April 2025

CURRICULUM VITAE of ROSANNA GRASSI

Personal data

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Academic position*:*

2024-now Coordinator of BS degree in Economia, Analisi dei Dati e Management

2022-now Full professor at University of Milano-Bicocca, Dept. of statistics and Quantitative Methods, SSD STAT 04-A Mathematical Methods of Economy, Financial and Actuarial Sciences

2011-2022 Associate professor at University of Milano-Bicocca, , Dept. of statistics and Quantitative

2000-2011 Assistant professor at University of Milano-Bicocca, Dept. of statistics and Quantitative Methods, STAT 04-A Mathematical Methods of Economy, Financial and Actuarial Sciences

Educational Qualification

- Degree in Mathematics, year 1995 University of Milan
- PhD in "Mathematics for the Analysis of Financial Markets", year 2000 University of Brescia

Research interests

Complex networks, Graph Theory, Centrality measures, Network topological indicators, Operation research, Network approach and portfolio theory, Optimization problems in networks

Reviewer activity

Annals of Operations Research, Scientific Reports, Social Networks, Physica A, Mathematical Review, European Journal of Operational Research, The European Physical Journal B, Discrete Dynamics in Nature and Society, Quality and Quantity, Network Science, Empirical Economics

Scientific Society Affiliation:

Euro Working Group of Financial Modelling
AMASES (Associazione per la Matematica Applicata alle Scienze Economiche e Sociali)
SICC - Società Italiana Caos e Complessità
CSS - Complex Systems Society

International Research Group Membership

GNAMPA Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni
ECONOPHYSICS NETWORKS

Invited talks

November 22, 2024, Rome – University Unicusano, Community detection with persistence modularity

September 4-6, 2023 Rome – University Sapienza, Summer School in Economic, Social and Financial Networks, Network structures and topological indicators

May 2nd, 2023 Bologna - Dipartimento di Matematica, Higher order assortativity for directed weighted networks and Markov chains

May 25-27, 2022 Perugia – ICRA9, 9th International Conference on Risk Analysis, Systemic risk assessment through higher order clustering coefficient

February 11, 2022 Rome – CRN - Consiglio Nazionale delle Ricerche, The effect of the pandemic on complex socio-economic systems: community detection induced by communicability

April, 2 2019, Trento - School of International Studies, University of Trento - Centrality measures to identify leaders in criminal networks

February, 26 2019, Macerata – Network measures in socio-economic models: a mathematical perspective

Conferences

April 15, 2025 Palermo, Quantitative Finance Workshop 2025 (QFW2025), International Fintech Research Conference, Information flow in the FTX bankruptcy: A network approach (joint work with R. Deblasis, L. Galati, G. Rizzini)

January 30, 2025 Perugia, International Fintech Research Conference, Information flow in the FTX bankruptcy: A network approach (joint work with R. Deblasis, L. Galati, G. Rizzini)

September, 5-7, 2024, Ischia – XLVIII Convegno Amases, Balance in financial signed networks: a new systemic risk measure (Joint work with P. Bartesaghi, F. Diaz Diaz and Pierpaolo Uberti)

A new clustering coefficient based on edges for multilayer undirected (Joint work with G. Rizzini) networks

July, 1-4, Copenaghen, Balance in financial signed networks: a new systemic risk measure (Joint work with P. Bartesaghi, F. Diaz Diaz and Pierpaolo Uberti)

April 12, 2024, Bologna – Quantitative finance Workshop 2024,

Local Balance and Systemic Risk Measures in Signed Financial Networks (Joint work with P. Bartesaghi, F. Diaz Diaz and Pierpaolo Uberti)

A new systemic risk measure in a Random Matrix Theory context (Joint work with C. Pastorino and Pierpaolo Uberti)

November, 28-30, Menton – CNA2023, Complex Networks and their applications**,** A novel Self-Adaptive SIS Model Based on the Mutual Interaction between a Graph and its Line Graph

