PROGRAMME AND ABSTRACTS

8th International Conference on

Computational and Financial Econometrics (CFE 2014)

http://www.cfenetwork.org/CFE2014

and

7th International Conference of the
ERCIM (European Research Consortium for Informatics and Mathematics) Working Group on

Computational and Methodological Statistics (ERCIM 2014)

http://www.cmstatistics.org/ERCIM2014

University of Pisa, Italy
6 – 8 December 2014

ERCIM WG on Computational and Methodological Statistics
http://www.CMStatistics.org

ERCIM
European Research Consortium for Informatics and Mathematics

Computational and Financial Econometrics
http://www.CFEnetwork.org

Queen Mary University of London
http://www.qmul.ac.uk

IN SUPREMÆ DIGNITATIS 1343
UNIVERSITÀ DI PISA
http://www.unipi.it

HIPPOCRATICA CIVITAS STUDIUM SALERNI
http://www.unisa.it

Depósito Legal: AS 03859-2014
ISBN: 978-84-937822-4-5

Technical Editors: Angela Blanco-Fernandez, Gil Gonzalez-Rodriguez and George Loizou.

Contents

General Information **I**
Committees . . . III
Welcome . . . IV
ERCIM Working Group on Computational and Methodological Statistics . . . V
CFEnetwork – Computational and Financial Econometrics . . . VI
Scientific and Social Programme Schedule, Meetings and Social Events Information . . . VII
Venue, lecture rooms, presentation instructions and internet access . . . VIII
Map of the venue and nearby area . . . X
Publications outlets . . . XI
Sponsors, exhibitors and supporting societies . . . XII

Keynote Talks **1**
MISURA PRIN Project CFE-ERCIM Keynote talk 1 (Mike West, Duke University, United States) Saturday 6.12.2014 at 09:10-10:00
Dynamic sparsity modelling . . . 1
CFE Keynote talk 2 (Robert Taylor, University of Essex, UK) Saturday 6.12.2014 at 11:55-12:45
Tests for explosive financial bubbles in the presence of non-stationary volatility . . . 1
ERCIM Keynote talk 2 (Nicolai Meinhausen, ETH, Switzerland) Saturday 6.12.2014 at 18:10-19:00
Maximin effects in inhomogeneous large-scale data . . . 1
CFE-ERCIM Keynote talk 3 (Irene Gijbels, Katholieke Universiteit Leuven, Belgium) Monday 8.12.2014 at 12:25-13:15
Recent advances in estimation of conditional distributions, densities and quantiles . . . 1
University of Salerno CFE-ERCIM Keynote talk 4 (James G. MacKinnon, Queens University, Canada) Monday 8.12.2014 at 18:25-19:15
Cluster-robust inference and the wild cluster bootstrap . . . 1

Parallel Sessions **2**

Parallel Session B – CFE (Saturday 6.12.2014 at 10:30 - 11:45) **2**
CS10: QUANTILE REGRESSION APPLICATIONS IN FINANCE (Room: E2) . . . 2
CS13: BAYESIAN ECONOMETRICS (Room: A2) . . . 2
CS22: DYNAMIC MODELING OF VARIANCE RISK PREMIA (Room: Q2) . . . 2
CS34: ECONOMETRICS OF ART MARKETS (Room: G2) . . . 3
CS35: ANALYSIS OF EXTREMES AND DEPENDENCE (Room: O2) . . . 3
CS50: MONITORING MACRO-ECONOMIC IMBALANCES AND RISKS (Room: P2) . . . 4
CS68: MULTIVARIATE TIME SERIES (Room: B2) . . . 4
CS71: NONPARAMETRIC AND SEMIPARAMETRIC METHODS: RECENT DEVELOPMENTS (Room: I2) . . . 5
CS83: ENERGY PRICE AND VOLATILITY MODELLING (Room: N2) . . . 5
CS88: QUANTITIVE METHODS IN CREDIT RISK MANAGEMENT (Room: C2) . . . 6
CS90: RISK ESTIMATION AND ESTIMATION RISK (Room: M2) . . . 6
CS61: FILTERS WAVELETS AND SIGNALS I (Room: D2) . . . 6

Parallel Session D – ERCIM (Saturday 6.12.2014 at 10:30 - 12:35) **8**
ES19: DEPENDENCE MODELS AND COPULAS: THEORY I (Room: N1) . . . 8
ES27: OUTLIERS AND EXTREMES IN TIME SERIES (Room: A1) . . . 8
ES35: THRESHOLD SELECTION IN STATISTICS OF EXTREMES (Room: B1) . . . 9
ES48: HANDLING NUISANCE PARAMETERS: ADVANCES TOWARDS OPTIMAL INFERENCE (Room: D1) . . . 10
ES63: MIXTURE MODELS FOR MODERN APPLICATIONS I (Room: L1) . . . 10
ES67: SMALL AREA ESTIMATION (Room: C1) . . . 11
ES74: STATISTICAL INFERENCE FOR LIFETIME DATA WITH APPLICATION TO RELIABILITY (Room: F1) . . . 12
ES80: ADVANCES IN SPATIAL FUNCTIONAL DATA ANALYSIS (Room: M1) . . . 12
ES94: STATISTICS WITH ACTUARIAL/ECONOMIC APPLICATIONS (Room: I1) . . . 13
ES99: METHODS FOR SEMIPARAMETRIC ANALYSIS OF COMPLEX SURVIVAL DATA (Room: E1) . . . 14
ES122: ADVANCES IN LATENT VARIABLES (Room: G1) . . . 14
ES39: BAYESIAN SEMI- AND NONPARAMETRIC MODELLING I (Room: Q1) . . . 15

