



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DEPARTMENT OF ECONOMICS

Annual Newsletter

2020

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Dear colleagues and friends, with a highlight of the continued improvement of our department reflected in acquiring several research projects, in high-quality publications, and in successful recruiting, I would like to present to you the third issue of our annual research newsletter on the department's scientific achievements and faculty recruitment during 2020.

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Matteo Cervellati

Head of the Department of Economics
University of Bologna

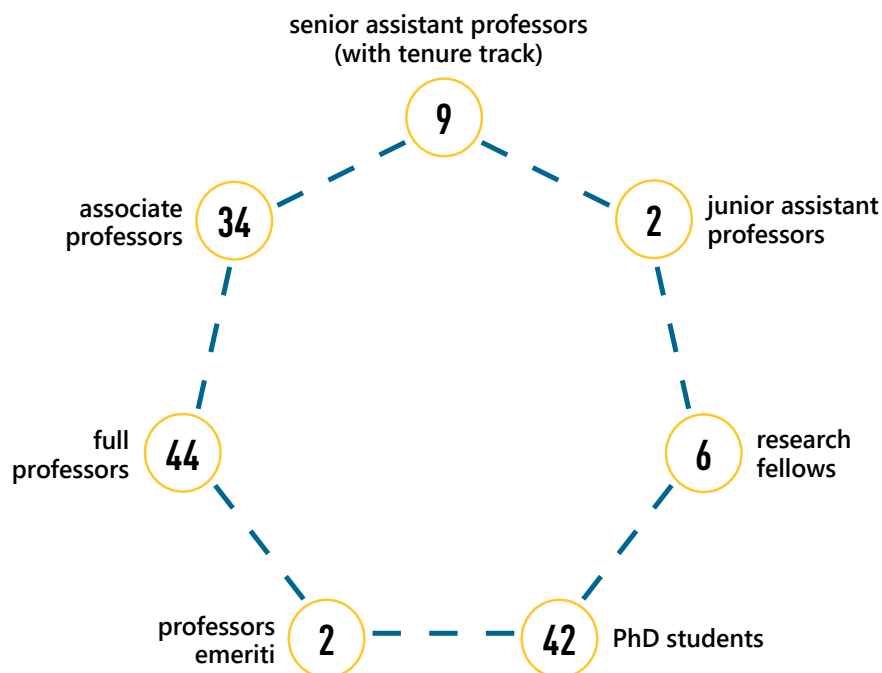
We are deeply saddened by the loss of our dear colleagues Gianpaolo Rossini and Vito Sciuto.

Gianpaolo began his academic career in Bologna at the Institute of Economic Sciences, which later became the Department of Economics and moved to Palazzo Hercolani in the early 1980s. Following the international academic path of his professors, such as Giorgio Basevi and Paolo Onofri, he specialized in Oxford at Linacre College. In Oxford, Gianpaolo was fortunate to have among his teachers some great economists such as Mirrlees, Sen, Hicks, who were among Nobel prize winners. He worked steadily on various themes, both theoretical and applied to the problems of today's society, and appreciated the cultural openness of his students from Forlì, also participating in the public debate on economic policy. Always autonomous in his judgment, academic and non-academic, he invested a lot of time in research work with younger colleagues, almost, at times, like an older brother.

Vito has been part of the administrative personnel of the department for many years. He was always available, happy, spontaneous, and respectful of everyone. He knew how to be appreciated and was a person to rely on to resolve all kinds of problems. He was a model of altruism and availability, and taking care of others was his way to happiness. He was a safe shoulder for his family, collaborating with voluntary associations, finding solutions and fixing anything for colleagues, teachers, and students. We all appreciated his incomparable manual wisdom in repairing any object with his own hands, reaching out to all those who asked for help. The memory of his cheerfulness and ability to face every situation with a smile will always stay with us.

The Department in numbers

Research staff



In-and-out's

New hires

- **Guglielmo Barone**, associate professor
PhD University of Bologna
- **Stefano Antonio Bolatto**, junior assistant professor
PhD University of Turin
- **Emanuele Campiglio**, associate professor
PhD University of Pavia
- **Sara Lazzaroni**, junior assistant professor
PhD Università Cattolica del Sacro Cuore
- **Alessandro Saia**, senior assistant professor
PhD University of Bologna

Retired faculty

- **Roberto Scazzieri**, full professor

Promotions

- **Elena Argentesi**, associate professor
PhD European University Institute
- **Patrizia Battilani**, full professor
PhD University of Ancona
- **Mauro Carboni**, associate professor
PhD Michigan State University
- **Luca De Angelis**, associate professor
PhD University of Bologna
- **Margherita Fort**, full professor
PhD University of Padua
- **Luigi Marattin**, associate professor
PhD University of Siena
- **Paolo Masella**, full professor
PhD London School of Economics and Political Science
- **Anna Montini**, associate professor
PhD University of Siena
- **Natalia Montinari**, associate professor
PhD University of Padua
- **Giuseppe Pignataro**, associate professor
PhD Università Cattolica del Sacro Cuore
- **Emanuela Randon**, associate professor
PhD Bocconi U./Cattolica/U. of Milan
- **Giulio Zanella**, full professor
PhD University of Siena

