

# DISSERTATION PROPOSAL

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## "Essays on Portfolio Choice"

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Chapter 1: Index ETFs' Tracking Error as a Predictor of Performance (joint with Darcy Pu, LBS)  
We find that index ETFs' tracking error, a measure of the manager's ability to replicate the index's return, is a significantly and consistently negative predictor of performance. Tracking error is highly persistent, indicating the index ETF manager's ability to replicate the index persists over time. We find that the performance predictability of tracking error comes mainly from index ETFs with higher tracking errors. Despite tracking error being a performance predictor, investors' flow is insensitive to tracking error. Investors have limited information processing capacity, face information inertia, and have restricted access to index ETFs, thus not optimally chasing index ETFs with lower tracking errors. Our long-only trading strategy that buys S&P 500 index ETFs with lowest-quintile tracking errors outperforms the equal-weighted portfolio of all S&P 500 index ETFs by 1.89% annually over 2003-2021.

### Chapter 2: Industry-specific Human Capital and Life-cycle Portfolio Choice

Industry-specific human capital is an important source of heterogeneity in households' background risk, which affects households' financial decisions. While previous literature finds little correlation of human capital shocks with stock returns at the aggregate level, I document a positive correlation between industry-specific human capital growth and industry stock returns. To hedge industry-specific human capital shocks, households optimally reduce the portfolio share of stocks in the same industry. I build a life-cycle model of consumption and portfolio choices and estimate households' hedging demand for the stocks in their own industry. This hedging demand is higher for younger households with more human capital, and for households in industries with higher correlation between human capital growth and stock returns.

### Chapter 3: The Risk-sharing of Firms and Workers Through Defined Contribution Plans

Defined Contributions are a significant component of labor compensation. They provide workers with crucial access to the financial markets. In this paper, we examine the risk-sharing between firms and workers in an exogenously incomplete market. We build a model of labor contracts where the worker could take aggregate risks in their private savings. Workers could quit voluntarily and are more likely to quit with higher wealth. Firms optimally backload wages to deter separation because separation is costly to the firm. When there is a positive aggregate shock, workers' wealth is higher and firms optimally give workers higher continuation utility to retain them. The optimal savings could be implemented with a risk-free bond, firm equity, and an aggregate market index fund in defined contributions. I propose to structurally estimate the model using data on wage, defined contributions, firm financial returns and aggregate market returns.