Mitchell Watt

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Education

2018 - present	Doctor of Philosophy in Economics **Stanford University** Primary Advisor: Professor Paul Milgrom Committee: Profs. Andrzej Skrzypacz, Ilya Segal, Al Roth, Shoshana Vasserman, Ravi Jagadeesan
2016-2018	Master in Public Policy **Harvard University, John F. Kennedy School of Government** Concentration: Business and Government Policy Thesis: *Trust mechanisms and online platforms: A regulatory response* Advisor: Professor Jason Furman
2008-2012	Bachelor of Science (Hons.) and Graduate Diploma of Economics **The University of Queensland** Major: Mathematics Honours Thesis: *Morse Theory: Smooth and Discrete* Advisor: Professor Stephan Tillmann

Research Interests

Market design, microeconomic theory, public policy, business strategy and regulation.

Working Papers

In-Kind Subsidies with Topping Up (Job Market Paper) with Zi Yang Kang (Toronto)   Paper

We characterize the optimal design of in-kind subsidies for redistribution when recipients can "top up" their subsidized allocations in a private market. The consumers' ability to top up constrains the social planner to offer subsidies that increase with the quantity purchased. When the social planner seeks to redistribute to consumers with lower demand, subsidies are optimal if and only if the opportunity cost of funds is below the average welfare weight and lump-sum transfers are unavailable, leading to subsidies for consumption *up to* a maximum level. When the social planner seeks to redistribute to consumers with higher demand, the social planner may prefer in-kind subsidies to lump-sum transfers, providing discounts for consumption *beyond* a minimum level. Both the social planner and the average eligible consumer favor targeted subsidies for goods with a strong positive association between demand and welfare weights.

Optimal In-Kind Redistribution with Zi Yang Kang (Toronto)   Paper

This paper develops a model of in-kind redistribution where consumers participate in either a private market or a government-designed program, but not both. We characterize when a social planner, seeking to maximize weighted total surplus, can strictly improve upon the laissez-faire outcome. We show that the optimal mechanism consists of three components: a public option, nonlinear subsidies, and laissez-faire consumption. We quantify the resulting distortions and relate them to the correlation between consumer demand and welfare weights. Our findings reveal that while private market access constrains the social planner's ability to redistribute, it also strengthens the rationale for non-market allocations.

A Walrasian Mechanism with Markups for Nonconvex Economies with Paul Milgrom (Stanford)   Paper

Revise and Resubmit at the *Review of Economic Studies*

We introduce Markup equilbrium, an extension of Walrasian equilibrium that adds a markup to the prices that consumers pay to ensure existence even in nonconvex quasilinear economies. Markup equilibria are resource-feasible, incur no budget deficit, and require little more communication and computation than the Walrasian equilibrium. The Markup direct mechanism is large-market incentive-compatible. Our Bound-Form First Welfare Theorem states that for any feasible allocation and price vector, the welfare loss compared to a first-best allocation is at most the sum of (i) the budget surplus and (ii) any rationing losses suffered by the participants. This implies that any Markup equilibrium with a small markup is nearly efficient.

Strong Monotonicity and Perturbation-Proofness of Walrasian Equilibrium   Paper

Best Paper by Young Researcher, Econometric Society Australasian Meeting (2023)

I study the price impact of small perturbations to Walrasian equilibrium, as might be caused by changes in the supply vector, changes in the set of participants, or misreports by an agent. A (nested) sequence of markets is perturbation-proof if, given any supply vector, the price impact of any bounded perturbation is inversely proportional to the number of agents. Perturbation-proofness implies good incentive properties of Walrasian equilibrium in large markets and robustness of prices to small misspecifications. Replica economies are perturbation-proof if and only if the base economy's demand correspondence is strongly monotone. When buyers' preferences are drawn identically and independently from a type distribution with a strongly monotone expected demand correspondence, the resulting sequence of economies is perturbation-proof with high probability.

