



C A M B R I D G E A S S O C I A T E S L L C

## U.S. MARKET COMMENTARY

### The Lowdown on Low Vol

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## The Lowdown on Low Vol

Eric Winig & Sean Duffin

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**While the theory behind low-volatility equity strategies is sound, funds seeking to provide equity-like returns with lowered volatility are neither new nor unique. Further, investors should tread cautiously given the mushrooming number of entrants in the field and the diversity of approaches.**

Hot on the heels of fundamental indexing and 130/30 funds, the latest “new, new thing” to sweep the institutional investment world is low-volatility funds. Billed as a way to boost compound returns by lowering volatility—i.e., smoothing return streams by mitigating losses—the concept of low volatility has begun to gain some traction with investors, perhaps partly due to extraordinarily volatile markets in recent years, which have spurred a swelling number of managers to introduce such funds.

While we certainly agree with the premise behind low volatility—indeed, the reason diversification is such a powerful investment tool is precisely because it tamps down portfolio volatility—we are a bit skeptical of the sudden rush to create and market products around this theme. Further, given that low volatility is similar to existing investment strategies—including actively managed value funds, fundamental indexing, “quality” funds, and hedge funds—the burden is on low-volatility providers to show they would add additional value.

It is also worth noting that while most low-volatility managers tout low volatility as an end in itself, portfolio holdings vary widely among products. While this is not necessarily bad—clearly, the same would apply to, for example, large-cap value managers—it does make it difficult, to say the least, to have an opinion on the *concept* of low volatility, as opposed to individual strategies. In other words, even if you believe in the low-volatility story, manager selection remains an important consideration.

Our conclusion is that the theory behind low volatility is valid, and some funds appear to be legitimate options for investors looking for alternatives to hedge funds (e.g., smaller investors or those with a high need for liquidity, or simply those looking for alternatives with low fees and good transparency). Said a slightly different way, low-volatility funds may be a relatively low-cost way to access certain factors that have historically boosted risk-adjusted returns. That said, this is not a new concept, and simply represents one way to achieve this goal. The idea of protecting on the downside, reducing volatility, and achieving equity-like returns can be accomplished in several ways, including hedge fund programs, active value managers, other “quant-based” products, and even, as mentioned above, general portfolio diversification.

### What’s the Big Idea?

Before discussing what low-volatility strategies are, it is important to understand what they are *not*—namely, passive indices comparable to cap-weighted market benchmarks. Rather, they have much in common with fundamental indices, on which we have said (and still believe) the following:

Our view is that a market index is something that attempts to give as complete a picture of a given market as reasonably practical, while active management is any strategy designed to beat a market benchmark. Since fundamental indices are designed to outperform the broad market rather than define it, it

seems most logical to define them as relatively low-octane quant strategies.<sup>1</sup>

We would say the same of low-volatility strategies, which aim not to replicate the market, but to refute, as it were, capital market theory and the efficient frontier. Importantly, this is not necessarily a strike against low volatility, but rather something investors must take into account when considering these strategies. In practical terms, low-volatility strategies tend to have fairly significant tracking error relative to cap-weighted indices (Exhibit 1), and should be considered active management intended to outperform such indices over time.

As to what low volatility *is*, it could hardly be more straightforward. Put simply, capital markets theory—which says higher-beta securities should generate above-average returns over time—is flawed, and there is little measurable relationship within equities between volatility and return. Thus, by systematically overweighting lower-volatility equities, an investor can smooth returns and thus boost compound returns—in both risk-adjusted and absolute terms—over time.

As most low-volatility managers are quick to point out, while the idea is simple, there is also a relatively robust analytical history behind the concept. Indeed, nearly 40 years ago, papers by Black, Jensen, and Scholes (1972),<sup>2</sup> and Fama and MacBeth (1973)<sup>3</sup> established that low-risk stocks had a tendency to post relatively high risk-adjusted returns. Perhaps most famously, Fama and French (1992)<sup>4</sup> found no measurable or consistent reward for investing in high-beta stocks rather than low-beta stocks, while more recently, Ang, Hodrick, Xing, and Zhang (2006)<sup>5</sup> found that “low idiosyncratic risk securities”

<sup>1</sup> *Fundamental Indexing*, 2006.

