December 2020

CURRICULUM VITAE of ROSANNA GRASSI

Academic position*:*

2000-2011 *Assistant professor at University of Milano-Bicocca, Faculty of Economics, SSD SECS-S06 Mathematical Methods of Economics, Financial and Actuarial Sciences*

2011-Now *Associate professor at University of Milano-Bicocca, Faculty of Economics, SSD SECS-S06 Mathematical Methods of Economics, Financial and Actuarial Sciences*

EDUCATIONAL QUALIFICATION

- Degree in Mathematics, year 1995

  Faculty of Mathematical, Physical and Natural Science, University of Milan
- Phd in "Mathematics for the Analysis of Financial Markets", year 2000

  Faculty of Economic, University of Brescia

  Thesis title: "Financial networks: bilateral trades of financial activities"

  Thesis advisor: Prof. Anna Torriero

TEACHING ACTIVITIES (by Academic years)

Faculty of Economics, University of Milano-Bicocca

2016-Now

Course of Mathematical Methods (Calculus II – Financial Mathematics)

2013 - Now

Course of Mathematics for Economics and Business (L. Triennale)

2009 - Now

- Course of Quantitative Management Science, (Laurea Magistrale)

2009-2016

- Course of Quantitative Methods (Calculus I)

2005-2009

- Course of Mathematics for Corporate firms (Laurea Magistrale)

2004/2005

- Course of Calculus I
- Course of Mathematics for Economics (Laurea Magistrale)
- Course of Financial Mathematics (teaching practice)

2002- 2004

- Course of Calculus II
- Course of Financial Mathematics **(**teaching practice)

2000/2001

- Course of Calculus I,II **(**teaching practice)

1999/2000

- Course of Calculus I, II

Course of Mathematics (teaching practice, Faculty of Economics, Catholic University of Milan)

1995-1997

Course of Mathematics for Economics (teaching practice)

Course of Mathematics I (teaching practice)

FUNDED TEACHING PROJECTS

TEOREMA (TEaching On-line pRoject for Economic MAthematics) (since 2003)

FUNDED PROJECT RESEARCH

2020 *"Hubs-repelling/attracting Laplacian operators and related dynamics on graphs/networks (RALONet)"*, University of Saragoza, Spain (Project leader Prof. Ernesto Estrada)

2020 "*Ownership structure of the Brazilian capital market: an analysis of complex networks"* , project n. 201020, University Presbiteriana Mackenzie, San Paolo, Brazil (Project collaborator)

2019 "*Approaches to multilayer networks: applications to community detection and portfolio allocations*" research project F.A. (Project leader)

2019 "*Community partition of trade networks*" Grant funding FAQC for excellent projects (project leader)

2018 "*Network approaches based on performance and dependence structure for portfolio allocation*" research project F.A. (Project leader)

2017 "*Reti complesse e modelli di rischio sistemico*", research project F.A. (Project leader)

2016 "*Rischio sistemico: modelli di reti e nuovi indicatori strutturali*", research project F.A. (Project leader)

2015 "*Reti complesse: indicatori strutturali e applicazioni in ambito socio-economico e finanziario",* research project F.A.R. (Project leader)

2014 *"Dinamiche di reti complesse e modelli non lineari nei mercati finanziari",* research project F.A.R. (Project leader)

2013 *"Dinamiche strutturali delle reti e modelli non lineari di mercati finanziari*", research project F.A.R. (Project leader)

2011 *"Reti complesse e dinamiche non lineari nei mercati finanziari",* research project F.A.R. (Project leader)

2010 "*Modelli economici di dinamiche non lineari e teoria delle reti nei mercati finanziari",* research project F.A.R. (Project leader)

2009 *"Modelli matematici nei mercati economico-finanziari: studio di dinamiche non lineari e di proprietà topologiche delle reti",* research project F.A.R. (Project leader)

2008 **"***Misure di centralità nelle reti e sistemi dinamici discreti: applicazioni ai mercati economico-finanziari"*, research project F.A.R. (Project leader)

2007 "*Grafi e reti, dinamiche non lineari: applicazioni ai mercati economico-finanziari*", research project F.A.R. (Project leader)

2006 "*Reti, grafi, centralità, dinamiche non lineari",* research project F.A.R. (Project leader Prof. Silvana Stefani)

2005 "Reti *e grafi: applicazioni all'Economia e alla Finanza*", research project F.A.R. (Project leader Prof. Silvana Stefani)

2004 "*Modelli non lineari per mercati finanziari*", research project D1 (Project leader Prof. Anna Torriero)

2003 "*Matematica discreta e ottimizzazione*: teoria e applicazioni all'economia e alla finanza", research project F.A.R. (Project leader Prof. Silvana Stefani)

2002 "*Second Order cone programming e applicazioni alla finanza*", research project F.A.R. (Project leader Prof. Silvana Stefani)

2001 "*Metodi di matematica discreta applicati all'economia e alla finanza*", research project F.A.R. (Project leader Prof. Silvana Stefani)

1996 "*Operatori monotoni generalizzati*", research project MURST 60% (Project leader Prof. Monica Bianchi).

