Timothy P. Dombrowski

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Academic Positions / Education

Assistant Professor of Finance, University of Missouri–St. Louis	Aug. 2020 – present
Ph.D. Finance with Economics Minor, Louisiana State University	May 2020
Graduate Certificate in Econometrics, Louisiana State University	May 2019
B.A. Accounting and Mathematics, Saint Leo University, *Summa Cum Laude*	May 2015
A.A. Pasco-Hernando State College, *Summa Cum Laude*	Dec. 2011

Research (See `https://timdombrowski.com/research.html` for abstracts)

Interests

- Mortgage markets, climate risk, generative AI, real estate finance, digital assets

Publications

Dombrowski, T.P. and Seagraves, C. (2025), "Optimizing Real Estate Portfolios: The Role of Generative AI in Geographic Diversification." *Journal of Real Estate Portfolio Management*, Forthcoming. `https://doi.org/10.1080/10835547.2025.2513145`

Dombrowski, T.P. and Slawson Jr., V.C. (2024), "The Feasibility of Mortgage-Backed Securities as Decentralized Autonomous Organizations." *Real Estate Finance*, 41:1, 1–20. `https://dx.doi.org/10.2139/ssrn.4761692`

Calabrese, R., Dombrowski, T.P., Mandel, A., Pace, R.K., and Zanin, L. (2024), "Impacts of Extreme Weather Events on Mortgage Risks and Their Evolution under Climate Change: A Case Study on Florida." *European Journal of Operational Research*, 314:1, 377–392. `https://doi.org/10.1016/j.ejor.2023.11.022`

Dombrowski, T.P., Pace, R.K., and Wang, J. (2024), "Imputing Borrower Heterogeneity and Dynamics in Mortgage Default Models." *Journal of Real Estate Finance and Economics*, 68:3, 462–487. `https://doi.org/10.1007/s11146-022-09934-9`

Dombrowski, T.P., Narayanan, R.P., and Pace, R.K. (2023), "The Rank-Size Rule and Challenges in Diversifying Commercial Real Estate Portfolios," *Journal of Real Estate Finance and Economics*, 67:1, 1–28. `https://doi.org/10.1007/s11146-020-09765-6`

Dombrowski, T.P., Ratnadiwakara, D., and Slawson Jr., V.C. (2021), "The FIMA NFIP's Redacted Policies and Redacted Claims Datasets." *Journal of Real Estate Literature*, 28:2, 190–212. `https://doi.org/10.1080/09277544.2021.1876435`

Dombrowski, T.P., Pace, R.K. Ratnadiwakara, D., and Slawson Jr., V.C. (2020), "Deductible Choice in Flood Insurance: Who Chooses the Maximum?" *Journal of Housing Research*, 29, S144–S169. `https://doi.org/10.1080/10527001.2020.1839320`

Dombrowski, T.P., Pace, R.K., and Narayanan, R.P. (2020), "Mortgage Portfolio Diversification in the Presence of Cross-Sectional and Spatial Dependence," *Advances in Econometrics* 41, 383–411. `https://doi.org/10.1108/S0731-905320200000041014`

Papers Under Review

Dombrowski, T.P. "From Plantations to Blockchains: A Review and Synthesis of the MBS and DeFi Literatures," Resubmitted after 1st R&R at *Journal of Real Estate Literature*.

Dombrowski, T.P. and Zanin, L., "Mortgage Credit Risk and Extreme Weather Events in the United States: A Flexible Survival Modeling Framework with a Nested Tree Structure," Submitted at *Journal of Financial Econometrics*.

Working Papers

Dombrowski, T.P., Pace, R.K., and Narayanan, R.P., "Concentration Risk in Mortgage Portfolios: A Rank-Size Approach."

Works in Progress

Dombrowski, T.P., "Asset Pricing Models and Bitcoin Mining Stocks." *See my public GitHub repository for analysis codes and preliminary results:* `bitcoin-miningstocks-project`

Dombrowski, T.P., "Factor Models for Bitcoin-related Assets." *See my public GitHub repository for analysis codes and preliminary results:* `bitcoin-factoranalysis-project`

Dombrowski, T.P. and Zanin, L., "Incorporating Climate Risk and Adaptation Measures in a Competing Credit Risk Analysis of the US Mortgage Market."

Dombrowski, T.P. and Kim, H., "Summarizing Academic Research Using LLMs."