Reducing Congestion in Labor Markets: A Case Study in Simple Market Design   Paper

with Shoshana Vasserman (Stanford GSB) and John J. Horton (MIT Sloan)

Many matching markets are suspected to suffer from inefficient levels of congestion. We show this is a real concern in an online labor market and present results of two market-wide experiments designed to reduce congestion. The first intervention introduced a "soft" cap on the number of applications that could be received for a job opening and the number of days applications were accepted. Despite reducing the number of applications per opening, the intervention did not reduce the hiring probability or reported match quality. A second, more complex intervention that attempted to price externalities directly failed. We find that application fees introduced by the platform reduced hire rates and competition among candidates, suggesting that these fees may have been miscalibrated or higher than socially efficient.

Concavity and Convexity of Order Statistics in Sample Size   Paper

We show that the expectation of the kth-order statistic of an i.i.d. sample of size n from a monotone reverse hazard rate (MRHR) distribution is convex in n and that the expectation of the $(n-k+1)^{\text{th}}$-order statistic from a monotone hazard rate (MHR) distribution is concave in n for $n \geq k$. We apply this result to the analysis of independent private value auctions in which the auctioneer faces a convex cost of attracting bidders. In this setting, MHR valuation distributions lead to concavity of the auctioneer's objective. We extend this analysis to auctions with reserve values, in which concavity is assured for sufficiently small reserves or for a sufficiently large number of bidders.

Academic Publications

Risk aversion and auction design: Theoretical and empirical evidence.   [Paper]

International Journal of Industrial Organization, 79:102758.

Auctions are inherently risky: bidders face uncertainty about their prospects of winning and payments, while sellers are unsure about revenue and chances of a successful sale. Auction rules influence the allocation of risk among agents and the behavior of risk-averse bidders, leading to a breakdown of payoff and revenue equivalence and a heightened significance of auction design decisions by sellers. In this paper, we review the literature on risk aversion in auctions, with an emphasis on what can be learned about auction design from theoretical modeling and empirical studies. We survey theoretical results relating to the behavior of risk-averse agents in auctions, the comparison of standard auction formats in the presence of risk aversion and implications for auction design. We discuss standard and more recent approaches to identifying risk preferences in empirical studies and evidence for the significance of risk aversion in auction applications. Finally, we identify areas where existing evidence is relatively scant and ask what questions empirical research might ask given the theory and where further theoretical research may be beneficial given existing empirical results.

Other Publications

- [Commentary on Effective Allocation of Affordable Housing by Nick Arnosti and Peng Shi](#) with Paul Milgrom, Management Science Blog, 2020.

- [Trust mechanisms and online platforms: A regulatory response](#) with Hubert Wu, Harvard Mossavar-Rahmani Center for Business and Governance, Associate Working Paper Series, No. 97, 2018.

- [Labor should fight for economic mobility](#) with The Hon. Dr. Jim Chalmers, Chifley Research Centre Blog, 2013

Work In Progress

Who Gets What and When: Dynamic Allocation without Transfers   [Slides]

A principal is endowed with a stream of items to be allocated to a fixed population of agents. Items arrive with random quality—some items are 'goods,' desired by all agents, while others are 'bads,' conferring negative flow payoffs to agents—and no transfers are allowed. The principal seeks to allocate as many items as possible while respecting the agents' participation constraints. I characterize the optimal allocation, which involves incentivizing undesirable allocations today using promises of improved future allocations. The principal is optimally 'loyal' to agents with worse historical allocations, assigning them priority for the best arriving goods. I discuss the implications of these results for the design of markets for ridesharing and the centralized allocation of teachers to schools.

A Bandit Model of Trade with Two-Sided Learning with Yunus Aybas (Texas A&M)   [Slides]

We study a model of trade with repeated interaction between a single buyer and many sellers. The buyer is initially uninformed about her valuations for the various goods and sellers are uninformed about the buyer's demand. We model this interaction as a multi-armed bandit problem with strategic arms and seek to understand the welfare consequences of various models of buyer behavior. We show that a buyer using a no-regret (contextual) learning algorithm may be exploited by colluding sellers in an approximate Nash equilibrium for the sellers. However, a buyer with commitment power may extract almost all the gains from trade from the sellers in an approximate dominant strategy equilibrium for the sellers.