Completed doctorates

Last name	First name	Thesis title	Supervisor
Boldrini	Michela	<i>Essays in Applied Economics: New Empirical Approaches to Study Individual Behavior and Improve Policy Targeting</i>	Maria Bigoni
Caporale Madi	Maria Fernanda	<i>Regulating Vertical Agreements: A Comparative Law & Economics Analysis of Brazil and Europe</i>	Roger Van den Bergh Niels Philipsen
Danda	Giacomo	<i>Essays in Applied Economics</i>	Davide Dragone
Lanzara	Gianandrea	<i>Essays in Economic Geography and Long-Term Development</i>	Gaetano Alfredo Minerva Matteo Cervellati
Marrazzo	Alessia	<i>Evaluating non-price Effects of Regulatory and Competition Enforcement Interventions</i>	Vincenzo Denicolò
Marsi	Antonio	<i>Essays in Empirical Macroeconomics</i>	Luca Fanelli
Martino	Edoardo	<i>Bank Governance and the Bail-in in the EU: A Law & Finance Analysis on the Role of Bail-inable Creditors</i>	Alessio Paccès Georg Ringe
Monti	Giorgio	<i>Essays in Economics of Education</i>	Paolo Vanin
Reyes	Renny	<i>Better Regulation in Latin American Countries: A Tool for Accountability?</i>	Alessio Paccès Andrea Renda
Veshi	Denard	<i>Refugee Flow: A Law and Economics Approach</i>	Eli Salzberger Michael Faure
Usta	Emine Kübra	<i>Essays in Applied and Labor Economics</i>	Margherita Fort

Research seminars and guests

32

internal seminars

39

research seminars

15

guests at the department

Selected publications by members of the department in 2020

Econometrics

- **Angelini, G.**, [Bootstrap Lag Selection in DSGE Models with Expectations Correction](#). *Econometrics and Statistics* 14: 38–48.
- **Barigozzi, M.**, M. Hallin. [Generalized Dynamic Factor Models and Volatilities: Consistency, Rates, and Prediction Intervals](#). *Journal of Econometrics* 216: 4–34.
- **Carriero, A.**, T.E. Clark, M. Marcellino. [Assessing International Commonality in Macroeconomic Uncertainty and its Effects](#). *Journal of Applied Econometrics* 35: 273–93.
- **Cavaliere, G., I. Georgiev.** [Inference under Random Limit Bootstrap Measures](#). *Econometrica* 88: 2547–74.
- **Cavaliere, G.**, A. Rahbek (forthcoming). [A Primer on Bootstrap Testing of Hypotheses in Time Series Models: With an Application to Double Autoregressive Models](#). *Econometric Theory*.
- **Cavaliere, G.**, H.B. Nielsen, A. Rahbek. [Bootstrapping Noncausal Autoregressions: With Applications to Explosive Bubble Modeling](#). *Journal of Business & Economic Statistics* 38: 55–67.

Environmental and Resource Economics

- Abatayo, A.L., V. Bosetti, **M. Casari**, R. Ghidoni, **A. Tavoni**. [Solar Geoengineering May Lead to Excessive Cooling and High Strategic Uncertainty](#). *Proceedings of the National Academy of Sciences of the United States of America* 117: 13393–8.
- Brock, W., **A. Xepapadeas**. [The Economy, Climate Change and Infectious Diseases: Links and Policy Implications](#). *Environmental and Resource Economics* 76: 811–24.
- Cahen-Fourot, L., **E. Campiglio**, E. Dawkins, A. Godin, E. Kemp-Benedict. [Looking for the Inverted Pyramid: An Application Using Input-Output Networks](#). *Ecological Economics* 169: 106554.
- Carattini, S., G. Gosnell, **A. Tavoni**. [How Developed Countries Can Learn from Developing Countries to Tackle Climate Change](#). *World Development* 127: 104829–31.
- Engstrom, G., J. Gars, **N. Jaakkola**, T. Lindahl, D. Spiro, A.A. van Benthem. [What Policies Address Both the Coronavirus Crisis and the Climate Crisis?](#). *Environmental and Resource Economics* 76: 789–810.
- Monasterolo, I., **L. De Angelis**. [Blind to Carbon Risk? An Analysis of Stock Market Reaction to the Paris Agreement](#). *Ecological Economics* 170: 106571.
- Pantelaiou, I., P. Hatzipanayotou, P. Konstantinou, **A. Xepapadeas**. [Can Cleaner Environment Promote International Trade? Environmental Policies as Export Promoting Mechanisms](#). *Environmental and Resource Economics* 75: 809–33.

- Polasky, S., A.-S. Crepin, R.O. Biggs, S.R. Carpenter, C. Folke, G. Peterson, M. Scheffer, S. Barrett, G. Daily, P. Ehrlich, R.B. Howarth, T. Hughes, S.A. Levin, J.F. Shogren, M. Troell, B. Walker, **A. Xepapadeas**. [Corridors of Clarity: Four Principles to Overcome Uncertainty Paralysis in the Anthropocene](#). *Bioscience* 70: 1139–44.
- **Xepapadeas, A.** [Perspectives on the Economics of the Environment in the Shadow of Coronavirus](#) (Section 3: The European Green Deal, Sustainability, Carbon Neutrality and COVID 19). *Environmental and Resource Economics* 76: 456–62.

