



# MANAGED VOLATILITY STRATEGIES AND LONG-SHORT EQUITY: SIMILAR PATHS TO ALTERNATIVE RETURNS?

NOVEMBER 2016

THIS NOTE COMPARES EQUITY LONG-SHORT HEDGE FUNDS AND MANAGED VOLATILITY STRATEGIES. OVER THE PAST 15+ years, both approaches have provided investors with lower volatility and smaller drawdowns than the cap-weighted benchmark. Managed volatility, however, may appeal to investors seeking less complex, more liquid, more transparent, and lower fee strategies. And in the context of a broader equity portfolio, a simple historical analysis highlights that managed volatility may complement a hedge fund allocation.

## BACKGROUND

Interest in hedge funds soared over the past 20 years as investors sought diversifying strategies with particular focus on downside protection in tumultuous markets. As well, the concept of freeing a skilled manager from traditional fund constraints to focus on delivering high absolute returns and motivating her with performance fees has obvious appeal. But some hedge fund strategies have drawbacks, including lack of transparency in the investment process, complexity of investment instruments and attendant risks, and high management fees.

For investors who are sensitive to such considerations, managed volatility strategies may provide an appealing alternative approach to lower-risk, diversifying investing. Like equity hedge funds, managed volatility strategies focus on absolute performance compared to cap-weighted benchmarks (i.e., Sharpe ratio rather than Information ratio). Specifically, they seek to generate similar average returns but with lower risk. Lower volatility translates similar-to-benchmark average returns into even higher compounded performance over time. Empirical work (guided by intuition) has provided evidence as to the robustness of the “low volatility” mispricing over time and across markets.\*

## COMPARING ATTRIBUTES

Managed volatility strategies are fully-invested, 100% long equity portfolios that target low absolute risk. Active implementations, generally speaking, are not referenced to a cap-weighted index; they draw from a broad

universe of stocks and are largely unconstrained with respect to style, size, and sector allocations, so factor exposures may vary through time.

As a relevant comparison, we focus on long-short equity hedge funds. This class of investments encompasses strategies that may range broadly in terms of investment process (quant or fundamental), use of derivatives, sector concentration, net market exposure, leverage, portfolio market capitalization, etc.

Managed volatility strategies and hedge funds share similar performance objectives. They’re both designed to maximize risk-adjusted return without reference to a cap-weighted benchmark. With respect to risk, they target lower-volatility and lower-beta portfolios than cap-weighted indices, and they’re designed to provide diversification, e.g., a returns stream with lower correlation to traditional equity portfolios.

But the vehicles that these two classes of strategies employ are quite different. While managed volatility is a relatively straightforward, purely long-only equity portfolio, hedge funds typically hold a mix of long and short equities, cash, and possibly derivatives, which may involve counterparty exposure. Managed volatility strategies are liquid, with daily pricing and, typically, daily liquidity. By comparison, hedge funds often provide only monthly marks and may impose lock-ups, gates, and other redemption restrictions. As well, managed volatility fees are typically in the 0.5% range, whereas 1% management and 20% performance fee arrangements are still common among hedge funds.

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\* Baker, Malcolm, Brendan Bradley and Jeffrey Wurgler, “Benchmarks as Limits to Arbitrage: Understanding the Low-Volatility Anomaly.” *Financial Analysts Journal* 67, no. 1 (2011): 40-54. Copyright 2011, CFA Institute. Reproduced and republished from the Financial Analysts Journal with permission from CFA Institute. All rights reserved. The paper was published in the January/February 2011 issue of the FAJ. Bradley is an employee of Acadian Asset Management LLC. Baker and Wurgler are associated with the firm as consultants.

