Carlos M. Carvalho, Ph.D.

Associate Professor of Statistics
CBA Foundation Centennial Fellow

The University of Texas
McCombs School of Business
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Education

DUKE UNIVERSITY — Durham, NC
Ph.D. in **Statistics**, February 2006.
Thesis: *Structure and Sparsity in High-Dimensional Multivariate Analysis*
Advisor: Mike West

FEDERAL UNIVERSITY OF RIO DE JANEIRO — Rio de Janeiro, Brazil
M.S. in **Statistics**, April 2002.
Thesis: *Bayesian Analysis of Stochastic Volatility Models with Multiple Regimes*
Advisor: Hedibert F. Lopes and Helio S. Migon

IBMEC BUSINESS SCHOOL — Rio de Janeiro, Brazil
B.S. in **Economics**, December 1999.

Academic

THE UNIVERSITY OF TEXAS MCCOMBS SCHOOL OF BUSINESS
DEPARTMENT OF INFORMATION, RISK AND OPERATIONS MANAGEMENT
DIVISION OF STATISTICS AND SCIENTIFIC COMPUTATION
DEPARTMENT OF FINANCE — Austin, TX
Associate Professor of Statistics.

THE UNIVERSITY OF TEXAS MCCOMBS SCHOOL OF BUSINESS — Austin, TX
Assistant Professor of Statistics, July 2010 – August 2012.

THE UNIVERSITY OF CHICAGO BOOTH SCHOOL OF BUSINESS — Chicago, IL
Assistant Professor of Econometrics and Statistics, July 2007 – June 2010.

DUKE UNIVERSITY — Durham, NC
Post-Doctoral Research Associate, March 2006 – June 2007.

IBMEC BUSINESS SCHOOL — Rio de Janeiro, Brazil
Assistant Professor (Lecturer) of Statistics, February 2001 – July 2002.

Awards

CBA Foundation Advisory Council Centennial Fellow *(since 2012)*
The University of Texas, Austin.

Donald D. Harrington Faculty Fellow *(2009-10)* – The University of Texas, Austin.

IBM Corporation Scholar *(2008-09)* – The University of Chicago.

Dennis V. Lindley Prize *(2007) for innovative research in Bayesian Statistics*, by the International Society for Bayesian Analysis. Honorable Mention for "Dynamic Matrix-Variate Graphical Models."

Leonard J. Savage Award *(2006) for outstanding doctoral dissertation in Bayesian econometrics and statistics*, by the International Society for Bayesian Analysis. Honorable Mention.

