Arrigo Coen Coria

Born in Mexico City, Mexico, December 31, 1985 (33 years old)
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Summary

- Ph.D. on Bayesian Statistics with two years of postdoctoral experience
- 4 papers on peer reviewed journals and 3 manuscripts submitted
- Instructor of 12 courses and Assistant professor of 10 courses, at the Faculty of Sciences UNAM
- One B.S. student thesis under jury revision and 2 ongoing student thesis projects
- Member of Mexican Research Assessment System of Mexico
- Research fields:
  Bayesian Statistics; Finance and Risk Theory; Time Series; Machine Learning

Education

2011 – 2015 **PhD. in Mathematics (Statistics)**
Institute of Research Applied Mathematics and Systems, UNAM
Thesis: On some applications of exchangeable and stationary dependence structures

2009 – 2011 **MSc. in Mathematics**.
Join program of the Faculty of Sciences, Institute of Mathematics, and Institute of Research Applied Mathematics and Systems, UNAM
General knowledge exams: Mathematical Finance, Analysis, and Probability
Thesis: Random Measures

2005 – 2009 **BSc. in Actuarial Sciences**.
Faculty of Sciences, UNAM
Thesis: Simulation of the Cramér–Lundberg Model

Employment

2017 – 2019 **Postdoctoral fellow**
DGAPA UNAM
Research Title: Value at Risk estimations with skewed distributions and their applications to the GARCH models, and Analysis of Exchangeable Renewal Processes
Postdoc advisor: Prof. María Asunción Begoña Fernández Fernández

2008 – 2017 **Instructor ("Profesor asociado - Titular A ")**
Faculty of Sciences, UNAM

Non-academic employment

2015 – 2017 **Vice principal of Analysis and Risk Methodologies "A"**
National Commission of Insurance and Finance (CNSF)
Office for the Treasury and Public Credit (SHCP)

Publications

Published papers on peer reviewed journals:

2019 **Unilateral lesion of the nigroestriatal pathway with 6-OHDA induced allodynia and hyperalgesia reverted by pramipexol in rats**. Héctor Alonso Romero-Sánchez, Liliana Mendieta, Amaya Montserat Austrich-Olivares, Gabriela Garza-Mouriño, Marcela Benitez-Diaz Mirón, Arrigo Coen, Beatriz Godínez-Chaparro. Accepted to appear in the *European Journal of Pharmacology*

Compound Dirichlet Processes. Arrigo Coen and Beatriz Godínez-Chaparro, *Selected Contributions on Statistics and Data Science in Latin America*, 10.1007/978-3-030-31551-1_4,

Modeling failures times with dependent renewal type models via exchangeability. Arrigo Coen, Ramsés H. Mena and Luis Gutiérrez. *Statistics: A Journal of Theoretical and Applied Statistics*, DOI: 10.1080/02331888.2019.1618858

2018 **Antiallodynic effect induced by [6]-gingerol in neuropathic rats is mediated by activation of the serotoninergic system and the NO–cGMP–ATP-sensitive K+ channel pathway**. Alfonso Mata-Bermudez, Teresa Izquierdo, Antonio Espinosa de los Monteros-Zuñiga, Arrigo Coen and Beatriz Godínez-Chaparro. *Phytotherapy Research*, DOI: 10.1002/ptr.6191

2015 **Ruin probabilities for bayesian exchangeable claims processes**. Arrigo Coen and Ramsés H. Mena. *Journal of Statistical Planning and Inference - Special Issue on Bayesian Nonparametrics*, DOI: 10.1016/j.jspi.2015.01.005

Submitted manuscripts:

2019 **Anti-allodynic effect induced by curcumin in neuropathic rat is mediated through Nitric Oxide-cyclic-GMP-ATP sensitive K+ channels pathway**. Tracy Pastrana-Quintos, Arrigo Coen, and Beatriz Godínez-Chaparro.

2018 **The compound product distribution; a solution to the distributional equation $X = AX + 1$**. Arrigo Coen, arXiv:1905.04758.

Ongoing manuscripts:

2019 **Changepoint detection in the ozone levels of Colombia with genetic algorithms**. Arrigo Coen, Eliane R. Rodrigues and Biviana M. Suárez-Sierra.

A Dynamic GARCH-EWMA Algorithm: Tail estimations of daily exchange rates returns with Generalized Beta, Generalized Beta of type two and skewed-t innovations. Daniel Cervantez, Arrigo Coen, and Begoña Fernández.

