UCLA Anderson School of Management

Research Proposal Application: Market Frictions and Financial Risks
National Bureau of Economic Research (NBER)
Office of Financial Research at the US Department of the Treasury
National Science Foundation

Dear Wenxin Du, Alp Simsek, and Chester Spatt:

We would like to submit this research proposal to the NBER research proposal application on market frictions and financial risks.

Attachments:

1. Project proposal.
2. Conflict of interest statements.
3. Summary statement explaining the public policy issue that the proposed research could help to inform.
4. Curriculum vitae for each investigator.

Sincerely yours,

Andrea L. Eisfeldt
*Laurence D. and Lori W. Fink Endowed Chair in Finance, UCLA Anderson School of Management*
*NBER Research Associate: Corporate Finance, Asset Pricing, Economic Fluctuations & Growth*

Bernard Herskovic
*Assistant Professor of Finance, UCLA Anderson School of Management*
*NBER Faculty Research Fellow: Asset Pricing*

Shuo Liu
*Assistant Professor of Finance, Tsinghua University, School of Economics and Management*

**Title:** Interdealer Price Dispersion

## Objectives

This research proposal aims to investigate the effects of the misallocation of risk across dealers on the aggregate risk-bearing capacity of the dealer sector. Frictions inhibiting interdealer risk sharing have direct implications for risk allocation, bond pricing, liquidity, and financial stability.

Specifically, we aim to:

1. Develop a new methodology to measure risk misallocation within the OTC dealer sector. Our preliminary findings, theoretically and empirically, indicate that the cross-sectional dispersion of bond yields across bilateral dealer trades—namely, interdealer price dispersion—is an effective measure of frictions in the interdealer market. We provide evidence that interdealer price dispersion can measure the overall misallocation of credit risk in the time series, and its negative effect on dealer-sector risk-bearing capacity.
2. Show that interdealer price dispersion is a strong determinant of bond yield spread changes and the cross-section of bond returns. We aim to document and further our understanding of the important effects of interdealer frictions on bond pricing.
3. Show that interdealer price dispersion is an indicator of financial stability. In a Walrasian market with perfect risk sharing, dealers equate their marginal costs of bearing risk and trades occur at a single price. Higher interdealer price dispersion indicates risk misallocation, stronger interdealer frictions, and lower overall dealer-sector risk-bearing capacity. We show that the dealer sector is not a "representative agent" as commonly modeled in macro models with an intermediary sector. Dealers play different roles in the interdealer market, with some dealers adding and some subtracting from sector-level risk-bearing capacity. As a result, concentration of risk exposures can lead to financial instability.

## Research Question

In our preliminary findings, we find that interdealer price dispersion explains a substantial amount of the variation in changes in corporate bond yields and is a priced risk factor in the cross section of bond returns. We argue that this is because interdealer price dispersion arises due to frictions within the dealer sector that lead to a misallocation of credit risk among intermediaries. Risk misallocation reduces dealer-sector risk-bearing capacity and increases effective market-level risk aversion due to worse risk sharing.

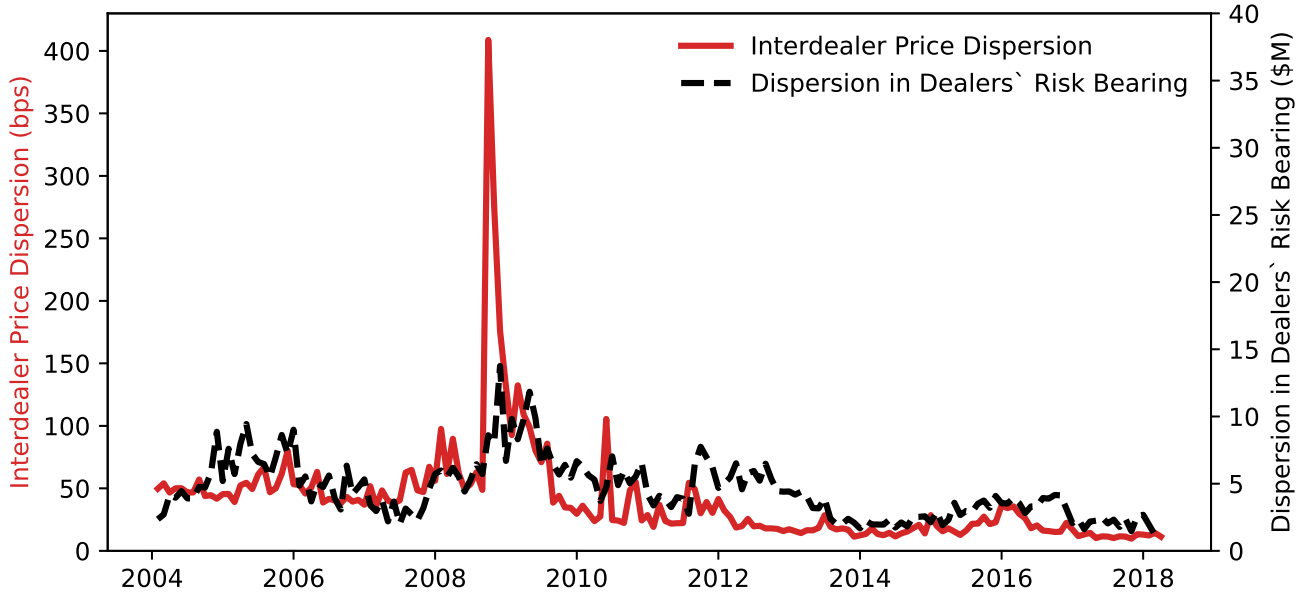
We measure interdealer price dispersion as the cross-sectional dispersion in bond yields of interdealer trades of the same bond at a given moment in time. Without frictions, bond dealers should optimally reallocate risk, and in a competitive Walrasian market interdealer price dispersion would be zero. However, we observe in the data that interdealer price dispersion is significant and varies substantially over time. Figure 1 plots the time series of interdealer price dispersion as the solid red line, along with the cross-sectional dispersion in dealers' risk-bearing capacity in the dashed black line. The picture shows a strong comovement between the two series. It is high when dealers with additional credit-risk capacity only partially exploit the gains from trading with other dealers who wish to reduce their credit exposure. When it is more costly to reallocate credit risk efficiently, the risk-bearing capacity of the dealer sector is impaired. Bond prices are lower, and credit spreads are higher.

In addition to explaining changes in bond yields and being a priced risk factor in the cross section of bond returns, our preliminary results indicate that changes in interdealer price dispersion also explain changes in the basis between credit spreads from OTC market data and credit spreads constructed using exchange-traded equity data and leverage ratios. This finding supports the idea that the explanatory power of interdealer price dispersion reflects frictions within the dealer sector in an over-the-counter (OTC) market.

When interdealer price dispersion increases, bond yield spreads increase as well. Interdealer price dispersion explains a substantial portion of the common component in the residuals from a regression of yield spread changes on fundamental credit risk variables (Collin-Dufresne et al., 2001). Shocks to interdealer price dispersion are a priced risk factor in corporate bond markets, and bonds with higher exposure to increases in interdealer price dispersion earn a positive risk premium.

