Quantitative Review of U.S. Equities

Brandywine GLOBAL

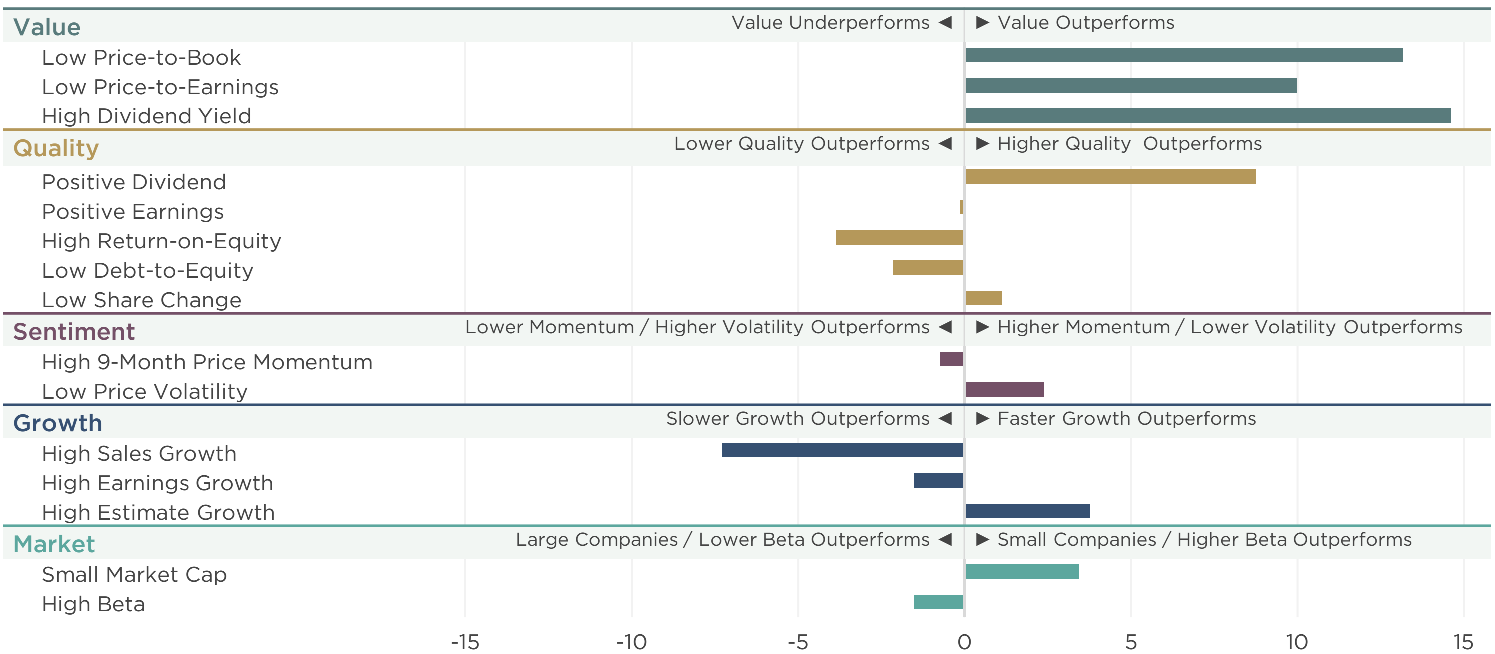
- U.S. equity markets were down, opening the year with the S&P 500 falling over 12% before rallying back in March to trim the first quarter loss to 4.6%.
- Value factors were very strong in the quarter, performing defensively across all the U.S. market segments. Value stocks then pared their relative gains in late March as the market partially recovered.
- While high sales and earnings growth stocks mostly lagged in the quarter, high estimate growth stocks performed well, including in March when the market rallied. The Russell 1000 Value Index lost only 0.7% this quarter while the Russell 1000 Growth Index was off 9.0%.
- The performance for higher-quality factors was mixed, failing to provide consistent defensiveness in a down market. Higher return-on-equity (ROE), lower debt-to-equity, and positive earnings stocks all fell more than the overall market. Dividend paying companies and stocks with negative or low share issuance were positive for the quarter. Most quality factors did poorly when the market turned positive in March.
- Various market-based factors had mixed returns across the U.S. equity market. High beta, high price volatility, and small cap versus large cap all were positive in some market segments and negative in others.
- High price momentum did well among smaller-cap stocks but was closer to neutral for large caps.
- **RESEARCH SPOTLIGHT: FEDERAL FUNDS RATES AND MARKET RETURNS** The Federal Reserve (Fed) raised its target federal funds rate in March for the first time since 2018. We review the historical impact on market returns from such a change in Fed policy.

