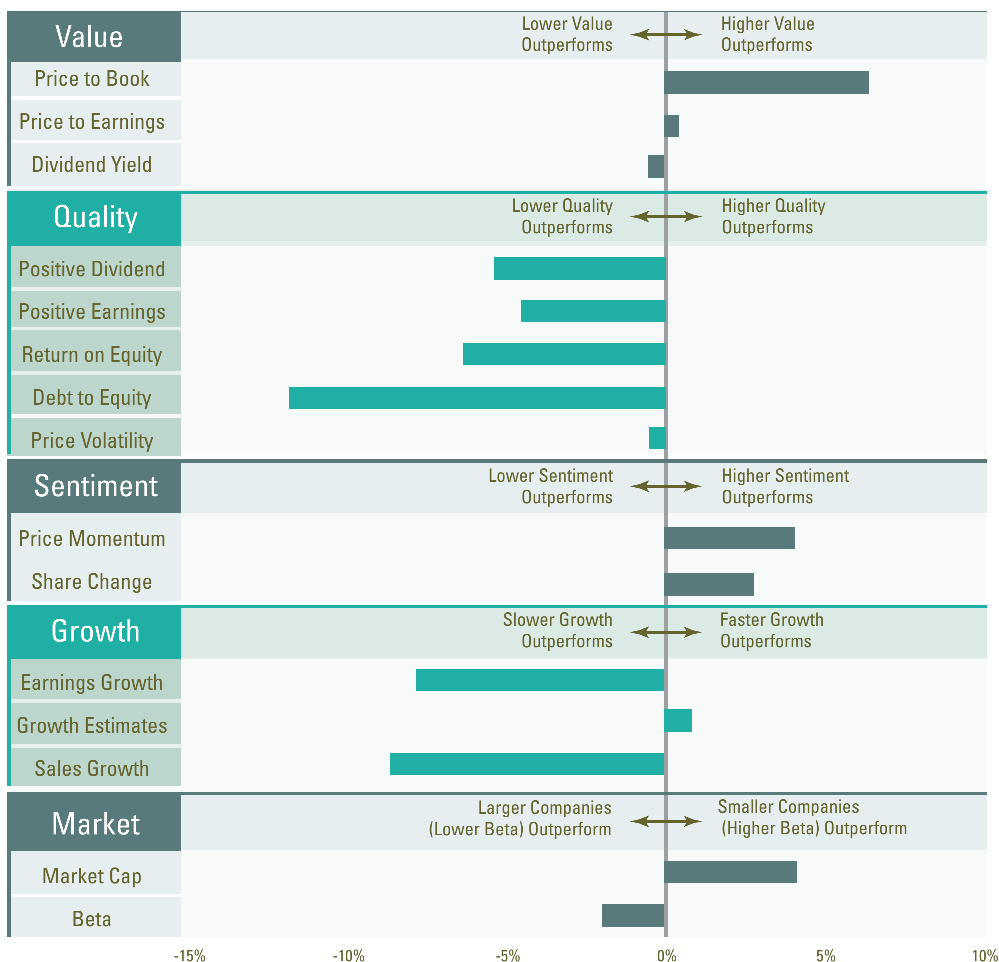
Quantitative Review of U.S. Equities

June 2013

- Quantitative factors showed greater consistency across the market cap and style (value/growth) spectrums after posting significant dispersion in the first quarter. Value, quality, sentiment, and growth factors mostly produced similar results in the Russell 3000, 1000 Value, and 2000 Value indices.
- Given this quarter's rise in long-term U.S. interest rates, dividend-paying stocks were among the worst performers: the higher the dividend yield, the lower the return. Rising interest rates probably also contributed to the negative return to lower volatility and lower beta as higher dividend stocks tend to score low on these characteristics. Most growth factors were also negative, as high future growth is more highly discounted as rates rise.
- As long-term interest rates rose from recent lows, factor returns in May and June generally were consistent with the historical link between the rising rates and equity factor performance. In this note, we review the potential impacts on equity factors if rates continue to rise and if short rates begin to follow longer rates higher.
- Unlike the first quarter, Apple had a much less noticeable impact on the Russell 3000 factors this quarter. While still down -10.4% in the quarter, this is closer to the S&P 500's 2.4% gain than the 27% return spread in the first quarter. Moreover, Apple's weight in the index has fallen given recent underperformance against the benchmark. Still, the stock significantly impacted year-to-date factors for the Russell 3000 Index.

