



CCA Alumni Workshop 2024

December 20, 2024
Collegio Carlo Alberto



Associazione
Allievi
 **CCA**



Research
Education
Outreach

CCA





Program

8:30-9:00 **Registration**

9:00-11:00 **Session 1: Microeconomic Theory and Operations Research**
Classroom 3

Matteo Bizzarri (Allievi'13), University of Napoli Federico II
Common ownership in production networks

Alessandro Chiusolo (Allievi'21), Princeton University
A new approach to principal-agent problems with volatility control

Dario Gori (Master'21), Toulouse School of Economics
The effect of preventive visits on health insurance contracts

Giacomo Rostagno (Master'20), HEC Paris
Efficient implementation with transfers: theory and experiment

11:00-11:30 **Coffee Break**
Common Room "Gianni Merlini"

11:30-12:30 **Session 2: Macroeconomics and Banking**
Classroom 3

Francesco Beraldi (Allievi'19), Yale University
Presented by: Alessandro Lavia (Master'20), Boston College
Equity flows in uncertain times: the role of heterogeneous information

Matteo Bondesan (PhD Student), University of Torino and CCA
Do households in the Euro area behave according to a non-anchored expectations system? Empirical evidence using consumer expectations surveys

12:30-14:00 **Lunch Break**
Common Room "Gianni Merlini"
Invitation Only

14:00-15:00 **Session 3: Competition and Innovation**
Classroom 3

Endri Advuli (Master'20), University of St. Gallen
IP rights competition and VC financing

Tommaso Portaluri (Allievi'16), University of Sussex
Methods for allocation of R&D funds. A review of current practices, justifications, trends, and gaps





15:00-15:30 Coffee Break
Common Room “Gianni Merlini”

15:30-17:30 Session 4a: Applied Microeconomics, Urban and Trade
Classroom 3

Federico Rodari (Allievi'20), Boston College
Oligopolies in trade and transportation: implications for the gains from trade

Adriano Amati (Master'20), Ca' Foscari University of Venezia
One person, one vote: the effect of direct elections on political discourse

Elisabetta Cappa (Allievi'17), Institute of Economics Sant'Anna
Too close to breathe: the environmental and health implications of shutting-down coal

Session 4b: Statistics
Classroom 4

Lorenzo Rimella (Allievi'17), University of Torino
Consistent and fast inference in compartmental models of epidemics using Poisson Approximate Likelihoods

Matteo Giordano (Allievi'17), University of Torino
Bayesian nonparametric inference in complex physical models

Augusto Fasano (Allievi'15), University of Torino
Scalable and accurate variational Bayes for high-dimensional binary regression models

17:30-18:30 Keynote Talk
Auditorium “Onorato Castellino”

Giorgio Martini (Allievi'14), formerly at Eppo and LinkedIn
Open problems in tech economics

18:30-22:00 Networking Dinner: Christmas Apericena of the Associazione Allievi
Common Room “Gianni Merlini”
Registration Required





Session 1: Microeconomic Theory and Operations Research

Matteo Bizzarri (Allievi'13), Assistant Professor at University of Napoli Federico II
Common ownership in production networks

We characterize the firm-level welfare effects of a small change in ownership overlap, and how it depends on the position in the production network. In our model, firms compete in prices, internalizing how their decisions affect the firms lying downstream as well as those that have common shareholders. While in a horizontal economy the common-ownership effects on equilibrium prices depend on firm markups alone, in the more general case displaying vertical inter-firm relationships a full knowledge of the production network is typically required. Addressing then the normative question of what are the welfare implications of affecting the ownership structure, we show that, if costs of adjusting it are large, the optimal intervention is proportional to the Bonacich centrality of each firm in the weighted network quantifying interfirm price-mediated externalities. Finally, we also explain how the parameters of the model can be recovered from typically available data, hence rendering our model amenable to empirical analysis.

Alessandro Chiusolo (Allievi'21), PhD Student at Princeton University
A new approach to principal-agent problems with volatility control


The recent work by Cvitanic, Possamai, and Touzi (2018) [9] presents a general approach for continuous-time principal-agent problems, through dynamic programming and second-order backward stochastic differential equations (BSDEs). In this paper, we provide an alternative formulation of the principal-agent problem, which can be solved simply by relying on the theory of BSDEs. This reformulation is strongly inspired by an important remark in [9], namely that if the principal observes the output process X in continuous-time, she can compute its quadratic variation pathwise. While in [9], this information is used in the contract, our reformulation consists in assuming that the principal could directly control this process, in a 'first-best' fashion. The resolution approach for this alternative problem actually follows the line of the so-called 'Sannikov's trick' in the literature on continuous-time principal-agent problems, as originally introduced by Sannikov (2008) [28]. We then show that the solution to this 'first-best' formulation is identical to the solution of the original problem. More precisely, using the contract form introduced in [9] as penalisation contracts, we highlight that this 'first-best' scenario can be achieved even if the principal cannot directly control the quadratic variation. Nevertheless, we do not have to rely on the theory of 2BSDEs to prove that such contracts are optimal, as their optimality is ensured by showing that the 'first-best' scenario is achieved. We believe that this more straightforward approach to solve continuous-time principal-agent problems with volatility control will facilitate the dissemination of these problems across many fields, and its extension to even more intricate problems.

