

# CURRICULUM VITAE ET STUDIORUM

## Barbara Vantaggi

### Informazioni personali

**Nome e cognome:** Barbara Vantaggi

**Nazionalità:** Italiana

**Indirizzo:** Dip. Metodi e Modelli per l'Economia, il Territorio e la Finanza MEMOTEF, Sapienza Università di Roma, Via Castro Laurenziano 9, 00161 Roma

**E-mail:** barbara.vantaggi@uniroma1.it

### Posizione attuale

**Dal 03/09/2019:** Professore Ordinario - Metodi matematici dell'economia e delle scienze attuariali e finanziarie S.S.D. SECS-S/06-, Dip. MEMOTEF, Sapienza Università di Roma

### Incarichi accademici

- Delegata del Preside di Facoltà di Economia al Tutoraggio (da 11/2019)
- Delegata del Direttore del Dip. SBAI alla didattica presso Facoltà I3S (a.a. 2017-2019)

### Attività editoriali

- Area Editor (probabilità e statistica) della rivista Fuzzy Sets and System da maggio 2018
- Membro dell'Editorial Board (dal 2016) e Associate Editor (dal 2020) della rivista International Journal of Approximate Reasoning
- Co-Guest Editor del volume A special issue on the mathematics of subjective probability 2020 dell'Decisions in Economics and Finance 43(1)
- Co-Guest Editor del volume VSI: SMPS 2016 dell'International Journal of Approximate Reasoning
- Co-Editor del libro "Soft Methods for Data Science", Advances in Intelligent Systems and Computing, Springer Verlag (2016)
- Co-Guest Editor del volume Marzo 2008 dell'International Journal of Approximate Reasoning

### Riconoscimenti

- Inverse Problems Insights for the publication on Inverse Problems nel 2015 (articolo pubblicato in collaborazione con D. Calvetti, F. Pitolli E. Somersalo)
- Outstanding Young Researcher Grant (MIUR) Sapienza Università di Roma (2002): Modelli probabilistici per il trattamento dell'incertezza

### Membro del Collegio docenti del dottorato

- Modelli per l'Economia e la Finanza (Sapienza) (dal 1.11.2019)
- Scienze e Tecnologie per i Sistemi Complessi (Sapienza) (1.11.2016-30.10.2019)
- Matematica e Informatica per il trattamento dell'informazione e della conoscenza (Università' di Perugia-Dip. Matematica e Informatica) (01.01.2004-30.10.2014)

