
Contents

Preface	xi
Introduction	xiii
Gilbert SAPORTA	
Part 1. Applications	1
Chapter 1. Context-specific Independence in Innovation Study	3
Federica NICOLUSSI and Manuela CAZZARO	
1.1. Introduction.	3
1.2. Parametrization for CS independencies	4
1.3. Stratified chain graph models	6
1.4. Application on real data	7
1.5. Conclusion	12
1.6. References	12
Chapter 2. Analysis of the Determinants and Outputs of Innovation in the Nordic Countries	15
Cátia ROSÁRIO, António Augusto COSTA and Ana LORGA DA SILVA	
2.1. Introduction.	15
2.2. Innovation.	16
2.3. Methodology	19
2.4. Results.	21
2.5. Conclusion	25
2.6. References	26

Chapter 3. Bibliometric Variables Determining the Quality of a Dentistry Journal	29
Pilar VALDERRAMA, Manuel ESCABIAS, Evaristo JIMÉNEZ-CONTRERAS, Mariano J. VALDERRAMA and Pilar BACA	
3.1. Introduction.	29
3.2. Statistical methodology.	30
3.3. Results.	32
3.4. Conclusions.	35
3.5. Acknowledgment	35
3.6. References	36
Chapter 4. Analysis of Dependence among Growth Rates of GDP of V4 Countries Using Four-dimensional Vine Copulas	37
Jozef KOMORŇIK, Magda KOMORŇIKOVÁ and Tomáš BACIGÁL	
4.1. Introduction.	37
4.2. Theory.	38
4.3. Results.	42
4.4. Conclusion and future work	45
4.5. Acknowledgment	47
4.6. References	47
Chapter 5. Monitoring the Compliance of Countries on Emissions Mitigation Using Dissimilarity Indices	49
Eleni KETZAKI, Stavros RALLAKIS, Nikolaos FARMAKIS and Eftichios SARTZETAKIS	
5.1. Introduction.	49
5.2. The proposed method	50
5.2.1. Description of method for individual data	51
5.2.2. Description of method for grouped data	52
5.3. Application of method	53
5.3.1. Application of method for individual data	54
5.3.2. Application of method for grouped data	55
5.4. Conclusions.	55
5.5. Appendix	57
5.6. References	58
Chapter 6. Maximum Entropy and Distributions of Five-Star Ratings	59
Yiannis DIMOTIKALIS	
6.1. Introduction.	59
6.2. Entropy framework to five-star ratings.	60
6.3. Maximum entropy of ratings for values $k = 1, 2, 3, \dots, 30$	66

6.3.1. Ratings with two outcomes ($k = 1$)	66
6.3.2. Ratings with three Outcomes ($k=2$)	69
6.3.3. Ratings with four outcomes ($k=3$)	73
6.3.4. Ratings with five outcomes ($k = 4$)	76
6.3.5. Ratings entropy for outcomes $k>4$	80
6.3.6. Maximum entropy constraints for the binomial distribution.	82
6.4. Application to real five-star rating data	83
6.5. Conclusions.	86
6.6. References	86
Part 2. The Impact of the Economic and Financial Crisis in Europe	89
Chapter 7. Access to Credit for SMEs after the 2008 Financial Crisis: The Northern Italian Perspective	91
Cinzia COLAPINTO and Mariangela ZENGA	
7.1. Introduction.	91
7.2. Italian SMEs and access to credit	92
7.3. The data	93
7.4. Methodology	94
7.5. Analysis and discussion	97
7.5.1. The measure for the Great Recession period (2008–2012)	97
7.5.2. The measure for the recovery period (2013–2015)	99
7.5.3. Comparing the two crisis phases	102
7.6. Conclusion	105
7.7. References	105
Chapter 8. Gender-Based Differences in the Impact of the Economic Crisis on Labor Market Flows in Southern Europe	107
Maria SYMEONAKI, Maria KARAMESSINI and Glykeria STAMATOPOULOU	
8.1. Introduction.	107
8.2. Data, methods and limitations	108
8.3. Results.	111
8.4. Conclusions and discussion	111
8.5. References	119
Chapter 9. Measuring Labor Market Transition Probabilities in Europe with Evidence from the EU-SILC	121
Maria SYMEONAKI, Maria KARAMESSINI and Glykeria STAMATOPOULOU	
9.1. Introduction.	121
9.2. Data, methods and limitations	122
9.3. Results.	124

9.4. Conclusions.	135
9.5. References	135
Part 3. Student Assessment and Employment in Europe.	137
Chapter 10. Almost Graduated, Close to Employment? Taking into Account the Characteristics of Companies Recruiting at a University Job Placement Office.	139
Franca CRIPPA, Mariangela ZENGA and Paolo MARIANI	
10.1. Introduction	139
10.2. Recruiters and graduates seeking an HEI common ground	140
10.3. Web survey pitfalls: considerations for data collection	141
10.4. Sampled recruiters: an outline	144
10.5. Conclusion	146
10.6. References.	146
Chapter 11. How Variation of Scores of the Programme for International Student Assessment can be Explained through Analysis of Information.	149
Valérie GIRARDIN, Justine LEQUESNE and Olivier THÉVENON	
11.1. Introduction	149
11.2. Multiplicative models and Zighera's parameterization	151
11.3. Application to PISA surveys	155
11.3.1. Data and variables.	155
11.3.2. Analysis of scores in mathematics	157
11.3.3. Conclusion	162
11.4. References.	163
Part 4. Visualization.	165
Chapter 12. A Topological Discriminant Analysis.	167
Rafik ABDESSELAM	
12.1. Introduction	167
12.2. Topological equivalence	168
12.3. Topological discriminant analysis.	171
12.4. Application example.	173
12.5. Conclusion and perspectives	175
12.6. Appendix	176
12.7. References.	178

Chapter 13. Using Graph Partitioning to Calculate PageRank in a Changing Network	179
Christopher ENGSTRÖM and Sergei SILVESTROV	
13.1. Introduction	179
13.1.1. Computing PageRank	181
13.2. Changes in personalization vector	182
13.3. Adding or removing edges between components	184
13.3.1. Computations in practice	186
13.3.2. Adding or removing an edge inside a component	187
13.3.3. Maintaining the component structure	189
13.4. Conclusions	190
13.5. References	191
Chapter 14. Visualizing the Political Spectrum of Germany by Contiguously Ordering the Party Policy Profiles	193
Andranik TANGIAN	
14.1. Introduction	193
14.2. The model	195
14.3. Conclusions	206
14.4. References	206
List of Authors	209
Index	213