Application Letter to NBER Digital Economics and AI Tutorial meeting

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University of Arizona

I am currently a fourth-year doctoral student in the finance program at the University of Arizona. I passed all my comprehensive exams in both the finance and economics departments during the summer of my first year. I have completed all coursework with 15As out of 16. I got straight As in all doctoral-level course. In addition to four finance seminar courses including (Dynamic Asset Pricing, Investments and Empirical Asset Pricing, Empirical Corporate Finance, Dynamic Corporate Finance), I also take several doctoral level electives in the department of economics and department of management information systems including Labor Economics, Empirical Industry Organization, Advanced Econometric Modelling, and Big Data and Web Mining.

My main research interests are digital economics (cryptocurrencies, AI, and big data), information economics, financial intermediation, and financial stability. I have three complete papers and eight work-in-progress, which were listed in the attached two-page CV in this application letter. I am particularly interested in this tutorial meeting because of my current two research projects on two driving forces of the digital economy: cryptocurrencies and artificial intelligence. *First*, I coauthored with my advisor, Richard Sias, on a research paper that studies individual crypto investors' behavior during a crypto bank crisis. Specifically, we are the first to use large-scale and micro-level depositor information from a major cryptocurrency bank and find that crypto deposits are highly concentrated: 2.2 % of investors can account for all net withdrawals during the bank run period around the Terra Luna crash event. We also reveal the relation between the crypto bank run risk and several depositor characteristics including investor size, sophistication, and ethnicity composition. *Second*, I also have a solo ongoing research project on how the adoption of AI reshapes the information acquisition activities in the asset management industry. I focus on the most sophisticated group of investors, hedge fund companies, and find that these investors increase their acquisition of soft information following the adoption of AI, which is consistent with my main hypothesis that with AI automating replaceable tasks of acquiring and processing hard information, fund managers' human capital is freed up for more soft information acquisition. To test this idea, I compiled a unique dataset that combines investors' downloading activities of companies' public filings and their participation of firms' earnings conference calls. I also plan to utilize blackouts to capture the exogenous decrease in investors' information acquisition activities and expect to document AI-adopted hedge funds to have more earnings call participation relative to those without AI adoption, due to their greater information acquisition capacity resulting from streamlined hard information acquisition processes. *Third*, given the importance of cybersecurity in the age of AI, part of my future research agenda is to study how shareholders help firms deal with cybersecurity risk and push for better governance, thus enhancing firm value.

Lastly, my tentative dissertation title is, *Human Capital Redeployment in the Era of Automation: Evidence from the Hedge Fund Industry,* which is described as the solo project above. My thesis advisor is Richard Sias. Committee members are to be announced. On a related note, all faculty members know that I frequently ask (good) questions during our department seminar series. I really look forward to having the opportunity to attend this tutorial meeting and I believe I will learn a lot and contribute my bit as well.

Yuan Gao

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EDUCATION

- **University of Arizona,** Tucson, AZ
  Ph.D. in Finance 2021–2026 (expected)

- **Georgia State University,** Atlanta, GA 2017–2020
  M.Sc. in Finance

- **Nankai University,** Tianjin, China 2010–2014
  B.A. in Economics & LLB
  (A triple-major and dual-degree Program of Econ. & Business & Law, affiliated with Ministry of Edu. of China)

RESEARCH INTERESTS

- Broad: Investments, Asset Management and Financial Intermediation, Asset Pricing, Investor Behavior, Fintech, Industry Organization, Climate finance, Corporate Finance
- Specific: Institutional Investors and Financial Intermediaries (Mutual Funds, Hedge Funds, Insurers, Insurance Brokers, Private Equity), Financial Innovation (Cryptocurrencies and ETFs), Corporate Governance

ACADEMIC RESEARCH

- **Working Papers**

Anatomy of a Crypto Bank Run *(with Richard Sias)*

We use micro-level depositor information to examine the behavior of more than half a million investors in the first major "cryptocurrency bank" run. Our analyses suggest that, combined with the lack of deposit insurance, the extreme concentration of deposits, information heterogeneity, and exogenous cryptocurrency market factors make cryptocurrency banks particularly fragile---a mere 2.2% of investors can account for all net withdrawals over the run event. Consistent with the hypothesis that a cryptocurrency bank's run risk depends on the composition of its investor base, the likelihood an investor runs is a function of investor size, sophistication, ethnicity, and exposure to individual currency crashes. Our results help elucidate how a cryptocurrency bank run evolves and have important implications for regulators and investors.