## Seminari e conferenze invitate

1. Local coherence of a partial assessment 25/03/1998, Facoltà di Economia dell'Univ. di Praga
2. Ordinal Relations Representable by Lower and Upper Probabilities 10/05/1998, Facoltà di Economia dell'Univ. di Praga
3. Properties of a stronger conditional independence notion 27/10/1999 Workshop on Conditional Independence Structures and Graphical Models, The Fields Institute for Research in Mathematics, Toronto (Canada)
4. Conditional independence and graphical models 09/03/2000 , Academy of Science UTIA. Praga
5. Probabilistic Reasoning (Laboratory), International Summer School on REASONPARK, Foligno (Perugia) 2002
6. Graphical representation of asymmetric graphoid structures 13/03/2003, Facoltà di Economia dell'Univ. di Pavia
7. The role of zero probabilities to deal with logical dependencies in graphical models 25/05/2004 ISBA Conference, Viña del Mar (Cile) (track Zero Probabilities in Statistical Inference)
8. Computational challenges in imprecise probabilities 23/07/2005 (Plenary), International Symposium on Imprecise Probabilities and their Applications (Pittsburgh, USA)
9. Fuzzy relations in a coherent conditional probability setting 4/7/2006 (Plenary), 7th International Conference on Information and Management Sciences, Chengdu (Cina)
10. Fuzzy relations and coherent conditional probability 1/06/2007, Facoltà di Economia dell'Univ. Co Foscari di Venezia
11. Conditional possibility: from numerical to qualitative approach, 28th Linz Seminar on Fuzzy Set Theory, Linz (Austria), 2007
12. Generalized Bayesian inference in a fuzzy context, Convegno ERCIM 2009 Cyprus (sessione Fuzzy Statistical Analysis)
13. From qualitative probability to qualitative possibility, Convegno ERCIM 2010 London (sessione Hybrid models in uncertainty and decision)
14. Coherence for Uncertainty Measures given through a Basic Assignments ruled by General Operations, Convegno IPMU 2012 Catania (sessione New Trends in De Finetti's approach)
15. Identifiability of hierarchical models with one hidden binary variable, Convegno SIS 2012 Roma (sessione Graphical models: some recent advances)
16. Coherence for statistical matching with misclassification, Convegno ERCIM 2013 Londra (sessione Statistical methods for non-precise data)
17. Bayesian inferential models with multiple priors: lower and upper envelopes, Modena, 2015
18. Bayesian inference starting from a 2-monotone prior capacity, 3rd Meeting on Statistics Athens, 2015
19. de Finetti coherence and beyond, (Tutorial) Conferenza International Symposium on Imprecise Probability: Theories and Applications ISIPTA 2015, Pescara, 2015
20. Decisions under partial knowledge and risk (Plenary) Conferenza del progetto trilaterale Italia-Francia Germania a Villa Vigoni Human rationality 2015
21. Rationality principles for preferences, at the Conference a Vila Lana, Academy of Science, Praga, 2016
22. Preference relations agreeing with conditional Choquet expected values with respect to conditional belief or plausibility functions, EURO 2016, Poznan, Polonia (sessione Imprecise Probability)
23. Knowledge Processing in Decisions under Fuzziness and Uncertainty, Invited talk, IFSA Conference 2017, Otsu, Japan.
24. Decisions on generalized Anscombe-Aumann acts under possibly unexpected scenarios, Plenary talk, Workshop WUPES 2018, Trebon Czeck Republic.
25. Belief functions in decision theory, 5th School on Belief Functions and their Applications, 2019, La Certosa di Pontignano, Siena.

## **Coordinatore dei seguenti progetti (ultimi 15 anni)**

1. FFABR 2017 - Ministero dell'Istruzione dell'Università e della Ricerca (MIUR).
2. PRIN 2008 (22/03/2010-22/09/2012) F.N. 2008JNWBP\_002 : Dynamic decision models under partial and vague knowledge (Coordinatore dell'unità locale di Roma La Sapienza, MIUR)
3. Fondi per organizzare il convegno internazionale "Soft Methods in Probability and Statistics" (GNAMPA-INDAM 2016)
4. Assegnazione fondi per un assegno di ricerca con bando competitivo basato su indici bibliometrici (Fac. Ingegneria ICI, Univ. Sapienza 2012)
5. Conditional probability and its role in decision processes, Univ. La Sapienza - Fondi AST (2006)
6. Conditional uncertainty measures and their application on decisional processes, Univ. La Sapienza - Fondi AST (2007)
7. Inferential models and uncertainty measures, Univ. La Sapienza - Fondi AST (2008)
8. Dynamic decision models under uncertainty, Univ. La Sapienza (2010)
9. Methods and models for decisions under uncertainty, Univ. La Sapienza (2011)
10. Grant for Visiting Professor Prof. Erkki Somersalo (Case Western Reserve University), Univ. La Sapienza (2013)
11. Bayesian inference, envelopes of probabilities and their applications, Univ. La Sapienza (2014)
12. Numerical and probabilistic models for the management of information, Univ. La Sapienza (2015)
13. Grant for Visiting Professor Prof. Erkki Somersalo (Case Western Reserve University), Univ. La Sapienza (2017)
14. Modelli per le decisioni, processi inferenziali e loro applicazioni, Univ. La Sapienza (2017)
15. Handling uncertainty: identifiability and random fields, Univ. La Sapienza (2019)
16. Modelli decisionali in condizioni di incertezza e ambiguità, Univ. La Sapienza (2020)

## **Partecipazione a progetti (ultimi 10 anni)**

1. PRIN 2010 (1/2/2013-1/2/2016) G.N. 2010FP79LR-003 (MIUR) Logical Methods for dealing with the information
2. 04/2015-03/2017 F.N. J52I14001640001 (Ministero della Salute) Intelligent decision systems for the identification of doping cases
3. 2015-2017 Progetto trilaterale Italia-Francia-Germania "Human Rationality"

