

Small cap defensive: Oxymoron, or simply overlooked?

An analysis of Russell 2000[®] Defensive Index[®] performance, characteristics and factors compared to the Russell 2000[®] Index

Key points

- The Russell 2000 Defensive Index represents U.S. small cap stocks that exhibit a combination of high return-on-assets, low debt-to-equity, low earnings variability, and low long- and short-term total return volatility.
- The Russell 2000 Defensive Index has historically exhibited higher performance and lower risk compared to the parent Russell 2000 Index.
- The Russell Stability Indexes methodology identifies stocks in the small cap space that have risk exposures that are consistent with the construction and design objectives of the Russell 2000 Defensive Index.

The phrase “small cap defensive stocks” may, at first blush, seem to be an oxymoron. The term “defensive stocks” evokes mature “household” names, like Pfizer, IBM or Coca-Cola, which are members of the Russell 1000[®] Defensive[®] Index as of December 31, 2014. However, the Russell Stability Indexes methodology allows for the identification of small cap stocks that – like their large cap counterparts – display risk characteristics that may be considered defensive in nature.¹

While we acknowledge that there are risks unique to small cap stocks, we demonstrate that high-quality, lower-risk portfolios can be built from stocks in the

¹ For additional information on the Russell Stability Indexes methodology, please refer to the Construction and Methodology document: <http://www.russell.com/documents/indexes/construction-methodology-stability-indexes.pdf>. Also refer to D. Hintz (2010), “The Third Dimension of Style: Introducing the Russell Stability Indexes,” Russell Research (December).

Russell 2000 Index (R2) universe. Furthermore, we will investigate the aggregate factor exposure of the Russell 2000 Defensive Index (R2DF) compared to the R2 over time with respect to measures of corporate profitability, financial leverage and stock volatility. The observant reader will recognize that these factors correspond to several of the quality and volatility measures Russell uses in its Stability Indexes methodology to create the relatively stable Defensive (and less stable Dynamic) indexes.

In this paper we look at the following:

- Some recent research that considers quality (including volatility) to be an important component of small cap performance and the small cap risk premium.
- The historical performance and portfolio characteristics of the R2DF and the R2, and finally,
- The factor exposures of the R2DF compared to the R2.

We find that, as expected, compared to the R2, the R2DF has exhibited lower volatility, strong returns and higher Sharpe ratios. Also, sector weights, as well as the specific companies captured by the R2DF, may differ slightly from those of the broader R2. Finally, historical factor exposures are in line with index design objectives.

Recent research: Increased interest in quality small cap stocks

Russell Indexes launched the Russell 2000 Defensive and Russell 2000 Dynamic indexes as part of the Russell Stability Indexes in early 2011, based on Russell's manager research observations that growth and value styles alone did not fully explain performance differences among managers investing within these styles.² Russell Defensive and Dynamic indexes go beyond strictly delineating between high quality and low quality; while quality is an essential aspect of Russell's Stability Indexes methodology, the Defensive index is designed to include stocks that demonstrate a combination of high quality and low volatility.³ Russell research has concluded that stability measures, particularly in the quality and volatility combination, are the best indicators of relative company risk in the U.S. and global ex-U.S. large cap stock universes.⁴

Until recently, though, two aspects of the considerations that led to the design of the Russell Stability Indexes have been overlooked by much of the industry. First, rather than focusing on quality, much of the industry discussion has centered on the low-volatility anomaly and the investment premium that low-volatility stocks have offered, with an abundance of research on the low-volatility effect having been published in recent years.⁵ And second, rather than focusing on small cap, the bulk of the research, including that conducted and published by Russell, has focused on the large cap or all cap stock universes.

² See D. Hintz (2010).

³ "Defensive" captures less risky and less volatile stocks, based on return on assets, debt to equity, earnings variability, and 52-week and 60-month stock volatility, while "dynamic" captures more risky and more volatile stocks based on these same five variables.

⁴ See B. Feldman (2014), "Stability is the Risk Dimension of Equity Style," *Journal of Investing* (Fall).