Ph.D. Dissertation

Dombrowski, T.P. (2020), "Essays on Mortgage Portfolio Diversification," *LSU Doctoral Dissertations, 5160.* `https://digitalcommons.lsu.edu/gradschool_dissertations/5160`
- Committee: R. Kelley Pace (chair), Rajesh Narayanan, V. Carlos Slawson Jr., Dek Terrell, and Norman Massel

GitHub Projects

See my GitHub profile (`https://github.com/tim-dombrowski`) to review my open-source data science projects that explore various fintech topics. Some examples include:
- `bank-trends-project`: example for loading/cleaning data from FDIC BankFind API
- `bitcoin-factoranalysis-project`: asset pricing models and Bitcoin-related assets
- `bitcoin-miningstocks-project`: comparison of publicly-traded Bitcoin mining stocks
- `bitcoin-timeseries-project`: exploring autocorrelation/seasonality in BTC prices
- `money-supply-project`: example for using the FRED API and generating graphics
- `national-debt-project`: API example using the U.S. Treasury's Fiscal Data API
- `numerai-fund-project`: analysis of Numerai project and hedge fund performance
- `sec-edgar-project`: demo for SEC's EDGAR API and downloading company filings
- `sharpe-ratio-project`: CAPM analysis and Sharpe ratio comps for stocks and crypto
- `singularitynet-project`: analyze SingularityNET AI projects and their token prices
- `zillow-hpi-project`: exploring Zillow data at various geography levels

Teaching Experience *(italics indicates online/hybrid courses)*

Instructor of Record

AI Applications in Finance, FIN 3574/6574, UMSL, *Spring 2021*, *Spring 2022*, *Spring 2023*, *Spring 2024*, *Spring 2025*

Principles of Real Estate, FIN 3542/6542, UMSL, Spring 2024, *Fall 2024*, *Spring 2025*

Financial Data Analytics, FIN 3572/6572, UMSL, *Fall 2020*, *Fall 2021*, *Fall 2022*, *Fall 2024*

Financial Management, FIN 3500, UMSL, *Fall 2020*, *Summer 2021*, *Fall 2021*, Spring 2022, *Summer 2022*, Fall 2022, *Spring 2023*, *Summer 2023*, Fall 2023, *Summer 2024*

FINRA Exam Prep, FIN 3598/6590, UMSL, *Spring 2023*, *Fall 2023*, *Spring 2024*

PMBA Fintech Seminar, FIN 6590, UMSL, *Spring 2021* ($\times 2$ sections)

SIE Exam Prep, FIN 3599, UMSL, *Spring 2021*

Principles of Finance, FIN 3716, LSU, Fall 2019, *Spring 2020*

Principles of Real Estate, FIN 3351, LSU, Summers 2017, 2018, 2019

Teaching Assistance / Supplemental Instruction

Principles of Real Estate, FIN 3351, LSU, Fall 2018, Spring 2019

Financial Planning, FIN 3060, LSU, Fall 2018, Spring 2019

Real Estate Financial Decisions, FIN 7310, LSU, Fall 2015 – Fall 2018

Linear Algebra, MAT 361, SLU, Spring 2015

Ordinary Differential Equations, MAT 411, SLU, Spring 2014, Spring 2015

Discrete Mathematics, MAT 251, SLU, Fall 2014

Computer Skills

Artificial Intelligence Experience/Skills

- Perplexity Pro (Deep Research, R1 1776, Claude 3.7 Sonnet, etc.) since Sept. 2024
- xAI's Grok (2 and 3, web application + API) since Aug. 2024
- GitHub Copilot Pro (RStudio integration, web application) since Jan. 2024
- Brave's Leo AI (browser agent, Mixtral, Claude Haiku, Llama 3.1 8B) since Nov. 2023
- OpenAI's ChatGPT (GPT-3, GPT-4o, o1, o3, OpenAI API) since Nov. 2022

Data Analysis Software

- MATLAB (parallel computing, datastores, tall arrays, sparse matrices, etc.)
- Microsoft Excel (from basic spreadsheets to financial modeling, pivot tables, etc.)
- R and RStudio (tidyverse, data.table, quantmod, fst, xgboost, renv, rmarkdown, etc.)
- Python (Jupyter notebooks, pandas, numpy, selenium, reticulate R package, etc.)

Document Processing

- Adobe Acrobat (pdf management, merging, editing, vector graphics, etc.)
- LaTeX (including Beamer, Overleaf, and JabRef bibliography management)
- Microsoft Office (Word, Excel, OneDrive, Outlook, PowerPoint, Teams, etc.)

Financial Research

- Bloomberg Terminal (Bloomberg Market Concepts (BMC) certificate)
- FHFA datasets (house price indexes, NMDB, Freddie Mac mortgage data, etc.)
- First Street climate risk data (flood, wind, heat, fire, and air quality hazards)
- FRED (web application, FRED API, and the fredr R package)
- LSEG Workspace (formerly Refinitiv Workspace)
- OpenFEMA data (NFIP claims and policies, hazard mitigation, web app and API)
- SEC's EDGAR Database (web application and the edgar R package)
- WRDS (CRSP, Compustat, etc.)

Version Control

- Git and GitHub (web application, command-line interface, and RStudio integration)
- Various cloud services (AWS, Dropbox, Google Drive, OneDrive, Overleaf, etc.)

