CURRICULUM VITAE
Rafael Mendoza-Arriaga

Information, Risk, & Operations Management (IROM)
McCombs School of Business

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EDUCATION

- Ph.D. Industrial Engineering & Management Sciences. *Northwestern University*, 2009.
- M.Sc. Industrial Engineering & Management Sciences. *Northwestern University*, 2005.
- M.Sc. Mathematical Finance. *University of Toronto*, 2002.
- B.Sc. Engineering Physics. *Instituto Tecnológico y de Estudios Superiores de Monterrey*, 1999.

AREA OF SPECIALIZATION

Financial Mathematics, Stochastic Processes, Quantitative Finance, Risk Management, Derivative Pricing: Credit and Credit-Equity models, Commodity and Energy Markets.

EMPLOYMENT

ACADEMIC POSITIONS

- 2009-present   Assistant Professor. Dept. of Information, Risk and Operations Management. McCombs School of Business, University of Texas at Austin.

INDUSTRIAL EXPERIENCE

- Citadel Investment Group L.L.C.

  - Quantitative Researcher, Summer 2007.

- Algorithmics Inc. (now IBM Risk Analytics)

  - Financial Engineer, 2000-2001 (México), 2002-2004 (Canada), Summer 2005 (U.S.).

HONORS, AWARDS

- *INFORMS Section in Finance*. Vice-chair of section.
- *SIAM Activity Group in Financial Mathematics & Engineering*. Nominated to run for the position of secretary during the 2015-2017 service period.
- *McCombs Research Excellence Fund*, McCombs School of Business, 2013.
- *Society of Teaching Excellence* of the School of Undergraduate Studies and the Academy of Distinguished Teachers at the University of Texas at Austin, 2011.
- *George L. Nemhauser Dissertation Prize*, best dissertation in two consecutive years, IEMS Northwestern University, 2009.
- *Terminal Year Fellowship*, McCormick School of Engineering, Northwestern University, 2008.
- *Fellowship Minority MEAS Tuition Grant*, IEMS Northwestern University, 2004.
- *Fellowship UofT Masters of Mathematical Finance*, Algorithmics Inc., 2001.

- *Graduated with Honors* from Instituto Tecnológico y de Estudios Superiores de Monterrey, 1999.

Research

Journal Papers – Published/Accepted

- Lorig, M., O. Lozano-Carbassé, and R. Mendoza-Arriaga (2016). Variance Swaps on Defaultable Assets and Market Implied Time-Changes. *SIAM Journal on Financial Mathematics 7*(1), 273-307.

- Li J., L. Li, and R. Mendoza-Arriaga (2016). Additive Subordination and Its Applications in Finance. *Finance and Stochastics 20*(3), 589-634.

- Li, L., R. Mendoza-Arriaga and D. Mitchell (2016). Analytical Representations for the Basic Affine Jump Diffusion. *Operations Research Letters 44*(1), 121-128.

- Li, L., R. Mendoza-Arriaga, M. Zhiyu and D. Mitchell (2016). Modeling Electricity Prices: A Time Change Approach. *Quantitative Finance 16*(7), 1089-1109.

- Mendoza-Arriaga, R. and V. Linetsky (2014). Time-Changed CIR Default Intensities with Two-Sided Mean-Reverting Jumps. *The Annals of Applied Probability 24*(2), 811-856.

- Mendoza-Arriaga, R. and V. Linetsky (2016). Multivariate Subordination of Markov Processes with Financial Applications. *Mathematical Finance 26*(4), 699-747.

- Mitchell, D., P. L. Brockett, R. Mendoza-Arriaga, and K. Muthuraman (2013). Modeling and Forecasting Mortality Rates. *Insurance: Mathematics and Economics 52*(2), 275–285.

- Li, L. and R. Mendoza-Arriaga (2013). Ornstein-Uhlenbeck Processes Time Changed with Additive Subordinators and Their Applications in Commodity Derivative Models. *Operations Research Letters 41*(5), 521–525.