Honors and Awards

- Journal of Industrial Economics Fellowship (2024)
- Gale and Steve Kohlhagen Fellowship in Economics, Stanford University (2024-2025)
- Best Paper by Young Researcher, Econometric Society Australasian Meeting (2023) for *Strong monotonicity and perturbation-proofness of Walrasian equilibrium*
- The Koret Fellowship, Stanford University (2021-2023)
- Ric Weiland Graduate Fellowship, Stanford University (2021-2023)
- Centennial Teaching Award, Stanford University (2021)
- Department of Economics Outstanding TA Award, Stanford University (2021)
- Dean's Award for Excellence in Student Teaching, Harvard Kennedy School (2018)
- John F. Kennedy Fellowship, Harvard Kennedy School (2016-2018)
- Graduate of the Year, University of Queensland (2012)
- University Medal, University of Queensland (2011)
- Harriet Marks Bursary, University of Queensland (2011)
- Madalen Kitty Ravenhill Hulbert Memorial Prize, University of Queensland (2009)
- John Black Prize, University of Queensland (2009)
- Dean's Excellence and Equity Scholarship, University of Queensland (2008-2010)
- UQ Excellence Scholarship, University of Queensland (2008-2010)

Conference Presentations

- 21st Annual Berkeley/Columbia/Duke/MIT/Northwestern IO Theory Conference (2024, upcoming)
- Econometric Society Australasian Meeting (2023)
- 34th Stony Brook International Conference on Game Theory (2023)
- American Economics Association CSQIEP Mentoring Conference (2023)
- NBER Market Design Working Group, Fall Meeting (2021)

Teaching Experience

Stanford University	ECON 202 Graduate Microeconomics I (TA, 2020) ECON 136 Market Design (TA, 2021) Public Policy Masters Math & Economics Bootcamp (Instructor, 2021) Economics PhD Math Camp (Instructor, 2022-23)
Harvard Kennedy School	API-303 Game Theory & Strategic Behavior (TA, 2017) API-101D Markets & Market Failure (TA, 2017) API-102I Economic Analysis of Public Policy (TA, 2018)
University of Queensland	MATH1051 Calculus & Linear Algebra I (TA, 2009) MATH1052 Multivariable Calculus & ODEs (TA, 2009-2013) MATH2000 Calculus & Linear Algebra II (TA, 2011-2013) MATH3402 Functional Analysis (TA, 2013) MATH3500 Problems & Applications in Modern Mathematics (TA, 2012-13) ECON7040 Macroeconomic Analysis (TA, 2013) ECON7010 Consumer and Firm Behaviour (TA, 2013)

Academic Service

- Member of the Economics Graduate Student Committee (2021-2023)
- Volunteer, WE RISE: Women's Empowerment and Rational Inclusion at Stanford Economics (2018-19)
- Volunteer for Graduate Student Admissions, Department of Economics, Stanford University (2018-2023)
- Social Chair, Department of Economics, Stanford University (2019)

Other Experience

Auctionomics - Consultant   March 2023–present

Research support, economic analysis and litigation consulting for defense counsel in *United States et al. v. Google LLC* (online display advertising antitrust case). Analysis of auction design and strategy, including original research, empirical analysis, analysis of documentary evidence, report writing and presentation to non-expert audiences.

AlphaBeta Advisors - Consultant   May–August 2017

Strategic economic analysis and advice for a number of public sector clients on policy design, including labour market economics and industry policy.

Parliament of Australia, Office of The Hon. Dr. Jim Chalmers MP - Adviser   October 2013–July 2016

Speech-writer and adviser on policy issues for the (then) Shadow Minister for Financial Services and Superannuation, Shadow Minister for Sport, Shadow Assistant Minister for Trade, Resources and Productivity. Policy and legislative advice, speech-writing, support for parliamentary duties.

Australian Labor Party
Secretary, Australian Young Labor   April 2014–September 2015
President, Queensland Young Labor   May 2013–May 2014

Campaign organizing, event management and administrative management of youth wing of party.

The Pyjama Foundation - Volunteer and IT Assistant   April–November 2013

Assisted the charity (which provides tutoring and support for foster children) with database development and maintenance, training for new volunteers, and general office administration.