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 | First Quarter 2022 Russell 1000 Index Factor Returns

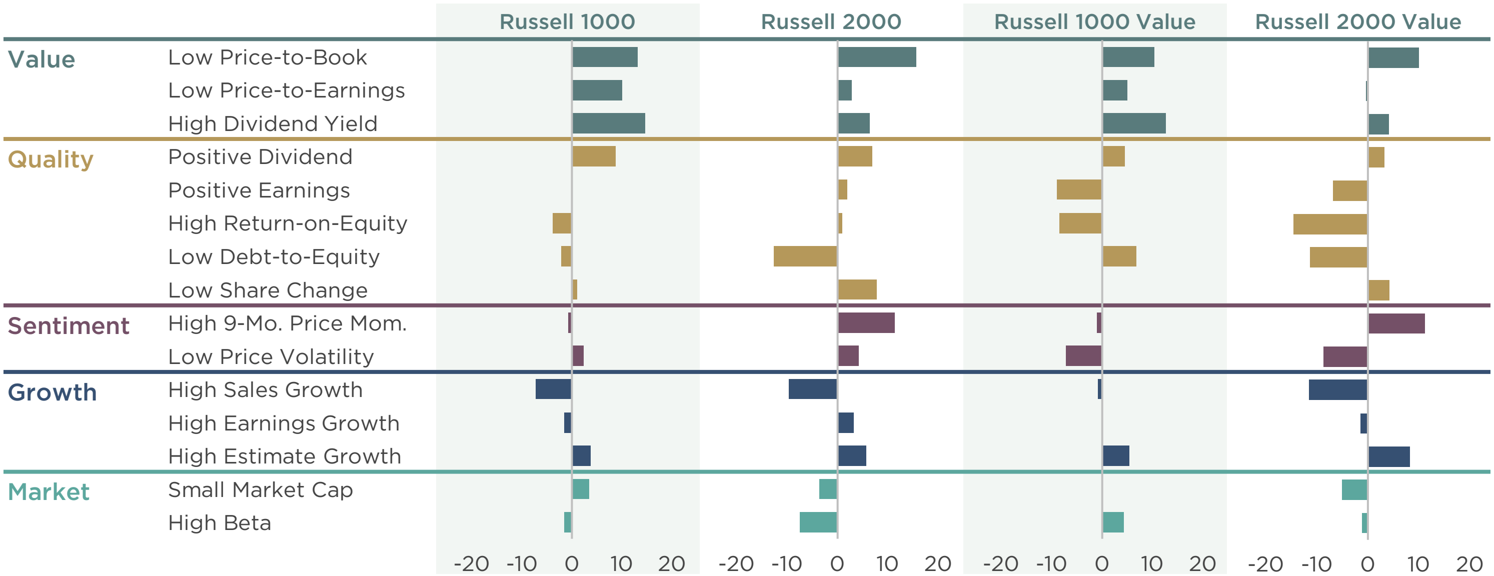
QTD; % Return Difference Between Factor's[1] High and Low Quartile; Russell 1000 Index; As of 3/31/2022



Source: Brandywine Global, FactSet, FTSE Russell

2 **Russell Index Factor Returns**

YTD; % Return Difference Between Factor's[1] High and Low Quartile; As of 3/31/2022



Source: Brandywine Global, FactSet, FTSE Russell

First Quarter 2022 Factor Returns

Rising inflation, potential Fed rate hikes, new COVID-19 surges, and geopolitical tensions were certainly not new concerns for investors at the beginning of 2022. However, in 2021 investors seemed to shrug off these issues and pushed the S&P 500 to a record high in late December and a 28.7% gain for the year. In 2022, these negatives seemed to assert control over investors, driving U.S. equity markets lower with the S&P 500 falling over 12.0% by mid-March before snapping back to just a 4.6% quarterly loss. Perhaps reflecting the traditional market wisdom of sell on the rumor, buy on the news, U.S. equities initially rallied following the February 24 Russian invasion of Ukraine and then again in mid-March after the Fed raised the target federal funds rate by a quarter point. Several indicators highlighted the tumultuous nature of the first quarter: The yield on the 10-year Treasury note rose 83 basis points to 2.34% from 1.51% and temporarily fell below the yield on the two-year Treasury yield in late March (though still well above the one-year Treasury bill rate). Oil prices rose from near $75 per barrel, peaking over $120 following the Ukraine invasion, before falling back around $100 at quarter-end. The Consumer Price Index continue to climb, rising at an annual rate of 7.9%, the highest level since 1982 and emphatically dispelling the notion that the recent inflation increase was transitory. Finally, the VIX measure of stock market volatility spiked higher, though still below the levels reached in early 2020 as the pandemic took hold.