- Mendoza-Arriaga, R. and V. Linetsky (2011). Pricing Equity Default Swaps under the Jump to Default Extended CEV Model. *Finance and Stochastics 15*(3), 513–540.

- Mendoza-Arriaga, R., P. Carr, and V. Linetsky (2010). Time Changed Markov Processes in Credit-Equity Modeling. *Mathematical Finance 20*(4), 527–569.

- Burmeister, C., H. Mausser, and R. Mendoza (2005). Actively Managing Tracking Error. *Journal of Asset Management 5*(6), 410–422.

Journal Papers – Under Review/Revision

- Li, L. and R. Mendoza-Arriaga (2016). Equivalent Measure Changes for Subordinate Diffusions.

- Sun, Y., R. Mendoza-Arriaga, and V. Linetsky (2016). Marshall-Olkin Distributions, Subordinators, Efficient Simulation, and Applications to Credit Risk.

Book Chapters and Other Publications

- Linetsky, V. and R. Mendoza-Arriaga (2011). Unified Credit-Equity Modeling. In T. Bielecki, D. Brigo, and F. Patras (Eds.), *Credit Risk Frontiers: Subprime Crisis*, *Pricing and Hedging*, *CVA*, *MBS*, *Ratings and Liquidity*. New Jersey: Bloomberg Press.

- Sun, Y., R. Mendoza-Arriaga, and V. Linetsky (2011). Valuation of Collaterized Debt Obligations (CDOs) in a Multivariate Subordinator Model. In S. Jain, R. R. Creasey, J. Himmelspach, K. P. White, and M. Fu (Eds.), *Proceedings of the 2011 Winter Simulation Conference*.

- Linetsky, V. and R. Mendoza (2010). The Constant Elasticity of Variance Model. In R. Cont (Ed.), *Encyclopedia of Quantitative Finance*. Chichester, West Sussex: Wiley.

- Burmeister, C., H. Mausser, and R. Mendoza (2006). Techniques for Managing Tracking Error. In T. P. Ryan (Ed.), *Portfolio Analysis: Advanced Topics in Performance Measurement, Risk and Attribution.* London: Risk Books.

Working Papers

- Malladi, V., and R. Mendoza-Arriaga (2016). Dynamics of Credit Ratings with Subordinated Processes. *Working paper*.

- Malladi, V., S. Tompaidis, and R. Mendoza-Arriaga (2016). Modeling the Electricity Supply Stack with Time-subordinated Processes. *Working paper*.

- Li, L., and R. Mendoza-Arriaga (2015). State- and Time-inhomogeneous Default Intensity Model for Bilateral Counterparty Risk for CDS with Simultaneous Defaults. *Working paper*.

- Li, L., and R. Mendoza-Arriaga (2015). Analytical Solutions to Classic Stochastic Volatility Models. *Working paper*.

Teaching Experience

McCombs School of Business

- RM 391. *Mathematics in Finance (Ph.D.)* Spring 2016. Jointly with Prof. Zariphopoulou.
- STA 372. *Quantitative Finance: Models, Tools & Applications.* Fall 2015. Jointly with Prof. Zariphopoulou.
- STA 371G. *Statistics and Modeling.* Fall 2013-2015.
- STA 309H. *Elementary Business Statistics Honors.* Fall 2010-2012.
- STA 309. *Elementary Business Statistics.* Spring 2010.

Northwestern University

- IEMS 326. *Economics & Finance for Engineers.* Spring 2009.

Computational Skills

- *Operating Systems:* Linux, Unix, OS X, Windows.
- *Specialized Computing Software:* Python, Mathematica, Matlab, C++, VBA.

Invited Seminars and Workshops

2014

- *Stanford University.* Stanford, CA. Department of Management Science & Engineering Seminar. "Time-Dependent Modeling Via Additive Subordinators: Applications to Energy Markets".
- *Johns Hopkins University.* Baltimore, MD. Department of Applied Mathematics and Statistics Seminar. "Time-Dependent Modeling Via Additive Subordinators: Applications to Energy Markets".

