

Matthew Andres Murillo

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EDUCATION

U.C. Berkeley, Berkeley, CA

Present

Yale University, New Haven, CT

2018 –2022

Bachelor of Arts in Economics and Mathematics (*Distinction*)

London School of Economics, United Kingdom

June 2019 – July 2019

LSE Summer Session

EXPERIENCE

Research Assistant Supervised by Lorenzo Caliendo

June 2022 – Present

Tobin Center for Economic Policy: Post Graduate Fellow

- Derived the conditions under which reciprocity holds for multiple general equilibrium (GE) trade models (two-good two-country neoclassical, Eaton and Kortum, Caliendo and Parro) and implemented the solution in MATLAB.
- Derived analytical solutions for the labor dislocation effects given changes in tariffs in GE trade models for multiple countries and sectors used in *Reciprocity and the China Shock* and implemented the results in MATLAB.
- Worked with the Inter-American Development Bank (IDB) to extend the Caliendo and Parro (2015) framework to include effects from climate change and multiple tax channels.
- Characterized the sufficient and globally necessary conditions of the system in *Mechanics of Spatial Growth* to verify uniqueness.
- Created the MATLAB script for *Tariff Reductions, Entry, and Welfare: Theory and Evidence for 1990-2010* that computes the utility decomposition derived in the paper.
- Linearized Caliendo and Parro (2015) to approximate a closer initial guess in wages given counterfactual changes to tariffs prior to implementing in the nonlinear model to improve efficiency.
- Created the replication packages for *Tariff Reductions, Entry, and Welfare: Theory and Evidence for 1990-2010* and *A Second-Best Argument for Low Optimal Tariffs on Intermediate Inputs* which can be downloaded at the website I developed for both projects: <https://rcfeenstra.github.io/CFRT>
- Developed a framework to efficiently construct and aggregate multi-regional input-output tables given raw data from Eora, the World Input-Output Database (WIOD), or from the Global Trade Analysis Project (GTAP).
- Wrote a script to aggregate the tariff data from Caliendo-Feenstra-Romalis-Taylor (CFRT) from the product classification SITC Rev. 4 to ISIC Rev. 3 and ISIC Rev. 4 using the trade weighted averages constructed from the World Integrated Trade Solution (WITS).
- Compiled notes on Caliendo and Parro (2015) and translated the MATLAB script to Python to create an interactive interface for users to learn and apply the model under different conditions.

Tobin Undergraduate Research Assistant

October 2021 – June 2022

- Developed skills to work with quantitative GE trade models such as constructing MRIO tables, working with different tariff databases, and running MATLAB simulations.

Federal Reserve Bank of Philadelphia

June 2021 – December 2021

Research Assistant at the Consumer Finance Institute

- Used the Federal Reserve Bank of New York/Equifax Consumer Credit Panel (CCP) to study de-identified individual level household finance data across a twenty-year period.
- Ran regressions for data consisting of over one hundred million observations to analyze the impacts of bank closures and openings on consumer finances.
- Developed an interactive map in Python that queries household locations across the United States within a user defined radius of any branch closure or opening.

Yale University Economics Department and School of Management

February 2020 – October 2021

Supervised by Mushfiq Mobarak

- Analyzed large datasets to describe labor market, housing, and commuting statistics within geographical units across major cities in the United States and the United Kingdom.
- Used Python and QGIS to calculate global population and pollution statistics for commuting isochrones within major cities across the world.
- Worked with Facebook's Social Connectivity Index to determine the social connectivity of county pairs within isochrones across the United States.

Microeconomics Undergraduate Learning Assistant

September 2021 – May 2022

- Hosted weekly office hours session for Introductory Microeconomics

RESEARCH PROJECTS

“Voluntary Emission Restraints in Developing Economies: The Role of Trade Policy”

2024

(with Lorenzo Caliendo, Marcelo Dolabella, Mauricio Moreira, and Fernando Parro)