Value stocks, whether measured on low price-to-book or price-to-earnings were the prime beneficiaries in these uncertain markets. Two sectors with significant representation in the value indices, oil companies and financials, were top performers. The oil & gas sector was by the far the strongest group this quarter based on the significant rise in oil prices, with a 38.7% sector return within the Russell 1000 compared with a 5.1% loss for the index overall. Financials did not do as well as oil companies but still outperformed with just a -1.6% loss within the Russell 1000 Index. Financial stocks generally do well when longer-term rates are rising. They did lag the market in late March when the yield curve inverted with the two-year Treasury rate exceeding the 10-year Treasury rate—typically not a good environment for financials.

Within growth factors, high sales growth, and earnings growth were negative while high estimate growth was positive, a performance difference explained by varying sector weights in the factors. The high sales and earnings growth segments have a very high weighting in technology stocks, which underperformed as a group for the quarter. Technology has a significant weighting in the high estimate growth group, but nearly half of the weight is in high sales growth stocks. At the same time, the low estimate growth segment had larger weights in communications services and consumer discretionary, two weaker sectors in the first quarter. The combination of strong value performance and mixed growth returns is seen in the Russell index returns for the quarter in **FIGURE 3**, with, for instance, the Russell 1000 Value Index down only -0.7% while the Russell 1000 Growth Index declined 9.0%.

3 **Russell Index Returns by Style**

As of 3/31/2022

	1Q 2022	
	Growth	Value
Russell 1000 Index	-9.0%	-0.7%
Russell Midcap Index	-12.6%	-1.8%
Russell 2000 Index	-12.6%	-2.4%
Russell Microcap Index	-13.7%	-3.5%

Source: FTSE Russell

Contrary to quality factors' historical defensiveness, their performance was mixed, with low share change and positive dividend stocks doing well while high return-on-equity (ROE), low debt-to-equity, and positive earnings stocks lagged. Each segment's weight in energy stocks was critical given the sector's 38.7% return for the quarter. Energy was more prominent in low ROE and negative earnings but also in low share change, which explains the different performance of these various quality factors.

Market-based factors were also mixed in this quarter's down returns. Low beta and low price volatility outperformed, as might be expected given their historical tendency to fall less in a negative market, but small caps outperformed, at least in the Russell 1000 Index. The difference here is related to the weighting in the poor-performing technology sector across the various groups. Both the high-volatility group and large-cap stocks had an overweighting in tech, pulling down the returns for both factors among large caps but not among smaller caps with their lower tech weight.

4 **Russell Index Returns by Size**

As of 3/31/2022

	1Q 2022
Russell 1000 Index	-5.1%
Russell Midcap Index	-5.7%
Russell 2000 Index	-7.5%
Russell Microcap Index	-7.6%

Source: FTSE Russell

While the high price momentum factor was neutral for larger-cap stocks, it was positive among small caps. In large caps, the significant weights in energy and tech in the high price momentum group offset each other. Within small caps, energy was a bigger relative weight in high momentum in part because small caps simply have a lower tech weight overall.

Research Spotlight: Federal Funds Rates and Market Returns

On March 16, 2022, the Federal Reserve Board raised the federal funds target rate by 25 basis points to a 0.25% – 0.50% range, the first increase since December 2018 but certainly not the last in 2022. As has often been the case historically, the Fed's move was intended to slow down surging inflation. A slowing economy or recession is often a negative impact from rising rates, though perhaps necessary to bring inflation back in line. Given this backdrop, we analyze past periods of rising federal funds rates to determine how the U.S. equity market responded to these moves. We analyze average monthly market returns for different federal funds rate levels. We also calculate the average market return for months when the federal funds rate decreased, was unchanged, or increased from January 1971 through December 2021.

