

Roundtable discussion

Introduction

swissHEDGE regularly invites reputed hedge funds to join a roundtable discussion in which to share their views on a particular topic. This time, we have invited three leading hedge funds who will explain how volatility affects their strategies.

Deephaven Capital Management L.L.C., Minnetonka

Fund: Deephaven Market Neutral Fund Ltd.
AUM: USD 3.4b
Representative: Shailesh Vasundhara, Head of Convertible Arbitrage, and Jeff Applebaum, Managing Director

Capital Fund Management (CFM)

Fund: Nimbus Fund Ltd.
Ventus Fund Ltd
Discuss Fund Ltd
AUM: USD 820m
Representative: Marco Avellaneda, Head of Volatility Arbitrage

Vicis Capital

Fund: Vicis Capital Fund Ltd.
AUM: USD 350m
Representative: Shad Stastney, Partner/John Succo, Partner

Q: Are the current low levels of volatility justified?

DEEPHAVEN: In the current environment, levels of volatility have been low and in a 100 pt SPX range for the last 9 to 12 months – between 1050 and 1150 in the SPX. The market is using the narrow band that we have traded between to justify the low absolute levels of volatility. However, volatility can gap; there have been environments in the past where volatility traded lower in a seemingly secular lower trend before it gapped to the upside. The right question is whether volatility has started to

look interesting at these levels. This is especially true in markets such as Japan, where the proliferation of structured products has re-enforced this narrow range. Those forces could work in reverse in the event of a break out.

CFM: Volatility in major equity indices is at a historical low. While this cannot be justified «intrinsicly», we believe that volatility levels are related to the activity of the equity markets and by the interest of institutional investors in equities. The crash of 2000-2002 diminished the public's appetite for equities and thus a very low volatility environment marked its aftermath. The situation is not unlike the early 1990's.

VICIS: Although volatility in the equity markets (our area of expertise) is certainly low relative to recent history, realized volatility can go through long periods of being either low or high, largely as the result of macro forces. We believe the drop in volatility over the last year or so is the result of unprecedented easy global monetary policy. It is difficult to say any level of realized volatility is not justified – it is simply a reflection of the macro environment, or investor's perception of it. Differences between realized volatility and implied volatility can turn out, in hindsight, to have been justified or not. Making that decision is the basic task of the volatility trader, and there are currently moderate opportunities to exploit those differences in this environment.

Q: Do you believe volatility is forecastable?

DEEPHAVEN: Volatility is one of the few asset classes that has displayed mean reversion characteristics in the past and therefore, calculated «qualitative» guesses can be made about the direction of volatility. It becomes a bit more tricky because even though volatility is mean reverting, the mean is not static and has trending characteristics. While quantitative predictive models such as Garch and eGarch have worked in certain environments, there are questions about how these models behave for extreme moves.

CFM: We don't believe that volatility is forecastable over long periods of time, which justifies considering equity volatility as a traded asset. The options markets provide forecasts of volatility – via the implied volatility of options and indices – for periods from one month to one year. These forecasts may be right or wrong, although

they are generally unbiased in the long run. We believe that forecasts can be improved through the study of correlations between stocks and between indices.

VICIS: As noted earlier, it is largely forces outside of the volatility market that determine the level of volatility in any market, especially the equity volatility market. A robust model for predicting volatility would, therefore, be able to predict the interplay of all of those macro forces over time. Such a model has been proven to be illusory given the linear mathematical tools available. However, there are certain indicators in any given market which can indicate a more or less imminent relative change in the volatility environment. Because even these indicators can be (and often are) superseded by unexpected macro events, it has been our experience over the past 25 years that it is not a sustainable business model to attempt to make large bets on forecasted volatility. The indicators are useful in adjusting a portfolio on the margin, but any more than that, in our view, is unjustified based on historical data. Our experience has been to not «trade» the overall level of volatility, but rather to look for major discrepancies in relative volatility.

Q: Is there any relationship between volatility in the different asset classes and is it exploitable?

