ACADIAN

MACS CASE STUDY: THE FEBRUARY VIX SPIKE

FEBRUARY 2018

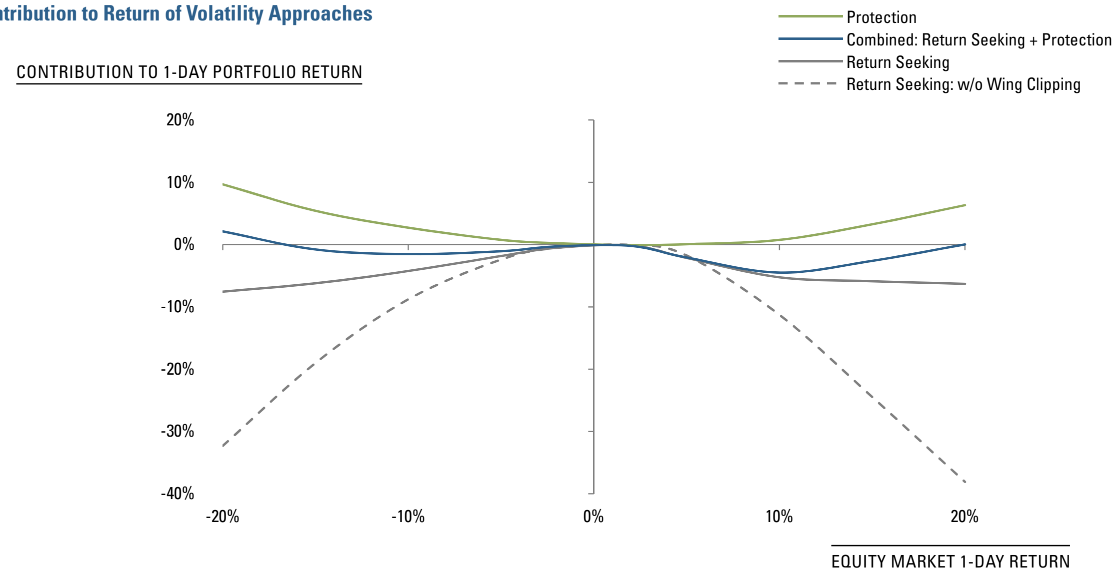
Early February saw tremendous turbulence in the markets, much of it attributed to volatility/options trading. At one point, the VIX spiked to 50, and a popular short volatility ETF (XIV) shut down, causing a loss of over 90% to its investors. Generally, short volatility strategies did quite poorly; however, the volatility component of our Multi-Asset Class (MACS) strategy held up as we would have expected.

The volatility component of our MACS strategy incorporates several important features that have had a material impact on performance so far in February:

- **Incoporating return-seeking and a defensive component**—The return-seeking component goes short volatility via short-dated options, while the defensive component goes long volatility via long-dated options (both are delta-hedged). As expected during a significant volatility spike, the return-seeking component of the volatility strategy detracted from the representative portfolio's returns, but the defensive positioning largely offset the return-seeking underperformance.
- **Clipping the wings**—To specifically address sudden market shocks, in the return-seeking component of our approach, we cover any short option with a deep out-of-the-money long option of an equal notional amount. This mitigates potential losses when there is a very large one-day move in equity markets. In Figure 1 below, we show a stylized, hypothetical example of the contribution to a MACS portfolio return from the various components of our volatility strategy during an equity market shock. The dashed grey line shows a simple return-seeking strategy that is just short a strip of delta-hedged options. The solid grey line represents the actual return-seeking component of our volatility approach, which adds long, deep out-of-the-money options. The green line ("Protection") represents our defensive component, and the dark blue line reflects the combined strategy, which incorporates both return-seeking and defensive components (solid grey and green lines). On days of extreme equity market moves, a simple return-seeking strategy may suffer substantial losses because of its non-linear risk profile. In contrast, our combined strategy, which clips the wings in the return-seeking strategy and adds a protection component, may detract a more modest amount from portfolio return, or could even be additive.

FIGURE 1

Contribution to Return of Volatility Approaches

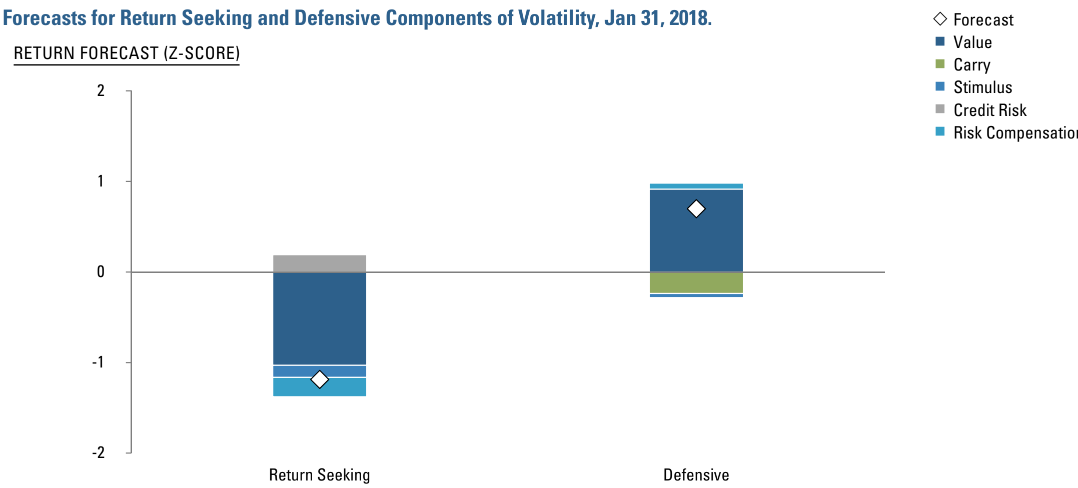


Source: Acadian. For illustrative purposes only. This is meant to be an educational illustrative example of hypothetical contribution from a market shock scenario to a hypothetical MACS portfolio. It is not intended to represent investment results generated by an actual portfolio. They do not represent actual trading or an actual account. Results do not reflect transaction costs, other implementation costs and do not reflect advisory fees or their potential impact. Hypothetical results are not indicative of actual future results. Every investment program has the opportunity for loss as well as profit.