Parallel Session D – CFE (Saturday 6.12.2014 at 14:35 - 16:15) **17**
CSI02: MODELING AND FORECASTING HIGH DIMENSIONAL TIME SERIES (Room: Sala Convegni) . . . 17
CS01: FINANCIAL ECONOMETRICS (Room: M2) . . . 17
CS03: ADVANCES IN IDENTIFICATION OF STRUCTURAL VECTOR AUTOREGRESSIVE MODELS (Room: C2) . . . 18
CS17: LIQUIDITY AND CONTAGION (Room: N2) . . . 18
CS32: CO-MOVEMENTS IN MACROECONOMICS AND FINANCE (Room: P2) . . . 19
CS42: TIME-SERIES ECONOMETRICS (Room: B2) . . . 19
CS53: ADVANCES IN DSGE MODELLING (Room: O2) . . . 20
CS58: STATISTICAL MODELLING IN BANKING AND INSURANCE REGULATIONS (Room: H2) . . . 20
CS62: FILTERS WAVELETS AND SIGNALS II (Room: D2) . . . 21
CS64: REGIME CHANGE MODELING IN ECONOMICS AND FINANCE I (Room: G2) . . . 21
CS80: FINANCIAL MODELLING (Room: E2) . . . 22

Parallel Session E – ERCIM (Saturday 6.12.2014 at 14:35 - 16:15) **24**
ESI01: ROBUSTNESS AGAINST ELEMENTWISE CONTAMINATION (Room: A1) . . . 24
ES07: STATISTICAL METHODS FOR DEPENDENT SEQUENCES (Room: H1) . . . 24
ES14: SUFFICIENCY AND DATA REDUCTIONS IN REGRESSION (Room: E1) . . . 24
ES20: CHANGE-POINT ANALYSIS (Room: P1) . . . 25
ES41: ROBUST ESTIMATION IN EXTREME VALUE THEORY (Room: B1) . . . 26
ES50: DIRECTIONAL STATISTICS (Room: G1) . . . 26
ES60: SIMULTANEOUS EQUATION MODELS CONTROLLING FOR UNOBSERVED CONFOUNDING (Room: D1) . . . 27
ES65: GOODNESS-OF-FIT TESTS (Room: L1) . . . 27
ES92: CURE MODELS AND COMPETING RISKS IN SURVIVAL ANALYSIS (Room: F1) . . . 28
ES101: FUNCTIONAL REGRESSION MODELS AND APPLICATIONS (Room: M1) . . . 28
ES129: STATISTICAL METHODS AND APPLICATIONS (Room: I1) . . . 29
ES77: CONTRIBUTIONS TO CLASSIFICATION AND CLUSTERING (Room: O1) . . . 29
ES29: DEPENDENCE MODELS AND COPULAS: THEORY II (Room: N1) . . . 30
ES45: BAYESIAN SEMI- AND NONPARAMETRIC MODELLING II (Room: Q1) . . . 31
ES06: BIG DATA ANALYSIS: PENALTY, PRETEST AND SHRINKAGE ESTIMATION I (Room: C1) . . . 31

Parallel Session E – CFE (Saturday 6.12.2014 at 16:45 - 18:50) **33**
CS02: VOLATILITY AND CORRELATION MODELLING FOR FINANCIAL MARKETS (Room: N2) . . . 33
CS103: CONTRIBUTIONS TO APPLIED ECONOMETRICS I (Room: F2) . . . 33
CS06: NON-STATIONARY TIME SERIES AND THE BOOTSTRAP (Room: B2) . . . 34
CS16: MODELLING FINANCIAL CONTAGION (Room: E2) . . . 35
CS18: STATISTICAL SIGNAL PROCESSING IN ASSET MANAGEMENT (Room: O2) . . . 36
CS21: BEHAVIOURAL AND EMOTIONAL FINANCE: THEORY AND EVIDENCE (Room: A2) . . . 36
CS47: CYCLICAL COMPOSIT INDICATORS (Room: P2) . . . 37
CS55: VOLATILITY MODELS AND THEIR APPLICATIONS (Room: G2) . . . 38
CS57: RISK MEASURES (Room: C2) . . . 38
CS60: CONTRIBUTIONS ON TIME SERIES ECONOMETRICS I (Room: D2) . . . 39
CS100: EMPIRICAL APPLICATIONS IN MACROECONOMICS AND TIME SERIES ANALYSIS (Room: M2) . . . 40
CS46: MACRO AND FORECASTING (Room: I2) . . . 40