July 10-14, 2023 Vienna - NETSCI 2023: International School and Conference on Network Science, Taxonomy of cohesion coefficients for weighted and directed multilayer networks (Joint work with P. Bartesaghi, GP Clemente)

June 30- July 1, 2022 Rome – CNR – Consiglio Nazionale delle Ricerche, 10th International Workshop on Computational Economics and Econometrics, Eigenvector centrality as an indicator of high-funded European projects: a novel approach using the dual projection method

June, 22-24 2022 Catania – WHEIA 2022 Workshop on Economic Science with Heterogeneous Interacting Agents, The multilayer architecture of the global input-output network and its properties

April 22, 2022 Cagliari- IAERE 2022, Environmentally extended input-output analysis in complex networks: a multilayer approach

July, 11-14 2021 Athens– University of Athens, Euro 2021 – 31th European conference for Operational Research, Clustering coefficients in financial multilayer networks

June, 28-29 2021 Milano – Università Cattolica del Sacro Cuore di Milano, WEHIA 2021 Workshop on Economics with Heterogeneous Interacting Agents, Community Detection based on Communicability in a Multiplex Framework Networks

May, 26-28 2021 – Dijon - French Regional Conference on Complex Systems FRCCS 2021, Online conference, Country Centrality in the International Trade Network and the COVID-19 Pandemic

December, 7-11, 2020 – Conference on complex systems CCS2020, Online conference, Community structure in the World Trade Network based on communicability distances

September 18, 2020 - eMAF2020, Online conference, Network approaches based on performance and dependence structure for portfolio allocation

December 10-12, 2019, Lisbon - Complex Networks 2019, 8th International Conference on Complex Networks and their Applications, Community structures based on multi-attributes in International Trade Network

September, 9- 11 2019, Perugia – 43th Amases Meeting, Community structure based on multi-attributes in International Trade Network

June, 24-26 2019, London - City University of London, WEHIA 2019, 24th Workshop on Economic Science with Heterogeneous Interacting Agents, Communities in international trade network: new evidence using communicability
June, 24-26 2019, Dublin - Network approaches based on performance and dependence structure for portfolio allocation Euro 2019
October, 9-12 2018, Paris, France – Dyses 2018, Systemic risk assessment through higher order clustering coefficient
July, 8-11 2018, Valencia, Spain – Euro 2018 29th European Conference on Operational Research
Networks and market-based measures of systemic risk: the global banking system in the aftermath of the financial crisis
January, 24-26 2018, Rome, Italy - XIX Workshop on Quantitative Finance – QFW2018, A Portfolio Model for Minimizing Systemic Risk (joint work with R. Castellano, R. Cerqueti, G. Clemente)
September, 14-16 2017, Cagliari, Italy, - 41st Amases Meeting, Structure of control in financial networks: an application to the Brazilian stock market (Joint work with M. Piaia Abreu)
September, 6-8 2017, Lisboa, Portugal - Optimization 2017, Directed clustering in weighted networks: a new perspective, (joint work with G. Clemente)
June, 12-14, 2017, Milan, Italy – WEHIA 2017, 22th Workshop on Economic Science with Heterogeneous Interacting Agents, Directed clustering as a measure of systemic risk: a new perspective

Member of scientific committee :

- DYSES 2024: Dynamics in socio-Economic systems, Bucharest, September 2024
- DYSES 2022: Dynamics in socio-Economic systems, Rouen, October 2022
- Workshop Complex Networks, Milan, 2022, May 13th
- NET 2019: Workshop on Network Models In Statistics, Economics and Social Sciences, Milan, 2019, November 14-15th
- DYSES 2018: Dynamics in socio-Economic systems, Paris 2018, October 9-12th
- NET 2011 Networks: Topology and Dynamics, Milan, 2011, May 31th
- NET 2010 Networks: Topology and Dynamics, Milan, 2010, June, 14-16th
- NET 2009 Networks: evolution and complexity, Rome, 2009, May 28-30th
- NET 2008 Networks structure and complexity, Trento, 2008 June 12-14th
- NET 2007 Networks: Topology and Dynamics, Urbino, 2007, May 17-19th
- NET 2006 Networks: Topology and Dynamics Verbania-Intra, , 2006, May 4-5th
- 8-th Italian-Spanish Meeting on Financial Mathematics, Verbania, 2005, July

