Optimum Complexity

Beyond the concept of risk

ALPHAWEEK

Optimum Complexity: Outperforming Using Low Complexity Stocks

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Whilst many hedge fund managers have worked previously for a different fund, or a bank, the industry is populated by those of various backgrounds. It's not uncommon, for example, for healthcare-focused hedge funds to be founded by a medical doctor, or consumer stocks focused hedge funds to be founded by someone with a retail background. Rocket scientists are no different, and Jacek Marczyk is just the latest in a long line of scientists turning their expertise towards the markets.

Marczyk is the founder of Universal Ratings, a research firm which focuses on complexity theory in order to analyse the resilience stocks and corporations. He works with customers in multiple industries, including car manufacturer Audi and suppliers of the U.S. Department of Defense, and builds early warning systems for these organisations. Marczyk realised that he could apply these models to stocks to generate a complexity rating - which reflects the complexity contribution of a stock to an index - and use these ratings as the basis for trading. Marczyk has co-founded an investment management firm called Optimum Complexity, based in London, which has built two products to trade specifically on the aforementioned complexity data. Marczyk says that the decision to launch a complexity technology-based hedge fund came about naturally.

"Complexity is the hallmark of markets, the global financial system, the economy and society. It's strange to someone like me, who has an engineering background, that the most evident characteristic of a market is not taken into account when exercising some kind of business - for example managing a hedge fund - in that market. It seems logical to make use of complexity when designing investment strategies or portfolios precisely because you are going to launch them within a very complex context."

Marczyk has team up with Daniele Cosulich, whose previous experience includes TMT research at Kaufmann & Partners and Method Investments and Advisory and Andrea Calandruccio, previously with Marex Spectron (and is currently pursuing a PhD in Applied Mathematics at Imperial College London) to launch Optimum Complexity. The firm offers two products; the flagship long/short U.S Equity strategy, which trades stocks in the S&P500, and a long/short U.S technology strategy, which trades stocks in the Nasdaq100. Both products were launched after conducting research on multiple equity markets.

"We offer these two products specifically because after doing extensive research, we found that our techniques worked particularly well in the U.S. In the U.S., there is the phenomenon of the low volatility anomaly; low beta stocks have, in the last 40 – 50 years, tended to outperform the index. This is an anomaly because normally you would expect to make money with more volatile stocks. Consider that complexity is really modern-day volatility, so the low volatility anomaly means that low complexity stocks tend to outperform U.S. indices quite consistently", says Marczyk.

In both products, the portfolios are 100% long-only; the models never short single stocks. The U.S equity strategy usually holds approximately 50 stocks – 10% of the S&P500 - and the Technology strategy approximately 10 stocks (10% of the Nasdaq100). The portfolios of each product are rebalanced monthly because the complexity coefficients change; stocks are selected which exhibit lower complexity versus the index overall. Execution of the strategy is purely systematic.

Optimum Complexity's Marczyk

The early-warning signals that are generated by Optimum's models are based on 30 macro indicators, and, according to Marczyk, spikes - defined as rapid increases in the complexity coefficient - have preceded the Russian debt default and Long Term Capital Management collapse in August 1998, the bursting of the DotCom technology bubble in March 2000, the financial crisis and the collapse of Lehman Brothers in September 2008 and the China stock market crash and Greek default in 2015. Observable and rapid increases in the complexity coefficients leads Optimum to employ its risk management process, which is buying out-of-the-money puts on regional indexes. When stock

prices fall, the same exposure is kept on the long side, but the put options covers the losses on the stocks when that option is exercised.

"When you look at things from a complexity perspective, you have to change the way you perceive and treat risk. The technique that we have in place puts risk management and stock selection under the same ideological umbrella. It's all taken care of in one position – to stay away from things that are excessively complex and avoid stocks or asset classes that appear to be complex", says Marczyk.

Cosulich goes further.

"In the flagship product, we identify the fifty stocks – 10% of the available universe – which our model shows to be the most resilient stocks. When our model shows a complexity spike – which, for us, shows that the market is about to turn to the downside – we buy 10% out-of-the-money put options on the S&P500 and exercise those when the strike price is reached", he said.

Optimum has been live trading the technology strategy since September 2017 and the U.S. equity strategy since January 2018 and has outperformed the Nasdaq100 and the S&P500 respectively since launch. The firm is launching a separate account for a European bank this month (September) which trades large-cap stocks in the Eurostoxx Large 200 index and can roll out customised products for clients based on most of the major indices.

"This product is an actively managed certificate and we're looking at the EuroStoxx200 – that's the pool from which we will construct the portfolio. The rest of the process is the same, but we will be using European macroeconomic indicators to show us when there might be a complexity spike and then we'll buy out-of-the-money puts on the EuroStoxx 200", says Marczyk.

Optimum Complexity can create customisable products for investors and the firm is currently conducting research and live trading with internal capital to see if their model can be applied at the asset class level to assist asset owners with dynamic rebalancing of portfolios across different asset classes.

"We can do quite a lot [with the algorithm]", says Marczyk. "We have been researching multi-asset investment strategies where we can take six or seven different asset classes into account and we can use our technique to actually select which are the best asset classes to get exposure to in the next month, or quarter.

Many hedge funds have struggled to compete with low-cost, passively managed products in the past decade, with central bank monetary policy inflating equities valuations to all-time highs. The U.S Federal Reserve has cut interest rates twice since July and Mario Draghi recently announced a rate cut by the ECB and the planned resumption of quantitative easing in November. Marczyk believes that analysing complexity is the next frontier with regards to outperforming stock indexes and because Optimum Complexity's algorithm works in other industries the proof is already in the pudding.

"Complexity is also a measure of globalisation, and the world is roughly five times more complex than it was in the 1970s. That means it's five times more difficult to understand how the world functions and how it's dynamics work", he said. "It is comforting that our technology has been proven in very different fields, like defence, medicine and manufacturing without any changes to the algorithm. It's very difficult to beat an index, but understanding complexity is, for us, the key first step to that end."