

André K. Anundsen and Ragnar Nymoén, Department of Economics

ECON 4160 -

Econometrics – Modeling and systems estimation

TEACHING PLAN -- Autumn 2013

Lectures and computer classes:

Teacher: André K. Anundsen and Ragnar Nymoén

Time and place: Lectures: Wednesday 12:15-14:00, ES Auditorium 4

Computer Class: Tuesday 8:15-10:00, HH 035, PC-Lab,

First lecture, August 21st

First computer class, August 27th

Seminars:

Seminar Leaders: André K. Anundsen and Ragnar Nymoén

First seminar: Week 37 (17 and 19 September). Schedule: [See the official web page.](#)

Main references (syllabus)

Davidson, R. and J.G. MacKinnon: *Econometric Theory and Methods*, 2004. Oxford University Press. The International Edition of this book, from 2009, is identical.

Supplementary texts in the form of handouts will be posted on the course web-page during the semester

Norwegian speaking students may benefit from also reading: **E. Biørn**: *Økonometriske emner*, 3. utgave (Econometric Topics, 3rd edition, in Norwegian) Unipub 2009. Kapitlene 1, 2.1-2.4, 3, 4, 5.4, 5.5, 5.6.a, 6.3.a, 6.4.a, 6.5, 7.1-7.6, 8, 10.1-10.4.

Lectures, computer classes and seminars overview

Week	Lecture	Computer Class	Seminars
34	#1 Wed 21/8		
35	#2 Wed 28/8	#1 Tue 27/8	
36	#3 Wed 4/9		
37	#4 Wed 11/9	#2 Tue 10/9	
38	#5 Wed 18/9		#1 Mon 16 /9 and Thu 19/9
39	#6 Wed 25/9	#3 Tue24/9	
40			#2 Mon 30 /9 and Thu 3/10
41	#7 Wed 9/10	#4 Tue 8/10	
42	#8 Wed 16/10		#3 Mon 14 /10 and Thu 17/10
43	#9 Wed 23/10	#5 Tue 22/10	
44	#10 Wed 30/10		#4 tba
45	#11 Wed 6/11	#6 Tue 5/11	
46	#12 Wed 13/11		#5 Mon 11 /11 and Thu 14/11
47	#13 Wed 20/11		#6 Mon 18/11 and Thu 21/11

Plan for lectures and computer classes

The details may change when the course gets under way (information will then be given in the class and on the web-page).

Lecture 1 , Wednesday 21 August : Introduction and overview. The multiple regression model in matrix notation, OLS/MM estimators of the regression coefficients. Frisch-Waugh-Lovell theorem. Hypothesis testing in the regression model. *Reading material:* Ch. 1.4, 1.5, 2.4-2.5, 3.1-3.5, 4.1-4.5 in DM

Computer Class 1, Tuesday 27 August: Introduction to Oxmetrics. Data input and variable transformations. Estimation and mis-specification testing of multiple regression models in Oxmetrics-PcGive. Show consistency of OLS estimator under standard assumptions by MC simulations. Documenting your work: alg-files and batch-files. *Reading material:* The section on *Simulating Econometric Models* in Ch. 1 in DM

Lecture 2 Wednesday 28 August Maximum likelihood estimation. LR, LM and Wald tests. Confidence intervals. Delta method. Non-linear LS. *Reading material:* Ch. 5.1-5.2, 5.5,6.3-6.4 and 10.1-10.5.,15.3 in DM

Lecture 3 Wednesday 4 September Generalized least squares (GLS). The econometric regression model in a system context. Conditional models and marginal models. Time series. The definition of stationarity. The ADL(1) model as a conditional model derived from the VAR(1). The system represented by the conditional ADL and the marginal model from the VAR(1). Dynamic multipliers in ARDL models. Properties of OLS estimators. *Reading material:* DM: Ch 7.1-7.5. (GLS), 7.6 and 13.1-13.4. (Lag-operator; Stationarity; ADL model) . *Lecture note 3.*

Computer Class 2, Tuesday 10 September: Show bias of coefficient on lagged dependent variable in AR(1) and on lagged dependent variable and exogenous variable in ARDL model by MC simulation. Non-linear least squares in Oxmetrics-PcGive. Specification and testing of linear dynamic single equation models in Oxmetrics-PcGive. Recursive estimation and testing of coefficient stability.

Lecture 4 Wednesday 11 September The ADL(p,q) model. Pre-determinedness and Granger-causality. Dynamic and long run multipliers. Single equation model typology. Estimation of VARs. Location-shifts in the VAR and in dynamic regression models. Exogeneity concepts. *Reading material:* Ch. 13.4-13.5 and 13.7 in DM, and Lecture note 3 and 4 about VARs and ADL models.

Lecture 5 Wednesday 18 September Testing exogeneity and invariance. *Reading material:* Ch. 1.3, 3.2, 8.1-8.3 and 8.7, 15.3. Lecture note about the Lucas-critique.

Computer Class 3, Tuesday 24 September: Testing for autocorrelation due to common factors (See DM Ch 7.8 and 7.9 (Common factors)). Examples of tests for different types of exogeneity. Heuristics of General-to-specific-modelling (GETS). Manual and automatic Gets modeling in Oxmetrics-PcGive . *Reading material:* Ch. 13.7 in DM.

Lecture 6 Wednesday 25 September Identification of a single structural equation. Endogeneity bias. IV estimation of a single structural equation. Case: The rational expectations New Keynesian Phillips curve. *Reading material:* Ch. 8.1-8.6, 12.4 in DM

Computer Class 4, Tuesday 8 October: Show bias of OLS estimator when one of the regressors is an endogenous variable by MC simulation. IV estimation in Oxmetrics PcGive. Test of overidentifying restrictions. Show how IV estimator fixes the problem. Encompassing

Lecture 7 Wednesday 9 October Recursive systems and simultaneous equations econometric models (SEM). Structural VAR and recursive systems. Identification criteria for the structural equations of a SEM. *Reading material:* Ch. 12.4-12.5 in DM

Lecture 8 Wednesday 16 October Dynamic SEMs and VARs. Estimation of SEMs by IV and FIML. Encompassing the VAR. *Reading material:* Ch. 12.4-12.5 in DM

Computer class 5 Tuesday 22 October System modeling in OxMetrics-PcFIML. System and model specification and estimation. Test for overidentifying restrictions in systems. Mis-specification testing. Impulse responses and dynamic multipliers.

Lecture 9 Wednesday 24 October Systems of regression equations, the SUR estimator.
Reading material: Ch. 12.1-12.2 in DM

Lecture 10 Wednesday 30 October Forecasting from econometric models. *Reading material:* Lecture note on forecasting from econometric models

Computer class 6 Tuesday 5 November Systems of regression equations, the SUR estimator an example. Using dynamic econometric models in OxMetrics for forecasting . Robust forecasting methods in OxMetrics.

Lecture 11 Wednesday 6 November Introduction to econometric modeling under the assumption of “unit-roots”. Cointegration, concepts and tests. *Reading material:* Ch. 14 in DM

Lecture 12 Wednesday 13 November Building and using macroeconometric models for the Norwegian Economy. *Reading material:* Lecture note.

Lecture 13 Wednesday 20 November Available.