<sup>2</sup> *The Capital Asset Pricing Model: Some Empirical Tests*.

<sup>3</sup> *Risk, Return, and Equilibrium: Empirical Tests*.

<sup>4</sup> *The Cross-Section of Expected Stock Returns*.

<sup>5</sup> *The Cross-Section of Volatility and Expected Returns*.

generally keep pace with their high-risk counterparts, and often outperform over the long term.

So why has such an obvious and seemingly exploitable anomaly persisted? While there is no one answer to this question, academic studies suggest two primary reasons: behavioral biases and benchmarking tendencies. Behavioral biases include:

- **The Lottery Effect:** The misplaced belief that upside potential trumps downside risk for high-volatility stocks (i.e., positive skewness, wherein large payoffs are more likely than big losses).
- **Representativeness:** A bias toward overestimating the chances of a big payoff due to prominent examples—e.g., Microsoft, Intel—while ignoring the much larger pool of less-publicized failures.
- **Overconfidence:** Overestimating one’s knowledge and/or judgment, which can result in being more comfortable with taking large risks.

Taken as a whole, such biases are likely to result in investor overpricing of high-beta securities and subsequent underperformance of lower-beta equities. Investor benchmarking, meanwhile, probably plays an even greater role. Put simply, the vast majority of investment managers are measured against a benchmark, with many investors basing hiring and firing decisions on relative performance. As a result, and given markets’ historical propensity to rise more often than they fall, managers often tend to lean toward higher-beta assets, since from an asset-gathering standpoint it is better to outperform when markets are good (i.e., most of time) and lag during the (brief) downturns. Said a different way, managers that overweight higher-beta equities are likely to outperform the broad market more often than they trail it, *even if long-term performance lags*.

## Do You Know ... What You Don't Know?

The biggest challenge to crafting a low-volatility strategy is that volatility is not knowable *ex ante*. Thus, while numerous studies have extolled the virtues of minimum-variance portfolios, such a portfolio remains purely hypothetical for anyone lacking perfect foresight (in which case, we should add, it would be unnecessary). Low-volatility managers, therefore, have come up with a variety of approaches to approximate the minimum-variance portfolio, with most also hoping to add alpha through their own proprietary methods. However, while it is reasonable to assume groups of equities will, in aggregate, hew to historical beta trends, the nuts and bolts of how to implement a low-volatility strategy—or even how to benchmark it—are more complex than one might think.

For example, the MSCI USA Minimum Volatility Index, introduced earlier this year, claims to offer “a transparent and relevant benchmark for managed volatility equity strategies.” However, far from being easy to replicate, the construction process is a complex, involved undertaking on par with actively managed quant strategies. For example, under its section on “defining the optimization constraints,” MSCI lists eight bullet points describing said constraints, ranging from the very straightforward (minimum weight of a constituent is 0.05%) to the, shall we say, less so (exposure to all Barra risk index factors other than volatility “will be restricted to +/- 0.25 standard deviations relative to the parent index”).

Indeed, a recent paper<sup>6</sup> argued forcefully that the MSCI indices (they have different minimum-volatility indices for different geographic regions) “do not represent an unambiguous passive

<sup>6</sup> David Blitz and Pim van Vliet, “Benchmarking Low-Volatility Equity Strategies,” *The Journal of Investing*, Summer 2011.

benchmark for active low-volatility managers, but are essentially an active investment strategy themselves.” The authors point out in a footnote that as their paper was going to press, MSCI introduced another series of “risk-weighted” indices that overweight low-volatility stocks, which “makes it even more arbitrary to elevate the status of any one index to benchmark for all low-volatility managers.”

It is also true that, as with other “alternative index strategies” such as fundamental indexing and equal weighting, much of the outperformance of low-volatility products over cap-weighted indices has been attributable to overweighting value and small-cap equities, which have outperformed growth and large caps, respectively, over time.<sup>7</sup> Again, this need not be a black mark against these strategies; as noted, many low-volatility products may, given their low fees, represent a reasonable way to access such factors. Further, it is worth noting that most managers, while not disputing these factor effects, claim the tilt toward value is more pronounced for the true minimum-variance portfolio than for low-volatility products, which tend to be more nuanced. And on an empirical basis, most low-volatility products performed far better in 2008 than did small-cap and value indices.

