Quantitative Review of U.S. Equities

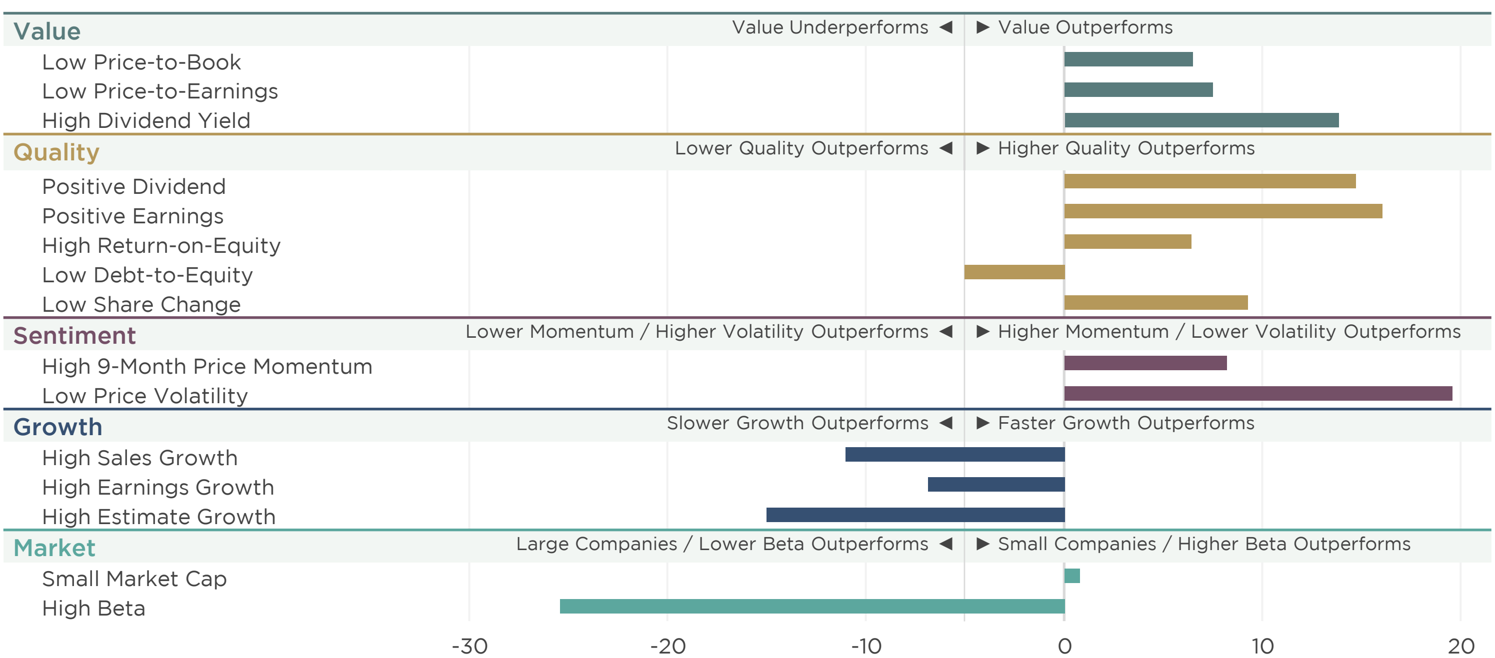
- U.S. equity markets continued to fall, with the S&P 500 index declining 16.1% in the second quarter and 20.2% for the year, reaching the traditional definition of a bear market.
- Consistent with a falling stock market, quality factors such as high return-on-equity, positive earnings, high share buyback, and positive dividend were all strong performers for the quarter and the year.
- Also typical of declining equities, lower price volatility, lower beta, and larger cap stocks generally performed better, though the very large growth stocks underperformed.
- Strong stock price momentum stocks have done well this year.
- Value factors mostly outperformed in the quarter and year to date. However, when longer-term interest rates fell sharply late in the second quarter, the value factors lagged.
- Growth factors, such as high sales and earnings growth, were weaker while interest rates rose through much of 2022. These factors continued to mostly underperform as longer-term rates declined in June.
- For the quarter, the Russell 1000 Value Index fell less than the Russell 1000 Growth Index, declining 12.2% versus a 20.9% drop. Similarly for the year, the value index was off only 12.9% compared with the growth index's 28.1% decline.
- **Research Spotlight: U.S. Recessions and Market Returns:** U.S. gross domestic product (GDP) fell in the first quarter of 2022, raising the possibility of economic recession based on one widely used definition as two consecutive quarters of negative GDP growth. We review the historical record of U.S. recessions and equity market returns.[1]

