

# CURRICULUM VITAE ET STUDIORUM

of

**SILVIA MUZZIOLI**

## PERSONAL INFORMATION:

Muzzioli, Silvia

ORCID ID: [0000-0003-0738-6690](https://orcid.org/0000-0003-0738-6690)

SCOPUS ID: [6507158710](https://scopus.org/authorid/6507158710)

RESEARCHER ID: B-3717-2016

Date of birth: 01/01/1974

Nationality: Italian

URL for web site: <http://personale.unimore.it/AddressBook/Home/smuzziol>

## ADDRESS:

Department of Economics “Marco Biagi”

University of Modena and Reggio Emilia

Viale Berengario, 51

I-41121 Modena, ITALY

phone 39-059-2056771

fax 39-059-2056947

e-mail : [silvia.muzzioli@unimore.it](mailto:silvia.muzzioli@unimore.it)

## CURRENT POSITION:

Associate Professor in Quantitative Methods for Economics and Finance, Department of Economics “Marco Biagi”, University of Modena and Reggio Emilia, Italy

## NATIONAL SCIENTIFIC QUALIFICATIONS:

05 February 2014 - : national scientific qualification as Full Professor in Quantitative Methods for Economics and Finance.

04 December 2014 - : national scientific qualification as Associate Professor in Statistics applied to Economics.

## PAST POSITIONS:

01 October 2001- 30 October 2014:

Assistant Professor (tenure) in Quantitative Methods for Economics and Finance, Department of Economics “Marco Biagi”, University of Modena and Reggio Emilia, Italy

January -September 2001:

Research assistant for the project "Fuzzy methods for derivatives pricing"

Department of Economics “Marco Biagi”, University of Modena and Reggio Emilia, Italy

## CAREER BREAKS:

15/09/2005 to 27/05/2006 Maternity leave 8 months.

23/08/2008 to 26/01/2009 Maternity leave 5 months.

## EDUCATION:

- 05 February 2001      PhD Computational methods for financial forecasting and decision making  
Department of Mathematics, Statistics, Computer Science and applications,  
University of Bergamo, Italy
- January 2000          Master of Science in Banking and Finance, HEC, University of Lausanne,  
Switzerland

## PRINCIPAL INVESTIGATOR OF INTERNATIONAL RESEARCH PROJECTS:

**2015-2017**      Coordinator of the international research project: “Implied Volatility and higher order moments: new measures and indexes of financial connectedness”, **Budget: € 66.233,57**, funded by Dep. of Economics "Marco Biagi" ( 23.633,57) and Fondazione Cassa di Risparmio di Modena (42.600,00); National Departments involved: Department of Economics, University of Modena and Reggio Emilia and Department of Economics, Mathematics and Statistics, University of Palermo; international Departments involved: Department of Applied Mathematics, Biometrics and Process Control, Ghent University, Ghent (Belgium), Department of Finance, Temple University, Philadelphia, USA.

**2010-2013**      Coordinator of the international research project: “Volatility modelling and forecasting with option prices: the proposal of a volatility index for the Italian market”, **Budget € 23.529,41**, funded by Fondazione Cassa di Risparmio di Modena and MIUR. National Departments involved: Department of Economics, University of Modena and Reggio Emilia and Department of Mathematics, Statistics, Computing and Applications of the University of Bergamo, international Departments involved: Department of Banking and Financial Management, University of Piraeus, Athens (Greece), Business Administration Department, Universidad Rey Juan Carlos, URJC, Madrid (Spain), Department of Applied Mathematics, Biometrics and Process Control, Ghent University, Ghent (Belgium).

## PRINCIPAL INVESTIGATOR OF NATIONAL PROJECTS:

- 2016-2017**      Coordinator of the national project: “A skewness index for Europe (EU-SKEW)” **Budget: € 7.000,00**, funded by the University of Modena and Reggio Emilia.
- 2001-2002**      Young researchers project “Fuzzy models for pricing structured products”, **Budget € 5.000,00**.

## CURRENT TEACHING ACTIVITIES:

- 2014-2016      Mathematics and financial mathematics (42 hours), Dep. of Economics, University of Modena and Reggio Emilia.
- 2012-2016      Financial modelling (applications) (42 hours), Dep. of Economics, University of Modena and Reggio Emilia, Italy.
- 2012-2016      Mathematics for economics and finance (42 hours), Dep. of Economics, University of Modena and Reggio Emilia, Italy.