Figure 1 Broad Market U.S. Equity Factor Returns

YTD; % Return Difference between Factor's[1] High and Low Quartile; Russell 3000 Index



As of 6/28/2013; Source: FactSet, Brandywine Global

A NOTE FROM BRANDYWINE GLOBAL'S DIVERSIFIED EQUITY TEAM

Attached 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. We welcome feedback on our factor report as well as on the thoughts and research in our written presentation.

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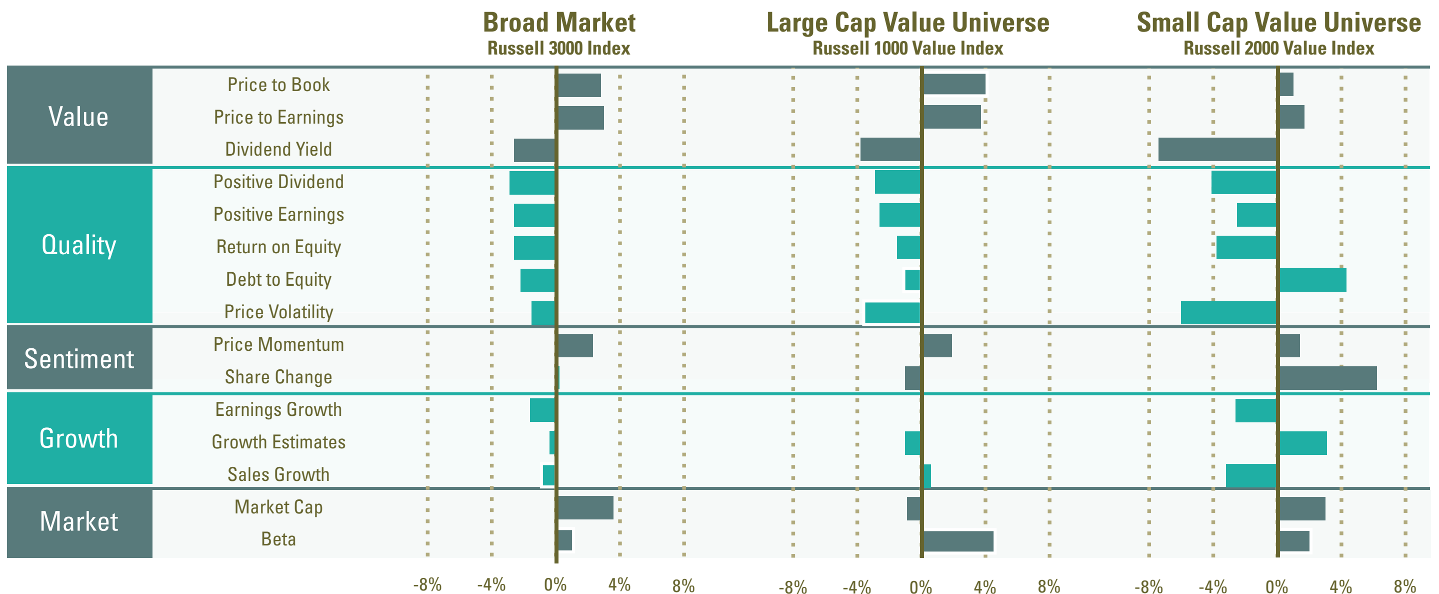
Figure 2 U.S. Equity Factor Returns
Last 3 Months; % Return Difference between Factor's[1] High and Low Quartile



As of 6/28/2013; Source: FactSet, Brandywine Global

SECOND QUARTER FACTOR PERFORMANCE

The most important second-quarter investment event was the unexpected sharp rise in long-term Treasury rates. Federal Reserve (Fed) Chairman Ben Bernanke triggered this increase by outlining a potential path toward reduced quantitative easing. This rate increase meaningfully impacted equity markets overall as well as the return to various market factors. While equity markets continued to rise in early May when long rates first began to increase, the factors most directly impacted by interest rates reacted almost immediately: after leading the market higher earlier in the year, higher dividend-paying stocks began to significantly underperform, particularly on those days where interest rates increased. Sectors such as utilities, consumer staples, and real estate investment trusts were among the hardest hit. Lower volatility and lower beta stocks also underperformed beginning in May as the higher yielding stocks tend to be less volatile on an absolute and market-relative basis.

