Alejandro Lopez-Lira

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CONTACT INFORMATION

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ACADEMIC APPOINTMENTS

Assistant Professor of Finance, University of Florida	2021-
Assistant Professor of Finance, BI Norwegian Business School	2020-2021

EDUCATION

The Wharton School, University of Pennsylvania	
Ph.D. in Finance	2015-2020
M.A. in Finance	
Instituto Tecnologico Autonomo de Mexico (ITAM)	
M.A. in Economic Theory	2014-2015
B.A. in Economics (with honors)	2010-2014
B.A. in Financial Management	

RESEARCH INTERESTS

Fintech, Machine Learning, Asset Pricing, Macro Finance, Bayesian Econometrics, Private Equity

PUBLISHED PAPERS

1. **Man vs. Machine Learning: The Term Structure of Earnings Expectations and Conditional Biases** [download]
   The Review of Financial Studies, Volume 36, Issue 6, June 2023, with Jules H. van Binsbergen and Xiao Han
2. **Why Do Managers Disclose Risks Accurately? Textual Analysis, Disclosures, and Risk Exposures** [download]
   Economic Letters, Volume 204, July 2021

OTHER RESEARCH

1. **Non-Standard Errors** *The Journal of Finance, Forthcoming*
   as part of the #fincap project

WORKING PAPERS

1. **What If Option Closing Prices Were Trustworthy? A Machine Learning Approach**
   Unlike stocks, options lack a robust mechanism to determine closing prices. Current practices relying on last-trade prices suffer from stale information, while closing quotes are unreliable due to consolidated trading and potential manipulation. We propose using machine learning to create a counterfactual auction price for the options market's close using the underlying stock prices. Our approach consistently outperforms traditional models, such as the Black-Scholes-Merton model, across all options series. The 4-PM mid-quotes and last-trade prices

deviate from the counterfactual benchmark prices by 35% and 47%, respectively, suggesting significant efficiency gains can be achieved from implementing closing auctions.
Awards: *Australian Stock Exchange Prize: Best Paper in Derivatives*

2. **Can ChatGPT Forecast Stock Price Movements? Return Predictability and Large Language Models**
with Yuehua Tang
We examine the potential of ChatGPT, and other large language models, in predicting stock market returns using sentiment analysis of news headlines. We use ChatGPT to indicate whether a given headline is good, bad, or irrelevant news for firms' stock prices. We then compute a numerical score and document a positive correlation between these "ChatGPT scores" and subsequent daily stock market returns. Further, ChatGPT outperforms traditional sentiment analysis methods. We find that more basic models such as GPT-1, GPT-2, and BERT cannot accurately forecast returns, indicating return predictability is an emerging capacity of complex models. ChatGPT-4's implied Sharpe ratios are larger than ChatGPT-3's; however, the latter model has larger total returns. Our results suggest that incorporating advanced language models into the investment decision-making process can yield more accurate predictions and enhance the performance of quantitative trading strategies. Predictability is concentrated on smaller stocks and more prominent on firms with bad news, consistent with limits-to-arbitrage arguments rather than market inefficiencies.
Awards: *Blackrock Prize: Best Paper in Funds management and Capital Markets*

3. **Peer-Reviewed Theory Does Not Help Predict the Cross-section of Stock Returns**
with Andrew Chen and Tom Zimmerman
To examine whether theory helps predict the cross-section of returns, we combine text analysis of publications with out-of-sample tests. Based on the original texts, only 18% of predictors are attributed to risk-based theory. 58% are attributed to mispricing, and 24% have uncertain origins. Post-publication, risk-based predictability decays by 65%, compared to 50% for non-risk predictors. Out-of-sample, risk-based predictors fail to outperform data-mined accounting predictors that are matched on in-sample summary statistics. Published and data-mined returns rise before in-sample periods end and fall out-of-sample at similar rates. Overall, peer-reviewed research adds little information about future mean returns above naive back testing.

4. **Follow the Pipeline: Anticipatory Effects of Proposed Regulations (submitted)**
with Suzanne Chang and Joseph Kalmenovitz
We develop the first firm-level measure of regulatory pipeline: the average number of proposed federal rules that are relevant to the firm. The measure is based on a granular data set which tracks the entire rulemaking activity of all federal agencies since 1995. Out of 41,000 rule proposals, only two-thirds converted into a final rule, and they did so after spending two years on average in the rulemaking pipeline. Using a machine-learning algorithm to assign proposed rules to firms, we find that firm-level exposure to the regulatory pipeline has significant anticipatory effects. Firms with greater exposure express more concerns about future political risk, increase their overhead costs, and see lower profits. To prepare for the anticipated regulatory changes, firms spend more on lobbying, build up cash reserves, and reduce capital investment. The effects are independent of the firm's current regulatory burden and are driven by rule proposals that are more likely to convert into final rules. Financially constrained and small firms are especially responsive to the regulatory pipeline, which highlights the role of budget constraints and economies of scale. Our results are the first to consistently document substantial anticipatory effects, based on the entire body of

potential federal regulations.
Awards: *The Best Paper Award for Financial Stability*

