Research Statement

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My research lies at the intersection of **empirical asset pricing**, **market microstructure**, **digital assets**, and **AI in economics and finance**. I study how new market participants, new financial instruments, and new technologies reshape price discovery, liquidity, and investor behavior. Methodologically, I combine rigorous econometric identification with large-scale data engineering — my work integrates millisecond-level exchange data, high-frequency order books, proprietary transaction records, and billions of news and trade observations — and, increasingly, with frontier AI tools both as objects of study and as instruments of research.

Retail Trading Networks and Cross-Predictability (Job Market Paper)

My job market paper, *Retail Trading Network and Cross-Predictability in the US Equity Market* (solo-authored), asks how the growing crowd of retail investors is connected across stocks, and what those connections mean for asset prices. Using Nasdaq's Retail Trading Activity Tracker from 2016 to 2024, I construct a directed network of nearly 10,000 U.S. securities based on lead-lag correlations in retail trading flows — to my knowledge, the first market-wide network built from retail flow comovement rather than from firm fundamentals such as industry links, supply chains, or analyst coverage. The empirical infrastructure integrates twelve large-scale datasets, including millisecond-level NYSE TAQ, CRSP, OptionMetrics, and over one billion news records.

The central finding is that the average return of a stock's retail-trading peers robustly predicts its future returns. I trace this predictability to two microstructure channels: *price discovery*, where retail networks aggregate dispersed information — effects are strongest in "Buy the Dip" episodes and in weaker information environments — and *liquidity provision*, where coordinated retail buying systematically supplies depth on the bid side, leading market makers to widen spreads in response to adverse selection risk. The predictability is persistent and does not reverse, consistent with the permanent incorporation of information rather than temporary price pressure, and it extends across the full CRSP universe — common stocks, ADRs, REITs, and ETPs — while volatility-linked products on Cboe, where retail plays no informational role, show no effect. The paper contributes to four literatures. To the literature on *retail trading*, which has focused on how retail activity in a single security affects its own pricing and volatility (e.g., Barber, Huang, Odean, and Schwarz, 2022; Bartlett, McCrary, and O'Hara, 2024), I add the first analysis of the network structure arising from correlated retail activity *across* securities — and, at a technical level, refine the fractional-share identification of Bartlett, McCrary, and O'Hara by lowering the latency bound from 20ms to 10ms in the post-2024 latency regime. To the asset-pricing literature on *cross-predictability*, which has documented linkages through industry (Moskowitz and Grinblatt, 1999; Cohen and Lou, 2012), supply chains (Cohen and Frazzini, 2008; Menzly and Ozbas, 2010), institutional ownership (Anton and Polk, 2014), and analyst coverage (Ali and Hirshleifer, 2020), I add a new channel — retail trading comovement — whose predictive power survives controls for all known linkages, and I supply the microstructure mechanism behind it. To the *market mi-*

crostructure literature, I establish a new empirical regularity: peer returns in the retail network forecast a stock's future trading activity, volatility, liquidity, and information efficiency, extending market-quality prediction (Easley, López de Prado, O'Hara, and Zhang, 2021) to the broad U.S. equity market and, through option-market spillovers, across markets. Finally, to the emerging literature on *Bitcoin ETFs*, the IBIT prototype offers a market-based methodology for identifying the economic profile of a new asset from the revealed preferences of retail investors.

Perpetual Futures and Market Quality in Digital Assets

Perpetual Futures Contracts and Cryptocurrency Market Quality (with Artem Streltsov; presented at the AFA 2026 Annual Meeting) provides among the first causal evidence on how perpetual futures — the dominant derivative in cryptocurrency markets — reshape the quality of underlying spot markets. Using high-frequency order book data from major exchanges over 2017–2023, we exploit three complementary sources of variation: the eight-hour funding cycle unique to perpetual contracts, the unanticipated regulator-driven termination of perpetual trading on a major exchange, and 95 staggered contract introductions across exchanges and tokens.

We document a seemingly paradoxical pattern: perpetual contracts substantially increase spot trading volume while *widening* quoted spreads. We reconcile these findings by showing that perpetuals concentrate informed and arbitrage trading around funding settlements, raising adverse selection risk to which market makers rationally respond. The termination and introduction experiments deliver mirror-image results, reinforcing the causal interpretation. The paper speaks directly to the design and regulation of derivative markets in the digital age: financial innovations can expand trading activity and information flow while simultaneously imposing measurable costs on liquidity. I identified perpetual futures — then largely unstudied despite their enormous trading volume — as a first-order innovation in cryptocurrency markets, and conceptualized this project around them. I developed the framework for causal identification from China's evolving regulatory landscape at the time perpetual trading was terminated at Huobi, distilled the core findings from the empirical results and connected them to information-based market microstructure explanations, and presented the work at the AFA 2026 Annual Meeting.

