

Alejandro Rojas-Bernal

✉ la.rojas1560@gmail.com - alejandro.rojas@alumni.ubc.ca • March 17, 2023

Education

Ph.D. Candidate in Economics - University of British Columbia <i>Emphasis in macroeconomics, international finance and econometrics</i> GPA: 91.7 over 100	Vancouver, Canada 2018–Ongoing
Master of Arts in Economics - Universidad de Los Andes <i>Emphasis on finance and econometrics</i> GPA: 4.77 over 5	Bogotá, Colombia 2016–2018
Bachelor of Arts in Law - Universidad de los Andes <i>Summa Cum Laude</i> ¹ GPA: 4.63 over 5. Ranking: 2 out of 92.	Bogotá, Colombia 2010–2016
Bachelor of Arts in Economics - Universidad de Los Andes <i>Cum Laude</i> ² GPA: 4.63 over 5. Ranking 2 out of 107.	Bogotá Colombia 2010–2016
Exchange Student-University of Copenhagen	Copenhagen, Denmark August 2014 - December 2014

Published Papers

Pricing the exotic: Path-depended American options with stochastic barriers

Latin American Journal of Central Banking, 2021

Authors: Alejandro Rojas-Bernal, Mauricio Villamizar-Villegas **Abstract:** We develop a novel pricing strategy that approximates the value of an American option with exotic features through a portfolio of European options with different maturities. Among our findings, we show that: (i) our model is numerically robust in pricing plain vanilla American options; (ii) the model matches observed bids and premiums of multidimensional options that integrate ratchet, Asian, and barrier characteristics; and (iii) our closed-form approximation allows for an analytical solution of the option's greeks, which characterize the sensitivity to various risk factors. Finally, compared to the traditional Monte Carlo simulations method, we highlight that our estimation's prediction is more accurate and requires less than 1% of the computational time.

Working Papers

The Distributional Theory of the Second Best: Inequality Under Production Networks 2023
Solo Authored

The Macroeconomic Impact of Microeconomic Shocks under Distortions 2023
with Sudipta Gosh and Ali Karimirad

¹This honorific distinction is given to the students that have a GPA that is in the top 1% of his faculty in the last 5 years and display comprehensive achievements in an interview with the Academic Council.

²This honorific distinction is given to the students that have a GPA that is in the top 5% of his faculty on the last 5 years.

Structural Transformation on Network Multipliers
with Xiaojun Guan

2023

Stairway To Haven
Solo Authored

2020

Professional Experience

Central Bank of Colombia

Bogota, Colombia

Analyst in the Department of Financial Markets Development

September 2016–May 2018

I have four main accomplishments from my time at the Colombian Central Bank. First, due to its increasing use in other countries, I developed a political uncertainty index for Colombia using text analysis and news from the main national newspapers and magazines. This index is still used by the Board of Directors and has been mentioned in several of the justifications for their monetary policy decisions, mainly after the last presidential elections. Second, I independently studied and statistically showed the existence of a seasonal component on the inflation expectations that can be extracted from the sovereign fixed income market. The seasonal explanation is commonly used by the Board of Directors to explain the behavior of inflation expectations. Third, the two regulation projects that I was working on were implemented. In particular, the new foreign indebtedness regulation simplified the rules on this topic, and macroprudential safety measures were added for situations of external pressure over the foreign exchange market due to heavy capital flows. Finally, at the beginning of 2018, I volunteered to do a presentation for the General Manager of the Central Bank that showed the administrative inefficiencies that the required paperwork imposed over market agents. This presentation stimulated a series of trips and meetings with other regional central banks, mainly Chile, Mexico, and Peru, in order to study more efficient ways to recollect data of foreign exchange transactions.

Academic Experience

University of British Columbia - Research Assistant.....

Project: Production Networks and International Fiscal Spillovers **Vancouver School of Economics**
Professor: Michael Devereux *2019-2021*

Project: Canadian Banking sector and the crisis of 1907 **Vancouver School of Economics**
Professor: Angela Reddish *2019*

University of British Columbia - Teaching Assistant.....

Econ 556 - International Finance **Vancouver School of Economics**
Professor: Michael B. Devereux *2023*

Econ 456 - International Macroeconomics and Finance **Vancouver School of Economics**
Professor: Michael B. Devereux *2022; 2023*

Econ 447 - Monetary Theory **Vancouver School of Economics**
Professor: Geoffrey Newman *2020; 2021; 2022*

Econ 356 - International Finance **Vancouver School of Economics**
Professor: Geoffrey Newman *2019; 2020; 2021; 2022*

Financial Markets and International Trade **Vancouver School of Economics**
Professor: Michael Vaney *2019*

University Of Los Andes - Graduate Teaching Assistant.....