Said a slightly different way, there is a world of difference between concluding that low volatility is a viable investment strategy and finding a suitable manager. Indeed, while most practitioners market their funds with virtually identical language extolling the virtues of low volatility as an end in itself, their underlying methodologies and portfolio holdings vary widely. Broadly speaking, all use heavily quantitative methods, with most falling into one of two groups—those

<sup>7</sup> See, for example, Robert Arnott, “Better Beta Explained,” *The Journal of Index Investing*, Summer 2011, and Ronnie R. Shah, “Understanding Low Volatility Strategies: Minimum Variance,” *Dimensional Fund Advisors*, August 2011.

that screen initially for low volatility and then look to add alpha through proprietary processes, and those that layer a low-volatility component on to an existing portfolio construction methodology. One is not necessarily better than the other, although given structural similarities, the former is likely to be more highly correlated with minimum-volatility indices.

Drilling down a bit, we find more substantive differences, including how quickly managers turn over their portfolio, when and how they rebalance, the number of equities in the portfolio, and sector constraints. As a result, holdings are far from uniform. Among economic sectors, for example, weightings among five major low-volatility products ranged from 18% to 30% for consumer staples, and from 9% to 25% for health care (Exhibit 5). (These sectors' weightings in the MSCI Minimum Volatility Index are 15% and 16%, respectively.) Further, while a large percentage of low-beta equities are generally located in utilities, consumer staples, and health care—which suggests low-volatility products will have highly cyclical return patterns—some managers specifically seek out “high-quality” companies, which boosts their weighting in technology and, more broadly, results in a more even distribution across sectors.

While there is nothing wrong with managers in a particular strategy using different tactics, the issue is that most managers are pitching the *concept* of low volatility as a proven method to boost risk-adjusted returns. Each, of course, believes their particular methodology to be superior, but in general the low-volatility story is based on a supposed market anomaly—namely, by investing in assets with similar expected rates of return but lower volatility than the market, an investor can boost long-term returns. Thus, it is somewhat odd that the strategies designed to exploit this anomaly differ so greatly with regard to process and holdings. We of course recognize

the necessity of active management in this space due to the fact that volatility is not knowable *ex ante*, as well as the reality that a “pure” minimum-variance strategy would be very concentrated and have high tracking error. Nevertheless, this makes it difficult if not impossible to pass judgment on low-volatility strategies *as a whole*; instead, as with any actively managed strategy, investors should assess each individual manager on its merits, even if one believes wholeheartedly in the low-volatility story.

## So ... Does it Work?

All this, of course, is prelude to the issue of whether low-volatility strategies have historically demonstrated outperformance relative to broad market indices, and more importantly, whether such outperformance can be expected to persist. The answer to the first is obvious, as evidenced by the rush to create low-volatility funds. Indeed, while eponymous low-volatility strategies have a relatively short history, all have the *de rigueur* back-tested model that shows how well they would have performed, had they only existed at the time.

As to the second, we are, as the saying goes, cautiously optimistic. To begin with, these are quant-based strategies, so there is reason to believe real returns would have looked similar to those shown by models, although as with any strategy designed to exploit a market anomaly, low volatility could conceivably become a victim of its own success. For example, in our 2006 report *Fundamental Indexing*, we noted that while the theory behind fundamental indexing was solid—i.e., market cap-weighted indices tend to systematically overweight expensive stocks and underweight cheap ones—this advantage could easily be arbitrated away were investors to embrace fundamental indexing en masse, although such an event seemed unlikely. A



similar sentiment applies here, as the systematic mispricing behind low-volatility strategies would almost certainly be eroded by large adoption of such strategies, although we view this as similarly unlikely.

Backtested performance for the MSCI Index, meanwhile, has been in line with what should be expected from such exposures—outperformance in down markets, underperformance in strong up markets, and outperformance for the full period (Exhibit 2). Live fund performance has also borne this out, with low-volatility strategies falling less than the broad market during 2008–09, rising less than the market since the March 2009 trough, and posting better overall returns for the entire period (Exhibit 3).