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 **Second Quarter 2022 Russell 1000 Index Factor Returns**

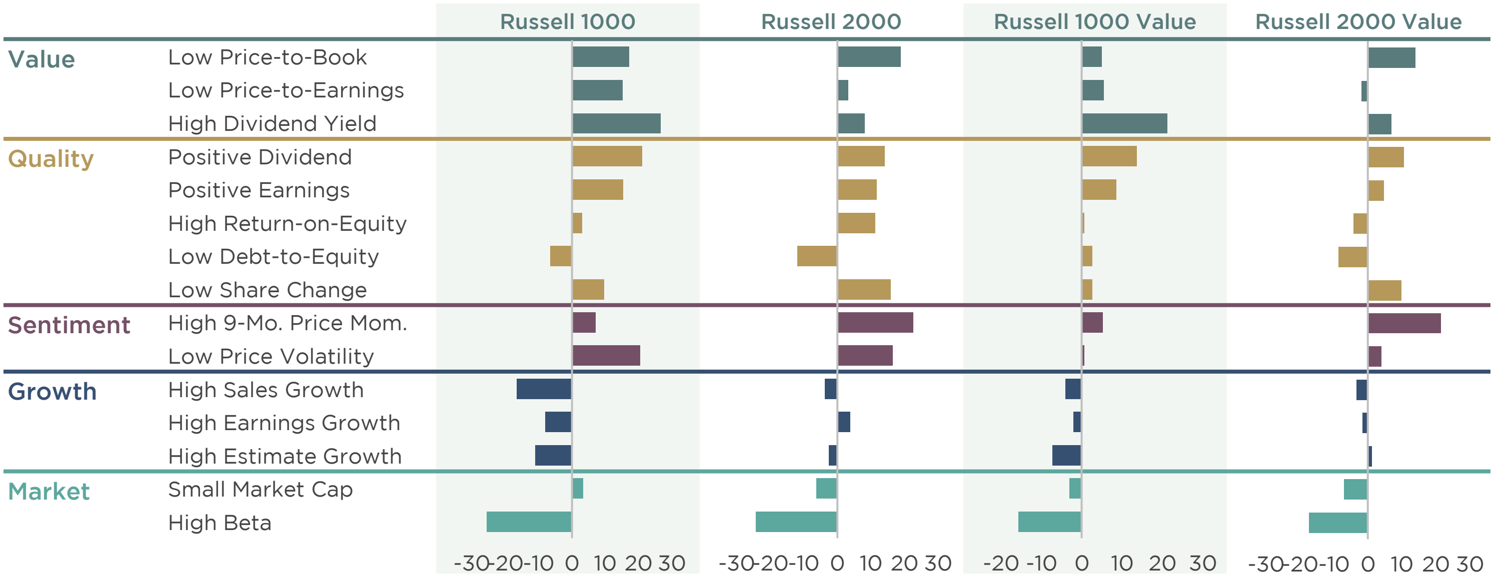
QTD; % Return Difference Between Factor's[2] High and Low Quartile; Russell 1000 Index; As of 6/30/2022



