



Elisa Fusco

Curriculum Vitae

Short biography

Born in 1986.

Assistant professor (RTD-B) in Economic Statistics (STAT-02/A). Department of Statistics, Computer Science, Applications "G. Parenti" (DISIA), University of Florence, Florence, Italy.

Granted as Associate Professor in Economic Statistics (STAT-02/A) - National Scientific Qualification (2021-2033).

Adjunct professor in Statistics at the Catholic University of Rome.

Executive committee member of The International Society for Spatial Methods (ISSM).

Ph.D in Methodological Statistics at the Sapienza University of Rome.

Degree in Statistical Science for Business Strategies at the Sapienza University of Rome.

Author of several scientific papers.

Author of two R packages for estimating the Spatial Stochastic Frontier Analysis (ssfa) and for constructing composite indicators (Compind).

Reviewer for *European Journal of Operational Research*, *OMEGA*, *The Annals of Regional Science*, *Social Indicators Research*, *Journal of Spatial Econometrics*, *Social Science & Medicine*, *Annals of Operations Research*, *Applied Economics*, *International Transactions in Operational Research*, *Empirical Economics*, *Papers in Regional Science*, *Spatial Economic Analysis*, *Big Data Research*.

Fellow Spatial econometric association (SEA), SIS and AISRe.

ORCID: orcid.org/0000-0001-5976-1013.

https://www.researchgate.net/profile/Elisa_Fusco

Main research interests

- Parametric and nonparametric statistical methods for estimating productive/cost efficiency.
- Methods for constructing Composite indicators.
- Spatial econometrics.

Education

- 2013-2017 **Ph.D in Methodological Statistics**, *Sapienza University of Rome, final vote: Ottimo.*
- 2008-2011 **Degree in Statistical Science for Business Strategies**, *Sapienza University of Rome, final vote: 110 cum laude.*
- 2005-2008 **Three-year degree in Statistical and Computer Science for Business Management**, *Sapienza University of Rome, final vote: 110 cum laude.*

Ph.D thesis

- Title *New developments in frontier models for objective assessments*
- Supervisor Prof. Bernardo Maggi, Department of Statistical Sciences, Faculty of Engineering of Information, Informatics and Statistics, Sapienza University of Rome
- Abstract The dissertation is the result of some innovative proposals, in the wide framework of production efficiency frontier models, that have the common goal of reducing subjective choices of the researcher by using, as far as possible, objective methods. In particular, the first proposal links the economic efficiency theory to the spatial econometrics with the aim of taking into account - in the efficiency evaluation of a productive unit - the neighborhood effects in a global way avoiding the subjective selection of a set of variables identifying territorial effects. The method called Spatial Stochastic Frontier Analysis (SSFA) has been published in Fusco and Vidoli (2013) for the production efficiency analysis and generalized in this thesis to be able to also analyze the cost efficiency. The second proposal, instead aims to introduce enhancements in the methods using frontier techniques to aggregate simple indicators in a composite indicator. Subjectivity is avoided in the identification of the set of aggregation weights necessary for constructing the composite indicator, in the definition of a preference structure among simple indicators and in the extreme values and outliers influence removal. The two methods proposed, called respectively Directional Benefit of the Doubt (D-BoD) and Robust Directional Benefit of the Doubt (RD-BoD), have been published in Fusco (2015) and Vidoli, Fusco and Mazziotta (2015).

Academic experience

- 2023-today **Assistant professor (RTD-B in Economic Statistics (STAT-02/A))**, *Department of Statistics, Computer Science, Applications "G. Parenti" (DISIA), University of Florence, Florence.*
- a.y. **Lecturer**, *Online Certification Program: "Analisi delle dinamiche finanziarie tra livelli di governo" (3 hours), "MODULO 3 - Gli strumenti statistici ed econometrici per la valutazione della performance e la determinazione del fabbisogno standard", MIP Politecnico di Milano Graduate School of Business, Politecnico di Milano, June 13, 2025.*
- 2024-2025
- 2024-today **Adjunct professor**, *Course: Applied statistics and big data (business intelligence) (40 hours), Faculty of Economics, Master program in Business administration and consultancy, Catholic University, Rome.*

a.y. **Adjunct professor**, Course: *Statistica 1 (30 hours)*, Faculty of Economics, Bachelor's degree program in Economics and Management of Services, Catholic University, Rome.

2016 "*Statistica sociale: nozioni di base e aspetti applicativi*":

- Fundamentals of descriptive and inferential statistics,
- Introduction to statistical data analysis with SPSS,
- Scale of Measurement and statistical tests.

Seminars (3 CFU) for Ph.D students of Ph.D Course in "Foreign Languages, Literatures and Cultures", Department of Foreign Languages, Literatures and Cultures, University of Roma Tre, March 7-11-14-18-21, 2016.

