Curriculum Vitae

Updated: November 2023

Personal Information

Name: Mathias Gabriel Silva Vázquez
Birthdate: 27/09/1993
Nationality: Uruguayan
Home Address: 3 Rue Cyrano - 69003 - Lyon - France
E-mail: mathias.SILVA-VAZQUEZ@univ-amu.fr / mathias.silva_vazquez@ens-lyon.fr

Education

Graduate Education:

- PhD Candidate in Economics (2019 - ongoing)

    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Topic: Bayesian econometric methods for income distribution and inequality analysis with limited data
    Supervisor: Stephen Bazen
    PhD defence date: 18/12/2023

- M2 in Economics - Empirical and Theoretical Economics track (2018/2019)

    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Graduation Date: 18/06/2019
    Dissertation Title: "Estimating the Global Income Distribution. Exploring a Multiple Imputations approach to correct for missing high incomes and account for statistical uncertainty"
    Dissertation JEL Code: C51, C15, F69
    Dissertation Supervisor: Michel Lubrano

- M1 in Economics (2017/2018)

    Institution: Aix-Marseille School of Economics - Aix-Marseille University

- Diploma in Economics (2016/2017)

    Institution: Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay

Undergraduate Education:

- Bachelor's Degree in Economics

    Institution: Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
    Graduation Date: 22/04/2016
    Dissertation Title: "ICT and Wage Inequality in Uruguay"
    Dissertation JEL Code: J31, O30.
    Dissertation Tutor: Fedora Carbajal

Employment

Academic Experience:

- Temporary Research and Teaching Attaché (ATER)
  Institution: École normale supérieure de Lyon
  Period: 01/10/2022-31/08/2023

- Contractual PhD candidate
  Institution: Aix-Marseille School of Economics - Aix-Marseille University

Period: 01/10/2019-30/09/2022

- Research Assistant
  Institution: Instituto de Economía (IECON), Department of Economics – Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
  Period: 07/10/2016 - 21/8/17

- Research Assistant
  Institution: Student Performance and Trajectories in the Universidad de la República's Social and Arts Area Research Unit - Universidad de la República - Uruguay
  Period: 07/09/2015 - 21/8/17

- Academic Assistant to the Dean
  Institution: Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
  Period: 29/09/2016 - 21/8/17

Teaching Experience:

- Lecturer
  - Machine Learning
    Level: Graduate - MSc. Advanced Economics
    Institution: École normale supérieure de Lyon
    Period: 21/11/2022-Ongoing
    Language: English

  - Topics in Econometrics: Panel data methods, Quantile regressions, and causal inference methods.
    Level: Graduate - MSc. Advanced Economics
    Institution: École normale supérieure de Lyon
    Period: 07/11/2022-Ongoing
    Language: English

  - Econometrics I: Advanced linear models
    Level: Graduate - MSc. Advanced Economics
    Institution: École normale supérieure de Lyon
    Period: 14/09/2022-Ongoing
    Language: English

  - Research projects in Economics
    Level: Undergraduate - pre-MSc. Advanced Economics
    Institution: École normale supérieure de Lyon
    Period: 30/09/2022-Ongoing
    Language: English

- Thesis supervision
  - Augustin Boone (2023) – 'The Secret Sauce to ETI: Predicting Elasticities' Magnitude using Machine Learning'
    Dissertation for the degree of MSc. in Economics, co-supervised with Jonathan Goupille-Lebret.

- – Etienne Billon (2023) – 'Corporate Income Tax under "Excess Profit": Evidence from the 2017-2022 French CIT cut'
  Dissertation for the degree of MSc. in Economics, jury member.
- Teaching Assistant
  - – Introduction to Econometrics
    Level: Undergraduate - Magistère ingénieur économiste
    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Period: 07/10/2021 - 3/12/2021
    Language: English

  - – Introduction to Economics
    Level: Undergraduate - L3 (Bachelor's degree)
    Institution: Ecole Centrale de Marseille
    Period: 01/09/2021 - 31/08/2022
    Language: French

  - – Introduction to Econometrics
    Level: Undergraduate - Magistère ingénieur économiste
    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Period: 08/10/2020 - 3/12/2020
    Language: English

  - – Descriptive Statistics
    Level: Undergraduate (Bachelor's Degree in Statistics)
    Institution: Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
    Period: 10/02/2017 - 21/8/17
    Language: Spanish

Professional Experience:

- General Coordinator
  Student Center's Services - Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
  Period: 21/12/2013 – 13/08/2015

- Secretary
  Student Center's Services - Facultad de Ciencias Económicas y de Administración - Universidad de la República - Uruguay
  Período: 14/02/2013 - 21/12/2013

Research

Main Interests: Econometrics, Bayesian Inference, Income distribution, inequality, and poverty analysis, Microeconometrics, Machine Learning.
Research Lines:

Bayesian Econometrics.

Simulation-based inference methods.

Econometrics of income distributions.

Public Policies and Impact Evaluation.

Higher Education and Analysis of Education.

