# Anna Gloria Billé

## Curriculum Vitae

March 2021

Address: Department of Statistical Sciences, University of Padua, Via Cesare Battisti, 241, Padova, Italy.
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Emails: annagloria.bille@unipd.it
Birth: 23/07/1985


## Job Positions

2020 - present Assistant Professor (Ricercatore Tipo A)
Department of Statistical Sciences, University of Padua, Italy

## Education and Qualifications

2018 - 2020 Post-doc Research Fellow
Econometric Methods for Electricity Markets & Optimization
Faculty of Economics and Management, Free University of Bozen–Bolzano
SSD: SECS-P/05 Econometrics
Tutor: Prof. Francesco Ravazzolo

2017 - 2018 Post-doc Research Fellow
Copula & Clustering Methods
Faculty of Economics and Management, Free University of Bozen–Bolzano
SSD: SECS-S/01 Statistics
Tutor: Prof. Fabrizio Durante

2016 - 2017 Post-doc Research Fellow
National Institute of Statistics (ISTAT)

2015 - 2016 Post-doc Research Fellow
Econometric Methods and Models for Microeconometric data
Department of Economics and Finance, University of Rome "Tor Vergata"
SSD: SECS-P/05 Econometrics
Tutor: Prof. Franco Peracchi

2013 - 2014 Expert in Spatial Statistics and Econometrics
Teaching Assistant and Tutorship in Economic Statistics
Department of Economics, University of Chieti-Pescara "G. D'Annunzio"

2010 - 2013 Ph.D.
SSD: SECS-S/03 Economic Statistics
Department of Economics, University of Chieti-Pescara "G. D'Annunzio"
Ph.D. dissertation title: *Spatial Discrete Choice Models and Health Econometrics*
Tutor: Prof. Giuseppe Arbia

2007 - 2009 M.Sc. Environmental Economics (110/110 cum laude)
University of Chieti-Pescara "G. D'Annunzio"

2004 - 2007 B.Sc. Economics (110/110 cum laude)
University of Chieti-Pescara "G. D'Annunzio"

## Visiting Periods

2011/09 - 2011/12 University of Illinois at Urbana-Champaign
Regional Economic Applications Laboratory (REAL)
Urbana-Champaign, IL, USA. Tutor: Prof. Geoffrey J.D. Hewings.

## Publications

ORCID Connecting Research and Researchers: https://orcid.org/0000-0002-6699-6440

**List of publications:**
Billé, A.G. and M. Rogna (2021), "The Effect of Weather Conditions on Fertilizer Applications: A Spatial Dynamic Panel Data Analysis". **Journal of The Royal Statistical Society - Series A**. Accepted. Preprint at arXiv:2002.03922v2 and SSRN.

Billé, A.G. and S. Leorato (2020), "Partial ML Estimation for Spatial Autoregressive Nonlinear Probit Models with Autoregressive Disturbances". **Econometric Reviews**, Volume 39, pp 437–475. Preprint at BEMPS–Bozen Economics & Management Paper Series.

The paper has been presented at

- 9th Seminar Jean Paelinck "Non parametric spatial econometrics: theory and empirical issues", 6-7 October, 2017, Universidad Politecnica de Cartagena, Cartagena, Spain.
- 1st Italian Workshop of Econometrics and Empirical Economics (IWEEE 2018): Panel Data Models and Applications, January 25th-26th, 2018, University of Milano-Bicocca, Milan, Italy.
- XIIth World Conference of the Spatial Econometrics Association (SEA), Webstern Univeristy, Wien - Session 1.1: Estimating and Testing Spatial Models 1
- 2nd Internal Workshop on Economics and Econometrics, Free Univeristy of Bolzano–Bozen, Bolzano
- 39th AISRe Conference, Free University of Bozen–Bolzano & EURAC, Bolzano
- 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2018) - INVITED SPEAKER
- Department of Industrial and Information Engineering and Economics, University of L'Aquila.

Billé, A.G. and G. Arbia (2019), "Spatial Limited Dependent Variable Models: A Review Focused on Specification, Estimation and Health Economics applications", **Journal of Economic Surveys**, Volume 33, Issue 5, pp 1531–1554. DOI: 10.1111/joes.12333. Preprint at BEMPS–Bozen Economics & Management Paper Series

Billé, A.G., Salvioni, C. and R. Benedetti (2018), "Modelling Spatial Regimes in Farms Technologies", **Journal of Productivity Analysis**, Volume 49, Issue 2–3, pp 173–185. DOI: https://doi.org/10.1007/s11123-018-0529-7.
The paper has been presented at

- 150th Seminar, European Association of Agricultural Economists, Edinburgh, UK.
- 29th International Conference of Agricultural Economists (ICAE), Milan, Italy - Session: Quantitative Methods (5).
- XV European Workshop on Efficiency and Productivity Analysis (EWEPA), 12-15 June, 2017, London, UK.
- Cicle of seminars at Department of Economic Sciences - 25 October, 2017, University of Verona, Verona, Italy.