Institutional teaching activities (University of Florence)

a.y. **Statistical information systems for tourism**, (9 CFU), Master program in Design of sustainable tourism systems – *Progettazione dei sistemi turistici*.
2025-2026

a.y. **Fonti e metodi per l'analisi dei dati economici e sociali**, (3 CFU), Bachelor's degree program (DM 270/04) in *Sviluppo sostenibile, cooperazione e gestione dei conflitti*.
2025-2026

a.y. **Statistical information systems for tourism**, (9 CFU), Master program in Design of sustainable tourism systems – *Progettazione dei sistemi turistici*.
2024-2025

a.y. **Economic statistics for tourism**, (3 CFU), Master program in Design of sustainable tourism systems – *Progettazione dei sistemi turistici*.
2024-2025

a.y. **Statistica per le applicazioni aziendali (Statistics for business)**, (3 CFU), Bachelor's degree program (DM 270/04) in *Economia aziendale (Business Administration)*, Curriculum Management.
2023-2024

a.y. **Statistical information systems for tourism**, (3 CFU), Master program in Design of sustainable tourism systems – *Progettazione dei sistemi turistici*.
2023-2024

a.y. **Efficiency frontiers and composite indicators**, (2 CFU), PhD programme in *Mathematics, Computer Science and Statistics*, Statistics curriculum.
2023-2024

Institutional management activities (University of Florence)

2024-today **Member of the Council (Giunta)**, Department of Statistics, Informatics, Applications "G. Parenti" .

2024-today **Member of Review Group for quality of education**, Master program in Design of sustainable tourism systems – *Progettazione dei sistemi turistici*.

Graduate committees (University of Florence)

16 October 2025 **Co-supervisor, Master Thesis in Statistics and Data Science** , "*Corporate sustainability: a decision-oriented ESG composite indicator*", Giulio Magnanensi.

9 July 2025 **Supervisor, Master Thesis in Design of sustainable tourism systems** , "*Business Intelligence tools to support strategic decision-making in tourism destination management processes: The case study of Pistoia*", Chiara Guasti.

- 9 July 2025 **Co-Supervisor, Master Thesis in Design of sustainable tourism systems** , *"Analysis of Seasonality in Sustainable Tourism Flows: a comparison between Mediterranean and Scandinavian destinations."*, Filippo Fanti.
- 17 October 2024 **Co-supervisor, Master Thesis in Statistics and Data Science** , *"Efficienza e produttività dell'editoria italiana: un'analisi decennale con le frontiere stocastiche"*, Rimediotti Luca.
- 10 April 2024 **Co-supervisor, Master Thesis in Design of sustainable tourism systems**, *"Attitudes of air passengers toward emerging sustainable technologies in aviation"*, Derikuca Aleksandra.

Other teaching activities

- 23 October 2025 **Bootcamp Scuola IFEL**, *"Come sintetizzare i fenomeni complessi: il motore statistico econometrico della misurazione della performance "*, Scuola IFEL, Rome.

Other academic responsibilities

- 2023-... Member of the profit examination committee, academic year 2022/2023, course *Statistica economica* (President Prof.Francesco Vidoli) at the University of Urbino Carlo Bo.
- 2022-... "Cultore della materia" (subject expert) in Economic Statistics (SECS-S/03), in particular for the course *Statistica economica - 9CFU* (Prof.Francesco Vidoli) at the University of Urbino Carlo Bo.
- 2018-2020 "Cultore della materia" (subject expert) in Economic Statistics (SECS-S/03), in particular for the courses *Statistica economica corso avanzato - 9CFU* and *Efficiency and productivity analysis - 6CFU* (Prof.Bernardo Maggi) at the Sapienza University of Rome.
- December 2018 - May 2019 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences - Official statistics) with title "Alternative indicators for the evaluation of renewables in Europe: an efficiency approach", Livia Rizzuto.
- December 2018 - July 2019 Co-supervisor, Master Thesis (M. in Statistical and Decisional Sciences - Official statistics) with title "Multinational Firms and Productivity: the Italian case", Rebeka Mjeshtri.

Society memberships, Awards, and Honors

- 2025-today Albo IFEL (Fondazione Anci per la Finanza e l'Economia Locale)
- 2024-today Executive committee member of The International Society for Spatial Methods (ISSM)
- 2024-today Albo esperti AGENAS (Agenzia Nazionale per i Servizi Sanitari Regionali) - Area 5: Ricerca e Rapporti Internazionali
- 2022-today Member of SEA (Spatial econometric association)
- 2021 Granted as Associate Professor in Economic Statistics (13/D2) - National Scientific Qualification (2021-2033).
- 2017-today Ordinary member of SIS (Società Italiana di Statistica - Italian Statistical Society)

2013-today Member of AISRe (Associazione Italiana di Scienze Regionali - Italian Association of Regional Sciences)