## COMPARING RISK AND RETURN

How has performance of managed volatility and long-short hedge funds, in aggregate, compared over time? We analyze three series of monthly returns:

- The HFRX Equity Hedge index (HFRX EH): an average net-of-fee, USD returns stream from a global sample of equity hedge funds.<sup>1</sup>
- A simulated managed volatility portfolio (SMV): a hypothetical, net-of-fee actively managed long-only equity strategy that creates a low-risk portfolio using stocks from the world's developed markets.<sup>2</sup>
- The MSCI World index (MW), representing a cap-weighted benchmark portfolio of global developed market stocks.<sup>3</sup>

Table 1 presents summary statistics from January 1999 through June 2016. Among the highlights, simulated managed volatility realized a higher average return than hedge funds and the cap-weighted benchmark (10.6%, 4.7%, and 5.4%, respectively). In terms of risk, SMV and HFRX EH both exhibited considerably lower volatility than MW (10.1%, 7.9%, 15.5%) and much smaller drawdowns. Putting return and risk together to compare risk-adjusted performance, the Sharpe ratio of SMV exceeds those of HFRX EH and MW (0.86, 0.36, 0.23). Although hedge funds offered the lowest volatility, SMV benefited not only from both the dampened volatility relative to the cap-weighted benchmark but also the highest absolute returns over the analysis period.

### TABLE 1

Summary statistics for the HFRX Equity Hedge index, simulated managed volatility, and the MSCI World index, January 1999 through June 2016.

	HFRX Equity Hedge (HFRX EH)	Simulated Managed Volatility (SMV)	MSCI World (MW)
Mean return, % annualized (arithmetic)	4.71	10.57	5.37
Standard deviation of returns, % annualized	7.91	10.14	15.50
Sharpe ratio, annualized	0.36	0.86	0.23
Maximum 3-month drawdown %	-19.77	-18.92	-33.22
Maximum 6-month drawdown %	-24.53	-24.97	-43.55
Maximum 12-month drawdown %	-25.46	-26.23	-47.12
Sortino ratio, annualized	0.31	0.26	0.16
Tracking error, % annualized MSCI	11.47	9.27	

Sources: MSCI, Hedge Fund Research (HFRX), and Acadian. For illustrative purposes only. See end notes and disclosures for full descriptions of the three return series.

\*SIMULATED MANAGED VOLATILITY PORTFOLIO: In this paper, the returns and results reported for the managed volatility portfolio are simulated results and are being used for illustrative purposes only. The simulated returns vary significantly from the live strategy returns. The returns represent a theoretical equity portfolio and are being provided as supplemental to our fully compliant GIPS® presentation attached. Actual performance for the Global Managed Volatility strategy inceptioned on August 1, 2006. They do not represent actual trading or an actual account, but were achieved by means of retroactive application of a model designed with the benefit of hindsight. Results may not reflect the impact that material economic and market factors might have had on the adviser's decision-making of managing actual client assets. All returns reflect the reinvestment of dividends and other earnings as well as estimated transaction costs. The net simulated performance returns reflect a maximum 0.40% flat advisory fee. The One Month U.S. T-Bill is the risk-free rate in the Sharpe Ratio calculation. These results assume a \$1B initial investment. Additional information about how the simulated portfolio was constructed is available upon request. Simulated performance is not indicative of actual future results. Investors have the opportunity for losses as well as profits.