## PAST TEACHING ACTIVITIES (UNDERGRADUATE, GRADUATE AND MASTER COURSES):

- 2013-2014      Data Analysis for Economics (21 hours) Dep. of Economics, University of Modena and Reggio Emilia
- 2011-2012      Data analysis for Finance (42 hours) Dep. of Economics, University of Modena and Reggio Emilia.

2006-2010	Financial Mathematics (34 hours) Dep. of Economics, University of Modena and Reggio Emilia.
2006-2009	Risk Management (34 hours) Dep. of Economics, University of Modena and Reggio Emilia
2009-2010	Risk Management (21 hours) Dep. of Economics, University of Modena and Reggio Emilia).
2002-2008	Computer Science for Finance (Bonds and Equities), (32 hours) Dep. of Economics, University of Modena and Reggio Emilia.
2002-2005	Computer Science for Finance (Derivatives), (32 hours) Dep. of Economics, University of Modena and Reggio Emilia.
2002-2004	Computer Science (16 hours) Master in “International Management” Dep. of Economics, University of Modena and Reggio Emilia.
1997-2011	Mathematics (introductory course) (16 to 30 hours) Dep. of Economics, University of Modena and Reggio Emilia

#### **CURRENT INSTITUTIONAL RESPONSIBILITIES:**

2016 –	Delegate of the Department for Business and Community Engagement, Department of Economics of the University of Modena and Reggio Emilia
2016 –	Quality Manager of the Department, Department of Economics of the University of Modena and Reggio Emilia
2015 –	Coordinator of the committee on the quality and assessment of the Research of the Department (SUA-RD), Department of Economics of the University of Modena and Reggio Emilia, Italy
2007 –	ERASMUS Coordinator University Rey Juan Carlos, Madrid.

#### **PAST INSTITUTIONAL RESPONSIBILITIES:**

2015 –2015	Member of the Quality committee of the Department, Department of Economics of the University of Modena and Reggio Emilia
2014-2015	Member of the joint Committee on teaching (students-teachers), Department of Economics of the University of Modena and Reggio Emilia

#### **COMMISSIONS OF TRUST:**

2013 –	Appointed referee for R&D projects funded by the Italian Ministry of Education and Research (MIUR)
--------	--

### **JOURNAL REFEREE (selected):**

Fuzzy Sets and Systems, European Journal of Operational Research, Quantitative Finance, International Journal of Approximate Reasoning, IEEE Transactions on Fuzzy Systems, Information Sciences, Journal of Futures Markets, Journal of Economics and Business, Soft Computing, OR Spectrum, Applied Mathematical Modelling, Computers and Mathematics with Applications, Iranian Journal of Fuzzy Systems, Economic Change and Restructuring.

### **RECENT INVITED SEMINARS:**

Department of Economics and Statistics, University of Siena (2015), Department of Mathematical Modelling, Statistics and Bioinformatics, Ghent University, Belgium (2013), Department of Mathematics, University of Bologna (2012), Department of Banking and Financial management, University of Pyreus, Athens, Greece (2011); Department of quantitative methods for economics and business, University of Milano-Bicocca (2011); Department of Economics and Statistics, University of Siena (2008).

### **RECENT INTERNATIONAL AND NATIONAL CONFERENCE PRESENTATIONS:**

7<sup>th</sup> CEQURA Conference, Monaco, (2016), XVII Workshop on Quantitative Finance, Pisa (2016), Financial Management Association Annual Meeting, Orlando, Florida, (2015), XXXIX AMASES Padova (2015), XVI Workshop on Quantitative Finance, Parma (2015), Financial Management Association European Conference, Maastricht (2014); XXXVII AMASES, Stresa (2013); Financial Management Association European Conference, Luxembourg (2013); XIV Workshop on Quantitative Finance, University of Bologna, Rimini (2013); XXXVI AMASES, Vieste (2012); BOMOPAV meeting, Bologna (2012); Annual Meeting of the Midwest Finance Association, New Orleans (Louisiana) (2012); 5th CSDA International Conference on Computational and Financial Econometrics, University of London, UK (2011); XXXV AMASES, Pisa (2011); International Finance and Banking Society, Roma, (2011); First International Conference of the Financial Engineering and Banking Society, Chania, Grecia (2011); XVIIIth Forecasting Financial Markets Conference, Marsiglia, Francia, (2011); 2011 annual meeting of the Midwest Finance Association, Chicago (Illinois) (2011); XXXIV AMASES, Macerata (2010); EUROXXIV, 24th European Conference on Operational Research, Lisbona, Portogallo (2010); NFA2009, Northern Finance Association Conference 2009, Niagara on the Lake, Ontario, Canada, (2009);

