

Bruno Furtado

Department of Economics
Columbia University GSAS
1022 International Affairs Building (IAB)
420 West 118th Street
New York, NY 10027

E-mail: bruno.furtado@columbia.edu
Mobile: 917-992-4681
Nationality: Brazilian

EDUCATION

2017 - MAY 2023 (expected)	PhD in Economics Columbia University GSAS , New York, USA <i>Committee:</i> Navin Kartik (chair), Mark Dean, Jose Luis Montiel Olea
2013 - 2015	MSc in ECONOMICS University of Brasília , Brasília, Brazil
2006 - 2011	Bachelor of ECONOMICS University of Brasília , Brasília, Brazil

FIELDS

Primary: Microeconomic Theory

Secondary: Econometrics

Research Interests: Decision Theory, Information Economics, Mechanism Design, Econometrics

RESEARCH

Working Papers

1. **Job market paper:** “*The Behavioral Implications of Statistical Decision Theory*”

Abstract: Statistical decision theory (SDT), pioneered by Abraham Wald, models how decision makers use data for decisions under uncertainty. Despite its prominence in information economics and econometrics, SDT has not been given formal choice-theoretic or behavioral foundations. This paper axiomatizes preferences over decision rules and experiments for a broad class of SDT models. The axioms show how certain seemingly-natural decision rules are incompatible with this broad class of SDT models. Using my representation result, I develop a methodology to translate axioms from classical decision-theory, à la [?], to the SDT framework. I illustrate its usefulness by translating various classical axioms to refine my baseline SDT framework into more specific SDT models, some of which are novel to SDT. I also discuss foundations for SDT under other kinds of choice data.

2. “*Statistical Mechanism Design: Robust Pricing and Reliable Projections*”
with Duarte Gonçalves

Abstract: This paper studies the robustness of pricing strategies when a firm is uncertain about the distribution of consumers’ willingness-to-pay. When the firm has access to data to estimate this distribution, a simple strategy is to implement the mechanism that is optimal for the estimated distribution. We find that such empirically optimal mechanism boasts strong profit and regret guarantees. Moreover, we provide a toolkit to evaluate the robustness properties of different mechanisms, showing how to consistently estimate and conduct valid inference on the profit generated by any one mechanism, which enables one to evaluate and compare their probabilistic revenue guarantees.

3. “*Rational Choice with Full-Comparability Domains*”
with Leandro Nascimento and Gil Riella

Abstract: We propose a new model of choice in the presence of incomplete preferences. Instead of simply choosing an element which is maximal according to her preferences, the decision maker divides the space of alternatives into subdomains inside which her preferences are complete. She then acts fully rationally and maximize her preferences inside these domains of full comparability. Representation theorems are given in which the decision maker always satisfies a weaker form of the Weak Axiom of Revealed Preference and different postulates are imposed on a general notion of revealed preference. They identify a class of choice correspondences that is nested between choice correspondences represented by multiple rationales and the standard model of rational choice. In addition, we suggest that our results provide a useful tool to adapt models that were otherwise restricted to deterministic choice setups to the setup of random choice. In a way, they provide a bridge between deterministic and stochastic choice with special focus on discussing incomplete preferences in both setups.

Work in Progress

4. “*Identifiability of Finite Mixture Models via Non-negative Matrix Factorization*”

Abstract: High-dimensional latent parameter models, such as finite mixtures and topic models, are notoriously only set identifiable, in general. By establishing directly verifiable conditions under which a matrix has a unique exact non-negative factorization (up to permutations), I provide sufficient conditions for point identifiability of mixture models. Since these conditions are imposed on the data matrix before factorization, they can be checked prior to estimation. I also show that, when the model is identifiable, approximate non-negative matrix factorization provides a consistent, likelihood-free estimator of mixture weights. Applications include identifiability and point estimation of topic models.

