

David Zarruk Valencia

347 W 123rd Street, Apt. 3, New York, NY 10027
+1 (267) 474-6472

✉ davidza@sas.upenn.edu | 🏠 www.davidzarruk.com | in davidzarruk | 🐙 davidzarruk

EDUCATION

University of Pennsylvania, Philadelphia, PA

Ph.D. in Economics

Expected May 2018

M.A. in Economics

May 2017

Universidad de los Andes, Bogotá, Colombia

M.A. in Economics

Aug 2013

B.A. in Mathematics

Mar 2013

B.A. in Economics (cum laude)

Mar 2011

INTERESTS

Macro-finance, Taxation, Inequality and Heterogeneous Households Models

RESEARCH

Wall Street or Main Street: Who to Bail Out? 2017. [Job Market Paper]

Housing crises are characterized by an increase in foreclosure rates that generate losses to mortgage investors. To preserve their solvency, governments have historically implemented two policies: a) offer bailouts to investors (Wall Street), and b) offer subsidies to mortgage refinancing of households to prevent additional foreclosures (Main Street). This paper studies the welfare maximizing bailout-subsidy policy for the case of the Great Recession, shaped by two frictions: a dead-weight loss of 20% on the house value that occurs during the foreclosure process, and an information friction on individual house prices that leads households to engage in strategic default to qualify for the subsidy program. I quantitatively assess the welfare maximizing policy in a heterogeneous agents' economy and find that a subsidy-only policy would have generated welfare gains of up to 0.4%, measured as consumption equivalent variation, as compared to the baseline calibration that matches TARP and HAMP programs. In contrast, a bailout-only policy would have generated a welfare loss of 0.8%.

A Practical Guide to Parallel Computing in Macroeconomics, with Jesús Fernández-Villaverde, 2017.

Parallel computing opens the door to solving and estimating richer models in Economics. From dynamic optimization problems with high dimensionality to structural estimation with complex data, readily-available and economical parallel computing allows researchers to tackle problems in Economics that were beyond the realm of possibility just a decade ago. This paper describes the basics of parallel computing for economists, reviews widely-used implementation routines in Julia, Python, R, Matlab, C++ (OpenMP and MPI) and CUDA and compares performance gains using as a test bed a standard life-cycle problem such as those used in macro, labor, and other fields.

The Effects of Student Loans on the Provision and Demand for Higher Education, with Rodrigo Azuero, 2016.

This paper characterizes the general equilibrium outcomes of the tertiary education market in a context where borrowing constraints bind, there is a two-tier college system operating under monopolistic competition in which colleges differ by quality and returns to education depend on school quality. The paper shows that a widening of the gap in quality supplied by tertiary education institutions can be a by-product of subsidized student loan policies and illustrates the main results through a numerical exercise applied to the case of Colombia, which underwent a rapid expansion in the supply of subsidized student loans during the past decade.

TEACHING EXPERIENCE

University of Pennsylvania, Philadelphia, PA

Instructor

Math Camp for Economics and Wharton Finance Ph.D. (ECON 897)

Summer 2015, 2016

Teaching Assistant

Macroeconomic Theory II for Economics Ph.D. (ECON 704)

Springs 2015, 2016

Monetary and Fiscal Policy (ECON 243)

Fall 2014

Universidad de los Andes, Bogotá, Colombia

Instructor and Teaching Assistant

MATLAB Workshop (2013), Advanced Microeconomics: Game Theory (2012), Microeconomics II (2012), Advanced Macroeconomics: Long Run (2011), Linear Algebra I (2011) and Mathematical Methods for Economists (2011)

CONFERENCES AND PRESENTATIONS

George Washington University Student Research Conference in Economics, Washington D.C.

Spring 2017

21st Annual LACEA Meeting, Medellín, Colombia

Fall 2016

PROFESSIONAL EXPERIENCE

University of Pennsylvania, Philadelphia, PA

Aug 2013 – Present

Research Assistant

- Research assistant for Prof. Jesús Fernández-Villaverde (Aug 2016 – Jul 2017)
- Research assistant for Profs. Ufuk Akcigit and Jeremy Greenwood on paper *Buy, Keep or Sell: Economic Growth and the Market for Ideas*, Econometrica, 2016
- Coded GitHub repository with using parallel computing in R, Python, Matlab, Julia, C++ (OpenMP, MPI), CUDA (GPU)
- Co-authored and currently maintain R package *Rtauchen* to discretize AR(1) processes following Tauchen (1986)
- Extended R package *gmapsdistance* to allow for options such as arrival time, and enabled multiple origins/destinations
- Led workshop on R and C++ (*Rcpp* package) at Federal Reserve Bank of San Francisco (Jul 2017)
- Elected as one of three members of Graduate Economics Society responsible for Department's social events

La Rama Ciudadana (laramaciudadana.com), Remote

Jun 2016 – Present

Co-Founder

- Designed website to disseminate Colombian statistics on various topics through use of data scraping and visualization
- Scraped data on attendance to 2K+ Congress sessions for Congressmen using Python and developed visualizations in R
- Scraped 15K+ sites with academic publications of universities using R and developed visualizations
- Achieved wide press coverage on mainstream newspapers and radio stations

Ministerio de Educación Nacional, Bogotá, Colombia

Jun 2015

Summer Advisor

- Developed policy recommendations for the 10-Year National Education Plan
- Projected costs of Colombian high school system based on probabilistic model of teacher ranking promotions
- Elaborated document with distribution and characteristics of high school teachers in Colombia

Universidad de los Andes, Bogotá, Colombia

Mar 2011 – Jun 2013

Research Assistant

- Performed econometric analyses and estimation of models related to conflict, crime, education and poverty
- Elaborated policy recommendations to National Planning Department to increase income and land access of rural households
- Estimated costs of programs to displaced population for Ministry of Finance
- Assembled datasets using administrative data with 28M+ entries on school attendance and crime

HONORS AND AWARDS

Federal Reserve Bank of San Francisco, San Francisco, CA

Dissertation Fellowship

Summer 2017

University of Pennsylvania, Philadelphia, PA

Dissertation Completion Fellowship

Aug 2017

Judith Rodin Fellowship

May 2016

Best Preliminary Econometrics Exam

Sep 2014

Universidad de los Andes, Bogotá, Colombia

M.A. scholarship Awarded to Best National Exam of Undergraduate Quality (ECAES) of Universidad de los Andes

Jun 2011

Academic Excellence Scholarship (GPA: 5/5)

Apr 2011

Cum laude degree in Economics

Mar 2011

REFeree EXPERIENCE

International Economic Review

SKILLS AND LANGUAGES

Languages:

Spanish (native), English (proficient), Portuguese (intermediate), Italian (basic)

Programming:

Proficient: C++, R, Matlab, VBA, Stata, Linux, OpenMP, CUDA

Basic: Java, Python, MPI

REFERENCES AND DISSERTATION COMMITTEE

Jesús Fernández-Villaverde (Advisor)

University of Pennsylvania

3718 Locust Walk, 440 McNeil Building

Philadelphia, PA, 19104

Phone: +1 (215) 898-1504

Email: jesusfv@econ.upenn.edu

Dirk Krueger (Advisor)

University of Pennsylvania

3718 Locust Walk, 511 McNeil Building

Philadelphia, PA, 19104

Phone: +1 (215) 573-1424

Email: dkrueger@econ.upenn.edu

Guillermo Ordóñez (Committee)

University of Pennsylvania

3718 Locust Walk, 428 McNeil Building

Philadelphia, PA, 19104

Phone: +1 (215) 898-1875

Email: ordonez@econ.upenn.edu