Specialization courses

- 2023 **Forecasting with factor models and textual data**, Prof.Lorenzo Trapani, University of Leicester School of Business.
- 2023 **Factor models for large dimensional time series**, Prof.Lorenzo Trapani, University of Leicester School of Business.
- 2021 **Contemporary methods in spatial statistics in R with applications to life and social sciences**, Prof. Paula Moraga, Prof. David Bolin, Prof. Håvard Rue, Dr. Elias Krainski from King Abdullah University of Science and Technology, PhD winter school co-organized by University of Pavia and USI, (Introduction to INLA (H. Rue), An introduction to the SPDE approach (D. Bolin), Generalized Bayesian Likelihood-Free Inference Using Scoring Rules Estimators (L. Pacchiardi), Spatial Disease Modeling and Visualization using INLA and R (P. Moraga)).
- 2021 **Introduction to programming with Python (3a ed.) - Eduopen**, Prof. Armando Tacchella, University of Genoa.
- 2021 **Statistical matching**, Prof.Lorenzo Trapani, The University of Nottingham.
- 2021 **Forecasting low, high and mixed frequency series**, Prof.Lorenzo Trapani, The University of Nottingham.
- 2021 **Machine Learning for Time Series**, Prof.Lorenzo Trapani, The University of Nottingham.
- 2020 **Advanced econometrics**, Prof.Federico Belotti, University of Rome Tor Vergata.
- 2018 **Statistical methods for network analysis (SIS course)**, Prof.Domenico De Stefano, University of Trieste and Prof.Giuseppe Giordano, University of Salerno and Giancarlo Ragozini, University of Naples Federico II and Prof.Maria Prosperina Vitale, University of Salerno and Prof.Susanna Zaccarin, University of Trieste.
- 2017 **Workshop on “Recent Advances in causal inference for policy evaluation”**, Prof.Giovanni Mellace, University of Southern Denmark.
- 2016 **Workshop on “Recent Advances in Quantile and M-quantile Regression”**, Prof.Domenico Vistocco, University of Cassino and Southern Lazio and Prof.Nikos Tzavidis, University of Southampton.
- 2015 **Likelihood asymptotics**, Prof.Nicola Sartori, University of Padova.
- 2015 **Spatial econometrics (SIS course)**, Prof.Giuseppe Arbia, Catholic university of Rome and Prof.Paolo Postiglione, University of Chieti-Pescara.
- 2014 **Simulation and inference for stochastic differential equations in R**, Prof.Stefano Maria Iacus, University of Milan.
- 2014 **Econometrics for program evaluation: theory and practice using STATA**, Ph.D Giovanni Cerulli, National Research Council of Italy, Institute of Research on Economic Sustainable Growth.
- 2014 **Finite mixture models**, Prof.Roberto Rocci, University of Rome Tor Vergata.

2013 **Extensions and modifications of the likelihood concept**, Prof.Cristiano Varin, Ca' Foscari University.

Publications & working papers

Summary of Scientific Achievements

Total Impact factor: 87.89 (Latest IF)

Google scholar:
○ Publications: 43
○ h-index: 14
○ i10-index: 12
○ Citations: 706

Semantic scholar:
○ Publications: 31
○ h-index: 9
○ Citations: 430
○ Highly Influential Citations: 28

Researchgate:
○ Publications: 40
○ h-index: 11
○ Citations: 568
○ Reads: 4844

Scopus:
○ Publications: 26
○ h-index: 10
○ Citations: 414

Publications

- 2025 M.P.Libório, P.I.Ekel, E.Fusco, F.Vidoli, W.Pedrycz, C.S. Moura, *Fuzzy inference system for measuring composite indicators' overall quality*. Social Indicators Research, (DOI: <https://doi.org/10.1007/s11205-025-03679-7>) ISSN 0038-0121
- 2025 P.Di Caro, U.Fratesi, E.Fusco, *Trade flows, spatial effects and cohesion policy in the EU regions*. Open Economies Review, (DOI:<https://doi.org/10.1007/s11079-025-09812-w>) ISSN: 1573-708X
- 2025 A.G.Coimbra, O.C.D.dos Santos, A.C.G.Santos, J.B. Mendes; M.F. Silveira Vasconcelos D'Angelo, M.P. Libório, R.M. Macedo, E.Fusco, P.Y. Ekel. *Proposal for a Global Quality Indicator for the Municipal Public Health System – GQIMPHS*, Science Talks, 100466 (DOI:<https://doi.org/10.1016/j.sctalk.2025.100466>) ISSN: 2772-5693
- 2025 A.G.Coimbra, C.G. Oliveira, M.P.Liborio, H.Mannan, L.I. Santos, E.Fusco, M.F. Silveira Vasconcelos D'Angelo. *Approaches for Handling Imbalanced Data Used in Machine Learning in the Healthcare Field: A Case Study on Chagas Disease Database Prediction*, PLoS One 20(5): e0320966 (DOI:<https://doi.org/10.1371/journal.pone.0320966>),ISSN: 1932-6203