Parallel Session F – ERCIM (Saturday 6.12.2014 at 16:45 - 18:00) **42**
ES03: STATISTICAL MODELLING WITH R (Room: I1) . . . 42
ES13: HIGH-DIMENSIONAL CAUSAL INFERENCE (Room: B1) . . . 42
ES33: STATISTICAL METHODS IN HIGH DIMENSIONS (Room: L1) . . . 42
ES36: STATISTICS IN FUNCTIONAL AND HILBERT SPACES (Room: M1) . . . 43
ES38: INFERENCE BASED ON THE LORENZ AND GINI INDEX OF INEQUALITY (Room: E1) . . . 43
ES53: BAYESIAN SEMI AND NONPARAMETRIC ESTIMATION IN COPULA MODELS (Room: Q1) . . . 44
ES58: HEURISTIC OPTIMIZATION AND ECONOMIC MODELLING (Room: D1) . . . 44
ES78: DIRECTED AND UNDIRECTED GRAPH MODELS (Room: G1) . . . 45
ES97: CHANGE-POINTS IN TIME SERIES I (Room: P1) . . . 45
ES103: TAIL DEPENDENCE AND MARGINALS WITH HEAVY TAILS (Room: N1) . . . 45
ES106: ROBUST CLUSTERING WITH MIXTURES (Room: A1) . . . 46
ES116: INTELLIGENT DATA ANALYSIS FOR HIGH DIMENSIONAL SYSTEMS (Room: H1) . . . 46
ES125: MISSING COVARIATE INFORMATION IN SURVIVAL ANALYSIS (Room: F1) . . . 47
ES127: BIOSTATISTICS, EPIDEMIOLOGY AND TWIN STUDIES (Room: C1) . . . 47
ES153: MULTIVARIATE STATISTICS I (Room: O1) . . . 48

Parallel Session F – CFE (Sunday 7.12.2014 at 08:45 - 10:25) **49**
CS11: BAYESIAN NONLINEAR ECONOMETRICS (Room: A2) . . . 49
CS14: RECENT DEVELOPMENTS IN VOLATILITY MODELLING (Room: N2) . . . 49
CS20: BANKS AND THE MACROECONOMY: EMPIRICAL MODELS FOR STRESS TESTING (Room: H2) . . . 50
CS30: MIXTURE MODELS FOR FINANCIAL AND MACROECONOMIC TIME SERIES (Room: I2) . . . 50
CS48: NOWCASTING AND FORECASTING MACRO-ECONOMIC TRENDS (Room: P2) . . . 51
CS73: REGIME SWITCHING, FILTERING, AND PORTFOLIO OPTIMIZATION (Room: G2) . . . 51
CS76: TOPICS IN FINANCIAL ECONOMETRICS (Room: M2) . . . 52
CS82: BOOTSTRAPPING TIME SERIES AND PANEL DATA (Room: B2) . . . 53
CS96: ECONOMETRIC MODELS FOR MIXED FREQUENCY DATA (Room: E2) . . . 53
CP01: POSTER SESSION (Room: First floor Hall) . . . 54

Parallel Session G – ERCIM (Sunday 7.12.2014 at 08:45 - 10:25) **56**
ESI03: TIME SERIES MODELING AND COMPUTATION (Room: Sala Convegni) . . . 56
ES12: MULTIVARIATE SURVIVAL ANALYSIS AND MULTI-STATE MODELS (Room: F1) . . . 56
ES26: ADVANCES IN CLUSTER ANALYSIS (Room: O1) . . . 57
ES31: APPLICATIONS IN ENGINEERING AND ECONOMICS (Room: I1) . . . 57
ES32: DIRECTIONAL STATISTICS (Room: G1) . . . 58
ES46: GENERALIZED ADDITIVE MODELS FOR LOCATION, SCALE AND SHAPE (Room: E1) . . . 58
ES49: STATISTICAL INFERENCE IN HIGH DIMENSIONS (Room: B1) . . . 59

ES54: WHAT IS NEW IN MODELING AND DESIGN OF EXPERIMENTS (Room: N1) . . . 59
ES56: ROBUST STATISTICAL MODELING (Room: A1) . . . 60
ES69: ANALYSIS OF COMPLEX FUNCTIONAL DATA (Room: M1) . . . 60
ES75: RECENT ADVANCES IN GENETIC ASSOCIATION STUDIES (Room: C1) . . . 61
ES96: SOCIAL NETWORK DATA ANALYSIS (Room: D1) . . . 62
ES108: BAYESIAN NONPARAMETRIC AND ROBUSTNESS (Room: Q1) . . . 62
ES114: LATENT VARIABLES AND FEEDBACK IN GRAPHICAL MARKOV MODELS (Room: H1) . . . 63
ES121: STOCHASTIC MODELS FOR POPULATION DYNAMICS (Room: P1) . . . 63
ES126: RESAMPLING TESTS (Room: L1) . . . 64
EP02: POSTER SESSION I (Room: First floor Hall) . . . 65

