J. Leland Bybee

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Academic Positions

University of Chicago Booth School of Business
Assistant Professor of Finance, 2024-Present

Education

Yale School of Management, New Haven, CT
Ph.D. Financial Economics, 2024

University of Michigan, Ann Arbor, MI
M.S. Statistics, 2017

University of Chicago, Chicago, IL
B.A. Economics, 2013

Research Interests

Asset pricing, behavioral economics, financial econometrics, machine learning

Publications

1. Business News and Business Cycles (with B.T. Kelly, A. Manela, and D. Xiu) *Journal of Finance* (2024).
2. Narrative Asset Pricing: Interpretable Systematic Risk Factors from News Text (with B.T. Kelly and Y. Su) *Review of Financial Studies* (2023).
3. Change-point Computation for Large Graphical Models: A Scalable Algorithm for Gaussian Graphical Models with Change-points (with Y. Atchadé) *Journal of Machine Learning Research* (2018).

Working Papers

4. The Ghost in the Machine: Generating Beliefs with Large Language Models.
   BlackRock Applied Research Award (2023)
   Top Finance Graduate Award (2024)
   The Brattle Group PhD Candidates Awards for Outstanding Research (2024)
   EFA Engelbert Dockner Memorial Prize for the Best Paper by Young Researchers (2024)

   I introduce a methodology to generate economic expectations by applying large language models to historical news. Leveraging this methodology, I make three key contributions. (1) I show generated expectations closely match existing survey measures and capture many of the same deviations from full-information rational expectations. (2) I use my method to generate 120 years of economic expectations from which I construct a measure of economic sentiment capturing systematic errors in generated expectations. (3) I then employ this measure to investigate behavioral theories of bubbles. Using a sample of industry-level run-ups over the past 100 years, I find that an industry's exposure

to economic sentiment is associated with a higher probability of a crash and lower future returns. Additionally, I find a higher degree of feedback between returns and sentiment during run-ups that crash, consistent with return extrapolation as a key mechanism behind bubbles.

5. Associative Memory is Machine Learning (with T. Lyu).

   We document a relationship between memory-based models of beliefs and a general class of kernel methods from the statistics and machine learning literature. Motivated by this relationship, we propose a new form of memory-based beliefs which aligns more closely with the state of the art in the machine learning literature. We explore this approach empirically by introducing a measure of "narrative memory" – similarity between states of the world based on similarity in narrative representations of those states. Using textual embeddings extracted from conference call transcripts, we show that our estimates of memory-based beliefs explain variation in errors in long-term growth forecasts of IBES analysts. We conclude by discussing implications of this relationship for the literature on memory-based models of beliefs.

6. Macro-based Factors for the Cross-Section of Currency Returns (with L. Gomes and J.P. Valente).

   We use macroeconomic characteristics and exposures to Carry and Dollar as instruments to estimate a latent factor model with time-varying betas with the instrumented principal components analysis (IPCA) method by Kelly et al. (2020). On a pure out-of-sample basis, this model can explain up to 78% of cross-sectional variation of a Global panel of currencies excess returns, compared to only 27.9% for Dollar and Carry and 51% for a static PCA model. The latent factor and time-varying exposures are directly linked to macroeconomic fundamentals. The most relevant are exports exposures to commodities and US trade, credit over GDP, and interest rate differentials. This model, therefore, sheds light on how to incorporate macroeconomic fundamentals to explain time-series and cross-section.

Presentations

2024	USC Conference of Social and Behavioral Finance, NBER Digital Economics and AI Conference, AI in Finance/RFS Conference, Western Finance Association Conference, European Finance Association Conference, CEBRA Annula Meeting, Q-Group Conference, CQA Conference, SQA Conference, Purdue, University of Houston, Northwestern, University of Southern California, Harvard Business School, University of Illinois Urbana-Champaign, University of Chicago, Washington University, Cornell University, Arizona State University, University of Texas Austin, Ohio State University, Carnegie Melon University, Georgetown, University of Maryland, London Business School, London School of Economics
2023	Bloomberg, Insightful Minds in International Macro Seminar, Monash-Warwick-Zurich Text-as-Data Workshop, Advances with Field Experiments Conference, Olin Finance Conference at WashU (PhD Poster Session), Yale SOM (x2)
2022	Eastern Finance Association Conference, Holden Conference in Finance and Real Estate, Future of Financial Information Conference, Yale SOM (x2)
2021	Shanghai Financial Forefront Symposium, Wolfe QES Conference, Yale SOM (x2)
2020	Western Finance Association Conference, European Finance Association Conference

Professional Activities

Referee — *Quarterly Journal of Economics*, *Journal of Political Economy*, *Journal of Financial Economics*, *Review of Financial Studies*, *Journal of Financial Econometrics*, *Management Science*, *Journal of Econometrics*

Software & Data

1. `regIPCA`: A penalized implementation of instrumented principal components analysis in Python. Used in *Narrative Asset Pricing: Interpretable Systematic Risk Factors from News Text*.
2. `The Structure of Economic News`: Data and summaries for the 180 topics estimated for *Business News and Business Cycles*.
3. `DiSTL`: A collection of efficient Gibbs sampling implementations for latent Dirichlet allocation in Python. Used in *Business News and Business Cycles*.
4. `glVAR`: A fast method for group lasso vector autoregression in Python. Used in *Business News and Business Cycles*.
5. `labbot`: A set of Python decorators used for iterative development of research code.
6. `IPCA`: A Python implementation of instrumented principal components analysis (with M. Büchner).
7. `statsmodels`: I contributed the distributed estimation procedure of Lee et al. (2015) for penalized estimators.
8. `changepointsHD`: An R implementation of a simulated annealing algorithm for change-point detection. Used in *Change-point Computation for Large Graphical Models: A Scalable Algorithm for Gaussian Graphical Models with Change-points*.