DISCRETIONARY STRATEGIES

A few thoughts on Dispersion weighting schemes

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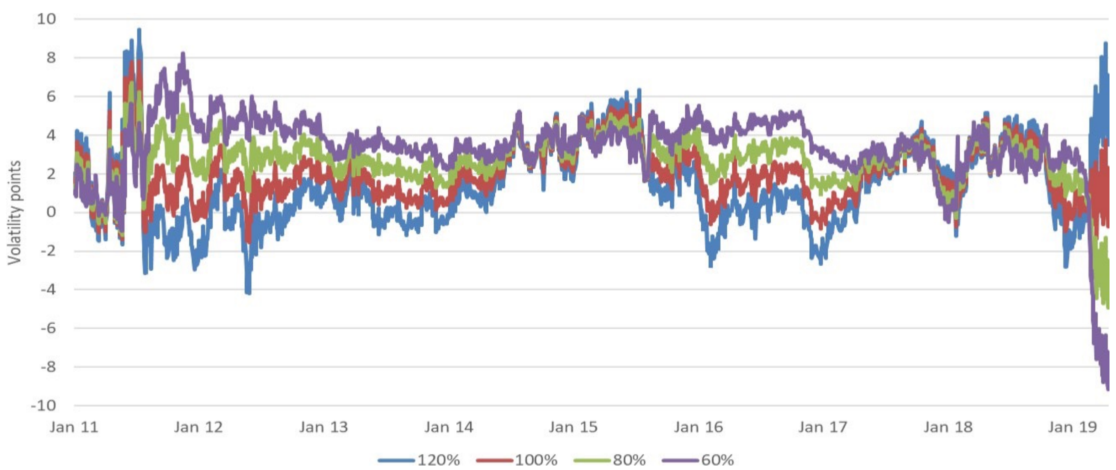
There are two weighting schemes that dispersion investors focus on, namely theta and vega neutral. Theta neutral schemes deliver an exposure to the correlation risk premium and involve selling 1 unit of index vega but only the buying back of a fraction of a unit of single stock vega. The fraction is determined by the ratio of the index implied volatility and the weighted average single stock volatility. Over the long run, this strategy delivers robust returns, but is subject to sharp drawdowns in market crises when implied correlation spikes. The most widely adopted weighting scheme is vega neutral and involves buying and selling equal units of vega. It therefore equates to a correlation strategy alongside a long single stock volatility exposure. Given implied volatility and correlation are correlated, a sharp spike in implied correlation should lead to a spike in single stock volatility thereby, mitigating the left tail of the return distribution.

There is nothing stopping managers from determining their own weighting scheme and there are managers who place more weight on the single stock book in order to use the correlation risk premium to fund a long volatility position. Figure 1 is a plot of the return from implementing a US dispersion strategy on a daily basis with different weighting schemes. As is usual in these simulations, the returns are based on the final trade value and do not incorporate a mark to market element

Figure 1: Historical simulation of 1yr S&P 500 dispersion with varying single stock vega as a percentage of index vega

