Office

Personal Details

Education

University of California, San Diego, USA
Ph.D. in Economics (2005)
Dissertation Title: "Essays on Financial Econometrics"
Committee: Prof. Robert F. Engle (Chair), Prof. Allan Timmermann (Co-Chair), Prof. Graham Elliott, Prof. Bruce N. Lehmann, Prof. Dimitris Politis

St. Anna School of Advanced Studies (Pisa, Italy)
Doctoral Degree in Economics (2003)
Dissertation Title: "Three Essays in Applied Econometrics"
Supervisors: Prof. Carlo Bianchi, Prof. Giampiero M. Gallo, and Prof. M. Lippi

University of Pisa (Pisa, Italy)
"Laurea" in **Economics:** *110/110 Summa cum laude* (1997)
Supervisor: Prof. Carlo Bianchi *Subject:* Financial Econometrics *Title of the Graduation Thesis*: "The short-term interest rates and GARCH models: theory with application to the Italian case"

Fields of Interest

Big Data, Forecasting, Time Series Analysis, Text Analysis, Financial Econometrics, Applied Econometrics

Forecasting with Big Data, Forecast Evaluation, Forecasting with nonlinear time series, Volatility Modeling and Forecasting, Predictability of Returns, Pure Variance Common Features models, Nonlinear panel data models.

Current Positions

Bank of Italy   *Economist*
Rome, Italy   **Oct. 2019 − Present**
Economics and Statistics, Research Department (Research Data Center and Innovation Lab Division)

Bank of Italy   *Coordinator*
Rome, Italy   **Aug. 2016 − 2019**
Bank of Italy's Team for Big Data and Machine Learning Applications for Central Banks

Academic Activities

- **Adjunct Professor** at the *Sapienza University of Rome*, Italy. M.Sc. in Data Science, course on 'Data-Driven Economics' half course (3 CFU) (academic years 2019/20 and 2020/21)

- **Lecturer** at the *Politecnico di Milano - Graduate School of Business*, Italy. International Master in FinTech, Finance, and Digital Innovation, Big data and Artificial Intelligence in Finance, lecture on 'Nowcasting Macroeconomic variables with Big data' (February 2020)

- **Visiting Scholar** at the *Universitat Pompeu Fabra*, Spain (Feb. 2015 – Jun. 2015 / Sep – Oct. 2015)

- **Visiting Scholar** at the *University of California, San Diego*, La Jolla, USA (Jan. 2013 – Apr. 2013)

- **Lecturer** at the *University of Rome "Tor Vergata"*, Italy. M.Sc.-Ph.D. course on 'Volatility' (Mar. 2010 – Apr. 2010) (in English)

- **Lecturer** at the *Department of Statistics* of the *University of Bologna*, Italy. Full responsibility for the upper division course in Advanced Macroeconomics (Oct. 2003 – Sept. 2004)

- **Teaching Assistant** at the *Department of Economics, (UCSD),* for the following *upper division* courses: Econometrics, Business and Financial Forecasting (*Forecasting* in Economics and Finance, Time Series Analysis), Macroeconomics (Sept. 2000 – Jan. 2003)

Research Activities	**University of California, San Diego**	*Research Assistant*
	La Jolla, USA	**Jun. 2002 – Jul. 2002**

Research Assistant to Prof. Robert F. Engle. "Common features in economics and finance"

	Sant'Anna School of Advanced Studies	*Young Researchers Project*
	Pisa, Italy	**Jun. 2000 – Sept. 2001**

"Volatility forecasting with Regime-Switching ARCH and option evaluation"

Publications in refereed journals

1. *"The Predictive Power of Google Searches in Forecasting US Unemployment"*, with Francesco D'Amuri, **International Journal of Forecasting**, 2017, 33, 801–816.

2. *"Comparing forecast accuracy: a Monte Carlo investigation"*, with Fabio Busetti, **International Journal of Forecasting**, 2013, 29, 13–27.

3. *"Are Moving Average Trading Rules Profitable? Evidence from the European Stock Markets"*, with Massoud Metghalchi and Yung-Ho Chang, **Applied Economics**, 2012, 44(12), 1539–1559.