ICT and Development.

Working Papers:

- Silva, M. (2023). "Parametric models of income distributions integrating misreporting and non-response mechanisms".

  Abstract: *Several representativeness issues affect the available data sources in studying populations' income distributions. High-income under-reporting and non-response issues have been evidenced to be particularly significant in the literature, due to their consequence in under-estimating income growth and inequality. This paper bridges several past parametric modelling attempts to account for high-income data issues in making parametric inference on income distributions at the population level. A unified parametric framework integrating parametric income distribution models and popular data replacing and reweighting corrections is developped. To exploit this framework for empirical analysis, an Approximate Bayesian Computation approach is developed. This approach updates prior beliefs on the population income distribution and the high-income data issues pressumably affecting the available data by attempting to reproduce the observed income distribution under simulations from the parametric model. Applications on simulated and EU-SILC data illustrate the performance of the approach in studying population-level mean incomes and inequality from data potentially affected by these high-income issues.*

  JEL Code: D31, C11, C18

  Keywords: 'Missing rich', GB2, Bayesian Inference.

  Status: Job Market Paper. Available online here or previously as Aix-Marseille School of Economics (AMSE) Working Paper, 2023(11), here

- Silva, M. (2023). "Parametric estimation of income distributions using grouped data: an Approximate Bayesian Computation approach"

  Abstract: *Recent empirical analysis of income distributions are often limited by the exclusive availability of data in a grouped format. This data format is made particularly restrictive by a lack of information on the underlying grouping mechanism and sampling variability of the grouped-data statistics it contains. These restrictions often result in the unavailability of an analytical parametric likelihood function exploiting all information available in the grouped data. Building on recent methods for inference on parametric income distributions for this type of data, this paper explores a new Approximate Bayesian Computation (ABC) approach. ABC overcomes the restrictions posed by grouped data for Bayesian inference through a non-parametric approximation of the likelihood function exploiting simulated data from the income distribution model. Empirical applications of the proposed ABC method in both simulated and World Bank's PovCalNet data illustrate the performance and suitability of the method for the typical formats of grouped data on incomes.*

  JEL Code: C11, C18, C63

  Keywords: Grouped data, Bayesian inference, Generalized Lorenz curve, GB2

  Status: Available online here or previously as Aix-Marseille School of Economics (AMSE) Working Paper, 2023(10), here

- Silva, M., & Lubrano, M. (2023). "Bayesian inference on Pareto tail models with applications to EU income distributions"

  Abstract: *Due to their right-skewed nature, income distributions are often modeled as a compound distribution with a component for the bulk and a component for the upper tail. This is particularly useful in situations where different data sources are used to estimate each of the two components, such as when survey data is taken for the bulk and tax data for the upper tail. Parametric Pareto distributions are often chosen to represent the heavy right tails of income distributions, while several parametric and non-parametric alternatives are available for representing the lower part of the distribution. This poses the challenge of defining a threshold income above which the Pareto representation is reasonable. Building on recent advances in the extreme value theory literature, this paper presents a semi-parametric bulk model approach to jointly estimate both components in the mixture while making inference on this threshold. A semi-parametric approach using Bernstein polynomials is proposed for modeling the bulk component, while a Pareto II model is taken to represent the distribution of high incomes. A Bayesian empirical strategy is proposed to exploit prior knowledge*

on the income distribution in making inference on all model parameters through a Gibbs sampler. The performance of this approach is illustrated in estimates for country-level and region-level income distribution estimates from EU-SILC data. To attend to the possibility of non-response and under-reporting of high incomes in these surveys external data on top fiscal income shares from the World Inequality Database are exploited, eliciting informative prior beliefs on the population's high-incomes distribution.

JEL Code: C11, D31, D63, I31.

Keywords: Bayesian inference, Pareto II, profile likelihood, Bernstein density estimation, top incomes, EU-SILC.

Status: Available online here or previously as Aix-Marseille School of Economics (AMSE) Working Paper, 2023(20), here

- Silva, M. (2016). "ICT and Wage Inequality in Uruguay".

  Abstract: This paper seeks to identify possible unequalizing effects on private-sector wage workers due to PC, Internet, and/or Cellphone use at their job and the abilities to do so. A new data source is used for this analysis, the 2013 Survey on Information and Communication Technologies Uses (EUTIC 2012 (INE)). Through the use of Quantile Regressions and Mincer wage equations the hypothesis that mere use of this technologies and heterogeneity in the specific skills to do so has no significant effect on Uruguay's wage distribution in 2013 is tested. The results found do not provide enough evidence to reject such hypothesis, nor do they suggest the existence of significant differences on the effects of different variables commonly associated to wages between those individuals that use ICT at their jobs and those who don't.

  JEL Code: J31, O30

  Keywords: Wage inequality, ICT, Uruguay, Quantile regression.

