

Latest update: October, 2024

**Research Interests** Econometrics, Macroeconomics, Macro-Finance.

## Professional Positions

- 2024- UCLouvain, *Postdoc*.
- 2022-2024 **University of Bologna**, *Research Fellow*.  
Carlo Giannini research fellowship in Econometrics
- 2016-2018 **European Central Bank**, *Risk Strategy Division*.  
Research Analyst (2017-2018); Trainee (2016-2017).

## Education

- 2022 **Aarhus University**, Ph.D. in Economics.  
Title: Essays on Estimation of Dynamic Macroeconomic Models.
- 2019-2020 **Princeton University**, Department of Economics, Visiting Ph.D. Student.  
Sponsor: B. Honoré.
- 2017 **University of Pavia**, M.Sc. in Economics.
- 2013 **University of Pavia**, B.Sc. in Economics.

## Other Affiliations

- 2024- **CORE**, *Junior research fellow*.
- 2022-2024 **Ca' Foscari University of Venice**, *Junior research fellow*.
- 2022 **DTMC**, *Research fellow*, (Dale T. Mortensen Centre).
- 2018- **CREATES**, *Junior research fellow (2022)*; *Ph.D. Fellow (2018-2022)*, (Center for Research in Econometric Analysis of Time Series).

## Teaching & Supervision

- Bologna **Empirical Methods for the Energy Systems**, *Lecturer*, M.A. in Resource Economics and Sustainable Management, 2024 (planned).
- Aarhus **Thesis in Economics**, *Thesis supervision*, B.Sc. in Economics and Business Administration, 2018-2022.  
**Thesis in Business Intelligence and Machine Learning**, *Thesis supervision*, M.Sc. in Economics and Business Administration, 2021.  
**Time Series Econometrics**, *TA*, M.Sc. in Economics, 2018-2019.  
**Econometrics I**, *TA*, B.Sc. in Economics, 2018-2019.
- Pavia **Econometrics**, *TA*, B.Sc. in Economics, 2013-2015.

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## Grants

FSR (2024); Carlo Giannini Fellowship grant, Otto Mønsted Foundation (2022); Fundación Ramón Areces and Spanish Economic Association grant (2021); Princeton VSRC Fellowship, Visiting Ph.D. Student at Princeton grant, Knud Højgaard's Fond grant (2019); Aarhus Ph.D. fellowship (2018); Erasmus Exchange Program grant (2016).

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## Selected Presentations at conferences, Seminars and Workshops - past, invited and \*planned

- 2024 XIV<sub>t</sub> WTSE, Econometrics Workshop in memory of Carlo Giannini\*;
- 2023 ESEM, ICEEE, Macro Seminar Series at Aarhus (invited), Virtual Workshop for Junior Researchers in Time Series;
- 2022 Vienna Workshop on High-Dimensional Times Series in Macroeconomics and Finance, XII<sub>t</sub> WTSE, DEM seminar at UNIPV;
- 2021 EWMES, CFE, SAEe, VPDE at Collegio Carlo Alberto, Macroeconomics and Econometrics Seminar Series at Lund School of Economics and Management, Economics seminar at Oxford University, SlE WEEE, Oxford NuCamp PhD Workshop (discussant), Arne Ryde Workshop (Heterogeneous Agent Models in Macroeconomics - Advances in Continuous Time)
- 2020 Nordic Junior Macro Seminar Series, Ph.D. Seminar Series at SDU, DGPE Workshop
- 2018-2019 Macro-Finance reading group at PU (2019); DGPE Workshop (2018).

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## Working Papers

- **Estimation of continuous-time linear DSGE models from discrete-time measurements**, *Joint with B. J. Christensen and J. C. Parra-Alvarez (2023)*, (**Accepted for publication, Journal of Econometrics**).

*Abstract:* We provide a general state space framework for estimation of the parameters of continuous-time linear DSGE models from data that are only available at discrete points in time. Our approach relies on the exact discrete-time representation of the equilibrium dynamics, which allows avoiding discretization errors. Using the Kalman filter, we construct the exact likelihood for data sampled either as stocks or flows, and estimate frequency-invariant parameters by maximum likelihood. We address the aliasing problem arising in multivariate settings and provide conditions for precluding it, which is required for local identification of the parameters in the continuous-time economic model. We recover the unobserved structural shocks at measurement times from the reduced-form residuals in the state space representation by exploiting the underlying causal links imposed by the economic theory and the information content of the discrete-time observations. We illustrate our approach using an off-the-shelf real business cycle model. We conduct extensive Monte Carlo experiments to study the finite sample properties of the estimator based on the exact discrete-time representation, and show they are superior to those based on a naive Euler-Maruyama discretization of the economic model. Finally, we estimate the model using postwar U.S. macroeconomic data, and offer examples of applications of our approach, including historical shock decomposition at different frequencies, and estimation based on mixed-frequency data.