REFEREE ACTIVITY

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
Complex Systems Society

INTERNATIONAL RESEARCH GROUP MEMBERSHIP:

GNAMPA Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni
EAEPE - European Association for Evolutionary Political Economy

December 2020

ECONOPHYSICS NETWORKS

INVITED TALKS AND MEETINGS

1) **December, 7-11, 2020** – Conference on complex systems CCS2020, Online conference, Community structure in the World Trade Network based on communicability distances
2) **September 18, 2020** - eMAF2020, Online conference, Network approaches based on performance and dependence structure for portfolio allocation (joint work with A. Hitaj, GP. Clemente)
3) **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 (joint work with S. Benati, P. Bartesaghi, GP. Clemente)
4) **September, 9- 11 2019, Perugia** – 43th Amases Meeting, Community structure based on multi-attributes in International Trade Network (joint work with S. Benati, P. Bartesaghi, GP. Clemente)
5) **June, 24-26 2019, London** - City University of London, WEHIA 2019, 24th Workshop on Economic Science with Heterogeneous Interacting Agents
   a) Communities in international trade network: new evidence using communicability (joint work with P. Bartesaghi, GP. Clemente)
   b) High order clustering coefficient and shock diffusion in a network (joint work with R. Cerqueti, G. Clemente)
6) **June, 24-26 2019, Dublin -** Network approaches based on performance and dependence structure for portfolio allocation (joint work with A. Hitaj, G. Clemente and P. Bartesaghi)
7) **April, 2 2019, Trento** - School of International Studies, University of Trento - Centrality measures to identify leaders in criminal networks (invited lecture)
8) **February, 26 2019, Macerata** – Network measures in socio-economic models: a mathematical perspective (invited lecture)
9) **October, 9-12 2018, Paris, France** – Dyses 2018, Systemic risk assessment through higher order clustering coefficient (joint work with R. Cerqueti, G. Clemente)
10) **July, 8-11 2018, Valencia, Spain** – Euro 2018 29th European Conference on Operational Research
    a) Networks and market-based measures of systemic risk: the global banking system in the aftermath of the financial crisis (joint work with C. Pederzoli, G. Clemente)
    b) Dependency and systemic risk in banking and insurance (joint work with A. Hitaj and G. Clemente)
    c) Systemic risk assessment through adjacency clustering coefficient (joint work with R. Cerqueti, G. Clemente)

3) **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)
4) **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)
5) **September, 6-8 2017, Lisboa, Portugal** - Optimization 2017, Directed clustering in weighted networks: a new perspective, (joint work with G. Clemente)
6) **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 (joint work with G. Clemente)
7) **December 16-17, 2016**, Trento, Italy - Net-2016 - III International Workshop Network Models in Statistics, Economics and Social Sciences,
   a) Betweenness Centrality and Vertex Relative Position in Subnetworks (joint work with C. Drago)

   b) Interconnectedness and network dynamics of global banking (joint work with G. Clemente, P. Bongini)
   c) Higher order assortativity in complex networks (joint work with A. Arcagni, S. Stefani, A. Torriero)