Billé, A.G., Benedetti, R. and P. Postiglione (2017), "A two–step approach to account for unobserved spatial heterogeneity", **Spatial Economic Analysis**, Volume 12, Issue 4, Pages 452–471. DOI: 10.1080/17421772.2017.1286373.

- The paper has been presented at 55th European Regional Science Association, Lisbon - Session: Spatial Econometrics and Regional Economic Modelling. Preprint arXiv:1602.05757v2.

Catania, L. and A.G. Billé (2017), "Dynamic Spatial Autoregressive Models with Autoregressive and Heteroskedastic Disturbances", **Journal of Applied Econometrics**, Volume 32, Issue 6, September/October 2017, Pages 1178–1196. DOI: jae.2565.

- The paper has been presented at Xth World Conference of the Spatial Econometrics Association (SEA), Rome - Session: Theory. Preprint arXiv:1602.02542v3.

Billé, A.G. (2014), "Computational Issues in the Estimation of the Spatial Probit Model: A Comparison of Various Estimators", **The Review of Regional Studies**, 43, 131-154.

## Submitted Papers

Billé, A.G., Blasques, F. and L. Catania (2019), "Dynamic Spatial Autoregressive Models with Time–varying Spatial Weighting Matrices". Submitted. Preprint at SSRN.

- The paper has been presented at Xth World Conference of the Spatial Econometrics Association (SEA), Rome - Session: Spatial Weighting Matrix.
- The paper has been presented at the Statistical Week, September 10th-13th, Trier, Germany - Young-Academics Mini–Symposium (Philipp Otto): Models for Spatial and Spatiotemporal Data.

Billé, A.G., Del Grosso F., Gianfreda A. and Ravazzolo F. (2020), "Day-ahead Electricity Price Forecasting by Iterative Model Selections". Revise and Resubmit.

- The paper has been presented at the 39th International Symposium on Forecasting, University of Thessaloniki, Greece.
- The paper has been carried out in collaboration with the Department of Engineering & Alperia, within the project "Optimization".

## Books and Chapters

Billé, A.G., Salvioni, C. and F. Vidoli (Book chapter, in press), "Spatial Econometric Modeling of Farm Data", in *Spatial Econometric Methods in Agricultural Economics Using R*, Eds. Benedetti, R., Piersimoni, F. and P. Postiglione, CRC Press/Taylor & Francis Group.

Billé, A.G. (Handbook chapter, in press), "Spatial Autoregressive Nonlinear Models in R: an Empirical Application in Labour Economics", in *Handbook of Reseach Methods and Applications in Empirical Microeconomics*, Eds. Haschimzade, N. and M. Torton, Edward Elgar Publishing Ltd.

## Working Papers

Arbia, G., Billé, A.G. and S. Leorato, "Feasible ML Estimator for Spatial Dynamic Panel Data Probit Models with Fixed Effects and Large Datasets". The paper has been

- presented at the HEalthcare MAnagement & economics Workshop (HEMAW#5), Advances in Applied Econometrics Modeling, Catholic University of the Sacred Heart, Rome, Italy.
- submitted at the International Association for Applied Econometrics (IAAE2020) - Cancelled due to Covid19.

Billé, A.G., "Finite Sample Properties of Spatial Nonlinear GMM for Spatial Autoregressive Nonlinear Probit Models".

Billé, A.G., F. Ravazzolo and A. Tomelleri, "Forecasting Regional Output using a Spatial Dynamic Panel Approach".

## Thesis Supervision

Alessio Tomelleri, Free University of Bolzano-Bozen (PhD, Chapter 3 - informal), ongoing. "Improved Italian Regional Forecasts using a Spatial Dynamic Panel Data Approach".

