MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD in Economics, Expected Completion: June 2025
DISSERTATION: "Essays on the Design of Social and Private Insurance"

DISSERTATION COMMITTEE AND REFERENCES

Professor James Poterba
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Professor Amy Finkelstein
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Professor Jonathan Gruber
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PRIOR EDUCATION

University of New South Wales (UNSW), Sydney, Australia   2018
     Bachelor of Economics (Honours Class I, University Medal)
     Bachelor of Science in Mathematics (Distinction)

CITIZENSHIP   Australia, Ireland   **GENDER:** Male

FIELDS

Primary Field: Public Finance
Secondary Fields: Financial Economics, Climate Economics

TEACHING EXPERIENCE

PhD Public Economics II (14.472)
     TA to Profs. Nathan Hendren & Amy Finkelstein   2024
     TA to Prof. Nathan Hendren   2024
     TA to Prof. Amy Finkelstein   2022
Undergraduate Public Finance & Public Policy (14.41)
     TA to Prof. Jonathan Gruber   2021

RELEVANT POSITIONS	Research Intern, Microsoft Research New England	
	Supervised by Prof. Hunt Allcott	2021
	RA to Professor James Poterba	2020-21
	RA to Professor Richard Holden, UNSW	2017-19

FELLOWSHIPS, HONORS, AND AWARDS	Jerry A. Hausman Graduate Dissertation Fellowship	2022-23
	Honorable Mention for Best Student Paper, IIPF	2023
	Bradley Public Economics Fellowship	2021-24
	George and Obie Shultz Fund	2021-24
	Daniel (1972) and Gail Rubinfeld Fellowship	2020-21
	MIT Presidential Fellowship	2019-20
	Honours Scholarship (UNSW)	2018
	University Medal in Economics (UNSW)	2018
	Malcolm Chaikin Foundation Scholarship (UNSW)	2013-17
	Scientia Scholarship (UNSW)	2013-17
	Henry Manson Scholarship (UNSW)	2015-16

PROFESSIONAL ACTIVITIES

Referee: *American Economic Review, American Economic Review: Insights, American Economic Journal: Economic Policy, Economic Journal, Games and Economic Behavior, International Journal of Game Theory, Journal of Retirement*, *Review of Finance*

External Presentations: *ARIA Huebner Colloquium (x2), PSID Annual User Conference, Risk Theory Society, USDA Economic Research Service, Western Economic Association International, UNSW*

Service:

Organizer, MIT Public Finance Lunch		2021-22
President, Graduate Economics Association		2020-21

PUBLICATIONS

"The Dynamics of Majoritarian Blotto Games (with Tilman Klumpp and Kai Konrad)" *Games and Economic Behavior* 117:402-419 , 2019**.**

"Imperfect Private Information in Insurance Markets" *Review of Economics and Statistics, forthcoming.*

This paper studies imperfectly-perceived private information in insurance markets when contracts endogenously respond. Equilibrium contracts, pooling and welfare depend on the joint distribution of risk and misperception. In the Health and Retirement Study (HRS), I show that misperceptions typically co-vary with (medical, long-term care, disability and mortality) risk type: high types under-perceive their risk, low types over-perceive. I develop a general model and algorithm to estimate the equilibrium contracts, pooling and welfare impact of misperceptions that is applicable in many settings. I offer suggestive evidence from US annuity markets that contracts are distorted due to misperceptions, with welfare likely increasing.

RESEARCH
PAPERS

"Optimal Insurance Scope: Theory and Evidence from US Crop Insurance" (Job Market Paper) (with Sylvia Klosin)

Distinct risks are typically insured separately. A single `aggregate' contract that pays more when many shocks occur simultaneously, but less when positive shocks offset negative shocks, is welfare enhancing absent moral hazard. However, an aggregate contract discourages diversification, leading to a novel insurance-incentive trade-off. We study the US Federal Crop Insurance Program (FCIP), where farmers can choose the `scope' of their policy - whether to insure each field separately, or all fields of the crop as an aggregate unit. Starting in 2009, the FCIP introduced a large subsidy increase for aggregate insurance. We show that farms that moved to aggregate insurance reduced crop diversity and irrigation, farmed less and conserved more land, and insured price risk - all reducing the diversification of risk they face. This increased the variability of farm yield by 10% to 33%, depending on the crop, raising the fiscal cost of aggregate insurance by about $1.5 billion per year. We derive and estimate a `Baily-Chetty' style formula for the optimal contract scope. We find that an aggregate policy is never welfare maximizing, but that the optimal policy lies partway between separate and aggregate. More generally, we discuss scope's widespread relevance in insurance design.