Presentations

Conferences and Seminars

UMSL College of Business Research Seminar, Nov. 2019, March 2022, April 2024, April 2025

American Real Estate Society Annual Conference, April 2018, April 2019, March 2021, April 2022, March 2023, March 2024, April 2025

American Real Estate Society Fall Research Symposium, Nov. 2024

Generative AI in Finance Conference, Concordia University, Oct. 2024

UMSL Department of Finance and Legal Studies Advisory Board Meeting, April 2024

University of Tulsa Center for Real Estate Studies Research Seminar, March 2024

JRER/UCF Current Issues in Real Estate Symposium, March 2024

Federal Housing Finance Agency (FHFA) Virtual Research Seminar, July 2022

LSU Finance Department Research Seminar, Nov. 2016, Sept. 2017, April 2019, Sept. 2019

Financial Management Association, Oct. 2017, Oct. 2018, Oct. 2019

École hôtelière de Lausanne Hospitality Finance & Economics Conference, June 2019

American Real Estate and Urban Economics Association, July 2017, Jan. 2018 (*poster*), June 2018, June 2019

FSU-UF-UCF Critical Issues in Real Estate Symposium, April 2019

Guest Lectures

"Modern Fintech and Engaging Students with Research and Debate"
- High School Advanced Credit Program, UMSL, Oct. 2023

"Fintech and Cryptocurrencies"
- University Program Board, Lunch and Learn, UMSL, Nov. 2021
- Investments, FIN 3826, LSU, April 2018, Nov. 2018
- Financial Markets, FIN 3636/7633, LSU, Nov. 2017, Nov. 2018

"Python for Academic Research" authored by Dr. James Nordlund
- Accounting Department Summer Workshop, LSU, May 2018

Professional Service

Journal Editorial Roles

- Junior Editor, *Journal of Real Estate Practice and Education*, Summer 2024 – present

Journal Referee

Journal of Real Estate Portfolio Management • *European Journal of Operational Research* • *Journal of Real Estate Finance and Economics* (×3) • *European Financial Management* • *Journal of Sustainable Real Estate* • *Journal of Real Estate Literature* • *PLOS One* • *Advances in Econometrics*

Conference Discussions

Concordia Generative AI in Finance 2024 • ARES 2024 • ARES 2021 • FMA 2019 • AREUEA-International 2019 • FMA 2018 • AREUEA-International 2017

Conference Organization

UMSL Finance Career Conference (2021, 2022, 2023, 2024)

Doctoral Committees

- Committee Member for Don Seitz, UMSL DBA, Fall 2025 – present
- Committee Member for Jason Northern, UMSL DBA, Fall 2023 – present
- Committee Member for John Held, UMSL DBA, Fall 2023 – present
- Committee Chair for David Beverly, UMSL DBA, Fall 2023 – Fall 2024
- Committee Member for Jesse Core, UMSL DBA, Fall 2023 – Fall 2024
- Committee Chair for Steven Kraml, UMSL DBA, Fall 2022 – Fall 2023

Other Service Activities

Faculty Executive Committee, UMSL CoBA, Fall 2024 – present

Degree Program Assessment Liaison, MS in Financial Technology, UMSL, Fall 2024 – present

Assurance of Learning Committee Representative, UMSL CoBA, Fall 2022 – present

Faculty Advisor, UMSL Finance Club, Fall 2020 – present

Website Manager, UMSL Finance and Legal Studies Department, Fall 2020 – present

Internship Advising, FIN 3590/6591, UMSL, ×12 student internships through Fall 2024

Independent Study on Fintech Capstone Course, FIN 5599, UMSL, Summer 2024

Online Proctoring Software Search Committee, UM System, Spring 2023 – Spring 2024

Independent Study on Financial Data Analytics, FIN 5599, UMSL, Spring 2024

Independent Study on Smart Contracts and Cryptocurrencies, FIN 3599, UMSL, Fall 2021

Grants/Awards

UMSL Research Award, UMSL Research Office, $10,006, Spring 2025

Junior Faculty Travel Grant, UMSL Research Office, $1,492, Spring 2025

Research Impact Award, Finance and Legal Studies, UMSL CoBA, Fall 2024
Covid-19 Supplemental Research Support Award, UMSL, $1,500, Summer 2021
Junior Faculty Travel Grant, UMSL Research Office, $1,000, Spring 2021
Graduate Student Association Travel Award, LSU $200, Fall 2018
Top Ten Session and Semifinalist for Best Paper in Markets & Institutions, FMA, Fall 2017
Graduate Student Association Travel Award, LSU, $450, Summer 2017
Student Tutor of the Year, SLU Learning Resource Center, Spring 2015
State Champion in Statistical Analysis, Florida PBL (FBLA Collegiate), Spring 2014
Most Utilized Tutor, SLU Learning Resource Center, Fall 2013
State Champion in Accounting Analysis, Florida PBL (FBLA Collegiate), Spring 2013

Research Identifiers and Profiles

Personal Webpage: `https://timdombrowski.com`
GitHub Profile: `https://github.com/tim-dombrowski`
Google Scholar: `https://scholar.google.com/citations?user=anVqbJMAAAAJ`
LinkedIn Profile: `https://www.linkedin.com/in/timothydombrowski`
ORCID Profile: `https://orcid.org/0009-0002-7287-8827`
ResearchGate Profile: `https://www.researchgate.net/profile/Timothy-Dombrowski`