Dario Gori (Master'21), PhD Student at Toulouse School of Economics
The effect of preventive visits on health insurance contracts

We study the problem of a monopolistic health insurer facing adverse selection and moral hazard. We find that healthcare overconsumption can only arise if both information frictions are present. Moreover, any optimal menu of contracts exhibits bunching independently of the distribution of types. This bunching is due to a natural trade-off that arises from the interaction between adverse selection and moral hazard.

Giacomo Rostagno (Master'20), PhD Student at HEC Paris
Efficient implementation with transfers: theory and experiment

Transfers are a standard tool to achieve efficient allocation in Economics. While the theoretical significance of transfers in social choice contexts is widely acknowledged, there has been limited exploration of simple efficient mechanisms. Building upon the recent Price-and-Choose mechanism, we show that efficiency is guaranteed under a variety of extensions. Furthermore, we demonstrate how these procedures implement various fundamental cooperative solution concepts. In a simplified setting, we conduct experimental investigations to compare the performance of these mechanisms.





Session 2: Macroeconomics and Banking

Francesco Beraldi (Allievi'19), PhD Student at Yale University

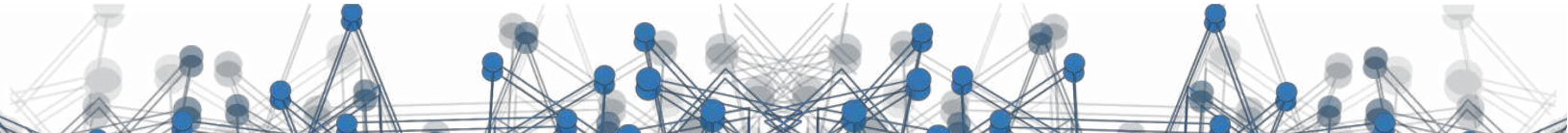
Equity flows in uncertain times: the role of heterogeneous information

We study the role of information heterogeneity in determining capital flows during the global financial cycle. When global uncertainty increases, investors retrench toward their home country and the United States. We build a model of portfolio choice and information acquisition with varying learning costs across countries. Our model replicates the global financial cycle's stylized facts and has new predictions for forecasting accuracy, which we test using micro forecast data. Domestic forecasters better predict their own country's economic outcomes, especially with increased global uncertainty. However, the US is an exception, where domestic forecasters do not outperform foreign institutions.

Matteo Bondesan, PhD Student at University of Torino and CCA

*Do households in the Euro area behave according to a non-anchored expectations system?
Empirical evidence using consumer expectations surveys*

Leveraging on the BRHANK model developed in Bondesan [2023], where boundedly rational heterogeneous agents use an adaptive learning algorithm to form expectations about their consumption-saving choices in continuous time, this paper tests the theoretical conclusions and policy implications drawn from the theoretical framework using different empirical models, e.g. structural VAR (SVAR), Bayesian VAR (BVAR), factor-augmented VAR (FAVAR), and Local Projections (LP) models. Survey data gathered from the ECB Consumer Expectations Survey (CES) would be included in the empirical model to better understand the expectation formation mechanism of households. Such a survey is of particular interest as it represents a unique data source aiming to establish a behavioral link between consumer expectations and their consumption and investment decisions by providing highly granular microdata to support the analysis of heterogeneity and its aggregate implications, especially in an environment in which agents deviate from the rational expectations paradigm.






Session 3: Competition and Innovation

Endri Advuli (Master'20), PhD Student at University of St. Gallen
IP Rights Competition and VC Financing

I study how Intellectual Property (IP) rights strengthening affects patenting incentives, as well as equity financing by venture capitalists. For this purpose, I exploit a French patent reform that increases the inventive requirement to patent and augments legal certainty and protection. The results show that patent activity decreases, both as applications and absolute level of grants. The increased innovation signal that patenting offers speeds up VC investments for patent. Moreover, I create a new measure of patenting competition that considers the position of the patent among all active patents. (Results on the last analyses coming soon).

