YANHUI SHEN

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EDUCATION

University of Wisconsin-Madison, USA Sep. 2022 - Present

- M.S. in Financial Economics, GPA: 3.86/4
- Key Coursework: Investment Theory, Advanced Derivative Securities, Corporate Finance, Financial Microeconomics, Macroeconomics, Financial Econometrics, Data Analytics for Economists.

Nanjing Audit University, China Sep. 2013 - Jun. 2017

- B.S. in Economics, GPA: 3.66/4
- Key Coursework: Calculus, Linear Algebra, Probability Theory, Statistics, Econometrics, Intermediate Microeconomics, Intermediate Macroeconomics, Intermediate Financial Accounting, Econometrics.

RESEARCH INTERESTS

FinTech, Empirical Asset Pricing, Derivatives Markets, Machine Learning (Neural Networks, Interpretability Analysis)

WORKING PAPER

American Option Pricing using Self-Attention GRU and Shapley Value Interpretation

- Construct four different machine learning models, including multilayer perceptron (MLP), long short-term memory (LSTM), self-attention LSTM, and self-attention gated recurrent unit (GRU) in comparison to the traditional binomial model.
- The results show that the self-attention GRU model with historical data outperforms other models due to its ability to capture complex temporal dependencies embedded in the historical data.
- Employ the SHapley Additive exPlanations (SHAP) method to interpret and analyze the prediction results of the self-attention GRU model with historical data, which provides insights that the current spot price, strike, and moneyness have the greatest impacts on predicting the current SPY call price.

SELECTED PROJECTS

Machine Learning Application to European Option Pricing May 2023

- Compared the predictive performance of Random Forest Model with the traditional Heston Pricing Model on SPX call option and it turns out the latter's accuracy is slightly better than the former.
- Utilized Monte Carlo Simulation for simulating 10,000 underlying price paths in the Black-Scholes Model and then contrasted the predicted Black-Scholes price with the estimation by Linear Regression.
- Adjusted parameters to apply the Deep Hedging framework proposed by Buehler et al. (2019) and the predicted result closely aligned with the Black-Scholes model price. The experiment also found that more hedging instruments and transaction costs led to a higher option price.

Acquisition Case Study Apr. 2023

- Estimated the enterprise value of the target company using Comparable Company Analysis and DCF model and provided a recommendation for the final bid price range.
- Calculated the optimal financing capital structure using Leveraged Buyout (LBO) Model and IRR Sensitivity Analysis considering the acquirer's profits and regulatory requirements.
- Assessed comprehensively potential conflicting interests among various parties such as the buyer, seller, and investment bank in this acquisition and how they may impact the final outcome.

Simulated Trading within Interactive Brokers Nov. 2022 - Dec. 2022

- Constructed a portfolio that has zero beta and positive alpha - buying S&P 500 low volatility ETF (SPLV) and selling S&P 500 High Beta (SPHB) and did rebalancing for five consecutive trading days.
- Implemented Delta Hedging - selling put options on S&P 500 index and delta hedging the position using Micro E-mini S&P 500 Futures, rebalancing once per day for five consecutive trading days.
- Wrote an IB-MATLAB program that sold ATM one-day maturity straddles on SPY and ran the program for five consecutive trading days.

PROFESSIONAL EXPERIENCE

International Department of Taizhou High School, China Sep. 2021 - Jun. 2022
Economics Teacher

- Bilingually taught IGCSE and A-level Economics courses, formulated teaching syllabus, and designed periodic exams to help students recall, comprehend, and apply the knowledge they acquired.
- Instructed students to participate in 2021 Diamond Challenge Competition.
- 60% of students in the class obtained A* or A on the international IGCSE examination.

Agricultural Bank of China, China Jul. 2017 - Aug. 2021
Operations Manager

- Supervised daily operational procedures of retail and corporate tellers, improving customer experience.
- Ensured that the bank's operations comply with relevant laws, regulations, and internal policies, such as monitoring and analyzing small-amount alarms to control Anti-Money Laundering risks.
- Led projects on digitization of banking business to enhance operational efficiency, including the adoption of automation of processes and integration of digital technologies.

Huapu Tianjian Accounting Firm, China Jan. 2016 - Mar. 2016
Assistant Auditor

- Assisted the project manager in completing audit working papers, and collecting and sorting out relevant audit data.
- Checked vouchers to test the authenticity and rationality of the contents included, whether they were recorded in the correct accounting periods, and whether the accounting methods used were correct.
- Requested bank confirmation of the audited entity's bank account and balance, and subsequently analyzed the bank reconciliation statement prepared by bookkeepers of the company.

HONORS AND AWARDS

CFA Society Madison Scholarship	*2023*
Exceptional New Joiner Award - Agricultural Bank of China	*2018*
Exceptional Graduate Award - Nanjing Audit University	*2017*
First Scholarship Award - Nanjing Audit University	*2014, 2015, 2016*
Outstanding Youth Volunteer - Nanjing Audit University	*2015, 2016*
Outstanding Student Leader Award - Nanjing Audit University	*2015*

CERTIFICATES AND SKILLS

Certificates	CFA Level I, Junior Level Accountant, High School Teacher Qualification Certificate
Programming Languages	Python, MATLAB, Stata, LaTeX
Python Packages	Pandas, Matplotlib, NumPy, SciPy, Scikit-Learn, PyTorch