## Counseling Activities & Cooperations

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| 10/2020 - 12/2020 | International Fund for Agricultural Development (IFAD – FAO)<br>Research & Impact Assessment Division (RIA) – Strategy and Knowledge Department (SKD)<br>Innovation Challenge Proposal Leveraging Artificial Intelligence and Big Data for IFAD2.0<br>Project Title: Predicting Projects Performance |

## Courses and schools

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| 04/2016 - 05/2016 | **University of Rome Tor Vergata & EIEF**<br>Dynamic Factor Models - Prof. Marco Lippi<br>State–Space Models - Prof. Tommaso Proietti<br>Bayesian Time Series Econometrics - Prof. Dimitris Korobilis<br>High-Dimensional Covariance Estimation with Applications - Prof. Mohsen Pourahmadi |
| 03/2015 - 04/2015 | **EIEF**<br>Advanced Econometrics - Prof. Alberto Holly<br>Bootstrap and Asymptotic Refinements - Prof. Samantha Leorato<br>Finite Mixture Models - Prof. Roberto Rocci |
| 09/2011 - 12/2011 | **University of Illinois at Urbana-Champaign**, Economics Department & Dep. of Agricultural and Consumer Economics:<br>Econometrics II - Prof. Anil Bera<br>Applied Spatial Econometrics - Prof. Kathy Baylis |
| 01/2010 - 11/2010 | **University of Bologna**, Department of Statistical Sciences<br>PhD Program in *Statistical Methodology for Scientific Research*:<br>Resampling methods for experimental research - Prof. Rodolfo Rosa<br>Statistical Inference - Prof. Patrizia Agati, Daniela Giovanna Caló, Paola Monari, Gabriele Soffritti<br>Bayesian Inference - Prof. Daniela Cocchi, Brunero Liseo, Andrea Tancredi, Fedele Greco<br>Micro Data Mining - Prof. Furio Camillo<br>Time Series Econometrics - Prof. Giuseppe Cavaliere, Luca Fanelli, Alessandra Luati, Attilio Gardini<br>Markov Chain Monte Carlo - Prof. Rodolfo Rosa |
| 07/2010 | **Summer School of Modern Methods in Biostatistics and Epidemiology**, Treviso, Italy:<br>Biostatistics I - Prof. Marcello Pagano<br>Principles of Epidemiology - Prof. Johanna Adami<br>Introduction to Stata |
| 02/2010 | **University of Rome "Roma Tre"**, Department of Economics<br>PhD program in *Statistical Methods for the Economy and the Enterprise*:<br>Nonparametric Statistics - Prof. Pier Luigi Conti<br>Bayesian Networks - Prof. Julia Mortera |
| 05/2009 - 06/2009 | **Spatial Econometrics Advanced Institute - SEAI09**, University of Rome "La Sapienza":<br>Spatial Statistics - Prof. Giuseppe Arbia<br>Spatial Economics - Prof. Jean Paelink<br>Spatial Econometrics I - Prof. Harry Kelejian<br>Spatial Econometrics II - Prof. Ingmar Prucha<br>Spatial Panel Data Econometrics - Prof. Badi Baltagi<br>R Laboratory - Prof. Gianfranco Piras |

## Teaching

As **Assistant Professor**

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| 2019 - 2020 | STATISTICS: BUSINESS APPLICATIONS (45/45 hours) - course owner |
| 2020 - 2021 | BUSINESS STATISTICS (40/64 hours) - course owner |
| 2020 - 2021 | HOW TO MEASURE ECONOMICS AND BUSINESS (12/64 hours) |

As **Teaching Assistant**

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| 2019 - 2020 | Econometrics (with R) for undergraduate students<br>Tutor: Francesco Ravazzolo. |
| 2018 - 2019 | Econometrics (with R) for undergraduate students<br>Tutor: Francesco Ravazzolo. |
| 2018 - 2019 | Statistics (with R) for undergraduate students<br>Tutor: Davide Ferrari. |
| 2015 - 2016 | Econometrics (with Gretl) for undergraduate students<br>Tutor: Samantha Leorato. |
| 2013 - 2014 | Economic Statistics (Sampling Designs - with R) for master students:<br>Tutor: Roberto Benedetti. |
| 2010 - 2012 | Economic Statistics (Hypothsis Testing and Inference) for master students<br>Tutor: Giuseppe Arbia. |
| 2010 - 2012 | Statistics (Descriptive and Probability) for undergraduate students<br>Tutor: Giuseppe Arbia. |

## Additional Accademic Responsibilities

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| 2020 - 2021 | Referent for English language (B2) | Department of Statistical Sciences | School of Science | UNIPD |