- 2025 J.Canello, F.Vidoli, E.Fusco & N.Giudice, *Identifying and mapping industrial districts through a spatially constrained cluster-wise regression approach*, Journal of Regional Science, 65, 403-428 (DOI:<http://doi.org/10.1111/jors.12743>), ISSN: 1467-9787.
- 2025 A.Baldassarre, D.Carullo, P.Di Caro, E.Fusco, P.Giacobbe, C.Orecchia, *A new approach to measure regional trade flows with administrative micro firm-level data*, Italian Economic Journal, 11, 65–101 (DOI:<https://doi.org/10.1007/s40797-023-00234-6>), ISSN 2199-3238.
- 2024 F.Giambona, A.Magrini & E.Fusco, *Assessing tourism sustainability in European Union countries: a multi-directional benefit of doubt composite indicator*, Socio-Economic Planning Sciences, 95, 102042 (DOI:<https://doi.org/10.1016/j.seps.2024.102042>), ISSN: 0038-0121.
- 2024 M.P.Libório, E.Fusco, A.M.A.Diniz, O.S.Martinuci, P.I.Ekel, *A novel approach for multispatial and multitemporal analysis of composite indicators*. Social Indicators Research, 173, 783-800 (DOI: <https://doi.org/10.1007/s11205-024-03370-3>), ISSN 0038-0121.
- 2024 M.P.Libório, H.Rabiei-Dastjerdi, C.Brunsdon, M.R. Pinto, E.Fusco, F.Vidoli, *An evaluation of the distribution of public goods in the city of São Sebastião do Paraíso in Brazil using composite indicators*. Cities, 150, 104993 (DOI:<https://doi.org/10.1016/j.cities.2024.104993>), ISSN: 0264-2751.
- 2024 F.Vidoli, E.Fusco, G.Pignataro, C.Guccio., *Multi-directional Robust Benefit of the Doubt model: an application to the measurement of the quality of acute care services in OECD countries*. Socio-Economic Planning Sciences, 93, 101877 (DOI: <https://doi.org/10.1016/j.seps.2024.101877>), ISSN 0038-0121.
- 2024 E.Fusco, M.P.Libório, H.Rabiei-Dastjerdi, F.Vidoli, C.Brunsdon, P.I.Ekel, *Harnessing spatial heterogeneity in composite indicators through the Ordered Geographically Weighted Averaging (OGWA) operator*. Geographical Analysis, 56(3), 530-553, (DOI: <https://onlinelibrary.wiley.com/doi/10.1111/gean.12384>), ISSN: 1538-4632.
- 2023 E.Fusco, *Potential improvements approach in composite indicators construction: the Multi-directional Benefit of the Doubt model*, Socio-Economic Planning Sciences, 85, 101447 (DOI:<https://doi.org/10.1016/j.seps.2022.101447>), ISSN 0038-0121.
- 2023 E.Fusco, R.Benedetti and F.Vidoli, *Stochastic frontier estimation through parametric modeling of quantile regression coefficients*, Empirical Economics, 64(2), 869-896, (DOI:<https://doi.org/10.1007/s00181-022-02273-x>), ISSN: 0377-7332.
- 2022 E.Fusco, B.Maggi and L.Rizzuti, *Alternative indicators for the evaluation of renewables in Europe: an efficiency approach*, Renewable Energy, 190, 48-65, (DOI:<https://doi.org/10.1016/j.renene.2022.03.007>), ISSN: 0960-1481.
- 2022 E.Fusco and B.Maggi, *Computing Nonperforming Loan Prices in Bank Efficiency Analysis*, Computational Management Science, 19(1), 1-23, Springer Berlin Heidelberg, 2022/1, (DOI:<https://doi.org/10.1007/s10287-021-00406-8>), ISSN:1619-6988.
- 2021 E.Fusco, M.Laurenzi and B.Maggi, *Length of Trials in the Italian Judicial System: An Efficiency Analysis by Macro-Area*, Justice System Journal, 42(1), 78-105, (DOI:10.1080/0098261X.2020.1852985), ISSN: 2327-7556.

- 2021 E.Fusco, *Spatial Dependence in Efficiency Parametric Models: A Generalization and Simulation Studies*, "Scienze Regionali, Italian Journal of Regional Science" Speciale/2021, pp. 595-618, (DOI:10.14650/97446), ISSN: 1720-3929.
- 2020 E.Fusco and V.Allegri, *The role of spatial interdependence in local government cost efficiency: An application to waste Italian sector*, Socio-Economic Planning Sciences, 69,100681, (DOI:https://doi.org/10.1016/j.seps.2019.01.003), ISSN: 0038-0121.
- 2020 E.Fusco, F.Vidoli and N.Rogge, *Spatial directional robust Benefit of the Doubt approach in presence of undesirable output: An application to Italian waste sector*, Omega, 94, (DOI:https://doi.org/10.1016/j.omega.2019.03.011), ISSN: 0305-0483.
- 2018 F.Vidoli and E.Fusco, *Level of services, spatial dependence and allocative efficiency in local governments*, Local Government Studies, 44:6 848-873 (DOI:10.1080/03003930.2018.1512491), Print ISSN: 0300-3930 Online ISSN: 1743-9388.
- 2018 E.Fusco, F.Vidoli and B.Sahoo, *Spatial heterogeneity in composite indicator: a methodological proposal*, Omega, 77 1-14 (DOI:https://doi.org/10.1016/j.omega.2017.04.007), ISSN: 0305-0483.
- 2016 F.Vidoli, C.Cardillo, E.Fusco and J.Canello, *Spatial nonstationarity in the stochastic frontier model: An application to the Italian wine industry*, Regional Science and Urban Economics, 61 153-164 (DOI:http://dx.doi.org/10.1016/j.regsciurbeco.2016.10.003), ISSN: 0166-0462.
- 2015 F.Vidoli, E.Fusco and C.Mazziotta, *Non-compensability in Composite Indicators: a Robust Directional Frontier Method*, Social Indicators Research, Springer Netherlands,1-18, (DOI: 10.1007/s11205-014-0710-y), ISSN: 0303-8300.
- 2015 E.Fusco, *Enhancing non compensatory composite indicators: a directional proposal*, European journal of operational research, 242(2) 620-630 (DOI:10.1016/j.ejor.2014.10.017), ISSN: 0377-2217.
- 2013 E.Fusco and F.Vidoli, *Spatial stochastic frontier models: controlling spatial global and local heterogeneity*, International Review of Applied Economics, 27(5) 679-694, (DOI:10.1080/02692171.2013.804493), ISSN: 1465-3486.