Industrial Organization / International and Spatial Economics / Tourism Economics

- **Bacchiega, E.**, O. Bonroy, E. Petrakis. [Auctions vs. Negotiations in Vertically Related Markets](#). *Economics Letters* 192: 109198.
- **Barigozzi, F.**, E. Manna. [Envy in Mission-Oriented Organisations](#). *Journal of Economic Behavior & Organization* 179: 395–424.
- **Burani, N., A. Mantovani.** [Non-Linear Pricing and Conscious Consumption](#). *International Journal of Industrial Organization* 68: 102549
- **Calvano, E.**, M. Polo. [Strategic Differentiation by Business Models: Free-to-air and Pay-TV](#). *The Economic Journal* 130: 50–64.
- **Calvano, E.**, G. Calzolari, **V. Denicolò**, J.E. Harrington, **S. Pastorello**. [Protecting Consumers from Collusive Prices due to AI](#). *Science* 370: 1040–42.
- **Calvano, E.**, G. Calzolari, **V. Denicolò**, **S. Pastorello**. [Artificial Intelligence, Algorithmic Pricing, and Collusion](#). *The American Economic Review* 110: 3267–97.
- Calzolari, G., **V. Denicolò**. [Loyalty Discounts and Price-Cost Tests](#). *International Journal of Industrial Organization* 73: 102589.
- Calzolari, G., **V. Denicolò**, P. Zanchettin. [The Demand-Boost Theory of Exclusive Dealing](#). *The RAND Journal of Economics* 51: 713–38.
- **Carroni, E.**, P. Pin, S. Righi. [Bring a Friend! Privately or Publicly?](#). *Management Science* 66: 2269–90.
- Cellini, R., **L. Lambertini**, G.I.P. Ottaviano. [Strategic Inattention, Delegation and Endogenous Market Structure](#). *European Economic Review* 121: 103324.
- **Dragone, D.**, **L. Lambertini**. [Equilibrium Existence in the Hotelling Model with Convex Production Costs](#). *Regional Science and Urban Economics* 84: 103568.
- Guizzardi, A., **G. Angelini**, F.M.E. Pons. [Does Advance Booking Matter in Hedonic Pricing? A New Multivariate Approach](#). *The International Journal of Tourism Research* 22: 277–88.

Selected publications by members of the department in 2020

- Leoni, V., **P. Figini**, J.O.W. Nilsson. [It's not All about Price. The Determinants of Occupancy Rates in Peer-to-Peer Accommodation.](#) *International Journal of Contemporary Hospitality Management* 32: 1693–711.

Labor & Household & Education / Health / Experimental & Behavioral Economics

- Amato, C., F. Gino, **N. Montinari**, P. Sacco. [Cheating, Inequality Aversion, and Appealing to Social Norms.](#) *Journal of Economic Behavior & Organization* 179: 767–76.
- **Barigozzi, F.**, I. Jelovac. [Research Funding and Price Negotiation for New Drugs.](#) *Health Economics* 29: 83–96.
- **Barigozzi, F.**, H. Cremer, K. Roeder. [Caregivers in the Family: Daughters, Sons and Social Norms.](#) *European Economic Review* 130: 103589.
- **Barigozzi, F.**, H. Cremer, K. Roeder. [Having It All, for All: Child-Care Subsidies and Income Distribution Reconciled.](#) *Journal of Economic Behavior & Organization* 176: 188–211.
- Bottazzi, R., S. Trucchi, **M. Wakefield**. [Consumption Responses to a Large Shock to Financial Wealth: Evidence from Italy.](#) *Scandinavian Journal of Economics* 122: 762–89.
- **Camera, G.**, C. Deck, D. Porter. [Do Economic Inequalities Affect Long-Run Cooperation & Prosperity?.](#) *Experimental Economics* 23: 53–83.
- **Dragone, D.**, H. Strulik. [Negligible Senescence: An Economic Life Cycle Model for the Future.](#) *Journal of Economic Behavior & Organization* 171: 264–85.
- **Ichino, A.**, **M. Fort**, **G. Zanella**. [Cognitive and Non-Cognitive Costs of Daycare 0-2 for Children in Advantaged Families.](#) *Journal of Political Economy* 128: 158–205.
- Maggian, V., **N. Montinari**, A. Nicolò. [Do Quotas Help Women to Climb the Career Ladder? A Laboratory Experiment.](#) *European Economic Review* 123: 103390.
- **Patuelli, R.**, **E. Santarelli**, A. Tubadji. [Entrepreneurial Intention among High-School Students: The Importance of Parents, Peers and Neighbors.](#) *Eurasian Business Review* 10: 225–51.