Figure 1: Interdealer price dispersion and primary dealers' risk bearing capacity

This figure plots interdealer price dispersion (red solid line) and the dispersion of dealers' risk-bearing capacity (black dashed line). To compute the interdealer price dispersion, we first compute the cross-sectional standard deviation of yield spreads for each bond within each month. Then, we averaged across all bond trades that month. Risk-bearing capacity is the duration-times-spread (DTS)-weighted average of cumulative bond inventory positions, and the dispersion of risk-bearing capacities is its cross-sectional interquartile range.




The risk-bearing capacity of the dealer sector has been the focus of a large and growing empirical literature in asset pricing (Adrian, Etula, and Muir, 2014; He, Kelly, and Manela, 2017; Haddad and Muir, 2021). The theoretical motivation for these models typically employs a representative intermediary (see He and Krishnamurthy, 2013; Brunnermeier and Sannikov, 2014) and suggests using equity-weighted intermediary-sector leverage as the intermediary asset pricing factor. However, not all intermediaries are created equal for asset pricing, and straight equity weighting may not be best when constructing intermediary asset pricing factors.

Several new studies point to the importance of individual dealers in determining asset prices (Siriwardane, 2019; Siriwardane, Sunderam, and Wallen, 2021; Lewis, Longstaff, and Petrasek, 2017). Consistent with these findings, Eisfeldt, Herskovic, Rajan, and Siriwardane (2023) document large heterogeneity across dealers in their net credit default swap positions and build a model to illustrate the resulting systemic risk in credit markets. Other recent studies point to an increase in interdealer frictions since the Global Financial Crisis (Copeland, Duffie, and Yang, 2021; Correa, Du, and Liao, 2020), indicating that the impact of dealer heterogeneity may have increased since 2008.

The reason why the risk-bearing capacity of the dealer sector in the presence of interdealer frictions depends on dealer heterogeneity can be understood in the context of an efficiency argument. The more efficient the allocation of credit risk among dealers—that is, the greater the ability of the dealer sector to equate participants' marginal costs of risk-bearing—the larger the risk-bearing capacity of the dealer sector is. The intuition is the same as why output is higher among producers with different productivities when capital is allocated to equate marginal products than when there is misallocation of capital or labor (Hsieh and Klenow, 2009). In asset pricing, the fact that misallocation leads to lower prices and higher risk premia is the core concept behind intermediary asset pricing. However, standard models feature only two types of agents, intermediaries and households, with frictionless interdealer markets and a representative-agent dealer sector.[1] We argue that these models are incomplete, especially in OTC settings.

Consider the corporate bond dealer sector. Each dealer has exposure to credit risk at any given point in time, which results from prior trade in bonds, loans, or derivatives. In a Walrasian market, these dealers would trade at a single market-clearing price to equalize credit exposures, and the risk-bearing capacity of the dealer sector would be independent of the initial allocation of risk.[2] In practice, the most intermediated markets are over-the-counter

[1] See Kargar (2021) for a model with two types of intermediaries and households, and Eisfeldt, Lustig, and Zhang (2021) for a model in which the joint distribution of wealth and expertise determines aggregate risk-bearing capacity. See also Bretscher, Schmid, Sen, and Sharma (2020), which emphasizes the role of heterogeneous institutional bond holders in a demand-system asset pricing model.

[2] For an important early paper modeling a Walrasian interdealer market with an emphasis on frictions in customer trading, see (Duffie et al.,

(OTC) markets (see Haddad and Muir, 2021). There is no one market-clearing price for OTC assets, even for bilateral trades within the dealer sector. If trading frictions prevent dealers from equalizing their exposures, the resulting dispersion in their marginal cost of risk-bearing will result in bilateral price dispersion.

For example, in the OTC network model of Eisfeldt et al. (2023), prices are a weighted average of bilateral counterparties' marginal costs of risk-bearing.[3] If two dealers with large pre-trade risk exposures transact, bond prices will be lower than in a trade between two less exposed dealers with lower marginal costs of bearing additional credit risk. Thus, price dispersion within the dealer sector reflects the inability of dealers to efficiently reallocate credit risk and to maximize the potential capacity of the dealer sector to absorb credit risk.

## Preliminary Findings

Our preliminary findings provide substantial evidence that interdealer price dispersion in the corporate bond market reflects impairment to the risk-bearing capacity of the dealer sector. We construct a dataset containing all interdealer corporate bond trades using TRACE data and dealer-level proxies for corporate bond positions from past transactions. We merge this data with data on corporate bond yields and fair-value spreads constructed using equity-market data and a structural model.

We have documented four main results:

1. First, in a panel regression setting, we show that changes in interdealer price dispersion are positively related to changes in yield spreads. A one percentage point increase in interdealer price dispersion is associated with around 78 basis point increase in yield spreads. Our finding is robust to various controls, including fundamental-based variables from Collin-Dufresne, Goldstein, and Martin (2001), the default factor from Bessembinder, Kahle, Maxwell, and Xu (2008), risk factors from He, Kelly, and Manela (2017), risk factors from He, Khorrami, and Song (2019), and OTC-based frictions variables from Friedwald and Nagler (2019).

2. Second, we find that interdealer price dispersion explains a substantial fraction of the basis between bond spreads from the OTC market and fair-value spreads, where we construct fair-value spreads via a structural model using exchange-traded equity volatility and leverage data. A one percentage point increase in interdealer price dispersion is associated with around 60 basis point increase in the bond basis—that is, the difference between yield spreads and fair-value spreads. Hence, interdealer price dispersion widens the gap between yield spreads and fair-value spreads, consistent with the idea that part of the bond basis between OTC market bond trades and bond spreads from a structural model and equity-market data is due to interdealer frictions. Again, our findings are robust to the same set of controls listed above.

3. Third, interdealer price dispersion explains a substantial fraction of the common component in residuals from a regression of yield spread changes on fundamental credit-risk variables. Collin-Dufresne, Goldstein, and Martin (2001) documented that these residuals feature a strong factor structure in which the first principal component explains about 20-25% of the total variation. Explaining the economic content of this first principal component is crucial for our understanding of bond prices. Our measure of interdealer price dispersion helps to explain variation in this first principal component, adding about 10 to 15 percentage points to the coefficient of determination relative to the specifications from prior literature that do not focus on dealer heterogeneity (Bessembinder, Kahle, Maxwell, and Xu, 2008; He, Khorrami, and Song, 2019; Friedwald and Nagler, 2019).

4. Finally, we document that interdealer price dispersion carries a negative price of risk in the cross-section of corporate bond returns, indicating that higher price dispersion indicates lower dealer-sector risk-bearing capacity. We document the ability of interdealer price dispersion to price the cross section of bond returns for duration-times-spreads sorted portfolios of bonds as well as for the cross-section of bonds double-sorted on maturity and size. Bond yields tend to increase when interdealer price dispersion goes up—in terms of returns, bond returns decrease. Bonds typically have a negative beta with respect to interdealer price dispersion. Exposure to shocks to interdealer price dispersion earns a positive risk premium and bonds more exposed to interdealer price dispersion have higher average returns. Interdealer price dispersion has a negative price of risk, consistent with the idea that higher dispersion indicates a less efficient allocation of risk and lower risk-bearing capacity (i.e. higher effective dealer-sector risk aversion).

