

GIANFRANCO PIRAS

Associate Professor of Econometrics

Department of Economics

University "G.d'Annunzio"- Chieti - Pescara

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Google Scholar profile:

<https://scholar.google.com/citations?user=eZQOvEgAAAAJ&hl=en>

Current Position

Associate Professor of Econometrics, Department of Economics, University "G. d'Annunzio", Chieti - Pescara, Italy

Other Affiliations

Faculty Affiliates, Regional Research Institute, West Virginia University, Morgantown, WV 26506-6825

Adjunct Professor, Division of Resource Management, West Virginia University, Morgantown, WV 26506-6825

Previous Positions

Ordinary Professor of Economics, Department of Arts and Sciences, The Catholic University of America, Washington, DC, USA

Associate Professor of Economics, Department of Arts and Sciences, The Catholic University of America, Washington, DC, USA

Interim Associate Professor of Economics, The Busch School of Business and Economics, The Catholic University of America, Washington, DC 20064

Visiting Assistant Professor of Economics, The Busch School of Business and Economics, The Catholic University of America, Washington, DC 20064

Research Assistant Professor, Regional Research Institute, West Virginia University, (Aug 2010 - May 2014)

Postdoctoral Research Associate, Department of City and Regional Planning, Cornell University (Dec 2009 - May 2010)

Postdoctoral Research Associate, GeoDa center Arizona State University (Dec 2008 - May 2009)

Assistant professor, IDEAR, Universidad Catolica del Norte, Antofagasta, Chile (Jul 2008- Nov 2008)

Post-Doctoral Fellow, Regional Economics Application Laboratory (REAL), University of Illinois at Urbana-Champaign (Aug 2006 - Jun 2008)

Research Fellow, University "G. d'Annunzio" of Chieti, Pescara, Italy (Aug 2005 Jun 2006)

Research Assistant, Econometric Modelling, Institute for Studies and Economic Analysis (ISAE), Rome, Italy (Jun 2002 - Sep 2003)

Education

PhD in Econometrics and Empirical Economics, Tor Vergata University, Faculty of Economics, Rome (Italy), 2005

M.A. Economics, Tor Vergata University, Faculty of Economics, Rome (Italy), 2002

B.S. Economics, University "G. d'Annunzio" of Chieti, Pescara (Italy) Faculty of Economics, 2001

Awards and Honors

Fellow of the Spatial Econometrics Association.

2009 Regional Studies Association Best Paper Award for the paper: "The European Regional Growth Process Revised", *Spatial Economic Analysis*, 3(1), 7-25. 2008 (with Dall'Erba S., and M. Percoco)

2014 Regional Studies Association Best Paper Award for the paper: "Efficient GM estimation of a Cliff and Ord panel data model with random effects", *Spatial Economic Analysis*, 8(3): 370-388. 2013

Keynote speech at ENABER, Brazilian Association of Regional Science. Recife, Brazil, October 8-10, 2012

Keynote speech at the French Economics Association. Dijon, France, June 14-16, 2022.

Keynote speech at the French Economics Association. Dijon, France, May 25-26, 2023.

Keynote speech at the Chilean Association of Regional Science. Chile, December 11-13, 2024.

