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# Cong Zhang

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## Education

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### **The University of Chicago Booth School of Business**

*Ph.D. Candidate in Business Administration (Finance and Econometrics)*

*June 2025 (Expected)*

### **The University of Chicago Booth School of Business**

*Master of Business Administration*

*August 2021*

### **The University of Chicago Law School**

*Master of Legal Studies*

*June 2021*

### **The University of Michigan**

*Bachelor of Science in Economics, Statistics and Mathematics (Triple Major)*

*April 2015*

## Research Interests

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**Asset Pricing:** Empirical asset pricing; Asset pricing theory

**Applied Econometrics:** Time series econometrics; Artificial intelligence and machine learning

**Financial Regulations:** Banking regulation; Insurance regulation; Securities regulation; Corporate and entrepreneurial finance

## Research Papers

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### **Asset Pricing in Digital Economy with Regulations**

Job Market Paper

I quantitatively assess the economic implications of two potential regulatory shifts in the digital economy—data privacy laws and command-and-control regulations. I develop a production-based equilibrium model that incorporates the non-rival nature of digital capital while accounting for regulations induced by the negative externalities of excessive data collection and data sharing, referred to as data emissions. The theoretical framework enables a decomposition of the risk price associated with rising market concentration driven by digital capital accumulation into two components: the immediate firm-level gains in output from adopting data-driven technologies and the potential long-term social costs associated with data emissions. This is guided by empirical evidence that equity risk prices have turned negative over the past twenty years, coinciding with the significant growth of the data trading market and the development of data-driven technologies. The model predicts that firms adopting data-driven technologies have returns that co-move more with concentration growth and resemble those of growth firms. Furthermore, I explore adoption trajectories for data-driven technologies and evaluate the social cost of data emissions under different state variables and model uncertainty concerns prompted by regulatory changes. My counterfactual analysis implies that the most effective regulatory paradigm involves a combination of data privacy laws and command-and-control regulations that are effectively enforced by implementing protocols aiming to reduce uncertainty in data emissions while introducing more uncertainty in innovation dynamics.

### **Optimizing Return Forecasts: A Bayesian Intermediary Asset Pricing Approach**

with Ming Gao

**Winner of the Arnold Zellner Doctoral Prize**

Under Review at *The Review of Asset Pricing Studies*

This study presents a novel Bayesian approach incorporating financial frictions into a panel structural break model, utilizing economically informed priors from intermediary asset pricing theories. Our data-driven prior selection method, adept at handling unbalanced panels, enhances the identification of regime shifts and the selection of return predictors, thereby improving equity return forecasts. Validated through simulations and empirical analysis, our approach boosts out-of-sample cumulative returns and Sharpe ratios. Leveraging asset holdings data and intermediary-induced priors, the framework facilitates precise real-time regime change detection and provides Bayesian insights into the inconsistencies of risk prices associated with intermediary risks.

### **The Effects of Economic Uncertainty on Financial Volatility: A Comprehensive Investigation**

with Zhuo Huang, Tianyi Wang, Chen Tong

*Journal of Empirical Finance*, Volume 73, September 2023, Pages 369-389

We provide new empirical evidence of how financial volatility responds to an increase in economic uncertainty. Consistent with the implications derived from a theoretical equilibrium model in which investors are uncertain about the true state of the economy, our estimates for the contemporaneous effects of uncertainty on volatility are significantly positive, and their magnitudes critically depend on the economic situation and degree of investors' risk aversion. Specifically, stock return volatility tends to overreact to increased uncertainty during good times when investors are more risk-averse. All these relations remain robust to different uncertainty measures. We further build a simple reduced-form predictive model augmented with uncertainty measure, and find the uncertainty displays additional predictive power for future volatility. Moreover, this improvement is concentrated around bad times with high risk aversion, most of which are located in the NBER-dated recession periods.

### **Impact of AI Adoption on Economic Dynamics through Habit Formation**

Under Review at *The Journal of Financial and Quantitative Analysis*

This study extends the Lucas tree model by incorporating habit formation, enhancing the strategic framework for artificial intelligence (AI) adoption and its impact on asset pricing. I show that decisions of adopting AI are significantly influenced by the visibility of productivity gains and agents' evolving habitual consumption patterns, as indicated by the surplus consumption ratio. Specifically, as the surplus consumption ratio rises—signaling decreased relative risk aversion—AI adoption becomes more likely up to a tipping point, beyond which further increases may deter further adoption. Initial AI adoption triggers heightened return volatility that eventually stabilizes but may lead to a price-dividend ratio bubble and subsequent market downturn. My findings underscore the crucial role of habit formation in determining AI adoption and its influence on economic and financial market dynamics.

