David Díaz-Villarejo

Ph.D. Candidate in Economics · Universidad Carlos III de Madrid

ddiazvil@eco.uc3m.es

Education

Universidad Carlos III de Madrid — Madrid, Spain
Ph.D. in Economics — 2023 – present
Supervisors: Carlos Velasco Gómez, Jesús Gonzalo Muñoz
Expected Defense in June 2027

M.Res. in Economic Analysis — 2023
B.Sc. in Economics — 2021

Purdue University — Indiana, U.S.
B.Sc. in Economics (Junior Year) — 2019

Professional Experience

Universidad Carlos III de Madrid — Madrid, Spain
Instructor and Teaching Assistant (*T.A.*). — 2022 – present

- Graduate Courses (*Instructor*): Probability and Statistics Preliminary Course (Ph.D. in Economics; 2024-26), Mathematics Preliminary Course (MSc. in Economic Development and Growth; 2024-26).
- Undergraduate Courses (*T.A.*): Econometrics (2023-26), Quantitative Microeconomics (2025 & 2023), Time Series Econometrics (2024), Microeconomic Theory (2022), Mathematics for Economics (2022 & 2026). *Teaching Excellence Awards in Econometrics and Quantitative Microeconomics.*

UNIE Universidad — Madrid, Spain
Lecturer. — Fall, 2025

- Undergraduate Courses: Financial Mathematics (Business Administration).

Autoridad Independiente de Responsabilidad Fiscal (AIReF) — Madrid, Spain
Research Assistant (*R.A.*). — 10/2020 – 08/2021

- Long-term Forecasts and Sustainability Analysis of the Spanish Government Accounts for the Spanish Independent Fiscal Institution (IFI).

Analistas Financieros Internacionales, Afi (International Financial Analysts) — Madrid, Spain
Professional Internship. — 07/2019 – 12/2019

- Analysis of Spanish and European Credit Institutions for the Assets & Liabilities Committees (ALCOs).

Work in Progress

Gini Index Regression. (Job Market Paper)
With Vedant Bhardwaj (fellow Ph.D. student).
The paper develops Gini Index Regression (GIR) to understand why populations differ in their inequality levels, a regression framework that directly models the Gini of the conditional distribution of a nonnegative outcome, without choosing a parametric functional form for that distribution. In the linear case, the parameter of interest is shown to have a familiar closed-form solution and, under model misspecification, it is a weighted best linear approximation to the conditional Gini. An omitted variable bias formula shows that changing controls affects both the projection and the ranking of outcomes. Estimation combines nonparametric series estimation of conditional ranks with weighted least squares. We establish $\sqrt{n}$-consistency, asymptotic normality, and validity of the bootstrap. An application to U.S. wage data finds that, after controlling for relevant characteristics, the inequality gap by union status remains significant but heterogeneous over experience, and that college-educated workers indeed possess the lowest levels of inequality compared to the less educated groups.

Locally Robust Semiparametric Estimation of Parametric Conditional Gini.
With Vedant Bhardwaj, Juan Carlos Escanciano, and Joel R. Terschuur.
Using the influence function for functionals of conditional distributions, we propose locally robust estimation and inference for Gini Index Regression (GIR) models by constructing moments which are insensitive to local misspecification of the first-stage nonparametric nuisance function. We consider three alternative model specifications, including nonlinear models.

A Durbin-FGLS Approach to Robust Inference for Time Series Regression.
HAC-based inference is known to fail in important cases, and conventional procedures that model error-term dynamics fail when strict exogeneity requirements are not satisfied. I propose a new semiparametric feasible generalized least squares (FGLS) estimator that learns the relevant dynamics nonparametrically in a way that allows for much weaker exogeneity conditions under which OLS or existing GLS variants are not consistent. The results cover root-n consistency and asymptotic normality, showing that the estimator is efficient whenever the GLS variants are.

Conferences

- Econometric Society, European Winter Meeting (EWMES) at the University of Warsaw, Poland. 2026.
- Symposium of the Spanish Economic Association (SAEE) at the University of Las Palmas de Gran Canaria, Spain. 2026.

Referee Activity

- Journal of Applied Econometrics.

Courses & Summer Schools

- Local Projection Methods for Time Series and Panel Data. CEMFI Summer School. Prof. Óscar Jordà (Federal Reserve Bank of San Francisco and UC Davis). 2024.
- DSGE and Time Series Models for Macroeconomic and Policy Analysis. CEMFI Summer School. Prof. Marco del Negro (Federal Reserve Bank of New York). 2024.
- Large Language Models and Machine Learning for Unstructured Data. Fundación Ramón Areces - IESE Business School. Prof. Stephen Hansen (UCL). 2024.

Honors & Awards

- Beca FPI para la Formación de Doctores. Ministerio de Ciencia e Innovación, 2023. Ph.D. Scholarship.
- Master's Scholarship. M.Res. in Economic Analysis (UC3M), 2021. Banco Santander. Full Scholarship.

Languages

Programming: R, Matlab, EViews, Stata, Excel.
Communication: English (C1), French (B2), Spanish (Native).

References

Carlos Velasco
Universidad Carlos III de Madrid
carlos.velasco@uc3m.es

Jesús Gonzalo Muñoz
Universidad Carlos III de Madrid
jgonzalo@est-econ.uc3m.es

Juan Carlos Escanciano
Universidad Carlos III de Madrid
jescanci@eco.uc3m.es