DEEPHAVEN: We believe the new area that is still not fully exploited by hedge funds/banks is cross-market volatility plays; there are correlations that exist and provide better risk/reward potential and less crowded trades. For example, looking at currency vs. equity volatility, or credit vs. equity volatility. However, these correlations are very environment specific, and recognizing the drivers of such correlations is as important as being able to quantitatively model them. For example, we are now in an environment where currency volatility and equity volatility are both moving together in tandem. Recognizing that there are global macro factors at work here that affect both these asset classes (for example, among other things the continued funding of the US's twin deficits via the capital account surplus in Asia through investment in US securities, thereby keeping rates low, equities supported, and the dollar strong) allows you to watch for the eventual breakdown in the causative factors before any historical data test reveals such breakdown in correlations.

CFM: The short answer is no. In our view, the volatilities between different asset classes are weakly correlated.

This means that forecasting the volatility of Dollar-Euro from the volatility of the S&P500 is very difficult and probably impossible to do in any systematic way. On the other hand, a fund that invests in volatility can diversify itself considerably by doing cross-asset volatility investments - by investing in a «portfolio» of different volatilities. Weak correlation gives rise to diversification and thus greater efficiency.

VICIS: As equity-only volatility specialists, this is outside our area of direct expertise. However, we are not aware of any models that would have accurately predicted cross-asset class volatility moves of the past several years, which leads us to be sceptical that a tradable relationship can be defined. Regardless, it would be a high risk-high reward proposition.

Q: Is the market for volatility a mature market and what practical problems do you encounter while trading volatility?

DEEPHAVEN: Volatility for the most part is a mature market, especially in currencies, G7 interest rates etc, but not so much in CDS, emerging market debt, and, as mentioned before, in cross market volatility oriented trades. Problems such as jump risk, dividend increases, and other events that Black-Scholes does not account for are pretty well understood by the market. Volatility markets, however, in such low volatility environments are characterized by a lack of enthusiasm and players and thus liquidity is a lot less than desirable so it is a bit tough to put a decent amount of money to work. Periods of very low liquidity can be a problem in Japan and, to a lesser extent, Europe.

CFM: Option trading in equities started in the 70's and interest rates/currencies started in the 80's or earlier. Therefore, dealing-room techniques for making money with volatility have been around for a long time. However, there have been several radical new developments. The first one is the availability of better information, better systems and easier access to electronic markets, especially in the United States. This «levels the playing field» and allows for hedge funds to compete with broker-dealers and to engage in portfolio trading in volatility. This was not possible a few years ago, because risk management systems and market structure did not allow one trader to manage more than one or two underlying assets. Now, thanks to new systems and electronic execution, traders can manage portfolios of options on

hundreds of different stocks in different currencies. The difficulties that we encounter in trading volatility have to do with liquidity, market structure, and competition. Market depths are variable: generally, options on single names have less liquidity than indices, but this may present good opportunities if appropriate strategies are put in place. Market structure distinguishes equity derivatives trading in the US from Europe: the former can be done electronically in reasonable size; the latter market is primarily over-the-counter (OTC). OTC markets present interesting questions for volatility traders. Finally, competition in this space is coming from broker-dealers as well as hedge funds. Some hedge funds have even become broker-dealers in the US to take advantage of the new market-structures offered by the electronic exchanges. All this promises increased competition in the asset class. Nevertheless, the differences in developments of different option markets, on a global scale, suggest that experienced players will be able to benefit from the different market structures.

VICIS: The market for volatility is certainly mature in the sense that the basic structures and the basic models (Black-Scholes based models) are universal and well-understood. An indirect way to answer this question is to say that it is our belief that these tools are significantly flawed. Additionally, as is the case with any market, as interest and participation change, the relative efficiency of the market changes. In our view, especially in the US volatility market (option prices), we are currently on the low end of interest and participation, meaning that the market-making tends to be relatively inefficient (spreads are wide).

Q: What is a sustainable volatility trading strategy?

DEEPHAVEN: We believe that volatility plays that look across different markets and take advantage of correlation «mispricings» are a sustainable volatility strategy. Also, taking advantage of relative value discrepancies between volatility in the same asset class, but across different markets, such as implied volatility within the convertible bond space versus listed option volatility, is a sustainable strategy, albeit the edge in such a strategy tends to vary a lot over time.