Scientific collaborations

- September 2023 - Organizer of the XLVII Annual Meeting of the Italian Association for Mathematics Applied to Social and Economic Sciences (AMASES 2023) Milan on 20-22 September 2023
- November 2019 - Organizer of the international meeting NET 2019: Workshop on Network Models In Statistics, Economics and Social Sciences, Milan on 14th - 15th of November 2019
- October 2018 - Organizer of the special session "Networks and systemic risk" International meeting DYSES2018 Dynamics of Socio-Economic Systems, with Prof. Simone Alfarano and Prof. Gabriele Tedeschi (Jaume I University, Castellon, Spain), Paris 2018, October 9-12th
- September 2014 - Organizer of the special session "Socio-Economics and Financial Networks" International meeting DYSES2014 Dynamics of Socio-Economic Systems, with Prof. Simone Alfarano (Jaume I University, Castellon, Spain), September 15-17, 2014 Seville, Spain
- June 2018 - Co-advisor of PhD-thesis for the student Mariana Piaia Abreu, with Prof. Renata Del Vecchio, (University Federal Fluminense, Instituto de Matemática Niterói, Rio de Janeiro, Brazil, from March to October 2017
- June 2021 - External examiner of PhD thesis for the student Alhanouf Ali Alhomaidhi, Department of Mathematics and Statistics, University of Strathclyde, Glasgow

Editor activity

- Member of the Editorial Board of the Journal PHYSICA. A STATISTICAL MECHANICS AND ITS APPLICATIONS, ISSN: 0378-4371 (since 2024)
- Member of the Editorial Board of the Journal PLOS Complex Systems, ISSN: 2837-8830 (since 2023)
- Member of the Advisory Board of the Journal of Applied Quantitative Methods, ISSN 1842-4562 (since 2017)
- Member of the Editorial Board of the Journal *Advances in Networks*, Science Publishing Group, ISSN:2326-9766 (Print) ISSN:2326-9782 (Online) (2014-2017)
- 2014 - Guest editor of the Journal *Quality and Quantity* for the special issue "Qualitative and quantitative methods in complex socio-economic systems" (with M. Fattore)

