

Luis F. Jaramillo, Ph.D.

lfj2111@columbia.edu | +1 202 702 4444 | New York, NY | [Detailed LLM & Research Portfolio: lfjaramillo.co](https://lfjaramillo.co)

Summary

I am an economist using LLMs to turn messy, unconventional sources into structured datasets to study innovation and technological adoption. I design and evaluate agentic panels of models that cross-check outputs and reason through disagreements to create research-grade datasets. Beyond academia, I use them to assess the economic rationale behind investment projects at the Inter-American Development Bank. I bring strong quantitative skills and a record of published, award-winning research. Intellectually curious, I communicate clearly and work well in lean, high-performing teams.

Skills

Research: innovation, technological adoption, industrial and trade policy.

Methods: Econometrics, causal inference, applied microeconomics, experimental design, structural modeling, machine learning.

AI workflows: agentic, multi-model LLM panels (OpenAI, Gemini, Anthropic, Qwen, DeepSeek); LLM extraction and classification; model comparison; benchmarking against human-transcribed reference data.

Programming and tools: Python, R, Stata, SQL; Codex, Claude Code; GIS.

Languages: English, Spanish, Portuguese.

Residency and citizenship: U.S. Permanent Resident (Green Card); citizen of Portugal (EU) and Colombia.

Professional Experience

Columbia University in the City of New York

July 2025 – Present

Postdoctoral Research Scholar, Firms and Industrial Policy Lab

- **Turned 200,000+ pages** of tariff schedules, research reports, and patents into structured datasets with agentic LLM panels I designed, typically three models per panel drawn from OpenAI, Google Gemini, Anthropic, Alibaba Qwen, and DeepSeek. Models' independent judgments and traceable reasoning guide disagreement resolution, iterative refinement, and targeted human review.
- **Reduced clear errors by 89%** (13.4% to 1.5%) relative to an earlier Claude Opus-only workflow, benchmarked against about 40,000 human-transcribed products and scoring each tariff-column assignment as correct or a clear error (wrong value or wrong position).
- **Lead five active research projects** on how innovation and trade policies shape economic performance across South Korea, Taiwan, India, Brazil, and Mexico, with co-authors at Harvard, Columbia, NYU, Dartmouth, and the IMF.
- **Serve on the program committee** of the New Thinking in Industrial Policy Conference, reviewing frontier research alongside world-class economists, including Nobel laureate Joseph Stiglitz.

Inter-American Development Bank

May 2025 – Present

Economics Consultant, Strategy Unit

- **Built an LLM workflow to assess loan projects' causal logic, results measures, and economic assumptions.** It reconciles independent model reviews against source documents and cut assessment time from **three days to two hours** across 15 projects to date; now working with the unit team to make it available to colleagues as an agent.
- Peer-reviewed a **\$4+ billion portfolio** of digital infrastructure and productivity-enhancing projects (submarine cables, data centers, broadcast-to-internet) in seven countries before board approval using the workflow mentioned above as a key input.
- **Advised on the design of a randomized evaluation of an AI system** being deployed in the courts of Ceará, Brazil, to automate case classification and processing, measuring judicial productivity and adoption by public servants.

University of Maryland

August 2019 – May 2025

PhD Researcher and Graduate Instructor

- Earned **\$70,000 in competitive research awards and grants**, including the Wylie Dissertation Fellowship (\$20,000) and the Best Third-Year Paper Award (\$15,000).
- Taught undergraduate microeconomics and supported graduate econometrics courses; **all students who completed the teaching evaluation would recommend me** to other students.

Presidency of the Republic of Colombia

August 2016 – August 2018

Economist, Office of the High Presidential Counsellor for the Private Sector

- **Advised on high-stakes policy decisions** (industrial and agricultural promotion, pharmaceutical-market and digital-platform regulation) and drafted weekly briefings on the economy's performance for the High Presidential Counsellor and the President.

Harvard University / New York University

August 2015 – July 2016

Research Assistant to Profs. Melissa Dell and Pablo Querubín

- Estimated the local economic effects of a major geopolitical shock (the Vietnam War bombing campaign), **building analysis-ready datasets** from unstructured historical records with R, Stata, and OCR software.