### **AWARDS:**

2006 The paper: S. Muzzioli, H. Reynaerts, "Fuzzy linear systems of the form  $A_1x+b_1=A_2x+b_2$ " Fuzzy Sets and Systems, 157, 7, 2006, 939-951 was at the 19th place of the list: Science Direct Top 25 hottest articles List for the journal Fuzzy Sets and Systems from October 2005 to March 2006 (<http://top25.sciencedirect.com/subject/engineering/12/journal/fuzzy-sets-and-systems/01650114/archive/6/>).

2000 University of Lausanne: "Prix de l'Association Vaudoise des Banques" for the Master Thesis.

### **MEMBERSHIPS:**

Present: FMA Financial Management Association, MFA Midwest Finance Association, KERMIT Research Unit Knowledge-based Systems (<http://www.kermit.ugent.be>), AMASES Associazione per la Matematica Applicata alle Scienze Economiche e Sociali, CEFIN Centro Studi Banca e Finanza.

Past: EFA European Finance Association, IFABS International Finance and Banking Society, FEBS Financial Engineering and Banking Society.

## **JOINT PROJECTS:**

Bernard De Baets, Department of Mathematical Modelling, Statistics and Bioinformatics, Ghent University, Belgium, participant the international projects “Implied Volatility and higher order moments: new measures and indexes of financial connectedness”, and “Volatility modelling and forecasting with option prices: the proposal of a volatility index for the Italian market”.

Elyas Elyasiani, Fox School of Business and Management, Temple University, Philadelphia, PA, USA, participant in the international project “Implied Volatility and higher order moments: new measures and indexes of financial connectedness”.

Andrea Cipollini, Department of Economics, Accounting and Statistics of the University of Palermo (Italy), participant in the international project “Implied Volatility and higher order moments: new measures and indexes of financial connectedness”.

George Skiadopoulos, Department of Banking and Financial management, University of Pyreus, Athens, Greece, participant in the international project “Volatility modelling and forecasting with option prices: the proposal of a volatility index for the Italian market”.

## **RESEARCH INTERESTS:**

Risk Measurement and management

Volatility (and higher moments) modelling and forecasting

Derivatives pricing

Fuzzy sets and systems

## PUBLICATIONS:

Total citation report on 20/10/2016 is equal to 310 citations (Scopus) 550 (Google Scholar), *h*-index: 6 (Scopus), 9 (Google Scholar).