Parallel Session I – CFE (Sunday 7.12.2014 at 10:55 - 13:00) 67
CSI03: VAR MODELING, COINTEGRATION AND UNCERTAINTY (Room: Sala Convegni) . . . 67
CS54: CONTRIBUTIONS ON VOLATILITY MODELS AND ESTIMATION (Room: N2) . . . 67
CS12: MODELLING UNCERTAINTY IN MACROECONOMICS (Room: P2) . . . 68
CS23: A NOVEL PERSPECTIVE IN PREDICTIVE MODELLING FOR RISK ANALYSIS (Room: Q2) . . . 69
CS26: STATISTICAL INFERENCE ON RISK MEASURES (Room: Q2) . . . 69
CS27: INFERENCE FOR FINANCIAL TIMES SERIES (Room: B2) . . . 70
CS63: FORECASTING (Room: E2) . . . 70
CS74: REGIME CHANGE MODELING IN ECONOMICS AND FINANCE II (Room: G2) . . . 71
CS92: REAL-TIME MODELLING WITH DATA SUBJECT TO DIFFERENT COMPLICATIONS (Room: O2) . . . 72
CS94: MACROECONOMETRICS (Room: I2) . . . 72
CS97: RISK MODELING AND APPLICATIONS (Room: C2) . . . 73
CS98: BAYESIAN ECONOMETRICS IN FINANCE (Room: A2) . . . 74
CS110: CONTRIBUTIONS TO APPLIED ECONOMETRICS II (Room: F2) . . . 75
CS78: CONTRIBUTIONS ON TIME SERIES ECONOMETRICS II (Room: D2) . . . 75

Parallel Session J – ERCIM (Sunday 7.12.2014 at 10:55 - 13:00) 77
ES04: CLASSIFICATION AND DISCRIMINANT PROCEDURES FOR DEPENDENT DATA (Room: O1) . . . 77
ES05: ADVANCES IN SPATIO-TEMPORAL ANALYSIS (Room: H1) . . . 77
ES09: STATISTICAL INFERENCE FOR NONREGULAR MODELS (Room: E1) . . . 78
ES11: MODELING DEPENDENCE FOR MULTIVARIATE TIME TO EVENTS DATA (Room: F1) . . . 79
ES15: MODEL SPECIFICATION TESTS (Room: L1) . . . 79
ES22: DEPENDENCE MODELS AND COPULAS: THEORY III (Room: N1) . . . 80
ES24: COMPONENT-BASED MULTILAYER PATH MODELS (Room: D1) . . . 81
ES25: MULTIVARIATE EXTREMES (Room: B1) . . . 82
ES82: ROBUSTNESS IN SURVEY SAMPLING (Room: A1) . . . 82
ES83: DATA ON MANIFOLDS AND MANIFOLD DATA (Room: M1) . . . 83
ES87: DATA SCIENCE AND THEORY (Room: I1) . . . 84
ES95: BAYESIAN INFERENCE FOR BIG DATA (Room: Q1) . . . 85
ES115: ELECTRICITY LOAD FORECASTING (Room: C1) . . . 85
ES123: SPARSITY AND NETWORK (Room: G1) . . . 86

Parallel Session L – CFE (Sunday 7.12.2014 at 14:45 - 16:25) 87
CS05: MEASURING SYSTEMIC RISK (Room: Q2) . . . 87
CS15: MULTIVARIATE MODELLING OF ECONOMIC AND FINANCIAL TIME SERIES (Room: B2) . . . 87
CS19: BANKS, INTEREST RATES AND PROFITABILITY AFTER THE FINANCIAL CRISIS (Room: H2) . . . 88
CS31: DYNAMIC CONDITIONAL SCORE MODELS (Room: O2) . . . 88
CS45: DEPENDENCE MODELING AND COPULAS (Room: F2) . . . 89
CS67: FINANCIAL AND MACROECONOMIC FORECASTING (Room: P2) . . . 89
CS77: MODELLING UNIVERSITY OUTCOMES THROUGH SURVIVAL ANALYSIS (Room: N2) . . . 90
CS79: MODELLING AND COMPUTATION IN MACRO-ECONOMETRICS (Room: I2) . . . 91
CS87: STATISTICAL ANALYSIS OF FINANCIAL RETURNS (Room: E2) . . . 91
CS93: TIME SERIES ANALYSIS IN ECONOMICS (Room: A2) . . . 92
CS44: CONTRIBUTIONS IN FINANCIAL ECONOMETRICS I (Room: M2) . . . 92

Parallel Session L – ERCIM (Sunday 7.12.2014 at 14:45 - 16:25) 94
ESI04: STATISTICAL ANALYSIS OF EVENT TIMES (Room: Sala Convegni) . . . 94
ES01: OODA-TREE STRUCTURED DATA OBJECTS (Room: N1) . . . 94
ES08: STATISTICS FOR IMPRECISE-VALUED DATA (Room: I1) . . . 95
ES28: RECENT ADVANCES IN STATISTICAL GENETICS (Room: C1) . . . 95
ES40: NEW APPROACHES IN SPATIAL STATISTICS (Room: H1) . . . 96
ES42: BAYESIAN ANALYSIS OF GRAPHICAL MODELS (Room: P1) . . . 96
ES44: MODEL-BASED CLUSTERING FOR CATEGORICAL AND MIXED-TYPE DATA (Room: L1) . . . 97
ES51: BAYESIAN SEMI- AND NONPARAMETRIC MODELLING III (Room: Q1) . . . 98
ES79: COUNTING PROCESSES (Room: D1) . . . 98
ES90: ROBUST AND NONPARAMETRIC METHODS (Room: A1) . . . 99
ES105: FLEXIBLE MODELS FOR DIRECTIONAL DATA (Room: G1) . . . 99

