RICARDO MARTO

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UNIVERSITY OF PENNSYLVANIA

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Placement Director: Holger Sieg	HOLGERS@ECON.UPENN.EDU	215-898-7194
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EDUCATION

Ph.D. in Economics, University of Pennsylvania, 2017 to 2023 (expected)

   Thesis Title: "Essays on Macro-Structural Issues"

M.S. in Economics (with Distinction), University College London (UCL), U.K.

B.S. in Economics, Nova School of Business and Economics, Portugal

THESIS COMMITTEE AND REFERENCES

Jeremy Greenwood *(Chair)*
Professor of Economics
University of Pennsylvania
215-898-1505
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Aviv Nevo
George A. Weiss and Lydia Bravo Weiss University Professor
University of Pennsylvania
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Joachim Hubmer
Assistant Professor of Economics
University of Pennsylvania
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RESEARCH AND TEACHING FIELDS

Primary field: Macroeconomics
Secondary field: Numerical methods

TEACHING EXPERIENCE

University of Pennsylvania

2020 Spring	Recitation Instructor, Macroeconomic Theory II (Ph.D.), *Prof. J. Greenwood* and *Prof. V. Ríos-Rull*
2019 Spring	
2019 Fall	Recitation Instructor, Econometrics I (Ph.D.), *Prof. K. Adusumilli* and *Prof. X. Cheng*
2018 Fall	Recitation Instructor, Econometric Data Science (Undergraduate), *Prof. F. Diebold*
2022 Spring	Teaching Assistant, History of Economic Thought (Undergraduate), *Prof. F. Arteaga*
2021 Fall	Teaching Assistant, Business in a Global Political Environment (Wharton), *Prof. R. Pique*
2021 Spring	Teaching Assistant, Labor Economics (Undergraduate), *Prof. A. Shephard*
2020 Fall	Teaching Assistant, Economics of Education (Undergraduate), *Prof. F. Agostinelli*

International Monetary Fund (audience: M.S./Ph.D. economists)

2016	Course Instructor, Model-based Debt Sustainability Analysis, Kenya
2016	Course Instructor, Macro-Fiscal Issues in Natural Resource Management, Tanzania
2016	Course Instructor, Public Investment, Growth, and Debt Sustainability, Washington, D.C.

RELEVANT POSITIONS

2022	Ph.D. Dissertation Fellow, Research Department, Federal Reserve Bank of St. Louis, St. Louis, MO
2022	Short-term Expert, Fiscal Affairs Department, International Monetary Fund, Uganda
2019	Visiting Scholar, Research Department, International Monetary Fund, Washington, D.C.
2015-17	Research Officer, Research Department, International Monetary Fund, Washington, D.C.
2013-15	Research Fellow, Evaluation Office, Inter-American Development Bank, Washington, D.C.
2009-11	Country Economist, United Nations Development Program, São Tomé and Príncipe
2008-09	Research Assistant, Research Department, Ministry of Economy and Innovation, Portugal
2006-07	Founding Member and Field Coordinator, AHEAD (International NGO), Mozambique

PRESENTATIONS

2022	Chicago Fed Rookie Conference, Computing in Economics and Finance Conference, Econometric Society Summer Meetings in Asia, Federal Reserve Bank of St. Louis, University of Pennsylvania, Virtual Macro Family Seminar
2017	Computing in Economics and Finance Conference, HAEE Energy Conference, IMF, ISEFI, University of Oxford's CSAE Conference

HONORS, SCHOLARSHIPS, AND FELLOWSHIPS

2022-23	Dissertation Fellowship, School of Arts and Sciences, University of Pennsylvania
2017-22	Graduate Fellowship, School of Arts and Sciences, University of Pennsylvania
2021	Research Conference Grant, University of Pennsylvania
2019	Princeton Iniatitive: Macro, Money, and Finance, University of Princeton
2011-12	UCL-Santander Master's Fellowship, University College London

PUBLICATIONS

"The Great Transition: Kuznets Facts for Family-Economists," with Jeremy Greenwood and Nezih Guner, *Handbook of Family Economics*, edited by Shelly Lundberg and Alessandra Voena (Amsterdam: Elsevier), *forthcoming* 2023.

"Investing in Public Infrastructure: Roads or Schools?," with Manoj Atolia, Bo Li, and Giovanni Melina, *Macroeconomic Dynamics*, Vol. 25, No. 7, pp. 1892–1921, 2021.

"Building Resilience to Natural Disasters: An Application to Small Developing States," with Vladimir Klyuev and Chris Papageorgiou, *Journal of Development Economics*, Vol. 135, pp. 574–586, 2018.

"The Long-run Decoupling of Emissions and Output: Evidence from the Largest Emitters," with Gail Cohen, João Jalles, and Prakash Loungani, *Energy Policy*, Vol. 118, pp. 58–68, 2018.

