

# Asset Pricing with AI-Generated Shocks <sup>\*</sup>

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## Abstract

Characteristics-based portfolios are puzzling to structural models in economics. I aggregate shocks from individual theories to study the linkage between stock characteristics and macroeconomic fundamentals. A novel methodology is proposed to construct more than 30 theory-motivated fundamental shocks using Meta’s Llama3. Each fundamental is formed through Llama3’s intelligent evaluation of economic activities discussed in newspapers, from the perspective of economic theories. These fundamentals include consumption, housing, human capital, and climate change, some of which are difficult to measure using standard economic variables. Main findings include (i) both aggregation and AI-based methodology incrementally contribute to explaining the cross-section of characteristics-sorted portfolios, (ii) that explanatory power is still insufficient to summarize cross-sectional variations of expected returns in the factor zoo, and (iii) aggregating AI-generated fundamental shocks delivers a mimicking portfolio with an out-of-sample Sharpe ratio of 1.2, unexplained by common characteristics-based factor models. My results suggest that most theory-proposed fundamental risks and systematic risks that are potentially associated with stock characteristics do not overlap, but may complement each other. My analysis also illustrates a framework to leverage both AI technology and economic theories to interpret asset prices.

**Key Words:** Fundamental risks, generative AI, Llama3, characteristics-based portfolios, newspapers, regularization

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