Publications

1. **"Partial Factor Modeling: Predictor-Dependent Shrinkage for Linear Regression."** (with Hahn, P.R. and Mukherjee, S.) *Journal of the American Statistical Association, 108* 2013.
2. **"DYNA-CARE: Dynamic Cardiac Arrest Risk Estimation."** (with Ho, Park and Ghosh). *Journal of Machine Learning Research*, WC&P (AIStats) 2013.
3. **"DYNACARE-OP: Dynamic Cardiac Arrest Risk Estimation Incorporating Ordinal Features."** (with Ho, Park and Ghosh). *ICML 2013, Healthcare Workshop.*
4. **Online Bayesian Learning in Dynamic Models: An illustrative Introduction to Particle Methods** (with Lopes, H.F.) *In Hierarchical Models and Markov Chain Monte Carlo - In Honor of Adrian F. M. Smith*, 2013.
5. **"A Sparse Factor-Analytic Probit Model for Congressional Voting Patterns."** (with Hahn, P.R. and Scott, J.) *Journal of the Royal Statistical Society C, 61*, 2012.
6. **"Bayesian Statistics with a Smile: a Resampling-Sampling Perspective."** (with Lopes, H. and Polson, N.) *Brazilian Journal of Probability and Statistics, 26*, 2012.
7. **"Dynamic Financial Index Models: Modeling Conditional Dependencies via Graphs."** (with Wang, H. and Reeson, C.) *Bayesian Analysis, 6*, 2011.
8. **"Particle Learning for Sequential Bayesian Computation."** (with Lopes, H., Johannes M. and Polson, N.) *Bayesian Statistics 9*, 2011.
9. **"Dynamic Stock Selection Strategies: a Structured Factor Model Framework."** (with Lopes, H. and Aguilar, O.) *Bayesian Statistics 9*, 2011.
10. **"The Horseshoe Estimator for Sparse Signals."** (with Polson, N.G. and Scott, J.) *Biometrika, 97*, 2010.
11. **"Particle Learning and Smoothing."** (with Johannes, M., Lopes, H.F. and Polson, N.G.) *Statistical Science, 25 (1)*, 2010.
12. **"Particle Learning for General Mixtures."** (with Lopes, H.F., Polson, N.G. and Taddy, M.) *Bayesian Analysis, 5*, 2010.
13. **"Simulation of Hyper-Inverse Wishart Distributions in Non-decomposable Graphs"** (with Wang, H.) *Electronic Journal of Statistics, 4*, 2010.
14. **"Volatility in Prediction Markets: A Measure of Information Flow in Political Campaigns."** (with Rickershauser, J.) *The Handbook of Applied Bayesian Analysis*, 2010.
15. **"Futures Markets, Bayesian Forecasting and Risk Modeling."** (with Quintana, J.M. and Scott, J.) *The Handbook of Applied Bayesian Analysis*, 2010.
16. **"In-Vitro to In-Vivo Factor Profiling in Expression Genomics."** (with Lucas, J., Merl, D. and West, M.) *Bayesian Modeling in Bioinformatics*, 2010.
17. **"Objective Bayesian Model Selection in Gaussian Graphical Models."** (with Scott, J.) *Biometrika, 96*, 2009.
18. **"Handling Sparsity via the Horseshoe."** (with Polson and Scott, J.) in *Journal of Machine Learning Research*, W&CP 5 (AIStats) 2009.
19. **"A Genomic Strategy to Elucidate Modules of Oncogenic Pathway Signaling Networks."** (with Chang, J., Mori, S., Bild, A., Gatza, M., Wang, Q., Lucas, J., Potti, A., Febbo, P., West, M. and Nevins, J.) *Molecular Cell, 34*, 2009.
20. **"Cross-study Projections of Genomic Biomarkers: An Evaluation in Cancer Genomics."** (with Lucas, J., Chen, J., Chi, J. and West, M.) *PLoS One 4(2)*, 2009.

21. **"A Bayesian Analysis Strategy for Cross-study Translation of Gene Expression Biomarkers."** (with Lucas, J. and West, M.) *Statistical Applications in Genetics and Molecular Biology, 8 (1)*, 2009.
22. **"High-Dimensional Sparse Factor Modeling: Applications in Gene Expression Genomics."** (with Chang, J., Lucas, J., Wang, Q., Nevins, J.R. and West, M.) *Journal of the American Statistical Association, 103*, 2008.
23. **"Flexible Covariance Estimation in Graphical Gaussian Models."** (with Rajaratnam, B. and Massam, H.) *Annals of Statistics, 36*, 2008.
24. **"Feature-Inclusion Stochastic Search for Gaussian Graphical Models."** (with Scott, J.) *Journal of Computational and Graphical Statistics, 17*, 2008.
25. **"Simulation of Hyper-Inverse Wishart Distributions in Graphical Models."** (with Massam, H. and West, M.) *Biometrika, 94*, 2007.
26. **"Dynamic Matrix-Variate Graphical Models."** (with West, M.) *Bayesian Analysis, 2*, 2007.
27. **"Dynamic Matrix-Variate Graphical Models – A Synopsis."** (with West, M.) *Bayesian Statistics 8*, 2007.
28. **"Simulation-based Sequential Analysis of Markov Switching Stochastic Volatility Models."** (with Lopes, H.F.) *Computational Statistics and Data Analysis, 51*, 2007.
29. **"Factor Stochastic Volatility with Time-varying Loadings and Regime Switching."** (with Lopes, H.F.) *Journal of Statistical Planning and Inference, 137*, 2007.
30. **"Sparse Statistical Modeling in Gene Expression Genomics."** (with Lucas, J., Wang, Q., Bild, A., Nevins, J.R. and West, M.) in *Bayesian Inference for Gene Expression and Proteomics,* 2006.
31. **"Experiments in Stochastic Computation for High-dimensional Graphical Models."** (with Jones, B., Dobra, A., Hans, C., Carter, C. and West, M.) *Statistical Science, 20*, 2005.