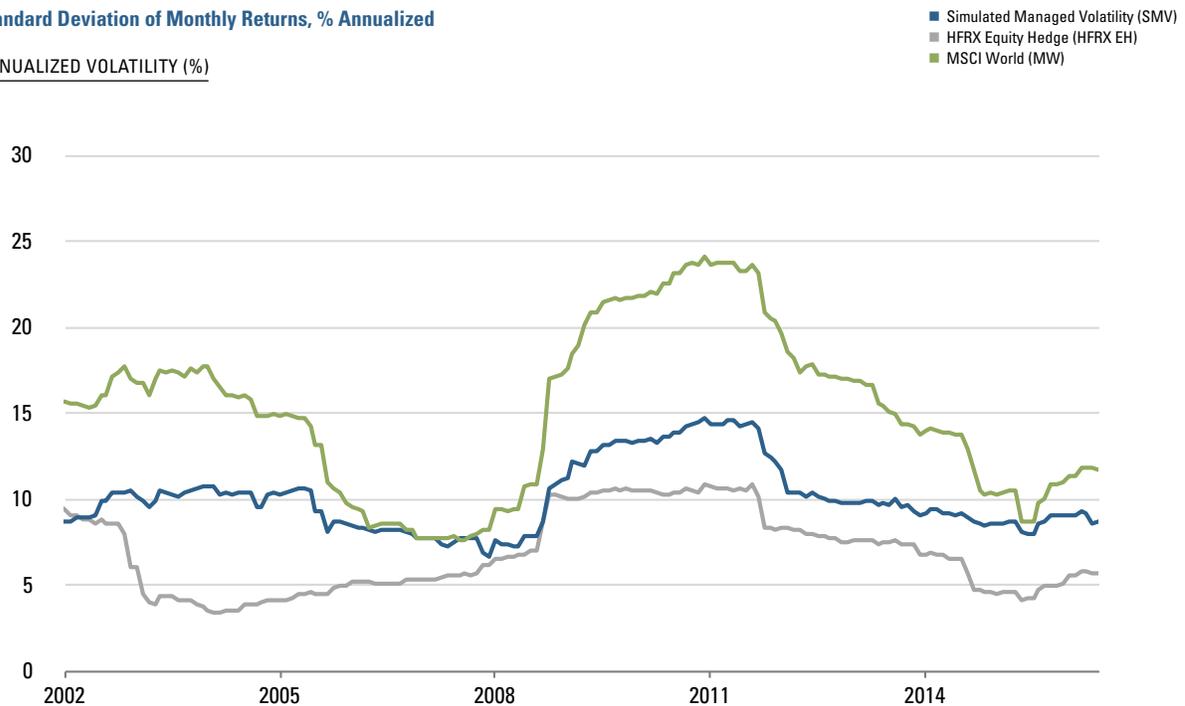
Thinking further about risk, it isn't surprising that managed volatility has higher volatility than hedge funds. Managed volatility is a long-only strategy, while hedge funds often short equities explicitly to reduce market exposure. Consistent with this intuition, the full-period beta of SMV to MW is 0.54, versus 0.36 for HFRX EH. Even without shorting, however, managed volatility's fully invested portfolio generates quite a substantial

reduction in beta and generates total volatility that is roughly 1/3 less than the benchmark. Figure 1 shows the consistency of the volatility reduction over time, comparing rolling 3-year standard deviations of the returns streams. The chart provides evidence that managed volatility's risk reduction benefit grows at times when it's desirable, i.e., when market volatility is high.

## FIGURE 1

### Standard Deviation of Monthly Returns, % Annualized

ANNUALIZED VOLATILITY (%)



Rolling estimates of the standard deviation of monthly returns for the period 2002-2016. Each monthly estimate uses the prior thirty-six months of returns to estimate standard deviation.

Sources: MSCI, Hedge Fund Research (HFRX), and Acadian. For illustrative purposes only.

See end notes and disclosures for full descriptions of the three return series.

For a more granular look at returns, Table 2 reports year-by-year returns for the three series. Simulated managed volatility outperformed MSCI World not just on average, but in a majority of years. Hedge funds, in contrast, underperformed the benchmark during 13 of the 18 years in the sample period. HFRX EH performance was

particularly strong early in the sample, when many hedge fund managers appear to have correctly called the boom and bust of technology stocks (and equities generally). Subsequently, however, HFRX EH returns have been comparatively low.

**TABLE 2**

**Returns (%) and differences by year for the HFRX index, simulated managed volatility, and the MSCI World index for the period January 1999 through June 2016.**

