

Ellen Muir

PERSONAL DETAILS

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EDUCATION

Ph.D. in Economics , Stanford University	June 2022 (Expected)
Ph.D. in Mathematics and Statistics , University of Melbourne Advisors: Simon Loertscher, Peter Taylor	Completed July 2017, Conferred July 2018
M.Sc. in Mathematics and Statistics , University of Melbourne	Dec. 2013
B.Sc. in Mathematics and Statistics , University of Melbourne	Dec. 2011

DISSERTATION COMMITTEE

[Paul R. Milgrom](#) (Primary advisor)
Dept. of Economics, Stanford University
milgrom@stanford.edu

[Mohammad Akbarpour](#)
Stanford Graduate School of Business
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[Gabriel Carroll](#)
Dept. of Economics, University of Toronto
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[Ilya Segal](#)
Dept. of Economics, Stanford University
isegal@stanford.edu

RESEARCH INTERESTS

Microeconomic theory, market design, mechanism design, auction theory, matching theory

WORKING PAPERS

[“Contracting and vertical control by a dominant platform”](#) with Zi Yang Kang
Job market paper

We study a platform that sells productive inputs (such as e-commerce and distribution services) to a fringe of producers in an upstream market, while also selling its own output in the corresponding downstream market. The platform faces a tradeoff: any output that it sells downstream increases competition with the fringe of producers and lowers the downstream price, which in turn reduces demand for the platform’s productive inputs and decreases upstream revenue. Adopting a mechanism design approach, we characterize the optimal menu of contracts the platform offers in the upstream market. These contracts involve price discrimination in the form of nonlinear pricing and quantity discounts. If the platform is a monopoly in the upstream market, then we show that the tradeoff always resolves in favor of consumers and at the expense of producers. However, if the platform faces competition in the upstream market, then it has an incentive to undermine this competition by engaging in activities, such as “killer” acquisitions and exclusive dealing, that harm both consumers and producers.

[“Monopoly pricing, optimal randomization and resale”](#) with Simon Loertscher
Forthcoming, Journal of Political Economy

We provide a parsimonious and unified explanation for randomized selling mechanisms widely used in practice, yet commonly perceived as puzzling. Optimality of randomization in the form of conflation and rationing implies that revenue under market clearing pricing is non-concave. Randomization is implementable via opaque pricing and underpricing. Relative to market clearing pricing, randomization increases the equilibrium quantity and quality of goods sold and, consequently, may increase consumer surplus. For fixed quantities, resale increases consumer surplus. However, resale can decrease the equilibrium quantity and quality of goods sold. Thus, resale prohibition, which always benefits the seller, may also increase consumer surplus.

[“Optimal market thickness”](#) with Simon Loertscher and Peter Taylor
Forthcoming, Journal of Economic Theory

Traders that arrive over time give rise to a dynamic tradeoff between the benefits of increasing gains from trade by accumulating traders and the associated cost of delay due to discounting. We

analyze this tradeoff in a dynamic bilateral trade model in which a buyer and seller arrive in each period and draw their types independently from commonly known distributions. With symmetric binary types, the optimal market clearing policy can be implemented with posted prices and ex post budget balance, provided it is optimal to store at least one trader. While optimally thick markets involve storing a small number of traders, their performance is nevertheless close to that of a large market. In particular, irrespective of the type distributions, two-thirds of the gains from increased market thickness can be achieved by storing just one trader.

“Wage dispersion, minimum wages and involuntary unemployment: a mechanism design perspective” with Simon Loertscher

We provide a theory of wage dispersion and involuntary unemployment based on optimal monopsony pricing. A wage schedule that includes a wage exceeding the market clearing wage is optimal whenever the cost of procurement under a market-clearing wage is not convex at the optimal level of employment. Introducing a minimum wage between the lowest wage offered in equilibrium and the market-clearing wage decreases involuntary unemployment and increases employment. Whenever there is wage dispersion and involuntary unemployment at a given minimum wage, a sufficiently small increase in that wage increases employment and decreases involuntary unemployment. If there is no involuntary unemployment at a given minimum wage, a sufficiently small increase in that wage increases employment, generically. Introducing a model of quantity competition in which the aggregate quantity is procured at minimal cost, we show that setting a minimum wage above—but sufficiently close to—the lowest wage offered in equilibrium absent wage regulation still increases employment.

“The benefits of market thickness for niche products” with Simon Loertscher

We use an independent private values model to analyze the social benefits and costs of monopoly market makers. Calling products niche (mass) if the fraction of agents who trade in a Walrasian market is small (large), we show that for sufficiently niche products a thick market monopoly generates more consumer (producer) surplus per buyer (seller) than ex post efficient bilateral trade. Moreover, relative to bilateral trade, the sorting benefits of thick markets grow unboundedly for increasingly niche products. If bilateral trade offers an outside option to trading with a thick market monopoly, mass products better mitigate the monopoly’s market power.