⁵ See, for example: Baker, M., B. Bradley, and J. Wurgler (2011), "Benchmarks as Limits to Arbitrage: Understanding the Low Volatility Anomaly," *Financial Analysts Journal* (Jan./Feb.); Blitz, D., J. Pang, and P. van Vliet (2007), "The Volatility Effect: Lower Risk without Lower Return," *Journal of Portfolio Management* (Fall).

Recently, however, Asness et al. (2015) demonstrated the capture of a strong size premium among high-quality stocks.⁶ The researchers separate the stock universe into high-quality and low-quality stocks, delineated by Quality-Minus-Junk (QMJ). The QMJ factor is based on profitability, growth, safety and payout.⁷ It is important to note that despite using “quality” as its general label, QMJ incorporates both quality and volatility factors in its definition of “high-quality” stocks. Asness et al. demonstrate that high-quality small cap stocks have outperformed high-quality large cap stocks, and that low-quality small cap stocks have outperformed low-quality large cap stocks. However, this size effect is muted when comparing small cap stocks as a whole to the universe of large cap stocks, which may be largely why some researchers have debunked the existence of the small cap premium. Asness et al. also highlight another potential benefit of a high-quality small cap portfolio: lower cost and higher capacity due to the elimination of illiquid low-quality stocks.

With this backdrop, using the Russell Stability Indexes framework, we seek to answer: How do small cap defensive stocks perform, compared to the broader universe of small cap stocks? Furthermore, what value do they have to offer in an investment portfolio? To help answer these questions, we first examine the historical performance in shock scenarios.

Shock scenario performance⁸ comparison: The R2DF has outperformed the R2 in most down market scenarios while keeping pace in up markets

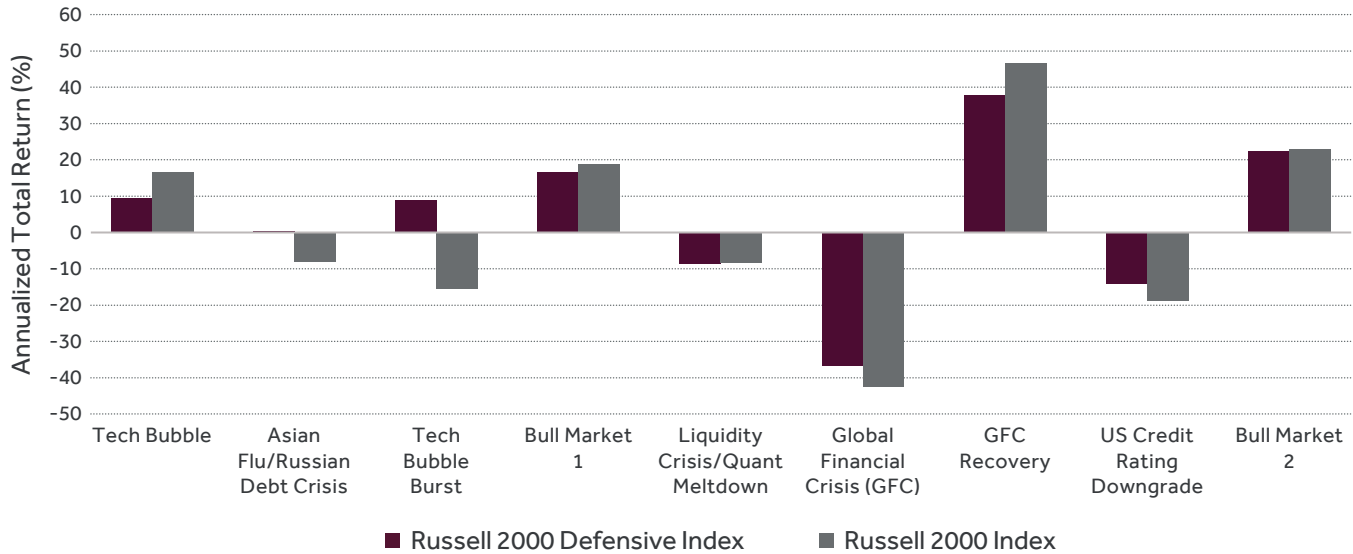
The R2DF has outperformed the R2 in down markets, with the exception of the liquidity crisis/quant meltdown period from June 2007 through July 2007 (Figure 1). In up markets, the R2DF has captured a significant portion of the upside of the R2 as well. Although the R2DF lagged the R2 during the Tech Bubble (which in Figure 1 begins at the R2DF inception of July 1996 through February 2000), it outperforms the R2 during the Tech Bubble Burst period (March 2000 through September 2002). This return profile is largely captured in the indexes’ longer-term performance and risk profiles, reviewed in the next section.