Proceedings

- 2025 E.Fusco and A.Magrini, *A decision-oriented approach to assess tourism sustainability in Italian regions*. In: 3rd Italian Conference on Economic Statistics (ICES 2025). Sustainability, innovation and digitalization: Statistical Measurement for Economic Analysis, 145-148, Napoli, Enzo Albano Editore, ISBN 979-12-80655-52-3.
- 2014 C.Settimi, F.Vidoli, E.Fusco and D.Ballanti, *Estimating Technical Efficiency in the Italian Municipalities*, Procedia Economics and Finance, 17(0) 131 - 137 (DOI:10.1016/S2212-5671(14)00887-9), ISSN: 2212-5671.

Technical reports

- 2011 Scuola Superiore dell'Amministrazione dell'Interno, *Linee di tendenza nella situazione delle province l'emersione del disagio economico e sociale*, Quaderni di documentazione.

Chapters

- 2025 *Connections Among Emerging Art Galleries: New Data and Exploratory Analysis* in In: Guccio, C., Mazza, I., Pignataro, G. (eds) *New Perspectives in the Public and Cultural Sectors. Contributions to Economics*. Springer, Cham. (DOI:https://doi.org/10.1007/978-3-031-81892-9_11)
- 2015 Chapter 8 "*Efficienza di costo*" in Ph.D F.Vidoli's lecture notes, *Metodi di stima dell'efficienza produttiva e di costo. Rassegna delle principali tecniche di stima ed applicazioni in ambito pubblico*, Course "Metodi quantitativi di valutazione delle politiche pubbliche", University of Roma Tre.

Working Papers

- 2024 E.Fusco, G.Arbia, F.Vidoli, V.Nardelli. *On Spatio-Temporal Stochastic Frontier Models*, arXiv, <https://arxiv.org/abs/2410.20915>
- 2024 E.Fusco, G.Arbia, F.Vidoli, V.Nardelli. *On Spatio-Temporal Stochastic Frontier Models*, DISIA WORKING PAPER 2024/09, University of Florence. https://labdisia.disia.unifi.it/wp_disia/2024/wp_disia_2024_09.pdf
- 2023 F.Vidoli, E.Fusco, G.Pignataro, C.Guccio. *Multi-directional Robust Benefit of the Doubt model: a comprehensive measure for the quality of health care in OECD countries*, Health, Econometrics and Data Group (HEDG) Working Papers 23/14, HEDG, c/o Department of Economics, University of York. <https://www.york.ac.uk/media/economics/documents/hedg/workingpapers/2023/2314.pdf>
- 2023 A.Baldassarre, D.Carullo, P.Di Caro, E.Fusco, P.Giacobbe, C.Orecchia, *Bilateral Regional Trade Flows in Italy: an Origin-Destination-Commodity GWR-SAR approach*, DF Working Papers (Italian department of finance Working Papers); no.WP2023-18, ISSN 2610-8887. <https://www.finanze.gov.it/export/sites/finanze/galleries/Documenti/Varie/WP2023-18.pdf>.
- 2023 A.Baldassarre, V.F.Calà, D.Carullo, H.Dudu, E.Fusco, P.Giacobbe, C.Orecchia, *Simulating the Effect of Business Tax Abolition through a New Regional CGE Model: Evidence from Italy*, Policy Research working paper; no. WPS 10387 Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/099256203292313304/IDU0d4c5420a036e3048de0875f0c8c25d7dca6a>.
- 2018 E.Fusco, M.Laurenzi and B.Maggi, *A data envelopment analysis of the Italian judicial efficiency*, DSS Empirical Economics and Econometrics Working Papers Series 2018/2, Centre for Empirical Economics and Econometrics, Department of Statistics, "Sapienza" University of Rome, ISSN: 2279-7491.
- 2016 E.Fusco and B.Maggi, *Bank financial world crisis: Inefficiencies and Responsibilities*, DSS Empirical Economics and Econometrics Working Papers Series 2016/2, Centre for Empirical Economics and Econometrics, Department of Statistics, "Sapienza" University of Rome, ISSN: 2279-7491.

Vignettes

- 2015-... E.Fusco and F.Vidoli, *Spatial Stochastic frontier models: Instructions for use*, *ssfa* R package, CRAN, [link].
- 2015-... F.Vidoli and E.Fusco, *Compind: Composite indicators functions based on frontiers in R*, *Compind* R package, CRAN, [link].