Books

1. **"Bayesian Inference in Factor Asset Pricing Models."** (with Lopes, H. and McCulloch, R.) Chapman & Hall/CRC (work in progress).

Working Papers and Others

1. **"Efficient Data Augmentation in Dynamic Models for Binary and Count Data"** (with Windle, J. Scott, J. and Sun, L.) 2013 (Submitted).
2. **"A Tractable State-Space Model for Symmetric Positive Definite Matrices"** (with Windle, J.) 2013 (Submitted).
3. **"Decoupled Shrinkage and Selection in Linear Models"** (with Hahn, R.) 2013 (Submitted).
4. **''LAMORE: A Stable, Scalable Approach to Latent Vector Autoregressive Modeling of Categorical Time Series"** (with Park, Y. and Ghosh, J.) 2013 (Submitted)
5. **"On the Long Run Volatility of Stocks."** (with Lopes, H.F. and McCulloch, R.) 2013 (work in progress).
6. **"Testing Factor Asset Pricing Models."** (with Daniel, K. and Titman, S.) 2013 (work in progress).
7. **"Risk Assessment in Large Portfolios: Why Imposing the Wrong Constraints Hurts."** (with Bianchi, D.) 2012 (work in progress).

8. **"Extending the Black-Litterman Portfolio Allocation Strategy."** (with Bianchi, D.) 2012 (work in progress).
9. **"Dynamic Graphical Models and Portfolio Allocations for Structured Mutual Funds."** (with Reeson, C. and West, M.) 2009 (Tech Report).
10. **"Developing and Testing Theories of the Causes of War: Assessing Key Events Leading to the Iraq War Using Prediction Markets."** (with Rickershauser, J.) 2008 (Tech Report).
11. **"Smoothing the Transition."** *ISBA Bulletin 14 (4),* 2007.
12. **"BFRM: Bayesian Factor Regression Modeling."** (with Wang, Q., Lucas, J. and West, M.) *ISBA Bulletin 14 (2),* 2007.

Talks

On The Long Run Volatility of Stocks
-Bocconi University, Milan, Italy, October 2013.

Decoupled Shrinkage and Selection in Linear Models
-Bocconi University, Milan, Italy, October 2013.

On The Long Run Volatility of Stocks
-The University of Texas at Austin, SSC Brown Bag Series, April 2013.

Decoupled Shrinkage and Selection in Linear Models
-EMR, Brazil, February 2013.

Decoupled Shrinkage and Selection in Linear Models
-Imperial College London, December 2012.

Decoupled Shrinkage and Selection in Linear Models
-CFE-ERCIM Conference, Oviedo, Spain December 2012.

Decoupled Shrinkage and Selection in Linear Models
-University of South Carolina, November 2012.

Decoupled Shrinkage and Selection in Linear Models
-Duke University, October 2012.

Testing Factor Asset Pricing Models
-ISBA 2012, Kyoto, Japan, June 2012.

From Data to Decisions
-The University of Texas at Austin, Dean's Scholars Research Seminar, April 2012.

On The Long Run Volatility of Stocks
-The University of Chicago, Booth School of Business – Seminar Speaker, February 2012.

On The Long Run Volatility of Stocks
-The University of Pennsylvania, Wharton School of Business – Seminar Speaker, October 2011.

Testing Factor Asset Pricing Models
-The University of Texas at Austin, Finance Department Brown Bag Series, September 2011.

On The Long Run Volatility of Stocks
-Hierarchical Models and MCMC – Greece, June 2011.

On The Long Run Volatility of Stocks
-University of California, Irvine – Seminar Speaker, May 2011.

On The Long Run Volatility of Stocks
-SBIES 2011 – St. Louis, April 2011.

On The Long Run Volatility of Stocks
-The University of Texas at Austin, Finance Department Brown Bag Series, April 2011.

On The Long Run Volatility of Stocks
-Carnegie Mellon University, Statistics Department – Seminar Speaker, March 2011.