Publications

Articles in journals

1. "A J -test for spatial autoregressive binary models". (with M.Sarrias), *Spatial Statistics*, 67, 100903.
2. "Heterogeneous spatial models in \mathbf{R} : spatial regime models". (with M. Sarrias), *Journal of Spatial Econometrics*, 4(4):1-32. (2023)
3. "One or Two-step? Evaluating GMM efficiency for spatial binary probit models". (with M. Sarrias), *Journal of Choice Modelling*, 100432, 1-16. (2023)
4. "GMM Estimators for Binary Spatial Models in \mathbf{R} ". (with Mauricio Sarrias), *Journal of Statistical Software*, forthcoming.
5. "Recursive Estimation of the Spatial Error Model". (with Ghiringhelli, C. Arbia, G. and Mira A.), *Geographical Analysis*, 55: 90-106. (2023)
6. "A simple test for stability of a spatial model", (with Kelejian H.H.), *Spatial Economic Analysis*, 17(2): 245-261. (2022).
7. "A deeper look at impacts in spatial Durbin model with sphet". (with Postiglione P.), *Geographical Analysis*, 54(3): 664-684. (2022).
8. "A Review of Software for Spatial Econometrics in R", (with Bivand, R. and Millo, G.), *Mathematics*, 9(11), 1276. (2021).
9. "Spillover effects in spatial models: Generalizations and extensions". (with Kelejian H.H.), *Journal of Regional Sciences*, 60(3), 425-442. (2020).
10. "Impact Evaluation of Investments in the Appalachian Region: A Reappraisal", (with Sayago-Gomez J, T., Jackson R. and Lacombe D.) *International Regional Science Review*, 41(6), 601-629. (2018).
11. "Important overlooked IV's in spatial models", (with Kelejian H.H.) *Empirical Economics*, 55(1), 69-83. (2018).
12. "A J -test for dynamic panel model with fixed effects, and nonparametric spatial and time dependence", (with Kelejian H.H.) *Empirical Economics*. 51(4): 15811605. (2016) .
13. "An extension of the J -test to a spatial panel data framework", (with Kelejian H.H.) *Journal of Applied Econometrics*, 31(2): 387-402. (2016).
14. "Comparing estimation methods for spatial econometrics", (with Bivand R.) *Journal of Statistical Software*, 63(18): 1-36. (2015).
15. "A spatially explicit approach to the study of socio-demographic disparities in the spatial distribution of trees across Boston neighborhoods" (with Duncan

- D., Kawachi I., Kum S., Aldstadt J., Matthews S.A., Arbia G., Castro M.C., White K., Williams D.R.), *Spatial Demography*, 1(4): 1-29. (2014).
16. "Estimation of spatial models with endogenous weighting matrices, and an application to a demand model for cigarette", (with Kelejian H.H.) *Regional Science and Urban Economics*, 46, 140-149. (2014).
 17. "Impact estimates for static spatial panel data models in R " *Letters in Spatial and Resource Sciences*, 7, 213-223. (2014).
 18. "Finite sample properties of pre-test estimators of spatial models", (with Prucha I.R.) *Regional Science and Urban Economics*, 46, 103-115. (2014).
 19. Special issue on spatial econometrics: an editorial note. (with Arbia G., and Prucha I) *The Review of Regional Studies*, 44: 221-222. (2014)
 20. "Efficient GM estimation of a Cliff and Ord panel data model with random effects", *Spatial Economic Analysis*, 8(3): 370-388. (2013).
 21. "The Built Environment and Depressive Symptoms among Urban Youth: A Spatial Regression Study" (with Duncan D., Johnson R., Dunn E.C., Melly S.J., and Molnar B.E.) *Spatial and Spatio-temporal Epidemiology*, 5:11-25. (2013).
 22. "On the parameter space in higher order spatial econometrics model", (with Elhorst J.P. and Lacombe D.) *Regional Science and Urban Economics*, 42(1-2): 211-220. (2012).
 23. "Spatial J-test: Some Monte Carlo evidence", (with Lozano-Gracia N.), *Statistics and Computing*, 22(1) 169-183. (2012).
 24. "Specialization, R&D and productivity growth: Evidence from EU regions", (with Patricio A. and Postiglione P.), *Annals of Regional Science*, 49(1) : 35-51. (2012).
 25. "splm: spatial panel data models in R ", (with Millo G.) *Journal of Statistical Software*, 47(1): 1-38. (2012).
 26. "The distributional effects of NAFTA in Mexico: Evidence from a panel of municipalities", (with Baylis K. and GardunoRivera R.), *Regional Science and Urban Economics*, 42(1-2): 286-302. (2012) .
 27. "The welfare benefit of a home's location: An empirical comparison of spatial and non-spatial model estimates", (with Lozano-Gracia N. and Koschinsky J.), *Journal of Geographical Systems*, 14(3): 319-356. (2012).
 28. "An extension of Kelejian's J-test for non-nested spatial models", (with Kelejian H.H.), *Regional Science and Urban Economics*, 41: 281-292. (2011).
 29. "Spatial approaches to panel data in Agricultural Economics: a climate change application", (with Baylis K. and Paulson N.D.), *Journal of Agricultural and Applied Economics*, 43(3), 325-338. (2011).
 30. "Growth and convergence in a Multi-regional model with space-time dynamics", (with Arbia G. and Elhorst J.P.), *Geographical Analysis*, 42, 338-355. (2010).
 31. "Journey to Safety: Conflict-Driven Migration Flows in Colombia", (with Lozano-Gracia N. Ibañez A. and Hewings G.J.D.), *International Regional Science Review*, 33, 157-180. (2010).
 32. "sphet: spatial models with heteroskedastic innovations in R " *Journal of Statistical Software*, 35 (1), 1-21. (2010).