PUBLICATIONS

1. Ancona A., Cerqueti R., Grassi R. (2024) How do partner selection strategies affect the amount of funding in collaborative research projects? Evidence using the dual-projection approach. Technological Forecasting and Social Change, 208, 123744
2. Bartesaghi P., Clemente G.P., Grassi R. (2024). A Self-Adaptive Centrality Measure for Asset Correlation Networks, Economies, 12,164, 1-19
3. Arcagni A., Cerqueti R., Grassi R. (2024) Higher-order assortativity for directed weighted networks and Markov chains, European Journal of Operational Research 316,1, 215-227
4. Bartesaghi P., Clemente G.P., Grassi R. (2024). A novel self-adaptive SIS model based on the mutual interaction between a graph and its line graph, Chaos, 34,2, 1-27
5. Clemente GP., Grassi R., Rizzini G., (2023) The effect of the pandemic on complex socio-economic systems: community detection induced by communicability, Soft Computing, s00500-023-09456-3
6. Avellone A., Benati S., Grassi R., Rizzini G. (2023) On finding the community with maximum persistence probability, 4OR- Q J Oper Res s10288-023-00559-z
7. Clemente, G. P., Cornaro, A., Grassi, R., & Rizzini, G. (2023). Strategic energy flows in input-output relations: A temporal multilayer approach. Applied Stochastic Models in Business and Industry.
8. Bartesaghi P., Clemente G.P., Grassi R. (2023). Taxonomy of cohesion coefficients for weighted and directed multilayer networks. Chaos, Solitons & Fractals, 166, 112968.
9. Bartesaghi P., Clemente G.P., Grassi R. (2023). Clustering coefficients as measures of the complex interactions in a directed weighted multilayer network. Physica A: Statistical Mechanics and its Applications, 610, 128413.
10. Bartesaghi, P., Clemente, G. P., Grassi, R., Luu, D. T. (2022). The multilayer architecture of the global input-output network and its properties. Journal of Economic Behavior & Organization, 204, 304-341.
11. Bartesaghi P., Clemente G.P., Grassi R. (2022) A tensor-based unified approach for clustering coefficients in financial multiplex networks. Information Sciences, 601, 268-286., Information Science
12. GP. Clemente, R. Grassi, A. Hitaj (2022), Smart network based portfolios, Annals of Operations Research, doi.org/10.1007/s10479-022-04675-7
13. R. Antonietti, P. Falbo, F. Fontini, R. Grassi, G. Rizzini (2022). The world trade network: country centrality and the COVID-19 pandemic. Applied Network Science, 7(1), 1-29.
14. A. Arcagni, V. Candila, R. Grassi, (2022). A new model for predicting the winner in tennis based on the eigenvector centrality. ANNALS OF OPERATIONS RESEARCH, DOI 10.1007/s10479-022-04594-7.
15. S. Benati, P. Bartesaghi, GP. Clemente, R. Grassi (2021). Multi-attribute community detection in International Trade Network, NETWORKS AND SPATIAL ECONOMICS, 21 (3), 707-733
16. P. Bartesaghi, GP. Clemente, R. Grassi (2020). Community structure in the World Trade Network based on communicability distances, JOURNAL OF ECONOMIC INTERACTION AND COORDINATION, 10.1007/s11403-020-00309-y
17. R. Castellano, R. Cerqueti, GP. Clemente, R. Grassi (2020). An optimization model for minimizing systemic risk. MATHEMATICS AND FINANCIAL ECONOMICS, 10.1007/s11579-020-00279-6

