Juan Arismendi Zambrano, D.Phil.

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Michael Smurfit Graduate Business School E-mail: juan.arismendi-zambrano@ucd.ie

Blackrock, Dublin, A94 XF34, Ireland WWW: www.smurfitschool.ie

RESEARCH INTERESTS Asset pricing, financial econometrics, multivariate statistics, financial stability, data science in finance and economics, big data in economics, risk management, quantitative finance, multi-asset option pricing, algorithmic trading, numerical methods for complex option pricing, portfolio optimisation.

EDUCATION

D.Phil. in Finance (Quantitative Finance), ICMA Centre – Henley Business School, University of Reading (AACSB, AMBA, EQUIS), 2013

Ph.D. in Mathematics (ABD), Simón Bolívar University, 2006 – 2009

M.Sc. in Finance, The Institute of Superior Studies in Administration – IESA

(AACSB, AMBA, EQUIS), 2007

M.Sc. in Computer Science (Artificial Intelligence/Machine Learning Applied to Finance),

Simón Bolívar University, 2006

B.Sc. in Computer Engineering, Simón Bolívar University, 2001

SELECTED PUBLICATIONS

1. Informativeness of the Federal Reserve Chair Communication's Sentiment on the Monetary Policy Uncertainty (Previously known as Federal Reserve Chair Communication Sentiments' Heterogeneity, Personal Characteristics, and their Impact on Uncertainty and Target Rate Discovery) (with E. Kypraios and A. Paccagnini) Annals of Operations Research, https://doi.org/10.1007/s10479-024-06414-6, 2024

Conferences: Irish Finance Association Annual Meeting, UCC Cork – Ireland, Dec 2017, FinTech: A FINancial supervision and TECHnology compliance training programme, Central Bank of Ireland – Dublin, Feb 2020, International Conference on Computational and Financial Econometrics – London, Dec 2020, Society for Computational Economics 27th International Conference on Computing in Economics and Finance – Online, May 2021 (C), Center for Latin American Monetary Studies (CEMLA) - Conference on New Advances in International Finance - Mexico City, April 2022, IBEFA session at the 97th Annual Conference of the Western Economic Association International (WEAI) meeting – Portland, OR, July 2022, 8th Annual Conference of the International Association for Applied Econometrics (IAAE) - London, May 2022 (C), European Economic Association (EEA) Congress- Milan, Aug 2022 (C), 2022 Conference on Monetary Policy: Heterogeneity, Communication and Subjective Inflation Expectations from the Central bank of Colombia – Bogota, Nov 2022, and the Society for Nonlinear Dynamics and Econometrics – Orlando, FL, Mar 2023. Research Seminars: Department of Mathematics and Statistics, Maynooth – Ireland Dec 2017, Department of Economics, Maynooth – Ireland Dec 2017, Department of Economics, University College of Dublin, Feb 2018, Hamilton Institute, Dublin – Ireland Jul 2018, School of Business, Maynooth - Ireland, Dec 2019, IMF Research Seminar - Washington D.C., Mar 2023, Lubrafin (Luso – Brazilian) Finance Meeting – Recife, Jun 2024

2. The implications of dependence, tail dependence, and bounds measures for counterparty credit risk pricing (Previously known as "The Implications of Tail Dependency for Counterparty Credit Risk Pricing") (with H. Kimura, V. Belitsky, and V. A. Sobreiro) – Journal of Financial Stability, Volume 58, February 2022

Conferences: 11th Research in Options (RiO), Rio de Janeiro – Brazil, Nov 2016, 8th World Finance Conference, Sardinia – Italy (A), Jul 2017, Financial Management Annual Meeting, Boston, MA – United States, Oct 2017

3. Equity Premium Predictability from Cross-Sectoral Downturns, (with J. Faias), Review of Asset Pricing Studies, Volume 12, Issue 3, September 2022, Pages 808–842

