. stock market to rally almost 14% in the first half of the third quarter. However, two 75 basis point Fed rate increases and Powell's stern language led stocks lower for the quarter with the S&P 500 Index off 4.9%. Even with this quarterly decline, several typically defensive equity factors underperformed in the third quarter. The quality factors return-on-equity (ROE), positive earnings, positive dividends, and low share change (within smaller caps) as well as low stock volatility and low beta all were negative for the quarter. The consumer discretionary sector is not normally defensive with its generally higher stock volatility and beta, however positive returns from some of its largest stocks (Amazon, Tesla, Home Depot, and Lowe's) drove the positive returns to high volatility and high beta. These stocks generally also have high ROE's but their returns were offset by the low return from tech stocks with high ROE's, leading low ROE to outperform. Negative earning stocks' outperformance was led by energy stocks which had positive returns for the quarter despite oil prices retreating from earlier 2022 highs. For the year, these defensive factors mostly outperformed with poor performance from the tech sector and above market returns from financials and healthcare producing positive returns for low volatility, low beta, low share change, and high ROE (overcoming the return boost given to low ROE by the strong energy returns).

Smaller-cap stocks tend to underperform in bear markets, with generally higher beta's and greater sensitivity to economic downturns. However, within large cap, smaller stocks actually outperformed for the year to date. Some of the largest U.S. stocks that had been the strongest performers in recent years (including the FAANG stocks—Meta, Amazon, Apple, Netflix, and Alphabet) have significantly underperformed this year leading the small-cap size factor to be negative in the Russell 1000 Index. **FIGURE 3** shows that the U.S. Russell index returns have been similar across market-cap segments for the year, though small cap has done somewhat better in the third quarter.

3 Russell Index Returns by Size

As of 9/30/2022

	Third Quarter	Year to Date
Russell 1000 Index	-4.6%	-24.6%
Russell Midcap Index	-3.4%	-24.3%
Russell 2000 Index	-2.2%	-25.1%
Russell Microcap Index	-0.5%	-25.5%

Source: FTSE Russell

In the first six months of 2022, prompted by the sustained increase in inflation, the yield on the U.S. 10-Year Treasury note rose to 3.5% from 1.5% before moderating a bit in late June. Generally, higher long-term rates favor value stocks versus growth stocks. Value stocks often have some strong representation from financials which often benefit from rising rates. Growth stocks, since their earnings are growing faster, rely more on those higher future earnings for their valuation. When rates rise, those future earnings are worth less and growth stocks can underperform. In addition, energy stocks are almost exclusively value stocks at this time, and this sector produced large positive returns early in the year as oil prices rose from the high $70s a barrel in late 2021 to over $120 in June. These impacts were reflected in the much better year to date returns for value factors, such as low price-to-earnings (P/E) and low price-to-book (P/B) and poor performance from the growth factors sales, earnings, and estimates growth. The Russell value indices also easily outperformed the Russell growth indices across the market-cap spectrum for the year.

In the third quarter, this trend reversed modestly as value factors lagged, growth factors generally outperformed, and the Russell growth indices beat the Russell value indices. The higher growth segments had greater exposure to the better-performing consumer discretionary stocks mentioned above which offset continued weak returns from tech stocks. Within the value factors, high P/E and high P/B returns were boosted by the same consumer discretionary outperformers which offset both the lagging high valuation tech stocks and the better returns from low valuation financials and energy (despite lower oil prices in the quarter). **FIGURE 4** shows the returns for the Russell value and growth indices for Q3 and year to date.

4 Russell Index Returns by Style

As of 9/30/2022

	Third Quarter		Year to Date	
	Growth	Value	Growth	Value
Russell 1000 Index	-3.6%	-5.6%	-30.7%	-17.8%
Russell Midcap Index	-0.7%	-4.9%	-31.5%	20.4%
Russell 2000 Index	0.2%	-4.6%	-29.3%	-21.1%
Russell Microcap Index	2.1%	-2.2%	-31.6%	-21.5%

Source: FTSE Russell

With the third quarter reversal in growth and value returns, high stock price momentum had small negative returns across most U.S. stock market segments. Higher-momentum stocks were hurt by the healthcare sector which had outperformed earlier in 2022 but lagged in the third quarter. Low momentum was helped again by the strong consumer discretionary names which had trailed the market in the first two quarters. For the year, the price momentum factor was strongly positive, with energy, healthcare, financials, and utilities all supporting high momentum returns for the year while technology and communication services were poor performers within the low momentum segment.