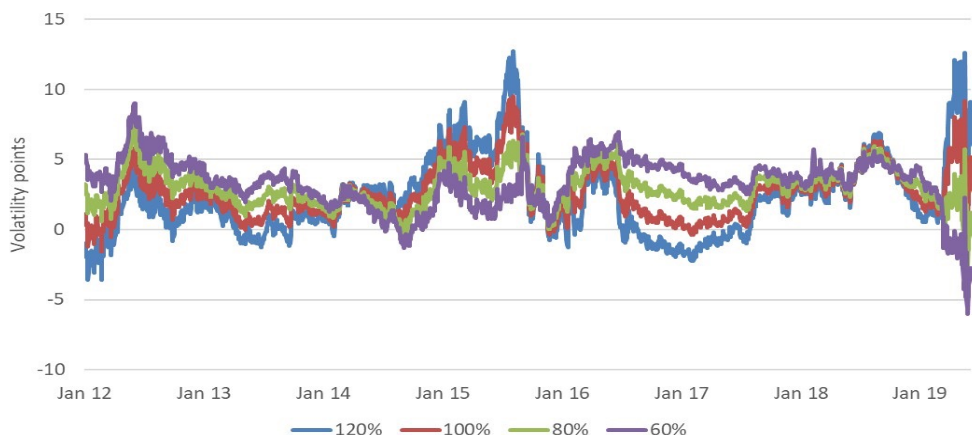


Source: Fulcrum Asset management LLP

It is clear from the graph that setting the single stock vega at 60% of the index level results in strong long term returns but significant drawdown risk. Owning volatility is an expensive long-term business and as one increases the single stock exposure it has a detrimental effect. What this graph does not demonstrate is the mark to market risk. February 2018 would be a good example, where theta neutral trades lost around 3.5 volatility points over the course of 2 days; they subsequently recovered all their losses in a matter of weeks. In Fulcrum's view, it does not make sense to increase the percentage of single stock to index vega above 100% and there are occasions where we believe it is optimal to hold less than 100%.

Figure 2 looks at the equivalent outcomes in Europe. It is interesting to note the quite different evolution and therefore the benefits of being able to access both markets. European markets took a lot longer than their US equivalent to recover from the 2008 financial crisis and realised single stock volatility remined high, leading to less of a difference between weighting schemes. In the volatile phase of 2015, vega neutral significantly outperformed theta neutral, whereas in the US returns were broadly similar.

Figure 2: Historical simulation of 1yr European dispersion with varying single stock vega as a percentage of index vega



Source: Fulcrum Asset Management LLP

The simulations above include the impact from our proprietary stock selection filter. Figure 3 looks at the historical performance of this filter in the US.

Figure 3: Historical simulation of a portfolio of 15 long single stock 1 year volatility positions vs the average stock as derived from US stock filter

Source: Fulcrum Asset Management LLP

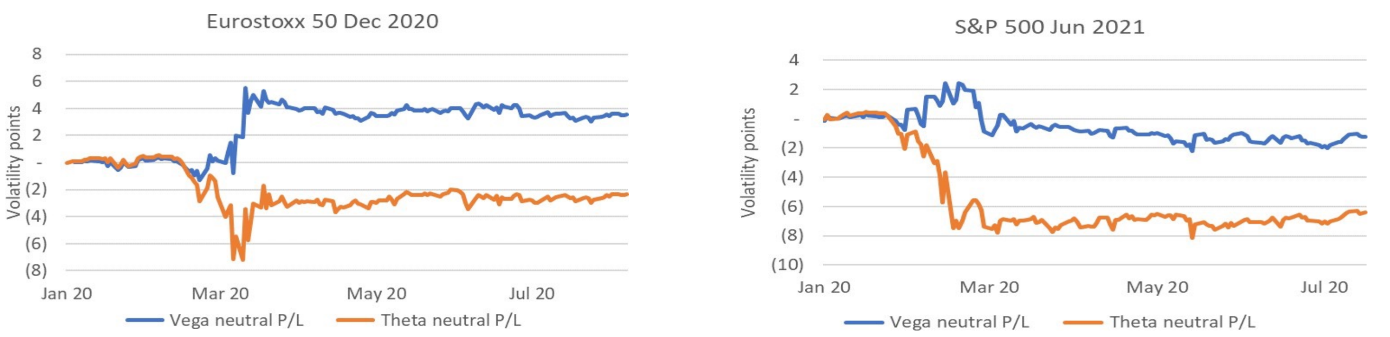
The two factors that shine out are the average return is relatively stable and positive and the filter performs well in periods of high volatility.

Revisiting Figures 1 and 2, if the stock filter is able to deliver positive long-term returns, this will flatter the return from strategies running a higher single stock vega. Typically, a theta weighted strategy will run only two thirds of the stock weight of a vega strategy and will therefore only extract two thirds of this source of alpha.