On The Long Run Volatility of Stocks
-The University of Texas at Austin, Mechanical Engineering Department – Seminar Speaker, February 2011.

Computational Methods for Bayesian Inference in Macroeconomic Models
-Opposition to Ingvar Strid's Ph.D defense. Stockholm School of Economics, Sweden, November 2010.

Dynamic Stock Selection Strategies: A Structured Factor Model Framework
-Texas A&M University – Seminar Speaker, November 2010.

On the Long Run Volatility of Stocks
-INFORMS 2010 – Austin, TX. November 2010.

On the Long Run Volatility of Stocks
-Rice University, Economics Department – Seminar Speaker. October 2010.

From Data to Decisions
-The University of Texas at Austin, Undergraduate Seminar. September 2010.

Dynamic Stock Selection Strategies: A Structured Factor Model Framework
-9th Valencia International Meeting on Bayesian Statistics. Benidorm, Spain – Invited Speaker. June 2010.

On the Long Run Volatility of Stocks
-The University of Warwick Model Uncertainty Workshop. Coventry, U.K. – Invited Speaker. June 2010.

Dynamic Stock Selection Strategies: A Structured Factor Model Framework
-M.D. Anderson Cancer Center, Houston, TX – Seminar Speaker, May 2010.

From Data to Decisions
-Harrington Fellowship Symposium, Amarillo College, TX. April 2010.

Complex Dynamic Models in Empirical Asset Pricing
-University of Southern California, Marshall School of Business – Seminar Speaker, April 2010.

Time-Varying Predictive Systems
-NESS, Harvard University, Cambridge, MA. April 2010.

Particle Learning and Smoothing
-10th Bayesian Brazilian Meeting. Angra dos Reis, Brazil. March 2010.

Structuring Covariances
-The University of Texas at Austin, McCombs School of Business – Seminar Speaker, December 2009.

Dynamic Financial Index Models: Modeling Conditional Dependencies via Graphs
-Transition Workshop on Sequential Monte Carlo Methods. SAMSI, NC, November 2009.

Handling Sparsity via the Horseshoe
-JSM 2009 – Invited talk. Washington, D.C., August 2009.

Handling Sparsity via the Horseshoe
-O-Bayes 2009 – Wharton School of Business, Philadelphia, PA, June 2009.

Handling Sparsity via the Horseshoe
-University of Washington – Seminar Speaker, May 2009.

Handling Sparsity via the Horseshoe
-SBIES 2009 – St. Louis, MO, May 2009.

Handling Sparsity via the Horseshoe
-Ohio State University – Seminar Speaker, April 2009.

Handling Sparsity via the Horseshoe
-The University of Cambridge, UK – Seminar Speaker, April 2009.

Handling Sparsity via the Horseshoe
-AIStats 2009 – Invited Speaker. Clearwater, FL, April 2009.

Particle Learning and Smoothing
-Illinois Institute of Technology – Seminar Speaker, March 2009.

Model Assessment and Adaptive Design
-Midterm Workshop on Sequential Monte Carlo Methods. SAMSI, NC, February 2009.

Sparse Factor Modeling and Cross-study Projections of Genomic Biomarkers
-The University of Chicago – Human Genetics Department, January 2009.

Handling Sparsity via the Horseshoe
-Duke University – Seminar Speaker, November 2008.

High-Dimensional Sparse Factor Modeling
-Rice University – Seminar Speaker, September 2008.

Particle Learning and Smoothing
-Workshop on Sequential Monte Carlo Methods. SAMSI, NC, September 2008.

Objective Bayesian Model Selection in Gaussian Graphical Models
-The University of Chicago Graduate School of Business – Brown-Bag Series in Econometrics and Statistics. June 2008.

Dynamic Matrix-Variate Graphical Models
-Workshop on Bayesian Inference. Federal University of Rio de Janeiro, Brazil. February 2008.

Objective Bayesian Model Selection in Gaussian Graphical Models
-9th Bayesian Brazilian Meeting. Maresias, Brazil. February 2008.

Objective Bayesian Model Selection in Gaussian Graphical Models
-Virginia Tech – Seminar Speaker, January 2008.