⁶ C. Asness, A. Frazzini, R. Israel, T. Moskowitz and L. Pedersen (2015), “Size Matters, If You Control Your Junk,” available at SSRN: <http://ssrn.com/abstract=2553889> or <http://dx.doi.org/10.2139/ssrn.2553889>.

⁷ C. Asness, A. Frazzini, and L. Pedersen, (2014), “Quality Minus Junk,” working paper, AQR Capital.

⁸ The inception date of the Russell Stability Indexes series is February 3, 2011. The returns provided for each Russell Index may include data for periods prior to when the index was in live production. Historical returns for these Russell Indexes prior to the live production date are calculated using the same Russell methodology; however, application to the performance calculation may vary, due to data sources and the availability of historical data.

Figure 1. Index performance comparison in various shock scenarios⁹



Sources: FTSE Russell and Morningstar Direct.

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Performance and risk profile comparison: The R2DF risk/return profile is in line with expected outcomes

Despite its attractive performance profile, the R2DF has attracted rather less interest than its larger cap counterparts. Institutional investors have passively invested in investment products tracking the Russell Defensive indexes over the four years since index launch, and all of their passively implemented assets have gone into investment products tracking large, mega or all cap Defensive indexes.¹⁰ This is, perhaps, why the notion that small cap stocks may also be defensive has been largely unexplored.

Nevertheless, this combination of small cap and defensive (i.e., high quality and low volatility) may appeal to small cap investors who are concerned about volatility. Over the period of available history, the R2DF had an annualized volatility of 15.8%, compared to 20.4% for the R2 (Table 1). In fact, the R2DF outperformed the R2 (10.7% vs. 8.4%), and with lower volatility, over the long term. Additionally, the R2DF experienced lower beta, lower max drawdown¹¹ and higher Sharpe ratio¹² relative to the R2. The indexes' down- and up-capture ratios are reflective of these performance characteristics as well.¹³

With these performance statistics in mind, one may ask how the indexes' characteristics differ.

⁹ Shock scenario dates: Tech Bubble (July 1996–February 2000); Asian Flu/Russian Debt Crisis (June 1997–August 1998); Tech Bubble Burst (March 2000–September 2002); Bull Market 1 (October 2002–September 2007); Liquidity Crisis/Quant Meltdown (June 2007 – July 2007); Global Financial Crisis (GFC) (November 2007–February 2009); GFC Recovery (March 2009–April 2011); U.S. Credit Rating Downgrade (August 2011–September 2011); Bull Market 2 (October 2011–December 2014).

¹⁰ Russell Index passive assets report (December 2014).

¹¹ Max drawdown is the largest (maximum) peak-to-trough decline during a specific record period of an investment.

¹² Sharpe ratio is a measure used to estimate reward per unit of risk. Here it is calculated by first dividing the average of monthly excess returns over the Citi 3-month Treasury bill by the standard deviation of those monthly excess returns, then annualizing that number.

¹³ The up-capture ratio is calculated by taking the index's upside capture return and dividing it by the benchmark's upside capture return. The down-capture ratio measures the index's performance relative to the benchmark when the market return is less than zero.

Table 1. Historical performance, July 1, 1996 – December 31, 2014

	Annualized cumulative total return ¹⁴	Annualized standard deviation	Beta	Max drawdown	Sharpe ratio	Down- capture ratio	Up- capture ratio
R2DF	10.7	15.8	0.7	-47.3	0.6	66.6	80.5
R2 (benchmark)	8.4	20.4	1.00	-52.9	0.4	100.00	100.00

Source: FTSE Russell and Morningstar Direct.