8) **November 30 - December 02, 2016 Milan, Italy** - 5th International Workshop on Complex Networks and their Applications, Interconnectedness and network dynamics of global banking (joint work with G. Clemente, P. Bongini)
9) **June 22-24, 2016 Castellon de la Plana, Spain -** WEIHA 2016, 21th Workshop on Economic Science with Heterogeneous Interacting Agents, Higher order assortativity in complex networks (joint work with A. Arcagni, S. Stefani, A. Torriero)
10) **September 17-19, 2015 Genova, Italy** – EAEPE 2015, 27th Annual Conference of European Association for Evolutionary Political Economy, Contagion and Correlation breakdown: analytical results and some empirical evidence (joint work with P. Falbo)
11) **May 21-23, 2015, Nice, France** - WEIHA 2015, 20th Workshop on Economic Science with Heterogeneous Interacting Agents , Networks evolving towards small-world: a quantitative measure (joint work with G. Clemente and M. Fattore)
12) **December 4-6, 2014, Milan, Italy** - EURO Working Group for Commodities and Financial Modelling, Contagion and correlation breakdown: analytical results and some empirical evidence (joint work with P. Falbo)
13) **September 15-17, 2014 Seville, Spain** - International meeting DYSES2014 Dynamics of Socio-Economic Systems, A measure for complex networks evolving towards small-world (joint work with G. Clemente and M. Fattore)
14) **January 20, 2014 Castellon de la Plana, Spain, University Jaume I**, invited conference “Contagion and correlation breakdown: analytical results and some empirical evidence” (joint work with Paolo Falbo)
15) **June 20-22, 2013, Reykjavik, Iceland –** WEIHA 2013, 18th Workshop on Economic Science with Heterogeneous Interacting Agents ,
    a) **“**Structural and non-structural changes in time-evolving networks” (joint work with A. Arcagni and M. Fattore)
    b) “Persistence of a core in corporate board network: the analysis of the Italian case” (joint work with L. Bellenzier)
16) **November 8-9, 2012 Trento -** NET 2012 Network models in statistics, economics and social science,
    a) “Dynamical analysis of interlocking directorates using graph edit distance” (joint work with V.Carletti, D. De Stefano, M. Fattore, P. Foggia)
    b) “Interlocking directorates in Italy: persistent links in network dynamics” (joint work with L. Bellenzier)
17) **September 27-28, 2012 Berlin**, X Workshop on Partial Order Theory and Application, “Measuring dynamics and structural change of time-dependent socio-economic networks” (Joint work with M. Fattore)
18) **September 12-16, 2011 Wien**, Eccs2011 European Conference on Complex Systems
    a) “Strategic bipartite network formation in interlocking corporate directorates” (Joint work with M. D’Errico and A. Uristani)
    b) “Interlocking directorates in Italy: network dynamic and centrality evolution”
19) **May 31, 2011 Milan** – NET 2011, Networks, topology and dynamics, “The structure of corporate directorates: a dynamic bipartite network approach” (Joint work with M. D’Errico and A. Uristani)
20) **September 1-4, 2010 Macerata** – XXXIV Convegno Amases,

a) “The Economic Effect of Interlocking Directorates in Italy: New Evidence Using Centrality Measures” (Joint work with E. Croci)
b) “Shock propagation and the topology of complex networks (Joint work with M. D’Errico and D. Felletti)

21) **June 14-16, 2010 Milan**– NET 2010, Network, topology and dynamics, “Shock propagation and the topology of complex networks (Joint work with M. D’Errico, D. Felletti)
22) **September 1-4, 2009 Parma** XXXIII Convegno Amases “Correlation breakdown and rational financial crisis” (Joint work with P. Falbo)
23) **May 28-30, 2009 Rome** NET 2009 Evolution and complexity, “Vertex centrality in organizational networks: a case study”, (Joint work S. Stefani, A. Torriero)
24) **September 18-20, 2008 Lecce -** MTISD 2008 Methods, Models and Information Technologies for Decision Support Systems, “Corporate board network and information flows in the Italian Stock Exchange” (Joint work with A. Patarnello, E. Szpilska)
25) **June 12-14, 2008 Trento** – NET 2008 - Network structure and complexity, “Corporate Board Network and Efficiency in the Italian Stock Exchange”, (Joint work with A. Patarnello, E. Szpilska)
26) **September 4-7, 2007 Lecce –** XXXI Convegno Amases, “Smax trees and the topology of scale-free networks”, (Joint work with S. Stefani, A. Torriero)
27) **May 17-19, 2007 Urbino -** NET 2007 **-** Networks: Topology and Dynamics, “Scale-free trees and centrality”, (Joint work with S. Stefani, A. Torriero)
28) **September 4-7, 2006 Trieste-** XXX Convegno Amases, “Betweenness centrality: extremal values and structural properties” (Joint work with R. Scapellato, S. Stefani, A. Torriero).
29) **May 4-5, 2006 Verbania-Intra** NET2006 Networks: Topology and Dynamics , “New theoretical results on betweenness centrality” , (Joint work with S. Stefani e A. Torriero).
30) **April 10-12, 2006 Aveiro** – Workshop on Graph Spectra, University of Aveiro, Portugal “Central vertices in networks : a unified approach” (Joint work with S. Stefani e A. Torriero).
31) **September 12-15, 2005 Palermo** - XXIX Convegno Amases, “Central vertices in networks: a unified approach” (Joint work with S. Stefani e A. Torriero).
32) **June 30 July 1th 2005 Verbania Intra** – 8-th Italian-Spanish Meeting on Financial Mathematics, “Shareholding Networks and Implications on Investment Choice” (*Joint work with* S. Stefani, A. Torriero, M. D’Errico).
33) **September 8-12, 2004 Modena** - XVIII Convegno Amases, “ Una misura di centralità nelle reti sociali” (Joint work with S. Stefani e A. Torriero).
34) **June 5-6, 2004 Trieste** - Workshop Nonlinear Dynamics in Economics, “Imitative Behaviour in a Simple Non Linear Financial Model”, Università degli Studi di Trieste, (Joint work with I. Foroni).
35) **April 27, 2004 Milan** – Workshop Graphs and Networks, “Some graph spectra inequalities” , Università di Milano - Bicocca .