33. "Service Industry and Cumulative Growth in the Regions of Europe", (with Dall'Erba S. and Percoco M.), *Entrepreneurship and Regional Development*, 21(4), 333-349. (2009).
34. "A new class of Spatial Concentration Measures", (with Arbia G.), *Computational Statistics and Data Analysis*, 53 (12), 4471-4481. (2009).
35. "Does evidence on Regional Economic Convergence Depend on the Estimation Strategy? Outcomes from Analysis of a Set of NUTS2 EU Regions", (with Arbia G. and Le Gallo J.), *Spatial Economic Analysis*, 3(2), 209-224. (2008).
36. "The European Regional Growth Process Revised", (with Dall'Erba S. and Percoco M.), *Spatial Economic Analysis*, 3(1), 7-25. (2008).
37. "Convergence in per-capita GDP across EU NUTS2 regions using panel data models extended to spatial autocorrelation effects", (with Arbia G.), *Statistica*, LXVII, 2. (2007).
38. "Non linear Regional Economics Dynamics: Continuous-Time Specification, Estimation and Stability Analysis", (with Arbia G. and Donaghy K.P.), *Journal of Geographical Systems*, 9(4), 311- 419. (2007).

Chapters in books

1. "Spatial Regression models" In *Thematic Encyclopedia of Regional Science*, edited by Peter Nijkamp, Karima Kourtit, Kingsley E. Haynes and Zeynep Elburz. 2025
2. "Looking ahead: a review of more advanced topics in spatial econometrics" in *Statistical Foundations of Spatial Econometrics: Application to regional Convergence*, (ed. Arbia G.), Springer Verlag, Berlin. 2006
3. "Appendix: A review of the available software for Spatial Econometric Analysis" in *Statistical Foundations of Spatial Econometrics: Application to regional Convergence*, (ed. Arbia G.), Springer Verlag, Berlin. 2006

Other Papers

1. "Measurement errors in the spatial weighting matrix".(with F.Rossi)
2. "Spatial Models with continuous heterogeneity". (with M.Sarrias)
3. "Spillover effects of farmer's adaptation to climate change." (with Sarrias M. and Rocco L.)
4. "On the Small Sample Properties of Spatial Estimators After Weight Matrix Selection". (with Prucha I.R.)
5. "Location Choice under Spatial Price Interdependency" (with Lozano-Gracia N. and Prucha I.R.)
6. "On the application of bootstrap methods in spatial econometric models", (with Lozano- Gracia N.)

Books

1. "Spatial Econometrics". (with Kelejian H.H.) Academic Press, Paperback

Books project

1. "Applied Spatial Econometrics with R". (with Bivand R. and Sarrias M.)

Other working papers

1. "Using Spatial Panel Data in Modelling Regional Growth and Convergence", (with Arbia G. and Basile R.), ISAE Working Papers 55, ISAE - Institute for Studies and Economic Analyses - (Rome, ITALY)
2. "Analyzing Intra-Distribution Dynamics: A Reappraisal", (with Basile R. and Arbia G.), ERSA conference papers ersa06p262, European Regional Science Association
3. "The relationship between Regional Growth and Regional Inequality in EU and transition countries - a Spatial Econometric Approach", (with Arbia G. and De Dominicis L.), ERSA conference papers ersa05p168, European Regional Science Association
4. "Convergence in per-capita GDP across European regions using panel data models extended to spatial autocorrelation effects", (with Arbia G.) ISAE Working Papers 51, ISAE - Institute for Studies and Economic Analyses - (Rome, ITALY)

Editorial Board and Reviewing Activities

Co-Editor, Spatial Economic Analysis (2024-to date)

Associate Editor, Journal of Spatial Econometrics (until 2023)

Associate Editor, Letters in Spatial and Resource Sciences (until 2022)

Guest Editor (jointly with Giuseppe Arbia and Ingmar Prucha) of The Review of Regional Studies for a special issue entitled: Advances in Spatial Econometrics

Guest Editor (jointly with Geoffrey Hewings) of Letters in Spatial and Resource Sciences for a special issue in honor of Harry Kelejian.