Of course, there are a variety of similarly structured strategies with similar return patterns, but without “low volatility” in the name (Exhibit 4).<sup>8</sup> And this is perhaps the most important issue to understand with regard to low volatility—while many practitioners are billing it as a new, innovative idea around which investors should structure their entire portfolios, it simply represents one of a range of approaches that seek to mitigate downside volatility in order to create a less volatile return series that compounds faster over time. As such, low volatility should be considered in the same breath as some hedge fund strategies, certain value managers and quant-based products, and even structured volatility-selling products.<sup>9</sup>

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<sup>8</sup> The managers shown in the exhibit do not represent a comprehensive list, but rather a group selected for their similar approach to investment strategy—namely, looking to provide market-beating returns with lower volatility over time. However, the means by which they seek to achieve this investment result differ meaningfully.

<sup>9</sup> Please see our 2011 report *The Benefits of Selling Volatility*.

As we see it, the advantages to low-volatility funds boil down to the following:

- **Low Fees:** Fees on quant-based, long-only low-volatility products range from a low of about 20 basis points (bps) for a U.S. strategy to roughly 60 bps for a global product, compared to active manager fees that often run north of 100 bps, and typical hedge fund fees of 2% of assets and 20% of gains.
- **Good Transparency:** Holdings are generally available, although methodologies are not.
- **Liquidity:** Many products have daily entry and exit.
- **No Leverage.**

We expect these products will appeal to smaller investors not willing or able to create a direct hedge fund program, as well as those simply looking for a transparent and low cost way to decrease portfolio volatility. They may also have value to pensions as an alternative to fixed income or liability-driven investments, although the risk/return profiles are of course quite different.

## Conclusion

We have mixed opinions about low-volatility products. While such strategies are based on a legitimate idea—that capital markets are inefficient, and owning lower-beta equities boosts risk-adjusted returns by smoothing return streams—there is also a strong element of faddishness to the ardor with which managers have embraced the topic. Thus, we view low volatility much the same as fundamental indices—a valid investment approach, but not particularly new or revolutionary.<sup>10</sup> We also stress that these

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<sup>10</sup> In the aforementioned paper, we said “while we believe fundamental indices are based on sound fundamental principles, we do not view them as particularly revolutionary, but rather as yet another tool for investors’ kits.”