Tests on the skewed distributional behavior of residuals of GARCH(1,1) models. Arrigo Coen.

Honors and awards

2018–july 2019	Postdoctoral fellowship DGAPA-UNAM
2015	Stimulus for the timely graduation for PhD, UNAM
2012	Research visits at Collegio Carlo Alberto, Turin Italy, PhD UNAM
2011–2015	CONACYT scholarship for PhD. studies
2011	Stimulus for the timely graduation for MSc, UNAM
2009–2011	CONACYT scholarship for MSc. studies
2005–2009	Telmex foundation scholarship for BSc.

Memberships

2018–	SNI–CONACyT, Mexican Research Assessment System: Candidate
2017–	Member of the Mexican Statistical Association (AME)
2014–	Member of the International Society for Bayesian Analysis (ISBA)

PhD thesis

Title	On some applications of exchangeable and stationary dependence structures
PhD supervisor	Dr. Ramsés H. Mena Chávez
PhD committee	Dr. Mogens Bladt Petersen Dr. Gerónimo Uribe Bravo
Synopsis	This work considers three different aspects about dependent structures. The first aspect that we analyze is the construction of multivariate stationary processes with a given stationary distribution. In particular, we study three different models using our construction; these models present t-multivariate, Gaussian and Wishart stationary distribution, respectively. The second aspect that we handle is the computation of ruin probabilities under exchangeable claim amounts scenario. We extend various important risk theory results of the independent framework. Finally, the third aspect that we handle is the implications on the renewal equation if the renewals are exchangeable. We found that the renewal function in this framework can be rewritten as the solution of a new type of equations. Furthermore, we obtain the general solution to them.

Meetings, Conferences and Talks

2019

Multiple Changepoint Detection in a Nonhomogeneous Poisson Process via Genetic Algorithms
XV Latin American Congress of Probability and Mathematical Statistics (CLAPEM)
Latin American Society of Probability and Statistics (SLAPEM)
Latin American Chapter of the Bernoulli Society
Yucatán, Mexico

Multiple changepoint detection on air pollution via genetic algorithms with bayesian-MDL on nonhomogeneous Poisson periods
International Meeting on Artificial Intelligence and its Applications (RIIAA)
Engineering Tower
National Autonomous University of Mexico, Mexico City, Mexico

Mexican Restaurant Processes

	VI Latin American Meeting on Bayesian Statistics (COBAL) International Society for Bayesian Analysis (ISBA) Pontificia Universidad Católica del Perú
	Efecto antialodínico inducido por curcumina via NO-GMPc-canales de K_+ sensibles ATP en ratas neuropáticas LXII Congreso Nacional de la Sociedad Mexicana de Ciencias Fisiológicas, A.C. Universidad Autónoma de Querétaro
2018	**Compound Dirichlet Processes** Latin-American Congress of Statistical Societies (CLATSE) and National Forum of Statistics (AME) University of Guadalajara and *Centro Universitario de Ciencias Exactas e Ingeniería*
	Short course: Solvency II: Risk models for insurance institutions National Congress of Basic Sciences Academic Division of Basic Sciences UJAT-Mexico
	Probability Quantiles: how few variables should influence our great decisions National Congress of Basic Sciences Academic Division of Basic Sciences UJAT-Mexico
2017	**Long-term volatility estimation for skewed GARCH models** XIII Symposium of Probability and Stochastic Processes Mathematical Institute, UNAM
	Exchangeable renewal models National Forum of Statistics(AME) Mexican Statistical Association *Posgrado en Ciencias Matemáticas UNAM*
	Bayesian inference for Exchangeable Renewal Equations, and their applications. Seminar of Probability and Stochastic Processes Department of Mathematics, Faculty of Sciences UNAM
2015	**Ruin probabilities for Bayesian Exchangeable Claim Processes** BISP9-2015 9th Workshop on Bayesian Inference in Stochastic Processes International Society for Bayesian Analysis Estabul, Turquía
	Ruin probabilities for Bayesian Exchangeable Claim Processes Postgraduate Meeting between the Department of Mathematics of UC Santa Cruz and Department of Probability and Statistics IIMAS-UNAM Institute of Research Applied Mathematics and Systems, UNAM
2014	**Ruin Probabilities for Exchangeable Claims** Seminar of Probability and Stochastic Processes Department of Mathematics, Faculty of Sciences UNAM
	Claim Processes: A Bayesian Exchangeable Approach ISBA World Meeting 2014 International Society for Bayesian Analysis
2013	**Short course: Introduction to the data analysis with R** Second Actuarial Congress Faculty of Sciences, UNAM

