

14E023

6 ECTS

Advanced Econometric Methods II

Overview and Objectives

The aim of this module is to equip the student with the ideas and methods necessary for theoretical and applied econometric research. The purpose of the first part of the course is to present some of the most important econometric methods usually employed in financial markets. In addition to the lectures, which are to a large extent self-contained, students will conduct empirical and Monte Carlo simulation exercises. The second part of the module will cover the most important econometric methods for the analysis of microdata (individual, household or firm data). The aim will be to offer a flavor of the theory, while keeping the applications firmly in sight.

Course Outline

Part I (Enrique Sentana):

Week 1. Some Useful Distributions.
Week 2. Maximum Likelihood Estimation and Related Procedures.
Week 3. Applications to Covariance Structures and Time Series Models for Volatility.
Week 4. Introduction to Generalised Method of Moments Estimation and Inference.

Part II (Albrecht Glitz):

Week 5-6: Panel Data Models.
Week 7-8: Discrete Choice Models.
Week 8-9: Selection Models.
Week 10: Duration Models and Quantile Regression.

Required Activities

There will be 6-7 problem sets overall.

Evaluation

Grades will be based on: final exam, 70%, problem sets, 30%.

14E023

6 ECTS

Advanced Econometric Methods II

Materials

Part I

Self References

Amengual, D., Carrasco, M. and Sentana, E. (2017): "Testing distributional assumptions using a continuum of moments", CEMFI Working Paper 1709.
<ftp://ftp.cemfi.es/pdf/papers/es/Proof19.pdf>

Amengual, D. and Sentana, E. (2018): "Is a normal copula the right copula?", forthcoming in the Journal of Business and Economic Statistics.
<https://doi.org/10.1080/07350015.2018.1505631>

Amengual, D., Fiorentini, G. and Sentana, E. (2012): "Sequential estimators of shape parameters in multivariate dynamic models", Journal of Econometrics 177 (2), pp. 233-249.
<http://dx.doi.org/10.1016/j.jeconom.2013.04.010>

Arellano, M., Hansen, L.P. and Sentana, E. (2012): "Underidentification?", Journal of Econometrics 170 (2), pp. 256-280.
<ftp://ftp.cemfi.es/pdf/papers/es/ahsmain.pdf>

Calzolari, G., Fiorentini, G. and Sentana, E. (2004): "Constrained Indirect Estimation", Review of Economic Studies 71 (4), pp. 945-973.
<http://dx.doi.org/10.1111/0034-6527.00310>

Fiorentini, G., Sentana, E. and Calzolari, G. (2003): "Maximum likelihood estimation and inference in multivariate conditionally heteroskedastic dynamic regression models with Student t innovations", Journal of Business and Economic Statistics 21 (4), pp. 532-546.
<http://dx.doi.org/10.1198/073500103288619232>

León, A., Mencía, J. and Sentana, E. (2009): "Parametric properties of semiparametric distributions, with applications to option valuation", Journal of Business and Economic Statistics 27 (2), pp. 176-192.
<http://dx.doi.org/10.1198/jbes.2009.0013>

Mencía, J. and Sentana, E. (2012): "Distributional tests in multivariate dynamic models with Normal and Student t innovations", Review of Economics and Statistics 94 (1), pp. 133-152.
http://dx.doi.org/10.1162/REST_a_00141

Mencía, J. and Sentana, E. (2018): "Volatility-related exchange traded assets: an econometric investigation", Journal of Business and Economic Statistics 36 (4), pp. 599-614.
<http://dx.doi.org/10.1080/07350015.2016.1216852>

Peñaranda, F. and Sentana, E. (2012): "Spanning tests in return and stochastic discount factor mean-variance frontiers: a unifying approach", Journal of Econometrics 170 (2), pp. 303-324.
<http://dx.doi.org/10.1016/j.jeconom.2012.05.007>

Peñaranda, F. and Sentana, E. (2015): "A unifying approach to the empirical evaluation of asset pricing models", Review of Economics and Statistics 97 (2), pp. 412-435.
http://dx.doi.org/10.1162/REST_a_00474

Sentana, E. (2015): Finite underidentification, CEMFI Working Paper 1508
<http://www.cemfi.es/ftp/wp/1508.pdfPress>

Other References

Bontemps, C. and Meddahi, N. (2005): "Testing normality: A GMM approach", Journal of Econometrics, 124 (1), 149-186.
<http://dx.doi.org/10.1016/j.jeconom.2004.02.014>

Bontemps, C. and Meddahi, N. (2011): "Testing distributional assumptions: A GMM approach", Journal of Applied Econometrics 27 (6) pp. 1099-1255.
<http://dx.doi.org/10.1002/jae.1250>

Lo, A.W. (2002): "The Statistics of Sharpe Ratios", Financial Analyst Journal July/August, 36-52.
<http://dx.doi.org/10.2469/faj.v58.n4.2453>
<http://www.frbsf.org/economic-research/files/3-17.pdf>

14E023

6 ECTS

Advanced Econometric Methods II

Monfardini, C. (1998): "Estimating Stochastic Volatility Models through Indirect Inference", *Econometrics Journal* 1, C113-C128.