5. **Why Do Betas Fail? The Limits of Factor Models in High-Dimensional Settings**
with Carter Davis
We develop a model featuring a high-dimensional state space, numerous assets, and rational risk-averse investors with incomplete information about covariances and expected returns. The model is able to explain several high-dimensional cross-sectional asset pricing puzzles. First, the capital asset pricing model (CAPM) fails because as the number of assets increases, average pricing errors grow because investors cannot fully recover the covariance matrix, even without considering uncertainty about expected returns. Moreover, since investors have different priors regarding the high-dimensional covariance matrix, the risk prices associated with common factors' exposures (betas) are also attenuated, with the consequence that it is beneficial to hedge systematic risk. Furthermore, investors having different priors about return predictability via characteristics leads to a zoo of anomalies. Finally, our model features the emergence of numerous high Sharpe ratio strategies that are not spanned by each other.

6. **Textual Analysis of Short-seller Research Reports**
with Jules H. van Binsbergen and Xiao Han
A large percentage of text in short-sell research reports pertains to accounting fraud and earnings mismanagement. Using survey cash-flow forecasts as a counterfactual, we find that investors underreact to the cash-flow news contained in short-sell reports. On average, target firms earn abnormal returns of -4.7% on the publication day, and the subsequent price revisions equal -13% over a 12-month horizon. We introduce a novel text-based fraud measure and find that reports more related to fraud are associated with larger negative long-term abnormal returns. Using a variance decomposition of returns, we find that the revisions in expected cash flows account for 70% of the negative return surprises associated with the reports. Furthermore, short-sell research reports are associated with significant reductions in future real investment ($118 million) and stock issuances ($197 million), and we present several potential mechanisms that can explain this correlation.

7. **Do Common Factors Really Explain the Cross-Section of Stock Returns?**
joint with Nikolai Roussanov
We document challenges to the notion of a trade-off between systematic risk and expected returns when analyzing the empirical ability of stock characteristics to predict excess returns. First, we measure individual stocks' exposures to all common latent factors using a novel high-dimensional method. These latent factors appear to earn negligible risk premia despite explaining virtually all of the common time-series variation in stock returns. Next, we use machine learning methods to construct out-of-sample forecasts of stock returns based on a wide range of characteristics. A zero-cost beta-neutral portfolio that exploits this predictability but hedges all undiversifiable risk delivers a Sharpe ratio above one with no correlation with any systematic factor, thus rejecting the central prediction of the arbitrage pricing theory.
Awards: *Jacobs Levy Center Research Paper Prize for Outstanding Paper*

8. **Risk Factors That Matter: Textual Analysis of Risk Disclosures for the Cross-Section of Returns (R&R)** [download]
I exploit unsupervised machine learning and natural language processing techniques to elicit the risk factors that firms themselves identify in their annual reports. I quantify the firms' exposure to each identified risk, design an econometric test to classify them as either systematic or idiosyncratic, and construct factor mimicking portfolios that proxy for each undiversifiable

source of risk. The portfolios are priced in the cross-section and contain information above and beyond the commonly used multi-factor representations. A model that uses only firm identified risk factors (FIRFs) performs at least as well as traditional factor models, despite not using any information from past prices or returns. **Awards:** *Jacobs Levy Center Research Paper Prize for Best Paper; WFA Cubist Systematic Strategies Ph.D. Candidate Award for Outstanding Research; Best Paper, European Investment Forum Research Prize, Cambridge; Best Paper in the Investment Track, Baltimore Area Finance Conference; Finalist, BlackRock's Applied Research Award; Best Paper Award: Invesco IQS Factor Investing Prize*

9. **Demand-Driven Risk and the Cross-Section of Expected Returns**
   Firms that concentrate their activities towards goods with higher income elasticity are more exposed to demand-driven risk since the consumption of high-consumption households is more exposed to aggregate shocks. These firms earn higher risk-adjusted equity returns. A portfolio that goes long on the most exposed firms and short on the least exposed gets an abnormal risk-adjusted annual return of 7.5%. This risk does not seem to be coming from competition. A portfolio that goes long in firms exposed to demand-driven risk and competitive pressure and short on firms not exposed to demand-driven risk nor competitive pressure earns an abnormal risk-adjusted annual return of 14%.

CS Research

1. **PIXIU: A Large Language Model, Instruction Data and Evaluation Benchmark for Finance**
   Although large language models (LLMs) has shown great performance on natural language processing (NLP) in the financial domain, there are no publicly available financial tailtored LLMs, instruction tuning datasets, and evaluation benchmarks, which is critical for continually pushing forward the open-source development of financial artificial intelligence (AI). This paper introduces PIXIU, a comprehensive framework including the first financial LLM based on fine-tuning LLaMA with instruction data, the first instruction data with 136K data samples to support the fine-tuning, and an evaluation benchmark with 5 tasks and 9 datasets. We first construct the large-scale multi-task instruction data considering a variety of financial tasks, financial document types, and financial data modalities. We then propose a financial LLM called FinMA by fine-tuning LLaMA with the constructed dataset to be able to follow instructions for various financial tasks. To support the evaluation of financial LLMs, we propose a standardized benchmark that covers a set of critical financial tasks, including five financial NLP tasks and one financial prediction task. With this benchmark, we conduct a detailed analysis of FinMA and several existing LLMs, uncovering their strengths and weaknesses in handling critical financial tasks. The model, datasets, benchmark, and experimental results are open-sourced to facilitate future research in financial AI.