Our goal is to measure the impact of this key rate on U.S. stock market returns. For this reason, we exclude from the data months when the rate was low (below 2.0%) and declining. These few months (11 in 1971 – 2021) include the financial crisis and early pandemic periods when the Fed aggressively reduced already low rates to counter a faltering economy and a plunging stock market. For instance, the Fed cut rates in October 2008 when the market fell 17% and in March 2020 during a 13% market decline. In both cases, the interest rate cut was a response to the market decline rather than its cause.

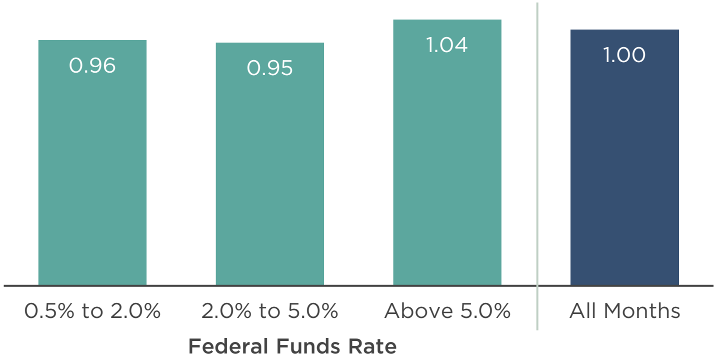
FIGURE 5 shows the average monthly U.S. equity market return over 1971-2021 depending on the absolute level of the federal funds rate. As the chart shows, stock market returns did not vary much depending on the rates current level.

FIGURE 6 represents the average monthly market return in periods when the rate was falling, unchanged, or rising. As might be expected, when the Fed increased the federal funds rate to counter rising inflation and collaterally slow the economy, the market was weaker. Even though average equity returns in these months were lower than for all periods, they were still positive.

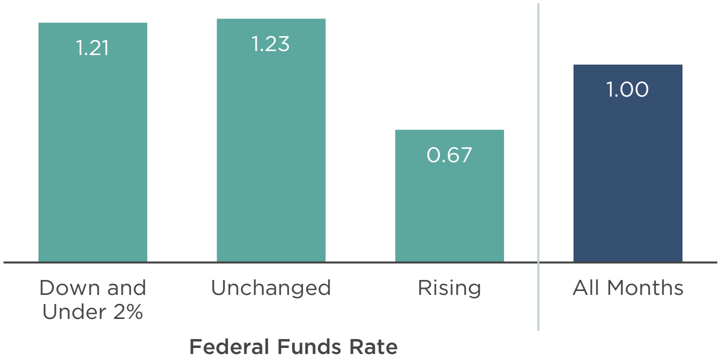
FIGURE 7 looks at what percentage of months were negative given the federal funds rate's direction. While the market was more likely (41.6% of the time) to be negative when the rate is rising, it was not dramatically higher than for when rates were falling (38.2%) or flat (33.3%).

With the recent Fed rate hike, and the Fed's clear intent to raise rates until inflation returns to acceptable levels, the historical evidence suggests that the U.S. equity market will have difficulty matching its strong returns from late 2020 and 2021. Nevertheless, past periods still indicate that market can deliver positive returns while the Fed fights inflation.

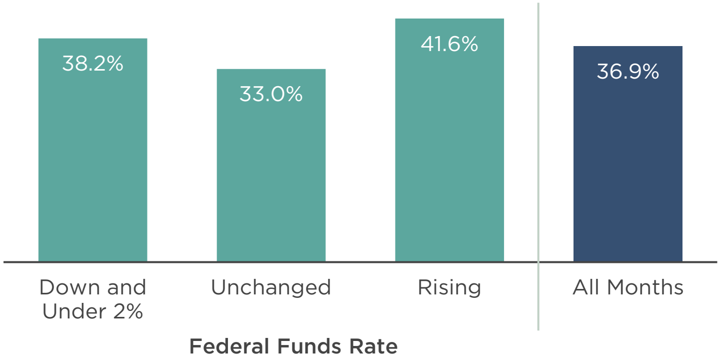
5 **Average Monthly Market Returns[2]**
1971-2021



6 **Average Monthly Market Returns[2]**
1971-2021



7 **Percentage of Negative Monthly Market Returns[2]** 1971-2021



[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] Federal Funds Rate: Board of Governors of the Federal Reserve System (US), Federal Funds Rate retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DFEDTAR; Market Returns: Ken French Data Library: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

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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