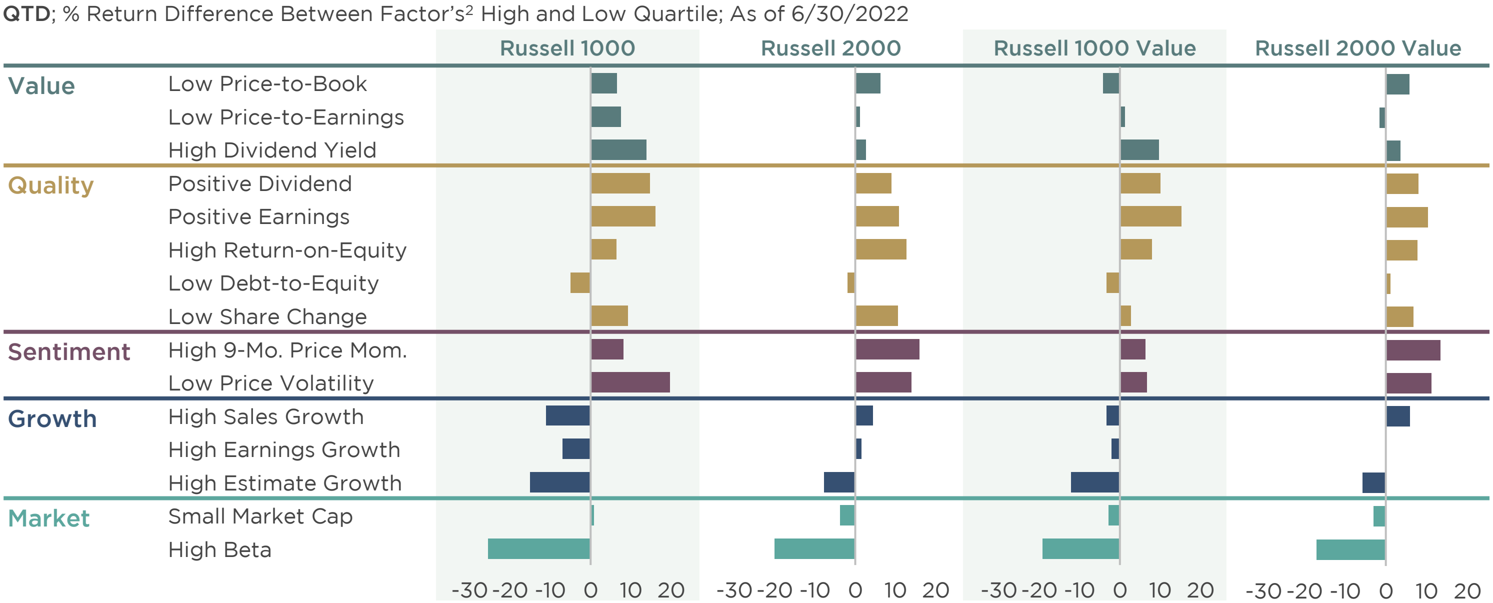
Source: Brandywine Global, FactSet, FTSE Russell

2 Russell Index 2022 Factor Returns

YTD; % Return Difference Between Factor's[2] High and Low Quartile; As of 6/30/2022



QTD; % Return Difference Between Factor's[2] High and Low Quartile; As of 6/30/2022



Source: Brandywine Global, FactSet, FTSE Russell

Second Quarter 2022 Factor Returns

Persistent inflation, which rose to a 40-year high of 9.1% in June, led to two significant federal funds rate increases this quarter after an initial hike in the first quarter. The 50 basis points (bps) May increase and the even larger 75 bps jump in June to a 150 to 175 bp range alerted investors that the Federal Reserve (Fed) was concerned that inflation was becoming more firmly rooted in the economy and would require sustained action to bring it under control. Following negative U.S. GDP growth in the first quarter, equity markets recognized that the U.S. economy could already be in a recession, defined as two consecutive negative growth quarters.[1] The National Bureau of Economic Research (NBER) incorporates additional economic factors such as income, unemployment, industrial production, and retail sales in its official determination of a recession. However, every recession defined with two negative growth quarters over the last 60 years has overlapped with a NBER-defined recession. All these issues plus global economic and political problems around the Russia/Ukraine war, China COVID-19 shutdowns, and high oil prices precipitated the equity market's sharp decline. Longer-term rates initially rose rapidly this year as the 10-year Treasury yield went from 1.5% at the start of the year to 3.5% in mid-June. The yield slid late in June down to 3.0% as investors recognized that the higher federal funds rate could slow economic growth, leading to lower long-term rates. This quarter the 2-year Treasury rate has tracked closely to the 10-year, leading to the possibility of an inverted yield curve, often seen as another signal of impending recession.

The cumulative result of these developments was a sharply lower U.S. stock market, reaching into bear territory based on the S&P 500's 20.2% decline in 2022's first half. This drop in U.S. equities was the worst first half decline since 1970. Consistent with expectations and market history, higher-quality stocks provided more defensive returns in this down market. The quality factors of high return-on-equity, positive earnings, high share buyback, and positive dividend all outperformed this quarter and year to date. Some lower-quality measures actually did well early in the year, propelled by the very strong energy stock performance, since many energy stocks currently have lower-quality characteristics. However, in June oil prices and oil stocks retreated, eliminating this offset to the poor performance of other lower-quality stocks.

