

Asset Pricing with AI-Generated Shocks

Characteristics-based portfolios are puzzling to macrofinance models. I aggregate shocks motivated by individual models to study the connection between stock characteristics and macroeconomic fundamentals. The shocks are innovations to novelly constructed macro-fundamental forecasts using Meta's Llama3. Each fundamental forecast is generated based on Llama3's reading of business news, from the perspective of economic theories. Main findings include (i) both aggregation and AI-based methodology incrementally contribute to explaining the cross-section of characteristics-sorted portfolios, (ii) the explanatory power is still insufficient to summarize cross-sectional variations in expected returns within the factor zoo, and (iii) an investment portfolio of AI-generated shocks delivers an out-of-sample Sharpe ratio of 1.2. My results suggest that most theory-motivated fundamental risks and systematic risks that are potentially associated with stock characteristics may complement each other. My analysis also illustrates a framework for leveraging both AI technology and economic theories to interpret asset prices.

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Yuan Hu is a Ph.D. student in Finance at Temple University. He expects to finish his Ph.D. in May 2025. His research focuses on asset pricing, derivatives, and AI. Specifically, he investigates: (i) the connection between macroeconomic fundamentals and asset prices, (ii) the macroeconomic implications of derivatives trading and empirically consistent option pricing models, and (iii) the application of machine learning and AI technologies in finance.

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