Paolo Zacchia

CURRICULUM VITAE – SEPTEMBER 2022

Italian national, born in Rome on December 17th, 1985. Currently resident in the Czech Republic.

Contacts

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Research Interests

Productivity and Innovation, Economics and Econometrics of Networks, Spatial Economics

Current Positions

2022 – present	**Assistant Professor** (*odborný asistent*), CERGE at Charles University
2021 – present	**Senior Researcher** (*seniorní vědecký pracovník*), Economics Institute (EI) of the Czech Academy of Sciences

Education

2009 – 2015	**Ph.D. in Economics**, University of California, Berkeley
2007 – 2009	**M.S. in Economics**, Università di Bologna
2004 – 2007	**B.S. in Economics**, Università di Pisa

Previous Positions

2020 – 2021	**Visiting Researcher** (*vědecký pracovník*), CERGE at Charles University
2019 – 2020	**Adjunct Lecturer** (*adjunkt*), CERGE at Charles University
2015 – 2021	**Research Fellow** (*assegnista di ricerca*), IMT School for Advanced Studies

Teaching Experience

2019 – 2021	**Lecturer**, CERGE-EI Statistics (*Ph.D. level, core*); Microeconometrics (*Ph.D. level, since 2021*)
2015 – 2021	**Lecturer**, IMT School for Advanced Studies Econometrics (*Ph.D. level, core*); Microeconomics (*preparatory Ph.D. class, 2016-2018*); Productivity and Innovation (*Ph.D. elective module, 2015*)
2011 – 2015	**Graduate Student Instructor**, University of California, Berkeley Urban Economics (*reader, intermediate, 2015*); Statistics and Econometrics (*intermediate, 2014*); Economic Analysis: Macro (*intermediate, 2011-2014*)

Publications

Helena Schweiger, **Alexander Stepanov** and **Paolo Zacchia**. "The Long Run Effects of R&D Place-based Policies: Evidence from Russian Science Cities."

Published in: the *American Economic Journal: Economic Policy*, 14(3), August 2022 (pp. 322-351). [link] [VoxEU summary]

Abstract. We study the long-run effects of historical place-based policies targeting R&D: the creation of *Science Cities* in former Soviet Russia. The establishment of Science Cities and the criteria for selecting their location were largely guided by military and strategic considerations. We compare current demographic and economic characteristics of Science Cities with those of appropriately matched localities that were similar to them at the time of their establishment, and had similar pre-trends. We find that in present-day Russia, despite the massive cuts in government support to R&D that followed the dissolution of the USSR, Science Cities still host more highly skilled workers and more developed R&D and ICT sectors; they are the origin of more international patents; and they generally appear to be more productive and economically developed. We also rule out alternative explanations related to the differential use of public resources, and we find limited evidence of reversion to the mean. By estimating a spatial equilibrium model in our matched sample, we interpret these findings as the result of the interaction between persistence and agglomeration forces.

Paolo Zacchia. "Knowledge Spillovers through Networks of Scientists."

Published in: *The Review of Economic Studies*, 84(7), July 2020 (pp. 1989-2018). [link]

Abstract. In this paper I directly test the hypothesis that interactions between inventors of different firms drive knowledge spillovers. I construct a network of publicly traded companies in which each link is a function of the relative proportion of two firms' inventors who have former patent collaborators in both organizations. I use this measure to weigh the impact of R&D performed by each firm on the productivity and innovation outcomes of its network linkages. An empirical concern is that the resulting estimates may reflect unobserved, simultaneous determinants of firm performance, network connections and external R&D. I address this problem with an innovative IV strategy, motivated by a game-theoretic model of firm interaction. I instrument the R&D of one firm's connections with that of other firms that are sufficiently distant in network space. With the resulting spillover estimates, I calculate that among firms connected to the network the marginal social return of R&D amounts to approximately 112% of the marginal private return.

Paolo Zacchia. "Benefiting Colleagues but not Cities: Localized Effects from the Relocation of Superstar Inventors."