Monetary and Financial Economics

- **Bajo, E.**, M. Barbi, M. Bigelli, E. Croci. [Bolstering Family Control: Evidence from Loyalty Shares.](#) *Journal of Corporate Finance* 65: 101755.
- **Bajo, E.**, M. Barbi, D. Hillier. [Where Should I Publish to Get Promoted? A Finance Journal Ranking Based on Business School Promotions.](#) *Journal of Banking & Finance* 114: 105780.

- **Bajo, E.**, E. Croci, N. Marinelli. [Institutional Investor Networks and Firm Value.](#) *Journal of Business Research* 112: 65–80.
- **Bigoni, M.**, **G. Camera**, **M. Casari**. [Money is More than Memory.](#) *Journal of Monetary Economics* 110: 99–105.
- **Bontempi, M.E.**, **L. Bottazzi**, **R. Golinelli**. [A Multi-level Index of Heterogeneous Short-Term and Long-Term Debt Dynamics.](#) *Journal of Corporate Finance* 64: 101666.
- Boel, P., **G. Camera**. [Monetary Equilibrium and the Cost of Banking Activity.](#) *Journal of Money, Credit & Banking* 52: 653–83.
- **Camera, G.**, D. Goldberg, A. Weiss. [Endogenous Market Formation and Monetary Trade: An Experiment.](#) *Journal of the European Economic Association* 18: 1553–88.
- Carbonara, E., H.T. Tran, **E. Santarelli**. [Determinants of Novice, Portfolio, and Serial Entrepreneurship: An Occupational Choice Approach.](#) *Small Business Economics* 52: 123–51.
- Coroneo, L., **S. Pastorello**. [European Spreads at the Interest Rate Lower Bound.](#) *Journal Of Economic Dynamics and Control* 119: 103979.

Political Economy / Development Economics / Law and Economics / Economic History

- **Bellettini, G.**, P. Roberti. [Politicians' Coherence and Government Debt.](#) *Public Choice* 182: 73–91.
- **Bellettini, G.**, **C. Berti Ceroni**, **C. Monfardini**. [Immigration, Ethnic Diversity and Voting: The Role of Individual Income.](#) *European Journal of Political Economy* 61: 1–15.
- **Cantoni, E.** [A Precinct Too Far: Turnout and Voting Co-sts.](#) *American Economic Journal: Applied Economics* 12: 61–85.
- Fuchs-Schündeln, N., **P. Masella**, H. Paule-Paludkiewicz. [Cultural Determinants of Household Saving Behavior.](#) *Journal of Money, Credit and Banking* 52: 1035–70.
- Gagliarducci, S., **M.G. Onorato**, F. Sobbrino, G. Tabellini. [War of the Waves: Radio and Resistance during World War II.](#) *American Economic Journal: Applied Economics* 12: 1–38.
- **Guerriero, C.** [Endogenous Institutions and Economic Outcomes.](#) *Economica* 87: 364–405.
- **Guerriero, C.** [The Political Economy of \(De\)regulation: Theory and Evidence from the US Electricity Industry.](#) *Journal of Institutional Economics* 16: 389–408.
- **Picci, L.**, L. Escresa. [The Determinants of Cross-Border Corruption.](#) *Public Choice* 184: 351–78.
- **Pignataro, G.**, **G. Prarolo**. [Learning, Proximity and Voting: Theory and Empirical Evidence from Nuclear Referenda.](#) *Social Choice and Welfare* 55: 117–47.

Calvano, E., G. Calzolari, V. Denicolò, S. Pastorello. Artificial Intelligence, Algorithmic Pricing, and Collusion. *The American Economic Review* 110: 3267–97

The price that we pay for goods and services is increasingly set by algorithms powered by artificial intelligence. These are widespread online. In 2015 already a third of all sellers on Amazon.com employed them. Also, their use had been documented in brick-and-mortar marketplaces such as fixing the price of gasoline that we pay at the pump. These tools are potentially a great source of value as they react faster to changing market conditions and can in principle better bridge the gap between demand and supply. However, law scholars, economists and antitrust practitioners and policy makers worry if there might be unintended consequences that we should worry about. One specific concern is whether these algorithms, when instructed to maximize profits, may independently find ways to soften competition raising prices. In this world we test this hypothesis. We deploy well known AI-powered learning algorithms in synthetic marketplaces and study their behavior. We document that indeed, these algorithms have a natural and stubborn tendency to "collude" in the classic economic sense. That is, to jointly raise prices above the competitive level and disable competition by threatening to start an expensive price war whenever any market participant deviates. Understanding why and when this outcome is more likely to happen makes it possible to think about how to update our legal doctrine to deal with this issue.

Cavaliere, G., I. Georgiev. Inference under Random Limit Bootstrap Measures. *Econometrica* 88: 2547–74

One of the main techniques used in applied economic work is the "bootstrap", a computationally-intensive statistical method which treats the sample of economic data as if it was the population. With respect to standard statistical methods, the bootstrap offers several advantages: it allows a better evaluation of the significance of statistical tests; confidence intervals built using the bootstrap are usually more accurate in terms of coverage than confidence intervals based on traditional methods; it is useful in order to build interval forecasts of economic and financial data. Despite being extremely powerful (especially when applied to samples of small or moderate size), the bootstrap is known to work under very specific conditions, which are often too restrictive in applications.

