Matthew W. Thomas

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Northwestern Economics

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Fields

Research: Microeconomic Theory

Teaching: Applied Microeconomics, Industrial Organization, Microeconomic Theory

Education

Ph.D., Economics, Northwestern University	(anticipated) 2023
Committee: Asher Wolinsky (Chair), Wojciech Olszewski, Bruno Strulovici	
B.A., Mathematics and Economics, Williams College	2017

Fellowships & Awards

Dissertation Fellowship, Northwestern University	2022–2023
University Fellowship, Northwestern University	2017–2018
Carl Van Duyne Prize	2017
Sentinels Fellowship	2015

Teaching Experience

Teaching Assistant, Northwestern University	2018–Present

Intro to Microeconomics, Introduction to Applied Econometrics, Natural Resource Economics, Economics of Education, Mathematical Methods for Economists (Math Camp), Marketing Analytics (Kellogg), Business Strategy (Kellogg), Programming (Kellogg)

Teaching Assistant, Williams College	2015–2016

Intro to Development Economics, Probability

Research Experience

Research Assistant, Ivan A. Canay, Northwestern University	2021

Conferences

Conference on "Contests: Theory and Evidence"

Refereeing

American Economic Review, Economics Letters, Journal of Mathematical Economics, Journal of Open Source Software, Review of Economic Design

Job Market Papers

"Regulation of Wages and Hours"

Abstract: This paper studies the problem of a labor market regulator who knows that workers prefer to work fewer hours at their current wage, but lacks specific knowledge of production, labor disutility, and the bargaining protocol. We show that for a large class of bargaining protocols, moderate regulation (such as a small minimum wage) is counterproductive in that it results in hours that exceed the efficient quantity. We find that a combination of the minimum wage, overtime pay, and a cap on hours is optimal in a novel robust regulatory setting where the regulator has neither a prior nor exogenous bounds on model parameters.

"Asymmetric All-Pay Auctions with Spillovers" with Maria Betto
R&R at Theoretical Economics, 2022

Abstract: When opposing parties compete for a prize, the sunk effort players exert during the conflict can affect the value of the winner's reward. These *spillovers* can have substantial influence on the equilibrium behavior of participants in applications such as lobbying,

warfare, labor tournaments, marketing, and R&D races. To understand this influence, we study a general class of asymmetric, two–player all–pay auctions where we allow for spillovers in each player's reward. The link between participants' efforts and rewards yields novel effects – in particular, players with higher costs and lower values than their opponent sometimes extract larger payoffs.

Works in Progress

"Choice over Assessments" with Maria Betto

Abstract: There are many settings where agents with differing types choose among assessments that attempt to measure these types. For example, students may take either the SAT or ACT. Bond issuers may choose between the three main rating agencies. Assessments that provide higher ratings are obviously preferable to all agents. Preferences over risk are less obvious. Intuitively, low types prefer less accurate assessments because they can benefit more from mistakes. High types prefer more accurate assessments because they benefit from an accurate description of their type. We propose a condition on the assessments that ensures agents will choose them in an assortative manner. If the assessments have only two scores, this condition implies Blackwell's informativeness criterion. However, this does not hold with three or more scores. When the assessments give the same unconditional distribution of scores, our condition implies the concordance order. We extend the analysis to repeated testing and mechanism design. We show that a principal can use menus of garbled assessments to improve the informativeness of high scores.

"Anonymous Contest Design"

Abstract: There are many settings where a principal knows the interim distribution of agent types rather than the ex-ante distribution. For example, the principal may have data that is anonymized or may know the types but is not allowed to discriminate. This setting is rarely studied in mechanism design because the optimal mechanisms are usually trivial. However, this setting is frequently studied in the design of contests under functional form assumptions that preclude full-surplus extraction. We model contest design as a general allocation rule without any functional form assumptions. Instead, we impose efficiency, the requirement that the entire prize budget must be allocated in response to any bid profile. This condition holds in all popular models of contests. We find that efficiency and linearity of payoffs are sufficient to prevent full surplus extraction. In the two–player case, the overall optimal contest is one of two popular models: an all–pay auction with bid caps when heterogeneity is low or a difference–form contest when heterogeneity is high.

"Covert Discrimination and Self-promotion"

Abstract: Agents with similar skill may differ in their ability to self-promote. We consider the problem of a manager who uses an anonymous contest to extract effort from equally productive workers who differ in their ability to win the contest. In this setting, the manager would like to offer a larger prize to the weaker worker to increase competitiveness. However, this overt discrimination is forbidden by anonymity. Instead, the designer is limited to contests with *covert* discrimination: those which give the weaker player a larger prize only in equilibrium. If the prize is fixed, it is often possible to engage in covert discrimination against the stronger player to increase total output. However, full surplus extraction is not typically possible. So, the stronger player is better off than the weaker player despite the smaller prize. If the designer can endogenize the prize, full surplus extraction is possible in an all–pay auction as long as a single–crossing condition is met.

"Free-Riding and Herding in OTC Markets" with Maria Betto

Abstract: Corporate bonds are traded in decentralized over-the-counter (OTC) markets which provide slower dissemination of information than equity markets. This causes players to "herd", i.e., copy the purchase and sale actions of other players. We build a stylized model of a market leader and follower to explain two empirical facts: herding is more prevalent in (1) more liquid markets and (2) in sales than in buys. In our model, herding is more prevalent in liquid markets because the leader changes the market price less when taking action. Because this change is always detrimental for the follower, increased liquidity reduces the cost of waiting for the leader's action. Herding is more prevalent in sales than buys because it is difficult to short sell in OTC markets. Therefore, any player who sells bought the asset in

a previous period. When the leader buys, it reveals that it received a buy signal over a certain threshold. When the leader sells, it demonstrates both that the leader received a strong sell signal and that the original buy signal was not that strong.

Languages   English (native)

Code   Integral Equations (inteq)

A Python package to numerically solve Volterra, Fredholm, and other integral equations

All-Pay Auctions in Python (allpy)

A Python package to estimate the equilibria of all-pay auctions with or without spillovers

Approximate Randomization Tests in R (rART)

An R package for Approximate Randomization Tests with a Small Number of Clusters

Personal and Professional Projects in R, Python, PHP, JavaScript, and Ruby

Including a tool to place student names on exam booklets, a decentralized tool for sharing math equations via URL, a plugin to generate SSL certificates, a remote follow tool for ActivityPub, and an open software mirror distributed across the US and Europe.

References   Professor Asher Wolinsky
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