



# Real-time risk management: the quest for alpha

*Gerald Hanweck, CEO of Hanweck, offers his thoughts on how funds can navigate derivatives markets and tap into opportunity created by more efficient risk management*

**Q** The “Volmageddon” on 5 February 2018 was a wake-up call for some funds in terms of managing margin and risk. What issues were uncovered and lessons learned?

**A** Market events on 5 February make it an exemplary case study day. It illustrates why funds need real-time analytics and how monitoring real-time risk in volatile markets and in liquidity vacuums is a big data challenge. Such market conditions clarify which risk management tools work best in high volatility environments, and how these tools are best integrated into a fund’s risk and margin management process.

For example, 5 February called attention to a particular deficiency in risk management, where several hedge funds calculated end of day P&L and margin for their portfolios that diverged from their clearing firms’ calculations. Bid/ask spreads on S&P 500 (SPX) options got



**Gerald Hanweck**  
Hanweck

Gerald A Hanweck Jr is CEO of Hanweck, the leading provider of real-time risk analytics on global derivatives markets. It focuses on the large-scale risk problems of banks, broker/dealers, hedge funds, central counterparties and exchanges – where the number of instruments and positions number in the millions. Hanweck delivers its risk analytics as a real-time service via API, dramatically simplifying integration with its customers’ risk architecture. Hanweck is headquartered in New York City and has offices in Belfast and Chicago.

extremely wide at some points or disappeared altogether. In some cases, clearing firms’ settlement prices differed greatly from the funds’ price estimates. Positions were marked in a seemingly arbitrary manner that day.

**Q** How do you manage your exposure when market liquidity has evaporated?

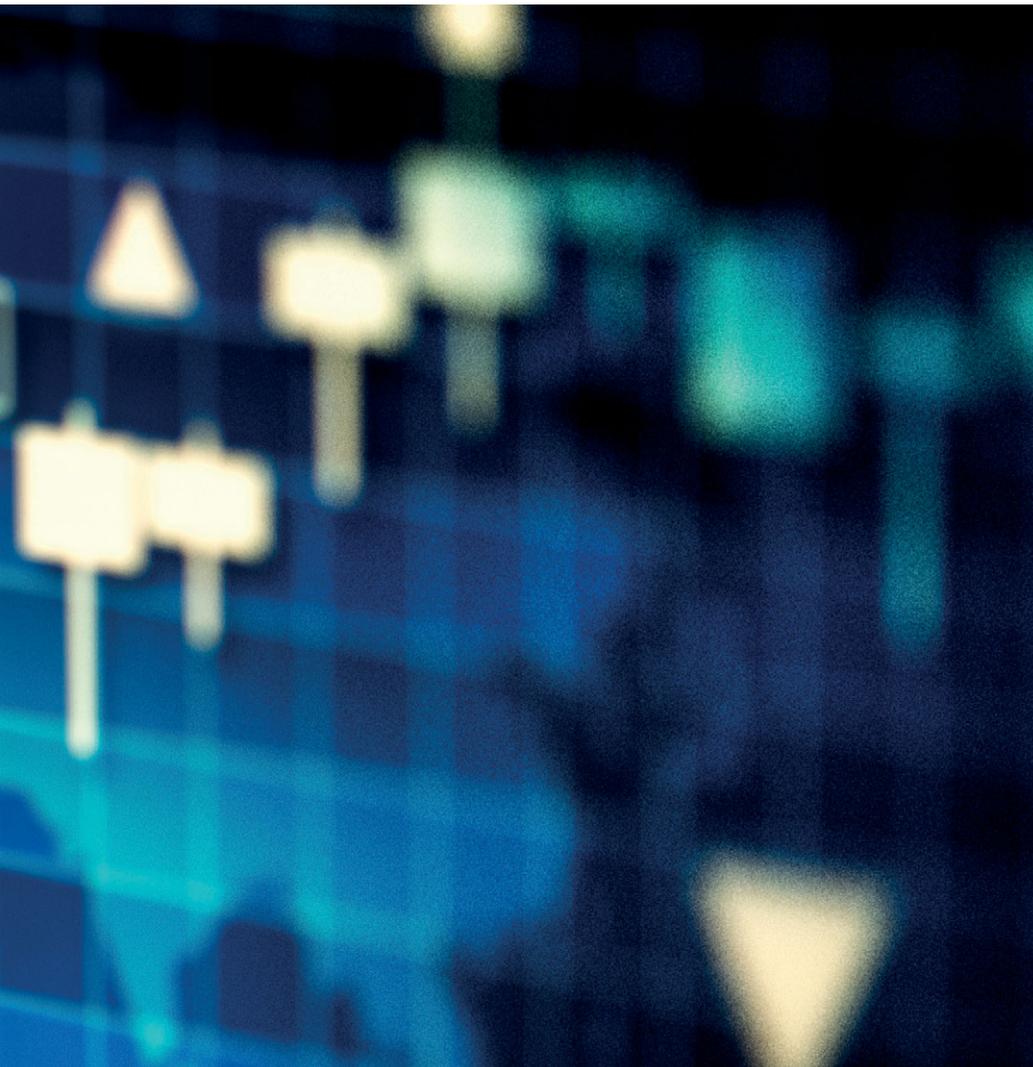
**A** For funds, this situation underscored the importance of having accurate measures of real-time risk and, in particular, treating margin as a source of risk. Margin is a real cash-flow that must be actively managed.