Other typically defensive factors, such as lower beta, lower price volatility, and higher market cap, also performed better for the quarter and the year. The one exception was in the Russell 1000 Index where smaller caps did outperform slightly this quarter and year to date, primarily because the growthier tech stocks that led the market's decline were mostly among the largest U.S. stocks. **FIGURE 3** shows that based on the Russell U.S. indices, the returns for large and small cap were very similar for the second quarter and only somewhat worse for smaller caps year to date.

3 Russell Index Returns by Size

As of 6/30/2022

	Second Quarter	Year to Date
Russell 1000 Index	-16.7%	-20.9%
Russell Midcap Index	-16.9%	-21.6%
Russell 2000 Index	-17.2%	-23.4%
Russell Microcap Index	-19.0%	-25.1%

Source: FTSE Russell

4 Russell Index Returns by Style

As of 6/30/2022

	Second Quarter		Year to Date	
	Growth	Value	Growth	Value
Russell 1000 Index	-20.9%	-12.2%	-28.1%	-12.9%
Russell Midcap Index	-21.1%	-14.7%	-31.0%	-16.2%
Russell 2000 Index	-19.3%	-15.3%	-29.5%	-17.3%
Russell Microcap Index	-22.4%	-16.8%	-33.0%	-19.7%

Source: FTSE Russell

As the Fed began raising the short-term federal funds rate, longer-term rates increased as well. The 10-year Treasury yield increased from 1.5% at year-end to a high of 3.5% in mid-June. Rising interest rates generally hurt growthier stocks since more of their valuation comes from future growth in earnings and profits, which is more heavily discounted with higher rates. Therefore, the FAANG group of growth stocks (Meta Platforms, Amazon, Apple, Netflix, Alphabet/Google) had a difficult first half. Financials, on the other hand, currently a significant weight among value stocks, generally benefit when rates increase. In addition, energy stocks, another group with lower valuations, performed extraordinarily well in the first half of 2022 as oil prices went from the mid-$70s at the beginning of the year to peaking over $120 per barrel. As a result, value factors, including low price-to-earnings and low price-to-book, were generally relatively strong while growth factors like high sales, earnings, and estimate growth lagged in the quarter and the year. Late in the second quarter, longer-term interest rates and oil prices both fell as the higher federal funds rate increased the potential for an economic slowdown. This shift in macro conditions did produce a small reversal in the value factors strength but no real boost for the growth factors. **FIGURE 4** shows the significant outperformance of the Russell value indices versus the growth indices across the market-cap spectrum in the quarter and year to date.

Stocks with high price momentum performed relatively well this quarter and year. Some larger tech growth stocks (Apple, Alphabet/Google) had positive momentum coming into 2022 and then significantly underperformed this year. However, energy and healthcare stocks also entered 2022 with strong momentum and continued to outperform, enabling the high momentum stocks as a group to perform better than the broader market. Low momentum stocks included large-cap growth stocks that had begun to falter in late 2021 and underperformed significantly in communication services (Netflix, Disney, Meta Platforms), retailers (Amazon), and some tech stocks (PayPal).

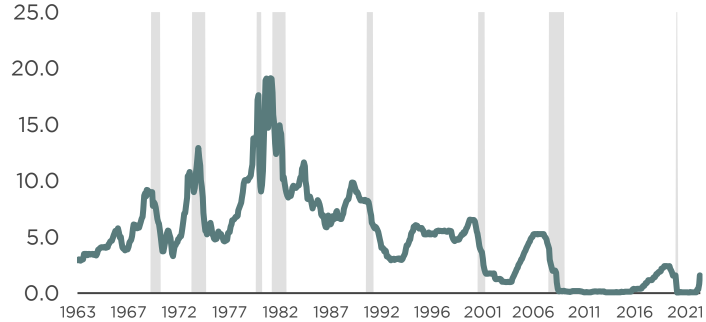
Research Spotlight: U.S. Recessions and Market Returns

