Masterclass series: Prediction and investment strategies in markets prone to crashes and bubbles
Dr William T. Ziemba
6 November 2013

Overview: lectures and topics to be covered

9:00-10:30   **The bond-stock earnings yield difference model and related crash prediction models**
     a. Using the model for crash prediction purposes in the US and Japan and around the world
     b. Equivalence of the bond-stock earnings yield model with the Fed model
     c. Applications to Iceland, China and the US in 2006-9
     d. Applications to the internet/Nasdaq crash circa 2000
     e. Comparison with Shiller's high PE ratio signal
     f. Results using Buffett's value of the stock market to value of the economy

10:30-10:45   **BREAK**

10:45-12:00   **Financial market bubble identification and exit and entry strategies**
Jarrow and Protter method for identifying financial market bubbles
     a. Disorder model of Shiryaev and Zhitlukhin
     b. Application to Apple stock (AAPL)
     c. Application to the Nasdaq100 circa 2000
     d. Application to the Japanese stock and land markets proxied by the golf course membership indices circa 1990 and in 2013
     e. Application to various US stock and land market crashes including 1929, 1987, 2007

12:00-13:00   **LUNCH**

13:00-14:30   **Financial institutions trading disasters**
     a. How to lose money with derivative trading positions
     b. Examples of those who lost huge amounts of money
         i. Long Term Capital Management
         ii. Niederhoffer Hedge Fund
         iii. Amaranth
         iv. Société Générale in 2008
     c. Risk management ways to avoid hedge fund and bank trading disasters
     d. Risk measures and scenario dependent correlation matrices
         i. Vienna InnoALM Model for Siemens Austria

14:30-14:45   **BREAK**

14:45-15:30   **Primer on Kelly capital growth investing**
     a. What is Kelly investing and what are its main properties?
     b. Examples of investors who use Kelly investing

Readings and reference materials:

- Geyer, A. and W.T. Ziemba (2008) The Innovest Austrian Pension Fund Planning Model InnoALM, *Operations Research 56* (4); 797-810
- Jarrow, R, Y Kehia and P Protter (2011) How to detect an asset bubble, *SIAM Journal of Financial Mathematics,* 839-65
- Lleo, S. and W.T. Ziemba (2012) Stock market crashes in 2007-2009: were we able to predict them? *Quantitative Finance* 12(8): 1161-1187
- Lleo, S. and W.T. Ziemba (2013) Comparison of the crash prediction ability of the bond-stock equity yield model and the high price-earnings ratio model, 1962-2012, working paper
- MacLean, L.C., Thorp, E.O., Zhao, Y., Ziemba, W.T. (2011) How does the Fortune's Formula-Kelly capital growth model perform? *Journal of Portfolio Management* 37(4):96-111
- Shiryaev, AM, M Zhitlukhin and WT Ziemba (2014) When to sell Apple and the NASDAQ? Trading bubbles with a stochastic disorder model, *Journal of Portfolio Management*, in press
- Shiryaev, AM, M Zhitlukhin and WT Ziemba (2013) Land and stock bubbles, crashes and exit strategies in Japan circa 1990 and 2013, working paper.
- Ziemba, W.T. (2013) The case for convex risk measures, *Quantitative Finance Letters*
- Ziemba, W.T., (2013) Response to Paul A Samuelson letters and papers on the Kelly capital growth investment strategy*,* 30 pages
- Ziemba, RES and Ziemba, WT (2013). Investing in the modern age. World Scientific (various chapters).

Tutor:

William T Ziemba, Alumni Professor of Financial Modelling and Stochastic Optimisation (Emeritus) at University of British Columbia, has been working on financial market research as discussed in this seminar for many years. He has been a consultant to the Frank Russell Company, one of the leaders in the use of such research and models and the advisor on some $1 trillion of assets. The seminar will discuss some of this experience. Besides teaching at UBC, he has taught in finance and management science at Berkeley, UCLA, Stanford, London School of Economics, Imperial College, ICMA Centre, University of Reading, University of Cyprus, Sabanci University (Turkey), University of Tsukuba in Japan, Nanyang Technological University and National University in Singapore, KAIST (Korea), the University of Chicago, Helsinki School of Economics, Oxford University, the University of Zurich, the Massachusetts Institute of Technology, Toulouse School of Economics and has given lectures and short courses at various Italian universities in Rome, Bergamo, Venice and Milan. He has consulted and traded for many years and has consulted for several hedge fund groups and is running a hedge fund. He has many books and research papers on these topics, see www.williamtziemba.com