CFM: We develop volatility trading strategies for our clients. Therefore, we consider that this research is proprietary and that it is the reason why our clients invest with us. Nevertheless, some generalities – which may not be obvious to some investors – are worth mentioning. First

of all, a sustainable strategy cannot consist of being systematically long volatility. This style of trading, which became known a few years ago, was based on the misconstrued idea that volatility would always continue to increase in the aftermath of the Internet era. This hypothesis turned out to be wrong and proved lethal to long-only players. Furthermore, the long-only concept is not economically sustainable, since volatility is a perishable asset, which costs money. Taking a long position in volatility has a negative carry, which can only be recouped if one believes that in the long run markets systematically underprice volatility. That, as it turns out, is not the case. Similarly, short-only funds sell volatility in situations when they think that markets over react to risk by «marking up» excessively volatility. This strategy has positive carry but, like any insurance-like strategy, there can be unbounded losses if the underlying stock moves considerably. Rather than engaging in long-only or short-only strategies, our strategies tend to be balanced between longs and shorts and are based on constructing a suitable portfolio in which we simultaneously buy and sell options. A great advantage of long-short strategies is that they can succeed in high as well as low volatility environments. Furthermore, for the purposes of managing money, they utilize capital in a more efficient way.

VICIS: In our view, the most sustainable volatility trading strategy is a strategy that is basically non-directional in terms of overall volatility levels, but that exploits the natural inefficiencies of the market, which can be quite pronounced at times. Since these inefficiencies manifest themselves in clusters and in different ways over time, we aggressively vary allocations and trading strategies.

Q: Do pricing models still provide an edge in trading volatility?

DEEPHAVEN: For the most part, on their own, pricing models do not provide any edge in trading volatility. They are easily available to all sophisticated participants.

CFM: Very much so. However, pricing models mean different things to different people. Clearly, the Nth improvement of the Black-Scholes formula will be mostly of academic interest. The use of pricing models is to prevent mistakes in pricing – such as ignoring or mispricing the implied volatility skew. Unfortunately, these errors are not as rare as one may think. We also believe at CFM that pricing models should incorporate multi-asset information: options are not priced in a vacuum –

or, for the matter in a one-stock-one-bond market, but rather in relation to other stocks, indices and options.

VICIS: Current option pricing models are linear in nature and are flawed. Since variant Black-Scholes models are nearly universally employed, there is little edge for the average volatility trader. We believe the opportunity comes in understanding the limitations of these models and using experience to «adjust for those limitations».

Q: What would be the worst case scenario in your trading strategy?

DEEPHAVEN: Breakdowns in historical correlations would cause our trading strategy to underperform its objective. However, the portfolio can be tested for such potential scenarios.

CFM: The worst-case scenario would be one in which a significant portion of my short positions would be such that the underlying asset moves a significant amount while, at the same time, my long positions are such that the underlying assets do not move. All this coupled with a rise in the implied volatilities of my shorts and a drop in the implied volatilities of my longs. We structure our portfolio in such a way to make this unlikely and – in the case when this may happen – to minimize the loss in NAV. The way to deal with this problem is to limit concentrations by name and expiration, both on the long and short side, and to limit correlation risk-i.e. the likelihood to be exposed to stocks moving together as in a crash.

VICIS: In a non-directional strategy with the ability to vary asset allocation, the most likely «worst case» scenario is a lack of opportunities, and therefore more cash-like returns.

Q: How do you manage your fund so as to weather difficult trading conditions?

DEEPHAVEN: We are fortunate in having multiple trading strategies across different asset factors that we manage globally. We do not look at volatility in isolation; we look at our volatility exposures in the context of our other asset factor exposures which tends to minimize difficult trading environments for volatility. This, in addition to very strong quantitative and qualitative risk management, allows us to weather difficult trading conditions in volatility and for that matter in any particular strategy.

CFM: We have market experience that goes back several years. We have implemented best-practices for risk-management that are designed to make the fund survive

difficult crises like those of 1987, 1991, 1998, 2000, 2001, 2002. Without going into technical details, our positions are put on based on the assessed value of different options. We also understand that this position carries a «directional risk» (for instance: the position makes money if the VIX goes up faster than the VXN). To manage the directional aspect of volatility trading, we do not invest in long-term strategies and do not hesitate to stay in cash if we find that our trading signals are too weak.

VICIS: We do not consider any trading environment to be «difficult»; they are merely different. However, the essential tenet in any market environment must be risk. Risk is the primary concern in structuring any portfolio or any individual position – in other words, only those opportunities with well defined and appropriate risk for return characteristics within the context of the overall portfolio should be considered. If that means that the positions in the portfolio have somewhat lower profit and risk potential over certain periods of time, that has to be acceptable.