	HFRX Equity Hedge (HFRX EH)	Simulated Managed Volatility (SMV)	MSCI World (MW)	HFRX EH - MW	SMV - MW	SMV - HFRX EH
1999	41.03	0.89	24.93	16.09	-24.05	-40.14
2000	16.97	6.85	-13.18	30.15	20.03	-10.12
2001	8.96	-6.41	-16.82	25.78	10.42	-15.36
2002	2.12	1.08	-19.89	22.01	20.97	-1.04
2003	14.46	36.66	33.11	-18.64	3.56	22.20
2004	2.20	31.54	14.72	-12.52	16.82	29.34
2005	4.21	10.81	9.49	-5.28	1.32	6.60
2006	9.22	26.54	20.07	-10.84	6.47	17.31
2007	3.22	8.27	9.04	-5.81	-0.77	5.05
2008	-25.46	-19.26	-40.71	15.26	21.45	6.19
2009	13.13	18.23	29.99	-16.86	-11.76	5.10
2010	8.91	13.91	11.76	-2.85	2.15	5.00
2011	-19.07	5.73	-5.54	-13.53	11.27	24.80
2012	4.80	12.15	15.83	-11.03	-3.68	7.35
2013	11.14	20.31	26.68	-15.54	-6.37	9.17
2014	1.42	11.26	4.94	-3.52	6.32	9.84
2015	-2.34	6.53	-0.87	-1.47	7.40	8.87
2016	-4.97	9.18	-1.11	-3.85	10.30	14.15
<b>AVERAGE</b>	<b>5.00</b>	<b>10.79</b>	<b>5.69</b>	<b>-0.69</b>	<b>5.10</b>	<b>5.80</b>

Sources: MSCI, Hedge Fund Research (HFRX), and Acadian. For illustrative purposes only. See end notes and disclosures for full descriptions of the three return series.

## FIGURE 2

Cumulative returns of the HFRX index, simulated managed volatility, and the MSCI World index, January 1999 through June 2016.

CUMULATIVE RETURN



Sources: MSCI, Hedge Fund Research (HFRX), and Acadian. For illustrative purposes only.

See end notes and disclosures for full descriptions of the three return series.

Figure 2 plots the hypothetical cumulative return of \$1 invested in each of the strategies at the end of January 1999. HFRX EH's early strong performance is evident, but SMV catches up in the mid-2000s and eventually surpasses it. Both the chart and Table 2 show outperformance of SMV versus HFRX EH during the global financial crisis (GFC) of 2008-9. MSCI World lags both alternative strategies over the full period, although its gap relative to HFRX EH has narrowed due to continued hedge fund underperformance since the GFC.

## PORTFOLIO ALLOCATION: MANAGED VOLATILITY AND HEDGE FUNDS AS COMPLEMENTS

Historical behavior of HFRX EH and SMV returns suggest that a mix of hedge funds and managed volatility may work well in an asset allocation setting alongside (or in lieu of) an index such as MSCI World. They both display higher Sharpe ratios and may offer potentially diversifying risk characteristics. To investigate further, we compare hypothetical performance of alternative allocations to the three strategies. Specifically, in Table 3, we compare Sharpe ratios calculated from average returns of the three hypothetical portfolios and their covariances.

Table 3 may take a moment to digest, but it's worth a little effort. Each cell represents a hypothetical portfolio with an allocation to the HFRX EH, SMV, and MW. The left-most column displays the weight assigned to HFRX EH, and the top row displays the weight assigned to SMV. The allocation to MW is the residual, i.e., the weight that creates a 100% invested portfolio. We lowered the simulated managed volatility portfolio returns to the MSCI World index plus 100 basis points in order to better reflect our forward-looking return expectations. The table reports the Sharpe ratio for each hypothetical asset allocation portfolio. So as an example, a portfolio that has a 0% allocation to both HFRX EH and SMV, in the upper left corner, has an implied 100% allocation to MSCI World and a Sharpe ratio of 0.23 (consistent with that reported in Table 1).

The lightly shaded column and row highlight hypothetical portfolios in which the allocation to either HFRX EH or SMV is constrained to be 0. In each case, Sharpe ratios rise steadily as the allocation shifts from the MSCI World benchmark to either hedge funds or managed volatility, consistent with the relative Sharpe ratios from Table 1. In other words, on a Sharpe ratio basis, as calculated from returns over our sample period, no optimal portfolio would include an allocation to the benchmark index.

**TABLE 3**

Sharpe ratios of three-asset portfolios. The hypothetical portfolios are composed of the HFRX index according to weights in the first column, of simulated managed volatility according to weights at the top of the second through seventh columns, and of the MSCI World index such that total weights sum to 100%. Sharpe ratios are calculated using the average return vector and the variance-covariance matrix estimated from monthly returns January 1999 through June 2016. For the simulated managed volatility portfolio returns we use the MSCI World index plus 100 basis points to better reflect our forward-looking return expectations.