2005).

[3] See Atkeson et al. (2015) for a related result in a search model.

## Data

We use the enhanced Trade Reporting and Compliance Engine (TRACE) data set from January 2004 to December 2019 as the main data set for interdealer price dispersion and bond credit spreads. This data set provides counterparty information. In particular, it allows us to identify interdealer trades vs. trades involving customers as counterparties. The financial institutions registered as member firms of the Financial Industry Regulatory Authority (FINRA) are labeled dealers in TRACE.[4] We filter the data following the standard procedure in Dick-Nielsen (2014). Then we merge the filtered data set with the Mergent Fixed Income Securities Database (FISD) to obtain bond fundamental characteristics. We exclude variable-coupon, convertible, exchangeable, put-able and newly issued bonds. We also exclude asset-backed securities, privately placed instruments, and bonds denominated in foreign currencies or issued by foreign companies.

We use the academic version of the TRACE data to compute dealers' cumulative inventory of bonds, and we use the data on bond-level fair value spreads from Chang, d'Avernas, and Eisfeldt (2021) to calculate the OTC bond basis, which measures the non-default component of the credit spread. For data describing all other bond- and market-level controls, we next merge our data with CRSP, Compustat, OptionMetrics, Chicago Board Options Exchange (CBOE) and the economic data from the Federal Reserve Bank of St. Louis to obtain issuers' and primary dealers' equity prices and accounting information, the Standard & Poor's (S&P) 500 index, the volatility index (VIX), the 10-year Treasury constant maturity rate, the slope of the yield curve, implied volatilities of options on S&P 500 futures, and the effective yields of U.S. investment-grade (IG) and high-yield (HY) corporate bond portfolios.

The merged data sample consists of monthly observations at the bond level. Following the standard practice in the academic literature, we only consider bonds for which we have at least 25 observations of monthly credit spread/basis changes. Our final data sample includes 10,537 bonds issued by 5,869 firms. The total outstanding amount of all the bonds is 19.6 billion dollars, with 73% rated BBB and above. The average age is 3.2 years, the average time-to-maturity is 7.2 years, and the average trade size is $880,000 across all transactions.

## Summary and Future Work

We document the explanatory power of interdealer price dispersion for corporate bond yields. When interdealer price dispersion is higher, bond yield changes are more positive. Interdealer price dispersion explains a substantial fraction of the first principal component of the residuals from a bond-level regression of yield spread changes on fundamental credit-risk variables. We argue that interdealer price dispersion is a proxy for frictions in the OTC bond market. Consistent with this, we show that interdealer price dispersion explains the basis between bond spreads from the OTC bond market and bond spreads constructed using a structural model and exchange-traded equity market data on volatility and leverage. Finally, we show that interdealer price dispersion is a priced risk factor. This is consistent with the idea that systematic credit risk capacity is lower when interdealer price dispersion is greater. We argue that this is because prices in the interdealer market become more dispersed when credit risk misallocation is more severe. Credit risk misallocation reduces risk-bearing capacity and increases effective risk aversion, leading to lower prices and higher expected returns.

In future work, we plan to develop a theory of interdealer price dispersion and risk-bearing capacity that can help to (1) refine our empirical measures, (2) help to improve representative agent models of intermediary asset pricing to account for dealer heterogeneity and interdealer frictions and (3) help to develop better models of the role of interdealer frictions on asset pricing and in assessing financial stability. We also plan to investigate markets outside of the corporate bond market, including the market for mortgage-backed securities, the treasury market, and currency markets. Finally, we plan to study the different market structures and funding models for fundamental assets and derivative securities to try to understand the role of interdealer frictions on bases between fundamental assets and related derivatives. To this end, we plan to study the relationship between price dispersion in the corporate bond and credit default swaps market and the CDS-bond basis.

[4]Member firms of the FINRA mainly include broker-dealers, exchanges and crowdfunding portals. Member firms must submit reports to FINRA after completing corporate bond transactions. The reports include detailed information on realized transactions, including bond ID, counterparty ID, price, volume, execution time, etc. Each report must be submitted within 15 minutes since the corresponding transaction happens.

## Research Team

Our research team consists of three principal investigators:

1. Andrea L. Eisfeldt(principal investigator)
   *Laurence D. and Lori W. Fink Endowed Chair in Finance, UCLA Anderson School of Management*
   *NBER Research Associate: Corporate Finance, Asset Pricing, Economic Fluctuations & Growth*

2. Bernard Herskovic (principal investigator)
   *Assistant Professor of Finance, UCLA Anderson School of Management*
   *NBER Faculty Research Fellow: Asset Pricing*

3. Shuo Liu (principal investigator)
   *Assistant Professor of Finance, Tsinghua University, School of Economics and Management*

## References


T. Adrian, E. Etula, and T. Muir. Financial intermediaries and the cross-section of asset returns. *The Journal of Finance*, 69(6):2557–2596, 2014.
A. Atkeson, A. Eisfeldt, and P.-O. Weill. Entry and exit in otc derivatives markets. *Econometrica*, 83(6):2231–2292, 2015.
H. Bessembinder, K. M. Kahle, W. F. Maxwell, and D. Xu. Measuring abnormal bond performance. *The Review of Financial Studies*, 22(10): 4219–4258, 2008.
L. Bretscher, L. Schmid, I. Sen, and V. Sharma. Institutional corporate bond pricing. *Swiss Finance Institute Research Paper*, (21-07), 2020.
M. K. Brunnermeier and Y. Sannikov. A macroeconomic model with a financial sector. *American Economic Review*, 104(2):379–421, 2014.
H. Chang, A. d'Avernas, and A. L. Eisfeldt. Bonds vs. equities: Information for investment. *Equities: Information for Investment (April 15, 2021)*, 2021.
P. Collin-Dufresne, R. S. Goldstein, and J. S. Martin. The determinants of credit spread changes. *The Journal of Finance*, 56(6):2177–2207, 2001.
A. Copeland, D. Duffie, and Y. Yang. Reserves were not so ample after all. Technical report, National Bureau of Economic Research, 2021.
R. Correa, W. Du, and G. Y. Liao. Us banks and global liquidity. Technical report, National Bureau of Economic Research, 2020.
J. Dick-Nielsen. How to clean enhanced TRACE data. Working paper, CBS, 2014.
D. Duffie, N. Gârleanu, and L. H. Pedersen. Over-the-counter markets. *Econometrica*, 73:1815–1847, 2005.
A. L. Eisfeldt, H. Lustig, and L. Zhang. Complex asset markets. Technical report, National Bureau of Economic Research, 2021.
A. L. Eisfeldt, B. Herskovic, S. Rajan, and E. Siriwardane. Otc intermediaries. *The Review of Financial Studies*, 36(2):615–677, 2023.
N. Friedwald and F. Nagler. Over-the-counter market frictions and yield spread changes. *Journal of Finance*, Forthcoming, 2019.
V. Haddad and T. Muir. Do intermediaries matter for aggregate asset prices? *The Journal of Finance*, 76(6):2719–2761, 2021.
Z. He and A. Krishnamurthy. Intermediary asset pricing. *American Economic Review*, 103(2):732–70, 2013.
Z. He, B. Kelly, and A. Manela. Intermediary asset pricing: New evidence from many asset classes. *Journal of Financial Economics*, 126(1):1–35, 2017.
Z. He, P. Khorrami, and Z. Song. Commonality in credit spread changes: Dealer inventory and intermediary distress. Technical report, National Bureau of Economic Research, 2019.
C.-T. Hsieh and P. J. Klenow. Misallocation and manufacturing tfp in china and india. *The Quarterly journal of economics*, 124(4):1403–1448, 2009.
M. Kargar. Heterogeneous intermediary asset pricing. *Journal of Financial Economics*, 141(2):505–532, 2021.
K. F. Lewis, F. A. Longstaff, and L. Petrasek. Asset mispricing. Technical report, National Bureau of Economic Research, 2017.
E. Siriwardane, A. Sunderam, and J. Wallen. Segmented arbitrage. *Available at SSRN 3960980*, 2021.
E. N. Siriwardane. Limited investment capital and credit spreads. *Journal of Finance*, 2019.