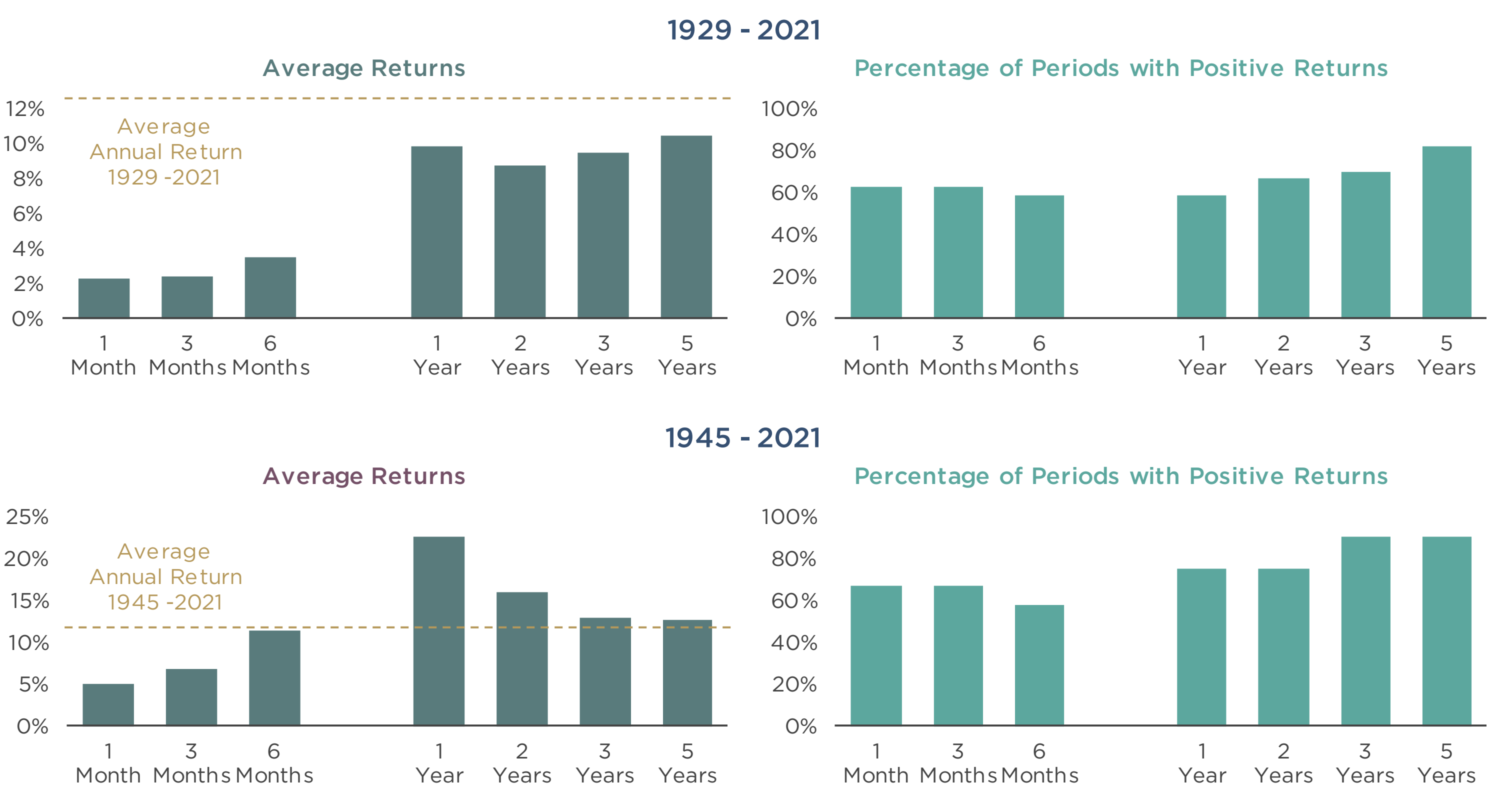
Research Spotlight: Market Returns after a Bear Market

By mid-June, the S&P 500 Index was down over 20% from its January 3, 2022 peak, indicating that U.S. equities entered a bear market. This significant market decline raises the question whether historically bear markets had negative momentum that sustained further declines or if they were the trigger for rebounding equity prices. We look back historically to 1929 to determine how that market behaved in situations similar to our current bear market.

From the first day in which the market declined at least 20% from a recent high, we calculated returns over the next month, 3 months, 6 months, 1 year, 3 years, and 5 years to identify typical behavior after such a meaningful decline. We also examined what proportion of the subsequent periods produced positive returns following the market decline. There have been 25 bear markets since 1929. We provide results for both the full period and just the post-World War II era. The 1929-1942 period saw extremely high market volatility with 12 bear markets in 13 years as the market fell, recovered, and then fell again repeatedly. The next 80 years saw only 13 bear markets, including the current one in 2022.

As the charts in **FIGURE 5** indicate, the average return after the market fell 20% was positive for all subsequent periods in both the entire and post-1945 era. Of course, the return was not positive in the subsequent periods for every bear market, just on average. The charts to the right show the percentage of times the subsequent period was positive: generally, between 50% and 60% of the time for the shorter 1-month, 3-month, and 6-month periods, over 75% of 1-year periods post-1945 and

5 | Historical Market Returns for Periods Following a 20% Equities Decline



90% of the 3- and 5-year periods post 1945. One indication that the post bear market returns were not always immediately positive is that the average decline in the full bear market was 34.6%, representing an additional drop of 16.1% after the initial 20% decline. The one extreme negative outlier followed the 1929 stock crashes' initial 20% decline. The market temporarily recovered to that 1929 level several times over the subsequent ten years, however, investing in the market after the first 20% decline in 1929 did not permanently produce a positive return until 1942.

Despite this one extreme period, these results do suggest the advisability for long-term investors to stick with stocks even when the market reaches bear territory. Studies have shown the tendency for investors, particularly individual investors, to sell in down markets and then miss subsequent rallies, leading to long-term investment returns that fall short of the market return. With patience, staying with the market following a substantial decline has been rewarded and even more so for holding periods longer than those examined here.

[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 (©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. 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.**

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