Conferences: Financial Management Annual Meeting, Las Vegas, NV – United States (C),² Oct 2016, 6th Research in Options (RiO), Rio de Janeiro – Brazil (C), Nov 2016, 24th Annual Conference of the Multinational Finance Society, Bucharest – Romania (C), Jun 2017, Foro de Finanzas, Barcelona – Spain (C), Jul 2017, European Finance Association Annual Meeting, Manheim – Germany (C), Aug 2017, 18th Brazilian Meeting of Finance, São Paulo – Brazil, Jul 2018, Irish Economics Association, Annual Meeting, Cork – Ireland, May 2019, 37th International Conference of the French Finance Association (AFFI), Audiencia, Nantes – France (Online), May 2021

- On Quadratic Forms in Multivariate Generalized Hyperbolic Random Vectors (with S. Broda), Biometrika, Vol. 108, Issue 2, pp. 413–424, 2021
- Multivariate Truncated Moments, Journal of Multivariate Analysis, Vol. 117, pp. 41–75, 2013

Conferences: 6th Research in Options (RiO), Angra Dos Reis – Brazil, Nov 2011, 4th World Finance Conference, Limassol – Cyprus, Jul 2013

SELECTED WORKING PAPERS

1. The Efficiency vs. Pricing Accuracy Trade-Off in GMM Estimation of Multifactor Linear Asset Pricing Models (with M. Lozano and M. Guidolin) (Revise & Resubmit to Journal of Business & Economics Statistics)

Conferences: Research in Finance Seminar – University of Castilla-La Mancha (C), Oct 2008, 16th AEFIN Finance Forum – ESADE Business School, Barcelona (C), Nov 2008, International Conference on Finance – National Taiwan University (C), Dec 2008, Southwestern Finance Association 48th Annual Meeting – Oklahoma City (C), Feb 2009, Royal Economic Society Conference – London (C), Apr 2009, Symposium in Statistics and Econometrics – Lausanne (C), Apr 2009, Eastern Finance Association Annual Meeting – Washington D.C. (C), May 2009, Asian Finance Association Conference – Brisbane (C), Jul 2009, and at the Symposium in Economics and Finance – Geneva (C), Jul 2009, World Congress of the Econometric Society - Milan (C), Aug 2020, Frontiers of Factor Investing - Lancaster, Jan 2021, 37th International Conference of the French Finance Association (AFFI) - Audiencia, Nantes (Online), May 2021, Econometric Research in Finance (ERFIN), Warsaw, Sep 2021, Society For Financial Econometrics (SOFIE) Annual Meeting – Rio de Janeiro, Jul 2024, Brazilian Meeting of Finance (EBFin) Curitiba, Jul 2024, 12th Bachelier World Congress - Rio de Janeiro, 2024, EEA/ESEM Annual Meeting – Rotterdam, Aug 2024

Prizes: First prize for the category of Quantitative Methods, in the Brazilian Meeting of Finance 2024.

¹A: Accepted presentation

²C: Co-author presentation

2. Implicit Entropic Market Risk from Interest Rate Derivatives (with R. Azevedo) (Second Revise & Resubmit to Journal of Financial Econometrics)

Conferences: 11th Research in Options (RiO), Rio de Janeiro – Brazil (C), Nov 2016, 11th International Risk Management Conference, Paris – France, 2018, 37th International Conference of the French Finance Association (AFFI) - Audiencia, Nantes (Online), May 2021, 12th Bachelier World Congress – Rio de Janeiro, Jul 2024

3. Intraday Returns Forecasting using Machine Learning: Evidence from the Brazilian Stock Market (with H. Alexandre and A. De Genaro) (Submitted to International Review of Financial Analysis)

Conferences: Annual Meeting of the Business Association for Latin American Studies (BALAS) – São Paulo, Jul 2024.

Work in Progress

 Arbitrage, Heterogeneous Firms, and Latent Asymptotics in a Heterogeneous Factor Economy

Conferences: 18th International Risk Management Conference, Jun 2025 – Bari, 13th International Association for Applied Econometrics, Jun 2025 – Turin.