ES117: HIGH-DIMENSIONAL BAYESIAN MODELING (Room: B1) . . . 100
ES119: HIGH-DIMENSIONAL DATA ANALYSIS (Room: M1) . . . 101
ES132: COMPUTATIONAL STATISTICS I (Room: O1) . . . 101
ES37: CHANGE-POINTS IN TIME SERIES II (Room: F1) . . . 102
ES130: NON-PARAMETRIC AND SEMI-PARAMETRIC METHODS (Room: E1) . . . 102
EP01: POSTER SESSION II (Room: First floor Hall) . . . 103
EP03: POSTER SESSION III (Room: First floor Hall) . . . 104

Parallel Session M – CFE (Sunday 7.12.2014 at 16:55 - 18:35) 107
CSI01: VOLATILITY MODELLING (Room: Sala Convegni) . . . 107
CS24: NONSTATIONARY TIME SERIES AND FINANCIAL BUBBLES (Room: A2) . . . 107
CS28: FINANCIAL ECONOMETRICS (Room: M2) . . . 107
CS37: COMMON FEATURES IN FINANCE AND MACROECONOMICS (Room: I2) . . . 108
CS49: DEVELOPMENT ON SEASON ADJUSTMENT AND SEASONAL MODELLING (Room: P2) . . . 109
CS56: MODELING MULTIVARIATE FINANCIAL TIME SERIES (Room: D2) . . . 109
CS84: TAIL RISKS (Room: Q2) . . . 110
CS85: FUNDS PERFORMANCE MEASUREMENT (Room: E2) . . . 110
CS89: ANALYSING COMPLEX TIME SERIES (Room: B2) . . . 111
CS91: ESTIMATION OF MACROECONOMIC MODELS WITH TIME VARYING VOLATILITY (Room: N2) . . . 111
CS99: STATISTICAL METHODS FOR MODELLING SPATIO-TEMPORAL RANDOM FIELDS (Room: O2) . . . 112
CS107: ENERGY ECONOMICS (Room: F2) . . . 112

Parallel Session N – ERCIM (Sunday 7.12.2014 at 16:55 - 19:00) 114
ES18: STATISTICAL METHODS FOR SPATIAL EPIDEMIOLOGY (Room: H1) . . . 114
ES23: DEPENDENCE MODELS AND COPULAS: APPLICATIONS (Room: N1) . . . 114
ES30: ADVANCES IN ROBUST DATA ANALYSIS (Room: A1) . . . 115
ES34: REGRESSION MODELS FOR EXTREME VALUES (Room: B1) . . . 116
ES52: RECENT DEVELOPMENTS IN THE DESIGN OF EXPERIMENTS (Room: G1) . . . 116
ES55: NEW SOFTWARE DEVELOPMENTS FOR COMPETING RISKS AND MULTI-STATE MODELS (Room: F1) . . . 117
ES70: NONPARAMETRIC FUNCTIONAL DATA ANALYSIS (Room: M1) . . . 118
ES76: STATISTICAL METHODS FOR INSURANCE AND FINANCE (Room: D1) . . . 119
ES93: INFERENCE UNDER IMPRECISE KNOWLEDGE (Room: I1) . . . 119
ES102: BAYESIAN NETWORKS IN OFFICIAL STATISTICS (Room: Q1) . . . 120
ES113: ADVANCES IN ORDINAL AND PREFERENCE DATA (Room: C1) . . . 121
ES120: CHANGE-POINT DETECTION, DEPENDENCE MODELLING AND RELATED ISSUES (Room: P1) . . . 122
ES124: SURVIVAL AND RELIABILITY (Room: E1) . . . 122

Parallel Session O – CFE (Monday 8.12.2014 at 08:45 - 10:05) 124
CS09: VOLATILITY MEASURING, MODELING AND APPLICATIONS (Room: N2) . . . 124
CS29: SOLUTION AND ESTIMATION OF NON-LINEAR GENERAL EQUILIBRIUM MODELS (Room: O2) . . . 124
CS41: APPLIED ECONOMIC ISSUES (Room: E2) . . . 124
CS69: RISK PREMIA TIME SERIES (Room: B2) . . . 125
CS75: QUANTITATIVE RISK MANAGEMENT (Room: C2) . . . 125
CS102: CONTRIBUTIONS IN FINANCIAL ECONOMETRICS II (Room: M2) . . . 126
CS104: CONTRIBUTIONS TO BAYESIAN ECONOMETRICS I (Room: A2) . . . 126
CS106: COMPUTATIONAL ECONOMETRICS I (Room: F2) . . . 127
CS65: REGIME CHANGE MODELING IN ECONOMICS AND FINANCE III (Room: G2) . . . 128