4. *"Asymmetric Effects of the Business Cycle on Bank Credit Risk"*, with Mario Quagliariello, **Journal of Banking and Finance**, September 2009, 33(9), 1624–1635.

5. *"Is the Swedish Stock Market Efficient? Evidence from some simple trading rules"*, with Massoud Metghalchi and Yung-Ho Chang, **International Review of Financial Analysis**, 2008, 17(3), 475–490.

6. *"Is Bank Portfolio Riskiness Procyclical? Evidence from Italy using a Vector Autoregression"*, with Mario Quagliariello, **Journal of International Financial Markets, Institutions & Money**, February 2008, 18(1), 46–63.

7. *"Revisiting the Empirical Evidence on Firms' Money Demand"*, with Francesca Lotti, **Journal of Economics and Business**, January-February 2007, 59(1), 51–73.

8. *"A Long Run Pure Variance Common Features Model for the Common Volatilities of the Dow Jones"*, with Robert F. Engle, May 2006, **Journal of Econometrics**, 132(1), 7–42.

9. *"Forecasting Stock Market Volatility with Regime-Switching GARCH Models"*, 2005, **Studies in Nonlinear Dynamics and Econometrics**, Vol. 9, Issue 4, Art. 6.

Other Publications

- *"Stress Testing Credit Risk: Experience from the Italian FSAP"*, with Sebastiano Laviola and Mario Quagliariello, **BNL Quarterly Review**, September 2006, Vol. LIX, n. 238, 269–291

- *"La domanda di liquidità delle imprese statunitensi: una analisi panel" (Corporate Liquidity Demand in the US: Evidence from Panel Data)*, with Francesca Lotti, **L'Industria**, April-June 2004, n. 2, 403–418

Working Papers & Work in Progress

- *"News and Consumer Card Payments"* (2019), with Guerino Ardizzi, Simone Emiliozzi e Libero Monteforte, Bank of Italy, Working paper n. 1233.

- *"Can We Measure Inflation Expectations Using Twitter?"* (2021), with Cristina Angelico, Marcello Miccoli and Filippo Quarta, Bank of Italy, Working paper (*forthcoming*).

- *"The Power of Text-based Indicators in Forecasting the Italian Economic Activity"*, with Valentina Aprigliano, Simone Emiliozzi, Andrea Luciani, Gabriele Guaitoli, and Libero Monteforte, Bank of Italy, Working paper (*forthcoming*).

- *"Twitter Sentiment and Banks' Financial Ratios: Is There A Causal Link?"*, with Giuseppe Bruno, Paola Cerchiello, and Giancarlo Nicola.

- *"The Portfolio Balance Channel: Evidence from Italian Mutual Funds"*, with Gabriele Zinna.

- *"Predicting the Italian Unemployment Rate with Google and Twitter"*, with Francesco D'Amuri.

- *"Female Entrepreneurs in Trouble: Do Their Bad Loans Last Longer?"*, Questioni di Economia e Finanza (Occasional Papers) 185, Bank of Italy, 2013, with Paolo E. Mistrulli.

- *"Forecasting US Birth Rates Using Google Trends"*, with Francesco Billari and Francesco D'Amuri.

Old Working Papers

- *"The Treatment of Small and Medium Enterprises Under Basel Rules: So Right, So Wrong?."*, 2013, with Gaetano Chionsini and Mario Quagliariello.

- *"Google it! Forecasting the US unemployment rate with a Google job search index"*, 2009, with Francesco D'Amuri, ISER Working Paper, 2009-32, November.

- *"Credit risk and business cycle over different regimes"*, 2008, with Mario Quagliariello, Bank of Italy, Working paper n. 670.

- *"Are common factors useful in forecasting international stock market realized variances?"*, paper presented at the Conference on "Factor Structures for Panel and Multivariate Time Series Data", Maastricht University (2008).

- *"A Threshold model for firms' investment over the business cycle"*, with Francesca Lotti, paper presented at the 13th Panel Data Conference, the 62nd European Meeting of the Econometric Society, 1st International Conference in Memory of Carlo Giannini and at the Department of Economics at Harvard University.