Published in: *Research Policy*, 47(5), June 2018 (pp. 992-1005). [link]

Abstract. In this paper I examine episodes in which superstar inventors relocate to a new city. In particular, in order to assess whether the beneficial effects of physical proximity to a superstar have a restricted network dimension or a wider spatial breadth (spillovers), I estimate changes in patterns of patenting activity following these events for two different groups of inventors: the superstar's close collaborators, and all the other inventors in a given urban area, for both the locality where the superstar moves to and for the one that is left behind. In the case of collaborators, I restrict the attention to patents realized independently from the superstar. The results from the event study register a large and persistent positive effect on the collaborators in the city of destination, as well as a simultaneous negative trend affecting those still residing in the previous location. In the long run, these effects translate into an increased difference between the two groups of about 0.16 patents per inventor. Conversely, no city-wide spillover effect can be attested, offering little support to place-based policies aimed at inducing a positive influx of top innovators in urban areas.

Working Papers

Santiago Pereda Fernández and **Paolo Zacchia**: "Identification of Network Effects with Spatially Endogenous Covariates: Theory, Simulations and an Empirical Application."

Status: second round of revision at the *Journal of Applied Econometrics*.

Abstract. Researchers interested in the estimation of peer and network effects, even if these are algebraically identified, still need to address the problem of correlated effects. In this paper we characterize the identification conditions for consistently estimating all the parameters of a spatially autoregressive or linear-in-means model when the structure of social or peer effects is exogenous, but the observed and unobserved characteristics of agents are cross-correlated over some given metric space. We show that identification is possible if the network of social interactions is non-overlapping up to enough degrees of separation, and the spatial matrix that characterizes the co-dependence of individual unobservables and peers' characteristics is known up to a multiplicative constant. We propose a GMM approach for the estimation of the model's parameters, and we evaluate its performance through Monte Carlo simulations. Finally, we show that in a classical empirical application about classmates our approach might estimate statistically non-significant peer effects when conventional approaches register them as significant.

Francesco Del Prato and **Paolo Zacchia**: "Heterogeneous Responses of Productivity to Labor Market Reforms." Status: draft circulating for feedback and comments.

Abstract. We provide evidence that increased labor flexibility, through a more liberal use of temporary contracts by firms, adversely impacted the total factor productivity (TFP) in the lower segments of the productivity distribution across manufacturing industries, while leaving the rest of the distribution largely unaltered. Specifically, we show that following an Italian labor market reform from 2001, firms at the bottom of the TFP distribution are less productive than the counterfactual firms, with a difference of 4-to-5 percentage points. This adverse effect monotonously decreases along the distribution itself. Moreover, these firms' exit rates were reduced by 20-to-30% within two years after the reform. Instead, firms in the middle-to-high segments of the productivity distribution experienced no sizable impact on the TFP as well as an increase in labor productivity by 5-to-8% within three years. We build a general equilibrium model with monopolistic competition to argue about what mechanisms can rationalize the empirical evidence. Our model, which relates the equilibrium productivity distributions across sectors to frictions in both labor and capital markets, highlights how labor wedges may have heterogeneous effects and ambiguous net impact, as they can potentially mitigate misallocation effects due to distortions of other kinds.

Alonso Alfaro Ureña, **Jose Vasquez** and **Paolo Zacchia**: "(Mis)matching to Good Suppliers: Evidence from Transactions Microdata." Status: preliminary and incomplete version available on request.

Abstract. Using administrative data for the universe of firm-to-firm transactions in Costa Rica, we study the role and prevalence of "good suppliers", defined as those upstream firms that provide better, more valuable inputs to their downstream buyers. We then investigate the frictions that might prevent buyers from matching with good suppliers and thus become more productive. Our analysis proceeds in three phases. First, we adapt standard machine learning techniques to the estimation of production functions with many inputs in order to identify the good suppliers in the economy. Next, we quantify the frictions that may preclude buyers from matching with the good suppliers. We do so by empirically estimating a production network formation model through a conditional likelihood approach specifically suited to this problem. Finally, we perform economy-wide counterfactual simulations of industrial policies aimed at supporting good suppliers. The objective of this paper is to study matching distortions in input markets as a microeconomic origin of misallocation in developing economies and to suggest adequate policy responses.