WORKS IN PROGRESS

- “Algorithmic pricing and collusion” with Zi Yang Kang
- “Optimally designing property rights” with Piotr Dworczak
- “Liquidity, imbalance and thickness in an efficient market” with Simon Loertscher

REFEREED PUBLICATIONS

- “Road to recovery: Managing an epidemic” with Simon Loertscher, *Journal of Mathematical Economics* [Special Issue on the economics of epidemics and emerging diseases], 93, 2021
- “A general noncentral hypergeometric distribution” with Simon Loertscher and Peter Taylor, *Communications in Statistics – Theory and Methods*, 46(9):4579–4598, 2017
- “Approximating the equilibrium quantity traded and welfare in large markets” with Konstantin Borovkov, *Stochastic Models*, 33(3):411–429, 2017

APPOINTMENTS

Postdoctoral Fellow, School of Mathematics and Statistics, University of Melbourne 2017

RELEVANT POSITIONS

- Research Assistant**, Department of Economics, Stanford University 2017 – 2021
Paul Milgrom (2017–2019, 2021), Gabriel Carroll (2020–2021)
- Research Assistant**, Department of Political Science, Stanford University 2021
Avidit Acharya
- Research Assistant**, Graduate School of Business, Stanford University 2018
Mohammad Akbarpour
- Visiting Scholar**, Department of Economics, Columbia University 2015
Sponsored by Michael Riordan

TEACHING
EXPERIENCE

Department of Economics, Stanford University

Teaching Assistant and Guest Lecturer: Econ 203 Microeconomics II (2020)

Department of Economics, University of Melbourne

Guest Lecturer: ECON90064 Advanced Studies in Economics I (2019)

Teaching Assistant: ECON90002 Microeconomics (2017), ECON40001 Advanced Microeconomics (2015), ECON30010 Microeconomics (2012 – 2014), ECON20002 Intermediate Microeconomics (2014), ECON20001 Intermediate Macroeconomics (2014), ECON10004 Introductory Microeconomics (2011 – 2013), ECON10003 Introductory Macroeconomics (2011 – 2013)

SELECTED
SCHOLARSHIPS &
AWARDS

SIEPR Bradley Graduate Fellowship, Stanford University	2021 – 2022
Visiting Research Scholar Award, University of Melbourne	2018 – 2019
Economics Department Fellowship, Stanford University	2017 – 2018
Australian Laureate Fellowship Postgraduate Researcher Award	2014 – 2017
Elizabeth and Vernon Puzey Scholarship, University of Melbourne	2014 – 2017
Professor Wilson Prize in Mathematics, University of Melbourne	2013
Mathematics and Statistics Departmental Scholarship, University of Melbourne	2012 – 2013
Melbourne National Scholarship, University of Melbourne	2009 – 2011

REFEREEING

American Economic Journal: Microeconomics; Proceedings of the National Academy of Science; Communications in Statistics – Theory and Methods

PROFESSIONAL
ACTIVITIES

Program Committee member, EC'21 (2021 ACM Conference on Economics and Computation)
Postgraduate Programs Committee member, University of Melbourne (2014 – 2017)

INVITED TALKS

Monash University; Asia-Pacific Industrial Organization Conference (scheduled)	2021
Stanford and MIT COVID-19 Policy Hackathon; University of Melbourne	2020
Google Research; University of Melbourne; Queues, Modelling and Markov Chains: A Workshop Honouring Professor Peter Taylor (Mount Tamborine); University of Oxford; YoungEC'19 (Tev Aviv)	2019
CME Group-MSRI Prize in Innovative Quantitative Applications Panel (Chicago); University of Chicago (Guest Lecturer in Econ 40603/Business 33915 Market Design); Monash University; University of Melbourne; Paris School of Economics	2018
University of North Carolina at Chapel Hill	2017
Columbia/Duke/MIT/Northwestern IO Theory Conference; École Polytechnique Fédérale de Lausanne; University of Queensland; Melbourne IO and Theory Day	2016

CONFERENCE
PRESENTATIONS

ASSA 2021 Annual Meeting (Virtual)	2021
2020 Delhi School of Economics and the Econometric Society Winter School (Virtual)	2020
INFORMS Applied Probability Society Conference (Brisbane)	2019
Australasian Economic Theory Workshop (Auckland); Applied Probability at the Rock (Yulara); Stochastic Processes and their Applications (Moscow)	2017
Australasian Meeting of the Econometric Society (Sydney)	2016
Australian and New Zealand Applied Probability Workshop (Adelaide); Australia and New Zealand Industrial and Applied Mathematics Conference (Gold Coast)	2015