

The April meeting of the New South Wales Branch will be held on

Tuesday, 25 May 2010

6:00pm for refreshments and 6:30pm for talk

at

Seminar Room 100, New Law School Building, University of Sydney

William T.M. Dunsmuir

School of Mathematics and Statistics, UNSW

Modelling the Dynamics of Financial Transactions Data

This review talk will consider modelling the dynamics of ultra high frequency data arising in the processes of transaction by transaction stock prices. "These new data sets provide us with an unprecedented microscopic view of the structure of financial markets that was previously impossible with time aggregated data" - Russell and Engle (2005). Such data is characterised by irregular spacing in time and distributions for right skewed durations and discrete valued price change processes. As such they raise modelling challenges well beyond standard time series analysis. Models for the time duration between individual trades as well as models for the price change process occurring at trades will be reviewed. The models considered are part of the large class of observation driven stochastic models because the past observed values of times between trades and the price changes are used to develop a conditional mean of the next observation in these processes. These models lead to a likelihood that is conditionally specified and therefore rapid to compute and maximise over the unknown parameters. Work of the author and his recent students on observation driven models for discrete valued time series (binary, Poisson, negative binomial and trinomial) arising in modelling the price change process will be the major focus of the talk. The ability to fit the models efficiently means that many days of data can be fit en masse, or separately for each day, allowing statistical assessment of constancy of model parameters from day to day of trading. Results of the modelling will be related in part to econometric hypotheses about market microstructure. The ideas will be illustrated on various trade by trade series.

Professor William T.M. Dunsmuir joined the School of Mathematics and Statistics at the University of New South Wales in 1993 as Professor of Statistics. He has served as Head of the Department of Statistics for substantial periods since then. During 2001-2 he was Professor of Biostatistics at the University of Minnesota. Previous academic appointments have been: Massachusetts Institute of Technology (1976-1980), Australian National University (1980-2), Australian Graduate School of Management (1987-8) and Bond University (1988-93). He holds an honours degree from La Trobe University and a PhD from the Australian National University both in Statistics. He is immediate past President of the Statistical Society of Australia and a member of several international societies. He was made a Fellow of the American Statistical Association in 2004. Professor Dunsmuir has extensive consulting and management experience at Siromath (1982-87), Bond University and, since then, in private practice. His research is evenly divided between theory and methods for correlated observations (primarily in time series analysis) and in applications across a wide range of disciplines. In recent years his applied research has been mostly in public health applications and in time series modelling of financial data.

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University of Sydney	University of Sydney	University of Technology Sydney	University of Technology Sydney



GETTING THERE

By Train from Redfern station

Follow the path shown in the map

By Train from Central station

Take bus (422, 423, 426, 428) to Wentworth Building on City Road OR

Take bus (other routes) to USYD entrance on University Avenue from Parramatta Road

By Car

Parking at Camperdown and Darlington Campuses: \$ 6 flat rate (from 3pm – 6am)

– underground parking at the New Law School Building is available (entrance on Barff Road)

2-hour on-street free parking is available on Darlington Road until 6pm (no time limit after 6pm)

1-hour free parking is available outside the University Sport & Aquatic Centre in Darlington Campus until 6pm (no time limit after 6pm)