Abstract: A significant number of economic equilibrium models use component variables (agents, firms, commodities), with a infinite or a continuous population domain, that are heterogeneous variables in the physical reality. Arbitrage models, and arbitrage pricing theory (APT) in particular, rely in the use of the Law of Large Numbers (LLN) with the assumption of an i.i.d. distribution of these component variables (firms) in their sample domain, to eliminate the non-systematic risk and to derive its equilibrium result. The i.i.d. of the "growing N to infinity" asymptotics is a non-realistic assumption considering the heterogeneous nature of these component variables, and it can lead to the rejection of the model in empirical tests. By assuming the existence of the arbitrage equilibrium, we derive the implicit underlying (non)-i.i.d. Law of Large Numbers (LLN) under which the economic equilibrium holds. We provide two algorithms to derive the implicit non-i.i.d. Law of Large Numbers (LLN): (i) latent asymptotic firm characteristics method and a (ii) economic characteristics proxy method. We define this extended APT model as the the heterogeneous factor economy model where we replace the i.i.d. asymptotics by a characteristic-weighted asymptotics approach. Empirical tests show that (i) the heterogeneous factor economy model remains valid in cases where traditional APT factor models are rejected, and (ii) when the economic characteristics proxy method is used, the firm size, assets under management (AM), industry concentration (HerfBE), research and development (RD), and leverage characteristics represent better the heterogeneity of the variables in the non-i.i.d. diversification of non-systematic risk.

- 2. High-Frequency Identification of the Private Information Disclosure after Press Conferences: The Case of the Fed (Machine Learning/Macro-Finance Area). Conferences: 27th International Conference Computing in Economics and Finance (The Society for Computational Economics), Online, Jun 2021
- 3. A Higher-Order Approximation of the Generalized Method of Moments Standard Error (Econometrics/Statistics Area)
- 4. Tests of Asset Pricing Models with \mathcal{L}_1 Regularizations (*Econometrics/Statistics Area with C. Robotti*)

Publications -Academic Conferences (Peer Reviewed)

 Tail Systemic Risk And Contagion: Evidence From the Brazilian and Latin America Banking Network (with M. Rivera-Castro, A. Ugolini), Emerging Markets Review
 Vol. 35, pp 164–189, 2018

Conferences: 4th Paris Financial Management Conference, Paris – France, Dec $2016\,$

 A Moment Based Analytic Approximation of the Risk-neutral Density of American Options (with M. Prokopczuk), Applied Mathematical Finance, 2017

Conferences: 9th Research in Options (RiO), Buzios – Brazil, Nov 2014, 6th World Finance Conference, Buenos Aires – Argentina, Jul 2015

3. Multivariate Elliptical Truncated Moments (with S. Broda), Journal of Multivariate Analysis - Vol. 157, pp. 29–44, 2017

Conferences: Financial Engineering and Banking Society, Nantes – France, Jun 2015, Brazilian Meeting of Finance, São Paulo – Brazil (A), Jul 2015, ISI World Statistics Congress, Rio de Janeiro – Brazil, Jul 2015, ISI World Statistics Congress, Marrakesh – Morocco (A), Jul 2017

- 4. The Profitability of Moving Average Trading Rules in BRICS and Emerging Stock Markets: A Computational Experiment (with V. Sobreiro, T. da Costa, R. Nazário, J. Silva, E. Moreira, M. Lima, H. Kimura), North American Journal of Economics and Finance, Vol. 38, pp. 86–101, 2016
- 5. Validation of Default Probability Models: A Stress Testing Approach (with F. Y. Tsukaharaa, H. Kimura, V. A. Sobreiro), International Review of Financial Analysis, Vol. 47, pp. 70–85, 2016
- Monte Carlo Approximate Tensor Moment Simulations (with H. Kimura), Numerical Linear Algebra with Applications, Vol. 23, Issue 5, pp. 825–847, 2016

Conferences: Meeting of the National Association of Postgraduate Courses and Research in Administration – EnANPAD, Rio de Janeiro – Brazil (C), Sep 2014, Financial Engineering and Banking Society, Nantes – France, Jun 2015, Brazilian Meeting of Finance, São Paulo – Brazil (A), Jul 2015