## Conferences & Workshops

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| 12/2019 | Catholic University of the Sacred Heart | HEMAW#5, Advances in Applied Econometrics Modeling |
| 09/2019 | Univeristy of Trier | Statistical Week: Models for Spatial and Spatiotemporal Data |
| 06/2019 | University of Thessaloniki | 39th International Symposium on Forecasting |
| 12/2018 | University of Pisa | 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2018) - INVITED SPEAKER |
| 09/2018 | Free Univeristy of Bozen–Bolzano & EURAC | 39th AISRe Conference |
| 06/2018 | Free University of Bozen–Bolzano | 2nd Internal Workshop on Economics and Econometrics |
| 06/2018 | Webster University | XIIth World Conference of the Spatial Econometrics Association (SEA) |
| 01/2018 | University of Milan Bicocca | 1st Italian Workshop of Econometrics and Empirical Economics (IWEEE 2018) |
| 12/2017 | Free University of Bozen–Bolzano | Workshop on Asset Allocation under Parameter Uncertainty |
| 06/2017 | Free University of Bozen–Bolzano | 1st Internal Workshop on Economics and Econometrics |
| 06/2017 | Loughborough University, London | XV European Workshop on Efficiency and Productivity Analysis (EWEPA) |
| 07/2016 | University of Pisa | Workshop on Recent Advances in Quantile and M-quantile Regression |
| 06/2016 | CNR-IRCrES, Rome | International Workshop on Computational Economics and Econometrics |
| 06/2016 | Catholic University of Rome | XIIth World Conference of the Spatial Econometrics Association (SEA) (served as discussant for sessions “Theory” & “Spatial Weighting Matrix”) |
| 08/2015 | University of Lisbon | 55th European Regional Science Association (ERSA) Congress |

## Referee Activity

Served as referee for:
**Computational Statistics and Data Analysis**: *Estimation of Spatial Autoregressive Models with Measurement Errors for Large Data Sets*,
**International Journal of Computational Economics and Econometrics**
**Regional Science and Urban Economics**: *A Spatial Panel Data Model with Time Varying Endogenous Weights Matrices and Common Factors*,
**Statistics and Its Interface**: *A Note on Estimating Spatial Autocorrelation in a Discrete Choice Model*,
**Networks and Spatial Economics**: *Why choose one when I can pick both? Marrying metrics using a mixture model of the intra-metropolitan location choice of establishments*,
**Spatial Economic Analysis**: 1) *Estimating a Spatial Autoregressive Model with Autoregressive Disturbances Based on the Indirect Inference Principle*, 2) *What Drives the Patterns of Urban Land Use in a Developing Country? The Role of Transport Infrastructures and Natural Amenities*,
**Journal of Econometrics**: *Using Generalized Estimating Equations to Estimate Nonlinear Models with Spatial Data*,
**The Annals of Applied Statistics**: *Spatio-Temporal Probabilistic Wind Vector Forecasting over Saudi Arabia*,
**Journal of Agricultural Economics**: *Modelling Spatial Interaction in Stochastic Frontier Analysis*,
**Statistical Methods and Applications**: *Testing the Correct Specification of a Spatial Dependence Panel Model for Stock Returns*,
**Environmental & Resource Economics**: *Application of Spatial Error Probit Models to A Contingent Valuation Study*.

## Research Fields

Statistics & Econometrics: Spatial & Spatio-Temporal Modelling, Estimation Methods, Simultaneous Linear/Nonlinear Equation Models (Limited Dependent Variables), Model Specification, Forecasting, Applied Econometrics.

Machine Learning & Data Analysis: Computational Statistics/Econometrics, Mathematical Optimization & Algorithms, Clustering Methods, Stochastic Processes, Big Data.

## Computer Skills

R, MatLab, Python, GeoDa, ArcGis, LaTeX, Gretl, SPSS, Windows, Linux.

## Language

Italian : mother tongue

English : fluent; IELTS Certificate (2009).
Deutsch : A.1.1; Internal Exam at Free Univerisity of Bozen (2018).

## References

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|---|---|
| Professor Samantha Leorato | Professor of Statistics |
| | University of Milan, Milan, Italy |
| | Email: samantha.leorato@unimi.it |
| Professor Giuseppe Arbia | Professor of Economic Statistics |
| | Catholic University of the Sacred Heart, Rome, Italy |
| | Email: giuseppe.arbia@unicatt.it |
| Professor Francesco Ravazzolo | Professor of Econometrics |
| | Free University of Bolzano-Bozen, Bolzano, Italy |
| | Email: Francesco.Ravazzolo@unibz.it |
| Professor Franco Peracchi | Professor of Econometrics |
| | University of Rome “Tor Vergata”, Rome, Italy |
| | Email: franco.peracchi@uniroma2.it |
| Professor Tommaso Proietti | Professor of Economic Statistics |
| | University of Rome “Tor Vergata”, Rome, Italy |
| | Email: tommaso.proietti@uniroma2.it |

I hereby authorize the treatment of my personal data pursuant to Italian Legislative Decree 196/2003.