36) **September 3-6, 2003 Cagliari** – XXVII Convegno Amases, “Un modello imitativo di un mercato finanziario: caso non lineare” (Joint work with I. Foroni).

37) **September 3-6, 2003 Cagliari** – XXVII Convegno Amases, “Un modello imitativo di un mercato finanziario: caso lineare” (Joint work with I. Foroni).

38) **September 5-8, 2001 Florence**– XXV Convegno Amases, “Una nota su alcune disuguaglianze rilevanti nella connessione di un grafo”.

39) **April 5-8, 2000 Philadelphia**- 7th Annual Conference Multinational Finance Society, “Partial Equilibrium Prices on a Financial Graph” (Joint work with P. Falbo).

40) **April 8-10, 1999 Valencia** – 24th Euro Working Group on Financial Modelling, “Bilateral trade of financial assets: a simulation study” (Joint work with P. Falbo).

41) **October 7-10, 1998 Cracovia -** 23th Euro Working Group on Financial Modelling, “Pareto optimal trade with risky and not risky assets” (Joint work with P. Falbo).

Member of scientific committee :

- 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
- Workshop “Graphs and Networks”, Milan, 2004, April

Scientific collaborations

- Organizer of the international meeting NET 2019: Workshop on Network Models In Statistics, Economics and Social Sciences, Milan on 14th - 15th of November 2019
- 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
- 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

- 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

Editor activity

- 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) (since 2014)
- 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

A. INTERNATIONAL JOURNALS

1. 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
2. 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
3. R. Cerqueti, GP. Clemente, R. Grassi (2020), Stratified cohesiveness in business complex networks, JOURNAL OF BUSINESS RESEARCH, 10.1016/j.jbusres.2020.04.005
4. 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
5. 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
6. 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
7. 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.

8. 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.
9. R. Cerqueti, GP. Clemente, R. Grassi, (2019). Influence measures in subnetworks using vertex centrality. SOFT COMPUTING, 10.1007/s00500-019-04428-y
10. 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
11. 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.
12. 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
13. 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.
14. 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
15. P. Bongini, GP. Clemente, R. Grassi, (2018). *Interconnectedness, G-SIBs and network dynamics of global banking.* Finance Research Letters, 27, 185-192
16. 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
17. 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
18. 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
19. 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
20. M. Fattore, R. Grassi (2015), *Qualitative and quantitative methods in complex socio-economic systems*, Quality & Quantity: International Journal of Methodology, 49:1549–1551
21. L. Bellenzier, R. Grassi, (2014) *Interlocking directorates in Italy: persistent links in network dynamics*, Journal of Economic Interaction and Coordination, (9) 2, 183-202
22. 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
23. 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

24. 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
25. 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
26. R. Grassi, (2010) *Vertex centrality as a measure of information flow in Italian Corporate Board Networks,* Physica A 389 pp 2455-2464
27. R. Grassi, S. Stefani, A. Torriero, (2010) *Centrality in organizational networks,* International Journal of Intelligent Systems Vol. 25 pp 253-265
28. 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
29. R. Grassi, S. Stefani, A. Torriero, (2007), *Some new results on the eigenvector centrality* , Journal of Mathematical Sociology, 31 (3) 237-248
30. Foroni, R. Grassi, (2005) *The contagion process in a financial model: a synergetic approach*, Pure Mathematics and Applications, 16, n. 4
31. P. Falbo, R. Grassi, (2004), *Equilibrium prices on a financial graph*, Computational Economics, Vol 24, n° 2, 117-157
32. R. Grassi, (2004), *Relevant inequalities in graph connectivity*, Archives of Inequalities and Applications, 16, 183-198

B. SUBMITTED to INTERNATIONAL JOURNALS

1. GP. Clemente, R. Grassi, A. Hitaj (2019), Smart network based portfolios, submitted to Annals of Operations Research
2. S. Benati, P. Bartesaghi, GP Clemente, R. Grassi, (2019) Multi-criteria community detection in International Trade Network, submitted to Networks and Spatial Economics