RESEARCH PAPERS

"Structural Change and the Rise in Markups," **(Job Market Paper)**

Is the recent rise in markups in the United States and Europe caused by increased monopoly power or is it a natural consequence of structural change in the economy? I show that the rise in aggregate markups has been driven by a reallocation of market share away from goods-producing firms to services-producing firms and a faster increase of services' markups. I develop a two-sector model of structural change to assess the sources of the rise in markups between 1980 and 2015. The two forces of structural change play opposing roles in the model. On one hand, an increase in the relative productivity of manufacturing leads to a decline of the relative price of manufactured goods. The pass-though to consumers is however smaller than one, pushing up the markups of goods-producing firms. On the other hand, increasing incomes trigger the rise of the services sector, leading to higher markups for firms in services. The higher markups result from preferences that imply the price elasticity of demand falls with income. The model matches key trends in the United States, specifically the rise of the service sector and the fall of the relative price of manufactured goods. I show that the rise in markups is in line with these observed shifts and may not necessarily reflect a decline of competition. I provide novel experimental evidence supporting the notion that the price elasticity of demand decreases with income.

Keywords: endogenous markups, income elasticity of demand, non-homothetic preferences, manufacturing, online experiment, price elasticity of demand, services, skill premium, structural change, survey, technological progress

"**College Admissions and the (Mis)Allocation of Talent**," with Yaacov Wittman.

Why are high-achieving, low-income students less likely to apply to selective colleges despite the generous financial aid typically offered? To reconcile this seeming puzzle, an equilibrium model of the U.S. college market featuring tuition discrimination and a noisy application and admissions system is presented and estimated. Students, who differ in their financial resources and innate ability, can apply to multiple colleges and are uncertain about their prospective admissions and financial aid. Colleges in turn only observe a signal of students ability and compete by choosing admission standards and tuition schedules. Low-income students receive generous financial aid at selective colleges because only the highest-ability among them apply, making their signals highly informative. If signals became less informative (e.g. colleges stopped using the SAT), high-ability students would be worse off and only high-income, low-ability students would benefit. Finally, there are welfare gains from increasing need-based financial aid (e.g. Pell Grants). Despite its fiscal cost, the policy would greatly benefit low-income, high-ability students.

Keywords: college admissions, college enrollment, college market, credit constraints, financial aid, High School Longitudinal Study, information asymmetry, Pell Grants, sorting, tuition discrimination

"**The Great Transition: Kuznets Facts for Family-Economists**," with Jeremy Greenwood and Nezih Guner.

The 20th century beheld a dramatic transformation of the family. Some Kuznets style facts regarding structural change in the family are presented. Over the course of the 20th century in the United States fertility declined, educational attainment waxed, housework fell, leisure increased, jobs shifted from blue to white collar, and marriage waned. These trends are also observed in the crosscountry data. A model is developed, and then calibrated, to address the trends in the US data. The calibration procedure is closely connected to the underlying economic logic. Three drivers of the great transition are considered: neutral technological progress, skill-biased technological change, and drops in the price of labor-saving household durables.

Keywords: average weekly hours, blue-collar jobs, calibration, college premium, education, family economics, fertility, housework, Kuznets, leisure, market work, marriage, neutral techological progress, price of labor saving durables, skilled-biased technological progress, white-collar jobs

[**Data toolkit:** *Ask Kuznets! Interactive facts here.* **Model toolkit:** *Simulate your own experiments here.*]

BOOK

"**Numerical Methods for Macroeconomists (with Julia and Matlab codes)**," with Jeremy Greenwood.

A primer on numerical methods in macroeconomics for advanced undergraduates and beginning graduate students. The book presents classic economic problems, such as the determination of labor supply, economic growth, and business cycle analysis, and provides codes to solve them. In particular, the book covers the following tools: (1) solving nonlinear equations via bisection and Newtons method, (2) computing maximization problems by golden section search, discretization, and the particle swarm algorithm, (3) simulating difference equations using the extended path and multiple shooting algorithms, (4) numerical differentiation, (5) conducting Monte Carlo simulations, (6) constructing Markov chains, (7) interpolating functions, (8) computing dynamic programming problems, (9) solving policy functions using the Coleman, endogenous grid, and parameterized expectation algorithm, (10) solving the Aiyagari heterogeneous agent model with and without aggregate uncertainty.

Keywords: Aiyagari model, calibration, Coleman algorithm, difference equations, dynamic programming, endogenous grid method, interpolating functions, linearization, Markov chains, maximization problems, Monte Carlo simulation, nonlinear equations, numerical differentiation and integration, parameterized expectations, random number generation

[**Code repository:** *Coming soon*]

WORK IN PROGRESS

"**Advertising and the Rise of Specialized Varieties**," with Salomé Baslandze, Jeremy Greenwood, and Sara Moreira.

The last decades have seen large improvements in advertising technology that allowed firms to better target specific consumers. This paper studies the relationship between advertising, the rise of product varieties, and economic growth. We develop a model of advertising and product varieties, where firms choose the intensity of digital ads targeted at specific consumers and traditional ads that are undirected. The calibrated model shows that improvements in advertising technology have driven the rise in product varieties over time. We provide causal empirical evidence of the mechanism at play using detailed micro data on firms' products and advertising choices for the 1995-2015 period and exogenous variation in consumers' differential access to the internet.

"**The Market Power of Cities**."

I estimate markups using detailed establishment-level data to study the role of cities in the rise of markups. I develop a model to quantify the forces behind the spatial differences in markups.

LANGUAGES

English (fluent), French (native), Portuguese (native), Spanish (fluent)

If you are interested in my policy work, *click here*.