

## **JUHANA SILJANDER**

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**Placement Directors:** Professor Ufuk Akcigit, [uakcigit@uchicago.edu](mailto:uakcigit@uchicago.edu), (773) 702-0433

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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 (co-chair)

University of Chicago

[lhansen@uchicago.edu](mailto:lhansen@uchicago.edu)

Stéphane Bonhomme (co-chair)

University of Chicago

[sbonhomme@uchicago.edu](mailto:sbonhomme@uchicago.edu)

Thibaut Lamadon

University of Chicago

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Joseph Vavra

Univ. of Chicago Booth School of Business

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### **Teaching and Research Fields:**

Primary fields: Labor Economics, Macroeconomics

Secondary fields: Applied Econometrics, 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:

“Aggregate effects of talent allocation: Evidence from the Finnish comprehensive school reform”  
(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 changes in occupational sorting have not driven aggregate productivity growth in the recent past. Potential gains for aggregate productivity by improving sorting are also limited. Next, I study a counterfactual, where workers sort into occupations purely on skills. I consider occupational *preference wedges* defined for each occupation as the ratio of equilibrium wages between the actual and the counterfactual economy. I document substantial differences in the counterfactual equilibrium wages. Differential time trends on the wedges explain up to 40% of relative wage growth in certain occupations during 1995 - 2005. Occupational sorting patterns are also important for the gender earnings gap. Even if women's skills matched men's, the earnings gap would remain at 3.5% due to their differential sorting patterns, which increase

aggregate productivity by an additional 2.9 percentage points, or 28%, compared to complete gender equalization. I augment this analysis by studying the *Finnish Comprehensive School Reform*. Leveraging the reform's staggered implementation, I estimate a 1.7% reduced-form reduction in the gender earnings gap in 2011 - 2017. Using the model, I decompose the reform effect into its skill and sorting components and employ this decomposition to discipline another counterfactual on gender equality. 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 present a continuous-time macro model of the real estate market, where exogenous relaxation of a financing constraint produces a housing boom and a subsequent endogenous credit crunch without an additional shock reversal. I consider two types of agents: (i) productive but credit-constrained entrepreneurs and (ii) patient savers, with differing productivity and saving propensities. An exogenous credit liberalization allows entrepreneurs to increase their ownership of business capital. The savers selling the capital readjust by increasing their portfolio share on housing, creating a housing boom. However, different saving propensities between the agents lead to an eventual endogenous reversal with decreasing output and decreasing interest rate during the bust. I also propose a novel house price decomposition, dynamics of which are characterized in a closed-form phase diagram. Quantitative analysis suggests that the model is capable of explaining 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. The paper thus proposes a new monetary policy transmission mechanism, which does not rely on 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.