YORK UNIVERSITY
FACULTY OF ARTS
DEPARTMENT OF ECONOMICS
ECONOMICS 5220
ECONOMETRIC THEORY

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Course Description

This course is an introduction to time series analysis for graduate students who have taken ECON5025 or an equivalent course. It will cover the basics of time series analysis such as the definition of a stochastic process, the stationarity and the autocorrelation function (ACF). These concepts will be used to examine selected univariate autoregressive and moving average processes (ARMA), and autoregressive conditional heteroskedasticity (ARCH) processes. Students will learn to identify and estimate stationary univariate models, detect the seasonality, and test for nonstationarity in the trend from the D-F unit root tests. Later on, a multivariate VAR model will be discussed along with the concept of cointegration and the VEC model. All theoretical concepts introduced in this course will be illustrated in class by various empirical examples. Additional examples will be assigned as homeworks. Students are encouraged to work and submit their assignments in teams of no more than 3 participants. Most assignments will require some basic programming skills. In class, students can learn SAS, and use the SAS codes available on the course website.

Requirements, Evaluation and Other Details

1. Mid-term exam: 15% approximate date of exam: February 15. It can be improved by submitting Assignment 4 individually.

2. Final exam: 40% (date to be determined)

3. Assignments 1,2 and 3: 45% available on-line from "Handouts". The solutions need to be handed in on February 1, March 1, and March 29.

Books and Other Materials

Required:

William S. Wei, Time Series Analysis; Univariate and Multivariate Methods,2nd ed. (2006) Pearson.

Suggested for complementary readings:

R.C. Hill, W.E Griffith, G.C. Lim J.M. Principles of Econometrics, 3rd or 4th ed. (2008 or 2011) Wiley.

1. lecture notes at http://www.jjstats.com

2. Brockwell, P.J. and R.A. Davis *Introduction to Time series and Forecasting*, 2nd ed., 2002, Springer

Course Content

1 Time series : examples and basic concepts (chap 1 and 2)

2. Stationary Time Series : estimation and tests; (chap. 3)
3. Nonstationary TimeSeries : ; (chap. 4)
4. Forecasting , ; (chap. 5)
5. Model Identification ; (chap. 6)
6. Parameter Estimation ; (chap. 7)
7. Seasonal Models and Intervention Analysis :(chap. 8 and 10)
8. ARCH-GARCH Models ; (chap. 15)
9. Multivariate TS Models ; (chap. 16)
10. Cointegrationand ECM Representations ; (chap. 17)