Referee for: Journal of Econometrics, Econometric Review, Journal of Applied Econometrics, Journal of Economic Geography, Spatial Statistics, Annals of Regional Sciences, The R journal, Agricultural Economics, Economic Modeling, Environment and Planning, Growth and Change, Journal of Economic Dynamics and Control, Journal of Public Economics, Spatial Demography, Papers in Regional Science, International Regional Science Review, Empirical Economics, Regional Science and Urban Economics, Journal of Geographical Systems, Italian Journal of Regional Sciences, Spatial Economic Analysis, Letters in spatial and resource sciences, Network and Spatial Economics, Geografiska Annaler Series B, Emerging Markets Finance and Trade, Real Estate Economics, Statistics and Computing, Scandinavian Journal of Economics

Professional Affiliations

Spatial Econometrics Association

Regional Science Association International

Western Regional Science Association

Urban Economics Association

Association of American Geographers

Teaching

University "G. d'Annunzio" Chieti-Pescara

Econometrics, Spring 2020-to date

Introduction to Panel data models, Spring 2023

Spatial Econometrics Methods and Models: with applications in R, Spring 2022

Introduction to Spatial Models: cross-section and panel, Spring 2021

The Catholic University of America: ECON 223 Statistics for Business and Economics, Fall 2023

ECON 363 Principles of Econometrics, Fall 2023

ECON 223 Statistics for Business and Economics, Fall 2022

ECON 363 Principles of Econometrics, Fall 2022

ECON 223 Statistics for Business and Economics, Fall 2021

ECON 363 Principles of Econometrics, Fall 2021

ECON 363 Principles of Econometrics, Spring 2020

ECON 370 Big Data for Economics, Spring 2020

ECON 570 Big Data, Spring 2020

ECON 363 Principles of Econometrics, Spring 2019

ECON 223 Statistics for Business and Economics, Spring 2019

ECON 363 Principles of Econometrics, Fall 2018

ECON 223 Statistics for Business and Economics, Fall 2018

ECON 363 Principles of Econometrics, Spring 2018

ECON 223 Statistics for Business and Economics, Spring 2018

ECON 363 Principles of Econometrics, Fall 2017

ECON 223 Statistics for Business and Economics, Fall 2017

ECON 223 Statistics for Business and Economics, Spring 2017

ECON 223 Statistics for Business and Economics, Fall 2016

ECON 102 Principle of Microeconomics, Fall 2016

IEDM/P 543 Applied Econometrics I, Spring 2016

IEDM/P 572 Advanced Microeconomics, Spring 2016

IEDM/P 543 Applied Econometrics I, Fall 2015

IEDM/P 562 Survey Design, Fall 2015

IEDM/P 543 Applied Econometrics I, Spring 2015

ECON 223 Statistics for Business and Economics, Spring 2015

IEDM/P 543 Applied Econometrics I, Fall 2014

IEDM/P 562 Survey Design, Fall 2014

Other courses:

Spatial Econometrics, De La Salle University, Manila, Philippines, Summer 2019.

Introduction to Spatial Econometrics, Spatial Econometrics Advanced Institute, Rome, Summer 2018.

Spatial Econometrics, UNAM, Mexico City, Mexico, Summer 2018.

Spatial Econometrics, Capital University of Beijing, China, Summer 2017.

Regional Research Institute Summer Courses in Spatial Econometrics, West Virginia University, Summer 2011, 2012, 2013, 2016, 2019.

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics II, 2016

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics II, 2015

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics I, Spatial Econometrics II, 2012

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics I, Spatial Econometrics II, Spatial Panel Data Econometrics, 2010

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics I,

Spatial Econometrics II, Spatial Panel Data Econometrics, 2009

Spatial Econometrics Advanced Institute, Computer Labs Spatial Econometrics I, Spatial Econometrics II, Spatial Panel Data Econometrics, 2008

Statistics, University of Chieti, Spring 2008 Advanced Statistics, LUISS University of Rome, Spring 2006

Instructor: Dr. Giuseppe Arbia Statistics, University of Rome "La Sapienza", Spring 2005

Statistics, University of Chieti, Spring 2004

Conference and Seminars (partial list)

