Facing Up to Economic Complexity
2015 World Knowledge Forum
Dr. Mark Buchanan

At the 16th Annual World Knowledge Forum in Seoul, South Korea, the session titled “Facing Up the Economic Complexity” was led by mediator and Professor of Economics at Harvard University, Nathan Nunn. He introduced the guest speaker, Mark Buchanan, Physicist and author of “Forecast: What Physics, Meteorology, and the Natural Sciences Can Teach Us About Economics," who delivered a lecture about the need to understand the reality of a complex economy.

Dr. Buchanan asserted that the economic market is dealt with too simply by economists who do not know how, or do not wish to deal with, the complexity of the real economy.

“The result? Leveraging increases the efficiency of the market but makes it unstable and pushes the market past a stability threshold, beyond which a crash becomes certain,” he explained.

“More efficiency often means less stability,” he added. Seemingly counterintuitive, he compared it to a glass of water. “A glass 3/4 full is stable, but not does not maximize efficiency well, whereas a glass filled to the brim is efficient yet unstable. An economic example is high frequency trading, which is very efficient but fails to understand the complexity of the market and leads to crisis.

Dr. Buchanan used weather forecasting as an analogy, explaining that just like a calm and sunny day can turn into a storm within an hour, so too can the market appear calm one hour and suddenly enter a crisis the next hour. The difference between the weather and the economy, he said, is that such drastic changes in the economy can occur in minutes or even seconds.

Like the weather, he said, “Crisis is a natural part of the economic system. We need to understand this. Beyond the leverage threshold there are wild fluctuations… The market looks stable, but it isn’t.”

Mr. Buchanan explained that high frequency trading leads to an overcrowding of agents, which enables such phenomena as Flash Crashes.

“It’s okay to not know things,” Dr. Buchanan advises economists. However, he suggested that physics can enable us to forecast expected problems, and identify the conditions making them more likely, and predict the likely consequences of counter measures.

“Economic forecasts can be predicted like weather forecasts through simulations. Thanks to computers and simulations, algorithms can calculate scenarios with leveraging, risk, and conditions,” Dr. Buchanan said.

He concluded his lecture by admitting the natural instability of the economy, but advised that we should not turn a blind eye to its complexity in favor of using simple techniques like high frequency trading.

Max Enos, Reporter