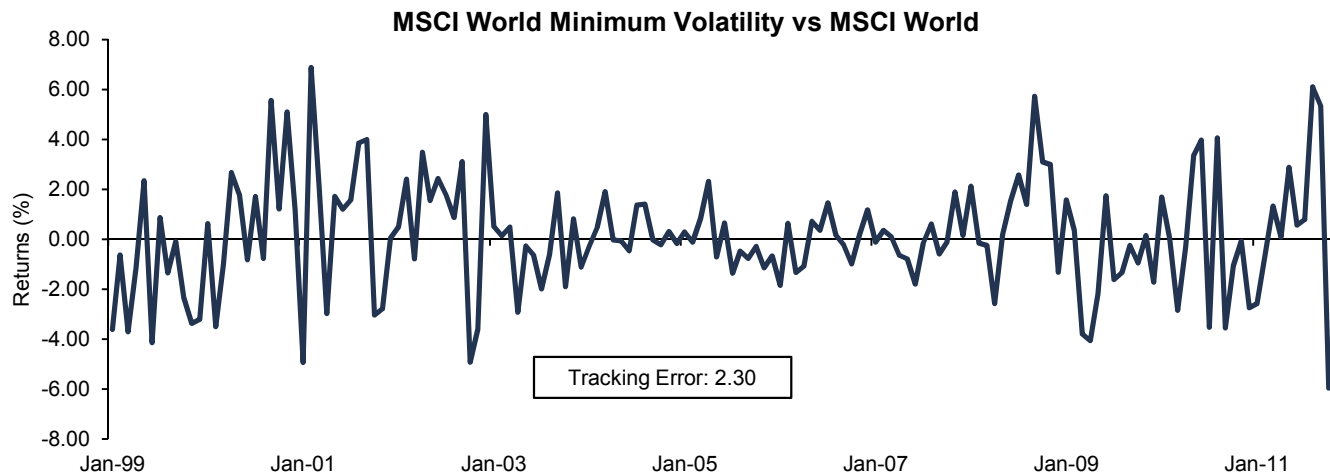
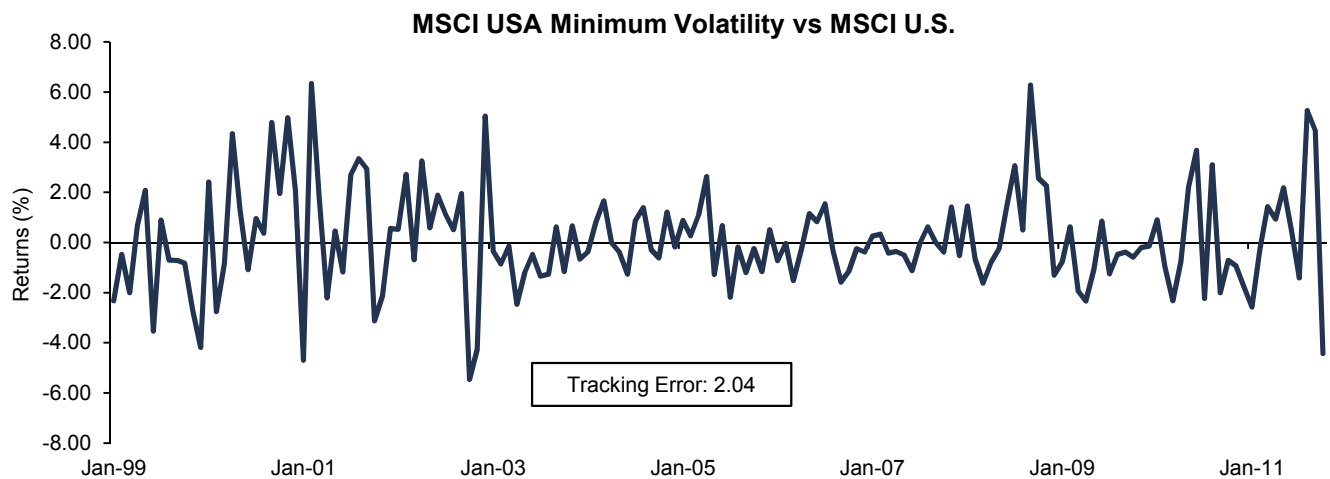
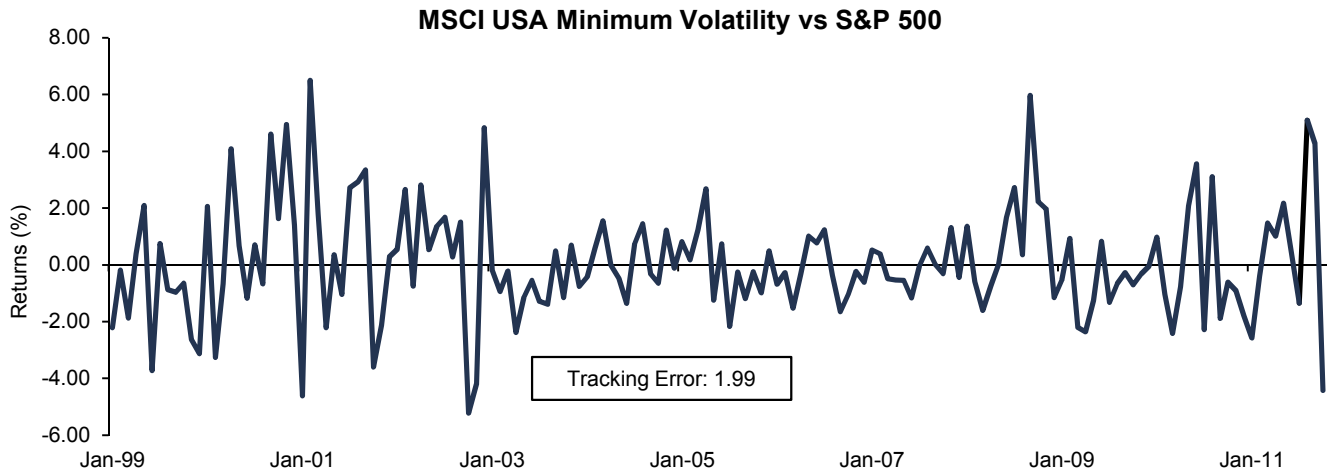
are active management strategies designed to outperform cap-weighted indices, and as such will have periods (likely long lived) of both out- and underperformance.