## Conflict of Interest Statement

I have no financial or other interests that might bear on the proposed work, especially any ties to financial institutions or firms that may be affected by the proposed research.

Andrea L. Eisfeldt

I have no financial or other interests that might bear on the proposed work, especially any ties to financial institutions or firms that may be affected by the proposed research.

Bernard Herskovic

I have no financial or other interests that might bear on the proposed work, especially any ties to financial institutions or firms that may be affected by the proposed research.

Shuo Liu

# Public Policy Statement

Misallocation of risk and financial stability is a public policy issue that our proposed research will help to inform. Our research project directly impacts public policy because our proposed measure of interdealer price dispersion is a measure of financial stability. We argue that interdealer price dispersion is a proxy for OTC bond market frictions within the dealer sector across different dealers with varying capacities to absorb additional risk. The prices dealers are willing to trade at, and the amount of trade they are willing to execute can help to assess the health of the dealer sector, and potentially of individual dealers. Our preliminary results are consistent with the idea that the capacity of the dealer sector to bear systematic credit risk is lower when interdealer price dispersion is higher. We argue that this is because prices in the interdealer market become more dispersed when credit risk misallocation is more severe. Credit risk misallocation reduces risk-bearing capacity and increases effective risk aversion, leading to lower prices, higher expected returns and lower financial stability. In addition to building a measure of financial stability, one of the objectives of this proposal is to develop a theory of interdealer price dispersion and risk-bearing capacity that helps to design better models of the role of interdealer frictions on asset pricing and in assessing financial stability.

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**Academic Employment Positions**

| | |
|---|---|
| 2015-Present | Laurence D. and Lori W. Fink Endowed Chair in Finance, UCLA Anderson School of Management. |
| 2015 | Anderson Faculty Term Chair in Finance and Professor of Finance, Anderson School of Management, UCLA. |
| 2014-2015 | Professor of Finance, Anderson School of Management, UCLA. |
| 2011-2014 | Associate Professor of Finance, Anderson School of Management, UCLA. |
| 2010-2011 | Visiting Associate Professor of Finance, Finance Area, Anderson School of Management, UCLA. |
| 2007-2011 | Associate Professor of Finance (with tenure), Kellogg School of Management, Northwestern University. |
| 2000-2007 | Assistant Professor of Finance, Kellogg School of Management, Northwestern University. |

**Education**

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|---|---|
| August 2000 | Ph.D., Department of Economics, University of Chicago. |
| August 2000 | M.A., Department of Economics, University of Chicago. |
| May 1994 | B.S. in Economics, Highest Honors, College of Commerce, University of Illinois at Urbana-Champaign. |

**Other Academic Positions**

| | |
|---|---|
| 2022-Present | Visiting Scholar, Federal Reserve Bank of San Francisco. |
| 2022-Present | NBER Macroeconomics Annual Advisory Board. |
| 2021-Present | Associate Editor, Journal of Political Economy. |
| 2021-Present | Associate Editor, Journal of Economic Perspectives. |
| 2014-Present | NBER Research Associate: Corporate Finance, Asset Pricing, Economic Fluctuations & Growth. |
| 2010-present | Member, Foundation for the Advancement of Research in Financial Economics (FARFE). |
| 2020-2022 | Co-Chair, then Chair, Society for Financial Studies Cavalcade. |
| 2017-2022 | Member, Macro Financial Modeling Executive Group. |
| 2016-2022 | Associate Editor, Review of Economic Dynamics. |
| 2014-2022 | Associate Editor, Journal of Monetary Economics. |
| 2014-2022 | Associate Editor, American Economic Journal: Macroeconomics. |
| 2019-2021 | Director, American Finance Association. |
| 2019-2021 | Director, Society for Financial Studies Cavalcade. |
| 2016-2019 | Associate Editor, Journal of Finance. |
| 2015-2016 | President, Macro Finance Society. |
| 2012-2017 | Director (founding board), Macro Finance Society. |
| 2009-2017 | Academic Advisory Board Member, Gutmann Center for Portfolio Management Board of Directors, Vienna. |

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|---|---|
| 2015-2016 | Faculty Director, Fink Center for Finance and Investments at UCLA Anderson. |
| 2011-2014 | Invited member, Finance Theory Group. |
| 2010-2013 | Director, Western Finance Association. |
| 2009-2011 | Board Member, Chicago Census Data Research Center Board of Directors. |
| 2009-2010 | Co-Editor, Finance Research Letters. |
| 2003, 2004 | Visiting Scholar, Minneapolis Fed, Institute for Empirical Macroeconomics. |

**Other Board and Employment Experience**

| | |
|---|---|
| 2022-Present | UCLA Investment Company Board. |
| 2021-Present | Academic Advisory Board, Vise AI Advisors, LLC. |
| 2020-Present | Affiliate, Cornerstone Research, LLC. |
| 2015-2018 | Consultant, AQR Capital Management, LLC. |
| 2013-2015 | Chief Economist and Principal, Structured Portfolio Management, LLC, (while on unpaid leave from UCLA Anderson). |
| 2012-2013 | Consultant, Structured Portfolio Management, LLC. |
| 1994-1996 | Associate, Chicago Partners, LLC, Economic Consulting. |

**Publications**

**"Endogenous Liquidity in Asset Markets"** ***(lead article).***
*Journal of Finance* 2004, 59(1): 1-30.
***Smith Breeden Distinguished Paper***.
Reprinted in *"Handbook of Liquidity and Crises"* (2011), edited by Franklin Allen, Elena Carletti, Jan Pieter Krahnen, and Marcel Tyrell.