Stocks with higher debt-to-equity ratios also began to underperform, even though other measures of lower quality such as low return on equity and negative earnings continued to perform well. The stocks with more debt may be responding negatively to their need to refinance their debt at higher rates. The other high quality factors also began to outperform once market returns turned negative late in May. Growth factors were mixed in the quarter but mostly turned negative late in the quarter, either in response to higher interest rates more heavily discounting future growth or because of the tendency for growthier and typically higher beta names to lag as the broad market declines.

Value factors performed well in the quarter and subsequently in the year-to-date period after producing mixed results in the first quarter. Sentiment factors mostly fared well in the second quarter, continuing the outperformance from earlier in the year.

HISTORICAL IMPACT OF INTEREST RATES ON EQUITY FACTORS

Table 1 reviews the historical impact of various interest rate environments on returns to key quantitative equity factors. While reviewing rate changes from the past is a straightforward process, a few notes of caution are appropriate when drawing parallels to current markets. The Fed's recent discussion of a conditional timetable for reducing quantitative easing has been described as a form of Fed tightening. However, quantitative easing has rarely been employed by the Fed and traditionally, tightening has taken the form of raising short-term interest rates and narrowing the spread between short- and long-term rates, and at times going so far as to invert the yield curve. Over the last few years, the Fed's efforts have held down longer rates through significant purchases of longer-maturity Treasuries and mortgage-backed securities. The discussion of a potential plan to reduce the Fed's bond purchases led to higher long-term rates, while T-Bill rates remained near the zero level. The result was a widening

term premium, the exact opposite of traditionally defined tightening. Given the lack of historical precedence, we do not know if equity markets will respond as they have in the past to similar changes in interest rate levels.

Table 1

		LONG TERM RELATIONSHIP 1962-2012			
	Q2 2013: 10-YEAR LOW AND RISING	**10-YEAR LOW AND RISING**	**SPREAD WIDENING**	**T-BILL LOW AND RISING**	**SPREAD NARROWING**
Market	Mixed	Positive	Positive	Mildly Positive	Mildly Positive
Small Cap	Positive	Positive	Mildly Positive	Positive	Mildly Positive
Value	Positive	Mildly Positive	Mildly Positive	Mildly Positive	Mildly Positive
Dividend Yield	Negative	Negative	Neutral	Negative	Neutral
Price Momentum	Positive	Mildly Positive	Neutral	Positive	Mildly Positive

With these caveats in mind, the first column in **Table 1** shows the return to various factors on the days this quarter when rates were rising. The next two scenarios are a historical look at environments similar to the last two months: a low and rising 10-year rate and a rising long-short interest rate spread. The final two scenarios, low and rising short-term rates and a declining long-short spread, represent potential outcomes if, as in the past, short rates follow long rates higher and do so at a faster rate, causing the spread between long and short rates to narrow. Not surprisingly, both rising long and short rates tend to be quite difficult for higher dividend stocks, just as we have seen this year. Most of the other factors tend to react at least moderately well to rates rising from low levels, and are at worst indifferent to the direction of the long-short rate spread.

Table 2 shows the best interest rate environment for each of the equity factors. High and falling interest rates (long or short term), often experienced at the early stages of an economic and market recovery, tend to be the best scenario for a number of factors, including overall market performance. (Note that with the exception of Dividend Yield and Small Cap, the factors' average return was positive in all interest rate environments, with the worst case environment reflecting low but positive returns to the Market, Value, and Price Momentum).

One seemingly inconsistent finding is that a period of high and falling rates is the best scenario for the market but also the best scenario for value factors, yet value generally performs better when markets decline. This results stems from value performing best in the slightly unusual time periods when interest rates are falling and yet the market underperforms.