<http://dx.doi.org/10.1111/1368-423X.11007>

Some Useful Books

Hamilton, J.D. (1994): *Time Series Analysis*, Princeton University Press.

Johnson, R.A. and Wichern, D.W. (1992): *Applied Multivariate Statistical Analysis*, 3rd edition, Prentice-Hall.

Ogaki, M. (1993): "Generalized method of moments: econometric applications", in G.S. Maddala, C.R. Rao and H.D. Vinod, *Handbook of Statistics* vol. 11, Elsevier Science Publishers.

Poirier, D.J. (1995): *Intermediate Statistics and Econometrics. A Comparative Approach*, MIT Press.

Part II

The main reading material will be the lecture notes, which derive primarily from the following two references:

Cameron, A. C. and P. K. Trivedi (2005), *Microeconometrics: Methods and Applications*, Cambridge University Press, New York, Chapters 21-23.

Wooldridge, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA.

Panel Data Models

Arellano, M. (2003), *Panel Data Econometrics*, Oxford University Press.

Baltagi, B. H. (2005), *Econometric Analysis of Panel Data*, 3rd Edition, John Wiley.

Cameron, A. C. and P. K. Trivedi (2005), *Microeconometrics: Methods and Applications*,

Cambridge University Press, New York, Chapters 21-23.

Hsiao, C. (2003), *Analysis of Panel Data*, Cambridge University Press.

Wooldridge, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA.

Discrete Choice & Selection Models

Cameron, A. C. and P. K. Trivedi (2005), *Microeconometrics: Methods and Applications*, Cambridge University Press, New York, Chapters 14-16.

Greene, W. (2005), *Econometric Analysis*, 5th edition, Prentice-Hall International, Chapter 23.

Maddala, G. S. (1989), *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press, New York.

Wooldridge, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA, Chapters 15-17.

Duration Models

Greene, W. (2005), *Econometric Analysis*, 5th edition, Prentice-Hall International, Chapter 22.5 (Brief discussion within a standard econometrics textbook)

Heckman, J. and B. Singer (1984), "A Method for Minimizing the Impact of Distributional Assumptions in Econometrics Models for Duration Data," *Econometrica*, 52 (2), 271-318.

Jenkins, S. P. (2005a), *Survival Analysis*, unpublished manuscript, Institute for Social and Economic Research, University of Essex. Downloadable from <http://www.iser.essex.ac.uk/teaching/degree/stephenj/ec968/pdfs/ec968lnotesv6.pdf>

Kiefer, N. (1985), "Econometric Analysis of Duration Data," *Journal of Econometrics* 28, 1-169. (Extensive survey for econometricians)

14E023

6 ECTS

Advanced Econometric Methods II

Kiefer, N. (1988), "Economic Duration Data and Hazard Functions," *Journal of Economic Literature* 26, 646-679. (Readable general survey)

Lancaster, T. (1990), *The Econometric Analysis of Transition Data*, Cambridge University Press. (The modern classic)

Wooldridge, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA, Chapter 20. (Single chapter introduction in a leading graduate microeconometrics textbook)

Quantile Regression

Buchinsky, M. (1994), "Changes in the US Wage Structure 1963-1987: Applications of Quantile Regression," *Econometrica* 62 (2), 405-458.

Greene, W. (2005), *Econometric Analysis*, 5th edition, Prentice-Hall International, Chapter 16.3. (short section).

Hall, P. (1994), "Methodology and Theory for the Bootstrap," *Handbook of Econometrics*, Vol. IV, Chapter 39, 2342-2383.

Imbens, G. and J. M. Wooldridge (2007), "Quantile Methods," in *What's New in Econometrics?*, Notes from the NBER Summer Institute 2007 (<http://www.nber.org/minicourse3.html>).

Koenker, R. W. and G. Basset (1978), "Regression Quantiles," *Econometrica* 46 (1), 33-50.

Powell, J. L. (1991), "Estimation of Monotonic Regression Models under Quantile Restrictions," in Barnett, Powell and Tauchen (eds.), *Nonparametric and Semiparametric Methods in Econometrics and Statistics*, Cambridge University Press.