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Citizenship	Canadian
Languages	English (native), French
Research Interests	Public Economics Economics of Education Labour Economics Applied Econometrics
Teaching Interests	Public Economics Quantitative Methods in Economics Economics of Education Labour Economics
Education	
2011-present	Ph.D., Economics, University of Toronto (expected June, 2017) <i>Dissertation:</i> Three Essays on the Economics of Education <i>Committee:</i> Robert McMillan (supervisor), Philip Oreopoulos, Natalie Bau
2010-2011	M.A., Economics, University of British Columbia
2005-2009	B.Comm., Finance, University of British Columbia • Graduated with honours

Completed Working Papers

School Accountability and the Dynamics of Human Capital Formation
(*Job Market Paper*)

Experimental Estimates from Observational Data: The Case of Class Size (submitted)

Educational Reforms in General Equilibrium: The Case of Class Size Reduction in California (with Hugh Macartney and Robert McMillan)

Centralized or Decentralized Funding? The Case of Title I

Work in Progress

Capacity Constraints, Household Preferences, and the Valuation of School Quality (with Jessica Burley)

Awards (Ph.D. Only)

Ontario Graduate Scholarship, 2013-2015, 2016-2017
Social Sciences and Humanities Research Council of Canada Doctoral Fellowship, 2014-2016
University of Toronto Graduate Fellowship, 2011-2015

Professional Experience

- 2011-2016 Teaching Assistant, University of Toronto
- Quantitative Methods for Policy Analysis (Fall 2012, 2013, 2014, 2015, 2016)
 - Introductory Economics (Winter 2013, Summer 2012, 2015, 2016)
 - Advanced Economic Theory (Winter 2013)
 - Intermediate Macroeconomic Theory and Policy (2011-2012)
- 2016 Course Instructor, University of Toronto
- Refresher for Quantitative Methods for Policy Analysis (Winter 2016)
- 2012-2015 Research Assistant, University of Toronto
- Supervisor: Robert McMillan
 - Duties included data preparation and analysis
- 2010-2011 Teaching Assistant, University of British Columbia
- Introductory Economics (Fall 2010)
 - European Economic History (Winter 2011)

Conference Presentations

2016: Canadian Public Economics Group (Montreal), International Association for Applied Econometrics (Milan), International Workshop on the Applied Economics of Education (Catanzaro, Italy), Centre Interuniversitaire de Recherche en Économie Quantitative (CIREQ) PhD Students' Conference (Montreal), Canadian Economics Association Conference (Ottawa)

2015: International Workshop on the Applied Economics of Education (Catanzaro, Italy), Annual Doctoral Workshop in Applied Econometrics (Toronto), Canadian Economics Association Conference (Toronto)

2014: Canadian Economics Association Conference (Vancouver)

References

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Dissertation Abstract

School Accountability and the Dynamics of Human Capital Formation (Job Market Paper)

This paper sets out a new approach that enables me to credibly identify dynamic interactions among school inputs for the first time. I do so in the context of accountability reforms that provide explicit incentives to educators. As a starting point, I employ a theoretical model to obtain new dynamic predictions: accountability schemes that set identical targets for each student incentivize schools to raise students toward the achievement target gradually, both by investing early in students and in those with ability below the achievement threshold. Using detailed administrative data from North Carolina, I test these predictions by taking advantage of an understudied feature of No Child Left Behind (NCLB) – the largest accountability scheme ever implemented in the United States – whereby students are effectively held accountable only if there are forty or more students in their demographic group. This variation allows me to compare the achievement of students who face accountability with those who do not through a regression discontinuity (RD) design. I then set out a new identification strategy that incorporates year-to-year treatment variation in the RD design to provide the period-by-period randomization necessary to identify interactions in inputs across time. Consistent with the model, I find that schools focus on students in early grades below the achievement threshold: while, on average, accountability boosts test scores by 0.06σ , the effect on students with below-threshold ability in the first accountable grade is 0.23σ . In addition, I find complementarities among inputs across time: RD estimates show accountability in the second period leads to a $0.2\text{-}0.3\sigma$ test score increase among those receiving treatment in the prior period, relative to those who did not. These reduced-form responses suggest that educators have a sense of the underlying technology, providing an opportunity to identify the technology structurally: reduced-form estimates capture school responses, and assuming the school does know the underlying technology, these responses represent the relative benefit of investment in each period, pinning down any complementarities in inputs across time. With the dynamic technology in hand, I consider the efficacy of alternative accountability schemes, including value-added schemes that set student-specific targets based on prior test scores. Given that value-added schemes implicitly punish early investment, I highlight a ‘multiperiod value-added’ scheme that counteracts this dynamic distortion by setting achievement targets based on *baseline* test scores. The counterfactuals reveal that multiperiod value-added schemes outperform traditional value-added schemes and NCLB by 0.13σ and 0.17σ , respectively. While value-added schemes increase the black-white test score gap by fifteen percent, I also propose alternative multiperiod value-added schemes that can reduce the pervasive test score gaps that plague education today.

Experimental Estimates from Observational Data: The Case of Class Size

While researchers using randomized experiments, such as Project STAR, have concluded that smaller classes lead to large improvements in student achievement, studies using regression discontinuity (RD) methods generally find much smaller effects. I argue that this divergence occurs because the two methods estimate different quantities: experimental studies capture changes in class size alone, whereas RD methods measure the broader impact of adding a new class, which may include changes in teacher quality through hiring a new teacher. To reassess the efficacy of smaller classes, I propose a novel extension of the RD design that can recover the pure effect of changes in class size using observational data, as well as the effect of a newly-hired teacher. Intuitively, the design exploits the asymmetry between school-grades entering versus exiting treatment to disentangle individual treatment effects from a discontinuity incorporating multiple treatment components. I apply my identification strategy using data from New York City for 2009-2013. The results imply a pure class size effect in line with previous experimental estimates: a four-student reduction in class size increases math and English test scores by

0.21 σ and 0.14 σ , respectively. However, the pure class size effect is counteracted by the newly-hired teacher effect, which reduces test scores in math by 0.23 σ and in English by 0.17 σ , highlighting a trade-off in practice between class size and teacher quality. More generally, the approach provides researchers with a tool to separately identify unique treatment effects in a discontinuity composed of multiple treatments.

Centralized or Decentralized Funding? The Case of Title I

The merits of decentralized public goods provision have long been debated by policymakers and academics alike. Although decentralization can improve outcomes and raise productivity, it may hurt the disadvantaged if local elites are able to capture public resources. This paper sheds new light on the decentralization debate in the context of Title I, the largest U.S. federal education funding program. Title I funds can be delivered in two ways: a centralized form called 'targeted assistance' and a decentralized form known as the 'schoolwide program.' I incorporate these two delivery mechanisms into a model featuring the key tension between resource capture by local elites and the benefits of decentralization. The model draws attention to three informative dimensions of comparison: centralized Title I versus no Title I; decentralized Title I versus no Title I; and decentralized Title I versus centralized Title I. I then use regression discontinuity designs to estimate all three comparisons using data from California for the 2008-11 period. Prior research implicitly compared non-Title I schools to schools receiving Title I in a centralized form and found that Title I had negligible effects on student achievement. My results indicate that the negligible impact of Title I is likely caused by the centralized nature of the funds: in its decentralized form, Title I generates a substantial improvement in student achievement, particularly for the socioeconomically disadvantaged. The findings suggest that policymakers should both lower the current decentralization threshold and reconsider the inflexible mandates embedded in the delivery of centralized funds.