Refereing Activities

American Economic Review, Journal of the American Statistical Association, The Review of Economics and Statistics, Journal of Applied Econometrics, International Journal of Forecasting, Studies in Nonlinear Dynamics & Econometrics, Journal of Economic Dynamics & Control, Journal of Forecasting, Journal of Banking and Finance, Journal of Financial Markets, Journal of Empirical Finance, Empirical Economics, Computational Statistics and Data Analysis, Statistical Methods and Applications, International Journal of Central Banking, International Review of Economics and Finance, Quantitative Finance, Emerging Markets Finance and Trade, Bulletin of Economic Research, Contemporary Economic Policy, Economia Politica, Rivista di Politica Economica (in Italian), Cambridge University Press

Awards and Scholarships

- International Journal of Forecasting Best paper Award for papers published in the years 2016-2017 (May 2019)
- Best Graduate Student Paper: 11th Symposium of the *Society for Nonlinear Dynamics and Econometrics*, held in Florence, March 13-15, 2003: *"Forecasting Stock Market Volatility with Regime-Switching GARCH Models"*
- *Research Fellow* at the *Ente per gli Studi Monetari, Bancari e Finanziari 'Luigi Einaudi'*, Rome, Italy, Feb. 2003 – Jan. 2004
- One-year competitive full time scholarship to study abroad from CESIFIN – *Cassa di Risparmio di Firenze S.p.A.* (Center for Financial Studies of the Saving Bank of Florence, Italy), Aug. 2000 – Aug. 2001

Memberships

Econometric Society, Society for Financial Econometrics, American Statistical Association, American Economic Association, Italian Econometric Association (SIDE)

Conferences

31st (EC)2 Conference on "High dimensional modeling in time series", 2020 Bank of Italy and Federal Reserve Board Conference on "Nontraditional data & Statistical Learning with Applications to Macroeconomics", 21st IWH-CIREQ-GW Macroeconometric Workshop on "Forecasting and Uncertainty", 2020 Bank of England virtual conference on "Modeling with Big Data & Machine Learning: Measuring Economic Instability", 2020 World Congress of the Econometric Society, 2019 Bank of England's workshop on "Modeling with Big Data and Machine Learning", 2019 NBER Summer Institute "IT and Digitization", 8th Italian Congress of Econometrics and Empirical Economics (2019), Bank of Italy and BIS Workshop on "Computing Platforms for Big Data and Machine Learning" at the Bank of Italy (January 2019), 29th (EC)2 Conference on "Big Data Econometrics and Applications" (December 2018), STATALK on "New Challenges in Official Statistics" (November 2018), 2018 Bank of Korea workshop on "Central Bank Macro Modeling and Forecasting' (September 2018, invited), 2018 SITE Workshop on "Macroeconomics of Uncertainty and Volatility" at Stanford University (August 2018), CARMA 2018 Conference in Valencia (July 2018 - "Advanced Research Methods and Analytics"), Workshop on "Big Data: New Approaches to Forecasting" in Berlin (Nov. 2017 - Federal Ministry for Economic Affairs and Energy), Bank of England Workshop on "Big Data Empirics and Policy Analysis" in London (Nov. 2017), Italian Banking Association (ABI) workshop on Big Data for banking and finance (Oct 2017), Workshop on "Text, Herding and Sentiment" at Institute for New Economic Thinking of the University of Cambridge (Sep. 2017), 10th SOFIE Conference (June 2017), 2016 CFE Seville (Dec. 2016), Italian Banking Association (ABI) workshop on Big Data for banking and finance (Oct. 2016), Workshop in honor of Giorgio Calzolari on 'Computational methods for econometrics' (Oct. 2016), 2015 MFA Annual Meeting,

