



Time Series Econometrics – first part

STATIONARY UNIVARIATE MODELS. Wold decomposition theorem, ARMA models and Box-Jenkins methodology, Model Selection, maximum likelihood estimation, Forecasting methodology (Hamilton *Time Series Analysis*, ch. 1-5)

UNIVARIATE and MULTIVARIATE GARCH. (Franq Zakoian *GARCH models*, Wiley)

STATE-SPACE MODELS: Kalman filter (Hamilton *Time Series Analysis*, ch. 13, Durbin Koopman *Time series analysis by State Space Methods* Oxford University Press, ch. 1-4)

Time Series Econometrics – second part

NONSTATIONARY UNIVARIATE MODELS. Trend/Cycle decomposition, Beveridge-Nelson decomposition, Deterministic and stochastic trend models, Unit root tests. (Hamilton *Time Series Analysis*, ch. 15-17)

STATIONARY MULTIVARIATE MODELS. Dynamic simultaneous equations models, Vector autoregression (VAR) models, Granger causality, Impulse response functions, Variance decompositions, Structural VAR models. (Hamilton *Time Series Analysis*, ch. 9-11; Lutkepohl *New Introduction to Time Series Analysis*, ch. 9)

NONSTATIONARY MULTIVARIATE MODELS. Spurious regression, Cointegration, Granger representation theorem, Vector error correction models (VECMs), Structural VAR models with cointegration, Testing for cointegration, Estimating the cointegrating rank, Estimating cointegrating vectors. (Hamilton *Time Series Analysis*, ch. 18-20; Lutkepohl *New Introduction to Time Series Analysis*, ch. 6-8)