Parallel Session O – ERCIM (Monday 8.12.2014 at 08:45 - 10:05) 129
ES145: DIMENSIONALITY REDUCTION AND VARIABLE SELECTION (Room: O1) . . . 129
ES148: DISCRETE STATISTICS (Room: M1) . . . 129
ES57: RECENT APPLICATIONS OF GRAPHICAL MARKOV MODELS (Room: H1) . . . 130
ES151: DEPENDENCE IN APPLIED STATISTICS AND DATA ANALYSIS (Room: N1) . . . 130
ES68: MARKOV PROCESSES (Room: F1) . . . 131
ES155: MULTIVARIATE MODELLING (Room: P1) . . . 131
ES84: BAYESIAN METHODS I (Room: Q1) . . . 132
ES131: METHODOLOGICAL STATISTICS I (Room: E1) . . . 133
ES139: CONTRIBUTIONS TO ROBUST DATA ANALYSIS (Room: A1) . . . 133
ES133: APPLIED STATISTICS AND DATA ANALYSIS I (Room: I1) . . . 133
ES138: CONTRIBUTIONS TO BIOSTATISTICS AND BIOINFORMATICS (Room: C1) . . . 134
ES61: MIXTURE MODELS FOR MODERN APPLICATIONS II (Room: D1) . . . 135
ES134: STATISTICAL INFERENCE I (Room: L1) . . . 135
ES137: CONTRIBUTIONS TO NETWORK AND SPATIAL DATA ANALYSIS (Room: G1) . . . 136
ES135: CONTRIBUTIONS TO STATISTICS OF EXTREMES AND APPLICATIONS (Room: B1) . . . 137

Parallel Session P – CFE (Monday 8.12.2014 at 10:35 - 12:15) **138**
CS112: FINANCIAL APPLICATIONS I (Room: E2) . . . 138
CS95: CONTRIBUTIONS ON PANEL DATA (Room: M2) . . . 138
CS101: CONTRIBUTIONS ON TIME SERIES ECONOMETRICS III (Room: B2) . . . 139
CS04: CONTRIBUTIONS ON VOLATILITY AND CORRELATION MODELLING (Room: N2) . . . 140
CS66: CONTRIBUTIONS ON BANKING AND FINANCIAL MARKETS (Room: H2) . . . 140
CS40: CONTRIBUTIONS TO FORECASTING (Room: A2) . . . 141
CS43: CONTRIBUTIONS ON QUANTILE REGRESSION, NON/SEMI-PARAMETRIC METHODS (Room: O2) . . . 142
CS39: CONTRIBUTIONS TO DEPENDENCE MODELING AND COPULAS (Room: F2) . . . 143
CS109: CONTRIBUTIONS TO THE MACROECONOMY AND ASSET PRICES (Room: P2) . . . 143
CS81: CONTRIBUTIONS TO QUANTITATIVE RISK MANAGEMENT (Room: Q2) . . . 144
CS36: CONTRIBUTIONS TO MACRO AND FORECASTING (Room: I2) . . . 145

Parallel Session P – ERCIM (Monday 8.12.2014 at 10:35 - 12:15) **147**
ESI02: STATISTICS OF EXTREMES AND APPLICATIONS (Room: Sala Convegni) . . . 147
ES16: BAYESIAN SEMIPARAMETRIC INFERENCE (Room: Q1) . . . 147
ES43: STATISTICAL ANALYSIS OF FMRI DATA (Room: E1) . . . 147
ES59: COMPUTATIONAL APPROACHES IN FINANCIAL ECONOMICS (Room: D1) . . . 148
ES71: APPLICATIONS OF FUNCTIONAL DATA ANALYSIS (Room: M1) . . . 149
ES72: BIND SOURCE SEPARATION: STATISTICAL PRINCIPLES (Room: B1) . . . 149
ES73: STATISTICAL MODELS FOR THE HEALTH CARE ASSESSMENT (Room: P1) . . . 150
ES64: THEORETICAL ECONOMETRIC ADVANCES IN FINANCIAL RISK MEASUREMENT (Room: G2) . . . 151
ES86: OUTLIER AND ANOMALY DETECTION IN MODERN DATA SETTINGS (Room: A1) . . . 151
ES100: THE THEORY OF GRAPHICAL MARKOV MODELS: RECENT DEVELOPMENTS (Room: H1) . . . 152
ES104: PARTICLE FILTERING (Room: L1) . . . 152
ES107: DESIGNING EXPERIMENTS WITH UNAVOIDABLE AND HEALTHY CORRELATION (Room: N1) . . . 153
ES109: ASTROSTATISTICS (Room: I1) . . . 153
ES111: SAE AND INEQUALITIES MEASUREMENT (Room: C1) . . . 154
ES112: RECENT DEVELOPMENTS IN LATENT VARIABLE MODELS (Room: F1) . . . 155
ES154: MULTIVARIATE STATISTICS II (Room: O1) . . . 155

Parallel Session Q – CFE (Monday 8.12.2014 at 14:50 - 16:30) **157**
CS33: STATISTICAL ANALYSIS OF CLIMATE TIME SERIES (Room: D2) . . . 157
CS114: CONTRIBUTIONS IN FINANCIAL ECONOMETRICS III (Room: M2) . . . 157
CS38: MACROECONOMETRICS (Room: N2) . . . 158
CS52: TEMPORAL DISAGGREGATION AND BENCHMARKING TECHNIQUES (Room: P2) . . . 158
CS70: MIDAS MODELS: APPLICATIONS IN ECONOMICS AND FINANCE (Room: F2) . . . 159
CS72: ECONOMETRIC AND QUANTITATIVE METHODS APPLIED TO FINANCE (Room: O2) . . . 160
CS86: TOPICS IN TIME SERIES AND PANEL DATA ECONOMETRICS (Room: B2) . . . 160