Ministry of Health of the Republic of Colombia

January 2013 – May 2014

Consultant, Office of the Minister

- Co-led a pharmaceutical price-regulation reform that **saved the national health system more than \$1 billion**, building the market-structure analysis behind the new pricing rules and using machine learning to redesign healthcare-district boundaries.

Selected Research

A Dataset of Global Trade Negotiations - with Felipe Barbieri, Tricia Muller, Camilla Schneider, and Robert W. Staiger. *Dataset*.

- How do governments bargain in international trade negotiations? I lead the construction of a product-level dataset from **100,000+ pages** of declassified archives spanning 50+ years. I designed LLM panels to recover bargaining records from complex page layouts and map historical product descriptions to modern trade classifications.

Innovation Spurred: South Korea's Big R&D Push - with Chan Kim. *Working Paper*.

- Can government policy shape the direction of innovation? I conceived and led this study of Korea's R&D push, including data construction, empirical and structural analyses, and writing. I built the treatment measure by mapping **4,771 Korean-language project descriptions** to patent and product classes with LLM panels. Compared with technologies selected but never funded, targeted technologies more than **doubled citation-weighted patenting** and nearly **tripled exports within ten years**, with benefits exceeding costs threefold.

Free-Riding Yankees: Canada and the Panama Canal - with Sebastián F. Galiani and Mateo Uribe-Castro. *Journal of Economic Growth*, 2025 (lead article).

- What happens to a country handed a shipping technology it did not build? I conceived the study, reconstructed the transport network, conducted the empirical and structural analyses, and wrote the paper. **Canal-driven market access raised productivity by 13.1%** in the most-exposed counties. Closing the canal would have cost 1.86% of GDP. A companion paper on U.S. migration has been resubmitted to the *Journal of Urban Economics*.

Patents and Firm-Level Upgrading in Pharmaceuticals in India - with Gianluca Antonicchia, Ajay Bhaskarabhatla, Surabhi Ghai, Eduardo Morales, and Eric Verhoogen. *Working Paper*.

- What do firms do when complex technologies become widely available? I lead the empirical analysis and contribute **new cheminformatics data on synthetic complexity and retrosynthetic analysis** to measure how difficult it is to synthesize drugs in the lab. I show that Indian generic laboratories adopt new products after U.S. patents expire, but entry depends on a firm's market experience and chemical know-how, with firms branching out less into more chemically complex products.

Forecasting Emerging Technologies - with Aditya Pande. *In progress*.

- Can emerging technologies be forecast? I am building a **new technology taxonomy** from patents and academic papers to identify technologies obscured by broad classifications. Using only information available at each date, LLMs organize the evidence and measure dimensions of technological emergence identified by the science-of-science literature. I am developing a Bayesian model approach that uses these data to forecast which technologies will emerge over specified time horizons.

The Politics of Import Substitution Industrialization in Mexico and Taiwan - with Melissa Dell and Pablo Querubín. *Dataset in Progress*.

- Why do governments protect the industries they protect? I led the digitization of **50,000+ pages** of Mexican trade policy records and economic censuses (1930–1980), using LLMs to convert the archives into product-level data on which industries the state chose to shield and why.

Conference Presentations

Industry and Policy: Federal Reserve Board of Governors (2025, 2024); NABE Tech Conference (2024)

Academic: Columbia University (2025, 2024); Georgetown University (2024); George Washington University (2024); European Economic Association (2024, 2022); NBER Summer Institute (2022); Latin American Economic Association (2024, 2023)

Education

University of Maryland - Ph.D. in Economics, 2025; M.A. in Economics, 2022

Universidad de los Andes (Colombia) - M.Sc. in Economics, 2017; B.Sc. in Economics, 2015

London School of Economics - Visiting Student, 2015

Hobbies & Interests

Strategy board games (Catan, Risk), long-distance and competitive running (Strava local legend in NYC and DC), weightlifting, cocktail-making, and traveling (40+ countries)