U.S. economic growth fell by 1.6% annualized in 2022's first quarter. A drop in the second quarter GDP would meet one popular, though not official, definition of an economic recession—two consecutive quarters of negative growth.[1] One potential trigger for a shrinking economy is the recent series of increases in the federal funds rate by the Fed. After initial increases of 25 bps in March and 50 bps in May, a 75 bps hike in June seemed to signal a more aggressive Fed effort to cut short surging inflation, which hit a 40-year high at over 9% in June. Raising interest rates in this way is thought to slow down economic growth and then inflation, with the risk that the economy might not just slow but fall into decline. **FIGURE 5** shows the relationship between the federal funds rate and economic recessions as defined by the National Bureau of Economic Research, the official arbiter of recessions. As the chart indicates, rate increases did usually precede a recession, but on average by just over two years, and rates often began to fall before the recession began. This period would be different if in fact we are already in a recession. Rates began to rise only late in the first quarter of this potential recession, another unusual feature of the recent unprecedented, pandemic-driven economic cycle.

FIGURE 6 presents average U.S. market returns over the different stages of the recession cycle. Not surprisingly, average market returns are weak through the recession months and negative in the six months before and the first six months of the downturn. If we are in a recession,[1] the market was caught off guard since the S&P 500 index rose almost 12% in the last six months of 2021. Of course, the market made up for those gains by dropping almost 20% in 2022's first half. A recovering economy was obviously well received by the equity market, with strong returns in the last six months of recession and the first six months of recovery. The returns of value and growth stocks, as represented by the Russell 1000 Value and Growth indices, did not differ significantly through the recession cycle. The one exception was that in the downturn's last six months, all stocks performed very well, but growth stocks did somewhat better.

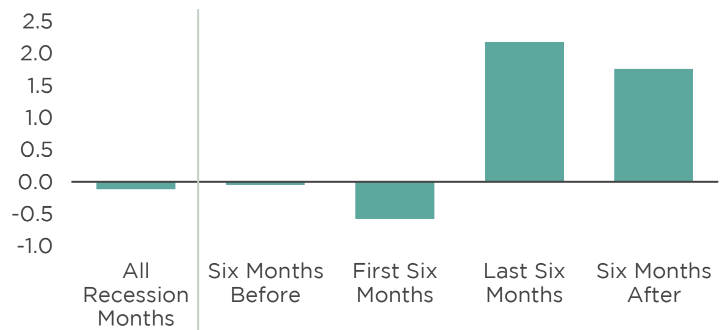
The historical market impact of the Fed's initial rate hike in an extended cycle of rate increases appears in **FIGURE 7**. In the six months after that first increase, low equity returns seem to indicate investors recognized the strong likelihood of a slowing or even contracting economy. However, the market has not been good at anticipating Fed policy shifts since the U.S. market historically has experienced strong returns in the six months before rate increases begin. U.S. equities were better at predicting a rate hike this cycle as the S&P 500 index fell 2.6% in the six months before the March rate move.

5 **Federal Funds Effective Rate**
Jan 1963 – Jun 2022



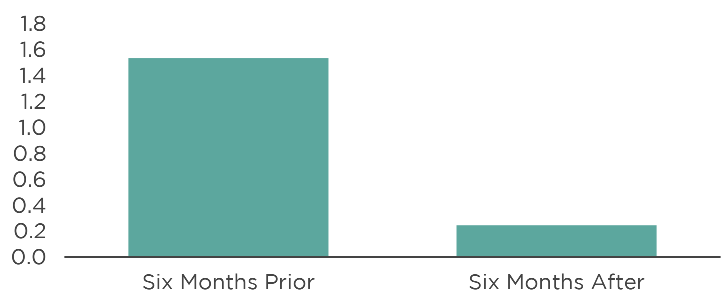
Source: FRED, Federal Reserve Bank of St. Louis

6 **Russell 1000 Returns Around A Recession**
1963 - 2021



Source: FRED, Federal Reserve Bank of St. Louis and FTSE Russell

7 **First Federal Funds Rate Hike**



Source: FRED, Federal Reserve Bank of St. Louis and FTSE Russell

[1] On July 29, the U.S. Bureau of Economic Analysis announced that U.S. GDP fell an estimated 0.9% annualized in 2022's second quarter, meaning GDP did fall in the last two quarters.

[2] 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.**

Brandywine GLOBAL

Brandywine Global Investment Management, LLC

1735 Market Street
Suite 1800
Philadelphia, PA 19103

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