CONTACT Information University of British Columbia
Vancouver School of Economics

Vancouver School of Economics 6000 Iona Drive

Vancouver, BC, V6T 2E8

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CITIZENSHIP

Canadian, American

Interests

Macroeconomics, Machine Learning, Growth, Macro-Development, Bounded Rationality

Positions

Associate Professor, University of British Columbia Visiting Professor, UBC Computer Science (Fall 2021)

Member, UBC Centre for Artificial Intelligence Decision-making and Action (CAIDA)

Faculty Affiliate, UBC Institute of Applied Mathematics

EDUCATION

Ph.D., Economics, May 2013

New York University, New York, NY, USA Fields: Macroeconomics, Industrial Organization

Committee: Boyan Jovanovic, Thomas J. Sargent, Jess Benhabib

B.Sc. Applied Mathematics, 1997 Columbia University, New York, NY

Published Papers Equilibrium Imitation and Growth (with Christopher Tonetti)

Journal of Political Economy, 2014

Catch-up and Fall-back through Innovation and Imitation (with Jess Benhabib and Christopher Tonetti)

Journal of Economic Growth, 2014

Equilibrium Technology Diffusion, Trade, and Growth (with Christopher Tonetti and Michael Waugh)

American Economic Review, 2021

Reconciling Models of Diffusion and Innovation: A Theory of the Productivity Distribution and Technology Frontier (with Jess Benhabib and Christopher Tonetti)

Econometrica, 2021

Eigendecomposition of Tau Matrices and Applications (with Sven-Erik Ekstrom, Carlo Garoni, and Adam Jozefiak)

Linear Algebra and Its Applications, 2021

## Working Papers

A Model of Product Awareness and Industry Life Cycles (with Larent Cavenaile, Murat Celik, and Pau Roldan-Blanco)

R&R (2nd Round) at Econometrica

Exploiting Symmetry in High-Dimensional Dynamic Programming (with Jesus Fernández-Villaverde, Mahdi E. Kahou and Arnav Sood)

NBER Working Paper

Doubling Down on Debt: Limited Liability as a Financial Friction (with Carolin Pflueger and Michal Szkup)

NBER Working Paper

Differentiable State-Space Models and Hamiltonian Monte Carlo Estimation (with David Childers, Jesus Fernández-Villaverde, Christopher Rackauckas, and Peifan Wu)

NBER Working Paper

Spooky Boundaries at a Distance: Exploring Transversality and Stability with Deep Learning (with Jesus Fernández-Villaverde, Mahdi E. Kahou, Sebastian Gomez, and Jan Rosa)

Working Paper by November 2022

### Works in Progress

Technology Adoption and the The Big Pull (with Michael Peters)

Monopsony or Peer Effects? Disentangling the Importance of Firms in the Labor Market (with Christian Moser and Raffa Saggio)

Cowles Redux: Models and Data through the Prism of Machine Learning (with Jesus Fernández-Villaverde)

Solving Equilibrium Economic Models with Deep Learning (with Jesus Fernández-Villaverde and Mahdi E. Kahou + computer science collaborators)

# Grants and Awards

Bank of Canada Governor's Award (2021-2022)

SSHRC Insight Development Grant (co-applicant 2021-2022), \$58,635

Monopsony or Peer Effects? Disentangling the Importance of Firms in the Labor Market

SSHRC Insight Grant (2018-2021), \$159, 183

Coordination frictions in macro-development: spatial equilibrium, technology traps, and industrial policy

SSHRC Insight Development Grant (2018-2020), \$68,834

Debt Overhang and Over-Investment

SSHRC Insight Development Grant (2015-2017), \$43,000

Why Doesn't Technology Diffuse through Migration?

Hampton Grant (2014-2015), \$22,000

The Growth Dynamics of Innovation, Diffusion, and the Technology Frontier

#### BOOKS

Quantitative Economics with Julia (with Thomas J. Sargent and John Stachurski)

Online textbook: https://julia.quantecon.org/

QuantEcon DataScience (with Chase Coleman, Spencer Lyon, and Collaborators)

Online textbook: https://datascience.quantecon.org/

## SEMINARS, CONFERENCES, AND VISITING

SCHOLAR

2022: Bank of Canada, Uppsala, Peking University (Scheduled)

2021: AEA, Canadian Macro Study Group, Bank of Canada Fellowship Learning Exchange, Boston College, Queens, Georgetown, Boston University, UCL

2020: HEC Paris

2019: SED (Organizing Committee), NBER Summer Institute (discussant)

2018: University of Pennsylvania, University of Toronto Rotman, Yale (Cowles Visiting Scholar),

SED (Organizing Committee)

2017: UCSD, Stanford, Philadelphia Fed, Minneapolis Fed (Visiting Scholar), WashU Mini-Conference

on Macro-Development, Minnesota Macro Theory, St. Louis Fed

2016: Simon Fraser University

2015: UC Berkeley, University of Pennsylvania, University of Pennsylvania Wharton, Columbia University, AEA, Cowles Foundation (discussant), Nottingham University Conference on Firm and Technology Dynamics

2014: San Francisco Federal Reserve, Cowles Foundation (discussant)

2013: UCLA, UCSD, Minnesota

### TEACHING EXPERIENCE

University of British Columbia, Vancouver, BC, Canada

ECON622 - Computational Economics with Data Science Applications (graduate)

Created course and moved to approval by the UBC Senate

ECON323 - Quantitative Economic Modeling with Data Science Applications (undergraduate)

Created course and moved to approval by the UBC Senate

ECON302 - Intermediate Macroeconomics (undergraduate)

ECON307 - Honors Intermediate Macroeconomics (undergraduate)

ECON407 - Topics in Macroeconomics (undergraduate)

ECON546 - Monetary Theory and Policy (graduate)

SERVICE

University of British Columbia, Vancouver, BC, Canada

Computer Lab Committee

Comps Committee Executive Committee

Instructor Recruitment Committee

Bank of Canada Governor's Challenge (Undergrad Team won 1st Place) Centre for Innovative Data in Economics Research (CIDER) Board Member

Advisory Committee of the SciML (https://sciml.ai/) organization

STUDENT PLACEMENTS

University of British Columbia, Vancouver, BC, Canada

Colin Caines, Committee Member (Placed at Federal Reserve Board)

João Alfredo Galindo da Fonseca, Committee Member (Placed at Université de Montréal)

Sev Hou, Advisor (Placed at Chinese University of Hong Kong, Shenzhen)

Dongxiao Zhang, Committee Member (Placed at Veeva Systems)

Nadhanael Gemaliel Vimala, Committee Member (Reserve Bank of India)

Mahdi E. Kahou, Advisor (in progress)

Referee

Economicz, American Economic Review, Quarterly Journal of Economics, Journal of Political Economy, Review of Economic Studies, AEJ: Macro, Journal of Economic Growth, Journal of International Economics, International Economic Review, Review of Economic Dynamics, European Economic Review, Journal of Economic Theory, Theoretical Economics, Journal of Development Economics, Canadian Journal of Economics, Journal of Economic Literature, Macroeconomic Dynamics, Journal of Economic Behavior & Organization

OTHER EXPERIENCE

CTO/Founder/Director of Research/Software Engineer at technology firms (1995-2006)