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Yagan Hazard

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Employment

2023 – Assistant Professor, Collegio Carlo Alberto and University of Turin (ESOMAS)

Education

Ph.D, Economics, Paris School of Economics. 2019-2023
Thesis Title: *Essays on the Econometrics of Treatment Effect Models and Labor Economics.*
Defended on the 12th September 2023.

Jury: Eric Maurin (President), Peter Hull (Referee), Aleksey Tetenov (Referee), Clément de Chaisemartin (Examiner), Philipp Ketz (Examiner), Luc Behaghel (Supervisor).

Diplôme de l'ENS, Economics, Ecole Normale Supérieure. 2016-2020
M.Sc, Economics, Paris School of Economics, *highest honours.* 2017-2019
B.Sc, Economics, PSL Research University, *highest honours.* 2014-2017

Research and Teaching Fields

Theoretical and Applied Econometrics, Labor Economics.

Visiting Positions

Visiting Research Scholar, Brown University (sponsored by Prof. Jesse Shapiro). Spring 2022

Teaching Experience

Fall 2023–... Econometric Theory I (Masters & PhD), Collegio Carlo Alberto.
Fall 2023 Econometrics (Masters), University of Geneva.
Fall 2021 Advanced Treatment Effect Models (Masters), Paris School of Economics . TA for M. Tô.
Topics: RCT, Clustering, RDD, IV, Marginal Treatment Effects, Advanced DID/TWFE
Spring 2021, Econometrics 3 (Masters), Paris School of Economics. TA for L. Behaghel and P. Ketz.
Spring 2023 Topics: Treatment Effect and Selection Models, Panel Data, Limited Dependent Variables

Conferences and Presentations (including upcoming)

2024	KU Leuven, Duke Microeconometrics Class of 2022 & 2023 Conference, PSE EAYE meeting, Bocconi internal seminar, NBER Summer Institute, LSE Advances with Field Experiments Conference, University of Olso
2023	CREST-ENSAI, University of Saint-Gallen, University of Gothenburg, University of Surrey, University of Manchester, Erasmus University Rotterdam, LMU Munich, University of Geneva, Collegio Carlo Alberto, University of Essex, 2023 EEA-ESEM (University Pompeu Fabra), 2023 Brucchi Luchino Workshop (Cagliari)
2022	2022 North American Winter Meetings of the Econometric Society, Brown Econometrics Coffee, International Econometrics PhD Conference (Erasmus University Rotterdam) (scheduled).
2021	PSE-CREST Econometrics Internal Seminar.
2020	PSE Labor and Public Economics Internal Seminar.

Honors, Scholarships and Grants

Nov. 2024	France Travail research grant, €95,000.
Jan. 2022	PSE mobility grant, €3840.
Dec. 2021	DARES (French Ministry of Labor, Statistical Unit) research grant, €190,387 Research project: Evaluating the effect of online training programs on employment: a randomized control trial (with P. Arni, L. Behaghel, M. Gurgand, R. Rathelot, and T. Zuber)
Aug. 2021	DARES (French Ministry of Labor, Statistical Unit) research grant, €61,221. Research project: Measuring occupational distances and the aggregate potential of training policies for labor force reallocation (with D. Mayaux and T. Zuber).
Oct. 2020	DARES (French Ministry of Labor, Statistical Unit) research grant, €289,656. Research project: Evaluating the effect of training programs on occupational transitions: a correspondence study (with G. Azmat, L. Behaghel, R. Rathelot and J. Sultan)

Working Papers

"The Potential of Recommender Systems for Directing Job Search: A Large-Scale Experiment " (with L. Behaghel, S. Dromundo, M. Gurgand and T. Zuber). 2024. *Revise and Resubmit, Econometrica.*

Abstract: We analyze the employment effects of directing job seekers' applications toward establishments likely to recruit. We run a two-sided randomization design involving about 800,000 job seekers and 40,000 establishments, based on an empirical model that recommends each job seeker to firms so as to maximize total potential employment. Our intervention induces a 1% increase in job finding rates for short term contracts. This impact comes from a targeting effect combining (i) a modest increase in job seekers' applications to the very firms that were recommended to them, and (ii) a high success rate conditional on applying to these firms. Indeed, the success rate of job seekers' applications varies considerably across firms: the efficiency of applications sent to recommended firms is 2.7 times higher than the efficiency of applications to the average firm. This suggests that there can be substantial gains from better targeting job search, leveraging firm-level heterogeneity.

"Improving LATE Estimation in Experiments with Imperfect Compliance" (with S. Löwe). 2024.

Abstract: Experiments with imperfect compliance are ubiquitous in applied economics and policy evaluation. Estimation of causal effects in such setting relies on an Instrumental Variable (IV) strategy, which can often

yield imprecise and thus possibly uninformative inference when compliance rates are low. We tackle this issue by proposing a Test-and-Select estimator that exploits covariate information to restrict estimation to a subpopulation with non-zero compliance. We derive the asymptotic properties of our proposed estimator under standard and weak-IV-like asymptotics, and study its finite sample properties in Monte-Carlo simulations. We clarify under which conditions it dominates the usual 2SLS estimator in terms of precision. Under an assumption on the degree of treatment effect heterogeneity, our estimator remains first-order unbiased with respect to the Local Average Treatment Effect (LATE) estimand, setting it apart from alternatives in the burgeoning literature on the use of covariates to improve the precision of IV estimators. This robustness to treatment effect heterogeneity is illustrated using Monte-Carlo simulations and an application to a large-scale experiment on job search counseling. Our proposal therefore provides an alternative to applied economists seeking an improvement in precision while keeping an estimator more tightly linked to the original LATE estimand.

