# WU Taizhi

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## Education

**Washington University in St. Louis** — St. Louis, United States
*Master Science in Finance - Quantitative Track; GPA: 3.98/4.00* — *Expected: Dec. 2022*

- **Core Courses**: Fixed Income Derivatives; Data Analysis, Forecasting & Risk Analysis; Corporate Finance; Advanced Continuous Time Finance (PhD level); Big Data and Cloud Computing

**Southern University of Science and Technology** — Shenzhen, China
*Bachelor of Science in Financial Mathematics; GPA: 3.58/4.00* — *Sept. 2017 - Jun. 2021*

- **Core Courses**: Real Analysis; Partial Differential Equation; Time Series Analysis; Asset Pricing and Risk Management; Security Investments; Models and Pricing of Financial Derivatives
- **Awards**: Third Prize of College Scholarship (2019, 2020)

**Peking University** — Beijing, China
*Summer Program* — *Jul. 2019 - Aug. 2019*

- **Courses Taken**: Stochastic Calculus and its Application in Quantitative Finance; Macroeconomic Analysis with Big Data and Machine Learning

**King's College London** — London, United Kingdom
*Summer Program* — *Jul. 2018 - Aug. 2018*

- **Courses Taken**: Applied Mathematics; International Business

## Research Experience

**Research Assistant** — St. Louis, United States
*Prof. Ilias Filippou, Washington University in St. Louis* — *May 2022 - Aug. 2022*

- Assisted research on ETF Flows and Currency Risk Premia
- Fetched 40 country ETFs quote data from WRDS database and constructed order imbalances as in Filippou et al. (2021)
- Constructed currency excess returns following Lustig et al. (2012); built five portfolios sorted by ETF order imbalances for all 40 countries and G10 countries, respectively
- Ran predictive panel regressions with currency portfolio returns on ETF order imbalances; $R^2$ for five regressions range from 0.701 to 0.903
- Implemented Fama-Macbeth regressions and GMM estimation (both $\text{GMM}_1$ and $\text{GMM}_2$) to produce estimates of the risk premia; produced similar estimates of factor prices

**Research Assistant** — St. Louis, United States
*Dr. Dan Zhao, Washington University in St. Louis* — *Aug. 2021 - Jun. 2022*

- Assisted research on Equifax Data with 320,000 individual credit data
- Investigated the credit demand of individuals in areas narrowly missed by severe tornadoes; individuals living in areas neighboring tornadoes decrease credit demand
- Cleaned credit data and formed data panels; sample the data randomly and assigned them into training and testing datasets
- Developed interpretable semiparametric DNN models adapted from to Bianchi et al. (2021) for robustness checks by using SHapley Addictive exPlanations (SHAP) method; reached similar results produced by the DID model
- Used Orthogonal Random Forest to estimate heterogeneous treatment effect; plot treatment effect of bankcard utilization on mortgages, personal loans, and student loans

## Teaching Assistantship

**Teaching Assistant** — St. Louis, United States
*Washington University in St. Louis*

- **Investments** FIN 441 for Prof. Ilias Filippou | 2021 Fall
- **Options and Futures** FIN 451 for Prof. Jian Cai | 2022 Fall
- **Data Analysis for Investments** FIN 532B for Prof. Guofu Zhou | 2022 Fall: explained and revised Python code of the Fama-French 3 factors model

## Work and Project Experience

**Fixed Income Derivatives Project Leader** St. Louis, United States

*Professor Anatoliy Belaygorod, Washington University in St. Louis* *Mar. 2022 - Apr. 2022*

- Leading 4 team members on the Hull-White Model Calibration project; winner project among 20 teams
- Calculated zero-bond prices, zero-bond put prices and caplet prices using analytic formulas
- Constructed SSE between the Black market model and Hull White market model on both volatility domain and price domain; applied the Nelder-Mead method to optimize model parameters
- Reached the Hull White cap and floor prices closed to the actual market prices

**Quantitative Risk Management Online Intern** Shenzhen, China

*Department of Quantitative Risk Management, J.P. Morgan* *Oct. 2020 - Nov. 2020*

- Assisted European Based Option Pricing and American Option Pricing projects
- Derived European based basket option asymptotic price and verified it via Monte Carlo simulation; reduced pricing variance through importance sampling and bootstrap
- Replicated the simple least-squares regression approach purposed by Longstaff and Schwartz and programed the method step by step
- Priced American options under both Black-Scholes-Merton Model and Heston Stochastic Model; verified the pricing method with finite differences; the errors are less than 4 cents in the test cases

**Financial Engineering Intern** Guangzhou, China

*Department of Financial Engineering, Wanlian Securities Company Limited* *Jun. 2020 - Aug. 2020*

- Assisted CTA Strategy Development, Arbitrage Trading Research and Option Monitor System Development projects
- Utilized VNPY station for quantitative trading in Chinese forward markets
- Examined and copied CTA strategy from existing report using Python, such as Turtle Strategy
- Compared component stocks between 50 ETF and H ETF to find motivation of the arbitrage opportunity to give timing of calling and selling
- Developed a monitoring system by Python which can calculate portfolio's Greeks (cash) automatically from Wind real time data

## Skills Summary

**Programming**: Python, SQL, R, LaTeX

**Big Data**: Linux, Apache Hadoop, PySpark

**Risk Management**: FRM I&II Passed

## References

**Professor Philip H. Dybvig**

*Boatmen's Bancshares Professor of Banking and Finance, Washington University in St. Louis*

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**Professor Ilias Filippou**

*Visiting Assistant Professor of Finance, Washington University in St. Louis*

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**Professor Guofu Zhou**

*Frederick Bierman and James E. Spears Professor of Finance, Washington University in St. Louis*

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