18. R. Cerqueti, GP. Clemente, R. Grassi (2020), Stratified cohesiveness in business complex networks, JOURNAL OF BUSINESS RESEARCH, 10.1016/j.jbusres.2020.04.005
19. P. Bartesaghi, M. Benzi, GP. Clemente, R. Grassi, E. Estrada (2020) Risk-dependent centrality in economic and financial networks, SIAM Journal of Financial Mathematics, 11 (2), pp. 526-565
20. M. P. Abreu, R. Grassi, R. Del Vecchio (2020), Analysis of productive structure applying network theory: The Brazilian case, Structural Change and Economic Dynamics 53, DOI: 281-291, 10.1016/j.strueco.2020.03.005
21. R. Cerqueti, GP. Clemente, R. Grassi (2020). Systemic risk assessment through high order clustering coefficient, ANNALS OF OPERATION RESEARCH, 10.1007/s10479-020-03525-8
22. GP. Clemente, R. Grassi, C. Pederzoli (2020) *Networks and market-based measures of systemic risk: the European banking system in the aftermath of the financial crisis*. Journal of Economic Interaction and Coordination 15, 159–181.
23. A. Arcagni, R. Grassi, S. Stefani, A. Torriero (2019). Extending assortativity: An application to weighted social networks. JOURNAL OF BUSINESS RESEARCH, 10.1016/j.jbusres.2019.10.008.
24. R. Cerqueti, GP. Clemente, R. Grassi, (2019). Influence measures in subnetworks using vertex centrality. SOFT COMPUTING, 10.1007/s00500-019-04428-y
25. GP. Clemente, R. Grassi, A. Hitaj, (2019). *Asset allocation: new evidence through network approaches.* Annals of Operations Research DOI:10.1007/s10479-019-03136-y
26. MP. Abreu, R. Grassi, R. Del Vecchio (2019). *Structure of control in financial networks: An application to the Brazilian stock market*. PHYSICA A 522 p. 302-314. DOI:10.1016/j.physa.2019.01.084.
27. R. Grassi, F. Calderoni, M. Bianchi, A. Torriero (2019). *Betweenness to assess leaders in criminal networks: New evidence using the dual projection approach,* Social Networks 56 p. 23-32
28. R. Cerqueti, GP. Clemente, R. Grassi, (2019). A network-based measure of the socio-economic roots of the migration flows. Social Indicators Research, 146(1-2), 187-204.
29. GP. Clemente, M. Fattore, R. Grassi (2018). *Structural comparisons of networks and model-based detection of small-worldness.* Journal of Economic Interaction and Coordination, 13 (1), 117-141
30. P. Bongini, GP. Clemente, R. Grassi, (2018). *Interconnectedness, G-SIBs and network dynamics of global banking.* Finance Research Letters, 27, 185-192
31. GP. Clemente, R. Grassi (2018). *Directed clustering in weighted networks: A new perspective*. Chaos, solitons & fractals, vol. 107, p. 26-38, ISSN: 1873-2887, doi: 10.1016/j.chaos.2017.12.007
32. Arcagni, A., Grassi, R., Stefani, S., & Torriero, A. (2017). *Higher order assortativity in complex networks.* European Journal of Operational Research. vol. 262, p. 708-719, ISSN: 0377-2217, doi: 10.1016/j.ejor.2017.04.028
33. P. Falbo, R. Grassi (2015) *Does expectation of correlation breakdown self-fullfill?* Discrete Dynamics in Nature and Society Volume 2015, Article ID 263908, DOI: 10.1155/2015/263908
34. R. Grassi, M. Fattore, A. Arcagni (2015) , *Structural and non-structural temporal evolution of socio-economic real network*s, Quality & Quantity: International Journal of Methodology, 49:1597–1608
35. M. Fattore, R. Grassi (2015), *Qualitative and quantitative methods in complex socio-economic systems*, Quality & Quantity: International Journal of Methodology, 49:1549–1551
36. L. Bellenzier, R. Grassi, (2014) *Interlocking directorates in Italy: persistent links in network dynamics*, Journal of Economic Interaction and Coordination, (9) 2, 183-202
37. M. Fattore, R. Grassi, (2014) *Measuring dynamics and structural change of time-dependent socio-economic networks*, Quality & Quantity: International Journal of Methodology, (48) 4, 1821-1834
38. E. Croci, R. Grassi, (2014). *The economic effect of interlocking directorates in Italy: new evidence using centrality measures*. Computational and Mathematical Organization Theory 20 (1), 89-112
39. P. Falbo, R. Grassi, (2011*) Market dynamics when agents anticipate correlation breakdown*, Discrete Dynamics in Nature and Society, Volume 2011, Article ID 959847, DOI :10.1155/2011/959847
40. R. Grassi, S. Stefani, A. Torriero, (2011) *Using bipartite graphs to assess power in organizational networks: a case study,* JDyses, Vol 2 (2), 199-216
41. R. Grassi, (2010) *Vertex centrality as a measure of information flow in Italian Corporate Board Networks,* Physica A 389 pp 2455-2464

42. R. Grassi, S. Stefani, A. Torriero, (2010) *Centrality in organizational networks,* International Journal of Intelligent Systems Vol. 25 pp 253-265
43. R. Grassi, S. Stefani, A. Torriero (2010), *Extremal properties of graphs and eigencentrality in trees with a given degree sequence,* Journal of Mathematical Sociology, 34 pp 115-135
44. R. Grassi, S. Stefani, A. Torriero, (2007), *Some new results on the eigenvector centrality* , Journal of Mathematical Sociology, 31 (3) 237-248
45. Foroni, R. Grassi, (2005) *The contagion process in a financial model: a synergetic approach*, Pure Mathematics and Applications, 16, n. 4