Objective Bayesian Model Selection in Gaussian Graphical Models
-The University of Chicago – Seminar Speaker, November 2007.

Structure and Sparsity in High-dimensional Multivariate Analysis
-JSM 2007 - Invited talk. Salt Lake City, UT, August 2007.

Flexible Covariance Estimation in Graphical Models
-Workshop on Random Matrices and Higher Dimensional Inference. AIM Research Conference Center, Palo Alto, California. April 2007.

Dynamic Matrix-Variate Graphical Models
-University of California, Berkeley – Seminar Speaker, February 2007.

Dynamic Matrix-Variate Graphical Models
-University of California, Irvine – Seminar Speaker, February 2007.

Dynamic Matrix-Variate Graphical Models
-The University of Texas at Austin, McCombs School of Business – Seminar Speaker, January 2007.

Dynamic Matrix-Variate Graphical Models
-University of California, Santa Cruz – Seminar Speaker, January 2007.

High-Dimensional Sparse Factor Modeling: Applications in Gene Expression Genomics
-University of Chicago Graduate School of Business – Seminar Speaker, January 2007.

Dynamic Matrix-Variate Graphical Models
-University of Pennsylvania, The Wharton School of Business – Seminar Speaker, January 2007.

Dynamic Matrix-Variate Graphical Models
-University of Southern California, Marshall School of Business – Seminar Speaker, January 2007.

Exploring Oncogenic Pathways Using High Throughput Data
-The Science of Cancer Modeling. National Cancer Institute, Bethesda, MD, December 2006.

Dynamic Matrix-Variate Graphical Models
-University of Chicago Graduate School of Business – Seminar Speaker, October 2006.

Dynamic Matrix-Variate Graphical Models
-Bayesian Focus Week – High Dimensional Inference in Random Matrices SAMSI, October 2006.

Non-Gaussian Sparse Factor Models and Latent Factor Regression
-JSM 2006 - Invited talk. Seattle, WA, August 2006.

High-Dimensional Sparse Factor Models
-9th Meeting of New Researchers in Statistics and Probability. University of Washington, WA, August 2006.

Integration of Oncogenic Networks in Cancer Phenotypes
-NCI/ICBP Meeting. Nashville, TN, May 2006.

Factor Stochastic Volatility – Time varying loadings and Regime switching
-JSM 2005 - Invited talk. Minneapolis, MN, August 2005.

Gaussian Graphical Models: Model Selection and Covariance Estimation
-Federal University of Rio de Janeiro – Operational Research Department – Seminar Speaker, Rio de Janeiro, Brazil, March 2005.

Sampling from the hyper-Wishart on decomposable models
-2nd Latin American ISBA Meeting - COBAL 2005. Los Cabos, Mexico, February 2005.

Unrestricted Gaussian Graphical Model Determination
-Federal University of Rio de Janeiro – Department of Mathematics and Statistics – Seminar Speaker, Rio de Janeiro, Brazil, July 2003.

Marginal Likelihood Computation for Non Decomposable Gaussian Graphical Models
-Workshop on Stochastic Computation, SAMSI, NC, February 2003.

Simulation-based sequential analysis of Markov switching stochastic volatility models
-2nd Brazilian Finance Meeting, Rio de Janeiro, Brazil, July 2002.

Other Presentations

Dynamic Matrix-Variate Graphical Models
-Oxford-Man Institute of Quantitative Finance Vast Data Conference - Oxford University, UK, September 2008.

Particle Learning and Smoothing
-ISBA 2008 World Meeting - Hamilton Island, Australia, July 2008.

Objective Bayesian Model Selection in Gaussian Graphical Models
-ISBA/IMS Meeting. Bormio, Italy, January 2008.

Sparse Factor Analysis for Deconvolution of Genomic Signatures
-NCI/ICBP Meeting. Cambridge, MA, June 2007.

Dynamic Matrix-Variate Graphical Models
-8th Valencia International Meeting on Bayesian Statistics. Benidorm, Spain, June 2006.

Sparse Non-Gaussian Factor Regression Models
-8th Valencia International Meeting on Bayesian Statistics. Benidorm, Spain, June 2006.

Sampling from hyper-inverse Wishart distributions
-SAMSI Random Graphs Stochastic Computation Workshop - Durham, NC, June 2005.

