University of North Carolina at Charlotte

Belk College of Business

BPHD 8220 FINANCIAL BAYESIAN ANALYSIS

Fall 2019

Course Time:	Tuesday 12:20 - 3:05 pm
Location:	Friday Building 207
Professor:	Dr. Yufeng Han
Office Location:	Friday Building 340A
Telephone:	(704) 687-8773
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Office Hours:	by appointment

Textbook:

Introduction to Bayesian Econometrics, 2nd Edition, by Edward Greenberg (***required***)

An Introduction to Bayesian Inference in Econometrics, 1st Edition, by Arnold Zellner

Doing Bayesian Data Analysis: A Tutorial with R, JAGS, and Stan, 2nd Edition, by Joseph M. Hilbe, de Souza, Rafael S., Emille E. O. Ishida

Bayesian Analysis with Python: Introduction to statistical modeling and probabilistic programming using PyMC3 and ArviZ, 2nd Edition, by Osvaldo Martin

The Oxford Handbook of Bayesian Econometrics, 1st Edition, by John Geweke

Topics:

1. Principles of Bayesian Analysis
2. Simulation
3. Linear Regression Models
4. Multivariate Regression Models
5. Time-Series Models
6. State-Space Models
7. Volatility Models

8. Endogeneity Models

Software:

1. Stan
2. Edward
3. JAGS
4. BUGS & MultiBUGS
5. Python Modules: PyMC & ArviZ
6. R, STATA, SAS, Matlab, etc.

Course Assessment:

Homework assignments, paper presentation, and replication (or project).

Grading:

Homework: 30%

Paper presentation: 40%

Replication (project): 30%

Selected Papers:

Vasicek, O. A. (1973), A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas. Journal of Finance, 28: 1233-1239. doi:10.1111/j.1540-6261.1973.tb01452.x

Shanken, J. (1987). A Bayesian approach to testing portfolio efficiency. *Journal of Financial Economics*, *19*(2), 195–215. https://doi.org/10.1016/0304-405X(87)90002-X

Guofu, C., & Harvey, R. (1990). Bayesian Inference in Asset Pricing Tests. *Journal of Financial Economics*, *26*, 221–254.

Madhavan, A., & Smidt, S. (1991). A Bayesian model of intraday specialist pricing. *Journal of Financial Economics*, *30*(1), 99–134. https://doi.org/10.1016/0304-405X(91)90039-M

McCulloch, R., & Rossi, P. E. (1991). A bayesian approach to testing the arbitrage pricing theory. *Journal of Econometrics*, *49*(1–2), 141–168. https://doi.org/10.1016/0304-4076(91)90012-3

Kandel, S., Mcculloch, R. E., & Stambaugh, R. F. (1995). Bayesian Inference and Portfolio Efficiency. *Review of Financial Studies*, *8*(1), 1–53.

Aguilar, O., & West, M. (2000). Bayesian Dynamic Factor Portfolio Allocation. *Journal of Business & Economic Statistics*, *18*(3), 338–357.

Barberis, N. (2000). Investing for the Long Run when Returns are Predictable. *Journal of Finance*, *55*(1), 225–264.

Baks, K., Metrick, A., & Wachter, J. (2001). Should Investors Avoid All Actively Managed Mutual Funds? *Journal of Finance*, *56*(1), 45–85.

Pástor, L., & Stambaugh, R. F. (2001). The Equity Premium and Structural Breaks. *Journal of Finance*, *56*(4), 1207–1239.

Pástor, L., & Stambaugh, R. F. (2002). Investing in equity mutual funds. *Journal of Financial Economics*, *63*(3), 351–380. https://doi.org/10.1016/S0304-405X(02)00065-X

Cremers, K. J. M. (2002). Stock Return Predictability: a Bayesian Model Selection Perspective. *Review of Financial Studies*, *15*(4), 1223–1249.

Tu, J., Zhou, G., & Louis, S. (2004). Data-generating process uncertainty: What difference does it make in portfolio decisions? *Journal of Financial Economics*, *72*(2), 385–421. https://doi.org/10.1016/j.jfineco.2003.05.003

Cohen, R. B., Coval, J. D., & Pástor, L. (2005). Judging Fund Managers by the Company. *Journal of Finance*, *60*(3), 1057–1096.

Jostova, G., & Philipov, A. (2005). Bayesian Analysis of Stochastic Betas. *Journal of Financial and Quantitative Analysis*, *40*(4), 747–778.

Jones, C. S., & Shanken, J. (2005). Mutual Fund Performance with Learning Across Funds. *Journal of Financial Economics*, *78*(3), 507–522.

Jones, C. S., & Hall, C. S. (2006). A Nonlinear Factor Analysis of S&P 500 Index Option Returns. *Journal of Finance*, *61*(5), 2325–2363.

Cremers, K. J. M. (2006). Multifactor Efficiency and Bayesian Inference. *Journal of Business*, *79*(6), 2951–2998.

Han, Y. (2006). Asset Allocation with a High Dimensional Latent Factor Stochastic Volatility Model. *Review of Financial Studies*, *19*(1), 237–271. https://doi.org/10.1093/rfs/hhj002

Busse, J. A., & Irvine, P. J. (2006). Bayesian Alphas and Mutual Fund Persistence. *Journal of Finance*, *61*(5), 2251–2288.

