Andrew Silva

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Select Experience

Economist / Insights Lead   12/2021 – Present
The World Economic Forum — Geneva, Switzerland   *2 yr 4 mo*

Microeconomic empirical research on labor and education, including data analysis, statistical model estimation for inference and prediction (R, Python). Institutional impact assessment. Data centralization and governance. Project management for publications and cross-unit functions. External partner collaboration on research, C-suite consortium meetings, agenda-setting and organization of the Annual Meeting in Davos.

Data Scientist / Research Consultant   04/2016 – 11/2021
Various International Organizations and Corporations   *5 yr 7 mo*

Research economist and data science consultant for clients including the World Trade Organization, the World Bank, the International Trade Center, the United Nations (UNCTAD), Developing Trade Consultants, and the Global Governance Center. Projects involve data wrangling, coding of structural models, estimation of statistical models (inference and prediction), and completion of published research papers. Examples of accomplishments:

o Coding of computable general equilibrium (CGE) trade model in Python, based on Caliendo & Parro (2015) and Aichele & Heiland (2014), with modifications for value chain decomposition, based on Wang, Wei, & Zhu (2018). Deliverable code enabled the client (Developing Trade Consultants) to compute detailed projections of country-sector trade flows in the millions USD; used by national governments to inform economic policy.

o Coding to automate data procurement and processing for multi-faceted matrix of international trade and business competitiveness indicators. Deliverable saves hundreds of work hours annually for the client (the International Trade Center). Published index informs government trade agencies on export development strategy.

Assistant Professor, School of Economics   09/2020 – 09/2021
University of Nottingham   *1 yr*

Conducted academic research. Delivered lectures in (1) Applied Econometrics and (2) Behavioral Economics, and other guest speaking engagements. Received the highest teaching reviews in department for Spring 2021.

Teaching Assistant, International Affairs and Development Studies   09/2012 – 09/2016
University of Geneva / Geneva Graduate Institute   *4 yr*

Taught graduate courses in statistics and economics. Courses: (1) Statistics for the Social Sciences, (2) Advanced Quantitative Methods (Econometrics), (3) Development Economics, (4) Applied Research Seminar. Received excellent teaching reviews, and recognized by faculty for student satisfaction and other teaching accomplishments.

Analog IC Design Engineer   04/2005 – 06/2007
Mondowave / Leadis Technology — Mountain View, United States   *2 yr 3 mo*

Designed and simulated mixed-signal circuits for digital-analog conversion in audio codecs, leading to development of IC with highest signal-to-noise ratio of its class on the market, and a $10m valuation of our startup within two years. Served as lead engineer for chip-level analog IC layout and maintenance of IP database. Design tasks included netlist generation, schematic capture, design rule programming, and lab evaluation.

Other positions: Data Analyst for the European Commission, SAT Test Prep Instructor, RF/Microwave Engineering Research Assistant, USDA Research appointment, IT Administrator, and various positions as tutor/mentor.

Select Projects

Counterfactual density simulation: Technique based on DiNardfo, Fortin, Lemieux (1995) to decompose changes in population income percentiles measures over time. See publication "Gender, Price, and Quantity Effects" below.

Spatial panel estimation: Identified causal effect of occupational concentration on geographical distribution of income, controlling for fixed effects and 2D autocorrelation. See paper "Occupational Concentration" below.

Tagging job tasks for AI automation: Used ML models to tag 19,000 tasks in O*NET database to characterize occupations as "automatable" or "augmentable" by generative AI. (In progress.)

Machine learning examples from *An Introduction to Statistical Learning*: Roughly 70 applied ML problems in Python from chapters 1-6, 8, 10, 12; textbook available at www.statlearning.com.

Education

University of Geneva / l'Institut des hautes études intenationales et du développment, Switzerland

    Ph.D. Development Economics   2018

    M.A. International Economics   2012

University of California, Davis, United States

    B.S. Electrical Engineering   2004

    B.A. Economics   2004

Graduate Records Examination (GRE) Scores

    Quantitative: 800/800 (94th pctl.) / Verbal: 630/800 (90th pctl.)

Courses & Certifications

Bayesian A/B Testing (Workshop) — École Polytechnique Fédérale de Lausanne   2023

Data Analysis with Python — École Polytechnique Fédérale de Lausanne   2023

Relational Databases and SQL (SOE.YDB-SQL0001) — Stanford Online   2023

Statistical Learning (SOHS-YSTATSLEARNING) — Stanford Online   2024

Skills

Programming languages: Python (numpy, pandas, statsmodels, sklearn), SQL, R, Stata, Matlab, Linux shell

Statistical learning: linear regression (fixed-effects, pseudo-panel, autoregressive spatial models), classification (logistic regression, LDA, QDA, Naive Bayes, KNN), causal inference (instrumental variables, matching, difference-in-differences, RDD, RCT), k-means, parameter selection, shrinkage (Lasso, Ridge, ElasticNet), dimensionality reduction (PCA, partial least squares), decision trees, random forests, ensemble methods (bagging, boosting), counterfactual density simulation, cross validation, bootstrapping methods, maximum likelihood

Structural models: Computable general equilibrium (CGE) spatial models, CGE trade models

Languages: English (native), Portuguese (B1), French (B1/B2), Malay (A2)

Research

Working papers

"Occupational concentration, the spatial distribution of earnings, and the role of communication costs"

Peer-Reviewed Journal Publications

Silva, Andrew (2020) "Gender, price, and quantity effects in U.S. earnings inequality: revisiting counterfactual density estimates," *Economics Bulletin*, Vol. 40 No. 3 p.A219.

Gaber, Nadia, Andrew Silva, Monica Lewis-Patrick, Emily Kutil, Debra Taylor, and Roslyn Bouier (2020) "Water insecurity and psychosocial distress: case study of the Detroit water shutoffs," *Journal of Public Health*. doi:10.1093/pubmed/fdaa157

Silva, Andrew (2020) "Unpaid internships and equality of opportunity: a pseudo-panel analysis of UN data," *Applied Economics Letters*. doi:10.1080/13504851.2020.1808571

Hertz, Thomas and Andrew Silva (2019) "Rurality and Income Inequality in the United States, 1975-2015," *Rural Sociology*. doi:10.1111/ruso.12295

Johnson, Jessi .E., Andrew Silva, and George R. Branner, G.R. (2005): "Analysis of Nonlinear Input Impedance Matching in Active Frequency Multipliers," *IEICE TRANSACTIONS on Information and Systems*, Vol. E88-D No. 7 pp 1409-1416

Software

Silva, Andrew (2017) "MSDECO: Stata module to compute the Mookherjee & Shorrocks (1982) over-time inequality decomposition by subgroup," Statistical Software Components. fmwww.bc.edu/RePEc/bocode/m/msdeco.ado

Shepherd, Ben. (2022) "Modelling global value chains: From trade costs to policy impacts". The World Economy. Vol. 45 No. 8. doi.org/10.1111/twec.13268 (Credited for CGE model coding)

Policy publications listed at www.andysilva.com