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Equity volatility – an investment tool in the hunt for absolute returns

With the recent retrenchment of equity markets, many investors are refocusing their attention towards investment strategies that seek to provide stable returns independent of market direction

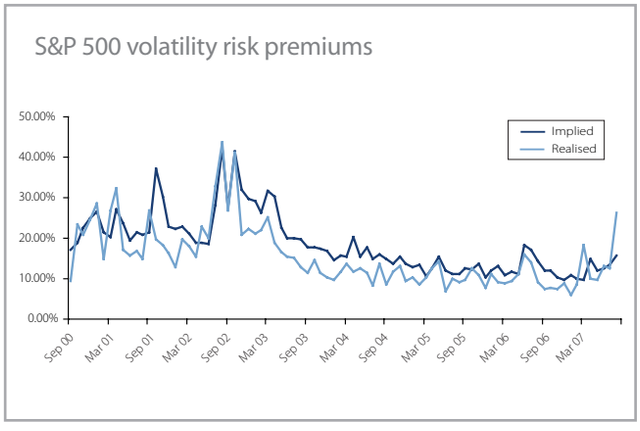
While these types of strategies are barely new – hedge funds have pursued absolute return for a long time – it is only recently that they have made their way into the structured investment arena. One of the simplest examples of this has been structured investments providing non-directional exposure to equity markets, much like a 'systematic long/short' strategy, but there are also many others. Investing in so-called 'hidden' or 'implicit' assets such as volatility, dividends or correlation has also gained popularity over the past few years and is now regarded as a credible alternative to pure equity investments. Leading this trend, volatility has emerged as an asset class in its own right that can be traded using liquid financial instruments. The development of this new asset class is one of the more important developments in the options market since the introduction of the Black-Scholes pricing model in 1973.

Investing in volatility can serve various purposes. On the one hand, volatility tends to exhibit strong negative correlation to equity market movements: in a downward trending market, for example, we typically observe elevated levels of volatility compared with upward markets. The reason can be found in a change in the correlation behaviour between stocks: when there is bad news, it tends to affect all stocks and they tend to drop together, i.e., by exhibiting a strong positive correlation. In the event of good news, this effect is typically much less pronounced and therefore volatility in an upward trending market often is lower. Given this, investments in volatility can be used, to some extent, as a hedging instrument against a downturn in equities. However, a characteristic feature of this use of volatility is that it is a 'negative carry' trade. In a benign market environment it is likely to lose some money, with the big payout occurring during a market crisis. A quite different approach to investing in volatility is to use it as a tool to generate absolute returns. Later in the article, we turn our attention to a specific example of this by looking at the Voltaire Strategy, a play on expected volatility versus future realised volatility.

Implied volatility as a predictor of future volatility

When pricing options, the key parameter for the trader to estimate is the level of volatility that will be realised over the life of the option. If a dealer can sell an option at a slightly higher implied volatility than is subsequently realised, he is likely to make a profit as the directional exposure to the equity market can be hedged out separately. Therefore, if option markets are liquid and efficient, implied volatility should be a good forecast of future volatility as this implies the absence of arbitrage opportunities. In options markets, however, price inefficiencies do exist. Structural imbalances in supply and demand affect option prices, creating a very real differential between implied and realised volatility. Investors (typically large institutions) buying put options for downside protection, for example, drive up implied volatility, especially for lower strikes. Other client segments investing in call options (such as through equity-linked notes) also contribute to this effect.

One could analyse this by comparing on each day one-month implied volatility (as derived from one-month variance swaps) with the realised volatility over the subsequent month. Historically, using this measure, in all major markets (the US, Europe, Japan, the UK), implied volatility has tended to over-predict future volatility on a fairly consistent basis. This has been true in about 80% of the cases between 2000 and mid-2007, with the average bias being for implied volatility to be more than 3% higher than subsequent realised volatility (see table A). This is quite an interesting situation and a logical reaction is to come up with a trading strategy that generates returns if that story persists in the future.



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Any data on past performance, modelling or back-testing is no indication as to future performance

Voltaire trading strategy

Voltaire is a simple trading strategy that capitalises on this relationship by receiving implied volatility and paying realised volatility. Rather than focusing on just one underlying market, the strategy operates across a number of geographical markets and identifies the one with the highest volatility risk premium. The most efficient means of doing this is through variance swaps, which offer 'pure' exposure to volatility, as well as the necessary liquidity to implement the strategy efficiently.

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A. Historical volatility risk premiums

	% cases of positive volatility premiums	Average implied volatility premium (%)
DJ EuroSTOXX 50	80.49	3.28
FTSE 100	81.71	3.14
S&P 500	84.15	3.23
Nikkei 225	79.27	3.34

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The advantage of using variance swaps to capture this differential is the funding (or lack thereof), as no initial cash outlay is necessary to enter into a swap. The main disadvantage is the capital risk, which makes it often inappropriate for many investors. Other disadvantages (or obstacles, rather) are linked to the infrastructure required to appropriately manage this type of strategy in house. By accessing the strategy through structured products such as notes or funds, on the other hand, investors may effectively bypass these issues, while still preserving good performance potential.

Historical simulations of the strategy show that it has performed well in a variety of market scenarios. The correlation to equity markets – especially over the longer term – has also been quite low (see table B). The returns, however, have been significant.

Strategies such as this show how volatility as an investment class can provide investors with a unique source of diversification and alpha along with potentially high, stable returns and low correlation to traditional markets. By offering these types of investment opportunities to a wider client base, products such as Voltaire are bridging the gap between institutional and other client segments, enabling them to access strategies, which until recently were only practical for hedge funds and certain proprietary trading desks.

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B. BVI™ correlation

	Voltaire Index™	Bonds	Equities	Commodities
Voltaire Index™	100.00%			
Bonds	36.04%	100.00%		
Equities	10.49%	-46.15%	100.00%	
Commodities	-22.75%	-1.93%	-11.09%	100.00%

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Analysis of quarterly returns over the period Sep 2000–Jun 2007

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The Barclays Voltaire Index™

The Barclays Voltaire Index™ (BVI™) replicates the performance of a disciplined strategy of selling short-dated equity market volatility at the 'implied' levels observed within the wholesale derivatives market. At any point in time, returns are linked to the volatility of one of four major equity market indexes: the S&P 500 Index, DJ EuroSTOXX 50 Index, FTSE 100 Index or Nikkei 225 Index.

The index will show positive returns over periods during which this implied level of volatility proves to be higher than the subsequently realised level of volatility – a phenomenon that has historically persisted over a number of years. Should realised volatility during a particular period exceed the level at which the strategy had gone short, then the index will fall.

The BVI™ is an investable index and can be replicated through the use of variance swaps. The index itself incorporates the results of a dealer poll to ensure accurate and competitive market pricing. In addition to the positive or negative returns from the variance swap element of the strategy, which can be established at zero cost each month, the BVI™ accrues a return linked to one-month LIBOR.

The index is calculated and published by the index sponsor, Barclays Capital, in a number of different currencies.

BVI™ forms part of the Barclays Capital Q-Series™, a range of quantitative investment products and strategies developed by Barclays Capital's Equity Derivatives team. The Q-Series aims to replicate trading strategies and provide access to investment opportunities that have historically been employed by a section of the active asset management community. These strategies, which might be linked to the performance of econometric models, relative value opportunities or implicit assets, are delivered in a transparent manner with a focus on enhanced liquidity and cost efficiency.

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