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**Graduate Student Coordinator:** Amy Schulz, [aschulz@uchicago.edu](mailto:aschulz@uchicago.edu), (773) 834-1972

**Education**

The University of Chicago, 2016 to present

Ph.D. Candidate in Economics

Thesis Title: “Aggregate effects of talent allocation: Evidence from the Finnish comprehensive school reform”

Expected Completion Date: June 2022

Ph.D., Mathematics, Aalto University, Finland

M.S., Mathematics, New York University

M.Sc., Mathematics, University of Oulu, Finland

**References:**

Lars Peter Hansen (chair)

University of Chicago

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Thibaut Lamadon

University of Chicago

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**Teaching and Research Fields:**

Primary fields: Macroeconomics

Secondary fields: Labor economics, Macro-Finance

**Teaching Experience:**

Spring, 2021	Economic Policy Analysis, University of Chicago, Instructor
Autumn, 2019	Economic Policy Analysis, University of Chicago, Instructor
Autumn, 2019	Macroeconomics (MBA), Chicago Booth, Teaching Assistant for John Huizinga
Summer, 2019	Macroeconomics (MBA), Chicago Booth, Teaching Assistant for John Huizinga
Spring, 2019	Economic Policy Analysis, University of Chicago, Teaching Assistant for Kotaro Yoshida
Winter, 2019	Investments (MBA), Chicago Booth, Teaching Assistant for Niels Gormsen
Autumn, 2018	Macroeconomics (MBA), Chicago Booth, Teaching Assistant for John Huizinga
Summer, 2016	Differential Equations, University of Jyväskylä, Finland, Instructor

**Research Experience and Other Employment:**

2019	Research assistant for Niels Gormsen
2015 – 2016	University of Jyväskylä, postdoctoral researcher (mathematics)
2012 – 2015	University of Helsinki, Academy of Finland postdoctoral research fellow (mathematics)
2010 – 2012	The Boston Consulting Group, Associate

**Honors, Scholarships, and Fellowships:**

2021	Yrjö Jahnsson Foundation Graduate Grant
2020	Data Acquisition Grant, University of Chicago Dept. of Economics
2017	CRSP Summer Research Grant, Booth School of Business
2016 – 2022	Social Science Graduate Fellowship, University of Chicago
2012 – 2015	Academy of Finland postdoctoral research fellowship in mathematics
2007 – 2009	Fulbright Foundation Scholarship
2006	Ernst Lindelöf prize (master's thesis award), The Finnish Mathematical Society

**Professional Activities:**Referee (mathematics):

Journal de Mathématiques Pures et Appliquées, Nonlinear Analysis: Theory, Methods & Applications, Manuscripta mathematica, Annales Academiæ Scientiarum Fennicæ Mathematica, Journal of Mathematical Analysis and Applications, Applied Mathematics Letters

Conference and Seminar Presentations (economics):

2021	Young Economist Symposium (Princeton)
2021	16 <sup>th</sup> Annual Economics Graduate Student Conference (WUSTL)
2021	50 <sup>th</sup> Annual Meeting, Illinois Economic Association
2021	Chicago Joint Program and Friends Conference (UChicago)

**Language and Computer Skills:**

Computer Skills: R, Matlab, Mathematica

Languages: English (Fluent), Finnish (native)

## Research Papers:

“Talent allocation, aggregate productivity, and income inequality: Evidence from Finland”  
(Job Market Paper)

**Abstract:** This paper studies the impact of occupational talent allocation on aggregate productivity and income inequality. I use Finnish administrative microdata to estimate a Roy model of occupational choice with unobservable skill and preference heterogeneity. I show that workers' sorting behavior changes have not driven aggregate productivity growth in the recent past. Holding skill distribution fixed, potential future gains for aggregate productivity by improving sorting are also limited. However, different time trends on occupational sorting patterns explain up to 40% of relative wage growth in certain occupations during 1995 - 2005. In particular, differential occupational sorting between genders explains 3.5 percentage points, or 16%, of the gender earnings gap. When accompanied by changes in the skill distribution, workers' occupational sorting behavior also matters for aggregate output. Removing gender differences in skills, in particular, would lead to a 28% higher GDP effect than complete gender equalization with identical sorting patterns. I augment this analysis by leveraging the staggered implementation of the *Finnish Comprehensive School Reform* to discipline another counterfactual exercise. I use the model to decompose the reform effect into its skill and sorting components. I show that the reform's differential impact on women increased aggregate productivity by one percent, half of which was due to the sorting channel.