Whom You Know Matters: Mutual Fund Workplace Networks and Investment Performance *(with Suiheng Guo)*

This paper investigates workplace information sharing through the lens of mutual fund organizational structures. We construct a novel fund-level skill-weighted measure of interfund comanager connections (ICC). We find that funds with a higher ICC exhibit more similar portfolio holdings to their connected funds. Exploiting within-fund variation, we show that a higher ICC is associated with better fund performance. Using a quasi-experiment of plausibly exogenous superstar manager departures, we confirm the positive ICC-performance relation in a causal setting. Further, the performance effect of ICC is more pronounced in team-managed funds and funds associated with small families, consistent with teams having lower information processing constraints and small families relying more on interfund information flows due to limited human capital. By hand-collecting a comprehensive sample on fund hierarchical structures from SEC fund prospectuses, we also show that all results hold based on an alternative ICC measure that uses the lead portfolio manager status to apply the skill weight. Value-relevant information is transmitted via comanager linkages: ICC funds profit more from trading on overlapped hard-to-research stocks and non-local stocks than non-ICC funds.

Presentations: University of Arizona (2023); University of Arkansas (2024); Eastern Finance Association (2024); FMA Asia/Pacific Conference (2024); Southwestern Finance Association Annual Meeting (2024); World Finance Conference (2024)

The Bright Side of Passive Ownership: Evidence from CEO Turnovers *(with Suiheng Guo)*

We provide new evidence on the governance impact of passive ownership through the lens of CEO turnover-performance sensitivity (TPS). We hypothesize that passive ownership affects CEO TPS through either less informative stock prices or intensified shareholder monitoring. Our baseline results show that there is a positive relation between passive ownership and CEO TPS. To establish causality, we exploit the exogenous changes in

passive ownership that arise from the Russell index reconstitutions to perform difference-in-discontinuity estimations and shock-based IV analyses. Based on these identification strategies, we show that increases in passive ownership results in higher CEO TPS. This evidence is consistent with the hypothesis that the large voting power of passive ownership facilitates large shareholders to push for better governance. We further conduct subsample analyses to show a possible underlying channel that governance-related shareholder proposals increase with a higher presence of passive investors in firms with higher ownership by large shareholders. We use event studies to show that the increased sensitivity of CEO turnover to performance is seen as a bright side by the stock market for firms with higher passive ownership.

Presentations: Georgia State University (2019); Eastern Finance Association (2024); Financial Management Association (2024); ICGS-ASU conference (2024)

- **Selected Work-in-Progress**
  - ***Intermediary Competition and Prices: Evidence from Health Insurance*** (with Shan Ge)
    - 2023 NAIC Early Idea Workshop
  - ***A Model of Hedge Fund Fees with Renegotiation*** (with Vikas Agarwal, Sugata Ray, and Baozhong Yang)
  - ***Human Capital Redeployment in the Era of Automation: Evidence from the Hedge Fund Industry***
    - 2023 FMA New Ideas Session
    - 2024 FMA doctoral consortium (scheduled)
  - ***The Importance of Shareholder Litigation Risk for Institutional Investors: Evidence from Fee-Shifting Bylaws***
  - ***Private Equity Ownership and Market Entries: Evidence from Insurance Brokers***
    - 2024 FMA New Ideas Session
    - U of A GPSC Research Grant (2023 fall)
  - ***Shadow Bank Runs under Private Equity Ownership: The case of Life Insurers***
  - ***Can ETF Ownership Explain Reversal? Evidence from Novel Text-based Classifications of Industry News***
  - ***Corporate Innovation and Institutional Ownership: Theory and Empirical Evidence*** (with Mark A. Chen, Paul Borochin, and Suiheng Guo)

PROFESSIONAL EXPERIENCE

- **Equifax Inc.,** Atlanta, GA 2019
  Academic Research Intern, Auto and Mortgage Group, University Capstone Program
  Sensation Seeking and Credit Performance: Evidence from 6 million Individuals (presented at Equifax Inc.)

- **PBC School of Finance, Tsinghua University,** Beijing, China 2014–2016
  Research Assistant, Minsheng Wealth Management Research Center, National Institute of Financial Research (NIFR)
  - **Key Research Project**
    - ***The Investment Value of Fund Managers' Educational and Professional Experience: Evidence from China's Equity Mutual Funds***

CONFERENCE DISCUSSIONS

From Active to Passive: The Consequences for Demand Elasticity
FMA 2024
How Do Life Insurers Manage Liquidity Risk?
EasternFA 2024
Capital Concentration of the Bond Fund Industry and Bond Market Fragility.
FMA 2021
The Investor Attention/Awareness and Learning Channels: Effect of Media Coverage on Fund Flows and Performance.
FMA 2021

GRANTS

U of A GPSC Research Grant *(2023 fall)*
U of A Finance Department Travel Grant *(2024 spring)*