6th Italian Congress of Econometrics and Empirical Economics (2015), 2014 Workshop on "Measuring and Modeling Financial Risk with High Frequency Data" (2014), 32nd Annual Symposium on Forecasting (2012), 4th Italian Congress of Econometrics and Empirical Economics (2011), 3rd International Conference on Computing and Statistics (ERCIM, 2010), 45th Scientific Meeting of the Italian Statistical Society (invited in Specialized Session) (2010), "*XVIII SNDE Conference*" (2010), CEPR/EBC Conference on "Procyclicality and Financial Regulation" (2010), "*Time Series Econometrics and Macroeconomic Forecasting in a Policy Environment*" - 2nd International Conference in Memory of Carlo Giannini (2010), CEBS Open Seminar "Assessing the Impact of Financial Regulations" (2009), "*XVII SNDE Conference*" (2009), 7th IIOC Conference (2009), 1st IFO-INSEE-ISAE Macroeconomic Forecasting Conference (2009), 3rd Italian Congress of Econometrics and Empirical Economics (2009), CEMMAP Conference on "Unobserved Factor Models" (2008), Conference on "Factor Structures for Panel and Multivariate Time Series Data" (2008), "*XVI SNDE Conference*" (2008), "*Recent Developments in Econometric Methodology*" - 1st International Conference in Memory of Carlo Giannini (2008), 5th ECB Workshop on Forecasting Techniques (2007), 62nd European Meeting of the Econometric Society (2007), North American Summer Meeting of the Econometric Society (2007), FDIC-Basel Committee Workshop on Banking, Risk and Regulation (2007), 2nd Italian Congress of Econometrics and Empirical Economics (2007), Workshop on Nonlinear Dynamical methods and time series (2006), 13th Panel Data Conference (2006), *Journal of Applied Econometrics* Conference on "Changing Structures in International and Financial Markets and the Effects on Financial Decision Making" (2005), 1st Italian Congress of Econometrics and Empirical Economics (2005), *Common Features in London* (2004), *Common Features in Maastricht* (2003), *Giornate di Studio della Società Italiana di Economia, Demografia e Statistica (SIEDS) "Statistica per l'Analisi Economica"* (2003), *XXVII Convegno Nazionale di Economia e Politica Industriale, "L'Industria Europea tra Stati Uniti e Nuovi Orienti"* (2003), 30th *Annual Conference of the European Association for Research in Industrial Economics (EARIE)* (2003), 10th *International Conference on "Forecasting Financial Markets"* (2003), 11th *Symposium of the Society for Nonlinear Dynamics and Econometrics* (SNDE) (2003), *Common Features in Rio* (2002).

Seminars and Invited lectures

Ente "Luigi Einaudi" (2003), Bank of Italy (2004, 2005), University of Maastricht (2005), Bank of Italy (2006), University of Rome Tor Vergata (2006), Bank of Italy (2007), Cass Business School (2007), University of Rome Tor Vergata (2008), University of Salerno (2008), Federal Reserve Bank of Boston (2008), Harvard University (2008), Bank of Italy (2009, 2010), LUISS University (2010), University of California, San Diego (2013), University of California, Irvine (2013), Universitat Pompeu Fabra (2015), IMT, Lucca (2016), University of Rome Tor Vergata (2016), Bank of Spain (2018), Bank of Korea (2018), Federal Reserve Board (2019), International Monetary Fund (2019), Invited lecture at Banque de France's seminar on Big data (2020), Invited online lecture at ML Portal on Machine Learning for Economists and Applied Social Scientists (Saint Mary's University and Dalhousie University, July 2020), University of Messina (2020), Bank of Italy (2020)

Professional Experience

- Co-organizer of the 2020 Bank of Italy and Federal Reserve Board Conference on "Nontraditional data & Statistical Learning with Applications to Macroeconomics" (November 11-12, 2020).

- Co-organizer of the Bank of Italy workshop on "Big Data & Machine Learning Applications for Central Banks" at the Bank of Italy (October 21-22, 2019).

- Organizer and Director of the 2019 SIdE Summer School of Econometrics on "Principles, ideas and theory in econometric time series with examples from cointegration, bootstrap, ARCH, state space and big data models" (June 17 - 22, 2019) and "Machine Learning Algorithms for Econometricians ' (July 15 - 20, 2019).

- Co-organizer of the Bank of Italy and BIS Workshop on "Computing Platforms for Big Data and Machine Learning", Rome, Italy (January 15, 2019).

- Co-organizer of the 29th (EC)2 Conference on "Big Data Econometrics and Applications", Rome, Italy (December 13-14, 2018).

- Guest editor of the Special Issue of "*Econometrics*" on "Using Big Data in Economics and Finance"

- Organizer of the Special Session on "Big Data for Central Banks" at CARMA 2018 Conference in Valencia (July 2018) on "Advanced Research Methods and Analytics".