- **Invalid proxies and volatility changes**, *Joint with G. Angelini and L. Fanelli*.

*Abstract:* When in proxy-SVARs the covariance matrix of VAR innovations is subject to exogenous, permanent (nonrecurring) breaks that generate target impulse response functions (IRFs) changing across volatility regimes, even strong, exogenous external instruments can result in inconsistent estimates. In such cases, it is essential to explicitly incorporate the shifts in unconditional volatility in order to point-identify the target structural shocks and restore consistency. We show that if a necessary and sufficient rank condition based on the moments implied by the changes in volatility holds, the target IRFs can be point-identified and estimated consistently. Importantly, standard asymptotic inference applies despite (i) the covariance between the proxies and the instrumented structural shocks being local-to-zero as in Staiger and Stock (1997), (ii) instruments exogeneity possibly fails. The external instruments, in the worst case, merely serve as labels for the target structural shocks. We present a novel identification strategy that appropriately combines external instruments with changes in volatility regimes, thereby avoiding the need to assume proxy relevance and exogeneity in estimation. We illustrate the usefulness of the suggested method by reexamining some proxy-SVARs previously estimated in the existing literature, including a fiscal proxy-SVAR.

- **Firm uncertainty and labor composition dynamics**, *Joint with E. H. Partsch and Y. Petrova (2022)*.

*Abstract:* We document the effects of uncertainty shocks on firm-level employment of high- and low-skilled labor. To investigate the potential effects of uncertainty on employment growth, we use that different industries are differentially exposed to a number of aggregate shocks. We use this fact to identify industry-specific uncertainty shocks. We show that while low-skilled labor growth is negatively affected by uncertainty shocks on impact, high-skill labor growth is not. Our dynamic approach shows that high-skill labor falls with a lag. Low-skilled labor shows similar dynamics, with the effect of uncertainty being strongest one year after impact. Our results highlight that the labor misallocation effects ascribed to uncertainty shocks seem to affect low-skilled labor most and that there is persistence in the effects. We contextualize our empirical findings within a heterogeneous firm model with high- and low-skill labor inputs and heterogeneous labor adjustment costs.

- **Structural estimation combining micro and macro data**, (2021), SSRN Id: 3911041.

*Abstract:* This paper introduces a novel approach for estimating heterogeneous-agent macroeconomic models adding information from micro data. The methodology applies to both panels and repeated cross sections, with applications to a wide class of dynamic structural models used in macroeconomics. The routine involves the estimation of dynamic moments over subgroups of the cross-sectional dimension of agents. Micro moments differ from each other in the informative content that they carry for point estimation of the structural parameters. For instance, variability of moments over the cross-sectional distribution of households' wealth contain relevant information for the correct estimation of the subjective discount rate. However, data from the cross section are not relevant for the identification of a technology shock.

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## Work in Progress

- **Heterogeneous information rigidity in forecasts**, *Joint with J. Boccanfuso*.

*Abstract:* Individuals differ in the weight they assign to news when revising their forecasts, reflecting varying degrees of attention. Building on theories of imperfect information and behavioral biases, we propose a novel method to uncover the unconditional distribution of attention in surveys of consumers and professional forecasters. Our approach relies on finite mixtures to cluster forecasts with similar attention to news, and is robust to forecast rounding and non-adjustment. We find that attention heterogeneity is sizable, and that ignoring it often leads to understate average inattention. We document new facts regarding the effects of aggregate and idiosyncratic factors on the full distribution of attention, and we explore novel implications of our findings for existing theory.

- **Estimation of weakly identified parameters with macroeconomic and financial data**, *Joint with B. J. Christensen and M. van der Wel*.

*Abstract:* In this paper, we present a method to estimate a dynamic macroeconomic model where the equilibrium can be defined analytically up to unknown functions. These functions arise from solving the model with rational expectations. Our approach solely relies on fully specifying the dynamics of the co-state variable. We demonstrate that two moment estimators - the Generalized Method of Moments (GMM) and the Martingale Estimating Function (MEF), are capable of identifying the true structural parameters of the model. The accuracy of these estimators improves when using higher order moment restrictions. In practice, we manage to find reasonable values for key parameters, like the relative risk aversion, valued at 4.23. Along with smaller standard errors, including second-order moments results in higher estimates of the required returns for holding risky assets.

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## Programming & Languages

Programming PYTHON 3, MATLAB<sup>®</sup>, SQL, R, STATA, MATHEMATICA, SAS  
Languages Italian (native), English (C2, advanced), French (B2, intermediate), Danish (A2), Hebrew & German (Basic words and phrases only)

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