Tommaso Portaluri (Allievi'16), PhD Student at University of Sussex
Methods for allocation of R&D funds. A review of current practices, justifications, trends, and gaps

Predicting the impacts of innovative technologies is as important as it is difficult. Problems derive mostly from the fact the innovation means, first of all, novelty – fully anticipating innovation may thus strike as an oxymoron. The importance of this aspect reflects the social and economic benefits usually associated with increased investments in innovation. Historically, attempts to predict future technological impacts have often been delusive. Despite this, governments and firms must make daily decisions under high uncertainty, necessitating robust criteria for R&D fund allocation. This paper examines the evolution of R&D funding tools, focusing on their desired outcomes and justifications. It traces the historical evolution of allocation modalities, from condition-free funding to delegation to a diverse network of stakeholders. Through three case studies (European Innovation Council, Defense Advanced Research Projects Agency, and Swiss National Science Foundation), the paper analyzes appraisal methods for R&D funding allocation: peer review, AI-aided tools, randomization, and Future-Oriented Technology Analysis (FTA) tools. Unintended consequences of appraisal methods and funding practices are highlighted, comparing how short-term gains can be offset by long-term effects. The analysis shows that desirable features of appraisal methods are context-dependent. Additionally, the assumption that qualitative evaluations can be translated into numerical scores is discussed, challenging the commensurability hypothesis inherent in evaluation funding practices.





Session 4a: Applied Microeconomics, Urban and Trade

Federico Rodari (Allievi'20), PhD Student at Boston College

Oligopolies in trade and transportation: implications for the gains from trade

We study the interplay between oligopoly in the transportation industry and oligopsony power retained by non-atomistic importers. We leverage transaction-level data from Chilean customs to document several empirical facts: (i) strong concentration in the transportation sector and among importers, and (ii) that transportation prices are highly dispersed and are the outcome of bilateral negotiations in the presence of dual market power. We develop and estimate a trade model that departs from the usual iceberg cost assumption and allows for two-sided market power in the transportation industry. We find that transport carriers charge large markups, but importers benefit from substantial bargaining power. Finally, we embed the bilateral bargaining framework into a quantitative trade model of importing. We show that the welfare costs of higher tariffs are 40% lower because of the presence of importers' market power. We also show that the passthrough on aggregate welfare of carbon policies on the shipping market (such as the EU ETS) have negligible effects.

Adriano Amati (Master'20), PhD Student at Ca' Foscari University of Venezia


One person, one vote: the effect of direct elections on political discourse

This study examines the impact of the 17th Amendment, which introduced direct elections for U.S. Senators, on their legislative behavior. Using a difference-in-differences approach and NLP analysis of over 6.5 million congressional speeches (1879–1935), we find that direct elections move Senators' policy agendas more closely with directly elected House Representatives, especially on fiscal policy and taxation, while reducing attention to infrastructure and immigration. Importantly, the effect is also observed when focusing only on incumbent Senators, and we find an overall narrowing focus on their agendas. However, voting behavior showed no significant ideological shift, suggesting the reform primarily influenced public discourse rather than legislative decisions.

Elisabetta Cappa (Allievi'17), PhD Student at Institute of Economics Sant'Anna

Too close to breathe: the environmental and health implications of shutting-down coal

Fossil-fuel combustion for energy generation is the primary contributor to air pollution mortality, causing more than 5 million deaths per year. The downstream health benefits of closing fossil-fueled power plants, however, are still poorly understood. While previous literature has focused on the contemporary and short-term benefits of coal decommissioning, the delayed and cumulative nature of the health impacts of air pollution exposure could imply that the largest mortality effects emerge only in the longer-run. This study exploits geolocalized information on fossil-fueled power plants, combined with gridded data on PM2.5 and regional health statistics, to investigate the long-term health implications of coal plant retirements in 16 European countries over the past thirty years. To my knowledge, this is the first attempt to isolate the environmental and health implications associated with the decommissioning of conventional energy units in Europe. I find that coal combustion for energy generation severely affects the population living within 50 km of a coal plant, increasing yearly mortality rates by 0.7% on average. However, the larger mortality benefits of coal plant shutdowns emerge 5 to 7 years after the closure date. This evidence underscores the importance of evaluating longer time horizons to fully understand the co-benefits associated with the decarbonization of the energy sector, suggesting that the benefits from shutting down coal-fueled power plants might be larger than previously estimated. This issue is particularly urgent, as the recent European energy crisis has led different countries to respond to energy price shocks by reactivating previously closed coal power plants, posing risks for both climate change mitigation and public health outcomes.