Some funds whose internal calculations showed they were up on the day had a very unpleasant surprise when their clearing firms said they were down and needed to fulfil a margin call. Funds must be able to accurately model their margin risk throughout the day and ensure they are in sync with their clearing firms.

**Q** How can hedge funds better mitigate margin risk?

**A** The industry has a big task ahead of it – from clearing houses to clearing firms to asset managers themselves – to better manage intraday risk and intraday margin requirements. The market will continue to have Flash Crash – or Volmageddon-like days, when spreads widen and liquidity dries up. Industry participants had better prepare for those types of market conditions.

Options positions magnify these



**A** Broadly, real-time risk analytics are used pre-trade and post-trade. Pre-trade, we see an increasingly alpha-oriented view of real-time risk analytics: is this a sensible trade given the risk it might create or offset, or given the capital it might require? Traders look at sensitivity analysis (such as option Greeks), theoretical volatility and scenario analysis to assess the risk and margin impact of a potential position: what if the market is down 5% and volatility spikes, or skew flattens, or correlations increase?

Post-trade, real-time risk analytics complete the circle, forming a feedback loop where a trader has full visibility into their current portfolio risk at any moment. When evaluating whether to put on or take off a position, the starting point is the current risk status of the portfolio.

Each of these uses are integrated into a concept known as 'margin at risk'. Funds evaluate their margin exposure to their clearing firms on a pre- and post-trade basis. On a pre-trade basis, how much capital can they prudently deploy without running the risk of a margin call? The post-trade use case takes a look at what margin they should anticipate posting end of day. In the current market environment, hedge funds need to put as much capital to work as possible. The flip side is that this approach leaves less cushion in the event of a margin call. With an insufficient capital cushion, a fund may need to liquidate a position at an inopportune time.

Consider a trade on the S&P 500. Real-time margin risk analytics can quantify the cost/benefit of using futures, SPY, SPX, or options depending on how these instruments interact with the existing portfolio from a portfolio margin view. Margin becomes a substantial factor that can impact the return on a trade. Funds can essentially augment alpha by optimising how they position trades from a margin perspective. However, they can only do this if they have an accurate pre-trade measurement of their margin risk. The bottom line is that having an accurate, real-time view into risk and margin is important for asset managers, not only for risk management purposes but also for alpha generation. **HFM**

problems because of their inherent leverage, non-linear payoffs and sparsity of trades. They also highlight the need for accurate theoreticals. Options market participants need to buy into the importance of real-time risk monitoring, including real-time margin monitoring.

Returning to the example of 5 February, a single snapshot of the market at the close or shortly thereafter, when liquidity had eroded, paints a very fuzzy picture of market prices, making it near impossible to judge fair value of these options, and hence a portfolio's exposure.

In contrast, the SPX market had reasonable liquidity at various times during the day. If a firm used a real-time, adaptive measure of prices and risk throughout the day, it would have had a solid theoretical valuation from which to measure risk, even when market liquidity eventually evaporated. This is a

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crucial point. Intraday snapshots did not contain enough information to fill in the liquidity gaps. On the other hand, a real-time, adaptive process exploits a continuous stream of information, allowing it to fill in gaps with accurate estimates, and filter bad data from good. This provides enormous value on days when the markets go haywire.

**Q** Can you walk through some of the specific use cases of how real-time risk data is being used by hedge funds now?