Fellowships, Honors, Awards and Grants

Australian Stock Exchange Prize: Best Paper in Derivatives, 2023

Blackrock Prize: Best Paper in Funds management and Capital Markets, 2023

The Best Paper Award for Financial Stability, 2023

Jacobs Levy Center Research Paper Prize for Outstanding Paper, 2022

Best Paper Award: Invesco IQS Factor Investing Prize, 2021

The Jacobs Levy Equity Management Center for Quantitative Financial Research Grant, 2020

Jacobs Levy Center Research Paper Prize for Best Paper, 2019

WFA Cubist Systematic Strategies Ph.D. Candidate Award for Outstanding Research, 2019

Finalist, BlackRock's Applied Research Award, 2019

Macro Finance Society Ph.D. Student Award, 2019

Best Paper, European Investment Forum Research Prize, Cambridge, 2019

Best Paper in the Investment Track, Baltimore Area Finance Conference, 2019

Irwin Friend Doctoral Fellowship in Finance, Wharton, 2019

The Jacobs Levy Equity Management Center for Quantitative Financial Research Grant, 2019

Rodney L. White Center for Financial Research Grant, 2019

The Mack Institute for Innovation Management Research Grant, 2019

George James Term Fund Travel Award, Wharton, 2019

Jacobs Levy Equity Management Dissertation Fellowship in Quantitative Finance, Wharton, 2019

Rodney L. White Center for Financial Research Grant, Wharton, 2018

The Mack Institute for Innovation Management Research Grant, 2018

Conferences and Presentations

2024: AFA*, UCLA (scheduled), Excess Returns (Podcast, scheduled), UC Davis-FMA Napa Finance Conference (scheduled), TBEAR Asset Pricing Workshop (scheduled), AI Paris Dauphine (scheduled)

2023: AFA, Emory University, University of Florida Brown Bag, University of Wisconsin Milwaukee, Federal Reserve Board, JOIM Spring, University of Iowa Finance and Economic Mini Conference, Latin American Finance Association, Alliance Bernstein, SFS Cavalcade, Future of Financial Information, Bloomberg, ROIS (Podcast), Biz Bites (Podcast), Excess Returns (Podcast), 8th SDU Finance Workshop, BAR, Behind the Markets (Podcast), FutFinInfo Webinar, Banco de Mexico, ITAM alumni conference, Northern Finance Association, Louisiana State University, FMA, UT Dallas Fall Finance Conference, FOM Conference at Yale, Southern Finance Association, 5th Conference on Behavioral Research in Finance, Governance, and Accounting U.S. Securities and Exchange Commission, RSFAS Summer Research Camp, UBS Sidney, Sydney Banking and Financial Stability Conference, Australasian Finance and Banking Conference, EDHEC Speaker Series, Online Seminars in Finance PUEB, NeurIPS*

2022: AFA, NBER Summer Institute, EFA, Utah Winter Finance Conference, The Future of Financial Information Conference, SFS Cavalcade, Financial Markets and Corporate Governance Conference, University of Cologne

2021: EFA, NBER Summer Institute, International Conference on Economics and FinTech, Frontiers of Factor Investing Conference, The Future of Financial Information Conference, University of Florida, BI Norwegian Business School

2020: NBER Big Data and Securities Markets, SFS Cavalcade, EFA, Wolfe Virtual Global Quantitative and Macro Investment Conference*, Global Virtual Seminar Series on Fintech*, Columbia University, University of Texas at Austin, University of Notre Dame, University of Houston, Texas A&M University, Georgia Institute of Technology, University Carlos III de Madrid, BI Norwegian Business School, New Economic School, ITAM, Wharton PhD Lunch Seminar

2019: WFA, The Future of Financial Information Conference, European Investment Forum Research, INFORMS Annual Meeting, NLP and Machine Learning in Investment Management Conference, Baltimore Area Finance Conference, 5th Annual University of Connecticut Finance Conference, In-

ternational Finance Conference 11, 27th Finance Forum, 2nd Dauphine Finance PhD Workshop, EFA Doctoral Tutorial, Financial Markets and Corporate Decisions, Southern Finance Association, BlackRock, 2019 ITAM Alumni Conference, Inquire Autumn Seminar 2019, Macro Finance Society PhD Session, TCU Finance Conference, Wharton PhD Lunch Seminar

2018: INSEAD-Wharton Doctoral Consortium, Wharton PhD Lunch Seminar

[*] *Presented by a coauthor*

Referee *Journal of Finance*, *Review of Financial Studies*, *Journal of Financial Economics*, *Review of Finance*, *Management Science*, *Journal of Financial and Quantitative Analysis*, *Economic Letters*, *Journal of Financial Econometrics*, *Journal of Banking and Finance*

Languages English (fluent), Spanish (native), Portuguese (basic), French (basic), Greek (basic)

References

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