## SELECTED PUBLICATIONS:

1. S. Muzzioli, B. De Baets, "Fuzzy Approaches to option price modelling" *IEEE Transactions on Fuzzy Systems*, 99, 2016, forthcoming (journal impact factor 6.701).
2. A. Cipollini, I. Lo Cascio, S. Muzzioli, "Volatility co-movements: a time scale decomposition analysis", *Journal of Empirical Finance*, 34, 2015, 34-44 (journal impact factor 0.907).
3. S. Muzzioli, A. Ruggieri, B. De Baets, "A comparison of fuzzy regression methods for the estimation of the implied volatility smile function", *Fuzzy Sets and Systems*, 2015, 131-143, doi:10.1016/j.fss.2014.11.015 (journal impact factor 2.098, n. of citations: Scopus 4, Web of Science 3).
4. S. Muzzioli, B. De Baets, "A comparative assessment of different fuzzy regression methods for volatility forecasting" *Fuzzy Optimization and Decision Making*, 12 (4), 2013, 433-450, DOI: 10.1007/s10700-013-9161-1 (journal impact factor 2.569, n. of citations: Scopus 3, Web of Science 2).
5. S. Muzzioli, "The information content of option based forecasts of volatility: evidence from the Italian stock market", *Quarterly Journal of Finance*, 3 (1), 2013, 1350005 (46 pages), DOI: 10.1142/S2010139213500055.
6. S. Muzzioli, "Option-based forecasts of volatility: An empirical study in the DAX-index options market" *European Journal of Finance*, 16 (6) 2010, 561-586 (journal impact factor 0.559, n. of citations: Scopus 10, Web of Science 7).
7. V. Moriggia, S. Muzzioli, C. Torricelli, "On the no arbitrage condition in option implied trees" *European Journal of Operational Research*, 193, 2009, 212-221 (journal impact factor 2.679, n. of citations: Scopus 4, Web of Science 3).
8. S. Muzzioli, H. Reynaerts, "The solution of fuzzy linear systems by non-linear programming: a financial application", *European Journal of Operational Research*, 177, 2007, 1218-1231 (journal impact factor 2.679, n. of citations: Scopus 27, Web of Science 24).
9. S. Muzzioli, H. Reynaerts, "Fuzzy linear systems of the form  $A_1x+b_1=A_2x+b_2$ " *Fuzzy Sets and Systems*, 157, 7, 2006, 939-951 (journal impact factor 2.098, n. of citations: Scopus 59, Web of Science 45).
10. S. Muzzioli, C. Torricelli, "A Multiperiod Binomial Model for Pricing Options in a Vague World" *Journal of Economic Dynamics and Control*, 28, 2004, 861-887 (journal impact factor 0.879, n. of citations: Scopus 32, Web of Science 32).
11. G. Facchinetti, R. Ghiselli Ricci, S. Muzzioli, "Note on ranking fuzzy triangular numbers", *International Journal of Intelligent Systems*, 13 (7), July 1998, 613-622 (journal impact factor 2.05, n. of citations: Scopus 137, Web of Science 105).

## PAPERS UNDER REVIEW:

12. F.G. Caloia, A. Cipollini, S. Muzzioli, A note on normalization schemes, the case of generalized forecast error variance decompositions
13. A. Cipollini, I. Lo Cascio, S. Muzzioli, Risk-aversion connectedness in Europe
14. E. Elyasiani, S. Muzzioli, A. Ruggieri, Forecasting and pricing powers of option-implied tree models: Tranquil and volatile market conditions
15. E. Elyasiani, L. Gambarelli, S. Muzzioli, Fear or greed, what does a skewness index measure?
16. E. Elyasiani, L. Gambarelli, S. Muzzioli, Can we use corridor implied volatilities in order to measure skewness?