An interesting exercise is to look at the mark to market risk of the two weighting schemes in March 2020. Given all of our live price history is based on broker pricing of vega neutral weighting schemes, we can only estimate the price of a theta neutral equivalent.

We can do this by estimating the mark to market of the index component and scaling the vega neutral component according to the initial implied correlation level. Figure 4 is based on a Eurostoxx trade initiated on the 6th January and a S&P 500 trade initiated on the 28th February.

Figure 4: Historical P/L of live vega neutral trades alongside estimated P/L on a theta weighted basis

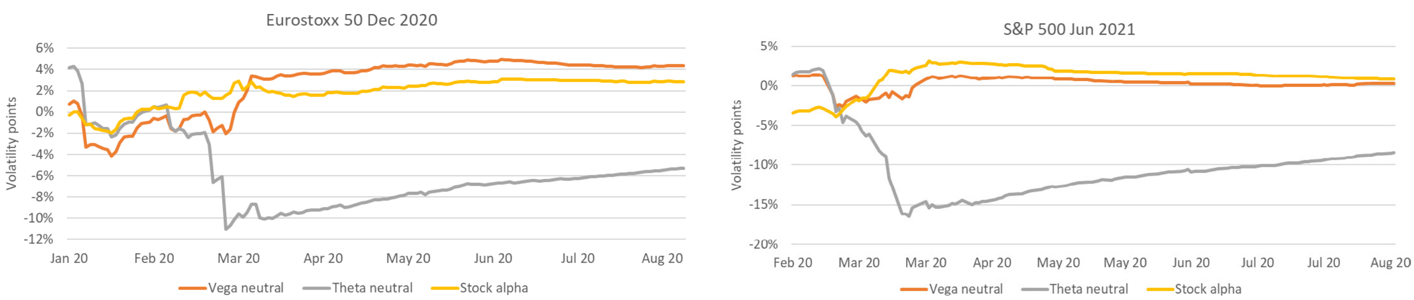


Source: Fulcrum Asset Management LLP

It is clear that whilst the vega neutral weighting scheme delivered positive returns in March 2020, an equivalent theta neutral scheme witnessed a very adverse mark to market. Given the very high levels of realised volatility in March and April and the fact that implied volatility remains elevated, the theta neutral trade has not recovered much of the loss. The European trade outperformed the US trade due to the single stock selection delivering more value, as well as the "background" realised correlation carry in Europe being higher than that in the US. Whilst the theta weighting scheme may recover further ground in the period to maturity, it would have been challenging to hold the position through March 2020.

One can also analyse the trades on the basis of the realised outcome to date. Once again, the impact of the excess index vega can be seen on the theta neutral trade. On both trades, the carry from correlation has more than offset the low background volatility, resulting in a stable realised P/L at trade level. In the European trade example, the single stock selection has continued to accrue value over time (due to the nature of the realised volatility calculation, the P/L must remain positive if a profit is to be maintained at a constant level).

Figure 5: Historical realised P/L of trades in Figure 4



Source: Fulcrum Asset Management LLP

In conclusion, it is clear that having access to both the European and US markets is one of the keys to successful investing in dispersion strategies. The one market we have not included, but which we have been following very closely is the Asian markets, to date we have not seen great opportunities in those markets, so we have avoided them and this has proved to be a good move. In addition, our ability or wish to customise the baskets of single stock volatility that we buy has a definite benefit to the outcomes we have produced and would seem to be a consistent provider of alpha. Finally, the way we have chosen to position the portfolio, with a long volatility bias has proved to be positive in the last three years, of live trading, and if we are to look at the figures above we believe strongly that we would have had the same sort of outcome if we had been running a similar strategy for longer.

About the Author

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Stephen Crewe joined Fulcrum in 2013. He is the lead portfolio manager for our Fulcrum Income Fund and Fulcrum Equity Dispersion Fund, in addition to being an integral member of the broader investment team, where his focus is on volatility strategies. Prior to joining Fulcrum, Stephen spent over two decades with F&C/BMO as Director of Alternatives.

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