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Characteristics comparison: As of 2014, the R2DF included larger cap names within the R2 with lower earnings variability, lower debt and higher return on assets

By design, the Russell Defensive indexes capture roughly half of the market cap of the core index, as is apparent in the total portfolio size and number of holdings (Table 2). However, the average weighted market cap of the R2DF tends to be higher than that of the R2, indicating, not surprisingly, that larger cap names within the small cap index tend to exhibit defensive characteristics and are therefore in the R2DF. In addition, as may be expected, the R2DF tends to have lower EPS variability, higher return on assets and lower debt-to-equity than the R2.

Table 2. Index characteristics as of December 31, 2014

Characteristic	R2DF	R2
Total portfolio size	895.2B	1.8T
Market cap - \$-weighted average (USD \$billion)	2.1B	1.9B
Number of holdings	1061	2011
Percent in 10 largest holdings	4.4%	2.7%
EPS variability - 10 years ¹⁵	59.2	90.9
Pre-tax return on assets – 5-year average ¹⁶	8.6	6.2
Debt/equity	0.83	0.91

Source: FTSE Russell and BNY Mellon.

¹⁴ Compound annual growth rate.

¹⁵ EPS variability measures the variability of annual EPS over the last five and 10 years. A high EPS variability number indicates that the portfolio is heavily invested in companies with volatile earnings streams, and it is a risk factor in the portfolio.

¹⁶ This characteristic measures the average pretax return on assets (ROA) over the last five years. Pretax earnings are used instead of net income so that the interest paid on debt remains in the numerator; this is important, because the debt itself is in the denominator. Since leverage is thus considered in pretax ROA, it may be a useful contrast with five-year ROE (which can be increased by leverage). For each of the last five years, pretax EPS is divided by beginning-of-year assets (net worth plus long-term liabilities). A simple average of these five ratios is the pretax ROA for each stock.

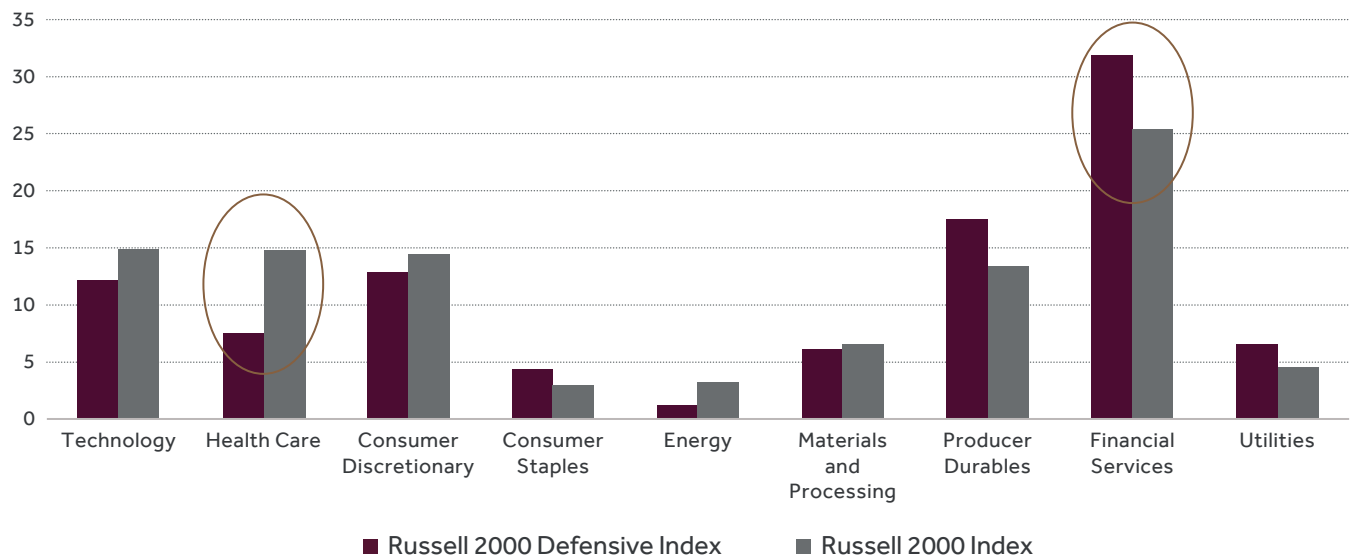
Sector weights comparison: Some sector differences between the R2DF and R2 indexes observed

In terms of sector composition, as of December 31, 2014, the R2DF was overweight Financial Services and underweight Health Care relative to the R2 (Figure 2). Within the R2DF, small cap Financial Services companies had, as of the most recent indexes reconstitution, relatively less debt, more stable earnings and higher returns on assets, as well as lower stock volatility than Financial Services companies in the R2.