Original statistical R packages

- 2015-... *ssf*: allows to estimate efficiency through the method proposed in *Spatial stochastic frontier models: controlling spatial global and local heterogeneity*. [link]
- 2014-... *Compind*: contains functions of several methods in the literature for constructing Composite Indicators. [link]

Conference organization and roles

Conference organization

- 2024 *2nd Italian Conference on Economic Statistics*, University of Florence (Italy), February 7/8, 2024.
- 2023 *XVII Spatial Econometrics Association World Conference (SEA 2023)*, San Diego, California, November 16/17, 2023.
- 2014 *Conference of European Statistics Stakeholders*, Sapienza University of Rome, November 24/25, 2014.

Session chairing and other roles

- 2025 Session chair and discussant, *XIX World Conference of the Spatial Econometrics Association (SEA 2025)*, Session: Inequality and Well-being, Rabat, Morocco, May 5/6, 2025.

Conference presentations

- 2025 *Local potential improvements in well-being evaluation* with Libório M.P. (State University of Montes Claros - Unimontes, Montes Claros, Brazil), XLVI Annual Scientific Conference AISRe, Gabriele d'Annunzio university, Pescara, September 10/12 2025.
- 2025 *Exploring local potential improvements in composite indicators* with Prof. Vidoli F. (University of Urbino), Libório M.P. (State University of Montes Claros - Unimontes, Montes Claros, Brazil), XIX World Conference of Spatial Econometrics Association (SEA 2025), Session: Local spatial analysis and spatial regimes, Rabat, Marocco, May 5/6 2025.
- 2025 *A decision-oriented approach to assess tourism sustainability in Italian regions* with Prof. Magrini A. (University of Florence), 3rd Italian Conference on Economic Statistics, Session: Tourism and Overtourism, Naples, Italy, February 13/14 2025.
- 2024 *On spatiotemporal stochastic frontier models* with Prof. Arbia G. (Università Cattolica del Sacro Cuore), Vidoli F. (University of Urbino), Nardelli V. (Università Cattolica del Sacro Cuore), XVIII World Conference of Spatial Econometrics Association (SEA 2024), Session: Frontier models, Groningen, Netherlands, June 23/25 2024.
- 2024 *Spatial effects in efficiency frontiers models*, Workshop for Spatial Methods - Geospatial Intelligence Lab - Curtin University, Australia (**invited speaker**), Web workshop, June 13 2024.

- 2022 *Compind: Composite indicators functions based on frontiers in R*, with Prof. Vidoli F. (Urbino Carlo Bo University - Department of Economics, Society and Politics), Conference of European Statistics Stakeholders 2022, University of Rome La Sapienza, October 20/21 2022.
- 2022 *Bilateral Regional Trade Flows in Italy*, with Di Caro P. (Ministry of Economy and Finance; Department of Law; University of Catania, Italy; University of Essex Business School, United Kingdom), Balbassarre, A., Carullo, D. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Dudu, H. (The World Bank, Washington D.C., US), Giacobbe, P. (SOGEL spa, Rome, Italy), Orecchia, C. (Department of Finance; Italian Ministry of Economy and Finance, Italy), XLIII Annual Scientific Conference AISRe, Polytechnic University of Milan, September 5/7 2022.
- 2022 *Bilateral Regional Trade Flows in Italy*, with Di Caro P. (Ministry of Economy and Finance; Department of Law; University of Catania, Italy; University of Essex Business School, United Kingdom), Balbassarre, A., Carullo, D. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Giacobbe, P. (SOGEL spa, Rome, Italy), Orecchia, C. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Session: Macro-economic empirical spatial studies, XVI World Conference of Spatial Econometrics Association (SEA 2022), University of Warsaw, 24 June 2022.
- 2022 *Bilateral Regional Trade Flows in Italy*, with Di Caro P. (Ministry of Economy and Finance; Department of Law; University of Catania, Italy; University of Essex Business School, United Kingdom), Balbassarre, A., Carullo, D. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Dudu, H. (The World Bank, Washington D.C., US), Giacobbe, P. (SOGEL spa, Rome, Italy), Orecchia, C. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Session: Developing the regional Social Accounting Matrix, Workshop organised by World bank, European Commission, Italian Ministry of Economy and Finance: *Tax policy analysis with the new Italian IRENCGE-DF model: assessing environmental and regional effects*, 31 March 2022, <https://www.finanze.gov.it/it/inevidenza/Workshop-II-modello-italiano-CGE-di-tassazione-per-unanalisi-delle-politiche-pubbliche/>.
- 2021 *The new italian regional tax CGE model (DF-RENVCGE) for tax policy analysis*, with Di Caro P. (Ministry of Economy and Finance; Department of Law; University of Catania, Italy; University of Essex Business School, United Kingdom), Balbassarre, A., Carullo, D. (Department of Finance; Italian Ministry of Economy and Finance, Italy), Dudu, H. (The World Bank, Washington D.C., US), Giacobbe, P. (SOGEL spa, Rome, Italy), Orecchia, C. (Department of Finance; Italian Ministry of Economy and Finance, Italy), XLII Annual Scientific Conference AISRe, Web Conference.
- 2017 *Spatial nonstationarity in the stochastic frontier model: An application to the Italian wine industry*, with Vidoli F., Cardillo, C., Canello, J., 19th meeting of the OECD Farm-level Analysis Network, Paris.
- 2016 *Spatial stochastic cost frontier analysis for the spending review process implementation*, 2nd Annual Workshop of the PhD school in Statistical Science, Sapienza University of Rome.