  Status: Available online as Serie Documentos de investigación estudiantil, DIE 06/2016. Instituto de Economía (IECON), Facultad de Ciencias Económicas y Administración, Universidad de la República, Uruguay, here

Presentations in Academic Conferences and Seminars:

- 2023

  – "A Bayesian approach to regional income inequality in Europe using EU-SILC data". 8-th European User Conference for EU-Microdata. German Microdata Lab, GESIS in cooperation with Eurostat. Joint work with Michel Lubrano.

  – "A Bayesian approach to regional income inequality in Europe using EU-SILC data". CERGIC Graduate Seminar, Center for Economic Research on Governance, Inequality, and Conflict (CERGIC) - École normale supérieure de Lyon.

- 2022

  – "Parametric models of income distributions integrating reporting and/or non-response mechanisms". AMSE PhD Seminar, Aix-Marseille School of Economics - Aix-Marseille University. CERGIC Graduate Seminar, Center for Economic Research on Governance, Inequality, and Conflict (CERGIC) - École normale supérieure de Lyon.

  – "A workflow for Bayesian inference on income distributions accounting for high-income data issues". AMSE PhD Seminar, Aix-Marseille School of Economics - Aix-Marseille University. CERGIC Graduate Seminar, Center for Economic Research on Governance, Inequality, and Conflict (CERGIC) - École normale supérieure de Lyon.

- 2021

  – "Dealing with 'missing rich' in grouped data for income distributions: an Approximate Bayesian Computation approach". AMSE PhD Seminar. Aix-Marseille School of Economics - Aix-Marseille University.

  – Paper discussant at European Doctoral Group in Economics (EDGE) PhD Jamboree.

  – "Basics of Approximate Bayesian Computation". Presentation on Econometrics and Empirical Methods PhD Sessions. Aix-Marseille School of Economics - Aix-Marseille University.

- 2020

- "Parametric estimation of income distributions using grouped data under measurement errors for high incomes". AMSE PhD Seminar. Aix-Marseille School of Economics - Aix-Marseille University.

- 2019

    - "Modeling a Global Income Distribution". Presentation on Econometrics and Empirical Methods PhD Sessions. Aix-Marseille School of Economics - Aix-Marseille University.

- 2016

    - "ICT and Wage Inequality in Uruguay". Presentation on Labour Markets session at the 6th. Academic Conference of the Facultad de Ciencias Económicas y de Administración - Universidad de la República.

    - "Student Performance and Trajectories in the Universidad de la República's Social and Arts Area Research Unit's First Experiences". Presentation on Student Trajectories session at the 6th. Academic Conference of the Facultad de Ciencias Económicas y de Administración - Universidad de la República.

    - "Descriptive Statistics: Student Access to Social and Arts Area (2010-2015)". Presentation at the 2nd. International Seminar on Student Trajectories at Higher Education. Universidad de la República.

Research visits:

- PhD visiting

    Institution: Vienna University of Economics and Business (WU Vienna)
    Period: March - June 2022

Other research projects:

- "Quantitative evaluation of the impact of the Family Allowances-Equity Plan and the Uruguay Social card"
    Financing Institution: Ministry of Social Development (MIDES) - Uruguay.
    Period: October 2016 - December 2019
    Involvement: Research Assistant.
- "Positional Consumption and Income Transfer Policies' Sustainability"
    Financing Institution: Agencia Nacional de Investigación e Innovación (ANII) - Uruguay
    Period: October 2016 - 21/8/17
    Involvement: Research Assistant.
- Impact Evaluation of the Fondo de Solidaridad Scholarship Program on Student Outcomes at the Universidad de la República's Facultad de Ciencias Económicas y de Administración.
    Period: November 2016 - 21/8/17
    Involvement: Team member.
- "ICT and Inequality in Uruguay: Contributions from the Digital Poverty framework"
    Financing Institution: Student Research Support Program (Comisión Sectorial de Investigación Científica-Universidad de la República)
    Period: April 2016 - February 2017
    Involvement: Team member
    Tutor: Alina Machado Freites

Other Activities:

- Co-organizer - Reading Group on Economic Inequalities

    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Period: 04/03/2021 - 25/03/2021

Supervisor: Roberta Ziparo

- Co-organizer - Econometrics and Empirical Methods Sessions

    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Period: October, 2020 - Ongoing

- Research Internship - Statistical methods for inference with top-coded data.

    Institution: Aix-Marseille School of Economics - Aix-Marseille University
    Period: 14/05/2018 - 06/07/2018
    Supervisor: Michel Lubrano

Others

- **Languages:**

    French: Fluent

    English: Fluent

    Spanish: Native

- **Programming:** R, Bash, LaTeX, STATA, SAS
- **International Exams:**

    GRE-ETS iBT (29/12/2016): 160/162/4.5 (VR/QR/AW)

    TOEFL-ETS iBT (14/01/2017): 115

    CPE-ESOL University of Cambridge (December 2009): Grade C

- **Musical:** I've been studying and playing music since my late childhood, mostly guitar and bass guitar from a jazz theory school but my interests spread over many genres (jazz, blues, soul, mainly) so I'm always open to sharing through music.