For example, Prosperity Bancshares, a diversified bank, was fully defensive in the R2 in 2014, due to low earnings variability, low debt-to-equity and low long- and short-term stock volatility.

It is important to note that the sector composition of the indexes will change over time as the characteristics of the underlying securities change over time.

Figure 2. R2DF and R2 sector weights comparison as of December 31, 2014



Source: FTSE Russell. Note: Total may not equal 100%, due to rounding.

Top 10 names comparison: The top 3 companies in the defensive index are among the top 10 companies in the parent index

As of December 31, 2014, the top three names in the R2DF were included in the top 10 in the R2 (Table 3). Although the R2DF begins with the R2, it captures only a subset of the broader stock universe, based on higher-quality and lower-volatility characteristics.

Table 3. Top 10 holdings and weights, R2DF and R2, as of December 31, 2014

Russell 2000			Russell 2000 Index		
Defensive Index	Sector	Weight	Defensive Index	Sector	Weight
Ultimate Software Group Inc.	Technology	0.5%	Isis Pharmaceuticals Inc.	Health Care	0.4%
LaSalle Hotel Properties	Financial Services	0.5%	Brunswick Corp.	Consumer Discretionary	0.3%
Graphic Packaging Holding Co.	Materials & Processing	0.5%	Qorvo Inc.	Technology	0.3%
Heico Corp.	Producer Durables	0.4%	TriQuint Semiconductor Inc.	Technology	0.3%
Prosperity Bancshares Inc.	Financial Services	0.4%	Office Depot Inc.	Consumer Discretionary	0.3%
Teledyne Technologies Inc.	Producer Durables	0.4%	LaSalle Hotel Properties	Financial Services	0.3%
United Natural Foods Inc.	Consumer Staples	0.4%	Graphic Packaging Holding Co.	Materials & Processing	0.3%
WEX Inc.	Financial Services	0.4%	Puma Biotechnology Inc.	Health Care	0.2%
STERIS Corp.	Health Care	0.4%	RLJ Lodging Trust	Financial Services	0.2%
FEI Co.	Technology	0.4%	Ultimate Software Group Inc.	Technology	0.2%

Source: FTSE Russell.

With this short investigation of the performance and sector/stock differences that have characterized the R2DF when compared to its parent index, the Russell 2000, we turn now to a consideration of the risk factor exposures the R2DF has exhibited over its available history.

Factor analysis: A deeper look into the R2DF

For this analysis, we use the U.S. Fundamental Medium Horizon (AFMH) risk model developed by Axioma.¹⁷ The AFMH is used to examine the historical benchmark-relative risk exposures of the small cap R2DF for the time period June 1996 through December 2014. The benchmark is the R2.