- 11th World conference of the spatial econometrics association, Vienna, Austria;
- 10th World conference of the spatial econometrics association, Rome, Italy;
- 9th World conference of the spatial econometrics association, Zurich, Switzerland;
- 8th World conference of the spatial econometrics association, Zurich, Switzerland;
- 7th World conference of the spatial econometrics association, Washington, DC;
- 6th World conference of the spatial econometrics association, Salvador, Brazil;
- 5th World conference of the spatial econometrics association, Toulouse, France;
- 2nd World conference of the spatial econometrics association; New York, NY;
- 1st World conference of the spatial econometrics association, Cambridge, UK;
- 64th Annual North American Meetings of the Regional Sciences Association International, Vancouver, Canada;
- 63rd Annual North American Meetings of the Regional Sciences Association International, Minneapolis, MN;
- 62nd Annual North American Meetings of the Regional Sciences Association International, Portland, OR;
- 61th Annual North American Meetings of the Regional Sciences Association International, Washington, DC;
- 60th Annual North American Meetings of the Regional Sciences Association International, Atlanta, GA;
- 59th Annual North American Meetings of the Regional Sciences Association International, Ottawa, Canada;
- 58th Annual North American Meetings of the Regional Sciences Association International, Miami, FL;
- 57th Annual North American Meetings of the Regional Sciences Association International, Denver, CO;
- 55th Annual North American Meetings of the Regional Sciences Association International, New York, NY;

- 54rd Annual North American Meetings of the Regional Sciences Association International, Savannah, GA;
- 53rd Annual North American Meetings of the Regional Sciences Association International, Toronto, Canada;
- 52nd Annual North American Meetings of the Regional Sciences Association International, Las Vegas, NV;
- 51th Southern Regional Sciences Association Meeting, Charlotte, NC;
- 50th Southern Regional Sciences Association Meeting, New Orleans, LA;
- 49th Southern Regional Sciences Association Meeting, Arlington, VA;
- 51st Conference of the Western Regional Sciences Association, Kauai, HA;
- 46th Conference of the Western Regional Sciences Association, Newport Beach, CA;
- 44th Conference of the Western Regional Sciences Association, San Diego, CA;
- 45th European Congress of the European Regional Sciences Association (ERSA), Free University, Amsterdam, The Netherlands;
- 44th European Congress of the European Regional Sciences Association (ERSA), Region and Fiscal Federalism, University of Porto, Portugal; - Workshop on Spatial Econometrics, Zurich, Switzerland;
- Federal Reserve Board, Washington, DC;
- Federal Reserve Bank, Richmond, VA;
- RRI Seminar Series, West Virginia University, Morgantown, WV;
- Cornell University, Department of City and Regional Planning, Ithaca, NY;
- Purdue University, Department of Agricultural Economics, Purdue, IN;
- Universidad Catolica del Norte, Antofagasta, Chile;
- REAL Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL;
- University of North Carolina at Charlotte, Department of Geography, Charlotte, NC;
- REAL Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL;
- Workshop on Spatial Econometrics, Kiel Institute for World Economics, Kiel, Germany;
- 9th Jean Paelinck Seminar, University of Zaragoza, Zaragoza, Spain.
- First Jean Paelinck Seminar, University of Zaragoza, Zaragoza, Spain

Software

R, Matlab, Stata, Arch-GIS, Latex, Python

sphet:

An R package for estimating and testing spatial models with heteroskedastic innovations. It implements recent generalized moments estimators and semiparametric methods for the estimation of the coefficients variance-covariance matrix. A paper

that contains a general description of sphet is available from the Journal of Statistical Software website.

<https://github.com/gpiras/sphet>

splm:

An R package for estimating and testing spatial panel data models. It considers the implementation of both maximum likelihood and generalized moments estimators in the context of fixed as well as random effects spatial panel data models. A paper that contains a general description of splm is available from the Journal of Statistical Software website.

<http://r-forge.r-project.org/projects/splm/>

spldv:

Despite the huge availability of software to estimate cross-sectional spatial models, there are only few functions to estimate models dealing with spatial limited dependent variable. This project fills this gap introducing the new R library spldv. The library is entirely based on generalized methods of moment estimators and includes a series of two-step estimators based on different choices of the weighting matrix for the moments conditions in the first step, and different estimators for the variance-covariance matrix of the estimated coefficients.

<https://github.com/gpiras/spldv>

hspm:

Heterogeneous spatial models in R. This is an ambitious project that aims at developing various methods to control for heterogeneity in spatial models. Heterogeneity can be specified in various ways, ranging from spatial regimes models all the way up to “continuous” heterogeneity (i.e., every coefficient in the model can potentially vary by observational units).

<https://github.com/gpiras/hspm>

Languages

Italian (native), English, Spanish

March 18, 2026