To circumvent this drawback, in this paper Cavaliere and Georgiev extend the domain of validity of bootstrap methods by focusing on cases where the bootstrap is known to be inapplicable. Specifically, they provide new theoretical results which show that, even in cases where the bootstrap was generally known to be inapplicable, the method can still be a very useful tool in applied studies. The novel theoretical results are based on the theory of random measures, an important topic of modern probability theory, which has never been discussed before in the context of bootstrap inference.

The paper contains several applications in econometrics, including regression models and the analysis of data which are unstable over time.

Bontempi M.E., L. Bottazzi and R. Golinelli. A Multilevel Index of Heterogeneous Short-term and Long-term Debt Dynamics. *Journal of Corporate Finance* 64, 1–38

One of the primary goals of research into the dynamic nature of corporate capital structure is the identification of sub-samples of firms with homogeneous borrowing behaviour. In fact, estimating dynamic models for corporate debt on samples drawn from a population of heterogeneous companies produces unreliable empirical evidence, going from effects of the explanatory variables contrary to the theoretical predictions to unbelievably slow adjustments of the debt ratio when it is supposed to move towards its target. We introduce a novel multilevel index that classifies US companies in clusters of borrowing behaviours which are homogeneously related to the theories on corporate capital structure, captures the effects on the debt ratio of the shocks affecting each company, and is specific to each type of debt (bank, long- and short-run, for example).

Our innovative financial behaviour index has stimulated a research collaboration with CRIF, a global company specializing in business information, processing services, and credit solutions. Identifying those companies which desire to increase their debt ratios to reach their targets, or because they have specific financial needs, or because they are under-evaluated by the market, improves our assessment of the relevance of the credit rationing problem, the channels through which it operates, the impact on business performance and on investments, especially the innovative ones.

Shreedhar, G., A. Tavoni, C. Marchiori. Monitoring and Punishment Networks in an Experimental Common Pool Resource Dilemma. *Environment and Development Economics* 25: 66–94

This paper has explored the effectiveness of imperfect peer monitoring and punishment networks in promoting cooperation in a common pool resource (CPR) experiment. CPR games are increasingly used to study appropriation dilemmas in a simple setting where users make individual decisions about how much to harvest from a shared resource. CPR experiments thus aim to capture the dynamics of competition and cooperation inherent in the exploitation of renewable resources such as forests or fisheries.

We studied the differences between the complete network (with perfect monitoring and punishment, in which everyone can observe and punish everyone else) and two 'imperfect' networks (that systematically reduce the number of subjects who could monitor and punish others): the directed and undirected circle networks. Besides varying the network topology, such treatments introduced variation in the perceived 'burden of responsibility' to personally undertake costly peer monitoring and punishment aimed at mitigating free riding, an important feature according to studies that suggest that the availability of other agents who can engage in peer sanctioning reduces one's tendency to act prosocially (by shouldering the costly punishment).

We found that free riders were punished in all treatments, but the network topology impacted the type of punishment: the undirected circle induced more severe punishment and prosocial punishment, compared to the other two networks. Both imperfect networks were more efficient because the larger punishment capacity available in the complete network elicited higher punishment amount.

By focusing on a nonlinear CPR appropriation dilemma – a neglected class of social dilemma games that are said to be quite relevant to understanding more complex socio-ecological dynamics in the field – our experiment extended the emerging literature that studies whether imperfect monitoring and punishment networks affect cooperation levels relative to perfect institutions, which has so far focused on public goods games.

Carbonara, E., H.T. Tran, E. Santarelli. Determinants of Novice, Portfolio, and Serial Entrepreneurship: An Occupational Choice Approach. *Small Business Economics* 52: 123–51

In this paper we first present an original theoretical model showing that, based on the quality of their current business, on the expected quality of their prospective new business, on their entrepreneurial skills and the size of their initial investment, first-time entrepreneurs can alternatively become habitual entrepreneurs (either portfolio or serial), or remain novice. The main contribution of this model is in considering portfolio and serial entrepreneurship as two separate occupational choices, rather than putting them together as habitual entrepreneurship. We are able to prove that, while serial entrepreneurs are highly skilled individuals facing a new opportunity with a good expected quality, portfolio ones are medium-to-low skilled subjects that invest part of their capital in a new venture to mitigate a problem of decreasing productivity in their current business. Novice entrepreneurs, on the other hand, are successful, skilled business owners, running a high-quality activity.

We test the predictions obtained from the model using a novel dataset from Vietnam. Coherently with our theory, we prove that more human capital is associated to a higher likelihood to be a habitual entrepreneur. Moreover, a higher quality of the new business is associated with a higher likelihood of being habitual entrepreneurs, which implies that the higher entrepreneurial skills, the larger the impact of an increase in the quality of the new business on the likelihood to be serial or portfolio. Finally, habitual entrepreneurs tend to stay in business longer, while novice entrepreneurs, when endowed with high entrepreneurial skills and a high-quality business, are the category with the lowest probability to leave the market.