Cryptocurrency as an Inflation Hedge in Emerging Markets

Inflation Expectation and Cryptocurrency Investment (with Lin Cong, Pulak Ghosh, Jiasun Li, and Artem Streltsov; NBER Working Paper No. 32945; forthcoming at the *Review of Finance*; AFA 2026 program) provides the first direct, transaction-level evidence that households use cryptocurrency as an inflation hedge. We match 85.8 million transactions from India's dominant crypto exchange to the Reserve Bank of India's household inflation expectations survey. Higher local inflation expectations lead to significantly larger net purchases of cryptocurrency, with the effect concentrated precisely where hedging logic predicts: in Bitcoin and in the dollar-linked stablecoin Tether, purchased against rupees, while stablecoin-base trades show no effect. Higher inflation expectations also draw new investors into the market. Instrumental-variable strategies and survey-based controls for speculative motives support a causal interpretation.

The paper's contribution is to move the "crypto as digital gold" debate from aggre-

gate correlations to household-level behavior, showing how macroeconomic expectations shape portfolio choice in emerging markets — with implications for monetary policy credibility, capital flight, and the adoption of digital assets in high-inflation economies. I initiated this project and built it from the ground up: identifying the gap in the literature, designing the methodology for handling the proprietary crypto-exchange transaction data, and developing the econometric framework and instrumental-variable strategies for identification.

Financial Networks and Systemic Risk

Systemic Risks in Financial Networks Under Strategic Attacks (solo-authored) complements my empirical network work with theory. The paper is motivated by episodes in which deliberate attacks triggered outsized financial cascades — most vividly the May 2022 collapse of the Terra/LUNA algorithmic stablecoin and the ensuing failures of major crypto institutions. I replace the random shocks in Elliott, Golub, and Jackson (2014) with strategic, profit-motivated attacks, and extend the analysis from single to multiple shocks across network architectures including core–periphery, segregated, and power-law structures. Three results overturn intuitions from the random-shock benchmark: strategic attacks generate far larger cascades than random shocks; networks that appear stable under random shocks can remain deeply fragile under targeted ones; and the inverted-U relationship between diversification and cascade size can break down — or its turning points shift — once attackers choose where to strike. Together with my job market paper, this work forms a two-sided network agenda — empirical networks of investor behavior and theoretical networks of institutional fragility — with direct relevance for regulators assessing stability in systems, from banking to DeFi, where adversaries are strategic rather than random.

AI in Economics and Finance

The newest branch of my agenda uses frontier AI both to understand markets and to accelerate research itself. In *Using Vision Large Models to Understand Asset Returns* (presented at the Chinese Financial Research Conference, AI in Finance session), I apply computer vision to high signal-to-noise price and volume charts, integrating visual features with market microstructure and asset pricing frameworks to develop a contextual understanding of asset returns. In *FinAgentBench* (work in progress), I build a harness that benchmarks frontier language-model agents on real financial research tasks — from asset-pricing replication to return prediction from news, filings, and analyst text — separating what models can *execute* from what they can *judge*. A further project, *How Liquidity Providers Profit in Binary Settlement Markets*, studies liquidity provision using over one billion prediction market trades, extending my microstructure agenda to a rapidly growing new asset class.

Research Agenda

A single agenda runs through my work: modern markets are being remade by new participants, new instruments, and new technologies, and understanding this transformation requires both microstructure theory and serious data engineering. My comparative advantage is the combination of the two. Going forward, I will continue to work in empirical asset pricing — increasingly in combination with AI — together with digital assets, market microstructure, and FinTech. In *asset pricing*, I will deepen the retail-network agenda: how the network evolves through market episodes, how

it transmits shocks into options markets, and what its predictability implies for market efficiency after realistic trading frictions. In *digital assets and FinTech*, I will carry the work toward market design and regulation — the microstructure of stablecoins and perpetual-contract design, and liquidity provision in prediction markets, where my billion-trade dataset already supports the next paper. In *AI for finance*, I will extend FinAgentBench toward a standard for AI-assisted replication and build agentic pipelines that make large-scale empirical work faster and more verifiable. Each area has data in hand and a paper in progress; I look forward to pursuing this agenda with colleagues and students.

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