2012

- *UC Berkeley.* Berkeley, CA. Workshop on Probability and Statistics in Finance. "Positive Subordinate CIR Processes with Two-Sided Mean-Reverting Jumps"
- *Purdue University.* West Lafayette, IN. 8th. International Purdue Symposium on Statistics: Quantitative Finance. "Positive Subordinate CIR Processes with Two-Sided Mean-Reverting Jumps and Default Correlation and Clustering"

2011

- *Fields Institute.* Toronto, Canada. Fields Quantitative Finance Seminar. "Constructing Markov Processes with Dependent Jumps by Multivariate Subordination: Applications to Multi-Name Credit-Equity Modeling"

2010

- *Fields Institute.* Toronto, Canada. Industrial-Academic Forum on Credit-Hybrid Risk. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *Texas Quantitative Finance Festival.* Austin, TX. McCombs School of Business. "Constructing Markov Processes with Dependent Jumps by Multivariate Subordination: Applications to Multi-Name Credit-Equity Modeling"
- *SMM/CAIMS/SIAM.* Huatulco, Mexico. First North American Meeting on Industrial and Applied Mathematics. "Modeling Default Correlation and Clustering"

2009

- *Princeton University.* Princeton, NJ. Operations Research and Financial Engineering. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *Columbia University.* New York, NY. Industrial Engineering & Operations Research. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *University of Illinois at Urbana-Champaign.* Urbana, IL. Industrial and Enterprise Systems Engineering. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *McCombs School of Business.* Austin, TX. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *Universitat Pompeu Fabra.* Barcelona, Spain. Economic and Business Sciences. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *Laboratoire J.A. Dieudonné, CNRS et Université de Nice Sophia Antipolis.* Nice, France. Recent Advancements in the Theory and Practice of Credit Derivatives 2009. "Credit-Equity Modeling"
- *Universidad de Navarra.* Pamplona, Spain. Facultad de CC. Económicas y Empresariales. "Time Changed Markov Processes in Unified Credit-Equity Modeling"

2008

- *Rutgers University.* Brunswick, NJ. 2007-2008 Mathematical Finance and Probability Seminars, "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *ITAM.* Mexico City, Mexico. Seminario de Matemáticas, "Time Changed Markov Processes in Unified Credit-Equity Modeling"

Conferences

2016

- *SIAM Conference on Financial Mathematics and Engineering.* Austin, TX. "Modeling Electricity Prices: A Time Change Approach".

2015

- *INFORMS 2015.* Philadelphia, PA. "Modeling Electricity Prices: A Time Change Approach".

2014

- *INFORMS 2014.* San Francisco, CA. "Additive Subordination and its Applications in Finance"

- *SIAM Conference on Financial Mathematics and Engineering.* Chicago, IL. "Modeling Electricity Prices: A Time Change Approach".

2013

- *INFORMS 2013.* Minneapolis, MN. "Time-dependent Modeling via Additive Subordinators"

2012

- *INFORMS 2012.* Phoenix, AZ. "Positive Subordinate CIR Processes with Two-Sided Mean-Reverting Jumps"
- *SIAM Conference on Financial Mathematics and Engineering.* Minneapolis, MN. "Positive Subordinate CIR Processes with Two-Sided Mean-Reverting Jumps"

2011

- *INFORMS 2011.* Charlotte, NC. "Positive Subordinate CIR Processes with Two-Sided Mean-Reverting Jumps"
- *INFORMS 2011.* Charlotte, NC. "Modeling Default Correlation and Clustering"

2010

- *SIAM Conference on Financial Mathematics and Engineering.* San Francisco, CA. "Constructing Markov Processes with Dependent Jumps by Multivariate Subordination: Applications to Multi-Name Credit-Equity Modeling"
- *NFORMS 2010.* Austin, TX. "Modeling Default Correlation and Clustering: A Time Change Approach"
- *SIAM Annual Meeting 2010.* Pittsburg, PA. "Modeling Default Correlation and Clustering"
- *Bachelier Finance Congress 2010 (Fields Institute).* Toronto, Canada. "Modeling Default Correlation and Clustering"