"Insuring Catastrophic Climate Risk: Evidence from Public Cyclone Reinsurance"

Increasing climate risk has caused insurance in many locations to become unaffordable or unavailable. I study a novel policy response in Australian home insurance: government provided, mandatory, actuarially fair, reinsurance for cyclone damage. In this scheme, the government reinsures the cyclone risk, while the private market covers the remaining idiosyncratic risk. I find that public reinsurance leads to a 21% decrease in home insurance premiums and an 11% increase in the probability of insurance being offered at all. In terms of mechanisms, I rule out subsidization and show that the ambiguity of the risk has a minimal impact on premiums and insurance offerings. Instead, the entirety of the increase in insurance offered, and much of the decrease in premiums, comes from reducing the implicit costs associated with insuring spatially correlated risk. Increased competition due to insurer entry explains the remaining premium reductions. This isolates the cause of market dysfunction - correlated risk - and suggests that public reinsurance is a cost-effective policy to rehabilitate insurance markets for catastrophic climate risks.

"Bundling in Insurance Markets: Theory and an Application to Long-term Care"

Every insurance contract bundles risks, and explicit bundling discounts are common. I show theoretically that bundling arises in a competitive market whenever correlation between risk types enables insurer "cream-skimming": willingness-to-pay for insurance against one risk must be negatively correlated with expected costs from the other risk. I analyze long-term care insurance, in which both-spouse bundles are discounted by 20-35%. I show that cream-

skimming incentives are sufficient to explain these discounts, and rule out standard economies-of-scale. Counterfactually, banning bundling would raise welfare by 5% by correcting separate-market unraveling, while mandatory family bundling would reduce welfare by 5% by exacerbating advantageous selection.

"Self-Targeting in U.S. Transfer Programs" (with Charlie Rafkin and Evan Soltas)

Transfer receipt is voluntary and costly, generating "self-targeting" through selective take-up among the eligible. How does self-targeting select on need, and what are its policy implications? We show self-targeting is advantageous in eight U.S. transfers: On average, recipients have lower consumption and lifetime incomes than eligible nonrecipients with similar current incomes. Due to self-targeting, these transfers provide 50 to 75 percent more to the consumption-poorest and lifetime-poorest than would automatic transfers that are distributionally equivalent by income. Self-targeting makes automatic transfers undesirable: We estimate the social benefits of self-targeting are approximately six cents per transfer dollar, generally exceeding the social costs of ordeals.

"Projected Mortality Improvement and the Money's Worth of US Individual Annuities" (with James Poterba)

This paper presents new estimates of the money's worth of both immediate and deferred annuities that were available in the US individual annuity market in July 2020. It highlights the sensitivity of these estimates to two inputs to the valuation process: the choice of discount rate and the assumed rate of prospective mortality improvement for annuity buyers. The decline in nominal interest rates in the last two decades has coincided with a decline in the ratio of an annuity's annual payout as a fraction of its purchase price, as well as an increase in the difference between the money's worth estimates using interest rates for safe (US Treasury) and risky (corporate) bonds. In addition, projecting future mortality rates using the rate of mortality improvement observed in the US in the first decade of this century, the data underlying the most recent Society of Actuaries projections, results in much higher money's worth values than when future mortality improvement rates are assumed to follow the assumptions of the Social Security Administration Office of the Actuary. The sensitivity of these valuation calculations highlight potential challenges in designing communications about annuity products for retirement plan participants.

RESEARCH IN PROGRESS

"Household Unemployment Insurance and Spousal Labor Supply: Evidence from Australia"

Unemployment insurance (UI) systems are either individualized (e.g. the US) or family-based (e.g. Australia and the UK). In a family-based system, benefits are means-tested against spousal income: otherwise comparable unemployed people with low-earning spouses receive a higher benefit than those with high-earning spouses. A family-based system targets payments to needier households, but levies an implicit tax against spousal earnings, potentially depressing labor supply. I examine this trade-off in Australia, exploiting variation in the implicit spousal

tax rate that ranged from 60% to 25%. When the implicit tax rate fell, spousal earnings rose by 15%, implying a spousal income elasticity of ~0.25. I use the empirical estimates to estimate a model of optimal family-based UI that trades-off targeting with labor supply responses.

"Ex-Ante Subsidy vs Ex-Post Assistance: The Spillovers of Mispriced Climate Risk" (with Jonathan Gruber)

In many settings where households face substantial and changing climate risk, the government provides both ex-ante insurance subsidies and ex-post disaster assistance. Removing the former so that prices accurately reflect the risk faced would increase expenditures on the latter. We study the US National Flood Insurance Program, which has recently re-priced policies to be actuarially fair, and the spillovers this has on FEMA disaster assistance. We estimate that 1% flood insurance subsidy increases coverage by 0.66%. If a flood occurs, this coverage expansion reduces FEMA disaster assistance expenditures by $148 and disaster loans by $321 per house in the affected county. We explore heterogeneity by risk and region. Using these results, we estimate a model of optimal ex-ante subsidy versus ex-post assistance.