Teaching courses at Faculty of Sciences UNAM

2018	**Stochastic Processes** (Associate Professor)
2017	**Stochastic Processes** (Associate Professor)
2015	**Probability I** (Associate Professor)
2014	**Probability I** (Associate Professor)

	Probability II (Associate Professor)
2013	**Probability II** (Associate Professor)
	Probability I (Assistant Professor)
	Probability I (Associate Professor)
	Seminar of Applied Actuarial Mathematics (Assistant Professor)
2012	**Stochastic Processes** (Associate Professor)
	Stochastic Processes II (Assistant Professor)
2011	**Probability II** (Associate Professor)
	Probability and Statistics (Associate Professor)
	Probability I (Associate Professor)
2010	**Statistics I** (Associate Professor)
	Probability and Statistics (Associate Professor)
	Stochastic Processes (Assistant Professor)
2009	**Multivariate Analysis** (Assistant Professor)
	Statistics II (Assistant Professor)
2008	**Statistics III** (Assistant Professor)
	Financial Mathematics(Assistant Professor)
	Probability II (Assistant Professor)

B.S. thesis advisor

2019 Applied statistical inference to generate a subject schedule proposal for bachelor degrees of Actuarial Science, Computer Science, Mathematics and Apply Mathematics for the Faculty of Science UNAM.
Miriam Gabriela Colín Núñez
Ongoing undergraduate thesis project in Actuarial Science, UNAM Faculty of Sciences

Capital requirements under the new legislation of Solvency II in Mexico
Francisco Alejandro Balcázar Perales
Ongoing undergraduate thesis project in Actuarial Science, UNAM Faculty of Sciences

2018 Analysis of supervision measures of the National Bank Commission (CNBV) CCL and ICAP for the liquidity and capital solvency
Monserrat Alanis Duran
Under thesis committee revision
thesis project in Actuarial Science, UNAM Faculty of Sciences

B.S. thesis jury

2019 Vine copula applied to risk measures, UNAM Faculty of Sciences, Eric Daniel Hérnandez Jardon

Statistical methods for the estimation of abundance, UNAM Faculty of Sciences, Carlos René Flores Mendive

2018 Sum of non-independent Poisson processes with effects of shocks and applications in insurance and credit risk, UNAM Faculty of Sciences, Carlos Emilio Olmos Romero

Variational Bayes, Faculty of Sciences UNAM, Pablo Ulises Hernandez Garces

Regression models for circular data, Licenciatura en Matemáticas Faculty of Sciences UNAM, Estevan Navarro Garaiz

A modified Poisson process and its application to the prediction of markers in soccer, Faculty of Sciences UNAM, Guillermo Alfonso Martínez Contreras

	Estimation of CVaR through GARCH models in emerging markets, Faculty of Sciences UNAM, Martín Camarena Cristián
2017	Use of bivariate copulas for capital requirements in an internal model, Faculty of Sciences UNAM, Mildred Ochoa López
2014	OGARCH processes and applications to financial data, Faculty of Sciences UNAM, Pablo Isaac Fraga Esparza
	Value at risk with extreme value theory: analysis of the behavior during the Subprime crisis and modifications to the model to improve its confidence, Faculty of Sciences UNAM, Carlos Enrique Arzola Gutiérrez
	Ruin probabilities with finite time horizon, Faculty of Sciences UNAM, Jorge Antonio Solis Posadas
2013	Multilevel logistic regression, Faculty of Sciences UNAM, César Benjamín López Morales
	Investment risks in face of economic instability, Faculty of Sciences UNAM, Tania Vara Mazariegos

Committee Service

2018-	Reviewer of posdoctoral proposals for the program "Estancias Posdoctorales en el Extranjero Vinculadas a la Consolidación de Grupos de Investigación y Fortalecimiento del Posgrado Nacional", CONACYT.

References

- Prof. María Asunción Begoña Fernández Fernández
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  Full time researcher at
  Mathematical Institute, UNAM Mexico
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- Prof. Ramsés H. Mena Chávez
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