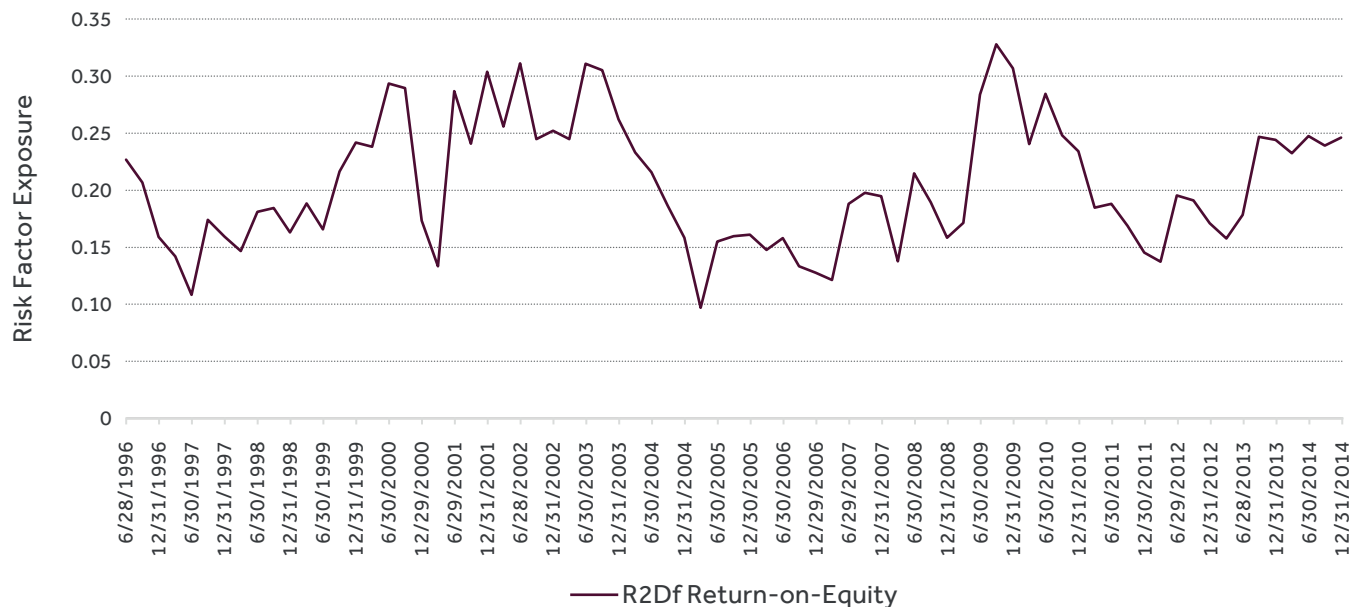
Risk models, such as Axioma's, are frequently used by investors to take their portfolio analyses beyond routine determination of aggregate sector or fundamental characteristics. By performing a risk factor analysis, investors seek to understand the risk exposures shared by the stocks in a portfolio. A risk model may incorporate dozens of risk factors. For our purposes, we will look at several of the Axioma "style" risk factors that can be associated with the Russell Stability Indexes methodology.¹⁸ The definitions of the AFMH style risk factors are similar enough to the variables used in the Stability methodology for us to make some general observations.

¹⁷ This Axioma risk model is used to measure the various relative risks of a portfolio, and attempts to estimate the future volatility of the portfolio based on its exposures to the risk factors as determined from holdings.

¹⁸ Axioma uses the word "style" generically, to refer to a collection of several risk factors. These included Value and Growth, but also include a number of others.

Figure 3 depicts the historic, normalized levels of Axioma’s return on equity (ROE¹⁹) style risk found in the R2DF. ROE can be considered as a measure of company quality.²⁰ In this case, the chart²¹ shows that the R2DF contained companies with higher ROE relative to its parent benchmark over the time period. Since the Russell Stability Indexes methodology uses return-on-assets (ROA) as one of the measures of quality, we would expect to see, and we do see, that the R2DF generally enjoyed a loading on higher ROE companies relative to the R2. Notably, the level of ROE risk declined to lower levels as profitability declined during the Great Financial Crisis, but still was positive.

Figure 3. Historical benchmark-relative Axioma ROE style risk of the Russell 2000 Defensive Index (R2DF), 1996–2014



Source: FTSE Russell and Axioma, Inc.

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Turning to another measure of quality, Figure 4 examines the R2DF’s historic exposure to the Axioma leverage factor.²² Russell’s Stability Indexes methodology uses total debt/equity as the measure of company leverage. We observe that, relative to the R2 benchmark, the companies in the R2DF had less leverage over most of the time period. The exception was during the March 2000 to June 2002 time period, where the relative level of leverage was actually higher in the R2DF than in the parent benchmark.

While that result does seem counterintuitive, it may be a reflection of the types of companies included in the R2DF during the time period immediately preceding the Tech sell-off in the early 2000s. For example, the R2DF was generally overweight

¹⁹ Axioma calculates ROE as the ratio of a company’s annualized income over the last year and the common equity value of a year ago.

