Federica Brenna

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Research interests

Empirical Macroeconomics, Applied Econometrics, Forecasting, Macro-finance, Monetary Policy.

References

Ferre De Graeve, *Associate Professor*
KU Leuven
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Marta Bańbura, *Principal Economist*
European Central Bank
marta.banbura@ecb.europa.eu

Francesco Ravazzolo, *Full Professor*
Free University of Bozen-Bolzano
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Raf Wouters, *Research Adviser*
National Bank of Belgium
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Education

2017 – 2023 (expected) **PhD in Economics**, KU Leuven – Leuven, Belgium
Advisor: Professor Ferre De Graeve.

2015 – 2017 **MRes in Quantitative Economics**, Université Libre de Bruxelles – Brussels, Belgium
Advisor: Professor Robert Kollman (*Grande Distinction*)

2011 – 2014 **MSc in Economics**, Catholic University – Milan, Italy
Advisor: Professor Domenico Delli Gatti.

2008 – 2011 **BSc in Economics and International Markets**, Catholic University – Milan, Italy
Advisor: Professor Angelo Lossani.

Research Papers

2022 **Job Market Paper:**
Behind the scenes of expectations: interpreting survey forecasts.
Forecasts produced by experts can influence the expectations of the general public, and ultimately the economy. In this paper, I ask what type of structural drivers are professional forecasters expecting to affect their previsions? To what extent do they disagree about these drivers, and how uncertain are they about their magnitude? I model forecasts in a novel empirical macroeconomic setting, which allows me to decompose them into a model implied part and a judgement part, reflecting individual expectations of future shocks. The model takes into account multi-step ahead conditional forecasts, includes subjective uncertainty measured via different methods, and identifies shocks exploiting time-varying volatility present in the forecasts. I find that throughout the sample, forecasters mostly disagree on the size of the shocks, while in periods of high volatility they give a larger weight to judgement and happen to disagree also on the nature of shocks, but are also more uncertain about their forecasts. My findings can inform policy makers by giving a deeper insight into the expectations formation process of forecasters from a structural perspective.

2022 **Macro-financial feedbacks through time**, with F. De Graeve and R. Wouters.
Changing (co-)variances of macroeconomic and financial series provide strong identification power in disentangling real-financial interactions. "Identification through heteroskedasticity" assumes changing (co-)variances stem only from changing structural shock-volatility. This paper generalizes the approach to encompass time-varying parameters. Imposing as constant either coefficients or shock volatilities does not reproduce real-financial (co-)variances for the US. The set of structural models that match the data contains both models with negative feedbacks and boom-bust theories. Alternative identification approaches unduly exclude plausible theories. The elasticity of financial to real variables increased around the 2000's, while that of real to financial variables fell.

2021 **Combining Bayesian VAR and survey density forecasts: does it pay off?**, with M. Bańbura, J. Paredes and F. Ravazzolo. *ECB Working Paper Series*.
This paper studies how to combine real-time forecasts from a broad range of Bayesian vector autoregression (BVAR) specifications and survey (judgemental) forecasts by optimally exploiting their properties. To do that, we compare the forecasting performance of optimal pooling and tilting techniques, incorporating the survey information in various forms. Results show that the SPF exhibits good point forecast performance but scores poorly in terms of densities for all variables and horizons. Accordingly, when individual models are tilted to the SPF's first moments and then optimally combined, point accuracy and calibration improve, whereas this is not always the case when the SPF's second moments are included in the tilting. Therefore, judgement incorporated in survey forecasts can considerably increase model forecast accuracy, however, the way and the extent to which it is incorporated matters. We demonstrate the usefulness of our analysis on a case study covering the COVID-19 pandemic period.

Teaching experience

2017 – 2022 **Teaching assistant: Macroeconomics (KU Leuven)**
Teaching assistant for Prof. De Graeve. Tutorials, office hours, preparation and grading of assignments, preparation of exams.

2017 – 2022 **Daily supervisor: Master's Thesis Economics (KU Leuven)**
Supervisor for several master's students. Selection of thesis topics, day-to-day support and feedback on theses, participation in oral defenses.

Work experience

July 2019 – November 2020 **ECB, Forecasting and Policy Modelling (Trainee, Research Analyst)** – Frankfurt, Germany
Develop a forecasting toolbox used to perform risk analysis and optimally combine several density forecasts. Analytical project, joint with M. Banbura, J. Paredes and F. Ravazzolo: "Combining Bayesian VARs and survey density forecasts: does it pay off?"

September 2014 – September 2015 **ECB, Monetary Analysis (Trainee, Research Analyst)** – Frankfurt, Germany
Contribute to the division's analytical projects in the field of banking and credit modelling. Support team members on a monthly-basis with creating presentations, briefing notes, monetary assessments and other publications.

March – September 2014 **EIB, Country and Financial Sector Analysis (Trainee)** – Luxembourg
Design a system to grant regular up-to-date information on economic developments. Prepare background notes on economic developments in the euro area. Compile databases on several macroeconomic indicators for the EU.

Conference Presentations

2022: 8^{th} IAAE Annual Conference, London, UK, 29^{th} Symposium of the Society for Nonlinear Dynamics & Econometrics.
2021: 11^{th} European Seminar on Bayesian Econometrics, 41^{st} International Symposium on Forecasting, 7^{th} RCEA Time Series Workshop, 27^{th} International Conference Computing in Economics and Finance.

Referee Experience

International Journal of Forecasting, Journal of Business & Economics Statistics

Doctoral courses

17-19 May 2021 — **PhD Course on Local Projections and VARs**, KU Leuven
Local projections, Bayesian VARs, Proxy VARs, TVP VARs, FAVARs
Instructor: H. Mumtaz

1-2 June 2021 — **Non-linear methods for the solution and estimation of DSGE models**, NBB
Piecewise linear methods, Projection techniques, Markov switching models
Instructors: F. Canova, W. Den Haan, J. Maih

25-27 Sep 2019 — **Lancaster PhD Summer School on Applied Macroeconometrics**, Lancaster University, Lancaster, UK
Non-linear time series processes, Structural macroeconomic models
Instructors: J. Morley, L. Gambetti

4-8 Jun 2018 — **SoFiE Summer School** (NBB), Bruxelles, Belgium
Big data in macroeconomics and finance
Instructors: D. Giannone, G. Primiceri

22-25 Jan 2018 — **BI Winter School** (Norwegian Business School), Oslo, Norway
Regime switching in VAR and DSGE models: theory and applications
Instructors: D. Waggoner, J. Maih

16-18 Oct 2017 — **CORE** (UCL), Louvain-la-Neuve, Belgium
A Bayesian approach to identification of structural VAR models
Instructor: C. Baumeister

Technical skills

Programming languages
Proficient in: Matlab, STATA, Dynare
Familiar with: Python, R, EViews

Software
LaTeX, Git, VBA, MS Office

Languages
Italian (native), English (fluent), French (advanced), German and Finnish (basic)

(updated November 1, 2022)