Parallel Session Q – ERCIM (Monday 8.12.2014 at 14:50 - 16:30) **162**
ES02: BIG DATA ANALYSIS: PENALTY, PRETEST AND SHRINKAGE ESTIMATION II (Room: C1) . . . 162
ES10: ROBUST METHODS ON FUNCTIONAL DATA AND COMPLEX STRUCTURES (Room: A1) . . . 162
ES21: BIOSTATISTICS AND BIOINFORMATICS (Room: O1) . . . 163
ES47: FUNCTIONAL DATA ANALYSIS (Room: M1) . . . 163
ES62: HIGH-FREQUENCY DATA STATISTICS: ADVANCES IN METHODOLOGY (Room: D1) . . . 164
ES81: INFERENCE IN MODELS FOR CATEGORICAL DATA (Room: L1) . . . 164
ES85: SPATIAL DEPENDENCE FOR OBJECT DATA (Room: N1) . . . 165
ES89: ROBUST STATISTICS IN R (Room: B1) . . . 166
ES91: BAYESIAN NONPARAMETRICS AND MCMC (Room: P1) . . . 166
ES98: ADVANCES IN QUANTILE REGRESSION (Room: E1) . . . 167
ES118: CURRENT ISSUES IN BAYESIAN NONPARAMETRICS (Room: Q1) . . . 167
ES144: STATISTICAL METHODS FOR PROCESSES IN ENGINEERING AND INDUSTRY (Room: I1) . . . 168

Parallel Session R – CFE (Monday 8.12.2014 at 16:55 - 18:15) **170**
CS111: CONTRIBUTIONS TO BAYESIAN ECONOMETRICS II (Room: A2) . . . 170
CS113: COMPUTATIONAL ECONOMETRICS II (Room: O2) . . . 170
CS59: CONTRIBUTIONS ON STOCHASTIC VOLATILITY (Room: N2) . . . 171
CS07: CONTRIBUTIONS ON NON-LINEAR TIME-SERIES MODELS (Room: B2) . . . 171
CS108: CONTRIBUTIONS TO APPLICATIONS IN MACROECONOMICS AND TIME SERIES (Room: P2) . . . 172
CS105: FINANCIAL APPLICATIONS II (Room: E2) . . . 173
CS51: CONTRIBUTIONS IN FINANCIAL ECONOMETRICS IV (Room: M2) . . . 173

Parallel Session R – ERCIM (Monday 8.12.2014 at 16:55 - 18:15) **175**
ES140: CONTRIBUTIONS TO ROBUSTNESS AND OUTLIER IDENTIFICATION (Room: A1) 175
ES146: REGRESSION MODELS (Room: E1) 175
ES152: STATISTICAL INFERENCE II (Room: L1) 176
ES88: BAYESIAN METHODS II (Room: Q1) 176
ES110: CONTRIBUTIONS TO DEPENDENCE MODELS AND COPULAS (Room: N1) 177
ES156: CLUSTER-BASED METHODS (Room: O1) 177
ES143: CONTRIBUTIONS ON FUNCTIONAL DATA AND TIME SERIES (Room: M1) 178
ES136: CONTRIBUTIONS TO HIGH-DIMENSIONAL DATA ANALYSIS (Room: B1) 179
ES142: CONTRIBUTIONS TO ORDINAL AND PREFERENCE DATA (Room: G1) 179
ES147: METHODOLOGICAL STATISTICS II (Room: F1) 180
ES150: APPLIED STATISTICS AND DATA ANALYSIS II (Room: I1) 180
ES149: COMPUTATIONAL STATISTICS II (Room: D1) 181

182

The aim is to identify spatiotemporal patterns characterizing specific locations and/or specific periods possibly associated to different human activities taking place within the city of Milan in an unsupervised fashion. In particular we perform a Hierarchical ICA (HICA) of mobile network data referenced in space with spatial resolution of 250 m, and referenced in time with temporal resolution of 15 minutes. Each record is an intensity measure of the use of the mobile network in a specific site at a specific time. HICA, which is proposed, is based on a recursive hierarchical application of ICA on pairs of variables. The output of HICA is a multi-resolution, wavelet-inspired, non-orthogonal, and data-driven basis useful to perform sparse dimension reduction. Differently from ICA and similarly to wavelets, the basis provided by HICA is naturally ordered according to the dimension of each basis element support. Similarly to ICA, the basis provided by HICA, is not orthogonal and driven by the search for independent components. Moreover, we prove the sparsitency of HICA (i.e., if the variability is generated by independent sources acting on disjoint groups of variables, the probability that HICA correctly identifies these groups goes to one as the sample size increases). In the application, coherently with the geostatistical literature, instants of times are assumed to index variables while sites instances. The declination of HICA in this case allows us to impose temporal sparsity to the final representation. The analysis unveils interesting patterns interpretable in terms of working, residential, shopping, leisure, and commuting activities.

ES89 Room B1 ROBUST STATISTICS IN R Chair: Valentin Todorov

E200: **Robust standard errors for panel data: a general framework**
Presenter: **Giovanni Millo**, Assicurazioni Generali, Italy

A comprehensive, modular and flexible framework is described for estimation of robust standard errors in panel data. Heteroskedasticity and autocorrelation robust estimators are brought together with the SCC mixing-fields based estimator, the unconditional PCSE estimator and the recent double-clustering approach, trying to bring together the applied literatures in macroeconometrics, finance, political science and accounting by demonstrating the common features of these apparently different approaches. The covariance estimators are integrated in the R package 'plm' and allow robust specification and restriction testing over a number of different panel models.