### **Synchronized Shifts: Decoding the Co-movement of Stock and Bitcoin Returns**

I develop a novel asset-pricing model within a dual-agent equilibrium framework to analyze the co-movement of stock and bitcoin returns, building on empirical research into hedging bitcoin with traditional assets. Incorporating habit formation and variable risk aversion, my model examines dynamic risk-sharing strategies between equity and cryptocurrency markets, shedding light on the time-varying correlation between cryptocurrency and stock returns. I find that this correlation is driven by the covariance between habit changes and stock returns, as well as the consumption-convenience benefit ratios between crypto assets and equities. Moreover, the analysis of return co-movements across various time horizons suggests the relative significance of external and internal habit formation in shaping investment decisions in equities and bitcoins.

### **Robust Long-Term Investment Strategy via Causal Reinforcement Learning**

with Yueyang Zhong

This paper develops a dynamic trading strategy aimed at maximizing long-term returns through a novel integration of causal inference and reinforcement learning (RL). Standard RL frameworks often assume well-defined model structures, yet real-world trading environments typically suffer from unobserved confounders and biased feedback, resulting in model misspecification and ambiguity. To address these challenges, we embed an instrumental variable (IV) approach within a model-free RL paradigm, devising an IV-based RL algorithm. Furthermore, we incorporate robust mode estimation to ensure consistent performance even when standard IV assumptions are partially violated. Our theoretical analysis establishes consistency and asymptotic normality of this method, while empirical results, using both synthetic simulations and real trading data, demonstrate the effectiveness of the resulting trading strategy.

## **Institutional Herding and Underperformance Risk in Mutual Funds**

with Haoyang Sun

This study develops a theoretical framework to explain why mutual funds frequently purchase over-valued stocks. We attribute this behavior to strategic herding, which managers use as "insurance" against underperformance. We argue that the asymmetric compensation structure of mutual fund managers—where the rewards for conformity outweigh the risks of deviation—drives this tendency. Our analysis emphasizes the critical role of the relationship between stock returns and the likelihood of herding in determining excess returns. Specifically, we find that stocks with low covariance to herding probability tend to yield higher risk premiums. This insight is vital for understanding mutual fund investment strategies, highlighting how managers' risk-reward calculations influence market dynamics and fund performance.

## **Teaching Experience**

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**Executive MBA Business Statistics (by Prof. Jefferey Russell)**

*Teaching assistant; Evaluation: 4.7/5*

**Chicago Booth**

*Jan 2022- May 2022*

**Executive MBA Investment (by Prof. John Heaton)**

*Teaching assistant; Evaluation: 4.5/5*

**Chicago Booth**

*Aug 2019- Sep 2019*

**MBA Business Statistics (by Prof. Bryon Aragam)**

*Teaching assistant*

**Chicago Booth**

*Jan 2022- March 2022*

**MBA Competitive Strategy (by Prof. Yoad Shefi)**

*Teaching assistant*

**Chicago Booth**

*March 2019- June 2019*

**PhD Time-series Analysis (by Prof. Jefferey Russell)**

*Teaching assistant*

**Chicago Booth**

*2018-2021*

## **Employment**

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**University of Chicago, Booth School of Business**

*Research assistant for Prof. Marianne Bertrand*

*June 2016 – Aug 2016*

**Columbia Business School**

*Research assistant for Prof. Marco Di Maggio*

*June 2014 – Aug 2014*

**China International Capital Corporation**

*Financial analyst*

*June 2013 – Aug 2013*

## **Fellowships, Awards & Grants**

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Winner of the Arnold Zellner Doctoral Prize, Chicago Booth

MLS Full Tuition Waiver and Stipend (Inaugural Recipient), University of Chicago Law School

Stevens Doctoral Program Research Funding Support, Chicago Booth

Doctoral Program Research Funding Support, Chicago Booth  
The Eugene Fama Endowed Ph.D. Fellowship, Chicago Booth  
The Beryl W. Sprinkel Ph.D. Stipend, Chicago Booth  
Financial Economics of Insurance Workshop Grant, Bendheim Center for Finance at Princeton  
Chicago Booth Ph.D. Fellowship, Chicago Booth  
Phi Beta Kappa, University of Michigan  
James B. Angell Scholar, University of Michigan  
High Honors and High Distinction, University of Michigan

## Others

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**Language:** English (fluent), Mandarin (native)

**Programming:** R, Python, Stata, Matlab, C++

**Hobbies:** Jogging with my Akita; Composing classical piano music; Playing point guard in basketball

## References

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**George M Constantinides (Co-Chair)**

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**Jeffrey R Russell (Co-Chair)**

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