Work in Progress

"Empirical Welfare Maximization and Optimal Matching Policies" (with T. Kitagawa).

Abstract: Suppose a policy maker has to choose (based on quasi-experimental data) how to match two types of individuals (e.g., job seekers and caseworkers, students and teachers etc.) to maximize a given measure of output (job finding rate, grades etc.). Following the empirical welfare maximization principle, a feasible decision rule could be to implement the allocation that would yield the highest possible output *as estimated from the sample*. How well would perform such a decision rule compared to the *actual* optimal allocation? Earlier work by T. Kitagawa and A. Tetenov (2018) have already derive finite sample guarantees on the performance of such rules for the choice of a binary treatment — but not for the choice of an entire matching policy, as is the goal of this project. Building on the optimal transport literature, we aim at deriving such bounds in this particular setting. We then plan to apply the method using exhaustive administrative data on the quasi-random matching of job seekers to caseworkers in France, in order to document the potential gains from learning about the optimal matching policy in that context.

"Exploiting Bounded Treatment Effect Heterogeneity for Improved Inference in (Quasi-)Experiments with Imperfect Compliance" (with X. D'Hautefœuille and S. Löwe).

Abstract: As a follow-up research project, this work consider the setting studied in Hazard and Löwe (2024, see above) under a bounded treatment effect heterogeneity assumption. Relying on the constraints imposed by the LATE (Angrist and Imbens, 1994) identifying assumption on the joint distribution of the reduced form and first-stage estimands, we propose a novel estimator based on a projection of empirical moments on the constraint with a high potential for reduction in RMSE. Inference results based on resampling methods—taking into account the bias of the estimator as well as the challenge raised by inference at the border of the parameter space—are currently being developed, with encouraging results in Monte-Carlo simulations and candidate applications.

"The Impact of Retraining Programs on Firms' Labor Demand and Occupational Mobility" (with G. Azmat, L. Behaghel, R. Rathelot and J. Sultan). (*Draft available soon*).

Abstract: We investigate the value of retraining programs in facilitating the mobility of workers into occupations in high demand. By sending 5,000 fictitious job applications to firms posting ads in six tight labor market occupations, we randomly vary the candidates' training and experience to compare labor demand for four profiles, all aged 21: an *incumbent* with both initial training and experience in the posted occupation, and three *movers* who initially trained and worked in a neighboring, less tight occupation. The movers

differ by the extent of retraining they have undergone for the target occupation. Callback rates vary significantly, with the *incumbent* receiving the highest callbacks, closely followed by the *long-retraining mover* who underwent several weeks or months of retraining (59% and 51% callback rates, respectively). *Untrained movers* and *short-retraining movers* have significantly lower callback rates (30%). We develop and test a matching model, predicting that the effect of retraining on callbacks should increase and then decrease with labor market tightness. Using geographic variation in tightness, we find that even in the tight labor markets studied, the effect of retraining on callbacks continues to increase with rising tightness.

"Measuring Occupational Distances and the Aggregate Potential of Training Policies for Labor Force Reallocation" (with D. Mayaux, K. M. Fritz and T. Zuber). (*Draft available soon*).

Abstract: How related are different jobs in terms of skills? To what extent training programs allow to move across jobs that differ in skills, and to what extent can this reduce the "mismatch" unemployment — i.e., the unemployment due to unbalances in labor demand vs. supply across occupations? The existing literature often answered the first question based on expert knowledge and existing job classification systems (O*NET, ROME classification in France etc.). Instead, we propose to build new measures of skill proximity across jobs based on job descriptions from vacancy data — using state-of-the-art Natural Language Processing (NLP) techniques. Making use of the skill distance measure produced, we describe the labor supply reallocations associated with the use of training programs by french job seekers — using comprehensive administrative data on unemployment spells, training use and employer-employee data. Comparing such occupational transitions in relationship with labor market tightness measures, we aim to assess the extent to which public funded training programs contribute to the reduction of mismatch unemployment.

"Evaluating the Effect of Training Programs for the Unemployed: an Examiner Design Approach" (with P. Arni, L. Behaghel, M. Gurgand, R. Rathelot and T. Zuber).

Abstract (early stage project): We exploit the random allocation of caseworkers to job seekers in France—and the heterogeneity in caseworkers' propensity to place individuals in training programs—in order to build an instrument for entering a training program while unemployed. To alleviate threats to the exclusion restriction assumption, we are currently developing an identification approach combining (i) the intuition behind of so-called "zero-first-stage" falsification test, (ii) an identification-at-infinity argument and (iii) a single-index assumption imposed on caseworkers' direct impact on individuals' job finding rate (violating the exclusion restriction of the instrument). Our framework lends itself nicely to the use of machine-learning predictions in a first step to identify the zero-first-stage subgroups that are essential for our identification-at-infinity approach.

Professional Service

Referee for *Review of Economics and Statistics*.

Miscellaneous

Programming	R, Stata, Git, GitHub, Markdown
Communication	English (fluent), French (native), Italian (beginner)

Personal Information

Born 1996 / He/Him/His / French citizen / Practicing sport climbing & trail running in my free time