Selected Work In Progress

"Hierarchical networks and their microeconomic origins."

Abstract. Borrowing tools from the practice of neural networks, I design an empirical framework for the analysis of "hierarchical networks:" socio-economic settings featuring multiple, layered networks, whose nodes are linked across layers. I use this framework to revisit questions involving networks of workers and firms.

"Human capital value chains in local labor markets." Joint with **Francesco Del Prato**.

Abstract. In local labor markets, workers often move at early stages of their careers from lower-paying firms that provide them training, to better-paying, specialized firms. We call this mechanism "human capital value chain" and we document its implications on both workers' page paths and local agglomeration externalities.

"Entropic network formation: theory, estimation, and empirical applications."

Abstract. I provide an economic interpretation to the entropy-based probabilistic models of network formation used in statistical physics. Specifically, I show how these models are nested in a wider class of network formation models where agents are rationally inattentive about the characteristics of other agents.

Grants, Awards and Scholarships

2021 – 2024	Charles University's PRIMUS Research Programme, fifth round Short project title: "(Mis)matching to Suppliers in the Production Network" Principal Investigator grant: 2,810,250 CZK (≈ 130,000 USD), renewable
2020 – 2021	*Jan Švejnar and Katherine Terrel* excellence in teaching award, CERGE-EI
2020 – 2021	Charles University's JUNIOR Fund (Post-Doc) for international researchers Fellowship supporting the local visiting position at CERGE
2013 – 2014	Dean's Normative Time Fellowship, U.C. Berkeley
2011	*Grace Katagiri* Prize for the best econometrics paper, U.C. Berkeley
2009 – 2011	*Marco Fanno* fellowship for graduate students in Economics
2007 – 2009	Full scholarship, Università di Bologna (*Collegio Superiore*)
2004 – 2007	Full scholarship, Sant'Anna School of Advanced Studies, Pisa

Invited Seminars

2022	University of Ottawa
2021	Università di Roma Tor Vergata, Università di Bologna
2019	Universität Innsbruck, University of Nottingham, University of Warwick, CERGE-EI, École Polytechnique (Paris-Saclay), Université de Cergy-Pontoise
2018	Hungarian Academy of Sciences, STICERD at the London School of Economics
2017	Università di Genova, GREQAM Université de Marseille
2016	L.M.U. (Munich), Max Planck Institute (Munich), K.U. Leuven, Einaudi Institute for Economics and Finance (Rome), I.I.E.S. at the Higher School of Economics (Moscow), Università di Bologna
2015	Sant'Anna School of Advanced Studies (Pisa), New Economic School (Moscow), IMT School for Advanced Studies (Lucca), Stockholm School of Economics, Banca d'Italia

Presentations at Conferences and Workshops

2020	Innovation Workshop at the University of Luxembourg (invited, canceled)
2019	Northwestern Junior Workshop on the Econometrics of Networks, Evanston (invited)
–	Annual Conference of the International Association for Applied Econometrics, Nicosia
2018	European Winter Meeting of the Econometric Society, Naples
–	13th Meeting of the Urban Economics Association, New York
–	4th Geography of Innovation Conference, Barcelona
2017	7th EIEF-UNIBO-IGIER Workshop on Industrial Organization, Bologna
–	XVIII April International Conference on Economic and Social Development, Moscow
2016	AQR Workshop on Regional and Urban Economics, Barcelona
–	Annual Conference of the International Association for Applied Econometrics, Milan
–	North American Summer Meeting of the Econometric Society, Philadelphia
–	3rd Geography of Innovation Conference, Toulouse
2015	Pacific Conference for Development Economics (PacDev), San Diego
2014	14th International Workshop on Computational Economics and Econometrics, Rome
–	Munich Conference on Innovation and Competition (MCIC), Kreuth

Organization of Conferences and Workshops

2018	7th Workshop on Networks in Economics and Finance (NETEF), Lucca Member of the local organizational committee (IMT School for Advanced Studies)

Affiliations

American Economic Association, Econometric Society, European Economic Association, Urban Economics Association

Languages

Italian (native), English (fluent), Spanish (fluent), German (advanced), Russian (intermediate), Czech (intermediate)