An Investment Model via Regime-Switching Economic Indicators

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The Internet bubble and 2008-2009 economic crash exposed severe limitations of traditional portfolio models, especially the dependence on a static framework, e.g., a constant covariance matrix. This paper develops a novel dynamic optimization model for constructing a long-short equity portfolio. Asset returns are characterized by a set of eight economic factors that follow a regime-switching autoregressive model. In the empirical analysis, we employ exchange traded funds to test the approach. Common factors include: changes in the S&P 500 price index, treasury bond index, the U.S. dollar index, implied volatility, aggregate dividend yield, short term interest rate, treasury yield spread, and credit spread. The optimal portfolio is subject to the various policy constraints on leverage, individual positions, and Value at Risk. The portfolio exposure to each of the risk factors is controlled by the level of risk aversion. The empirical tests show that the developed investment portfolio provides much higher returns with very limited risk, in contrast with alternative investment approaches, for the period of January 1999 to November 2010.

Speaker Biography
Professor Yonggan Zhao is the Canada Research Chair in Risk Management in School of Business Administration at Dalhousie University, Canada. Professor Zhao obtained his Ph.D in Operations Research from the University of British Columbia. Prior to joining Dalhousie University in 2006, Professor Zhao was a faculty member in the Nanyang Business School at NTU, where he taught in the Master of Financial Engineering Program for 5 years. His research is interdisciplinary and mainly focused on developing practical portfolio investment strategies. He has published widely in leading academic journals, such as Mathematical Programming, Mathematical Finance, Journal of Banking and Finance, Journal of Portfolio Management, Journal of Economic Dynamics and Control, Journal of Risk, and European Journal of Operational Research, etc. He has been a successful investment consultant to a number of hedge fund companies.

Host: Division of Mathematical Sciences, School of Physical and Mathematical Sciences