Algorithmic Finance 2 (2013) 1–2
DOI 10.3233/AF-13019
IOS Press

A Minute with Andrei Kirilenko

ANDREI KIRILENKO is the Professor of the Practice of Finance at the Sloan School of Management of the Massachusetts Institute of Technology (MIT) and Co-Director of the MIT Sloan Center for Finance and Policy. Prior to joining MIT in January 2013, Kirilenko spent four years at the Commodity Futures Trading Commission (CFTC) where he served as Chief Economist between December 2010 and December 2012. In his capacity as Chief Economist, he was instrumental in using modern analytical tools and methods to improve the Commission's ability to develop and enforce an effective regulatory regime in automated financial markets.

Kirilenko is perhaps best known for his role in the investigation of the "Flash Crash" of May 6, 2010, when the Dow Jones industrial average took an unprecedented plunge of almost 1000 points in minutes before ultimately recovering. The Flash Crash was originally blamed on high frequency trading. According to Kirilenko's authoritative study, high frequency trading did not set off the chain of events on May 6, but did contribute to exorbitant market volatility as the whole market system spiraled out of control.

Kirilenko received his Ph.D. in Economics from the University of Pennsylvania. His scholarly works have appeared in the *Journal of Finance* and the *Journal of Financial Markets* among others and have won numerous awards. In 2010, he was the recipient of the CFTC Chairman's Award for Excellence (highest honor), which recognized his "extraordinary accomplishments and superior service."

What are your research interests right now?

My research generally focuses on innovations in the design of markets, products, and trading strategies due to advances in technology. My current research interests are algorithmic and high frequency trading, machine-learning methods and models, measuring and managing systemic risk, and the design of innovative financial products, such as exchange traded funds. I look at the opportunities, challenges, and economic incentives that accompany these innovations. I also look at the potential threats to financial stability created or facilitated by them. People often ask me: "Could a Flash Crash happen again?" My answer is: Yes—financial markets have become so technologically complex and interconnected that no one really knows how the whole system operates and when it will malfunction again. The next question is typically: Can regulation help avoid that? The difficulty is that regulation is backward-looking; it is always trying to solve the latest crisis. In fact, I ultimately want to develop the principles of Financial Regulation 2.0 suitable for the automated era. FinReg 2.0 needs to be cyber-centric rather human-centric, designed for extra safety and resilience, encourage innovation, and, most importantly, make people regain confidence in markets. People need to start feeling again that financial markets serve their needs rather than the interests of technologically-advanced "power users" like high frequency traders.

What do you see as academically exciting?

I would really like to learn more about the principles and practices of computing and the design of automated systems. I have become quite convinced that the financial system has become much more of a *system* than ever before, with globally interconnected counterparties and automated infrastructure that facilitate tremendous integration during normal market conditions, and spread dislocation rapidly during periods of financial distress. I am aware that there are whole scientific disciplines out there on how to design and operate automated systems with safety and robustness in mind. I would really like to find out what the accumulated body of knowledge on this is. Luckily, MIT is a great place to do just that.

What would you work on if you had lots of time?

I would devote whatever time I have to help prevent the next systemic financial crisis. The last crisis—which did originate in the financial system—was the worst crisis that Americans have experienced since the Great Depression. Eight million Americans lost their jobs, millions of families lost their homes, and thousands of businesses got shuttered. I can't think of anything more important right now than to figure out how to make sure that innocent people are not adversely affected by the financial system. I have a view on what needs to be done. My answer is education. We need to train the next generation of financial industry

leaders and regulators by teaching them both the "hard skills" of technology and analytics, and the "soft skills" of collaboration and compliance. In this respect, it might be a good time to bring up the MIT Sloan Center for Finance and Policy that I am helping to organize. The Center is intended as a platform to stimulate innovative research and educational initiatives that positively impact policy and society. It is definitely a step in the right direction and I am really excited to contribute to this effort. And if I have any time left after all the research, teaching, and organizational work, I would really love to make a documentary about changing places for a day with another Andrei Kirilenko – an NBA player.