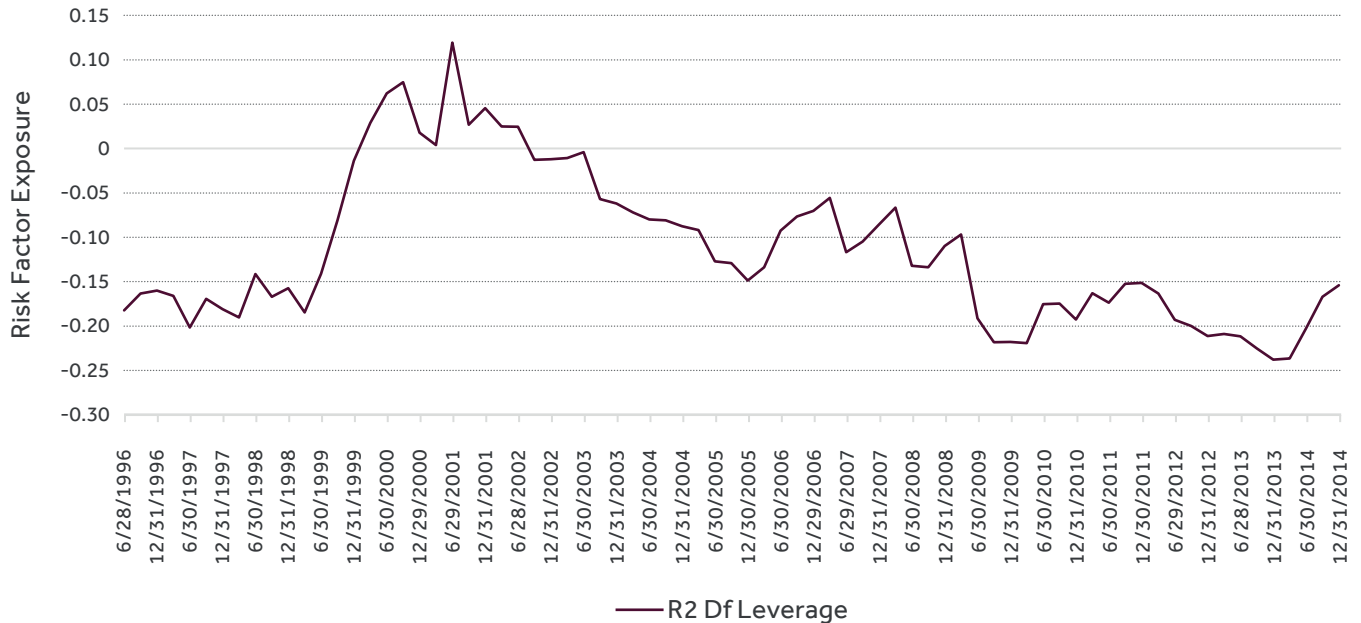
²⁰ Interestingly, ROE was initially considered by Russell as a quality variable. However, ROA was selected over ROE. The rationale behind this was that because some companies achieve a high ROE simply by leveraging up the balance sheet, ROE should not be treated as an indicator of strength. In addition, the debt/equity ratio component of the Russell Stability Indexes methodology also helps prevent highly levered companies from being categorized as defensive.

²¹ As with all of the Axioma style factors, a positive/lower score can be interpreted as exposure to companies with higher/lower exposure to the particular style risk.

²² Axioma’s leverage factor is defined as the ratio of total debt to total assets.

Technology in the early part of 2000 and then switched to an underweight in the latter part of the year. Notably, the technology companies included in the R2DF were more “old-line” tech companies, such as Perkin-Elmer, which had moderate levels of debt. On the other hand, the R2 held more “high-flying” companies, such as SanDisk, which had notably less debt (if any) on their balance sheets.

Figure 4. Historical benchmark-relative Axioma leverage style risk of the Russell 2000 Defensive Index (R2DF), 1996–2014



Source: FTSE Russell and Axioma, Inc.

