

Accidents Waiting to Happen—The U.S. Equity Market. UPDATE 31 March 2020

As the true scale of the Corona Virus disaster became apparent, equity markets in the U.S. suffered severe 20-day drawdowns, just as we warned was likely, *long before the Virus news hit the markets.*

In our 13 January 2020 Accidents Waiting to Happen, with analysis based on the S&P 500, Nasdaq 100 and Russell 2000 Indices up to the end of December 2019, we warned that there was a high probability of each market exceeding the 20-day losses that shocked investors in December 2018. And that the losses that should be expected if such a breach occurred were as bad as those in October 2008. Two months later, that is exactly what happened. The probability of very large drawdowns has increased. It appears very unlikely that the downturn is over.

You can't manage what you can't measure

Omega Metrics® Multi-day Value at Risk (VaR) and Expected Shortfall (ES) are based on historic multi-day returns, not measurements by naive extensions of daily risk estimates.

The assumption which justifies the widely used 'square root of time' rule for example is that returns are independent identically distributed random variables. But this contradicts the existence of mean reversion, auto correlation and many other well-known features of actual as opposed to idealised financial time series.¹

As a result, estimates of VaR and ES at multi-day scales which are based on this assumption cannot present a realistic picture of the risk of drawdowns. By contrast, our VaR and ES estimates, have proved accurate over the past 30 years for the S&P 500, Nasdaq 100 and Russell 2000 Indices. In the case of the S&P 500 (and its predecessor S&P Indices), we have evaluated the accuracy for a period of more than a century.

Our ability to model multi-day returns distributions accurately allows us to make reliable predictions of the frequency and severity over horizons of 20 days—well beyond the capability of conventional approaches.

This is critically important for managing risk. A position or a portfolio may well bounce back from even a very bad day—but a bad 20 days can take months or years to recover from. If you can't measure the risk on that horizon, you can't possibly control it.

Who's for Russian roulette?

We could have paraphrased the warning we gave in mid January about the S&P 500 and Russell 2000 In-

dices by saying that investors in those markets who were not prepared for 20-day drawdowns of at least 20% were playing Russian roulette with 1 bullet in 8 chambers (6 in the case of the Nasdaq 100 Index) and pulling the trigger once a month.²

Two months later, the guns went off. On 20 March, the S&P 500 Index recorded its worst 20-day drawdown since the 1929 stock market crash. Over the month of March there were multiple breaches of the December 2018 loss levels. Our prediction for the average such loss was 21%. The realised level was 23%.

The game of Russian roulette played out almost exactly as we had predicted. The results in the Russell 2000 and Nasdaq 100 Indices were very similar.²

The Risks have only increased

All of our predictions were based on daily price data to the end of December 2019. This means that the susceptibility of U.S. equity markets to disastrous drawdowns was present, and observable to sufficiently sophisticated technology, prior to any impact of the Corona Virus on the markets.

The returns distributions we analysed in January showed very fat tails, as well as very high risk at the 99% VaR and ES levels for long positions. Both the fatness of the tails and the VaR and ES levels have increased considerably over the past 3 months.

By the end of the first week of March, while we had still to experience a 20-day loss over the December 2018 level, the Russian roulette analogy would have dropped from 1 bullet in 8 chambers to 1 in 7. A week later on 13 March it was 1 in 5. The game has become much more dangerous.

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There's a good reason to estimate 99% VaR and ES

At the 99% threshold, you can expect a breach once every 100 days—in other words every 5 months. If you're not prepared to control losses that you should expect to happen every 5 months (or even every 8 months), what protection is your risk process offering to your portfolio, to your investors?

While some sell-side analysts say we may already be at the bottom³, we agree with Mohamed El-Erian's advice "Don't read too much into stocks' sudden rebound".⁴

The 99% VaR and ES levels for short positions in U.S. equity markets are also accurately measured by our model of the 20-day returns distribution. They provide very little hope that market rebounds will allow investors to recover their disastrous losses any time soon.

It appears very unlikely that this downturn is over.

¹ *On Time-Scaling of Risk and the Square-Root-of-Time Rule*, J. Danielsson and J-P Zigrand, Systemic Risk Centre, London School of Economics 2005. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=567123

² For information on our multi-day risk analysis contact **Risk@OmegaAnalysis.com**

³ *JP Morgan says the market rout is probably past its worst now*, Joanna Ossinger, Bloomberg 30 March, 2020. <https://www.bloomberg.com/news/articles/2020-03-30/jpmorgan-says-the-market-rout-is-probably-past-its-worst-now?sref=6cCCNZTR>

⁴ *Don't read too much into stocks' sudden rebound*, Mohamed A. El-Erian, Bloomberg 28 March, 2020. <https://www.bloomberg.com/opinion/articles/2020-03-28/coronavirus-don-t-read-too-much-into-stocks-sudden-rebound>

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