		Allocation to Simulated Managed Volatility					
		0%	20%	40%	60%	80%	100%
Allocation to HFRX	0%	0.23	0.26	0.31	0.35	0.40	0.45
	20%	0.25	0.30	0.35	0.40	0.46	
	40%	0.28	0.33	0.40	0.47		
	60%	0.31	0.38	0.45			
	80%	0.34	0.42				
	100%	0.36					

Sources: MSCI, Hedge Fund Research (HFRX), and Acadian. For illustrative purposes only.

See end notes and disclosures for full descriptions of the three return series.

This is not intended to represent investment returns generated by actual portfolios. They do not represent actual trading or an actual account. Results do not reflect transaction costs or other implementation costs. Hypothetical performance is no guarantee of future results. Every investment program has the opportunity for loss as well as profit.

A second key result of the analysis is that investors who have allocated between the benchmark and equity long-short hedge funds might see benefit from a reallocation to managed volatility. We can see evidence of this in the Sharpe ratios of portfolios that contain 0 allocation to MSCI World, which are found in the main diagonal that runs from bottom left to top right. (Where allocations to HFRX EH + SMV = 100%.) There, the highest Sharpe ratio among all portfolios represented in the table has a 60%/40% allocation to SMV/HFRX EH.

## CONCLUSION

Over the past nearly 18 years, hedge funds have delivered lower risk than cap weighted equity portfolios and a materially higher Sharpe ratio. During the same period, a simulated managed volatility portfolio also generated lower risk than the benchmark but with enough of an increase in returns to deliver an even higher Sharpe ratio than hedge funds.

Both hedge funds and managed volatility may provide beneficial diversification and drawdown protection in a broader asset allocation context. The simple allocation study presented in this note suggests, for example, that an optimal combination of the market index, hedge funds, and managed volatility may actually tilt towards the latter.

Overall, we see compelling evidence that managed volatility strategies may offer an attractive mix of low correlations, risk reduction, and return potential, and even more so when other attributes such as liquidity, transparency, and complexity are taken into consideration alongside raw performance. For these reasons, we consider managed volatility as a natural component of an asset allocation strategy.

## ENDNOTES

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- <sup>1</sup> The HFRX Equity Hedge index is an equal-weighted average of hedge fund returns collected and analyzed by Hedge Fund Research, Inc., [www.hedgefundresearch.com](http://www.hedgefundresearch.com). In general, funds that have at least \$50 million under management, that have at least a twenty-four-month track record, and that are open to new investment are eligible for inclusion in HFR's indexes. The HFRX Equity Hedge index is intended to be composite of many different equity strategies, but typically constituent funds have at least 50% of their capital invested in equities. Returns aggregated into the index are net of the fees that are reported by the constituent hedge funds and that may differ from fund to fund. Additional information may be available from HFR. Reference to the HFRX Equity Hedge index is for comparative purposes only and is not intended to indicate that a Managed Volatility portfolio would contain the same investments as the index.
- <sup>2</sup> SIMULATED MANAGED VOLATILITY PORTFOLIO: In this paper, the returns and results reported for the managed volatility portfolio are simulated results and are being used for illustrative purposes only. The simulated returns vary significantly from the live strategy returns. The returns represent a theoretical equity portfolio and are being provided as supplemental to our fully compliant GIPS® presentation attached. Actual performance for the Global Managed Volatility strategy inceptioned on August 1, 2006. They do not represent actual trading or an actual account, but were achieved by means of retroactive application of a model designed with the benefit of hindsight. Results may not reflect the impact that material economic and market factors might have had on the adviser's decision-making of managing actual client assets. All returns reflect the reinvestment of dividends and other earnings as well as estimated transaction costs. The net simulated performance returns reflect a maximum 0.40% flat advisory fee. The One Month U.S. T-Bill is the risk-free rate in the Sharpe Ratio calculation. These results assume a \$1B initial investment. Additional information about how the simulated portfolio was constructed is available upon request. Simulated performance is not indicative of actual future results. Investors have the opportunity for losses as well as profits.
- <sup>3</sup> Reference to the MSCI World index is for comparative purposes only and is not intended to indicate that a Managed Volatility portfolio would contain the same investments as the index.