## **Organizzazione di Convegni o sessioni (ultimi 10 anni)**

1. Co-Organizzatore della sessione invitata "Partial Knowledge and Conditional Uncertainty Measures" International Conference on Soft Methods in Probability and Statistics SMPS 2012, Konstanz, Germania (2012)
2. Co-Organizzatore della sessione invitata "Imprecise Probabilities: From Foundations To Applications" International Conference on Information Processing and Management of Uncertainty in Knowledge-based Systems IPMU 2014, Catania (2014)
3. Co-Organizzatore della sessione "Inference under imprecise knowledge" 7th International Conference ERCIM 2014, Pisa (2014)
4. Co-Organizzatore del convegno internazionale Soft Methods in Probability and Statistics SMPS 2016, Roma (2016)

5. Co-Organizzatore della sessione invitata "Imprecise probabilities" 28th European Conference on Operational Research EURO 2016, Poznan, Polonia
6. Co-Organizzatore della sessione invitata "De Finetti's heritage in uncertainty and decision making" 30th International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems, Arras, Francia (2017)
7. Co-Organizzatore della sessione "Some Recent Developments about Finitely Additive Probability Measures" at the First Italian Meeting on Probability and Mathematical Statistics, Torino (2017)
8. Co-Organizzatore del convegno internazionale The Mathematics of Subjective Probability, Milano (2018)
9. Co-Organizzatore del 43-esimo Annual Meeting of the AMASES Association for Mathematics Applied to Social and Economic Sciences, Perugia (2019)
10. Co-Organizzatore del convegno internazionale The Mathematics of Subjective Probability, Milano (2021)

### **Membro del Comitato Scientifico di Convegni Internazionali**

1. International Symposium on Imprecise Probabilities and Their Applications ISIPTA (2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019)
2. European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty ECSQARU (2009, 2011, 2013, 2015)
3. 14th International Conference on Principles of Knowledge Representation and Reasoning KR 2014, Vienna (2014)
4. International Conference on Information Processing and Management of Uncertainty in Knowledge-based Systems IPMU (2014, 2016)
5. International Conference on Soft Methods in Probability and Statistics SMPS (2012, 2014, 2016, 2018)
6. World Congress of the International Fuzzy Systems Association (IFSA) and the 9th Conference of the European Society for Fuzzy Logic and Technology (EUSFLAT), Gijón, Asturias (Spain, 2015)
7. International Conference on Belief Functions (Prague, 2016, Artois 2021)
8. 11th International Conference on Scalable Uncertainty Management SUM 2017 (Granada, 2017)
9. Joint 17th World Congress of International Fuzzy Systems Association IFSA-SCIS 2017 (Otsu, Japan)

### **Affiliazioni scientifiche**

- AMASES (Associazione di Matematica per le Applicazioni alle Scienze Economiche e Sociali)
- EMS (European Mathematical Society)
- GNAMPA (Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni)

### **Attività di referaggio e valutazione scientifica**

- Reviewer per Mathematical Review
- Referee per le seguenti riviste: Theory and Decision, European J. of Operational Research, Fuzzy Sets and Systems, Int. J. of Approximate Reasoning, Kybernetika, J. of Pure and Applied Mathematics, Decisions Economics and Finance, Electronic J. of Statistics, J. of Official Statistics, Journal of Multivariate Analysis, Knowledge-Based Systems, Mathematics and Computers in Simulation, Statistical Papers
- Valutatore dei progetti per Swiss National Science Foundation, Czech Republic Academy of Science, MIUR (FIRB, VQR 2004-2010, VQR 2011-2014), INDAM, per varie Università italiane.