C. CHAPTERS of BOOKS

1. M. Fattore, R. Grassi, A. Arcagni (2014), *Measuring Structural Dissimilarity Between Finite Partial Orders*, in Multi-indicator Systems and Modelling in Partial Order, Springer, R. Brüggemann, L. Carlsen, J. Wittmann, (Eds.), Springer-Verlag, 69-84

D. REFERRED PROCEEDINGS

1. M. D'Errico, R. Grassi, S. Stefani, A. Torriero, (2008) Shareholding *networks and centrality: an application to the italian financial market*, in Networks, Topology and Dynamics. Theory and Applications to Economics and Social Systems, Lecture Notes in Economics and Mathematical Systems, Vol. 613, 215-228 Naimzada, A.; Stefani, S.; Torriero, A. (Eds.), ISBN 978-3-540-68407-7

2. R. Grassi , R. Scapellato, S. Stefani, A. Torriero (2008) *Betweenness centrality: extremal values and structural properties*, in Networks, Topology and Dynamics. Theory and Applications to Economics and Social Systems, Lecture Notes in Economics and Mathematical Systems, Vol. 613, 161-176 Naimzada, A.; Stefani, S.; Torriero, A. (Eds.) ISBN 978-3-540-68407-7.
3. P. Falbo, R. Grassi, (2000), *Pareto optimal financial trades with risky and not risky assets*, in Financial Modelling Proceedings of the 23rd Meeting of the European Working Group on Financial Modelling, A.M.J. Skulimowski Ed. Publisher Progress and business, 77-101, ISBN 83-912831-1-9.

E. TECHNICAL REPORTS

1. M. D'Errico, D. Felletti, R. Grassi, (2010). *Shock propagation and the topology of complex networks.* Dipartimento di Metodi Quantitativi per le Scienze Economiche ed Aziendali n° 196 – Università di Milano Bicocca.
2. P. Falbo, R. Grassi, (2009) *Correlation breakdown and rational financial crises,* Dipartimento di Metodi Quantitativi per l'Economia n°168 – Università di Milano Bicocca.
3. R. Grassi, S. Stefani, A. Torriero, (2008) *Centrality and diameter of trees with a given degree sequence*, Dipartimento di Metodi Quantitativi per le Scienze Economiche ed Aziendali n°141 – Università di Milano Bicocca, 2008.
4. R. Grassi, S. Stefani, A. Torriero, (2006) *Central vertices in networks: a unified approach,* n° 105 – Università di Milano Bicocca.

F. SHORT PAPERS/EXTENDED ABSTRACT IN INTERNATIONAL OR NATIONAL PROCEEDINGS

1. "Interconnectedness and network dynamics of global banking", COMPLEX NETWORKS 2016 The 5th International Workshop on Complex Networks & Their Applications ISBN 978-2-9557050-1-8 (co-authors G. Clemente, P. Bongini)
2. "The Economic Effect of Interlocking Directorates in Italy: New Evidence Using Centrality Measures" Atti del XXXIV Convegno Amases, Macerata, 1-4 Settembre 2010 – (con E. Croci)
3. "Shock propagation and the topology of complex networks Atti del XXXIV Convegno Amases, Macerata, 1-4 Settembre 2010 – (con Marco D'Errico, Daniele Felletti)
4. "Correlation breakdown and rational financial crises", Atti del XXXIII Convegno Amases, Parma 1-4 settembre 2009 (co-author P. Falbo)
5. "Corporate board network and information flows in the Italian Stock Exchange", (Short paper) Proceedings of "MTISD 2008. Methods, Models and Information Technologies for Decision Support Systems" - Università del Salento, Lecce, 18 - 20 September 2008; pp. 110-112, ISBN 978-88-8305-061-9 (co-authors A. Patarnello, E. Szpilska)
6. "Smax trees and the topology of scale-free networks", Atti del XXXI Convegno Amases, Lecce 4-7 settembre 2007 (co-authors S. Stefani, A. Torriero).
7. "Scale-free trees and centrality", Atti del convegno NET 2007, Networks: Topology and Dynamics, (co-authors S. Stefani, A. Torriero)

8. “Betweenness centrality: extremal values and structural properties”, Atti del XXX Convegno Amases, Trieste, 4-7 settembre 2006 (co-authors R. Scapellato, S. Stefani, A. Torriero).

9. “New theoretical results on betweenness centrality” Atti del Convegno NET 2006 Network: topology and dynamics, Verbania-Intra, 4-5 maggio 2006 (co-authors S. Stefani e A. Torriero).

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