5. “*The Ex-Post Value of Information under Ambiguity*”

Abstract: Information economics often hinges on balancing the benefits and costs of obtaining or transmitting a piece of information. Bayesian agents are the workhorse of such models not only due to tractability concerns, but also because there are substantial challenges in defining the value of information (VoI) for non-Bayesian agents. Recently, there has been growing interest in models involving agents that deviate from the Bayesian paradigm. This paper aims to develop a suitable notion the VoI for such decision makers. I define the VoI as the willingness-to-pay for a given signal realization from a known experiment, and characterize its functional form for different preference update rules for a general class of non-Bayesian objective functions. I then connect the properties of the VoI to different axioms that may characterize the agent’s updated preferences.

CONFERENCE PRESENTATIONS

2022	26 th Spring Meeting of Young Economists, Orléans, France Title: “ <i>Behavior under Uncertainty in Statistical Decision Problems</i> ”
2019	41 st Meeting of the Brazilian Econometric Society, São Paulo, Brazil <i>Economic Theory Prize Session</i> Title: “ <i>Rational Choice with Full-Comparability Domains</i> ”
2015	37 th Meeting of the Brazilian Econometric Society, Florianópolis, Brazil Title: “ <i>Rational Choice with Categories</i> ”
2014	International Workshop of the Game Theory Society, São Paulo, Brazil Title: “ <i>Auction Design and Collusion in Public Procurements</i> ”

DISTINCTIONS AND AWARDS

2019/2020	Dhrymes Econometrics Award of the Columbia University Economics Department
2019	Brazilian Econometric Society best paper award in Economic Theory for “ <i>Rational Choice with Full-Comparability Domains</i> ”

GRANTS

2017 - 2023	Columbia GSAS Dean’s Fellowship
2017 - 2022	Wueller Fellowship
2022	Columbia University GSAS Dissertation Fellowship
2022	Columbia University Department of Economics Teaching Fellowship
2020	MTI Summer Research Grant
2020	Sander’s Fellowship for Promising Students in the Department of Economics
2019	PER Summer Research Fellowship
2013 - 2015	CNPq Fellowship for MSc. Program in Economics

TEACHING EXPERIENCE

TA Appointments at Columbia GSAS

2021	<ul style="list-style-type: none">• PhD Mathematical Methods for Economists, Prof. Elliot Lipnowski• PhD Introduction to Econometrics II, Profs. Jushan Bai and Simon Lee
2020	<ul style="list-style-type: none">• PhD Introduction to Econometrics I, Prof. Jose Luis Montiel Olea• Behavioral Economics, Prof. Mark Dean
2019	<ul style="list-style-type: none">• Cognitive Mechanisms and Economic Decisions, Prof. Michael Woodford• Principles of Economics, Profs. Sunil Gulati and Wouter Vergote
2018	<ul style="list-style-type: none">• Principles of Economics, Prof. Anna Musatti

WORK AND RESEARCH EXPERIENCE

2019 - 2020	Research Assistant at the Columbia University Department of Economics <i>Supervisor:</i> Navin Kartik
2014 - 2017	Finance and Control Auditor at Brazil’s Treasury Department, Brasilia, Brazil <i>Economic Affairs Advisory/Cabinet of the Minister of Finance</i>
2009 - 2010	Research Assistant at Sustainable Development Centre (CDS) - UnB, Brasília, Brazil <i>LUPIS Project Scholar</i>
2008 - 2009	Intern at Integration Ministry, Brasília, Brazil <i>Budget and Finance Coordination</i>

LANGUAGES

Portuguese (Native), English (Fluent), Spanish (Intermediate), Japanese (Intermediate)

COMPUTER SKILLS

Wolfram Mathematica, R, C, MATLAB, L^AT_EX, Office.

REFERENCES

Professor Navin Kartik
Department of Economics
Columbia University
420 West 118th Street
New York, NY 10027
212-854-3926
nkartik@gmail.com

Professor Mark Dean
Department of Economics
Columbia University
420 West 118th Street
New York, NY 10027
212-854-3669
mark.dean@columbia.edu

Professor Jose Luis Montiel Olea
Department of Economics
Cornell University
404 Uris Hall, Room 448
Ithaca, NY 14853
617-821-1336
montiel.olea@gmail.com