

The HFT Interviews | Karim Taleb, Robust Methods

by Mike on September 10, 2010



This week, we interview another High Frequency Trading expert who will be speaking at the upcoming *High Frequency Trading World* events in [London](#) and [New York](#).

Karim Taleb, Ph.D. is the Principal of [Robust Methods LLC](#), a New York based manager specializing in multi-asset absolute returns strategies. He oversees all operational aspects of the firm including portfolio management, risk management, computing systems, and quantitative research. Prior to founding Robust Methods, Karim worked for Applied Materials in the semiconductors industry, and prior to that, he dedicated himself to developing a framework for a green industrial evolution with a solid contribution in the field. A CFA Charterholder and a Cornell University graduate, Dr. Taleb draws from a multi-disciplinary experience covering the areas of Operations Research, Industrial Engineering, & Applied Statistics.

High Frequency Trading Review: *What's your definition of high-frequency trading?*

Karim Taleb: There is a lot of noise and confusion surrounding high-frequency trading (HFT) and some clarification is in order. A simple and comprehensive definition of what HFT actually entails goes well beyond its apparent aspect of fast and frequent trading; one cannot properly understand the subject matter and the issues it raises without first understanding the main players, their objectives, the economics, and the evolution of the market structure.

In terms of the HFT players, they are essentially the newest generation of market-makers (automated /virtual market-makers), as well as quantitative traders chasing pricing inefficiencies. Note that the line that separated market-makers from quant traders has become somewhat blurred with the advent of direct market access (DMA), speed of execution, and time-frame reduction.

The non-HFT players on the other side in the marketplace are the buy-side, representing the real money and capital providers, such as the institutional and retail investors who typically trade over much longer horizons.

There is a wide difference in needs and expectations between a pension fund wanting to buy a stock and hold it for 10 years versus a market-maker or a pairs trader looking to buy a stock and flip it in few seconds.

The interaction takes place via the exchanges that enable and govern the transactions, and whose business model and structure has also been under strain and undergoing changes as well.

HFT hence comprises the above elements mainly, with the issues arising from a developing landscape.

Technology is once again the catalyst for change, and given the significant cost and lead-times involved, the buy-side has been left at a disadvantage with a general mismatch between its needs and expectations from the marketplace.

HFTR: *How do various different types of market participants (institutional & retail investors, long-term investment funds, hedge funds, systematic traders, brokerage houses, exchanges, etc) benefit from HFT?*

Is there any particular group of players whom you think might have been adversely impacted by HFT? If so, what can be done about this?

KT: Technology in general has had a positive effect on the financial markets in terms of operational effectiveness, expanding the opportunity set, and bringing participants together. The market remains a financial zero-sum game at best nevertheless, with the benefits to some coming to the detriment to others.

HFT players such as arbitrageurs for instance, have had a positive impact on markets as they actively work in the background to ensure that markets and prices are efficient and coherent. Other HFT players involved in tactical trading over a variety of time frames also bring positive benefits, such as diversity of positioning and liquidity.

The same cannot be said when it comes to market-making HFT banks and companies and/or those engaged in predatory trading or the misappropriation of order-related trade data. This group accounts for the bulk of trading volume, and is colluding with the exchanges to profit from the institutional and retail investors order flow.

Hence, the benefits went to the HFT market-makers mainly, and whose fees also come as rebates from the exchanges based on volume. The majority of market participants do not intend on becoming market-makers, and nor can they justify a significant technological investment that will not be heavily used. Their choice is therefore to either use 3rd party execution algorithms or to leave the exchange altogether and trade on dark pools and other places.

***HFTR:** How do you think the practice of HFT has changed the US & worldwide equities markets in the last few years, and to what extent are other markets (commodities, fixed income, FX etc) going through similar changes?*

KT: HFT has raised the barrier to entry for short-term traders and increased the execution cost for institutions, both in terms of slippage as well as developing their algos to fight back.

HFT has also led to a market fragmentation as well as a liquidity of poor quality; many institutional players now avoid the exchange and HFT flow, and have taken away their liquidity. The case can certainly be made that the integrity of the exchanges has been compromised.

The computerization and concentration of trading volume is causing markets to be more prone to react quickly and in the same direction, a sort of a 'computer herd' behavior. In addition to this new propensity for markets to produce sudden spikes, there has been a loss of 'diversity in opinion' and which is a desired characteristic for a healthy market.

The behavior of human traders in general is too complex and diverse to be effectively replicated by an HFT algorithm, and only basic elements and scenarios are coded. There could be a lot of overlap among HFT algos, and where the same ideas have been cloned over many computers, and the diversity of opinion and behavior could have been lost. Speed has therefore become the main competitive advantage among high-frequency traders. Markets also run a higher risk of liquidity holes.

World markets including e-mini futures contracts are following this trend with increasing volume year over year on the electronic venues.

***HFTR:** What kind of risk implications are associated specifically with HFT? Are there specific dangers around algo risk/model risk for example? What is the best way of managing these risks, from the perspective of the various different players (prop traders, buy side, sell side, exchanges, regulators, etc)?*

KT: The investments in technology are substantial and beyond the reach of a typical institutional investor who has no interest in building a high frequency desk. Only the large market-makers and hedge funds can justify such an investment given that their business model is based on volume. The net result has been a dangerous concentration of trading volume within few hands, and a disproportionate control and leverage that these

companies now exert. While market-making can run in a market-neutral mode, it can also be run with a bullish or a bearish bias, and in this case, these companies could theoretically exert a significant directional pressure on the market with no notice. This is a real systemic risk to the financial markets and broader economies as a whole.

The exchanges favor the business of these large companies and provide them with preferential market data. This helps them grow even stronger, and we need to realize that the growth of these firms has come at the cost of market robustness.

Managing such a systemic risk cannot be applied in a back-ended manner i.e. by monitoring an unstable equilibrium hoping that nothing happens. The recent circuit-breakers are a good step but not a solution. The risks involved need to be prevented upfront and only a structural change would be effective.

***HFTR:** HFT is obviously highly dependent upon technology and cutting edge technology can be hugely expensive. How can firms compete in the HFT space while keeping costs down?*

KT: HFT has been likened to an arms race, and not everybody wants to be in such a race. For those wanting to compete or at least not falling prey, the option to buy off-the-shelf 3rd party solutions is available. This option provides a feasible solution as well as more time to evaluate whether a firm would want to be in this space or build and maintain its own capability.

***HFTR:** How do you see the HFT space progressing over the next few years? Is there any particularly ground-breaking technology coming along that will have a significant impact?*

KT: Complex events and natural language processing is one direction some funds are getting invested in. Some news wires have started adapting their news dissemination format for machine readability.

There are many interests at stake trying to influence the system in place. The positive part of HFT is that it has brought to daylight some pre-existing issues and principal-agent type conflicts of interests related to market-making, and as they became too obvious and costly to ignore.

Provoking such open debates will hopefully lead to markets which are fairer and more robust.

***HFTR:** Thank you Karim*