- Organizer and Director of the 2018 SIdE Summer School of Econometrics on " Text Analysis & Sentiment Analysis (TASA) with Applications to Finance" (July 16 - 20, 2018) and "Recent Advances in Financial Econometrics" (July 23 - 27, 2018).

- Co-organizer of the Bank of Italy workshop on "Harnessing Big Data and Machine Learning Technology for Central Banks" at the Bank of Italy (March 26-27, 2018).

- Guest editor of the Special Issue of the "*International Journal of Forecasting*" on "Using Big Data for forecasting and statistics"

- Co-organizer 5th SIDE-IEA Workshop for PhD Students in Econometrics and Empirical Economics, Perugia, Aug. 31 - Sep. 1, 2017.

- Organizer and Director of the 2017 SIdE Summer School of Econometrics on "Non-Parametric Bayesian Models for Big Data and Macro/Finance" (July 10 - 14, 2017) and "High-Dimensional Econometrics" (July 17 - 21, 2017).

- Coordinator of the Bank of Italy's internal working group on Big Data

- Bank of Italy's member of the ISTAT Committee on Big Data for Statistics

- Co-organizer 4th SIDE-IEA Workshop for PhD Students in Econometrics and Empirical Economics, Perugia, Sep. 1-2, 2016.

- Organizer and Director of the 2016 SIdE Summer School of Econometrics on "Big Data Econometrics and Machine Learning" (July 4 - 8, 2016) and "Methods for Evaluating Social Programs and for Duration Data Analysis" (July 11-15, 2016).

- Co-organizer 3rd SIDE-IEA Workshop for PhD Students in Econometrics and Empirical Economics, Perugia, Aug. 27-28, 2015.

- Organizer and Director of the 2015 CIdE Summer School of Econometrics on "Big Data and High-Dimensional Econometric Models" (June 29 - July 3, 2015).

- Organizer and Director of the 2014 CIdE Summer School of Econometrics on "The Econometrics of Systemic Risk and Tail Correlations" (July 14-18, 2014).

- Co-organizer of the 11th International Institute of Forecasters (IIF) workshop on "Using Big Data for forecasting and statistics" at European Central Bank (April 7-8, 2014).

Previous Positions	**Bank of Italy**	*Economist*
	Rome, Italy	**Sep. 2008 − Oct 2019**
	Economics, Statistics, and Research Department (Financial Markets Division)	

Federal Reserve Bank of Boston *Economist*
Boston, USA **Mar. 2008 − Sep. 2008**
Visiting scholar at the Research Department

Bank of Italy *Economist*
Rome, Italy **Jul. 2007 − Feb. 2008**
Economics, Statistics, and Research Department (Financial Markets Division)

Bank of Italy *Economist*
Rome, Italy **Oct. 2006 − Jun. 2007**
Economist at the Research Department (Short-Term Forecasting Division)
Duties: developed short-term forecasting models

Bank of Italy *Economist*
Rome, Italy **Jun. 2004 − Sept. 2006**
Economist at the Banking and Financial Supervision Research Unit
Duties: developed models for stress testing and credit risk

Qualifications **Associate Professor qualification (ASN 2012)** *for sectors:*
13/A1 *(Economics),* **13/A5** *(Econometrics),* **13/D2** *(Statistics)*
Google Scholar Citations: 1545, h-index 13 (as of Jan. 20, 2020)
Operative Systems: Ms-Dos, Windows, Unix, Open VMS
Programming Languages: C, C++, Matlab, Gauss, Fortran
Software: Eviews, Stata, Rats, Sas, PcGive, Excel
Word Processing: Word, Scientific Word
SGML: LaTeX, Html
Expert Systems: Bloomberg, Datastream
Language Skills: Italian (mother tongue); English (Written Fluent, Oral Fluent); French (Written Fair, Oral Fair); Spanish (Basic Knowledge)

References   *Professor Badi Baltagi (Syracuse University, USA)*, `bbaltagi@maxwell.syr.edu`
Professor Graham Elliott (University of California, San Diego, USA), `gelliott@weber.ucsd.edu`
Professor Robert F. Engle (UCSD and Stern School of Business - NYU, USA), `rengle@stern.nyu.edu`
Professor Allan Timmermann (University of California, San Diego, USA), `atimmerm@ucsd.edu`

January 20, 2021