Experiments In Stochastic Computation For Hight-Dimensional Graphical Models
-ISBA 2004 World Meeting - Vina del Mar, Chile, May 2004.

Unrestricted Gaussian Graphical Model Determination
-International Workshop on Bayesian Data Analysis - UC Santa Cruz, CA, August 2003.

Simulation-based sequential analysis of Markov switching stochastic volatility models
-7th Valencia International Meeting on Bayesian Statistics. Tenerife, Spain, June 2002.

A particle filter algorithm for the Markov switching stochastic volatility model
-1st Latin American ISBA Meeting - COBAL 2002. Ubatuba, Brazil, February 2002.

Service Activities

Journal of the American Statistical Association.
-Associate Editor (since 2013).

Electronic Journal of Statistics.
-Associate Editor (since 2008).

2013 Savage Award – ISBA.
- Member of the reviewing committee.

2013 AISTATs
-Conference Chair.

IROM Department and DSSC
-Chair of the faculty search committee (2012-2013).

IROM Department
-Member of the MS in Business Analytics development committee (2011-2013).

UT Division of Statistics and Scientific Computation
-Member of the Ph.D. committee working on the creation of the program (2010-2011).

Seminar on Bayesian Inference in Econometrics and Statistics (SBIES).
-Organizer. UT Austin, May 2010.

2010 NIPS.
-Member of the Reviewing Committee.

2010 AIStats.
-Member of the Reviewing Committee.

Symposium on Bayesian Non-Parametrics.
-Organizer. UT Austin, March 2010.

Symposium on Quantitative Methods in Finance: A Bayesian Perspective.
-Organizer. UT Austin, December 2009.

Program on Sequential Monte Carlo Methods, SAMSI, NC.
-Research Group Leader, 2008/2009.

2009 NIPS.
-Member of the Reviewing Committee.

2009 NecSys.
-Associate Editor.

Seminar on Bayesian Inference in Econometrics and Statistics (SBIES).
-Organizer. Chicago, May 2008.

BEST Award for Student Research, Duke University.
-Member of the Selection Committee, 2008-2013.

Ph.D. Committees

-*Kenneth Latimer* - UT Austin, Neuroscience, expected May 2015.

-*Daniele Bianchi* - (co-advisor) Bocconi University (Finance), October 2013.

-*Nicholas Crain* - UT Austin, Finance Department, May 2013.

-*Jesse Windle* - (advisor) UT Austin, Mathematics Department, May 2013.

-*Eamon O'Dea* - UT Austin, Ecology, Evolution and Behavior, May 2013.

-*Nicholas Hirschey* - UT Austin, Finance Department, June 2012.

-*Daniel Zantedeschi* - UT Austin, IROM Department, April 2012.

-*Anne Marie Ficth* - Massey University, NZ. December 2011.

-*Shameek Sinha* - UT Austin, Marketing Department, April 2011.

-*Richard Hahn* - (co-advisor) Duke University, March 2011.

-*Ingvar Strid* - (opponent) Stockholm School of Economics, November 2010.

-*Jarad B. Niemi* - Duke University, 2009.

-*Esther Salazar* - UFRJ - Brazil, 2008.

M.Sc. Committees / Advisor

-*Min Fun* - (advisor) – DSSC, May 2013.

-*Tian Lan* - (advisor) – DSSC, May 2013.

-*Leonardo Nassif* - (co-advisor) UFRJ - Brazil, December 2010.

Undergraduate Students

-*Steve Karson* - Honours Senior Thesis Advisor – UT Economics, 2012.

Teaching Awards

Faculty Honor Roll
Texas MBA at Houston, Fall 2011.

Industry

Dell, Inc. — Austin, TX
Analytics Consultant, Since March 2013.

Best LLC. — Hoboken, NJ
Financial modeling (research assistant), June 2005 – July 2005.

Fator Bank S.A. — Rio de Janeiro, Brazil
Corporate Finance Junior Analyst, April 1998 – December 1998.

Icatu Bank S.A. — Rio de Janeiro, Brazil
Fixed Income and Exchange Rate Trading Desk Support, May 1997 – April 1998.