**"Capital Reallocation and Liquidity,"** with Adriano Rampini***(lead article).***
*Journal of Monetary Economics* 2006, 53(3): 369-399.

**"Smoothing with Liquid and Illiquid Assets."**
*Journal of Monetary Economics* 2007, 54: 1572-1586.

**"New or Used? Investment with Credit Constraints,"** with Adriano Rampini.
*Journal of Monetary Economics* 2007, 54: 2656-2681.

**"Managerial Incentives, Capital Reallocation, and the Business Cycle,"**
with Adriano Rampini. *Journal of Financial Economics* 2008, 87: 177-199.
***Jensen Prize Second Place***.

**"Leasing, Ability to Repossess, and Debt Capacity,"** with Adriano Rampini.
*Review of Financial Studies* 2009, 22: 1621-1657.

**"CEO Turnover in a Competitive Assignment Framework,"**
with Camelia Kuhnen. *Journal of Financial Economics* 2013, 109: 351-372.

**"Organization Capital and the Cross-Section of Expected Returns,"**
with Dimitris Papanikolaou. *Journal of Finance* 2013, 68: 1365-1406.
***Amundi Smith Breeden First Prize Paper***.

**"The Value and Ownership of Intangible Capital,"** with Dimitris Papanikolaou.
*American Economic Review Papers & Proceedings*, 2014, 104: 189-94.

**"Entry and Exit in OTC Derivatives Markets,"** with Andrew Atkeson and Pierre-Olivier Weill. *Econometrica,* 2015, 83: 2231-2292.

**"Aggregate External Financing and Savings Waves,"** with Tyler Muir.
*Journal of Monetary Economics* 2016, 84: 116-133.

**"The Financial Soundness of US Firms 1926-2012,"** with Andrew Atkeson and Pierre-Olivier Weill. *Research in Economics* 2017, 71: 613-635

**Publications, cont'd.**

**"Government Guarantees and the Valuation of US Banks,"**
with Andrew Atkeson, Adrien d'Avernas and Pierre-Olivier Weill.
*2018 NBER Macroeconomics Annual.*

**"Capital Reallocation,"**
with Yu Shi. *Annual Review of Financial Economics* 2018, 10: 361-386.

**"The Cross Section of MBS Returns"** ***(lead article),***
with Peter Diep and Scott Richardson. *Journal of Finance* 2021, 76: 2093-2151.

**"Total Returns to Single Family Rentals"** ***(lead article),***
with Andrew Demers. *Real Estate Economics* 2022, 50: 7-32.
***Edwin Mills Best Paper Award***.

**"Intangible Value,"** with Edward T. Kim and Dimitris Papanilolaou.
*Critical Finance Review* 2022, 11: 299-332.

**"Human Capitalists,"**
with Antonio Falato and Mindy Xiaolan. *Forthcoming, NBER Macro Annual 2022.*

**"OTC Intermediaries,"** with Bernard Herskovic, Sriram Rajan
and Emil Siriwardane. *Forthcoming, Review of Financial Studies.*

**"Complex Asset Markets,"**
with Hanno Lustig and Lei Zhang. *Forthcoming, Journal of Finance.*

**Published Comments**

**"Comment on the Rise of Global Corporate Saving, by Peter Chen, Loukas Karabarbounis, and Brent Neiman."**
*Journal of Monetary Economics* 2017, 89: 20-24.

**"Book Review: Jonathan Haskel and Stian Westlake: Restarting the Future: How to Fix the Intangible Economy."**
*Forthcoming, Business Economics.*

**Working Papers**

**"Intangible Capital, Non-Rivalry, and Growth,"**
with Nico Crouzet, Janice Eberly, and Dimitris Papanikolaou.

**"Interdealer Price Dispersion,"** with Bernard Herskovic and Shuo Liu.

**"Bonds vs. Equities: Information for Investment,"**
with Adrien d'Avernas and Huifeng Chang.

**Unpublished Papers**

**"A Model of Intangible Capital,"** with Nico Crouzet,
Janice Eberly, and Dimitris Papanikolaou.

**"The Market for OTC Derivatives,"** with Andrew Atkeson and Pierre-Olivier Weill.

**"Financing Shortfalls and the Value of Aggregate Liquidity,"**
with Adriano Rampini.

**"Colonies,"** with Matthias Doepke.

**Fellowships, Honors and Awards**

| | |
|---|---|
| 2022 | Edwin Mills Best Paper Award, *Real Estate Economics*. |
| 2022 | Keynote Speaker and Chair, Society for Financial Studies Cavalcade. |
| 2022 | Keynote Speaker, Midwest Finance Association. |
| 2017 | Keynote Speaker: 12th Annual Hedge Fund Conference, Imperial College. |
| 2017 | Macro Financial Modeling Grant. |
| 2013-2016 | National Science Foundation Grant. |
| 2013 | Amundi Smith Breeden First Prize Paper Award, *Journal of Finance*. |
| 2012-2013 | Bank of France Research Grant. |
| 2013 | Excellence in Refereeing Award, *American Economic Review*. |
| 2012 | Fink and Ziman Center Data Purchase Grants. |
| 2011 | Fink Center Research Grant. |
| 2008 | Jensen Prize, Second Place, *Journal of Financial Economics*. |
| 2004 | Smith Breeden Distinguished Paper Award, *Journal of Finance*. |
| 2003, 2004 | Searle Fund Grant. |
| 1999 | Margaret Reid Dissertation Fellowship. |
| 1998 | Lee Prize for Best Money and Banking Paper, University of Chicago. |
| 1997 | National Science Foundation Honorable Mention. |
| 1996-1999 | University of Chicago Century Scholarship. |

**Invited Seminar Presentations**

| | |
|---|---|
| 2022 | Carnegie Mellon University, University of Wisconsin, University of Chicago Booth School of Business, University of Michigan, University of Bonn, BEA, University of Arizona, HKUST, Santa Clara University, UT Austin, NYU Stern, Boston University |
| 2021 | Michigan State University Econ, Richmond Fed, LSE, LBS, UNC, Bank of England, McGill, Insead |
| 2020 | Labor and Finance Online Seminar, Search and Matching in Macro and Finance Virtual Seminar, School of Business at ITAM, Rotman School of Business, Peking University, Tuck School of Business, Triangle Macro Finance Virtual Seminar, Toronto Econ, University of Maryland Robert H. Smith School of Business |
| 2019 | MIT Econ, MIT Sloan, Stanford Econ, UC Davis Econ, UT Austin McCombs, Northwestern Econ, UCLA Macro Finance Lunch, Chicago Booth Macro, Chicago Booth Finance, Columbia Econ |
| 2018 | Berkeley Haas, USC, University of Minnesota Carlson School of Management, Boston University, Office of Financial Research, US Treasury, Federal Reserve Board DC |
| 2017 | NYU Stern, CREI, Bocconi, LSE, UCL, Imperial College, FRB San Francisco, Berkeley Haas Real Estate, University of Washington Foster School |
| 2016 | UCSD Economics, AQR, University of Michigan Economics |
| 2015 | Ohio State University, Harvard University, Brigham Young University, Olin School WUSTL |
| 2014 | UNC, Wharton, Yale SOM, Columbia GSB, NYU Stern, Stanford GSB, Berkeley Haas, BlackRock, FRB NY |
| 2013 | MIT, University of Lausanne, Federal Reserve Bank of San Francisco, Boston University Economics, Columbia University Economics, NYU Economics |
| 2012 | Stanford University, University of Texas, Carnegie Mellon University, London Business School, London School of Economics, Duke University, University of Wisconsin |
| 2011 | University of Michigan, Columbia University, Yale University |
| 2010 | Ohio State University, University of Chicago, Boston University, University of Washington Foster School, USC Marshall School of Business, UCLA Department of Economics |