Bottazzi, R., S. Trucchi, M. Wakefield. Consumption Responses to a Large Shock to Financial Wealth: Evidence from Italy. *Scandinavian Journal of Economics* 122: 762–89

Household consumption spending is the largest single component of national income in modern, market-based economies. It is therefore of crucial interest and importance to understand the determinants of consumption spending and how this responds to resource shocks. This paper measures the responsiveness of household consumption to wealth shocks. We exploit large changes in the financial-asset prices in 2007–08 since these resulted in a genuine negative shock to financial wealth for some households. Data from the Bank of Italy's Survey on Household Income and Wealth allow us to observe consumption spending and wealth for the same households before and after the wealth shock.

Our results indicate that, on average, in response to each euro fall in the value of risky financial wealth, households cut consumption spending by 8.5 to 9 cents. Slightly more than 5.5 cents of this, was a cut in spending on non-durable goods and services (i.e. goods and services which are quickly used up after purchase). Food-spending can be important for household welfare and the effect on this category of spending was around 1.5 cents. We show that the magnitude of the effects for overall consumption spending can plausibly be generated by an economic model of consumption and saving behaviour, and we also find evidence in line with theoretical predictions that effects are stronger for lower-wealth households and those with mortgage debt.

Based on our results, we calculate that, in our data, around one-fifth of the overall fall in consumption-spending around 2008 was a response to shocks to the value of financial wealth. Thus, the results indicate that wealth effects in consumption are important. They are important both for the welfare of households that suffer the shocks and as a mechanism through which such shocks feed back into aggregate consumption and economic activity.

Dragone, D., H. Strulik. Negligible Senescence: An Economic Life Cycle Model for the Future. *Journal of Economic Behavior & Organization* 171: 264–85

Although death occurs with certainty, the time of death is uncertain. In this paper we build on this conceptualization and show that, although life ends at some point in time, human life can be meaningfully conceptualized as a strive for immortality that is never reached. We consider an intertemporal problem where health investments and consumption choices are made, taking into account that mortality depends on environmental factors, which are not controlled by the agent, and the agent's health condition, which is endogenous to lifestyle and health behavior. Formally, the infinite horizon approach has the advantage that adjustment dynamics to the steady state (i.e. human aging) can be discussed analytically. We explore the determinants of health deficits in this framework and show how individuals choose consumption and health expenditure over their lifetime in order to slow down (biological) aging. We compute analytically the impulse response functions for unexpected parameter changes. Specifically, we investigate how higher prices for medical goods and advancing medical technology affect individual behavior and health deficit accumulation.

