Aarón Mora

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November, 2023
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Undergraduate Education

Universidad de Costa Rica

2013 BA. *summa cum laude* in Economics
2014 BSc. in Actuarial Science
2017 BSc. in Pure Mathematics

Graduate Education

Toulouse School of Economics

2016 Master *first class honours* in Economic Theory and Econometrics
2018 Diplôme Européen d'Economie Quantitative Approfondie (DEEQA)

University of Pennsylvania

2021 M.A. in Economics
2018-Present Ph.D. in Economics, Expected Completion Date: May 2024
Thesis Title: "Essays in Financial Econometrics"

Thesis Committee and References:

Professor Francis X. Diebold (Co-Advisor)
Department of Economics
University of Pennsylvania
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Professor Frank Schorfheide (Co-Advisor)
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Professor Nikolai Roussanov
The Wharton School
University of Pennsylvania
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Professor Juan Camilo Castillo
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133 South 36th Street, Office 629
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Research Interests

Primary Econometrics, Asset Pricing
Secondary Industrial Organization, Machine Learning, Climate Economics

Teaching Experience

2019-2021	**University of Pennsylvania**
Teaching Assistant:	*Introduction to Microeconomics*, (Fall 2019, Fall 2020)
	Introduction to Macroeconomics, (Spring 2020)
	Introduction to Econometrics, (Spring 2021)
2014-2016	**Universidad de Costa Rica**
Lecturer:	*Calculus II*, Mathematics Department (S1 2015)
	Introductory Economics, Economics Department, (S1 2014 to S1 2015)
Teaching Assistant:	*Macroeconomic Theory II*, (S2 2016)
	Microeconomic Theory I, (S1 2014 to S1 2015), Economics Department

Research Experience

Research Assistant	Prof. Francis X. Diebold (Summer 2021-Spring 2024)
	Prof. Juan C. Castillo and Prof. Amit Gandhi (Spring, Summer 2021)
	Prof. Karun Adusumilli (Summer 2020)
Junior Researcher	Central Bank of Costa Rica (2016-2017)
	Economic Division, Economic Research Department

Professional Activities

Referee	International Economics Review
External Conferences & Seminars	2023 - 33rd Annual Meeting of the Midwest Econometrics Group *at* Federal Reserve Bank of Cleveland
	- International Assoc. for Applied Econometrics Annual Conference *at* BI Norwegian Business School
	2022 - 17th Economics Graduate Students' Conference *at* Washington University in St. Louis
	- 3rd Rising Scholars Conference *at* Chicago University Booth School of Business
	- 2da Conferencia Economistas CR (Econ CR 2022) *at* Universidad de Costa Rica
	2021 - 1ra Conferencia Economistas CR (Econ CR 2021) *at* Universidad de Costa Rica

Scholarships & Awards

2023	Best Student Paper Award, 33rd Annual Meeting of the Midwest Econometrics Group
2022, 2023	School of Arts and Sciences Dean's Travel Award
2022	Hiram C. Haney Fellowship Award in Economics for best 3rd-year research paper University of Pennsylvania
2019-2024	Ph.D. Fellowship, School of Arts and Sciences, University of Pennsylvania
2017-2019	Research Fellowship, Central Bank of Costa Rica
2015	Masters Fellowship, Toulouse School of Economics
2014, 2011	Honor Scholarships at Universidad de Costa Rica

Publications

2020 Information rigidities and rationality on inflation expectations of Costa Rican agents. (With Alonso Alfaro) in *Inflation Expectations, Their Measurement and the Estimate of Their Degree of Anchoring* edited by A. Guarín, L. Melo and E. González, Center for Latin American Monetary Studies (CEMLA)'s Joint Research Program. Link

Working Papers

"*Revealed Preference for Green Stocks: An Asset Demand Approach*" (Job Market Paper)

Winner of the Best Student Paper Award of the 33rd Annual Meeting of the Midwest Econometrics Group, 2023

This paper combines a traditional portfolio construction problem with demand estimation techniques to estimate the demand for green stocks of US institutional investors. The methodology presented innovates along two dimensions with respect to recent influential work on asset demand estimation. First, in our framework investors have heterogeneous portfolios not only through differential beliefs about future returns, but also because they place varying importance on the non-financial characteristics of the portfolios they construct. Second, by using a mixed logit demand specification, we can estimate asset demand that delivers more realistic substitution patterns across assets. Using data on the environmental performance of firms and quarterly stock holdings data from institutional investors, we estimate the demand for stocks accounting for environmental scores and return-related stock characteristics. We find that taste for green stocks fluctuates over time and by investor's assets under management. In a counterfactual exercise we study the equity price effects of a ban on green investing for pension funds; we find that a portfolio with the top brown stocks is estimated to have capital gains of 5.9% due to the policy, while a portfolio with the top green stocks is estimated to have capital losses of 7.3%.