- **Adjusting for skew**—When we delta hedge, instead of a naïve Black-Scholes delta, we use a skew-adjusted delta. This reflects the fact that the implied volatility is negatively correlated with equity markets. As a result, we hold fewer long equity futures positions as a delta hedge. This feature added to the representative portfolio's performance in February.
- **Positioning dynamically**—We use return forecasts to dynamically adjust both return-seeking and defensive components. As of late January, the return models liked the defensive strategy and disliked the return-seeking strategy, as depicted in Figure 2 below. This was driven by the fact that implied volatility levels were quite low everywhere; therefore, it was cheap to buy volatility and expensive to sell volatility. As a result, the portfolio was overweight the protection component and underweight the return seeking component.

FIGURE 2

Return Forecasts for Return Seeking and Defensive Components of Volatility, Jan 31, 2018.



Source: Acadian. The information provided is for illustrative purposes only based on proprietary models. There can be no assurance that the forecasts will be achieved.

In terms of longer-term return prospects for the volatility component of our MACS strategy, our simulation results show a post t-cost Sharpe ratio of 1.1 (based on 1997- October 2017 data), which indicates the potential to contribute positively to the future performance of our Multi-Asset Absolute Return Strategy.[1]

HOW DID OTHER STRATEGIES FARE IN EARLY FEBRUARY?

Figure 1 above illustrates how, without risk mitigation, volatility strategies can be materially exposed to directional moves in volatility. This explains how, during the volatility spike in early February, many of the more simplistic short volatility strategies tended to do poorly.

In contrast, trend following/CTA strategies are often described as "long volatility," because they tend to do well in protracted equity bear markets, but they also had a challenging experience in early February. Specifically, as their performance typically relies on market trends, they tend to struggle when markets suddenly reverse directions—thus, as we just saw, they can have the opposite return profile of put options, which are expected to protect during sudden market sell-offs.

CONCLUSION

Volatility strategies have long been known to provide attractive long-term returns with an asymmetric payoff profile, which leaves simplistic approaches particularly vulnerable in periods of market turbulence. We believe that these weaknesses can be overcome by balancing the defensive and return-seeking aspects of volatility investing by dynamically adjusting exposures to changing markets environments, and by carefully managing the tails. We have been encouraged by the performance of our strategy through this recent spate of volatility, and believe that we are well positioned should volatility continue to rise.

[1] The data presented here is for a simulated Multi-Asset Class portfolio. This does not represent actual trading or an actual account, but was 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 if managing actual client assets. Results do not reflect reinvestment of dividends, other earnings, deduction of estimated transaction costs, other implementation costs, advisory fees or their potential impact. T-Cost Shape ratio is gross of fees as net of fee results are not available. The standard fee schedule for this strategy is a 1% flat advisory fee. Live performance incepted November 2017. Additional information about how the simulation was constructed is available upon request. Simulated results are not indicative of actual future results. Investors have the opportunity for losses as well as profits. This simulation was created in October 2017. See the disclosure slide at the back of the presentation for information on our live strategy.

PERFORMANCE DISCLOSURE — MULTI-ASSET ABSOLUTE RETURN STRATEGY

	Composite Return (%) Gross-of-Fees	Composite Return (%) Net-of-Fees	U.S. T-Bill Return (%)	Dispersion of Returns Within Composite (%)	Three-Year ex-Post Standard Deviation of Absolute Returns		Number of Portfolios in Composite	Assets in Composite ($MMs)	Total Firm Assets under Management ($MMs)
					Composite	Benchmark			
2017*	0.0	-0.2	0.2	n/a	n/a	n/a	1	10	96,765
2018 through January	2.8	2.7	0.1	n/a	n/a	n/a	1	10	102,371

*Performance Inception: November 1, 2017. This composite was created on December 1, 2017. 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 this product is 1% on assets managed. For the year ending 2017 the non-fee-paying account percentage of the composite is 100%. Management fees may vary according to the range of services provided, investment performance, and the amount of assets under management. Constituent portfolios are included from the first full month after inception to the present or the last full month prior to cessation of the client relationship with the firm. For example, an account that opened January 15, 2010 will be included beginning February 1, 2010. An account that terminated February 12, 2010 will be included through January 31, 2010. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

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Composite Description: This composite is an absolute return strategy with low correlations to equities and other asset classes, and targets half the volatility of global equities. The strategy is implemented via long/short positions across and within five major asset classes: Equities, Bonds, FX, Commodities, and Volatility. The strategy seeks to incorporate diverse sources of return in a holistic, risk-balanced approach. It seeks return from three main sources – long term beta exposures, active allocations at the asset class level, and market selection within asset classes. A complete list of the firm's composites and their descriptions is available upon request.

Benchmark Description: The benchmark for the composite is the 90-Day U.S. T-Bill.

[1] Ashland Partners verified Acadian's GIPS Compliance claim through March 31, 2017. ACA Compliance Group acquired Ashland's GIPS Verification unit and provided subsequent verifications.

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