## COMPLETE LIST OF PUBLICATIONS:

### PAPERS IN REFEREED JOURNALS:

1. S. Muzzioli, B. De Baets, "Fuzzy Approaches to option price modelling" *IEEE Transactions on Fuzzy Systems*, forthcoming (journal impact factor 6.701).
2. A. Cipollini, I. Lo Cascio, S. Muzzioli, "Volatility co-movements: a time scale decomposition analysis", *Journal of Empirical Finance*, 34, 2015, 34-44 (journal impact factor 0.907).
3. S. Muzzioli, "The optimal corridor for implied volatility: from calm to turmoil periods", *Journal of Economics and Business*, 81, 2015, 77-94.
4. S. Muzzioli, A. Ruggieri, B. De Baets, "A comparison of fuzzy regression methods for the estimation of the implied volatility smile function", *Fuzzy Sets and Systems*, 2015, 131-143, doi:10.1016/j.fss.2014.11.015 (journal impact factor 2.098, n. of citations: Scopus 4, Web of Science 3).
5. S. Muzzioli, B. De Baets, "A comparative assessment of different fuzzy regression methods for volatility forecasting" *Fuzzy Optimization and Decision Making*, 12 (4), 2013, 433-450, DOI: 10.1007/s10700-013-9161-1 (journal impact factor 2.569, n. of citations: Scopus 3, Web of Science 2).
6. S. Muzzioli, "The information content of option based forecasts of volatility: evidence from the Italian stock market", *Quarterly Journal of Finance*, 3 (1), 2013, 1350005 (46 pages), DOI: 10.1142/S2010139213500055.
7. S. Muzzioli, "The forecasting performance of corridor implied volatility in the Italian market", *Computational Economics*, 41 (3) 2013, 359-386, published on-line 17 October 2012 (DOI) 10.1007/s10614-012-9343-x (journal impact factor 0.691, n. of citations: Scopus 4, Web of Science 3).
8. S. Muzzioli, "Put-Call Parity and options' forecasting power" *Advances and Applications in Statistics*, 30 (1) 2012, 1-17.
9. S. Muzzioli, "The Skew Pattern of Implied Volatility in the DAX Index Options Market", *Frontiers in Finance and Economics*, 8 (1) 2011, 43-68.
10. S. Muzzioli, "Option-based forecasts of volatility: An empirical study in the DAX-index options market" *European Journal of Finance*, 16 (6) 2010, 561-586 (journal impact factor 0.559, n. of citations: Scopus 10, Web of Science 7).
11. V. Moriggia, S. Muzzioli, C. Torricelli, "On the no arbitrage condition in option implied trees" *European Journal of Operational Research*, 193, 2009, 212-221 (journal impact factor 2.679, n. of citations: Scopus 4, Web of Science 3).
12. S. Muzzioli, H. Reynaerts, "American Option Pricing with Imprecise Risk-Neutral Probabilities" *International Journal of Approximate Reasoning*, 49, 2008, 140-147 (journal impact factor 2.696, n. of citations: Scopus 17, Web of Science 12).
13. V. Moriggia, S. Muzzioli, C. Torricelli, "Call and put implied volatilities and the derivation of option implied trees" *Frontiers In Finance and Economics*, vol.4, n.1, 2007, 35-64.
14. S. Muzzioli, H. Reynaerts, "Solving parametric fuzzy linear systems by a non linear programming method" *Computational Economics*, 29, 2007, 107-117, (journal impact factor 0.691 Scopus 2).
15. S. Muzzioli, H. Reynaerts, "The solution of fuzzy linear systems by non-linear programming: a financial application", *European Journal of Operational Research*, 177, 2007, 1218-1231 (journal impact factor 2.679, n. of citations: Scopus 27, Web of Science 24).
16. S. Muzzioli, H. Reynaerts, "Fuzzy linear systems of the form  $A_1x+b_1=A_2x+b_2$ " *Fuzzy Sets and Systems*, 157, 7, 2006, 939-951 (journal impact factor 2.098, n. of citations: Scopus 59, Web of Science 45).
17. S. Muzzioli, C. Torricelli, "The pricing of options on an interval binomial tree: an application to the DAX-index option market", *European Journal of Operational Research*, 163, 2005, 192-200 (n. of citations: Scopus 4, Web of Science 4).

18. S. Muzzioli, C. Torricelli, "A Multiperiod Binomial Model for Pricing Options in a Vague World" *Journal of Economic Dynamics and Control*, 28, 2004, 861-887 (journal impact factor 0.879, n. of citations: Scopus 32, Web of Science 32).
19. S. Muzzioli, C. Torricelli, "Implied Trees in Illiquid Markets: a Choquet Pricing Approach" *International Journal of Intelligent Systems*, 17 (6), June 2002, 577-594 (journal impact factor 2.05, n. of citations: Scopus 6, Web of Science 7).
20. S. Muzzioli, C. Torricelli, "A model for pricing an option with a fuzzy payoff", *Fuzzy Economic Review*, VI (1), May 2001, 49-62.
21. G. Facchinetti, R. Ghiselli Ricci, S. Muzzioli, "Note on ranking fuzzy triangular numbers", *International Journal of Intelligent Systems*, 13 (7), July 1998, 613-622 (journal impact factor 2.05, n. of citations: Scopus 137, Web of Science 105).