We study the role of trade policy in one of the most pressing climate policy challenges that developing countries face: meeting voluntary emission restraints (VERs). To do so, we develop a new general equilibrium trade model that extends Caliendo and Parro (2015) in three dimensions. First, we model extractive sectors that feature a continuum of producers with heterogeneous productivity, demanding labor, dirty natural resources, and intermediate goods from all industries. Second, we consider that production generates different amounts of emissions across sectors and countries, and households experience disutility from carbon emissions, modeled as a pure externality as in Shapiro (2021). Third, we model a general set of taxes along the value chain—on production, intermediate and final consumption, and on labor—which allows for different options of carbon taxes and tariffs that impact emissions and other outcomes in general equilibrium. In our quantitative analysis, we focus on two groups of policies: those that are in the traditional realm of trade policy, related to tariff reform and potential emission biases; and those that combine a Pigouvian carbon tax with border adjustments. Our main findings point to a questionable role of trade policy as a climate policy in developing economies. Although it is effective in mitigating emission leakages, such leakages are small in magnitude, and border adjustment tariffs have collateral effects in terms of trade declines, and in many countries, welfare losses. These findings contrast with the implications of climate policy in large economies, where emission leakages are much more significant and the impact on trade less costly. Our main results also indicate that carbon taxes and tariffs will not be enough for most developing countries to meet their net-zero emission targets dictated by the VERs.

“Trade, Taxation, and the Environment: Evaluating the Economic Impact on Households”

2023

This paper shows that the environmental bias that exists in trade policy not only extends to domestic tax policy, but also places a heavier burden on consumers. In estimating the revenues collected per tons of CO₂ emissions, taxes on final good consumption overwhelmingly exceeds tariffs, taxes on production, and taxes on intermediate good consumption. Using existing general equilibrium trade models, I derive a general welfare decomposition to evaluate the implications of using different tax mechanisms for mitigating carbon emissions as well as addressing the discrepancies between taxes faced by producers versus those faced by consumers. My findings reveal that the current tax structure is suboptimal, and US households would gain by increasing production taxes while simultaneously reducing consumption taxes on certain dirty sectors like petroleum. Gains in real income are also met with reductions in global emissions which opens the door for further research on the interplay between domestic and international carbon tax policy.

“Mobile Money, Global Financial Inclusivity, and Monetary Policy in Developing Economies”

2022

Mobile money is one of the most important recent financial developments in developing economies. In countries with high rates of adoption, mobile money has been shown to expand financial inclusivity, alleviate poverty, and improve economic wellbeing. Our analysis is broken down into two parts: first, we investigate how mobile money is used across countries and within groups, then we analyze the macroeconomic effects of the rapid growth of mobile money. For the first half of our analysis, we find a negative relationship between a country’s income and the level of mobile money integration. We also find that mobile money acts as a more equitable substitute for traditional financial services among the poorest 40% of the population and young adults. In the second half of our analysis, we observe that the rise in mobile money transaction value relative to GDP tends to increase the money demanded in the short run but the effects on output are unclear. Further research is required to better understand the mechanisms through which mobile money can affect macroeconomic indicators in developing countries.

RESEARCH ASSISTANCE EXPERIENCE

“Reciprocity and the China Shock” (Bown, Caliendo, Parro, Staiger, Sykes)

2023

The principle of reciprocity plays a central role in GATT/WTO market access negotiations. Motivated by the large loss of manufacturing jobs experienced by the United States after China’s WTO accession – the “China Shock” –and by the widespread belief that China has not abided by the norm of reciprocity since joining the WTO in 2001, we investigate the link between reciprocity in tariff negotiations and the magnitude of the labor-market adjustments that can be expected to arise under tariff negotiations that conform to reciprocity. In the canonical two-good two-country neoclassical trade model that has helped to illuminate the economic logic of many of GATT’s design features, we show that when the outcome of tariff negotiations conform to reciprocity a country’s own tariff liberalization is a sufficient statistic for the labor-market adjustments it can expect from those negotiations, and we demonstrate that this property extends to a number of workhorse quantitative trade models. We then apply our theoretical results to guide a quantitative evaluation of reciprocity in the context of China’s WTO accession negotiations, and we assess how deviations from reciprocity may have impacted the extent of employment dislocation in the United States and globally. Our findings indicate that China did indeed fail to deliver reciprocity, but that in fact the tariff reductions that it implemented after its accession exceeded the norm of reciprocity. This deviation from reciprocity increased aggregate real incomes in the United States and in the rest of the world through the channel of terms-of-trade improvements, but it also contributed to the magnitude of the China Shock experienced by the United States and other countries that was attributable to tariff changes over the post-China- WTO-accession period.