New projects

- **Emanuele Campiglio** (PI) started work on his ERC Starting Grant project “**SMOOTH - Sustainable Finance for a Smooth Low-Carbon Transition**” (2020–25; European Research Council; € 1,499,956). The aim of SMOOTH is to study the dynamic links between macro-financial systems and the transition to a low-carbon society, and to contribute to the design of policies directed at achieving a rapid and smooth decarbonisation. The project is composed of three main areas of work: (i) The study of how expectations, sentiments and cognitive biases affect the carbon intensity of physical and financial investments; (ii) The analysis of drivers, transmission channels and macro-financial impacts of transition risks, with a particular focus on stranding risk of physical and financial assets; (iii) The study of the governance and political economy implications of a low-carbon transition, with a focus on the role of central banks and financial regulators. SMOOTH is conducted by an international interdisciplinary research team, in collaboration with the RFF-CMCC European Institute on Economics and the Environment, based in Milan. Unibo’s funding amounts to about € 1.1 million.
- **Maria Bigoni** (PI) started, in collaboration with Tiziano Arduini, Margherita Fort, Daniela Iorio and Chiara Monfardini, the PRIN 2017 project “**At the Roots of Child Development: On the Role of Parental Beliefs, Preferences and Engagement**” (2020–2023; Italian Ministry of Education, University and Research; € 758,323). The project investigates the determinants of children’s non-cognitive skills and social preferences, focusing on the role of parenting practices. It comprises three pillars: i) a theoretical model of parental investment; ii) a novel longitudinal dataset on children’s preferences and non-cognitive skills, and parents’ preferences, beliefs, and time-use in activities that involve their child; iii) the exogenous variation in parental beliefs and time-investments induced by a psycho-educational intervention that targets parents through an RCT. The project aims at contributing to the creation of a sound empirical and theoretical basis for the design of policies promoting children’s well-being and equality of opportunities.
- **Paolo Masella** (PI) started a PRIN 2017 project entitled “**Religious and Racial Discrimination Attitudes: Evidence from a Contemporary and a Historical Context**” (2020–2023; Italian Ministry of Education, University and Research; € 395,520), on which he’s collaborating with Sara Lazzaroni. Motivation for the project is based on the fact that our understanding of the diffusion of discriminatory attitudes over time and across space is incomplete due to the intermittent coverage of available datasets. The research team plans to use textual analysis of a vast array of corpuses to build two sets of measures: 1) contemporary discriminatory attitudes based on race, ethnicity or religious beliefs within the US 2) historical discriminatory attitudes based on religion and race during a key period of modern economic growth, the first wave of globalization (1860–1914), in France. Using these measures will allow to study: 1) patterns of propagation of such discriminatory attitudes over time and across geographical areas; 2) demographic and legislative determinants of such attitudes; 3) role of economic factors such as globalization and falling demand for labour. The Unibo unit budget amounts to € 224,020.
- **Alireza Jay Naghavi** (PI) started research on his PRIN 2017 project named “**New Protectionist Policies: Political Determinants and Economic Consequences**” (2020–2023; Italian Ministry of Education, University and Research; € 670,655), on which he collaborates with department members Giuseppe Pignataro, Gaetano Alfredo Minerva and Stefano Bolatto. The project explores causes and effects of trade and trade-related policies in the current global context, providing policymakers, scholars and practitioners with a framework to identify new protectionist challenges and to anticipate their impact on location, ownership, and organizational patterns of international production, and consequently on productivity and innovation potential of firms and the economy. Unpacking the role of political domestic determinants, particularly related to populist shifts in Europe and the rest of the world, the project tracks their impact on trade, intellectual property regulations and trade litigation patterns among states, incorporating the EU and WTO mediation effects. Ultimately, the proposed research aims at producing a diversified menu of welfare-enhancing policy and business solutions, to widen the compatibility between national, bi- and multilateral arrangements. The Unibo unit has a budget of € 297,944.
- **Giuseppe Cavaliere**’s PRIN 2017 project “**Hi-Di NET – Econometric Analysis of High Dimensional Models with Network Structures in Macroeconomics and Finance**” (2020–23; Italian Ministry for University and Research; € 890,490) started its activities. Other department members collaborating to the project are: Luca Fanelli, Luca De Angelis, Giovanni Angelini, Iliyan Georgiev, Graziano Moramarco, Matteo Barigozzi. Research will focus on high-dimensional modelling and large dataset handling in Economics and Finance. The key challenges of high-dimensional models is the complex interactions among variables and the inferential difficulty associated with handling large datasets. The project deals with three key aspects: network effects and interconnectedness; time variation in the relationships; large cross section of variables. The aim is to develop novel multivariate econometric models and efficient methods suitable for high dimension databases and able to deal with network effects and time varying relationships. From an applied perspective, the project will deal with systemic risk, uncertainty and fintech. The project is coordinated by Monica Billio (University of Venice), while the Unibo unit’s budget is €220,130.

Funded projects

- **Emilio Calvano** launched the activities for his PRIN 2017 project **“The Impact of the Diffusion of Algorithms on Prices in Online Marketplaces: Efficiency or Collusion?”** (2020–23; Italian Ministry for University and Research; € 562,483). On this project he collaborates with department members Vincenzo Denicolò, Sergio Pastorello and Maximilian Shafer. The project focuses on the role of Artificial Intelligence in online platforms. These tools contribute to shape consumption choices including the music that we listen to, the movies that we watch, the pieces of news and books that we read and so on. Last but not least, these AI tools contribute to choosing the price that we pay to access a number of goods and services in our everyday online shopping sprees. The project plans on developing pricing algorithms, train them to maximize profits and observe how they interact among themselves in virtual environments as well as in real ones. Law scholars, Economists and policy makers worry that these algorithms, interacting among themselves in real marketplaces, may end up implementing suboptimal outcomes, for instance, increasing prices rather than competing. The ultimate goal is to use economic theory to help develop a new approach to competition policy that allows us to identify and prevent potential market failures due to algorithm diffusion. The project is led by Francesco Decarolis (Bocconi University), while the Unibo unit’s budget is € 256,925.
- **Giorgio Bellettini’s** PRIN 2017 project, entitled **“The Economics of Culture: Ethnicity, Gender, and their Interactions”** (2020–23; Italian Ministry for University and Research; € 554,000) started its activities, with Carlotta Berti Ceroni and Giovanni Prarolo as further collaborators. The grant was obtained to study the relationship between culture and economic outcomes with a focus on two specific dimensions of culture – ethnicity as related to migration, and gender and family culture – as well as their interactions. The project investigates a number of distinct politico-economic outcomes that potentially share the common feature of reflecting the combined influence of the cultural factors we focus on. The three main parts of the project study (i) the drivers of migration and its impact on local political choices, together with migrants’ entrepreneurship, (ii) the gender differences in political participation and selection into politics and (iii) how migration and gender issues interact in shaping the socioeconomic integration of migrant families and the evolution of their behavioral gap with native families. The national PI is Graziella Bertocchi (University of Modena and Reggio Emilia), while the Unibo budget is of € 125,026.
- **Luca De Angelis** collaborates to the project **“Scaling-up Green Finance to Achieve the Climate and Energy Targets: An Assessment of Macro-Financial Opportunities and Challenges for Austria – GreenFin”** (2020–21; Klima+Energie Fonds; about € 250,000), funded through the Austrian Climate Research Programme (ACRP11) and coordinated by Irene Monasterolo (Vienna University of Economics and Business). GreenFin aims to identify the conditions, in terms of market instruments, policies and governance solutions, that would allow to scale-up green finance in Austria while avoiding trade-offs on economic competitiveness and public finances, financial stability and inequality. By fostering methodological innovation and promoting cross-fertilization across the knowledge domains in which GreenFin’s research partners and stakeholders excel, GreenFin will yield evidence-based information for decision makers on green finance’s opportunities and challenges for Austria. Luca De Angelis is responsible for analysing and measuring the impact of climate-related policies on Austrian financial markets. The funding share at Unibo is around € 30,000.
- **Giuseppe Pignataro** started a project funded by a University of British Columbia Grant: **“The Welfare and Distributional Effects of Domestic Outsourcing: Evidence from Italian Administrative Data”** (2020–2021; € 23,000). The project focuses on domestic outsourcing, which represents a landmark in contemporary labor markets. By outsourcing jobs to outside business service providers, firms can potentially focus more on their core business. This change to a firm’s boundary might ultimately increase efficiency. At the same time, however, domestic outsourcing can profoundly affect both incumbent workers (i.e., individuals who remain with the leading firm following the outsourcing event) and outsourced workers (i.e., individuals forced to leave the main firm following the outsourcing event). This project plans to quantify how outsourcing ultimately impacts firms and workers empirically. It studies whether outsourcing should be viewed as a managerial strategy that effectively allows firms to become more productive as opposed to a tool in the hands of firms only meant to lower labor costs with the effect of creating unequal wage effects on both outsourced and incumbent workers.