The appeal of these products is likely to come from their quantitative focus—which means they are less reliant on investor skill than, say, an active value manager—as well as generally low fee structures. As noted, we also view manager selection as an important consideration, particularly given the short track records of most, along with the swelling number of new and untested entrants in the field; put simply, investors should tread cautiously. ■

**Exhibit 1**

**Excess Return and Tracking Error of MSCI Low Volatility Indices**

January 1, 1999 – October 31, 2011



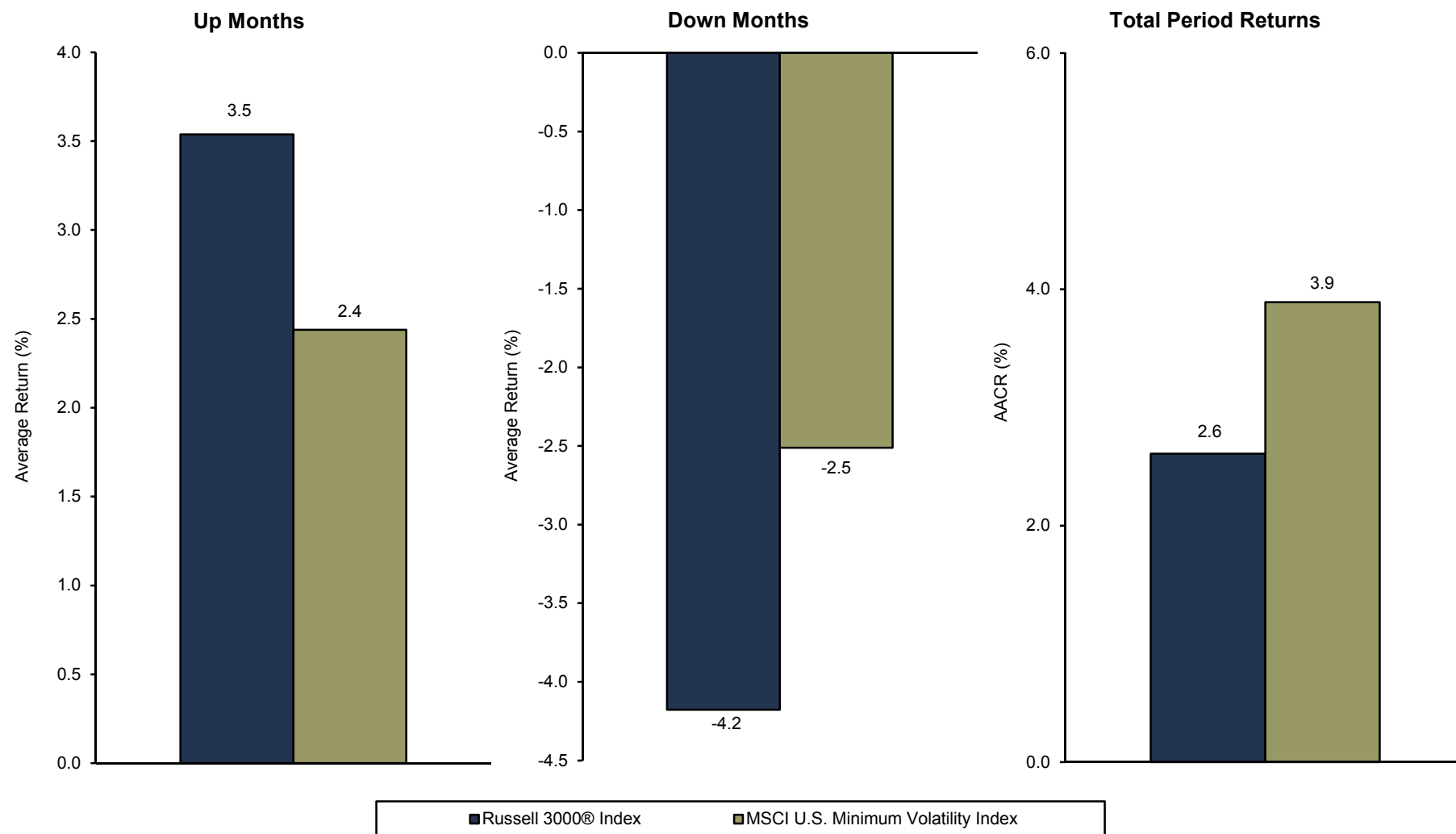
Sources: MSCI Inc. and Standard & Poor's. MSCI data provided "as is" without any express or implied warranties.  
Note: Tracking error is the standard deviation of historical excess returns.



