J. Leland Bybee

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Education

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

References

Nicholas C. Barberis (co-chair)
Stephen and Camille Schramm
Professor of Finance
nick.barberis@yale.edu

Bryan T. Kelly (co-chair)
Professor of Finance
bryan.kelly@yale.edu

William Goetzmann
Edwin J. Beinecke
Professor of Finance
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Job Market Paper

1. The Ghost in the Machine: Simulating Beliefs with Large Language Models.

   I introduce a methodology to simulate economic expectations by applying large language models (LLMs) to historical news. Simulated expectations closely match existing survey measures and capture many of the same deviations from full-information rational expectations. I employ this method to test 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 a measure of aggregate economic sentiment extracted from the simulated expectations is associated with a higher probability of a crash and lower future returns. Additionally, I find a higher degree of feedback between returns and expectations during run-ups that crash, consistent with return extrapolation as a key mechanism behind bubbles.

Publications

2. Business News and Business Cycles (with B.T. Kelly, A. Manela, and D. Xiu) *Journal of Finance* (Forthcoming).

3. Narrative Asset Pricing: Interpretable Systematic Risks from News Text (with B.T. Kelly and Y. Su) *Review of Financial Studies* (2023).

4. 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

5. Asset Pricing with Narrative Churn (with H. Wu).

   Why do some assets earn higher returns than others? Why are markets so volatile? The CAPM's failure and excess volatility are two of the central puzzles in asset pricing. We propose a new explanation for these puzzles that we term narrative churn: the events or "narratives" that drive asset price variation are constantly changing. By estimating local penalized regressions using textual embeddings extracted from conference call transcripts, we show that (1) narrative churn can explain three times the cross-sectional variation in expected returns as the best static explanations over our sample, (2) narrative churn explains a significantly larger proportion of time-series variation than benchmark models. Finally, we show how our method can be used to decompose the narratives which drive returns to better understand the origins of these puzzles.

6. 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.

7. 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.

Teaching Experience

MGT 595	Quantitative Investing with Tobias Moskowitz Fall 2020-2022
MGT 936	Fixed Income Strategies with Jordan Brooks Spring 2022-2023
MGT 939	Macroeconomic Strategies with Jordan Brooks Spring 2022-2023
STATS 250	Introduction to Statistics and Data Analysis 2015-2017

Presentations

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

Discussions

2023	*Peer-Reviewd Theory Does Not Help Predict the Cross-section of Stock Returns* (A. Chen, A. Lopez-Lira, T. Zimmermann) at UT Dallas 2023 Fall Finance Conference
2022	*Measuring the Economic Value of an Innovation When Some Investors Are Inattentive: Theory and Evidence* (T.J. Chemmanur, D. Li, K. Tseng, Y. Wang) at Eastern Finance Association Conference

Professional Activities

Referee	*Management Science*, *Journal of Econometrics*

Other Employment

Booth School of Business, Research Professional (2017-2019)

Google Summer of Code, Student Programmer (2016)

Fama-Miller Center, Research Professional (2013-2015)

Fama-Miller Center, Research Associate (2012-2013)

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*.