Session 4b: Statistics

Lorenzo Rimella (Allievi'17), Postdoctoral Fellow at University of Torino

Consistent and fast inference in compartmental models of epidemics using Poisson Approximate Likelihoods

Addressing the challenge of scaling-up epidemiological inference to complex and heterogeneous models, we introduce Poisson approximate likelihood (PAL) methods. In contrast to the popular ordinary differential equation (ODE) approach to compartmental modelling, in which a large population limit is used to motivate a deterministic model, PALs are derived from approximate filtering equations for finite-population, stochastic compartmental models, and the large population limit drives consistency of maximum PAL estimators. Our theoretical results appear to be the first likelihood-based parameter estimation consistency results which apply to a broad class of partially observed stochastic compartmental models and address the large population limit. PALs are simple to implement, involving only elementary arithmetic operations and no tuning parameters, and fast to evaluate, requiring no simulation from the model and having computational cost independent of population size. Through examples we demonstrate how PALs can be used to: fit an age-structured model of influenza, taking advantage of automatic differentiation in Stan; compare over-dispersion mechanisms in a model of rotavirus by embedding PALs within sequential Monte Carlo; and evaluate the role of unit-specific parameters in a meta-population model of measles.

Matteo Giordano (Allievi'17), Assistant Professor at University of Torino


Bayesian nonparametric inference in complex physical models

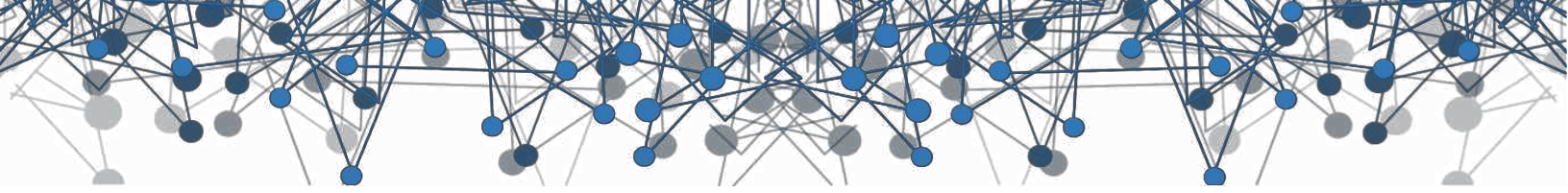
The talk will provide an overview on non-parametric Bayesian inference, with a focus on applications to statistical models based on partial differential equations (PDEs). In such models, the typical goal is to make inference on an unknown functional parameter in a PDE from noisy observations of its solution. Even for simple linear PDEs, such as elliptic diffusion equations with inhomogeneous diffusivity, the parameter-to-solution map is often non-linear, giving rise to a complex high-dimensional and non-convex inference problem. The Bayesian approach has become an established and popular methodology to tackle these problems after seminal work at the beginning of the last decade, leveraging on modern MCMC methods to provide an attractive alternative to optimisation-based statistical methods. However, only a few results are available to provide statistical guarantees for non-parametric Bayesian methods in PDE models. The talk will present some posterior consistency results for the problem of estimating the diffusivity function in an elliptic PDE in divergence form, showing that the posterior distribution concentrates around the true diffusivity as the number of observations increases. As a consequence, a convergence rate for the associated posterior mean estimator is obtained.

Augusto Fasano (Allievi'15), Assistant Professor at University of Torino

Scalable and accurate variational Bayes for high-dimensional binary regression models

Modern methods for Bayesian regression beyond the Gaussian response setting are often computationally impractical or inaccurate in high dimensions. In fact, as discussed in recent literature, bypassing such a trade-off is still an open problem even in routine binary regression models, and there is limited theory on the quality of variational approximations in high-dimensional settings. To address this gap, we study the approximation accuracy of routinely-used mean-field variational Bayes solutions in high-dimensional probit regression with Gaussian priors, obtaining novel and practically relevant results on the pathological behavior of such strategies in uncertainty quantification, point estimation and prediction. Motivated by these results, we further develop a new partially-factorized variational approximation for the posterior of the probit coefficients which leverages a representation with global and local variables but, unlike for classical mean-field assumptions, it avoids a fully factorized approximation, and instead assumes a factorization only for the local variables. We prove that the resulting approximation belongs to a tractable class of unified skew-normal densities that crucially incorporates skewness and, unlike for state-of-the-art mean-field solutions, converges to the exact posterior density as p goes to infinity. To solve the variational optimization problem, we derive a tractable CAVI algorithm that easily scales up in the tens of thousands, and provably requires a number of iterations converging to 1 as p goes to infinity. Such findings are also illustrated in extensive empirical studies where our novel solution is shown to improve the approximation accuracy of mean-field variational Bayes for any n and p , with the magnitude of these gains being remarkable in those high-dimensional $p > n$ settings where state-of-the-art methods are computationally impractical.





Organizing Committee

Emil Bandoni (Allievi'21), Economist at Central Bank of Ireland and University College Dublin

Francesco Bilotta (Allievi'21), PhD Student at Bocconi University

Rebecca Farina (Allievi'22), PhD Student at Carnegie Mellon University

Alessandro Lavia (Master'20), PhD Student at Boston College

Lorenzo Modotti (Allievi'22), PhD Student at Columbia Business School

Martina Scauda (Allievi'23), PhD Student at University of Cambridge