**Invited Seminar Presentations, cont'd.**

2009 Toulouse School of Economics, NHH, Bergen, IESE Barcelona, ESADE Barcelona, UCLA Anderson, University of Illinois
2008 University of North Carolina
2007 Vanderbilt University, University of Florida, Northwestern University Macro Lunch, Berkeley, Indiana University, University of Vienna (Research Fellow), Columbia University Department of Economics, Rice University, Chicago Fed
2006 University of British Columbia, University of Minnesota, University of Colorado, Stockholm School of Economics, Chicago Graduate School of Business, Harvard Business School, UCLA Department of Economics
2005 Michigan State, MIT Sloan School, University of Wisconsin
2004 University of Maryland, Census Bureau Washington DC, University of Illinois, Duke University
2003 Bank of International Settlements, Federal Reserve Board of Governors, London Business School, Federal Reserve Bank of Minneapolis
2002 Northwestern University Department of Economics, University of Michigan Department of Economics, Carnegie Mellon University GSIA
2000 UCLA Anderson School of Business, Northwestern University Kellogg School, University of Michigan GSB, Harvard Business School, Stanford University GSB, Stanford University Department of Economics, Berkeley Haas, University of Pennsylvania Wharton School, Columbia University GSB, University of Illinois Department of Economics and Department of Finance
1999 University of Chicago, Department of Economics

**Referee/Reviewer**

Journal of Finance, Journal of Financial Economics, Review of Financial Studies, Journal of Monetary Economics, American Economic Review (2013 Excellence in Refereeing Award), Econometrica, Journal of Political Economy, Review of Economic Studies, Census Bureau, National Science Foundation.

**Dissertation Committees**

Huifeng Chang, 2022, UCLA Economics, placed Fudan School of Management.
Yu Shi, 2021, UCLA Anderson, placed Nankai University (chair).
Geoffrey Zheng, 2020, UCLA Anderson, placed NYU Shanghai.
Mahyar Karkar, 2019, UCLA Anderson, placed University of Illinois Urbana Champaign (chair).
Darren Aiello, 2018, UCLA Anderson, placed Brigham Young University.
Leo Li, 2018, UCLA Anderson, placed Shanghai University of Finance and Economics (chair).
Adrien d'Avernas, 2017, UCLA Economics, placed Stockholm School of Economics.
Lei Zhang, 2016, UCLA Economics, placed Hong Kong University (chair).
Robert Richmond, 2016, UCLA Anderson, placed NYU Stern.
Robert Kurtzman, 2015, UCLA Economics, placed FRB DC.
Aurelien Philippot, 2015, UCLA Anderson, placed Laval University, Quebec.
Frederico Grinberg, 2015, UCLA Economics, placed IMF.
Mindy Xiaolan Zhang, 2014, UCLA Anderson, placed UT Austin Finance.
Tyler Muir, 2013, Kellogg Finance, placed Yale Finance.
Briana Chang, 2012, Northwestern Economics, placed University of Wisconsin Finance.
Joel David, 2012, UCLA Economics, placed USC Economics.
Matthias Kehrig, 2011, Northwestern Economics, placed UT Austin Economics.

# Bernard Herskovic

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## Academic Appointments

Assistant Professor of Finance, UCLA Anderson School of Management, 2015–
Faculty Research Fellow, National Bureau of Economic Research, Asset Pricing group, 2021-

## Education

Ph.D. in Economics, New York University (NYU), 2010–2015
M.A., Economics, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), 2008–2010
B.A., Economics, Universidade Federal de Minas Gerais (UFMG), 2004-2008

## Research Interests

Asset Pricing, Networks, Economic Theory, Macroeconomics

## Publications and Accepted Papers

1. "Micro Uncertainty and Asset Prices" (with Howard Kung and Thilo Kind)
   ***Journal of Financial Economics***, Accepted

2. "Income-Based Affirmative Action in College Admissions" (with João Ramos, and Luiz Brotherhood)
   ***Economic Journal***, Accepted

3. "OTC Intermediaries" (with Andrea Eisfeldt, Sriram Rajan, and Emil Siriwardane)
   ***Review of Financial Studies***, February 2023, Vol. 36(2), pp.615–677

4. "Firm Volatility in Granular Networks" (with Bryan Kelly, Hanno Lustig and Stijn Van Nieuwerburgh)
   ***Journal of Political Economy***, November 2020, Vol. 128(11), pp. 4097–4162

5. "Acquiring Information Through Peers" (with João Ramos)
   ***American Economic Review***, July 2020, Vol. 110(7), pp. 2128–52

6. "Networks in Production: Asset Pricing Implications"
   ***Journal of Finance***, August 2018, Vol. 73 (4), pp.1785-1818.

7. "The Common Factor in Idiosyncratic Volatility: Quantitative Asset Pricing Implications" (with Bryan Kelly, Hanno Lustig and Stijn Van Nieuwerburgh)
   ***Journal of Financial Economics***, February 2016, Vol. 119 (2), pp. 249–283

## Working Papers

8. "Hedging Risk Factors" (with Alan Moreira and Tyler Muir), *submitted*
9. "Interdealer Price Dispersion" (with Andrea Eisfeldt and Shuo Liu)
10. "Information Leakage from Short Sellers" (with Fernando Chague and Bruno Giovannetti)
11. "The Redistributive Effects of Monetary Policy" (with Daniel Andrei and Olivier Ledoit)

## Teaching

- Foundations of Finance (FEMBA) at UCLA Anderson—Spring 23' (scheduled)
- Foundations of Finance (MBA) at UCLA Anderson—Fall 21'
- Quantitative Asset Management (MFE) at UCLA Anderson—Spring 17', 18', 19', 20', 21', 22', 23' (scheduled)
- Investment Management (MBA, FEMBA) at UCLA Anderson—Spring 16', 17', 18', 19', 20', 21', 22', 23' (scheduled)
- Undergratuate Microeconomics at NYU Stern (teaching fellow, 4 semesters)—Fall 13', Spring 14', Fall 14', Spring 15'
- Undergratuate International Economics at NYU (instructor, summer)—Summer 13'
- Teaching Assistant: Ph.D. and MA Microeconomics II at PUC-Rio (Fall 2009), Ph.D. Microeconomics I at NYU (fall 2011), Ph.D. Financial Theory I at NYU Stern (fall 2012), Master's Microeconomics at NYU (spring 2013)