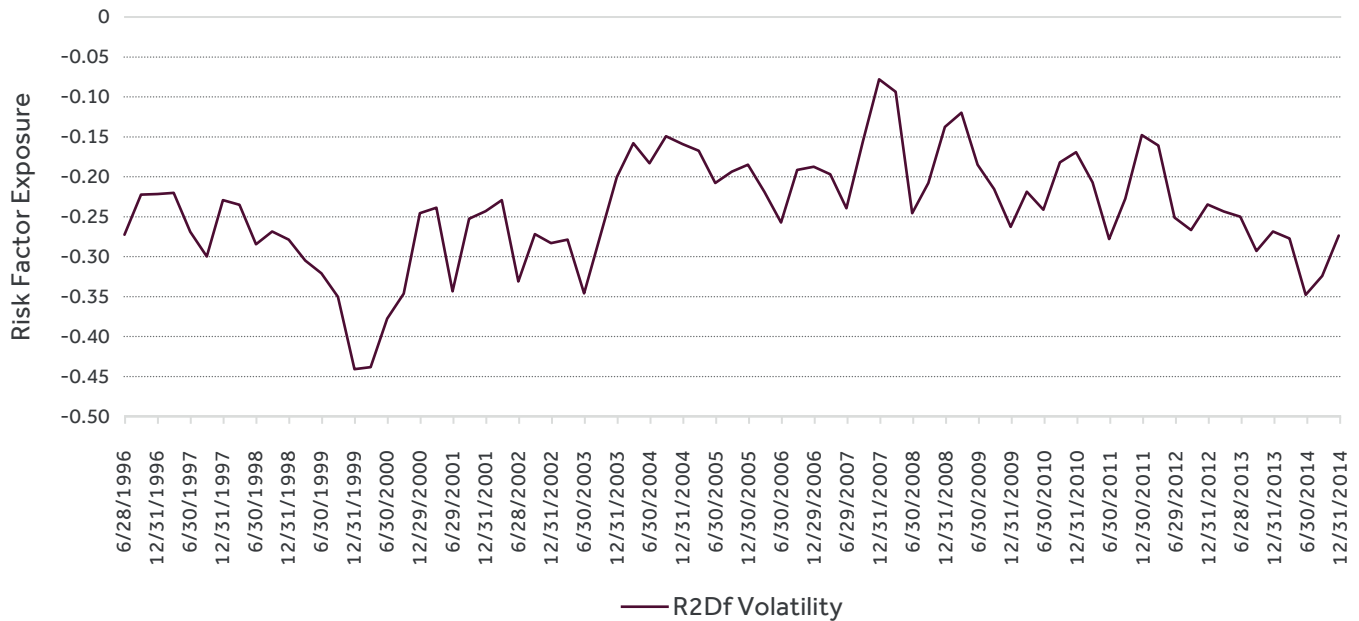
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Turning to a more market-driven risk, Figure 5 displays the historical factor exposure of the R2DF to the Axioma Volatility style factor.²³ Volatility, the companion to the quality component of defensive in the Russell Stability Indexes methodology, is defined by Russell as the average of the 52-week and 60-month price volatility of a stock. Here we can observe the negative loading on that factor, which indicates that, over our sample period, the R2DF included stocks that were less volatile than its benchmark.²⁴

²³ Axioma defines volatility exposure as the square root of the 125-day average of the stock’s absolute return divided by the cross-sectional volatility of the market. Using absolute return in place of the more standard squared return reduces the impact of outliers on the exposure estimate.

²⁴ Also, for most of the time period, the Russell 2000 Defensive index (R2DF) displayed a much larger benchmark-relative exposure to lower-volatility stocks than its large cap counterpart, the Russell 1000 Defensive index. This may be due, in part, to a higher level of cross-sectional volatility in the small cap space and hence a greater range in stock characteristics like volatility exposure. Interestingly, the level of volatility converged during the GFC, with the small cap and large cap defensive indexes showing similar exposure to lower-volatility companies. Since then, they have been on a divergent path.

Figure 5. Historical benchmark-relative volatility style risk of the Russell 2000 Defensive Index (R2DF), 1996–2014



Source: FTSE Russell and Axioma, Inc.

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Conclusion

We have shown that a compelling defensive index consisting of high-quality and low-volatility company stocks can be produced from a universe of U.S. small cap stocks. The Russell 2000 Defensive index offers many attractive historical risk and return characteristics. While there are indeed differences between the conventional Russell 2000 and Russell 2000 Defensive indexes, such as in sector deviations, we have shown that, as intended, the small cap defensive index exhibited risk-factor characteristics that are uniquely defensive in nature. This may be attractive to investors who are considering lowering the volatility of their small cap exposures by using the Russell 2000 Defensive index as a benchmark for active managers or for passive replication as they seek to capture defensive small cap equity exposure.

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