Table 2

	BEST ENVIRONMENTS	**WORST ENVIRONMENTS**
Market	High & Falling Long Rates High & Falling Short Rates Wide & Increasing Spread	High & Rising Long Rates High & Rising Short Rates
Small Cap	Low & Rising Long Rates Wide Spreads	Falling Long Rates High & Falling Short Rates Narrow Spreads
Value	High & Rising Long Rates Low & Falling Long Rates High & Falling Short Rates	Low & Rising Long Rates High & Rising Short Rates
Dividend Yield	Falling Rates (except for High Long Rates)	Rising Rates (except for High Long Rates) Wide & Increasing Spread Narrow & Declining Spread
Price Momentum	Declining Spread Rising Short Rates Falling Long Rates	Low & Falling Short Rates Wide & Increasing Spread

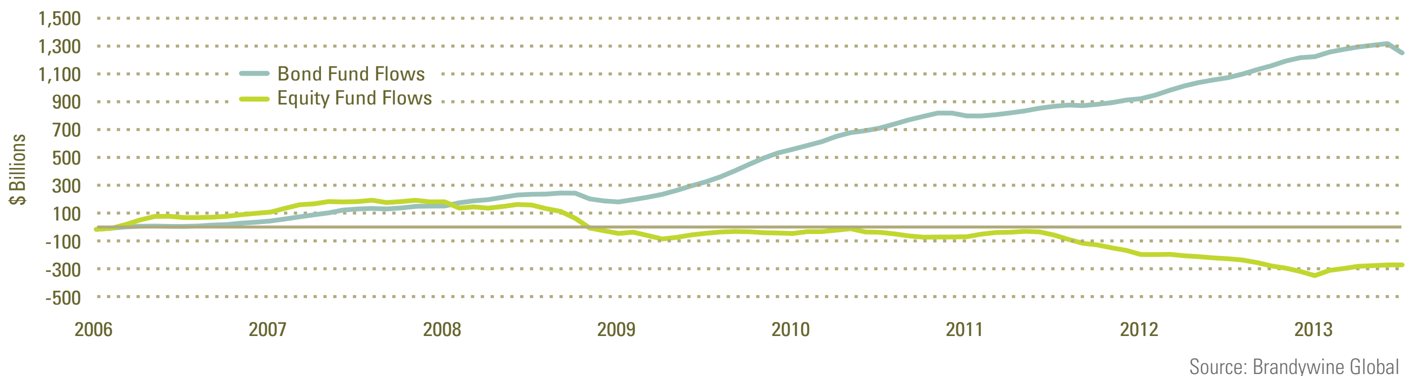
APPLE INC.'S IMPACT ON FACTOR RETURNS

Last quarter, we discussed how Apple's marked decline had strongly influenced a number of factor returns in the Russell 3000. Because Apple did not underperform as drastically in the second quarter (12.8% behind the S&P 500 compared to 27% underperformance last quarter) and its index weighting is down with its price, the stock did not have as significant an impact on second-quarter returns. However, Apple still affected year-to-date returns due to its first-quarter performance. Note that as of Frank Russell's June index rebalancing, Apple's weighting is now split between the 1000 Growth and Value Indices, with 75% of its weight in the Growth index.

MUTUAL FUND INVESTMENT FLOWS

Despite positive stock market returns in the second quarter, domestic equity flows were slightly negative after turning up in the first quarter. The failure to sustain inflows (see **Figure 3**) despite strong year-to-date and four-year equity returns (up 91%) shows investors still remain hesitant about active equity investing. Meanwhile, with the unexpected rise in interest rates starting in May, bond funds suffered their worst recorded* month of investor outflows ever in June with approximately $60 billion in net redemptions.

Figure 3 Cumulative Net Flows into Equity vs Bond Mutual Funds
2006-2013



Source: Brandywine Global

*Records from the Investment Company Institute begin in 1961.

[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 *(PE 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)*, Return-on-Equity, Debt-to-Equity, Price Volatility; **Sentiment**: Price Momentum *(9-month price change)*, Share Change *(12-month change in shares outstanding)*; and **Growth**: Earnings Growth *(1-year earnings growth)*, Sales Growth *(1-year sales growth)*

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