- 2015 *Misurare l'efficienza degli enti locali: OpenCivitas - Focus servizio smaltimento rifiuti*, Forum PA - Palazzo dei Congressi.
- 2015 *Parametric approximations of nonparametric cost frontiers: a probabilistic approach*, with professor Daraio C., poster at 1th Annual Workshop of the PhD school in Statistical Science, Sapienza University of Rome.
- 2014 *Non-compensability in composite indicators: a robust directional frontier method*, with Vidoli F. and Mazziotta C., 47th Scientific meeting of the Italian Statistical Society (SIS), Cagliari.
- 2013 *Local governments, expenditure needs and level of services: a parametric approximation of nonparametric robust frontier approach*, with Daraio C. and Vidoli F., 26th European Conference on Operational Research (EURO - INFORMS), Rome.
- 2013 *Enhancing non compensatory composite indicators: a directional proposal*, XXXIV Annual Scientific Conference AISRe, University of Palermo.
- 2013 *Estimating technical efficiency in the Italian Municipalities* at IES2013 Conference, University of Milano-Bicocca, with C.Settimi, F.Vidoli and D.Ballanti.

Seminars

- 2023 *Composite indicators through frontier methods*, AGENAS, March 31, 2023 (invited lecturer) with Prof.Francesco Vidoli, Prof.Giacomo Pignataro and Prof.Calogero Guccio
- 2022 *Efficiency frontier and composite indicators: Foundations and Spatial applications*, Department of Economics and Business, University of Catania, October 13, 2022 (invited lecturer by Prof.Giacomo Pignataro and Prof.Calogero Guccio).
- 2021 *Efficiency frontier models: Foundations and Spatial applications*, within the Ph.D. course *Spatial econometrics* held by Prof. Roberto Basile for the Ph.D. in "Regional Science & Economic Geography", Gran Sasso Science Institute, June 10, 2021 (invited lecturer by Prof.Paolo Di Caro).
- 2018 *Efficiency frontier models: Foundations and recent developments*, Department of Statistical Sciences, within the course *Statistica economica corso avanzato* held by Prof. Bernardo Maggi, Sapienza University of Rome, May, 2018.
- 2018 *Efficiency frontier models: Foundations and recent developments*, Department of Statistical Sciences, within the course *Efficiency and productivity analysis* held by Prof. Bernardo Maggi, Sapienza University of Rome, May, 2018.
- 2015 *Production/cost parametric efficiency estimation with R and STATA*, Department of Statistical Sciences, Sapienza University of Rome, December, 2015.
- 2015 *Production/cost parametric efficiency models: foundations and recent developments*, Department of Statistical Sciences, Sapienza University of Rome, December, 2015.
- 2015 *Level of services and cost evaluation: an integrated approach*, Seminar Series:"Program Evaluation and Spatial Dimension", Centro di Ricerca interdipartimentale di Economia delle Istituzioni, Department of Political science, University of Roma Tre.

- 2013 *Cenni sulle tecniche di frontiera di tipo parametrico*, seminar within the course *Metodi quantitativi di valutazione delle politiche pubbliche* held by Prof. Claudio Mazziotta, University of Roma Tre.
- 2013 *Stochastic frontier analysis for cross-sectional and panel data*, practical training with STATA within the course *Productive Efficiency Analysis* held by Prof. Cinzia Daraio, SoSe SpA.

Research Projects

- 2026-2027 Partner Investigator for the project entitled 'MarginalitY and Transitions of yoUth to RegioNal employment' acronym 'MY-TURN'. Competitive Biennial RTD Project 2026-2027, University of Florence. Topics: Analysis of the key drivers of transition, construction of a composite indicator of youth marginality, and examination of the related territorial disparities.
- 2024-2025 Assignment as collaborator for the PNRR project entitled 'TErritorial Mapping Model for an Equitable HEALTHcare' acronym 'TEMME-Health', financed by the European Union - 'NextGenerationEU' - CUP J33C22002910001, called by the Department of Economics, Society, Politics (DESP) of the University of Urbino Carlo Bo. Topics: Spatial econometrics with a focus on parametric and non-parametric stochastic frontier estimation models, quantile regression models and methods for estimating composite indicators.
- 2023- Member of the research project APQ-01042-23;407180/2023-0 by Pontifícia Universidade Católica de Minas Gerais, Minas Gerais, Brazil, coordinator: Prof. Petr Ekel. The project aims to develop and improve models and methods for multicriteria decision-making in the field of composite indicators. Status: In progress; Nature: Research. Members: Matheus Pereira Libório, Oséias da Silva Martinuci, Petr Ekel, Douglas Alexandre Gomes Vieira, Mateus Alberto Dorna de Oliveira Ferreira, Elisa Fusco, Financial support: Minas Gerais State Agency for Research and Development - FAPEMIG; Brazilian National Council for Scientific and Technological Development (CNPq).
- 2020-2023 Member of the research project: *Assessment of environmental tax reforms and regional impacts (CGE modelling)*, This research project funded by the European Commission-DG Reform, in collaboration with The World Bank, the Department of Finance of the Italian Ministry of Economy and Finance and the support of SOGEI SpA.
- 2020-2023 Member of the research project: *Improving the evaluation of VAT and excise tax policies in Italy*, European Union Structural reform support program European Commission, in collaboration with The World Bank-ECOMOD, the Department of Finance of the Italian Ministry of Economy and Finance and the support of SOGEI SpA.
- 2018-2020 Member of the research project (PI): *Banks Financial crisis: Inefficiencies or Responsibilities?*, This research project is framed in the context of the financial crises due to banks default. In particular is studied, at an international level, the behaviour of the banking system in terms of efficiency and productivity analysis and the causes that may engender a financial crisis.