## Honors, Grants, Scholarships, and Fellowships

1. Inter-American Development Bank, Institute for Mobility and Social Development, and Brazilian Econometric Society award, BID-IMDS-SBE Award (1st Place), 2022
2. Fink Center Research Grant, 2019
3. Fink Center Research Grant, 2018
4. Fink Center Research Grant, 2017
5. Macro Financial Modeling Grant, 2017
6. Fink Center Research Grant, 2016
7. Cubist Systematic Strategies Ph.D. Candidate Award for Outstanding Research, 2015
8. C.V. Starr Center Fellowship, NYU, 2012
9. McCracken Ph.D. Fellowship, NYU, 2010–2015
10. FAPEMIG Research Fellowship, Brazilian Government, 2010
11. Fulbright-CAPES Ph.D. Fellowship, Brazilian Government (declined), 2010
12. Honorable Mention, MA dissertation Summer Paper, PUC-Rio, 2009
13. CAPES-PROSUP Academic Performance Fellowship, Brazilian Government, 2009–2010
14. CNPq M.A. Fellowship, Brazilian Government, 2008–2009
15. Summer Course Fellowship, PUC-Rio, 2008
16. Academic Relevance, UFMG Honors Program, UFMG, 2007
17. Honorable Mention, UFMG Honors Program, UFMG, 2006
18. Undergraduate Honors Program fellowship at UFMG, Brazilian Government, 2005–2007

## Presentations

- 2023: ITAM Finance Conference
- 2022: Lubrafin, UCLA Anderson brown bag, *Rochester*
- 2021: Lubrafin
- 2020: *Wharton*, Conference in Financial Economics Research at IDC Herzliya Arison School of Business, *Virtual Brazilian Finance Seminar*, *Virtual Finance Workshop*
- 2019: American Finance Association, Macro Financial Modeling Winter Conference, HEC-McGill Winter Finance Workshop, UCLA Anderson brown bag seminar, LA Finance Day, Deutsche Bank Quant Conference, *HEC Montreal*, Canadian economic association conference, Society for Economic Dynamics, Lubrafin, NBER Summer Institute Asset Pricing, CEPR/Study Center Gerzensee European Summer Symposium in Financial Markets (ESSFM), *Einaudi Institute for Economics and Finance*, *University of Arizona*, *CEDEPLAR-UFMG*, *Stockholm School of Economics*, Santiago Finance Workshop
- 2018: *University of Washington*, Maryland Finance Junior Conference, Rome Junior Finance Conference, Lubrafin, Barcelona GSE Summer Forum Uncertainty in Macro and Finance, NBER Summer Institute Asset Pricing, *Central Bank of Chile*, Columbia Junior Workshop in New Empirical Finance, *Federal Reserve Bank of Dallas*, Conference on Derivatives and Volatility

- 2017: *Caltech*, *City University of Hong Kong*, *PUC-Rio*, UCLA Macro Lunch, UCLA Anderson brown bag seminar, Society for Economic Dynamics Meeting, European Meeting of the Econometric Society, UBC Summer Conference, OTC Markets and Their Reform (conference sponsored by Swiss National Science Foundation), LubraMacro, NBER Conference on Financial Market Regulation, Chicago Booth Asset Pricing Conference
- 2016: *Carnegie Mellon Tepper School of Business*, *Monash University*, *University of Melbourne*, *University of Chile*, *University of Wisconsin*, LA Finance Day, Society for Economic Dynamics Meeting
- 2015: *Arizona State University W.P. Carey*, *USC Marshall*, *Duke Fuqua*, *Federal Reserve Board*, *UCLA Anderson*, *Chicago Booth*, *Kellogg*, *London School of Economics*, *London Business School*, *UCSD Rady*, *UC Berkeley Haas*, *IPEA* (Brasília), *FGV São Paulo School of Economics*, *Insper*, *PUC-Rio*, *FGV-EPGE*, Western Finance Association Meeting, Society for Economic Dynamics Meeting, Econometric Society World Congress, Southern California Finance Conference at CMC, LSE conference on Economic Networks and Finance
- 2014: *PUC-Rio*, Latin American Meeting of the Econometric Society, NYU Stern Macro Lunch Seminar, NYU Stern Finance Job Market Workshop, NYU Macro Student Lunch Seminar, NYU Financial Economics Workshop

## Discussions

1. Gordon Alexander, Joshua Madsen, Jonathan Ross. "The Correlation Anomaly: Return Comovement and Portfolio Choice," SFS cavalcades, Toronto, Canada, May 2016
2. Andrew Di Wu. "Shock Spillover and Financial Response in Supply Chain Networks: Evidence from Firm-Level Data," Western Finance Association, Park City, UT, June 2016
3. Ali Ozdagli, Michael Weber. "Monetary Policy through Production Networks: Evidence from the Stock Market", American Finance Association Annual Meeting, Chicago, IL, January 2017
4. Nicole Branger, Patrick Konermann, Christoph Meinerding, and Christian Schlag. "Equilibrium Asset Pricing in Directed Networks," Western Finance Association, Whistler, Canada, June 2017
5. Marco Di Maggio, Francesco Franzoni, Amir Kermani, and Carlo Sommavilla. "The Relevance of Broker Networks for Information Diffusion in the Stock Market," NBER Summer Institute Asset Pricing meeting, Cambridge, MA, July 2017
6. David Baqaee, and Emmanuel Farhi. "The Macroeconomic Impact of Microeconomic Shocks: Beyond Hulten's Theorem," Workshop on networks and granularity in macro, Central Bank of Chile, Santiago, Chile, August 2017
7. Adrian Buss, Raman Uppal, and Grigory Vilkov. "Down the Rabbit Hole: Dynamic Portfolio Allocation and Asset Pricing with Alternative Assets," European Finance Association meeting, Mannheim, Germany, August 2017
8. Christoph Aymanns, Co-Pierre Georg, and Benjamin Golub. "Illiquidity Spirals in Coupled Over-ther-Counter Markets," LAEF OTC Workshop, Santa Barbara, CA, October 2017
9. Ekkehart Boehmer, Charles M. Jones, and Xiaoyan Zhang. "Tracking Retail Investor Activity," Citrus Finance Conference, Riverside, CA, May 2018
10. Felipe Iachan, Plamen Nenov, and Alp Simsek. "The Choice Channel of Financial Innovation," Lubrafin, Porto de Galinhas, Brazil, June 2018
11. Michael Gofman, Gill Segal, and Youchang Wu. "Production Networks and Stock Returns: The Role of Vertical Creative Destruction," European Finance Association meeting, Warsaw, Poland, August 2018
12. Selman Erol, and Michael Junho Lee. "Insider Networks," LAEF OTC Workshop, Santa Barbara, CA, October 2018
13. Robin Greenwood, Samuel Hanson, Lawrence Jin. "Reflexivity in Credit Markets," Conference on Advances in Financial Research at Federal Reserve Bank of San Francisco, San Francisco, CA, October 2018
14. Matthieu Gomez. "Ups and Downs: How Idiosyncratic Returns Drive Top Wealth Inequality," Midwest Finance Association, Chicago, IL, March 2019