## PROCEEDINGS:

22. E. Elyasiani, S. Muzzioli, A. Ruggieri, "Pricing and forecasting power of option implied trees and implied moments", *Proceedings of the XVI Workshop in Quantitative Finance*, paper available at the web-site: <http://www.qfinancexvi.altervista.org/Programme.pdf>
23. S. Muzzioli, "Corridor implied volatility and the variance risk premium in the Italian market" In L.E.Blose, V. Gondhalekar (eds) *Proceedings of the Midwest Finance Association, 2012 Annual Meeting, New Orleans, February 22-25, Vol. 9, pp 1-36*.
24. S. Muzzioli, "Towards a volatility index for the Italian stock market", In L.E.Blose (ed) *Proceedings of the Midwest Finance Association, 2011 Annual Meeting, Chicago March 3-5, Vol. 8, pp 1-29*.
25. H. Reynaerts, S. Muzzioli, "Solving fuzzy systems of linear equations by a nonlinear programming method", *Proceedings of the International Symposium on Applied Stochastic Models and Data Analysis, Brest 17-20 May 2005, 1370-1376*.
26. S. Muzzioli, H. Reynaerts, "Fuzzy binary tree model for European style vanilla options" *Proceedings of the International Conference on Fuzzy Sets and Soft Computing in Economics and Finance (FSSCEF2004), S. Petersburg (Russia), 17-20 Giugno 2004, Vol 1, 222-229*.
27. S. Muzzioli, C. Torricelli, "A methodology for pricing options in illiquid markets: an application to the DAX-index option market", *Proceedings of the Conference of the XXX Euro Working Group on Financial Modelling, Capri, 2-4 Maggio 2002*.
28. S. Muzzioli, C. Torricelli, "A Multiperiod Binomial Model for Pricing Options in an Uncertain World" *Proceedings of the 2nd International Symposium on Imprecise Probabilities and Their Applications, Ithaca, New York, June, 26-29, 2001, Gert De Cooman, Terrence L. Fine, Teddy Seidenfeld Eds., Shaker Publishing, The Netherlands, 255-264*.
29. S. Muzzioli, C. Torricelli, "A model for pricing an option with a fuzzy payoff", *Proceedings of the Portuguese Finance Network 1st Finance Conference, University of Minho, Braga, Portugal, June 28-July 1 2000, file n 104.pdf of the cd-rom*.
30. S. Muzzioli, C. Torricelli, "Pricing options on a vague asset", *Proceedings of the 5th International Conference of the Decision Sciences Institute on "Integrating Technology & Human Decisions: Global Bridges into the 21st Century", 4-7 July, 1999, Athens, Greece, Dimitris K. Despotis, Constantin Zopounidis Eds., New Technologies Publications, Athens, Greece, pag. 546-548*.



## CHAPTERS IN EDITED VOLUMES:

31. S. Muzzioli, "The relation between implied and realised volatility in the DAX index options market", in *M. Corazza, C. Pizzi (Eds.), Mathematical and Statistical Methods for Actuarial Sciences and Finance, Springer-Verlag Italia (2010), 215-224.*
32. S. Muzzioli, H. Reynaerts, "Option pricing in the presence of uncertainty", in *Batyrshin, I.; Kacprzyk, J.; Sheremetov, L.; Zadeh, L.A. (Eds.), Perception-based Data Mining and Decision Making in Economics and Finance, Series: Studies in Computational Intelligence, Vol. 36, Springer-Verlag (2007), 275-301.*
33. S. Muzzioli, H. Reynaerts, "Fuzzy binary tree model for European options" in *A. Di Bucchianico, R.M.M. Mattheij, M.A. Peletier (Eds.), Progress in industrial mathematics at ECMI 2004, Math. Ind., 8, Springer, Berlin, (2006), 437-441, (ISBN: 978-3-540-28072-9. [http://dx.doi.org/10.1007/3-540-28073-1\\_69](http://dx.doi.org/10.1007/3-540-28073-1_69)).*