## **Sviluppo software**

- Fast closure computation and representation by means of DAGs of conditional independencies (in collaborazione con M. Baiocchi, G. Busanello)
- Coherence check and extensions of conditional probability assessments and lower-upper envelopes of conditional probabilities (in collaborazione con A. Capotorti, L. Galli, S. Tognoloni, F. Rossi)
- IAS-algorithm: iterative inverse solver (in collaborazione con D. Calvetti, E. Somersalo, A. Pascarella, F. Pitolli)

## **Attività didattica**

1. Probabilità e Statistica e sue Applicazioni, Master in Esperto nella quantificazione e gestione del rischio finanziario, Univ. di Perugia 2004
2. Teoria delle decisioni, Ph.D. in Matematica e informatica per l'elaborazione e la rappresentazione dell'informazione e della conoscenza (2008, 2010, 2012), Univ. di Perugia
3. Probabilità e Statistica, Master in Gestione dell'energia nei parchi, nelle aree protette, nelle isole minori ed in zone rurali finalizzate alla sostenibilità ambientale, Univ. La Sapienza, Roma 2003
4. Probabilità e Statistica II (a.a. 2007/08) C.L. Ingegneria dei Trasporti (L.S.) - Univ. La Sapienza Roma
5. Calcolo delle Probabilità e Statistica (dal a.a. 2000-2001 al 2005-2006) C.L. Ingegneria Informatica - Univ. La Sapienza Roma
6. Calcolo delle probabilità, (dall' a.a. 2000-2001 a 2018-19) C.L. Ingegneria Gestionale - Univ. La Sapienza Roma
7. Probabilità e Statistica (dal a.a. 2012-2013 a 2018-19) C.L. Ingegneria Meccanica - Univ. La Sapienza Roma
8. Modelli probabilistici per la finanza (dall' a.a. 2010-2011 al a.a. 2013-2014) Magistrale Ingegneria Gestionale - Univ. La Sapienza Roma
9. Probabilistic models for finance (dall' a.a. 2014-2015 al a.a. 2018-2019) Magistrale Ingegneria Gestionale - Univ. La Sapienza Roma
10. Matematica corso base (dall' a.a. 2019-2020 a oggi) Facoltà Economia - Univ. La Sapienza Roma
11. Modelli matematici per le Scelte di Portafoglio (a.a. 2019-20) Magistrale Intermediari, finanza internazionale e risk management - Univ. La Sapienza Roma
12. Matematica per l'Economia e l'Impresa - Corso avanzato (dall' a.a. 2019-2020 a oggi) Magistrale in Finanza e Assicurazioni

## **Elenco principali pubblicazioni (ultimi 10 anni)**

1. D. Petturiti, B. Vantaggi (2021) Dempster-Shafer Approximations and Probabilistic Bounds in Statistical Matching. Lecture Notes AI 12897, 1–14.
2. D. Petturiti, B. Vantaggi (2021) Betting Schemes for Assessing Coherent Numerical and Comparative Conditional Possibilities. Proc. of Machine Learning Research 147, 254-263.
3. G. Coletti, B. Vantaggi (2021) Managing Uncertainty and Fuzziness through a Generalized Conditional Plausibility Model TWMS J. of Pure and Applied Mathematics 12 (1), 69-87.
4. Modeling agent's conditional preferences under objective ambiguity in Dempster-Shafer theory International Journal of Approximate Reasoning 119, p. 151-176.
5. G. Coletti, D. Petturiti, B. Vantaggi (2020) A Dutch book coherence condition for conditional completely alternating Choquet expectations Bollettino dell'Unione Matematica Italiana, p. 1-9
6. P. Antonini, D. Petturiti, B. Vantaggi (2020) Dynamic Portfolio Selection Under Ambiguity in the  $e$ -Contaminated Binomial Model Information Processing and Management of Uncertainty in Knowledge-based Systems, p. 210-223.

