RUI DA

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ACADEMIC APPOINTMENTS

Indiana University Kelley School of Business
Assistant Professor of Finance *08/2024 - present*
Acting Assistant Professor of Finance *07/2023 - 07/2024*

EDUCATION

University of Chicago Booth School of Business *June 2024*
Ph.D. in Business Administration

Princeton University *September 2013 - August 2015*
Ph.D. student in Physics

Nanjing University *July 2013*
B.Sc. in Physics

RESEARCH INTERESTS

Asset Pricing, Machine Learning in Finance, Financial Econometrics

WORKING PAPERS

The Statistical Limit of Arbitrage
with Stefan Nagel and Dacheng Xiu
October 2025, *R&R requested by Journal of Finance*
We investigate the economic consequences of statistical learning for arbitrage pricing in a high-dimensional setting. Arbitrageurs learn about alphas from historical data. When alphas are weak and rare, estimation errors hinder arbitrageurs—even those employing optimal machine learning techniques—from fully exploiting all true pricing errors. This statistical limit to arbitrage widens the equilibrium bounds of alphas beyond what traditional arbitrage pricing theory predicts, leading to a significant divergence between the feasible Sharpe ratio achievable by arbitrageurs and the unattainable theoretical maximum under perfect knowledge of alphas.

Disentangling Autocorrelated Intraday Returns
with Dacheng Xiu
July 2025, *R&R requested by Journal of Econometrics*
We propose a semiparametric approach to disentangling the autocovariance of equity returns at high frequency. We assume the observed price consists of an efficient component that follows a nonparametric continuous-time Itô-semimartingale, along with a market microstructure component that follows a discrete-time moving-average model. Our quasi-likelihood procedure relies on a misspecified moving-average model selected by information criteria. We establish the model-selection consistency, provide a central limit theory on autocovariance parameters, and show their consistency uniformly over a large

class of models that allow for an arbitrary noise magnitude and a flexible dependence structure. We also provide a quadratic representation of the likelihood estimator, which sheds light on its connection with nonparametric kernel estimators. Our simulation evidence suggests that our estimator outperforms the nonparametric alternatives particularly when noise magnitude is small. We apply this estimator to S&P 1500 index constituents, and find that in recent years the microstructure friction has become smaller but existed in 5-minute returns, particularly in small caps, and that the average duration of autocorrelations for large caps has shrunk considerably to merely 10 seconds.

Market Efficiency with Many Investors
April 2025
Modern financial markets contain many investors. In this context, we study the role of information in investor decision-making, and the informational efficiency and liquidity of the market. An equilibrium is characterized in closed-form for a continuous-time economy with many market participants and imperfect competition, in which investors receive private information with varying quality, and are heterogeneous in their misperception of the information quality. In equilibrium, investor heterogeneity in their misperception generates return predictability by investors' trading, and trading of different investors follows a simple factor structure with weak factors. To conduct empirical analysis that builds on these equilibrium implications, we develop a new big-data econometric method that utilizes the factor structure to accommodate the high-dimensionality of these implications. Applying the framework to price and institution holding data of the US stock market, we document that individual institution's trading with impotent predictive power can collectively generate significant return predictability that persists for about a quarter. We estimate dynamic price impact of around 0.25 at quarterly frequency, a moderate misperception of institutions on their information quality, and institutions' contributions to the informational efficiency of the market.

PUBLICATIONS

When Moving-Average Models Meet High-Frequency Data: Uniform Inference on Volatility
with Dacheng Xiu
Econometrica, November 2021
We conduct inference on volatility with noisy high-frequency data. We assume the observed transaction price follows a continuous-time Itô-semimartingale, contaminated by a discrete-time moving-average noise process associated with the arrival of trades. We estimate volatility, defined as the quadratic variation of the semimartingale, by maximizing the likelihood of a misspecified moving-average model, with its order selected based on an information criterion. Our inference is uniformly valid over a large class of noise processes whose magnitude and dependence structure vary with sample size. We show that the convergence rate of our estimator dominates $n^{1/4}$ as noise vanishes, and is determined by the selected order of noise dependence when noise is sufficiently small. Our implementation guarantees positive estimates in finite samples.

REFEREE ACTIVITIES

Review of Economics and Statistics, Journal of Econometrics (×6), Management Science (×5), Journal of Financial and Quantitative Analysis (×2), Journal of Business & Economic Statistics (×3), Journal of Financial Econometrics, Statistica Sinica

SEMINARS AND CONFERENCES

Colorado University Boulder, Purdue University, Texas A&M University, Indiana University, McGill University, University College London, Hong Kong University of Science and Technology (Finance and ISOM), Singapore Management University, SFS Cavalcade North America *2023*
University of Chicago, FinEML *2024*
Minnesota Macro-Asset Pricing Conference (discussion), Shanghai Jiao Tong University, Shanghai Advanced Institute of Finance Annual Research Conference, China International Conference in Finance (discussion), EFA Annual Conference, Alpine Finance Summit, Tsinghua University PBCSF *2025*

AWARDS

J. Michael Harrison Doctoral Prize *2021*
The Oscar Mayer Fellowship *2020 - 2021*
Ph.D. Program Fellowship, The University of Chicago Booth School of Business *2016 - 2020*
Natural Science Fellowship, Princeton University *2013 - 2014*
Cross-disciplinary Scholars in Science and Technology, University of California, Los Angeles *2012*

TEACHING

Intermediate Investment (Undergraduate), Indiana Kelley *Spring 2024, Fall 2024 - 2025*