15. Samuel Antill, and Asani Sarkar. "Is size everything?" Federal Reserve Board Conference on the Interconnectedness of Financial Systems, Washington, DC, March 2019
16. Batchimeg Sambalaibat. "Endogenous Specialization and Dealer Networks," European Finance Association meeting, Carcavelos, Portugal, August 2019
17. Harjoat S. Bhamra, Raman Uppal, and Johan Walden. "The Geography of Beliefs," HEC-McGill Winter Finance Workshop, Fernie, Canada, March 2020
18. Robert Ready, Nikolai Roussanov, and Ewelina Zurowska. "Why Does Oil Matter? Commuting and Aggregate Fluctuations," American Finance Association Annual Meeting, January 2021
19. Zhanhui Chen, Michael Gallmeyer, and Baek-Chun Kim. "Decoding the Pricing of Uncertainty Shocks," American Finance Association Annual Meeting, January 2021
20. Maarten Meeuwis. "Customer-Supplier Interactions and Expected Returns," MFA, March 2021
21. Maarten Meeuwis. "Idiosyncratic Income Risk, Precautionary Saving, and Asset Prices," UT Dallas 2-21 Fall Finance Conference, October 2021
22. Geert Bekaert, Xue Wang, and Xiaoyan Zhang. "The International Commonality of Idiosyncratic Variances," American Finance Association Annual Meeting, January 2022
23. Gill Segal and Ivan Shaliastovich. " Uncertainty, Risk, and Capital Growth," Northern Finance Association Meeting, September 2022
24. Kristin Forbes, Christian Friedrich, and Dennis Reinhardt. "Stress Relief?: Financial Structures and Resilience to the Covid Shock," Carnegie-Rochester-NYU Conference on Economic Resilience and Interconnectedness, November 2022

## Referee

Econometrica, American Economic Review, Journal of Political Economy, Review of Financial Studies, Journal of Finance, Journal of Financial Economics, Management Science, Review of Finance, Review of Asset Pricing Studies, Journal of Empirical Finance, Journal of Financial and Quantitative Analysis, Journal of Economic Theory, Journal of Monetary Economics, Critical Finance Review, Journal of Economic Dynamics and Control, Review of Economics and Statistics, Scandinavian Journal of Economics, Quantitative Finance, American Economic Journal: Economic Policy, Journal of Ethnic and Migration Studies,

## Other Professional Services

- *PhD committee member* for:
  - Shuo Liu (UCLA Department of Economics). First placement: Tsinghua University School of Economics and Management, Assistant Professor
  - Gabriel Cuevas (UCLA Anderson Finance, in progress)
  - Yingru Pan (UCLA Anderson Finance, in progress)
  - Yuanzhen Lyu (UCLA Anderson Accounting, in progress)
- *MFE Applied Finance Project academic advising*:
  - Long/Short Non-G10 FX Trade (Citi, 2017),
  - Accurate Estimates of Future Earnings (LA Capital, 2018),
  - GDP and Stock Market Earnings Growth (Chantico Global, 2018),
  - Black Litterman Optimization for Asset Classes (Zacks, 2019),
  - Identifying and Extending Equity Momentum Strategies (Martlet AM, 2019),
  - Multi-factor models for global equity markets (O'Neil Capital, 2020),
  - Enhanced portfolio construction techniques (Research Affiliates, 2020)
- *MBA independent study advising*: Joon Park and Seung Woo Lee (2019)
- *Conference and seminar organization*:
  - 2017 LA Finance Day,

  - 2016-2017 UCLA Anderson Finance Seminar series,
  - 2020-2022 UCLA Anderson Finance Seminar series

- *Program committee member*:
  - 2018 Brazilian Economic Society meeting (finance area),
  - 2020-2022 Best Working Paper Award Central Bank of Brazil

- *Professional memberships*: Macro Finance Society, European Finance Association, American Finance Association, Western Finance Association

# Shuo Liu

Tsinghua University SEM
Department of Finance

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*Website*: www.shuo-liu.com
*Update*: March 26, 2023

## Education

**University of California, Los Angeles** Sep 2014 –Jun 2020
Ph.D. in Economics

– Thesis: "Essays on Over-the-Counter Financial Markets"

M.A. in Economics

**Columbia University, New York City** Sep 2012 –Dec 2013
M.S. in Operations Research

**Nankai University** Sep 2008 –Jun 2012
B.Ec. in Financial Engineering

## Academic Appointments

Assistant Professor of Finance, Tsinghua University SEM, 2020-present

## Research Interests

over-the-counter market, search-and-match theory, financial intermediation, asset pricing, corporate bond markets, information

## Professional Experiences

**Federal Reserve Bank of St. Louis, Research Department** Jul–Aug 2019
Dissertation Intern

**International Monetary Fund, Washington D.C.** Jun–Sep 2018
Ph.D. Research Intern, Fund Internship Program

## Publications

- "Corporate Bond Liquidity During the COVID-19 Crisis" (with Mahyar Kargar, Benjamin Lester, David Lindsay, Pierre-Olivier Weill, and Diego Zuniga), *Review of Financial Studies* (2021), 34(11), 5352–5401

## Working Papers

- "Dealers' Search Intensity in U.S. Corporate Bond Markets"
- "Interdealer Price Dispersion" (with Andrea L. Eisfeldt and Bernard Herskovic)
- "Social Optimal Search Intensity in Over-The-Counter Markets" *R&R*
- "Search Friction, Liquidity Risk and Bond Misallocation" *R&R*

## Referee

Review of Asset Pricing Studies, Journal of Banking and Finance, International Review of Finance, Economic Modelling, North American Journal of Economics and Finance

## Seminars and Conference Presentations

2023: 2nd Finance and Development Conference, Tsinghua University and GuangXi University (*presenter*)

2022: Inaugural Search and Matching Workshop in Asia-Pacific (*discussant*), Peking University School of Economics, 2020 China Fintech Research Conference (*discussant and session chair*), the China International Conference in Finance 2022 (*discussant*)

2021: Shanghai Jiaotong Antai School of Management (*presenter*) , FiveStar Workshop Program 2021 (*presenter*) (CUHK-Shenzhen)

2020: Shanghai University of Finance and Economics (*presenter*)

## Teaching Experience

Tsinghua SEM: First-year Ph.D. in Financial Economics (theoretical asset pricing), Financial Data Analysis and Applications (master), Empirical Finance (undergraduate)

## Honors and Awards

| | |
|---|---|
| UCLA Dissertation Year Fellowship | 2019-2020 |
| UCLA Graduate Student Fellowship | 2014 - present |
| UCLA Graduate Student Research Assistantship | 2017 |
| Honor Pass in Macroeconomics Field Paper, UCLA Economics | 2016 |
| Honor Pass in Econometrics Field Paper, UCLA Economics | 2016 |