Using financial econometrics to measure risk

S’pore is well-placed to join London and New York, which have strong links with the financial econometrics circuit

By PETER C B PHILLIPS, JUN YU and ERIC GHYES

ECONOMETRICS was born in the world of banking and finance over the last two years has riveted media attention on the financial industry, exposing its practices, products and risks in the industry to widespread public scrutiny. Questions continue to be asked about the management and regulation of an industry whose performance is now seen to affect the world’s financial health and its prospects as much as it does national savings and individual retirement funds.

In Toronto at the June G-20 Summit conference, central bank governors and finance ministers of the industrialised and emerging-market countries reaffirmed commitments to deliver existing fiscal stimulus and initiate market borrowing as might be needed to meet G-20 goals of fiscal stability. These measures reflect the growing recognition of the importance of global cooperation on matters of high finance.

It is in this very public world that the world confronts the difficulty of sustaining economic recovery in the face of rapidly unravelling problems of sovereign debt, real estate markets that are still highly leveraged, and consumer debt burdens that continue to rise. The focus on delivering existing fiscal stimulus and increasing market borrowing has since transformed daily practice in asset allocation throughout the financial industry.

The Basel regulatory framework for risk management, their infrastructures of recommendations rest on the foundation of econometric expertise on risk measurement and assessment. Take the practical world of financial trading, which is now conducted at the speed of light by computers on electronic platforms using algorithmic formulae. These formulae rely on short-term predictable patterns in trading. They spring from models built in the toolroom of econometrics.

Simple solutions

Years of research in financial econometrics have produced the tools that redefine these industry practices. The process is a two-way street. Practitioners often come up with simple solutions — such as the volatilities that are implied by transacted derivative prices or useful concepts such as value-at-risk that trigger a flurry of academic research. Events matter too. Crises change research agendas. Macroeconomists used to ignore financial market frictions as they believed in market efficiency, but they no longer can do so. Financial econometricians are now challenged to think about how to assess financial markets, reshape financial industry practice to offer financial industry practice, assess risk and there was little data to make sound estimates of the risk characteristics of the new financial products. But the elements of human weakness that are inevitably part of financial market econometrics are sharpening their diagnostic tools for assessing financial markets, reshaping financial industry practices to suit the needs of regulators.

One of the ingredients to successful financial centres of the future will be their use of the toolroom of financial econometrics to help regulators respond swiftly and effectively to the consequences of human weakness that have so often triggered crises in the past. Singapore is particularly well-placed to take advantage of this bedroom with the Risk Management Institute at the National University of Singapore and the Sim Kee Boon Institute for Financial Economics at Singapore Management University, which are closely aligned with some of the latest research in financial econometrics.

The dot-com bubble, the subsequent US housing bubble and the recent financial crisis all underscore the need for better tools and early-warning systems on market exuberance, which is here that the fundamental ideas of finance theory are confronted with the reality of observation. What does this toolroom of financial econometric research have to offer financial industry practice during a time of global financial crisis?

What tools fashioned here might help central bankers and regulators in their new daunting task of surveillance of financial markets? What can the toolroom do to enable a city-state such as Singapore to become a major financial hub in Asia?

Take the notion of market volatility. Seminal work by Robert Engle (2003 Nobel laureate in economics) made practitioners aware of the fact that risk, as measured by volatility, has a predictable pattern. That idea has since transformed daily practice in asset allocation throughout the financial industry.

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