

AI-Powered (Finance) Scholarship

Robert Novy-Marx, Mihail Z. Velikov, NBER, 2025

Kang Guo, March 28, 2025

1. What are the research questions?

- How can AI automatically generate papers on stock return predictability by hypothesizing after the results are known?

2. Why are the research questions interesting?

- It shows how the misuse of data mining impacts the integrity of academic research and leads to academic arbitrage.

3. What is the paper's contribution?

- Existing:
 - Prior papers suggest that AI systems can assist academic writing and engage with economic reasoning and prediction.
- Expansion:
 - This paper provides a concrete demonstration of how LLMs can be used to automate the generation of academic finance papers at scale.
 - This paper highlights the potential for systematic manipulation of traditional academic metrics through AI-powered paper generation.

4. What hypotheses are tested in the paper?

- LLMs can formulate hypotheses based on empirical results, subsequently generating complete academic papers on cross-sectional return predictability.

5. Comment on the appropriateness of the sample selection procedures

- It exclusively utilizes financial data, neglecting non-financial data such as technical indicators and macroeconomic variables, and thus may fail to fully harness the potential of data mining methods.

6. Comment on the appropriateness of variable definition and measurement

- The signals are based on basic arithmetic operations rather than more complex nonlinear transformations, potentially overlooking the nonlinear characteristics of return pricing.

7. Comment on the appropriateness of the model specification

- LLM hallucinations can result in the formulation of hypotheses inconsistent with economic logic.

8. What difficulties arise in drawing inferences from the empirical work?

- Papers generated by LLMs have quality problems, lacking empirical analysis of economic mechanisms and necessary robustness tests.
- Some economic hypotheses proposed in these papers are not intuitive.

9. Describe at least one and feasible extension of this research?

- Employ LLMs to construct new theoretical models and conduct empirical tests based on these models.

10. What links exist among these papers?

- These studies underscore the potential of AI in automating social science research.