Summary

Climate Change, Analyst Forecasts, and Market Behavior

2024 年 4 月 2 日

1. **What are the research questions?**
    - Whether sell-side equity analysts help the market assimilate information contained in climate change.
2. **Why are the research questions interesting?**
    - An emerging literature in economics and finance examines whether climate change affects firm performance and whether firms are able to effectively manage climate-related risks
    - As information intermediaries, analysts should provide earnings forecasts that reflect the potential impact of global climate change on firm performance.
    - But not all analysts are likely to see the link between climate change and firm performance.
3. **What is the paper’s contribution?**
    - This paper contributes to the finance literature examines how climate change affects financial outcomes.
        - Recent papers:
            - Extreme temperatures affect agricultural production, aggregate industrial output, labor supply and establishments (Addoum etal., 2020).
            - Investors believe that some valuations do not fully reflect climate risks (Krueger et al., 2020).
            - Climate change and carbon-transition risk affect stock returns (Bolton and Kacperczyk, 2020).
        - Extension:Our temperature sensitivity measure allows us to identify firms whose earnings are affected by temperature increases
    - This study contributes to the literature that examines the factors that affect analyst forecasts.
        - Recent Papers:
            - Analysts are subject to various biases, including the depression (Dehaan et al., 2017), limited attention (Dong and Heo, 2016), and extreme negative events (Cuculiza et al., 2020).
        - Extension: Establishing that large increases in temperature affect analyst forecast and accuracy.
4. **What hypotheses are tested in the paper? list them explicitly**
    - Analysts located in areas where firms exhibit greater sensitivity to climate changes would be more aware and more sensitive to large temperature changes.
    - Abnormally warmer climate can influence the accuracy of affected analysts.
        - Analysts in climate-sensitive regions tend to issue less optimistic forecasts after periods of unusually warm weather.
        - Firms in climate-sensitive regions could be adversely affected.
    - This effect could be amplified for firms that are more sensitive to climate change.

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

Yes

(b) **Do these hypotheses follow from theory or are they otherwise adequately developed? Please explain the logic of the hypotheses (use visualization if possible)**

- The main hypothesis builds upon two strands of recent literature
  - Abnormally hot and cold climates have differential effects on individuals' awareness about climate change.(Choi etal.,2020)
  - Countries with higher average temperatures have lower per capita income (Gallup etal., 1999; Dell etal. 2009, 2012) and greater reduction in national output (Hsiang, 2010)

5. **Sample: comment on the appropriateness of the sample selection procedures**

   Exclusively relying on annual forecasts may lead to sample attrition.

6. **Dependent and independent variables: comment on the appropriateness of variable definition and measurement (focus on the key dependent variables and independent variables)**

   - Dependent variable: The use of the average value of forecasts issued by untreated analysts as consensus forecast may cause some problems
     - The average value may be affected by outliers, median value would be better
     - The consensus forecast may be lack of representativeness, especially, when the sample size of the control group is significantly smaller than treated group.
   - Independent variable: Including the month of occurrence of events may lead to prospective issues

7. **Regression/prediction model specification: comment on the appropriateness of the regression/prediction model specification**

   - It considers various fixed effects: analyst, firm, and time (year-quarter) reasonably.

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

   - including analyst-level controls and analyst fixed effects in regression may lead to multicollinearity.

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

   - Other measures of climate change: news, location, air condition……