Advanced Econometrics

Professors: Raquel Bernal and Diego Amador

Department of Economics

January 2017–July 2018

Introduction to Macroeconomics

Professor: Marc Hofstetter

Department of Economics

January 2017–July 2018

University Of Los Andes - Undergraduate Teaching Assistant.....

Financial Derivatives

Professor: Jairo Andrés Rendón

Department of Economics

January 2016–June 2016

Intermediate Econometrics

Professor: Jorge Alexander Bonilla

Department of Economics

July 2015–June 2016

Constitutional Hermeneutics

Professor: Daniel Eduardo Bonilla

School of Law

January 2014–May 2014

General Criminal Law

Professor: Ricardo Posada

School of Law

January 2014–May 2014

Special Crimminal Law

Professor: Ricardo Posada

School of Law

July 2013–December 2013

General Criminal Law

Professor: Yamila Fakhouri

School of Law

January 2013–May 2013

Constitutional Law

Professor: Diego Eduardo López

School of Law

July 2011–December 2011

Roman Law

Professor: Nicolás Pájaro

School of Law

January 2011–May 2011

Scholarships Awards and Honors

Faculty of Arts Graduate Award – 2022

University of British Columbia

\$7,511

President's Academic Excellence Initiative PhD Award– 2022

University of British Columbia

\$1080

International Tuition Award– 2022

University of British Columbia

\$2,133

Bank of Montreal Graduate Fellowship – Summer 2022

University of British Columbia

\$4583

International Tuition Award– Summer 2022

University of British Columbia

\$1,066

President's Academic Excellence Initiative PhD Award– Summer 2022

University of British Columbia

\$540

Bank of Montreal Graduate Fellowship – 2021

University of British Columbia

\$9166

Kathleen Simpson Memorial Graduate Scholarship– Winter 2021

University of British Columbia

\$2250

International Tuition Award– 2021	University of British Columbia \$2,133
President’s Academic Excellence Initiative PhD Award– Summer 2021	University of British Columbia \$515
International Tuition Award– Summer 2021	University of British Columbia \$1,066
Honorable Mention in the Central Bank Award Rodrigo Gómez– 2020	CEMLA
AD Scott Fellowship in Economics– 2020	University of British Columbia \$13,325
Faculty of Arts Graduate Award – 2020	University of British Columbia \$11,775
President’s Academic Excellence Initiative PhD Award – 2020	University of British Columbia \$652
International Tuition Award – 2020	University of British Columbia \$2133
International Tuition Award – Summer 2020	University of British Columbia \$1066
International Tuition Award – 2020	University of British Columbia \$2133
International Tuition Award – Summer 2019	University of British Columbia \$1066
Faculty of Arts Graduate Award – 2018	University of British Columbia \$25,524
International Tuition Award – 2018	University of British Columbia \$2133

Summa Cum Laude in Law: This honorific distinction is given to the students that have a GPA that is in the top 1% of his department in the last 5 years and display comprehensive achievements in an interview with the Academic Council.

Cum Laude in Economics: This honorific distinction is given to the students that have a GPA that is in the top 5% of his department on the last 5 years.

Commencement Speech at the graduation of the Departments of Law, Architecture, Design and Humanities: [Link Video](#).

Commencement Speech at the graduation of the Departments of Economics, Bussiness and Government: [Link Video](#).

Best National Higher Education Exam (Ecaes) in Law 2015:

Winner of the Jorge Méndez Munévar 2015 award: Annually given by the Department of Economics of the University of Los Andes to the student with the best research proyect in all the subjects of the B.A in Economics. This award was given due to the work *An Optimal Taylor Rule for Colombia: 2003-2015*.

Winner of the Cavelier Association Competition and Scholarship: First Place in the competition for the best article of investigation in Law, second semester of 2015, with the article "*The city, the property and the environment: Colective construction of a sustainable urban space*". As a consequence, I won a scholarship

for eighth million colombian pesos in Law studies.

Participation in Panels and Conferences

Pricing the Exotic <i>Quantil - Applied Mathematics Consultancy Seminar</i>	Bogotá, Colombia 2021
Dialogue Across Disciplines: <i>Perspectives on Economic Growth and Environmental Sustainability</i>	Green College, UBC 2019

Computational Skills

JULIA	Advanced Level
STATA	Advanced Level
MATLAB	Advanced Level
ARCGIS	Beginner Level

Languages

Spanish: Native Tongue

English: Advanced Level in speaking, writing, listening and hearing

German: Intermediate Level in speaking, writing, listening and hearing