"*Exchange Rate Supervised Topic Extraction*"

Winner of the Hiran C. Haney Fellowship Award in Economics, University of Pennsylvania, 2022

This paper shows how to use a hybrid of supervised and unsupervised learning models to go from text from news articles to an FX news index that can be used to enhance traditional models from the FX literature. To do so we rely on Supervised Latent Dirichlet Allocation (sLDA) which combines information about a supervising variable with topic extraction over a corpus of text in a single-stage estimation. Although this estimation can be done in two stages, we document with a Monte Carlo simulation that there are efficiency gains from a single-stage approach. The empirical application is centered around the Monex Market, the main Costa Rican platform for FX trade; accordingly, news articles are gathered from the main Costa Rican newspapers. The exchange rate of interest is the Costa Rican Colón (CRC), the local currency, and the United States dollar (USD). Using the CRC/USD exchange rate as the supervising variable, we suggest using sLDA to extract the topics from the news article corpus that are relevant as covariates for the exchange rate over short frequencies.

"*On Robust Inference in Time Series Regression*" (with Richard T. Baillie, Francis X. Diebold, George Kapetanios and Kun Ho Kim)

Least squares regression with heteroskedasticity and autocorrelation consistent (HAC) standard errors has proved very useful in cross section environments. However, several major difficulties, which are generally overlooked, must be confronted when transferring the HAC estimation technology to time

series environments. First, in plausible time-series environments involving failure of strong exogeneity, OLS parameter estimates can be inconsistent, so that HAC inference fails even asymptotically. Second, most economic time series have strong autocorrelation, which renders HAC regression parameter estimates highly inefficient. Third, strong autocorrelation similarly renders HAC conditional predictions highly inefficient. Finally, the structure of popular HAC estimators is ill-suited for capturing the autoregressive autocorrelation typically present in economic time series, which produces large size distortions and reduced power in HAC based hypothesis testing, in all but the largest samples. We show that all four problems are largely avoided using a simple dynamic regression procedure, which is easily implemented. We demonstrate the advantages of dynamic regression with detailed simulations covering a range of practical issues.

"*Order Flow, Market Making and Exchange Rates: Costa Rica's Monex Market*"

The cornerstone result of the market microstructure literature in FX markets is that the order flow, the difference between buyer-initiated and seller-initiated transactions, is a key determinant of the exchange rate short-run dynamics. This paper advocates studying the short-term dynamics of the Costa Rican Colón to United States Dollar exchange rate generated in the Monex market by employing market microstructure tools. Using transaction level data for 729 trading days we gather evidence that the order flow has explanatory power on the short-term dynamics of exchange rate returns, even after accounting for a feedback effect. Additionally, we show evidence suggesting that the informational content of the order flow has persistent effects. Finally, when characterizing the role of the interventions by the monetary authority on the market, data shows that interventions affect the informational content of the order flow, and that the monetary authority acts as a liquidity provider and a market maker in the Monex platform.

Professional Experience

Aug-Nov 2014	Intern at **Ernst & Young, Costa Rica** *Actuarial Science Department*
Mar-Aug 2013	Junior Inspector at **Comptroller General of the Republic, Costa Rica** *Comptroller's Office, Corporate Governance Unit*

Other Certificates

2020	TensorFlow Developer Professional Certificate Coursera program offered by `deeplearning.ai`
2018	Barcelona GSE Summer School: The Data Science toolbox and Bayesian Machine Learning in Social Sciences courses
2018	Deep Learning Specialization, Coursera program offered by `deeplearning.ai`

Programming Languages

Advanced Knowledge:	R, Julia, Python, Matlab, LaTeX, Excel
Intermediate Knowledge:	TensorFlow, Mathematica, VisualBasic
Basic Knowledge:	SageMath, Stata, HTML, JavaScript, Eviews
Cloud Platform Experience:	Azure

Personal Information

Full Legal Name:	Aarón de Jesús Mora Meléndez
Citizenship:	Costa Rican (F1 visa in an STEM field)
Languages:	Spanish (native), English (fluent), French (proficient)