E390: **Robust multiway analysis of compositional data in R**
Presenter: **Maria Anna Di Palma**, L Orientale, Italy
Co-authors: Valentin Todorov, Michele Gallo

Multiway data analysis addresses complex data structures represented as multiway data sets where data have more than two modes. The most popular methods for modeling multiway data are CANDECOMP/PARAFAC and TUCKER3. The standard algorithms for computing these models are based on alternating least squares (ALS) and thus are vulnerable to the presence of outlying data points. A single outlier could render the obtained estimates useless. Therefore robust methods are preferred. We present an R package, rrcov3way, implementing a set of functions for the analysis of multiway data sets, including PARAFAC and TUCKER3 as well as their robust alternatives. An additional feature to handle compositional data is also included through ilr transformation. Unified diagnostics, plotting functions, data examples and a manual in the form of vignette complete the package. In the presentation, basic usage of the package will be illustrated by analyzing real data from the UNIDO INDSTAT database. The database contains data on key industrial statistics indicators for the manufacturing sectors. A subset containing I countries, J sectors and K years for some indicators as value added and output will be analyzed.

E889: **Robust multivariate covariance estimation: a comparison**
Presenter: **Martin Maechler**, ETH Zurich, Switzerland
Co-authors: Maria Anna Di Palma, Valentin Todorov

Recently, several new (or newly popularized) estimators for multivariate scatter (covariance matrix when the 2nd moments exist) have been proposed; notably deterministic (Det) relatively fast versions to find local minima of the criterion for the multivariate MCD (Minimum Covariance Determinant), the S and the MM estimator (started from S). In addition, Falk's Comedian has gained renewed attraction. Where not available, we provide R implementations of these estimators and investigate their efficiency and robustness properties notably using Stahel's barrow wheel. An outlook, we will consider the behavior of these and related estimators under cellwise contamination. One goal is providing well implemented and tested versions of these new location and scatter estimates, available in Free Software R packages.

E1257: **Robust model estimation, through trimming and constraints, for mixtures of factor analyzers**
Presenter: **Francesca Greselin**, The University of Milano Bicocca, Italy
Co-authors: Salvatore Ingrassia, Luis Angel Garcia-Escudero, Alfonso Gordaliza, Agustin Mayo-Iscar

Mixtures of Gaussian factors are powerful tools for modeling an unobserved heterogeneous population, offering - at the same time - dimension reduction and model-based clustering. Unfortunately, the high prevalence of spurious solutions and the disturbing effects of outlying observations, along maximum likelihood estimation, open serious issues. We complement model estimation with restrictions for the component covariances and trimming, to provide robustness to violations of normality assumptions of the underlying latent factors. A detailed AECM algorithm, which enforces constraints on eigenvalues and tentatively discards outliers at each step, is also presented. Simulations and a real application are illustrated, and performances are compared to previous approaches showing aim and effectiveness of the proposed methodology. Moreover, the model estimation has been moved in a new setting where the mathematical and the statistical problem are well-posed.

ES91 Room P1 BAYESIAN NONPARAMETRICS AND MCMC Chair: Frank van der Meulen

E490: **Nonparametric heteroscedastic regression modeling, Bayesian regression trees and MCMC sampling**
Presenter: **Matthew Pratola**, The Ohio State University, United States
Co-authors: Hugh Chipman, Ed George, Robert McCulloch

Bayesian additive regression trees (BART) have become increasingly popular as flexible and scalable non-parametric models useful in many modern applied statistics regression problems. They bring many advantages to the practitioner dealing with large datasets and complex non-linear response surfaces, such as the matrix-free formulation and the lack of a requirement to specify a regression basis a priori. However, there are some known challenges to this modeling approach, such as poor mixing of the MCMC sampler and inappropriate uncertainty intervals when the assumed homoscedastic variance model is violated. We introduce a new Bayesian regression tree model that allows for possible heteroscedasticity in the variance model and devise novel MCMC samplers that appear to adequately explore the posterior tree space of this model.

E910: **Bayesian credible sets in the fixed design model for polished tail functions**
Presenter: **Suzanne Sniekers**, Leiden University, Netherlands
Co-authors: Aad van der Vaart

It is considered estimating the regression function f in the fixed design problem, where we have data $Y_i = f(x_i) + Z_i$ for $i \in \{1,\ldots,n\}$. Here (x_i) is a known sequence of points in the interval $[0,1]$, and (Z_i) is a sequence of unobservable i.i.d. standard normal random variables. The aim is to estimate the vector $\vec{f} = (f(x_i))_i$. We take a nonparametric Bayesian approach and use scaled Brownian motion W as a prior for f. In the Bayesian setup the observations are distributed according to the model $Y_i = W_{x_i} + Z_i$. We consider the posterior distribution of $\vec{W}$ given $Y_1,\ldots,Y_n$ and use this to construct a credible set for $\vec{f}$. The optimal scaling is dependent on the smoothness of the parameter function f. Generally this is unknown and must be estimated from the data. We consider the maximum likelihood estimator in the Bayesian model for this scaling and study its asymptotic