7. A Monte Carlo Multi-asset Option Approximation for General Stochastic Processes (with A. De Genaro), Chaos, Solitons & Fractals, Vol. 88, pp. 75–99, 2016

Conferences: Mathematical Finance Days, Montreal – Canada, Apr 2013, Brazilian Meeting of Finance, Recife – Brazil, Jul 2014, 8th World Congress of the Bachelier Finance Society, New York – United States (A), Jul 2014

8. Seasonal Stochastic Volatility: Implications for the Pricing of Commodity Options (with J. Back, M. Prokopczuk, R. Paschke, M. Rudolf) Journal of Banking and Finance – Vol. 66, pp. 53–65, 2016

Conferences: Financial Engineering and Banking Society, Nantes – France, Jun 2015, International Risk Management Conference, Luxembourg City – Luxembourg, Jun 2015, Brazilian Meeting of Finance, São Paulo – Brazil, Jul 2015, 10th Research in Options (RiO), Rio de Janeiro – Brazil, Nov 2015, 7th World Finance Conference, New York – United States, Jul 2016

Publications - Book Chapters

Higher-Order Tail Moments in Asset-Pricing Theory, Handbook of Global Financial Markets: Transformations, Dependence, and Risk Spillovers, 2018 (Finance – Asset Pricing Area)

Conference Discussant

4th World Finance Conference, Jul 2013, Limassol – Cyprus, 14th Brazilian Meeting of Finance, Jul 2014, Recife – Brazil, 6th World Finance Conference, Jul 2015, Buenos Aires – Argentina, 15th Brazilian Meeting of Finance, Jul 2015, São Paulo – Brazil, 7th World Finance Conference, Jul 2016, New York – United States, 4th Paris Financial Management Conference, Dec 2016, Paris – France, Midwest Finance Association Conference, Mar 2017, Chicago, IL – United States, 18th Brazilian Meeting of Finance, Jul 2018, São Paulo – Brazil, 8th FIMEF Financial Research Congress, Aug 2018, Monterrey – Mexico, 14th International Conference on Computational and Financial Econometrics, Dec 2020 – United Kingdom

Publications Discussed / Commented

Kim, S., & Korajczyk, R. (2024). Large Sample Estimators of the Stochastic Discount Factor. Journal of Financial Econometrics (forthcoming). Caruso-Bloeck, M., Mello, M., & Ponce, J. (2023). News of disinflation and firms expectations: New causal evidence. Journal of International Money and Finance, 137, 102914. Bianchi, D., De Polis, A., & Petrella, I. (2022). Taming Momentum Crashes. SSRN Electronic Journal. Connor, G., & Korajczyk, R. (2022). Semi-Strong Factors in Asset Returns. Journal of Financial Econometrics, 22(1), 7093. Bertsch, C., Hull, I., & Zhang, X. (2021). Narrative fragmentation and the business cycle. Economics Letters, 201, 109783. Christensen, J., Rudebusch, G., & Shultz, P. (2020). Accounting for Low Long-Term Interest Rates: Evidence from Canada. Federal Reserve Bank of San Francisco, Working Paper Series, 1.00072.000.

REVIEWING ACTIVITY

Finance: Journal of Banking & Finance, Energy Economics (2), Journal of Financial Econometrics, Journal of International Financial Markets, Institutions & Money (5), Journal of Commodity Markets, International Journal of Finance and Economics (4), Quantitative Finance, Brazilian Review of Finance (6). Economics/Macro-economics/Central Banking: Economic Modelling, Applied Economics, Latin American Journal of Central Banking (2). FinTech: Financial Innovation, Digital Finance. Statistics: Journal of Multivariate Analysis (4), Communications in Statistics – Theory and Methods, Statistics and Probability Letters. Physics: Chaos, Solitons and Fractals

Policy Work/ Consulting

Brainpool, London, United Kingdom

August 2020 to Present

WikiStrat, Washington D.C., United States

Senior Analyst

October 2016 to Present

ACADEMIC EXPERIENCE

School of Business, University College of Dublin (UCD), (AACSB, AMBA, EQUIS), Dublin - Ireland

Lecturer (Assistant Professor) of Banking and Finance, teaching the FIN42050 Quantitative Methods, FIN30160 Financial Economics II (Derivatives-Itô Calculus), and FIN42120 Programming for Financial Data Science (Programming with Python) modules.