Research activities at universities/visitings

- 2023 Department of Economics and Business, University of Catania, Prof. Giacomo Pignataro and Prof. Calogero Guccio, *Multi-directional Robust Benefit of the Doubt model*, November 15-17, 2023
- 2022 Department of Economics and Business, University of Catania, Prof. Giacomo Pignataro and Prof. Calogero Guccio, *Possibility of applying the Multi-Directional BoD method to AGENAS healthcare data*, October 13-14, 2022

Editorial activity

- July **Guest Editor.**
- 2025-May Special Issue "*Dynamic Spatial Statistics for Transport Modelling and*
2026 *Human Mobility*", Spatial Statistics (Elsevier), 2211-6753. Available at: <https://www.sciencedirect.com/special-issue/324491/dynamic-spatial-statistics-for-transport-modelling-and-human-mobility>
- May **Leading Guest Editor.**
- 2025-June Special Issue "*Sustainable Technologies and Innovations in Building and Construction*",
2026 Sustainability (MDPI), ISSN 2071-1050. Available at: https://www.mdpi.com/journal/sustainability/special_issues/Y8E9717EE0

Referring activity

European Journal of Operational Research, OMEGA, The Annals of Regional Science, Social Indicators Research, Journal of Spatial Econometrics, Social Science & Medicine, Annals of Operations Research, Applied Economics, International Transactions in Operational Research, Empirical Economics, Papers in Regional Science, Spatial Economic Analysis, Big Data Research.

Work experience

- 2020-2023 **Statistical Models Expert**, SOGEI SPA, Rome.
Department of economic modelling and statistical analysis for policy making.
- Estimation of inter-regional flows of a regional SAM to construct a regional Computational General Equilibrium (CGE) type of model for the evaluation of the macroeconomic effects of fiscal policies (for the Department of Finance).
 - Micro-simulation models for fiscal analysis, specially designed to applicable national and local tax regulations.
 - Study and estimation activities on the income effects of regulatory measures, the ex-post monitoring of the financial effects of recently-approved regulations and the tax expenditure incurred for the different rebates present in the Italian tax system.
- 2019-2020 **Researcher**, SOSE SPA, Rome.
Research Centre - Evaluation and methodology development area.

2011-2019 **Statistical analyst**, SOSE SPA, Rome.

- Analysis of the level of fiscal risk of some economic sectors (Working Group on Control Activities for the Guardia di Finanza) using Social Network Analysis methods.
- Synthetic Index of Reliability (in Italian abbreviated as ISA) determination.
- Construction of composite indicators for the evaluation of local government services.
- "Fabbisogni Standard", determination of expenditure standard needs for Italian Municipalities and Provinces (for more info, please see the Legislative Decree No. 216 of 26 November 2010) and "Fabbisogni Standard Regionali" (Legislative Decree No. 68 of 2011, Law delegation No. 42/2009), recognition of LEPs, expenditure standard needs and service objectives of Ordinary Statutes Regions.
- Technical efficiency estimation of local authorities.
- "Spending Review", identification of models for estimating the cost efficiency of Italian local authorities (parametric, semiparametric, and nonparametric methods) in collaboration with the special commissioner for the public expenditure review Enrico Bondi in 2012 and the "Gruppo di lavoro Fabbisogni e costi standard" (Ministry of Economy and Finance) during the years 2013-2014 established within the public expenditure review activities of the special commissioner Carlo Cottarelli (International Monetary Fund).

2009–2011 **Economic-statistic analyst**, ISTITUTO GUGLIELMO TAGLIACARNE, Rome.

- "Report on the State of the Provinces", a compilation of the questionnaire support and data processing.
- Construction of regional accounting indicators.
- Construction of urban competitiveness indicators.

Computer skills

Excellent use of:

- **SAS**: SAS Institute Italy courses:
 - SAS fundamentals,
 - Multivariate Statistical Analysis,
 - SAS Macro Language and SAS Macro Language Advanced,
 - Using SQL with SAS,
 - SAS Enterprise guide (advanced),
 - SAS Visual Analytics.
- **R**: R package developer.
- **STATA**
- **SPSS**
- **L^AT_EX**

Basic knowledge of:

- **Eviews**
- **GAMS**
- **Python**.

I agree with personal data processing in accordance with Italian 675/96 law.

Rome, November 7, 2025

