Mission Impossible

By Didier Darcet
didier.darcet@
gavekal-intelligence-software.com

TrackMacro ™ is a software tool providing equity risk signals in 40 countries

Download TrackMacro for PC from the company website
Download TrackMacro for iPad from the App Store

A common frustration in quantitative finance is that a model cannot be efficient both on a bottom-up and a top-down basis. A "bottom-up" model, with a very high success rate in anticipating the daily direction of the market, for instance, only makes a few mistakes, but they are nonetheless significant. A large part of the accumulation of daily gains is lost during these few events. On the other hand, a "top-down" model which protects from large misallocations of capital, finds itself relatively ignorant about small market movements.

There is an inherent trade-off when modelling, and controlling the best of both worlds is "mission impossible".

Mission Impossible in Physics

Mission impossible manifests itself in the field of physics as well. In quantum mechanics (the realm that describes everything that is small and cold), the Heisenberg Uncertainty Principle states that you cannot know with exact certainty the position and momentum of a particle. The more precisely you know one, the less precisely you necessarily know the other.

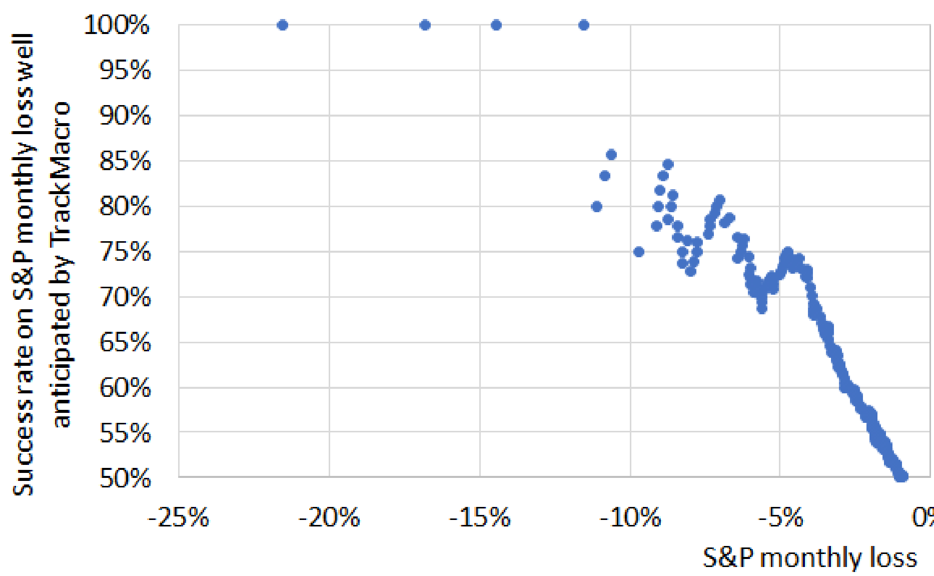
This phenomenon however, is not a limit of how well humans are capable of making measurements, it is a fundamental limit that nature has set in stone. In other words, the world is inherently unpredictable. Certain factors may be predicted with a high success rate, but always at the expense of others – much like the "bottom-up" and "top-down" models.

TrackMacro is a "Top-Down" model

The TrackMacro AI program has been trained to focus on large macro equity risks, not on small market fluctuations. The consequence is shown on the graph next page.

Large losses are very well anticipated by the model at the expense of small losses. TrackMacro struggles to be more efficient than a coin-toss for monthly losses of a few percent.

Graph 1. TrackMacro success rate in anticipating S&P monthly losses as a function of S&P losses



Source: Gavekal Intelligence Software- Bloomberg data 30/05/1960 to 31/12/2018

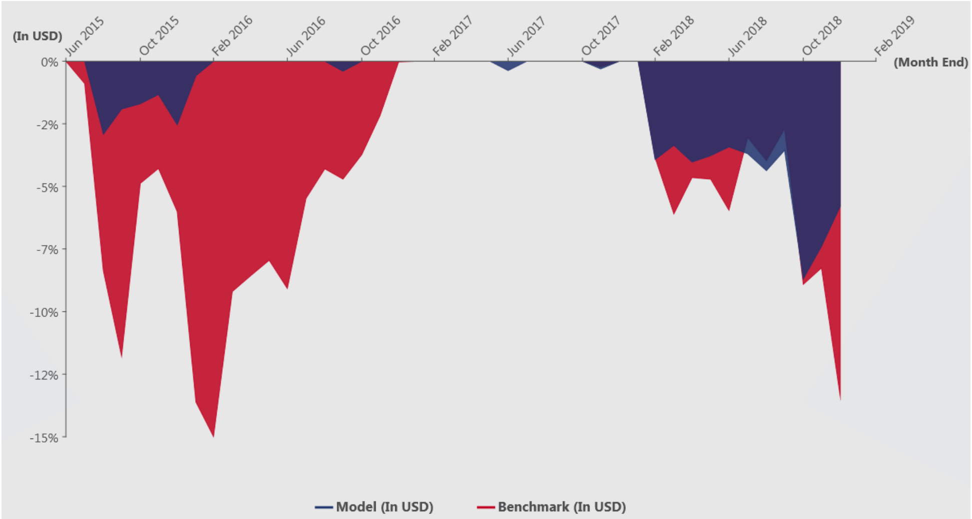
Live Consequences

TrackMacro managed to contain three important equity market drawdowns (more than 10% loss) since its launch on June 30, 2015.

Graph 2 below illustrates TrackMacro's ability to make radical decisions ahead of dangerous equity times, as well as its mistakes in the last 3.5 years.

The model generated +17% alpha over the period (+22% cumated return vs +5%) with a volatility of 5.6% compared to +11.1% for the equity benchmark (40 countries weighted by their GDP), and a maximum drawdown of -8.7% compared to -15%.

Graph 2. TrackMacro live drawdowns vs. world equity benchmark



In 2018, TrackMacro returned -2.1% vs. -9.8% for global equities. 27 countries generated positive alpha and 13 negative alpha. The alpha success rate is therefore 67%, which is not a spectacular performance in a stressed year. A money market fund investing in the cash markets of 40 countries, for instance, would have reached 90% success rate in 2018.

The model is not designed for a high success rate, but to create alpha by controlling large macro risks. It's a structural choice, limited by mission impossible!