Q: How do you assess the impact of structured products in the volatility market?

DEEPHAVEN: Assessing the impact of structured products is an intense information gathering process, whether it be a US equity issuing a new convert and thus dampening equity volatility, or a European corporate doing some volatility linked structured product which may effectively result in selling some volatility. Also, markets may be moved by offloading by banks of big volatility exposures that may reside in their structured product books (built up on retail or corporate oriented products over time). We always try to stay on top of such events or movements and attempt to quantify the impact it may have on either specific names or the market as a whole. The search for yield by institutions and individuals alike has led to an increase in the importance of structured products, particularly in Europe and Japan, so assessing their impact is vital to any volatility trading strategy.

CFM: Structured products drive the long end (maturities) of the implied volatility curve. This is mostly a market of originators and hedgers of short volatility exposure through guaranteed-principal notes. A similar situation arises with convertible bonds, except that the market generally buys the cheap volatility from bond issuers. Sometimes, issuers of structured products will enter the listed market to buy gamma or vega, thus pro-

viding a driver for the market. Clearly, these forces are good for the market in volatility because they provide fundamental flows that represent opportunities for hedge funds that can trade these flows and hedge their risk in the wider volatility market.

VICIS: Structured products that introduce leverage are a particular concern since the typical products through which volatility is traded – options and their OTC equivalents – can already be used to achieve a great amount of risk. Leveraging returns, which these products do, is a particularly dangerous activity in and of itself. It is critical for both sides of the structured product – the fund manager receiving the leveraged funds and the investor utilizing the leverage – to fully understand the precise risks to which the volatility manager is exposed, and to be comfortable with these risks. In our view, this use of leverage is inherently misunderstood: the risk does not become evident until untenable losses are experienced. The worst mistake in investing, liquidation at the bottom, is normally caused by this situation.

Q: Is there any systematic risk in the volatility market?

DEEPHAVEN: Nothing that unusual. Equity volatility mostly trades on exchanges so there is less counterparty credit risk. Other OTC products, whether they be structured notes or currency options, for example, cause a higher degree of credit exposure but that can be monitored and hedged. Systemic risks are, of course, extremely hard to measure. But it would seem that as the volatility market is now relatively mature any inherent systemic risks would have manifested themselves by now.

CFM: Like the futures markets, volatility markets are zero-sum games in which risk is transferred between different players. A systemic risk in the market would exist if all players would engage in the same strategy (say, selling volatility to issuers of guaranteed-principal notes). This is probably not a likely scenario, for various reasons. First of all, in the US markets, the integrity of the options markets is ensured by the OCC that verifies that all counterparties are suitably capitalized. To our knowledge, there have been no known instances of clearing members going bankrupt in the last 10 years. Part of the reason is that the system is implicitly backed by the large balance sheets of financial institutions that clear the business and that options trading represents a small fraction of all assets under management. A second reason is that regulators and risk managers are able to quickly identify

risky options positions and often charge margin calls in excess of 100 times the daily Value at Risk of an options portfolio. The reason for this is that risk-based margining is driven by extreme scenarios (stocks losing 50% of their values, broad indices dropping by 20%, etc.) and not by moves of two or three standard deviations. The integrity of the listed volatility markets is therefore linked to the clearinghouse structure. The issue of systemic risk in OTC markets seems to be less evident, although, once again, it will be probably be seen in long-only or short-only funds that sell reinsurance to issuers and are not adequately capitalized. But then, the prime brokers will absorb the risk.

VICIS: Yes, and this systematic risk varies quite substantially. When options get cheap, higher gamma is introduced into the market; this higher gamma essentially acts like higher leverage. An example was the stock market crash of 1987. The magnitude of the correction in the stock market was greatly amplified by «portfolio insurance»: synthetic put options created for investors to «protect» their overall portfolios. The problem with portfolio insurance was that it was not subject to the normal market pricing mechanism. Too much was sold to investors at too low a price. This high amount of «short» gamma created a confluence of events that resulted in a liquidity squeeze. In essence, the volatility market itself created a systematic risk. Today the OTC derivative market, whose notional value is roughly estimated at nearly USD200 trillion, in our view presents some of the same types of contingent systemic risk.