**Exhibit 2**

**Performance of the MSCI Minimum Volatility Index in Up and Down Equity Markets**

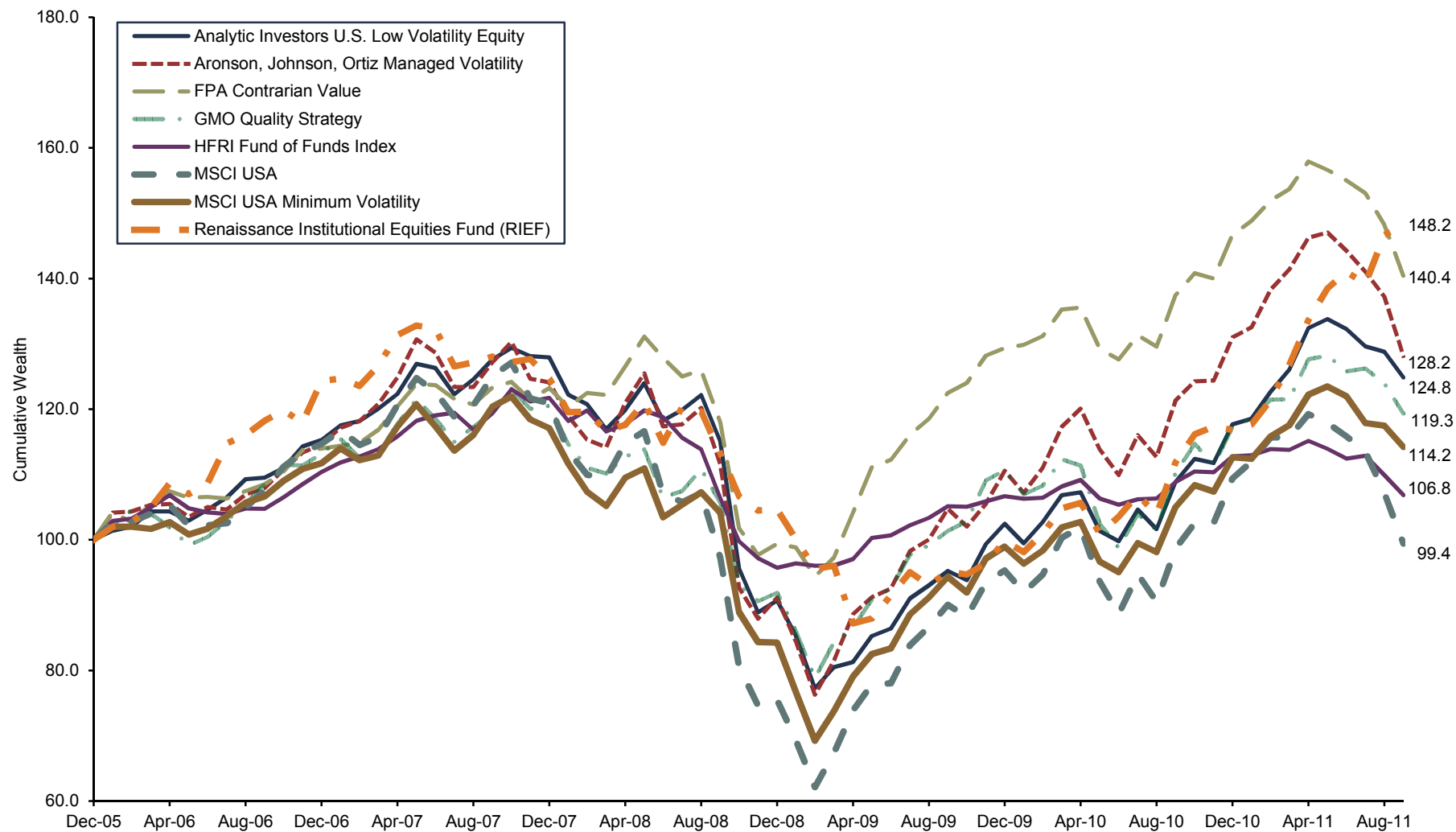
December 31, 1998 – October 31, 2011



Sources: Frank Russell Company, MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties. Note: Up and down months are defined by the monthly total return of the Russell 3000® Index.

### Exhibit 3 Cumulative Wealth for Various Indices and Managers

December 31, 2005 – September 30, 2011 • U.S. Dollars



Sources: Cambridge Associates LLC Investment Manager Database and Thomson Datastream.  
Note: Data are monthly.

**Exhibit 4**  
**Statistics for Various Indices and Managers**

January 1, 2006 – September 30, 2011 • U.S. Dollars

	<u>AACR (%)</u>	<u>Annualized Standard Deviation</u>	<u>Beta (vs S&amp;P 500)</u>	<u>Pre-2009 Peak to Trough (%)</u>	<u>Trough to Current (%)</u>
MSCI USA Min Vol	2.34	13.75	0.76	-43.23	64.99
S&P 500	0.39	17.22	1.00	-50.95	62.41
HFRI Fund of Funds	1.16	6.61	0.27	-22.20	11.63
Analytic U.S. Low Volatility Equity	3.88	13.44	0.71	-40.30	61.10
AJO Managed Volatility	4.41	15.39	0.86	-41.64	68.01
Unigestion Global Minimum Variance - U.S. <sup>1</sup>	1.85	16.73	0.75	-36.89	56.71
Renaissance Institutional Equities Fund (RIEF)	7.08	11.14	0.31	-34.35	69.92
GMO Quality Strategy	3.12	13.13	0.71	-35.97	51.37