“A debt-financed real estate boom with an endogenous credit crunch”

**Abstract:** I investigate the effect of credit relaxation on the real estate market and the broader economy. I develop a new mechanism whereby an exogenous collateral credit relaxation propagates through the financial markets and produces a sustained real estate boom. I emphasize the role of credit-constrained entrepreneurs and the impact of credit relaxation on their abilities to create new businesses. The entrepreneurs use the new debt capacity to purchase business capital, increasing output and housing rents during the boom. However, their relatively high consumption propensities create a reversal, where they eventually liquidate their productive assets to finance higher consumption. Output and the interest rate begin to decrease, resembling an endogenous credit crunch without an exogenous credit shock. My analysis also proposes a novel house price decomposition. I characterize the dynamics of the different components affecting house prices in a closed-form phase diagram. Quantitative analysis suggests that the model can explain the house price boom preceding The Great Recession.

## Work in Progress:

“Universities, urbanization, and regional development” with Annika Nivala, Mikko Silliman and Tuomo Suhonen

**Abstract:** In the 1960s, Finland saw a significant expansion of university education, with several new universities established. We build and estimate a structural gravity model to study the effects of this expansion on the local labor markets, taking into account the reform's equilibrium effects. We use differences-in-differences to identify the reform's effect and consider the counterfactual development of the aggregate economy had the expansion never taken place or had the educational expansion been targeted to existing universities.

“Monetary policy with financial frictions and transaction costs”

**Abstract:** I consider a heterogeneous agent cash-in-advance monetary model with banks, firms, and monetary authority. Firms make portfolio choices between borrowing, capital investments, and holding liquidity while facing a collateral borrowing constraint. Idiosyncratic random shocks and anticipated liquidity needs force occasional portfolio adjustments, which incur fixed transactions costs. Monetary policy affects the real economy through its impact on the credit market, even in the absence of New Keynesian nominal rigidities.

### Policy work:

Myllärniemi, M. et al. Eroon koronasta working group (2020). Corona-Free Finland: The rationale and methods for elimination of the coronavirus epidemic in Finland. Working group report.

### Publications (mathematics):

On the parabolic Harnack inequality for non-local diffusion equations (with D. Dier, J. Kemppainen, and R. Zacher). *Math Z.* 295 (2020), 1751–1769.

Boundary regularity for the porous medium equation (with A. Björn, J. Björn, and U. Gianazza). *Arch. Rational Mech. Anal.*, 230 (2018), no. 2, 493–538.

On the interior regularity of weak solutions to the 2-D incompressible Euler equations (with J.M. Urbano). *Calc. Var. Partial Differential Equations*, 56, 126 (2017).

Representation of solutions and large-time behavior for fully nonlocal diffusion equations (with J. Kemppainen and R. Zacher). *J. Differential Equations*, 263 (2017), no. 1, 149–201.

Everywhere differentiability of viscosity solutions to a class of Aronsson's equations (with C. Wang and Y. Zhou). *Ann. Inst. H. Poincaré Anal. Non Linéaire*, 34 (2017), no. 1, 119–138.

Decay estimates for time-fractional and other non-local in time subdiffusion equations in  $\mathbb{R}^d$  (with J. Kemppainen, V. Vergara, and R. Zacher). *Math. Ann.*, 366 (2016), no. 3–4, 941–979.

Hölder continuity for parabolic  $Q$ -minima in metric measure spaces (with M. Masson). *Manuscripta Math.*, 142 (2013), no. 1–2, 187–214.

Local Hölder continuity for doubly nonlinear parabolic equations (with T. Kuusi and J.M. Urbano). *Indiana Univ. Math. J.*, 61 (2012), no. 1, 399–430.

Hölder continuity for Trudinger's equation in measure spaces (with T. Kuusi, R. Laleoglu, and J.M. Urbano). *Calc. Var. Partial Differential Equations*, 45 (2012), no. 1–2, 193–229.

Obstacle problem for nonlinear parabolic equations (with R. Korte and T. Kuusi). *J. Differential Equations*, 246 (2009), no. 9, 3668–3680.