

Summary of <Can ChatGPT Forecast Stock Price Movements?

Return Predictability and Large Language Models>

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1. What are the research questions?

- Can and how LLMs like ChatGPT predict financial market movements while using news headlines?

2. Why are the research questions interesting?

- **Recent studies:** stock returns are predictable at a daily horizon using news and trained algorithms.
- LLMs are not trained in predicting returns, does them acquire this capability as they become better at other natural language tasks?

3. What is the paper's contribution?

- Contribute to the literature that use ChatGPT in the context of economics.
 - **Prior studies:** helpful in teach and research.
 - **This study** is among the first to study the potential of LLMs in financial markets.
- Contribute to the literature that employs textual analysis and machine learning to study a variety of finance research questions.
 - **Prior studies** focus on natural language processing in financial markets.
 - **This study** associated with the increasing adoption of LLMs (GPT) in financial markets. (**the first one**)
- Contribute to the literature uses linguistic analyses of news articles to extract sentiment and predict stock returns.
 - **Existing studies** media sentiment and aggregate stock returns or uses the sentiment of firm news to predict future individual stock returns.
 - **This study** focus on understanding whether LLMs add value by extracting additional information that predicts stock market reactions.
- Contributes to the literature on employment exposures and vulnerability to AI-related technology..
 - **Prior studies** examined the extent of job exposure and vulnerability to AI-related technology and the reasons for employment and productivity.
 - **This paper** focuses on capabilities of AI(LLMs) in the finance domain.

4. What hypotheses are tested in the paper?

- **Hypothesis1** State-of-the-art LLMs like ChatGPT can better capture the context of the news headlines, so they fare well against traditional methods for stock market predictions.
- **Hypothesis2** The predictability is more pronounced among smaller stocks and stocks with negative news headlines.

a) These hypotheses answer the research question.

b) These hypotheses follow from common sense, and previous studies.

5. Sample

- ChatGPT's training data is available only until September 2021.
- The sample period begins in October 2021, ensuring that the evaluation is based on information not present in the model's training data.

6. Dependent and independent variables

- The GPT score (1 if ChatGPT 3.5 says YES, 0 if UNKNOWN, and -1 if NO) may be a little bit random.

7. Regression/prediction model specification

- Using OLS with firm and date fixed effects, which is specific.

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

- The randomness of the answer of GPT may influence the results.

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

- LLMs to predict macroeconomic variables.
- LLMs to predict mutual funds' holdings.