Avramov, D., & Chordia, T. (2006). Predicting stock returns. *Journal of Financial Economics*, *82*(2), 387–415. https://doi.org/10.1016/j.jfineco.2005.07.014

Jones, C. S. (2006). A Nonlinear Factor Analysis of S&P 500 Index Option Returns. *Journal of Finance*, *61*(5), 2325–2363. https://doi.org/10.1111/j.1540-6261.2006.01059.x

Ang, A., & Chen, J. (2007). CAPM over the long run: 1926–2001. *Journal of Empirical Finance*, *14*(1), 1–40. https://doi.org/10.1016/j.jempfin.2005.12.001

Scruggs, J. T. (2007). Estimating the cross-sectional market response to an endogenous event: Naked vs. underwritten calls of convertible bonds. *Journal of Empirical Finance*, *14*(2), 220–247. https://doi.org/10.1016/j.jempfin.2006.02.002

De Mol, C., Giannone, D., & Reichlin, L. (2008). Forecasting using a large number of predictors: Is Bayesian shrinkage a valid alternative to principal components? *Journal of Econometrics*, *146*(2), 318–328. https://doi.org/10.1016/j.jeconom.2008.08.011

Ozoguz, A. (2008). Good Times or Bad Times? Investors' Uncertainty and Stock Returns. *Review of Financial Studies*, *22*(11), 4377–4422. https://doi.org/10.1093/rfs/hhn097

Tu, J. (2010). Is regime switching in stock returns important in portfolio decisions? *Management Science*, *56*(7), 1198–1215. https://doi.org/10.1287/mnsc.1100.1181

Tu, J., & Zhou, G. (2010). Incorporating economic objectives into Bayesian priors: Portfolio choice under parameter uncertainty. *Journal of Financial and Quantitative Analysis*, *45*(4), 959–986. https://doi.org/10.1017/S0022109010000335

Avramov, D., Kosowski, R., Naik, N. Y., & Teo, M. (2011). Hedge funds, managerial skill, and macroeconomic variables. *Journal of Financial Economics*, *99*(3), 672–692. https://doi.org/10.1016/j.jfineco.2010.10.003

Pettenuzzo, D., & Timmermann, A. (2011). Predictability of stock returns and asset allocation under structural breaks. *Journal of Econometrics*, *164*(1), 60–78. https://doi.org/10.1016/j.jeconom.2011.02.019

Han, Y. (2012). State uncertainty in stock markets: How big is the impact on the cost of equity? *Journal of Banking & Finance*, *36*(9), 2575–2592. https://doi.org/10.1016/j.jbankfin.2012.05.016

Dangl, T., & Halling, M. (2012). Predictive regressions with time-varying coefficients. *Journal of Financial Economics*, *106*(1), 157–181. https://doi.org/10.1016/j.jfineco.2012.04.003

Pástor, L., & Stambaugh, R. F. (2012). Are Stocks Really Less Volatile in the Long Run? *Journal of Finance*, *67*(2), 431–477.

Brandon, R. G., & Wang, S. (2013). Liquidity risk, return predictability, and hedge funds' performance: An empirical study. *Journal of Financial and Quantitative Analysis*, *48*(1), 219–244. https://doi.org/10.1017/S0022109012000634

Pettenuzzo, D., Timmermann, A., & Valkanov, R. (2014). Forecasting stock returns under economic constraints. *Journal of Financial Economics*, *114*(3), 517–533. https://doi.org/10.1016/j.jfineco.2014.07.015

Johannes, M., Korteweg, A., & Polson, N. (2014). Sequential learning, predictability, and optimal portfolio returns. *Journal of Finance*, *69*(2), 611–644. https://doi.org/10.1111/jofi.12121

Cederburg, S., & O'Doherty, M. S. (2014). Asset-pricing anomalies at the firm level. *Journal of Econometrics*. https://doi.org/10.1016/j.jeconom.2014.06.004

Anderson, E. W., & Cheng, A. R. (2016). Robust Bayesian Portfolio Choices. *Review of Financial Studies*, *29*(5), 1330–1375. https://doi.org/10.1093/rfs/hhw001

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Smith, S. C. (2018). *Learning, Time-variation, and the Factor Zoo*.

Chen, A. Y., & Zimmermann, T. (2018). *Publication Bias and the Cross-Section of Stock Returns*. *Ssrn*. https://doi.org/10.17016/FEDS.2018.033

Barillas, F., & Shanken, J. (2018). Comparing Asset Pricing Models. *Journal of Finance*, *73*(2), 715–754. https://doi.org/10.1111/jofi.12607

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Chib, S., & Zeng, X. (2019). Which Factors are Risk Factors in Asset Pricing? A Model Scan Framework. *Journal of Business & Economic Statistics*, *0*(0), 1–28. https://doi.org/10.1080/07350015.2019.1573684

Jensen, M., Fisher, M., & Tkac, P. (2019). *Bayesian Nonparametric Learning of How Skill Is Distributed across the Mutual Fund Industry*. *Federal Reserve Bank of Atlanta, Working Papers*. https://doi.org/10.29338/wp2019-03

Academic Honesty:

All students are required to read and abide by the Code of Student Academic Integrity. This Code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials (such as Library books on reserve), and complicity in academic dishonesty (helping others to violate the Code). Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online at http://www.legal.uncc.edu/policies/ps-105.html.

Accommodations for Disability:

Students with disabilities requiring accommodations, must first contact the Office of Disability Services (phone 704-687-4355, 230 Fretwell Building). The staff will assist you in both determining reasonable accommodations as well as coordinating these accommodations.

Belk College Statement on Diversity:

The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity

that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.