Aug 2021 - Today

ICMA Centre, Henley Business School, University of Reading, (AACSB, AMBA, EQUIS), Reading - United Kingdom

Visiting Research Fellow

Nov 2013 - Today

Kellogg School of Management, Northwestern University, (AACSB, AMBA, EQUIS), Evanston, Il - United States of America

Visiting Scholar

Sep 2021 - Aug 2022

Maynooth University, National University of Ireland (NUI), Maynooth - Ireland, (Tenured)

Lecturer (Assistant Professor) of Department of Economics, Finance, and Accounting. Taught FN205 Corporate Finance, FN312 Advanced Financial Modelling (Programming for Financial Economics), FN607A Financial Economics, FN314 International Banking

Aug 2017 - Jul 2021

University of Monterrey (UDEM), Monterrey - México, (Tenured)

Assistant Professor – Department Director, Business School, Department of Economics, Finance, and Accounting. Taught CO2080 Financial Markets, CO3080 Portfolio Management, and CO3085 Risk Management modules

Dec 2016 - May 2017

Technological Institute of Superior Studies of Monterrey (ITESM), León - México

Senior Visiting Professor of Business School, Department of Finance. Taught EC2003 Financial Econometrics, FZ2017 Fixed Income and Structured Products, FZ3006 Financial Programming (programming with MATLAB), FZ3031 Risk Management and Regulations, and FZ36032 Investment Advisor modules

Aug 2016 - Nov 2016

Federal University of Bahia (UFBA), Salvador - Brazil

Assistant Professor of Faculty of Economics. Taught ECo-001 Introduction to Economics (Micro and Macro), ECO-189 Econometrics III (Time Series Analysis), ECO-191 Quantitative Methods for Economics (Linear Algebra with Applications in Economics)

Aug 2015 - Jul

2016

University of Brasilia (UnB), Brasilia - Brazil

Brazil National Research Grant (PNPD-CAPES 2013)

Postdoc Research Fellow

Nov 2013 - Oct 2015

Research Fellow

Feb 2014 - Mar 2015

ICMA Centre, Henley Business School, University of Reading, (AACSB, AMBA, EQUIS), Reading - United Kingdom

Teaching Assistant of M.Sc. Financial Engineering and B.Sc. Finance and Investment Banking

Sep 2009 - Dec 2011

Simón Bolívar University, Sartenejas, Caracas - Venezuela

Teaching Assistant of Department of Computing and Information Technology

April 2006 - January 2007

Teaching Assistant of Department of Scientific Computing and Statistics

April 2003 - April 2005

Grants

UCD College Of Business Policy Promoting Excellence Grant R26620 (EUR 14,000)

Apr 2023 - Mar 2025

UCD College Of Business Policy Promoting Excellence Grant R23319 (EUR 14,000)

Apr 2022 - Mar 2024

Brazil National Research Grant (PNPD-CAPES 2013) (USD 90,000)

Postdoc Research Fellow

Nov 2013 - Oct 2015

Academic Awards

ICMA Centre Research Fellowship - Ph.D. in Finance (GBP 45,000), 2009–2013. Wilmott Scholarship - Certificate in Quantitative Finance (CQF) Scholarship (GBP 6,000), 2008. FONACIT Ph.D. Scholarship - Mathematics - Finance (USD 36,000), 2006–2013. Foundation Gran Mariscal de Ayacucho M.Sc. Scholarship - Finance, 2003. Finalist at Venezuela Mathematics Olympics CENAMEC (Top 500 students at national level), 1995. Foundation Gran Mariscal de Ayacucho Scholarship GALILEO PROGRAM (Top 150 students at national level), 1994.