7. G. Coletti, L. van der Gaag, D. Petturiti, B. Vantaggi (2020) Detecting correlation between extreme probability events *International Journal of General Systems* 49 (1), p. 64-87.
8. D. Petturiti, B. Vantaggi (2019) Conditional submodular Choquet expected values and conditional coherent risk measures *International Journal of Approximate Reasoning* 113, p. 14-38.
9. G. Coletti, D. Petturiti, B. Vantaggi (2019) Dutch book rationality conditions for conditional preferences under ambiguity *Annals of Operations Research* 279 (1-2), 115-150.
10. D. Calvetti, A. Pascarella, F. Pitolli, E. Somersalo, B. Vantaggi (2019) Brain activity mapping from meg data via a hierarchical bayesian algorithm with automatic depth weighting *Brain topography* 32 (3), 363-393
11. G. Coletti, D. Petturiti, B. Vantaggi (2019) Models for pessimistic or optimistic decisions under different uncertain scenarios. *INTERNATIONAL JOURNAL OF APPROXIMATE REASONING* 105, p. 305—326.
12. D. Petturiti, B. Vantaggi (2018) Upper and lower conditional probabilities induced by a multivalued mapping. *JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS* 458(2), p. 1214-1235.
13. D. Calvetti, F. Pitolli, E. Somersalo, B. Vantaggi (2018) Bayes meets Krylov: statistically inspired preconditioners for CGLS. *SIAM Review* 60(2), p. 429-461.
14. M. Di Zio, B. Vantaggi (2017) Partial identification in statistical matching with misclassification. *Int. J. OF Approximate Reasoning* 82, p. 227–241.
15. D. Petturiti, B. Vantaggi (2017) Envelopes of conditional probabilities extending a strategy and a prior probability. *Int. J. of Approximate Reasoning* 81, 160–182.
16. G. Coletti, D. Petturiti, B. Vantaggi (2016). A Savage-like representation theorem for preferences on multi-acts. *Advances in Intelligent Systems and Computing* 456, 127–134.
17. G. Coletti, D. Petturiti, B. Vantaggi (2016). When upper conditional probabilities are conditional possibility measures. *Fuzzy Sets and Systems* 304, 45-64.
18. L. Caldari, G. Coletti, D. Petturiti, B. Vantaggi (2016). Preferences on gambles representable by a Choquet expected value with respect to conditional belief and plausibility functions. In: J.P. Carvalho et al. (eds.), *Communications in Computer and Information Science*, vol. 611, p. 569-580, Springer
19. D. Petturiti, B. Vantaggi (2016). Envelopes of joint probabilities with given marginals under absolute continuity or equivalence constraints. *Advances in Intelligent Systems and Computing* 456, 399–406
20. G. Coletti, D. Petturiti, B. Vantaggi (2016). Conditional belief functions as lower envelopes of conditional probabilities in a finite setting. *Information Sciences* 339 p. 64–84.
21. G. Coletti, R. Scozzafava, B. Vantaggi (2015). Possibilistic and Probabilistic Logic under Coherence: Default Reasoning and System P. *MATHEMATICA SLOVACA* 65(4) p. 863–890.
22. G. Coletti, D. Petturiti, B. Vantaggi (2015). Rationality principles for preferences on belief functions. *Kybernetika* 51 p. 486–507.
23. G. Coletti, D. Petturiti, B. Vantaggi (2015). Decisions under risk and partial knowledge modelling uncertainty and risk aversion. *Proc.of ISIPTA 2015* p. 77–86.
24. D. Calvetti, A. Pascarella, F. Pitolli, B. Vantaggi (2015) A hierarchical Krylov-Bayes iterative inverse solver for MEG with physiological preconditioning. *INVERSE PROBLEMS* 31-125005
25. A. Capotorti, G. Coletti, B. Vantaggi (2014). Standard and nonstandard representability of positive uncertainty orderings. *Kybernetika* 50 p. 189–215
26. G. Coletti, D. Petturiti, B. Vantaggi (2014). Choquet expected utility representation of preferences on generalized lotteries. *Communications in Computer and Information Science*, 443, 444-453.
27. G. Coletti, D. Petturiti, B. Vantaggi (2014). Bayesian inference: the role of coherence to deal with a prior belief function. *Stat. Methods & Applications* 23(4) p. 519–545
28. G. Coletti, D. Petturiti, B. Vantaggi (2014). Possibilistic and probabilistic likelihood functions and their extensions: Common features and specific characteristics. *Fuzzy Sets and Systems*, 250 p. 25–51.
29. G. Coletti, R. Scozzafava, B. Vantaggi (2014). Do inferential processes affect uncertainty frameworks? *Fuzzy Sets and Systems*, 16 p. 3–20.