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## PERFORMANCE DISCLOSURE – GLOBAL MANAGED VOLATILITY

THREE-YEAR EX-POST STANDARD  
DEVIATION OF ABSOLUTE RETURNS

	COMPOSITE RETURN (%) GROSS-OF- FEES	COMPOSITE RETURN (%) NET-OF-FEES	MSCI WORLD RETURN (%)	MSCI WORLD MINIMUM VOLATILITY RETURN (%)	VALUE- ADDED (GROSS) VS. MSCI WORLD	DISPERSION OF RETURNS WITHIN COMPOSITE (%)	COMPOSITE	MSCI WORLD	MSCI MIN VOL	NUMBER OF PORTFOLIOS IN COMPOSITE	ASSETS IN COMPOSITE (\$MMS)	TOTAL FIRM ASSETS UNDER MANAGEMENT (\$MMS)
2006*	11.0	10.8	12.5	12.6	-1.5	n/a	n/a	n/a	n/a	2	87	64,065
2007	10.9	10.4	9.0	5.5	1.9	0.8	n/a	n/a	n/a	2	147	83,661
2008	-24.3	-24.7	-40.7	-29.7	16.4	1.4	n/a	n/a	n/a	3	170	42,549
2009	10.1	9.7	30.0	16.4	-19.9	1.0	14.6	21.4	16.5	4	298	49,314
2010	12.0	11.6	11.8	12.0	0.2	1.2	15.5	23.7	17.2	7	1,040	49,032
2011	7.5	7.0	-5.5	7.3	13.0	0.8	12.6	20.2	13.3	7	1,248	42,200
2012	12.4	12.0	15.8	8.1	-3.4	0.7	9.3	16.7	9.1	12	3,070	51,903
2013	19.8	19.3	26.7	18.6	-6.9	0.9	8.6	13.5	8.5	14	5,338	65,153
2014	8.8	8.4	4.9	11.4	3.9	0.7	8.3	10.2	8.3	22	7,946	70,339
2015	6.6	6.1	-0.9	5.2	7.5	0.7	9.2	10.8	8.9	24	8,737	66,834
2016 to Q2	8.3	8.1	0.7	11.5	7.6	n/a	8.7	11.5	8.4	24	8,831	69,688

\*Performance Inception: August 1, 2006. This composite was created on September 1, 2006. All figures stated in USD.

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Methodology: Returns are net of estimated foreign withholding taxes on dividends, interest, and capital gains. As of January 1, 2010 Acadian's methodology was augmented to produce a more accurate gross return figure by eliminating modest cash flows such as securities lending income and custodial fees which are regarded as independent of the investment management process; the reinvestment of all income and trading expenses continue to be included. Gross returns will be reduced by investment advisory fees and other expenses. Monthly composite results are asset-weighted by beginning-of-month asset values of member portfolios which are geometrically linked to arrive at the annual composite return. Net-of-fee performance is accrued on a monthly basis and is calculated using the highest management fee as described in section 2A of the firm's Form ADV for the investment process utilized to manage this strategy; such form is available upon request. Net-net-of-fees additionally include incentive fees which, when applicable, are also accrued on a monthly basis. The standard fee schedule for accounts managed with

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Composite Description: This composite invests globally in developed and opportunistic emerging equity markets. The strategy aspires to provide market-like returns with less-than-market volatility. As of January 1, 2010 this composite was renamed from "Global Low Volatility Equity." A complete list of the firm's composites and their descriptions is available upon request.

Benchmark Description: The primary benchmark for the composite is MSCI World (net of dividend withholding taxes). The MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets. The secondary benchmark is MSCI World Minimum Volatility (net of dividend withholding taxes) for purposes of additional comparison. The MSCI World Minimum Volatility Index is calculated by optimizing the MSCI World index to produce an index with the least volatility for a given set of constraints and to ensure index replicability and investability.

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