Thesis Supervised

Undergraduate

Rory Grant, Maynooth University, Analysing Oil Markets and Biofuels and their Influence on Agricultural Commodities, May, 2018

Liam Fachtna Gaughan, Maynooth University, An Investigation of a Credible Target Zone Between the Pound Sterling and The US Dollar, May, 2019

Does Short-Run Volatility In Commodity Prices Have A Long-Run Impact On Commodity Producers?, Owen Kenny, May, 2019

Postgraduate

Jagrit Anand, Maynooth University, Risk Analytics and Sentiment Analysis of 10-K Stock Reports, May, 2020

Gregory J. Cahill, Maynooth University, *Economic Catastrophe Bonds during COVID-19 Pandemia*, May, 2020

Owen Kenny, Maynooth University, A CoVaR Analysis of the Oil Prices Impact on Agriculturals Commodities, May, 2020

Professional Experience

BancTrust & Co.

Quantitative Strategist

September 2012 to December 2012

Clever Financial

Non-Executive Risk Management Director

January 2009 to July 2009

Vice-president of Investment

December 2003 to December 2008

Financial Intelligence Systems

CEO - Founder

October 2004 to 2008

Wincor Nixdorf

Internship

April 2001 to September 2001

Microsoft

Internship

March 2000 to October 2000

Professional Qualifications

Fitch - 7city Learning Centre

Certificate in Quantitative Finance.

February 2009

Securities and Investments Institute - United Kingdom

Certificate in Investment Management - Level 3 Certificate.

December 2008

Unit 05 - Investment Management

Unit 06 - Principles of Financial Regulation

Financial Industry Regulatory Authority - FINRA

Investment Advisor Law Examination Series 65 - EEUU.

November 2008

Global Association of Risk Professionals - GARP

Financial Risk Manager.

November 2008

Professional Risk Manager Association - PRMIA

Professional Risk Manager.

January 2008

Metropolitan University, CENDECO - Caracas, Venezuela

Financial Engineer Diploma.

July 2007

Volunteer Service

FVAS (Venezuelan Federation of Underwater Activities), Caracas - Venezuela

Sports Section Director

Jan 2001 - Dec 2001

CESUSIBO (Underwater Scuba Diving Club) Simón Bolívar University, Caracas - Venezuela

Sports and Competition Section Director

Apr 1990 - Mar 2006

AIESEC Simón Bolívar University Chapter, Caracas - Venezuela

Seminar: Local chapter seminar and National Leadership seminar.

Mar - Apr 1999

Congress of National Secular Association (Catholic), Caracas - Venezuela

Organizer - Assistant

Jul 1994

SPORTS

10th World Finswimming Championship - Palma de Mallorca ACHIEVEMENT

Selected as member of the national finswimming team and classified for the World Cup.

October 2000

LANGUAGES English (fluent), Spanish (native), Portuguese (fluent).

TECHNICAL SKILLS Extensive hardware and software experience in networking and information technology:

Programming: MATLAB: linear algebra, calculus, Fourier transforms, nonlinear numerical methods, polynomials, statistics, visualization, datafeed, finance, financial time series, fixed-income, genetic algorithm and direct search, linear and non-linear optimisation. Python, R, C, C++, Stata, EViews, MS Visual Basic, VBA, Java, Lisp, Fortran, SQL, NLTK, Quantlib, CUDA. Office Applications: TFX, LATEX, BIBTEX, Microsoft Office. Databases: WRDS, CRSP, Compustat, Bloomberg, Datastream, Economatica. Operating Systems: Microsoft Windows: 3.1, 1995, 1998, XP/2000, 7, 10, Linux: Red Hat, SuSe.

References

Prof. Chris Professor of Finance

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Reading, RG6 6BA, UK WWW: www.icmacentre.ac.uk

Prof. Gregory

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Prof. Massimo GUIDOLIN Professor of Finance

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Director of the Asset Risk Management

Prof. Robert Korajczyk

Harry G. Guthmann Professor of Finance

Kellogg School of Management,

Northwestern University

Co-Director, Financial Institutions and

Markets Research Center

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WWW: www.kellogg.northwestern.edu

Prof. Rowena

Pecchenino Professor of Economics

 ${\it May nooth~University,~National~University} \\ {\it of~Ireland,~Rhetoric~House,~Room~27,} \\$

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