30. E. Stanghellini, B. Vantaggi (2013) Identification of discrete concentration graph models with one hidden binary variable. *Bernoulli* 19(5A) p. 1920–1937.
31. A. Ferrero, M. Prioli, S. Salicone, B. Vantaggi (2013). A 2-D Metrology-Sound Probability–Possibility Transformation. *IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT*, 62(5) p. 982 – 990.
32. G. Coletti, R. Scozzafava, B. Vantaggi (2013) Inferential processes leading to possibility and necessity. *Information Sciences*, 245 (1) p. 132-145.
33. G. Coletti, D. Petturiti, B. Vantaggi (2013). Probabilistic fuzzy reasoning in a coherent setting Synergies of Soft Computing and Statistics for Intelligent Data Analysis In Kruse, R.; Berthold, M.R.; Moewes, C.; Gil, M.A.; Grzegorzewski, P.; Hryniewicz, O. (Eds.) *Advances in Intelligent Systems and Computing* p. 440-447.
34. G. Coletti, D. Petturiti, B. Vantaggi (2013). Independence in possibility theory under different triangular norms. *LECTURE NOTES LNAI 7958*, p.133–144.
35. G. Coletti, B. Vantaggi (2013). Hybrid models: probabilistic and fuzzy information. Synergies of Soft Computing and Statistics for Intelligent Data Analysis In Kruse, R.; Berthold, M.R.; Moewes, C.; Gil, M.A.; Grzegorzewski, P.; Hryniewicz, O. (Eds.) *Advances in Intelligent Systems and Computing* p. 63-72.
36. A. Ferrero, M. Prioli, S. Salicone, B. Vantaggi (2013). 2D Probability-possibility, transformations. Synergies of Soft Computing and Statistics for Intelligent Data Analysis In Kruse, R.; Berthold, M.R.; Moewes, C.; Gil, M.A.; Grzegorzewski, P.; Hryniewicz, O. (Eds.) *Advances in Intelligent Systems and Computing* p. 389-398.
37. G. Coletti, O. Gervasi, S. Tasso, B. Vantaggi (2012). Generalized Bayesian inference in a fuzzy context: From theory to a virtual reality application. *Computational Stat. & Data Analysis*, vol. 56, p. 967-980.
38. B. Vantaggi (2012). Identifiability of hierarchical loglinear models with one hidden binary variable. In *Proceedings of the XLVI Scientific Meeting of the Italian Statistical Society*. Padova: C.L.E.U.P - COOPERATIVA LIBRARIA EDITRICE UNIVERSITA' DI PADOVA.
39. A. Brozzi, A. Capotorti, B. Vantaggi (2012). Incoherence correction strategies in statistical matching. *Int. J. of Approximate Reasoning*, vol. 53, p. 1124-1136.
40. G. Coletti, D. Petturiti, B. Vantaggi (2012). A syntactical comparison between probabilistic and possibilistic likelihood. In: Kroupa, Vojnarova (Eds). *Proc. of the 9th Workshop on Uncertainty processing*. Marianske Lazne, 12-15/09/2012, p. 34-45, Prague: Faculty of management, uncertainty of economics.
41. M. Baioletti, G. Busanello, B. Vantaggi (2011). Acyclic directed graphs representing independence models. *Int. J. of Approximate Reasoning*, vol. 52(2), p. 2–18.
42. M. Baioletti, G. Busanello, B. Vantaggi (2011). Exploiting independencies to compute semigraphoid and graphoid structures. *Int. J. of Approximate Reasoning*, vol. 52(5), p. 565-579.
43. M. Baioletti, G. Coletti, D. Petturiti, B. Vantaggi (2011). Inferential models and relevant algorithms in a possibilistic framework. *Int. J. of Approximate Reasoning*, vol. 52(5), p. 580–598.
44. G. Coletti, R. Scozzafava, B. Vantaggi (2011). A bridge between probability and possibility in a comparative framework. In: Liu, Weiru. *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*. p. 557-568, Springer Verlag.
45. G. Coletti, R. Scozzafava, B. Vantaggi (2011). Default Rules as Fuzzy Inclusion of Degree . In *Proc. World Conference on Soft Computing*. San Francisco, p. 83-89

Autorizzo il trattamento dei miei dati personali presenti nel cv ai sensi dell'art. 13 del DL 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali" e dell'art. 13 e 14 del GDPR (Regolamento UE 2016/679).

05/09/2021

Barbara Vantaggi