McGill University
Department of Economics
Econ 763: Time Series and Financial Econometrics
Winter 2015
Course outline
(Preliminary)

Professor: Jean-Marie Dufour

January 2015
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Documents and other material relevant to the course will be available from my web page:

`http://www.jeanmarieedufour.com`
`http://www2.cirano.qc.ca/~dufourj/Web_Site/`

Lecture hours: Tuesday 18:05 - 20:55
Beginning: January 6, 2015. End: April 14, 2015.
Room: Leacock 520
Office hours: by appointment
Teaching assistants: to be determined
TA sessions: to be determined
e-mail: `jean-marie.dufour@mcgill.ca`

Evaluation will be based on 3 elements (percentage refer to the entire year's grade);

1. a mid-term exam: 25%;
2. assignments and term paper: 25%;
3. a final exam (April 2014): 50%.

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/) for more information).
L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/).

The following textbooks will be used in this course.

Brockwell, D. and Davis, R. A. (1991). Time Series: Theory and Methods, Second Edition. Springer-Verlag, New York. (BD)

Hamilton, J. (1994). Time Series Analysis. Princeton University Press, Princeton, NJ. (H)

Ait-Sahalia, Y., and Hansen, L. P. (2010). Handbook of Financial Econometrics, Volumes 1 and 2. Horth-Holland, Amsterdam.

Bossaerts, Peter (2002) The Paradox of Asset Pricing. Princeton University Press.

Campbell, J.Y, Lo, A. W., and MacKinlay, A. C. (1997). The Econometrics of Financial Markets. Princeton University Press.

Cochrane, J. (2001). Asset Pricing. Princeton University Press.

Gouriéroux, C., and Jasiak, J. (2001). Financial Econometrics: Problems, Models and Methods. Princeton University Press.

Ruppert, D. (2004). Statistics and Finance. Springer.

Singleton, K. J. (2006) Empirical Dynamic Asset Pricing: Model Specification and Econometric Assessment. Princeton University Press.

Course outline

1. Time series analysis
    (a) Introduction
    (b) Stochastic processes
    (c) Prediction and efficient markets
    (d) Continuous time models
    (e) Testing random walk and predictability
    (f) Nonstationarity
    (g) Building univariate time series models
    (h) Multivariate time series models
    (i) Long memory
2. Financial econometrics
    (a) Introduction: the problems of financial econometrics
    (b) Portfolio theory and the Capital asset pricing model (CAPM)
    (c) Volatility modelling
        i. The role of volatility modelling
        ii. Conditional heteroskedasticity: GARCH and stochastic volatility
        iii. Realized volatility
    (d) Heavy tails: theory and inference
    (e) Factor models
    (f) Dynamic optimization models and GMM
    (g) Quantile methods and value at risk
    (h) Options pricing