FPA Contrarian Value	6.08	11.05	0.57	-28.04	48.80

Sources: Cambridge Associates LLC Investment Manager Database, Standard & Poor's, The Clifton Group, and Thomson Datastream.

Note: Data are monthly.

<sup>1</sup> Unigestion Global Minimum Variance - U.S. begins April 30, 2008.

**Exhibit 5**  
**Sector Weights for Various Low-Volatility Managers**

As of September 30, 2011

	<u>Acadian U.S. Managed Volatility Strategy</u>	<u>Analytic Investors U.S. Low Volatility Equity</u>	<u>Aronson Johnson, Oritz Managed Volatility</u>	<u>SSgA U.S. Managed Volatility Strategy</u>	<u>Uni-Global Minimum Variance U.S.</u>	<u>S&amp;P 500</u>	<u>MSCI USA Minimum Volatility</u>
Consumer Discretionary	8.9	6.4	9.5	6.5	10.9	10.5	8.9
Consumer Staples	27.7	29.9	17.9	24.9	23.8	10.8	15.2
Energy	5.4	0.5	6.6	0.9	2.4	12.6	7.6
Financials	13.7	8.8	19.3	19.5	5.9	15.2	10.6
Health Care	15.0	25.3	8.6	15.2	10.2	11.4	16.2
Industrials	3.1	2.4	6.3	1.8	8.4	11.1	9.6
Information Technology	5.2	3.0	7.1	7.6	18.2	18.4	14.4
Materials	0.9	2.8	3.5	1.3	8.4	3.6	3.7
Telecommunication Services	2.3	0.9	4.3	3.6	2.0	3.0	5.7
Utilities	15.9	19.2	15.9	18.8	9.8	3.4	8.1

Sources: Cambridge Associates LLC Investment Manager Database and MSCI, Inc. MSCI data provided "as is" without any express or implied warranties.