Completed projects

- **Annalisa Loviglio** carried out an IZA Coronavirus Emergency Research Thrust project titled **“What is at stake without high stake exams? Students’ evaluation and admission to college at the time of COVID-19”** (2020; IZA; € 7,500). The outbreak of COVID-19 in 2020 inhibited face-to-face education and constrained exam taking. This project explores the implications of using historical data – rather than individual results on standardized exams – to decide upon higher education admission. We exploit historical data on high-school graduates in Catalonia (Spain) and implement different methods to produce in-sample and out-of-sample predictions. We find that the most transparent and accurate model is a linear regression with high school grades as the main predictors, and machine learning methods yield similar results. However, almost 50% of the out-of-sample variation in the high-stakes exam remains unexplained.

Uncertainty and the extent of the 2021 recovery

Maria Elena Bontempi

During the 2020 the world economy has been affected by the stronger recession after WWII, with GDP losses ranging from -9.9% in Italy to -7.5% in the Euro Area and -4.6% in the USA.

Fortunately, this year a recovery is expected: the corresponding GDP growth forecasts for 2021 are +4.1% for Italy, +4.2% for the Euro Area and +3.6% for the USA.

The GDP growth rebounds above broadly depend on two main factors: (a) the extent of the mitigation measures during 2021 (mainly related with the number of vaccinated people), (b) the effectiveness of the countercyclical policies, such as the Next Generation EU, supporting the economic activity.

Regarding point (b) above, we have also to consider the role played by economic and policy uncertainty. It is largely acknowledged that uncertainty has an adverse effect on the economic activity (Bloom 2014): more uncertainty slows down the economic recovery because families and businesses take a prudential attitude that, although understandable, delays the short-term economic recovery. Even more seriously, the fear which curbs consumption (especially in durable goods), investment, employment and expenditure on human capital undermines the foundations of long-term economic growth.

If we measure uncertainty directly and intuitively through the number of searches on the Web of specific queries related to the perception of uncertainty by the people, we see that the average level of uncertainty in the two-month period April-March 2020 had a radical change compared to the pre-Covid-19 average (2004m1-2020m2): 53% for the United States and 91% for Italy (see also Baker et al. 2020 and Altig et al. 2020). For the United States, the largest portion of the 53 per cent increase is attributable to three web search blocks: (1) "unemployment benefits", "income support programs" and "trade union rights" for more than 20 percent, (2) "security social" for 11 percent and (3) "food vouchers", "public deficit", and "wages and working hours" for an additional 11.5 percent. For Italy, the largest part of the 91 % increase is attributable to two query blocks: (1) "INPS" (the national social security institution) and "sovereign debt" for more than 60 percent, (2) "civil protection", "tax rate" and "stress test banks" for an additional 20 percent. Also, the geographical distribution of these searches is quite interesting. They prevail in states/regions with a low median household income, to indicate that many workers who became unemployed began to seek information on subsidies and other government measures put in place to combat the effects of the pandemic shock.

Unfortunately, nowadays the levels of (measured) uncertainty are still well above those prevailing in the eve of the pandemic in March 2020. Hence, it is important that policymakers understand the relevance of policies able to curb agents' uncertainty by improving their confidence that these policies will be successful. Therefore, the next steps in policy making will be not only relevant for the (obvious) direct effects on the economic activity, but also for the additional positive effects exerted by a lowered uncertainty. Conversely, policies that will not be perceived by the public as effective in fighting the pandemic recession can weaken, through the uncertainty channel, the expansive effects of measures aiming at supporting the economic activity.



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