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 LLM predict stock returns while using news headlines?
2. **Why are the research questions interesting?**
   - LLM in financial economics remains unknown area, especially to predict stock returns.
     - N:these models are general-purpose, not trained for stock return prediction.
     - Y:these models are trained using big text data, more capable of understand context.
     - Fill gap: study LLMs extract context from news headlines to predict stock returns.
   - Evidence: stock returns are predictable using news and trained algorithms
     - possibly because combining new information is complicated
     - Focus on: can LLM acquire the capability as better at other natural language tasks.
3. **What is the paper's contribution?**
   - contribute to literature on use ChatGPT in the context of economics.
     - Recent paper:
       - decode Fedspeak,helpful in teaching, writing (Korinek, 2023. . .)
       - using historical numerical data to predict:no better (Ko and Lee, 2023. . .)
     - Extend: first to study the potential of LLMs in financial markets, particularly the investment decision-making process.
   - contribute to literature on finance questions using textual analysis and ML
     - Recent paper:
       - Text Mining,Tone. . . (Baker et al,2016; Chin and Fan, 2023)
     - Extend: first study potential of ChatGPT in predict stock returns(not trained)
   - contribute to uses text analysis of news to extract sentiment, predict stock returns.
     - Recent paper:
       - studies media sentiment and aggregate stock returns (Tetlock,2007. . .)
       - firm news to predict future individual stock returns (Tetlock,2011. . .)
     - Extend:can LLM add value by extract additional information that predict return
   - contribute to employment exposures and vulnerability to AI-related technology.
     - Recent paper:
       - extent of job exposure to AI-related tech, affect employment and productivity.
     - Extend:finance domain: adding value to market participants processing information
4. **What hypotheses are tested in the paper?**
   - H1: positive correlation between ChatGPT scores and subsequent daily stock returns.
   - H2: ChatGPT performs better than tradition ways.

a) Do these hypotheses follow from and answer the research questions?

- Yes, and compares the performance of different models.

b) Do these hypotheses follow from theory? Explain logic of the hypotheses.

- its advanced language understanding capabilities, which allow it to capture the nuances and subtleties within news headlines,generate more reliable sentiment scores.

5. **Sample: comment on the appropriateness of the sample selection procedures.**
   - a more accurate“out-of-sample”,Will the ability decline over time?
6. **Comment on the appropriateness of variable definition and measurement.**
   - Concise and clear, no problem.use more LLM models for robustness.
7. **Comment on the appropriateness of the regress/predict model specification.**
   - Does regression not require the addition of other control variables?
8. **What difficulties arise in drawing inferences from the empirical work?**
   - Is it possible to control for not using external resources as a reference?
9. **Describe at least one publishable and feasible extension of this research.**
   - Temporal Analysis:the distance from the out-of-sample starting interval, market volatility, bull or bear market ?
   - When predicting stock return, considering market and macroeconomic factors, such as informing the model that it’s currently a bear market, can lead to higher excess returns?
   - Use chatgpt to identify investor sentiment (using stock bar text)
   - Relationship extraction in financial field: ChatGPT extracts relationships between related companies from financial news, which can constructs a corporate media association network.