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Education

Duke University

Joint Degree: Ph.D in Economics and Ph.D in Public Policy

2026 (Expected)

Dissertation Committee: Peter Arcidiacono (Co-Chair), Kate Bundorf (Co-Chair), Michael Pollmann, Sebastian James

M.S. in Computer Science

2026 (Expected)

Fundacao Getulio Vargas (FGV-EPGE)

M.A. Economics

2018

UFMG-Universidade Federal de Minas Gerais

B.A. Economics

2015

Research Field

Primary: Public Economics

Secondary: Applied Econometrics/Machine Learning, Development Economics

Working Papers

Who Should the Taxman Visit? Evidence from Door-to-Door Tax Enforcement in Indonesia

Job Market Paper - Latest Version ↗

(with Muhammad Khudadad Chattha)

Abstract: We investigate the effects and optimal design of a large-scale tax-nudging campaign in Indonesia, where officials conducted door-to-door visits to more than 30,000 property owners. To estimate the program's average and heterogeneous impact on property-tax compliance we propose a modified causal forest estimator. We find that visits increased payment rates by an average of 7.8 p.p., with effects persisting for at least four subsequent years and being particularly pronounced among lower-value properties. We then use individualized treatment-effect estimates—rather than conventional compliance risk scores—to design targeting rules that answer “Who should the taxman visit?” The optimal targeting depends on a prioritization rule induced by policy objective: A participation-maximizing rule, which seeks to induce the largest number of taxpayers to comply, prioritizes lower-value properties and delivers meaningful gains in both participation and revenue. A revenue-maximizing rule directs visits toward higher-value properties, generating substantial fiscal returns with little change in the number of payers. By contrast, a standard risk-based rule that targets likely noncompliers is effectively neutral—allocating effort broadly across the value distribution. However it yields no discernible improvements in either revenue or participation. These results suggest that risk-based prioritization is ill-suited to nudging contexts and make explicit the equity-efficiency trade-offs inherent in algorithmic targeting for tax enforcement.

Keywords: Tax Compliance, Behavioral Nudges, Causal Forest, Policy Learning

JEL Codes: H21, H26, H71, H83, C99, D04, D91

Low-Cost Reminders and Property Tax Compliance: Evidence from a Field Experiment

(with Muhammad Khudadad Chattha, Naranggi Pramudya Soko and Prabaning Tyas)

Abstract: This study examines the impact of low-cost digital nudges sent via WhatsApp on property tax compliance in Gorontalo, Indonesia. In a randomized controlled trial involving 801 delinquent taxpayers, individuals received either (i) a soft-tone message emphasizing civic duty, (ii) a hard-tone message, or (iii) no message (control). Four key findings emerge. First, despite referencing overdue taxes, the positive message substantially boosted current-year compliance by 9.9 percentage points. Second, the soft-tone message completely eliminated the compliance gap between high- and low-compliance individuals. Third, message framing mattered: the soft-tone message consistently outperformed the penalty message in the long-term. While the hard-tone message led to short-term increases in compliance, the effect dissipated in the long-term due to intertemporal substitution. Finally, the intervention has potential for scalability, we calculate that the marginal cost per additional tax bill paid is USD 0.126. These findings underscore the potential for such behaviorally informed messaging to improve tax collection in low-capacity settings.

Key Words: *Taxation in Developing Countries; Field Experiment; Microeconomic Policy*

The Mechanics of Deforestation Electoral Cycles in Brazil

(with Marcelo Goncalves)

Draft available upon request

Abstract: Empirical evidence shows that deforestation rates fluctuate with political cycles: There is positive correlation between election periods and increased deforestation. However the mechanism the mechanism remains uncertain. We propose an "administrative hypothesis" in Brazil, suggesting that political leaders may strategically manipulate the assignments of environmental agency staff—IBAMA—to modulate enforcement intensity and gain voter support. Brazil's alternating federal and local elections every two years provide a unique setting to examine how political alignment with the federal government impacts deforestation. Our analysis of close electoral races indicates that alignment with the federal government is associated with increased deforestation. In the current phase, we are investigating the characteristics of local environmental agency heads to determine if the selection mechanisms in public service relate to more intense deforestation cycles.

Key Words: *Political Cycle; Deforestation; Personnel Economics of the State; Selection into Public Sector*

Teaching Experience

Duke University

- PUBPOL304/ECON338: Economics of the Public Sector (Undergrad)
- PUBPOL303: Microeconomic Policy Tools (Undergrad)
- PUBPOL811: Microeconomics: Policy Applications (Graduate)
- PUBPOL812: Statistics and Data Analysis for Policy Makers (Graduate)

Durham, NC

Jul 2012 – Jun 2013

FGV-RJ

- Econometrics I: (Undergrad)

Rio de Janeiro

Fev 2017 – Jun 2017

UFMG

- Microeconomics I (Undergrad)

Belo Horizonte

Fev 2014 – Dez 2015

Skills

Programming Languages: Excel-VBA, STATA, MATLAB, R, L^AT_EX, Python (PyTorch, TensorFlow Pytorch Lightning), SQL

Languages: Portuguese (Native); English(Fluent); German(Fluent, but basic writing level)

Policy and Research Experience:

The World Bank Group, Washington, D.C.

Sep 2019 – Jul 2024

Public Sector Specialist

Policy diagnostics and PFM support across Brazil, Mozambique, Uruguay, Mexico, Belize, and Indonesia; built payroll microdata and wage-bill simulations; led an anti-corruption survey; conducted taxation research.

Harvard Business School, Rio de Janeiro

Nov 2018 – Sep 2019

Graduate Research Assistant

Processed restricted firm-level microdata at IBGE's secure data center to support productivity research with Professors Laura Alfaro, Naercio Menezes, and Andrea Luchesi.

FGV-IBRE, Rio de Janeiro

Jul 2019 – Jun 2021

Researcher

Expanded the Productivity Studies Series using confidential IBGE datasets to analyze firm dynamics and productivity trends in Brazil.

Caste Away – AIESEC, New Delhi

Jul 2013 – Oct 2013

Policy Analyst

Analyzed caste inequality with NFHS-III and Census microdata in collaboration with the National Campaign on Dalit Human Rights, producing cross-state comparative evidence.

Government of Minas Gerais, Delivery Unit, Belo Horizonte

Nov 2012 – Jun 2013

Policy Analyst

Developed social indicators, processed administrative microdata, and authored statistical reports informing state-level performance targets and monitoring.

References

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Duke University
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Duke University
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