“Mechanics of Spatial Growth” (Cai, Caliendo, Parro, Xiang)

2022

We develop a dynamic spatial growth model to explore the role of trade and internal migration in the process of spatial development and aggregate growth. Growth is shaped by the best global and local ideas that contribute to the local stock of knowledge. Global ideas diffuse more to locations that are relatively more exposed to international trade. Local ideas are diffused across space when workers move to another location. We embed the diffusion of ideas through trade and migration into a multi-country, multi-region framework with international trade, forward-looking dynamic migration decisions, and endogenous capital accumulation. We apply our framework to study the role of initial conditions, international trade, and internal migration on China’s spatial development and aggregate growth during the 1990s and 2000s. We find that initial conditions across space, idea diffusion, and capital accumulation play an important role in understanding the process of spatial development and aggregate growth in China. Changes in international trade costs and mobility restrictions during the 1990s and 2000s also contribute to aggregate growth, with large heterogeneity across space.

“Tariff Reductions, Heterogeneous Firms, and Welfare: Theory and Evidence for the Last Two Decades” 2022
(Caliendo, Feenstra, Romalis, Taylor)

We construct a new, global tariff dataset, and apply it to a multi-sector quantitative trade model with heterogeneous firms, including nearly all countries of the world. The impact of the Uruguay Round tariff reductions over 1990–2010 are analyzed, as well as the further cuts in Preferential tariffs and the impact of moving to complete free trade. We find that the Uruguay Round tariff cuts led to large welfare gains (2%–3% relative to 1990 for the world, higher in Emerging and Developing countries), but that Preferential tariff cuts led to only small further gains (0%–1%). Surprisingly, the hypothetical movement to free trade leads to the greatest gains (5% relative to 1990, almost 10% in Emerging and Developing countries), which implies that there is strong scope for gains from future multilateral tariff reductions, especially for Emerging and Developing economies. These gains are large relative to prior estimates in the literature and we attribute about nearly one-half of our measured gains to selection effects in our heterogeneous-firm model, which are influenced by the scale of production and by two-tier Armington aggregation.

“A Second-Best Argument for Low Optimal Tariffs on Intermediate Inputs” 2022
(Caliendo, Feenstra, Romalis, Taylor)

We derive a new formula for the optimal uniform tariff in a small-country, heterogeneous-firm model with roundabout production and a nontraded good. Tariffs are applied on imported intermediate inputs. First-best policy requires that markups on domestic intermediate inputs are offset by subsidies. In a second-best setting where such subsidies are not used, roundabout production and the monopoly distortion in the traded sector create strong incentives to lower the optimal tariff on imported inputs. In a quantitative version of our two-sector small open economy, we find that the optimal tariff is lowered under nearly all parameter values considered, and can be negative.

“Transportation Infrastructure and City-Center Accessibility in the US and Europe” 2022
(Conwell, Eckert, Mobarak)

We propose a theory-inspired measure of the accessibility to a city’s central work location: the size of the surrounding area from which it can be reached within a specific time. Using publicly available optimal-routing software, we compute these “accessibility zones” for the 100 largest cities in the US and Europe, separately for cars and public transit commutes. Compared with European cities, US cities are half as accessible via public transit and twice as accessible via cars. Car accessibility zones are always larger than public transit zones, so that US cities are accessible from larger areas than European cities. However, population density within the most accessible zones is relatively low in the US, and European cities provide more residents quicker access to their city centers. Moreover, greater car orientation is associated with less green space, more congestion, and worse health and pollution externalities.

EXTRACURRICULAR/SERVICE

Yale Health Equity Initiative October 2020 – December 2022
Co-President

- After running for Yale College Counsel Vice-President, my running mate and I created a student research organization which analyzes Yale Health’s student insurance infrastructure.
- Met with Yale administration and faculty members to advocate for equitable policy reform within Yale student health insurance to subsidize care outside of Yale’s HMO provider network.

New Haven Volunteer 2020

- Volunteered during the pandemic at several relief centers distributing food and necessary items to those most effected in New Haven.

Yale Analyst partnered with McKinsey & Company February 2019 – May 2019
Spring Analyst (Project Management)

- Responsible for the primary research and data collection concerning product expansion viability which was then presented to the client. The recommendations were accepted, and the new product began distribution Fall 2019.
- As of 2020, Havenly has expanded and purchased a storefront in New Haven providing career and education opportunities for refugee and immigrant women resettling in the United States.

SKILLS

Languages: Spanish (advanced) and Portuguese (proficient)

Software: Python, R, MATLAB, HTML, CSS, LaTeX, Lyx (Advanced), Stata, GIS, SQL (Intermediate)