Discussion - ChatGPT and Corporate Policies

Jha et. al.

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\(^1\)Views are my own and not of the Fed/Fed System.
Summary of the paper.

▶ Big Question: How to measure expectations of future corporate policies (esp. investment)?
▶ Idea: ChatGPT + earnings conference calls.
▶ Method: A prompt!

The following text is an excerpt from a company's earnings call transcripts. You are a finance expert. Based on this text only, please answer the following question. How does the firm plan to change its capital spending over the next year? There are five choices: Increase substantially, increase, no change, decrease, and decrease substantially. Please select one of the above five choices for each question and provide a one-sentence explanation of your choice for each question. The format for the answer to each question should be “choice - explanation.” If no relevant information is provided related to the question, answer “no information is provided.”

What they find?
▶ ChatGPT output predicts changes in investment (esp over near term - 4 qtrs).
▶ Correlated with CFO surveyed expectations of investment plans.
Great data + Intuitive Methodology + lots of validation

1. **Great data**: Earnings conference calls 4K US listed firms every quarter.
   - Multi-dimensional: presentation and Q&As.
   - Increasingly used in accounting, economics and finance as source of firm level data.

2. **Simple and intuitive**: ‘prompt-based’ classification – interpretable application of AI.
   - This will be copied.

3. Lots of careful comparisons with non-textual data.

**My Take**
- Important to understand the role of prompt in the correlation of ChatGPT output and investment rate.
My comments (1/3): Is ChatGPT following prompt instructions?

- I took 10 randomly sampled excerpts from earnings calls.

- Removing top 3 sentences from the prompt resulted in no change in the classification.

- Great! Results not sensitive to prompts.

- Concern: Output from a model which is not really tailoring the response to the exact question.

- Researchers might not be able to control false positives and negatives.

Prompt:

The following text is an excerpt from a company’s earnings call transcripts. You are a finance expert. Based on this text only, please answer the following question. How does the firm plan to change its capital spending over the next year? There are five choices: Increase substantially, increase, no change, decrease, and decrease substantially. Please select one of the above five choices for each question and provide a one-sentence explanation of your choice for each question. The format for the answer to each question should be “choice - explanation.” If no relevant information is provided related to the question, answer “no information is provided.”
My comments (2/3): What is ChatGPT really picking up?

▶ Author’s validation of: 1) Investment policy, 2) Timing.

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<td>ChatGPT Investment Score_{t}</td>
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<td>1.044***</td>
<td>0.998***</td>
<td>0.788***</td>
<td>0.626***</td>
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<td></td>
<td>(13.88)</td>
<td>(18.29)</td>
<td>(16.48)</td>
<td>(13.96)</td>
<td>(10.86)</td>
<td>(11.96)</td>
<td>(9.05)</td>
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▶ Similar results with overall sentiment in earnings calls.

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<td>Pct. Sentiment (Pos - Neg)_{t}</td>
<td>0.134***</td>
<td>0.181***</td>
<td>0.235***</td>
<td>0.214***</td>
<td>0.173***</td>
<td>0.180***</td>
<td>0.162***</td>
<td>0.130***</td>
<td>0.115***</td>
<td>0.058</td>
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<td>(0.027)</td>
<td>(0.033)</td>
<td>(0.034)</td>
<td>(0.034)</td>
<td>(0.037)</td>
<td>(0.037)</td>
<td>(0.036)</td>
<td>(0.037)</td>
<td>(0.037)</td>
<td>(0.036)</td>
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<tr>
<td>Pct. Risk_{t}</td>
<td>−0.057**</td>
<td>−0.044</td>
<td>−0.054</td>
<td>−0.044</td>
<td>−0.091**</td>
<td>−0.078**</td>
<td>−0.025</td>
<td>−0.036</td>
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<td>(0.028)</td>
<td>(0.032)</td>
<td>(0.034)</td>
<td>(0.036)</td>
<td>(0.036)</td>
<td>(0.037)</td>
<td>(0.042)</td>
<td>(0.043)</td>
<td>(0.040)</td>
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▶ Two potential issues: 1) general sentiment. 2) Timing of general discussion in EC.
Can we understand and classify how firms are increasing capital expenditures?
- 50-70% of capital expenditures is for repair and maintenance. (Duke-FRB Survey)
- Other margins seem to be more interesting.

What are executives reasons for increasing or decreasing capital expenditure policies?
- Understanding the effects of policies directly.

At this point, we expect total capital spending next year of approximately $11 million, primarily to get Nashville reopened and also adding some additional WiFi capability and other facility improvements at Dover International Speedway.

- Dover Motorsports Inc (2021)

Commodity prices have been very volatile and the industry has seen a continued softening in the U.S. drilling activity as companies exercise disciplined capital spending.

- Unit Corp (2019)
My take!

1. Prompt engineering: more justification for the prompt.
2. More insight into what ChatGPT is really picking up.
3. Go beyond prediction! how and why of investment policies. (Maybe another paper)