## WORKING PAPERS:

34. F.G. Caloia, A. Cipollini, S. Muzzioli "A note on normalization schemes, the case of generalized forecast error variance decompositions", *Working paper of the Department of Economics "Marco Biagi", n. 92, August 2016.*
35. A. Cipollini, I. Lo Cascio, S. Muzzioli, "Volatility risk premia and financial connectedness", *Working paper of the Department of Economics "Marco Biagi", n. 47, December 2014.*
36. S. Muzzioli, "The optimal corridor for implied volatility: from calm to turmoil periods", *Working paper of the Department of Economics "Marco Biagi", n. 29, December 2013.*
37. S. Muzzioli, A. Ruggieri, B. De Baets, "A comparison of fuzzy regression methods for the estimation of the implied volatility smile function", *Working paper of the Department of Economics "Marco Biagi", n. 28, November 2013.*
38. A. Cipollini, I. Lo Cascio, S. Muzzioli, "Volatility co-movements: a time scale decomposition analysis", *CEFIN working paper n.44, November 2013.*
39. S. Muzzioli, A. Ruggieri, "Option Implied trees and implied moments", *Working paper of the Department of Economics "Marco Biagi", n. 15, June 2013.*
40. S. Muzzioli, "Corridor Implied Volatility and the Variance Risk Premium in the Italian Market" (August 30, 2011). *Midwest Finance Association 2012 Annual Meetings Paper. Available at SSRN: <http://ssrn.com/abstract=1919662> or <http://dx.doi.org/10.2139/ssrn.1919662>*
41. S. Muzzioli, B. De Baets, "Assessing the information content of option-based volatility forecasts using fuzzy regression methods", *Materiali di discussione n.669, Novembre 2011, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia ISSN:2039-14.*
42. S. Muzzioli, "Corridor Implied Volatility and the Variance Risk Premium in the Italian Market", *CEFIN working paper n. 30, November 2011, Available at SSRN: <http://ssrn.com/abstract=1919662>.*
43. S. Muzzioli, "Towards a volatility index for the Italian stock market", *CEFIN working paper n. 23, September 2010.*
44. S. Muzzioli, "The skew pattern of implied volatility in the DAX-index options market", *Materiali di discussione n.617, Luglio 2009, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia.*
45. S. Muzzioli, "Option based forecasts of volatility: An empirical study in the DAX index options market", *CEFIN working paper n. 11, May 2008.*
46. S. Muzzioli, "The relation between implied and realised volatility: are call options more informative than put options? Evidence from the DAX index options market", *CEFIN working paper n. 4, October 2007.*
47. S. Muzzioli, H. Reynaerts, "American option pricing with imprecise risk neutral probabilities: from plain intervals to fuzzy sets", *Technical paper Series of the Center of Statistics of the Ghent University, n.1, 2007 disponibile sul sito: [www.cvstat.ugent.be](http://www.cvstat.ugent.be) .*

48. S. Muzzioli, H. Reynaerts, "Fuzzy up and down probabilities in a financial problem", *Technical paper Series of the Center of Statistics of the Ghent University*, n.4, 2005 disponibile sul sito: [www.cvstat.ugent.be](http://www.cvstat.ugent.be) .
49. V. Moriggia, S. Muzzioli, C. Torricelli, "The no arbitrage condition in option implied trees: evidence from the Italian index options market", *Materiali di discussione n.491*, Maggio 2005, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia.
50. V. Moriggia, S. Muzzioli, C. Torricelli, "Option implied trees when the put call parity is not fulfilled", *Materiali di discussione n.448*, Novembre 2003, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia.
51. S. Muzzioli, "A note on fuzzy linear systems" *Materiali di discussione n.447*, Novembre 2003, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia.
52. V. Moriggia, S. Muzzioli, C. Torricelli, "Option implied trees under put-call parity violations" *Quaderno del Dipartimento di Matematica, Statistica, Informatica e Applicazioni, Università di Bergamo*, n. 3, 2003.
53. S. Muzzioli, C. Torricelli, "Implied Trees in Illiquid Markets: a Choquet Pricing Approach" *Materiali di discussione n.368*, Luglio 2001, Dipartimento di Economia Politica, Università degli Studi di Modena e Reggio Emilia.
54. S. Muzzioli, C. Torricelli, "Combining the theory of evidence with fuzzy sets for binomial option pricing", *Materiali di discussione n.312*, Maggio 2000, Dipartimento di Economia Politica, Università di Modena e Reggio Emilia.
55. S. Muzzioli, C. Torricelli, "A model for pricing an option with a fuzzy payoff", *Materiali di discussione n.282*, settembre 1999, Dipartimento di Economia Politica, Università di Modena
56. G. Facchinetti, R. Ghiselli Ricci, S. Muzzioli, "New methods for ranking triangular fuzzy numbers: an investment choice", *Materiali di Discussione n.206*, ottobre 1997, Dipartimento di Economia Politica, Università di Modena.

#### **OTHERS:**

57. S. Muzzioli, "Option Pricing in a Fuzzy environment", *Master Dissertation Master of Science in Banking and Finance*.

Modena, 20 October 2016