2009

- *UCSB.* The Third Western Conference in Mathematical Finance. Santa Barbara, CA. "Modeling Default Correlation and Clustering: A Time Change Approach"
- *INFORMS 2009.* San Diego, CA. "Equity Default Swaps under the Jump to Default extended Constant Elasticity of Variance (JDCEV)"
- *INFORMS 2009.* San Diego, CA. "Modeling Correlated Defaults"
- *American Mathematical Society 2009: Financial Mathematics.* Washington, DC."Time Changed Markov Processes in Unified Credit-Equity Modeling"

2008

- *INFORMS 2008.* Washington, DC. "Time Changed Markov Processes in Unified Credit-Equity Modeling"
- *INFORMS 2008.* Washington, DC. "Pricing EDS under the JDCEV Model"
- *Bachelier Finance Congress 2008 (Imperial College).* London, UK. "Time Changed Markov Processes in Unified Credit-Equity Modeling"

Advising and Thesis Committees

Students Advised/Co-Advised at McCombs School of Business

- Ph.D.

- Vish Malladi (2015). Currently co-advising with Prof. Tompaidis. *Working thesis:* Modeling the Electricity Supply Stack with Time-subordinated Processes.

- UNDERGRADUATE
    - Thomas Lemens (2015). *Thesis Title:* Kickstarting Innovation: Evaluating the Effects of Different Governance Modes on Organizational Value Creation and Appropriation (second reader).

Ph.D. committee member

- MCCOMBS SCHOOL OF BUSINESS
    - Yinglu Deng
    - Daniel Mitchell
- DEPARTMENT OF MATHEMATICS
    - Andrew Kontaxis
    - Tianran Geng

SERVICE

McCombs service

- Society of Teaching Excellence (established by the School of Undergraduate Studies and the Academy of Distinguished Teachers in 2011). UT-Austin, 2011
- Third Year Review Committee. McCombs School of Business, 2010
- Plan II Sophomore Adviser, 2012.

Ad hoc journal reviewer

- Operations Research
- Management Science
- Mathematical Finance
- Finance & Stochastics
- SIAM Journal on Financial Mathematics
- SIAM Journal on Applied Mathematics
- European Journal of Operations Research
- Journal of Banking and Finance
- International Review of Economics and Finance
- International Journal of Theoretical and Applied Finance
- Journal of Risk
- Physica A
- IIE Transactions

Conference Cluster & Session Chair

- INFORMS 2016. *Cluster Chair of Financial Services*
- 2016 SIAM Financial Mathematics and Engineering. *Session:* Spectral and Transform Methods in Financial Mathematics - Parts I and II (Co-chair with L. Li from CUHK)
- INFORMS 2015. *Cluster:* Risk Management. *Session:* Quantitative Methods: Financial Applications
- INFORMS 2014. *Cluster:* Financial Services. *Session:* Stochastic Modeling in Financial Engineering (Co-chair with L. Li from CUHK)
- 2014 SIAM Financial Mathematics and Engineering. *Session:* Spectral and Transform Methods in Finance - Parts I and II (Co-chair with L. Li from CUHK)
- INFORMS 2013. *Cluster:* Quantitative Finance. *Session:* Analytical Methods in Quantitative Finance
- INFORMS 2012. *Cluster:* Quantitative Finance. *Session:* Portfolio Credit Risk

- INFORMS 2011. *Cluster:* Quantitative Finance. *Session:* Operator Methods in Finance (Co-chair with L. Feng from UIUC)

Conference reviewer

- Bachelier Finance Congress 2010. Fields Institute. Toronto, Canada

Seminar organizer

- RADM/OM speaker seminars
- RADM Brown Bag Series in Quantitative Finance, 2010-2011, 2013-2014
- Quantitative Finance Seminar, 2010-2011

Other

- Alumni Academic Review Committee, Mathematical Finance Program at University of Toronto, 2004

Societies

- Society for Industrial and Applied Mathematics
- SIAM Activity Group in Financial Mathematics and Engineering
- Bachelier Finance Society
- INFORMS