Green Bonds: Commitment to Sustainability Under Asymmetric Information

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Question, Results, and Contribution

How do green bonds affect firm value and cost of debt (and why)?

- Impacts of green bond issuance (announcement)
  - on Equity (stock price) [+]
  - on Debt (returns of all active bonds, yield to maturity) [+]
  - as explained by firm characteristics:
    credit rating [low +], maturity structure [long +], prior ESG [poor +]
  - on Sensitivity to climate concerns [-]

Contribution:

- comprehensive study integrating equity and debt markets
- new matching strategy: control for firm-specific factors
- propose signaling as a mechanism

Model

Simple, yet powerful predictions:

- two types of firms, time-0 strategy choice (commitment vs. flexibility)
- regulatory consequences at T: costs for brown assets
- signaling: market value increase v.s. flexibility value - penalty for false signal

Firm's objective function $u(p,s|j) = \alpha \hat{V}(s) + (1-\alpha)V(p,s|j)$.
The market value given the signal s is then the probability weighted average of the true values $\hat{V}(s) = \sum_{j,p} P(j,p|s)V(p,s,|j)$. $\Longrightarrow$ Existing separating equilibrium.

Predictions from separating equilibrium:

- positive responses to green bond issuance
- equity being more sensitive than debt
- longer maturity and riskier issuers $\Rightarrow$ more sensitive to valuation changes

Thoughts on Model

- [Assumption 1]: too crucial for the results but not well justified.
  e.g. Oehmke and Opp (2022) assumes the opposite.
  Are green firms (projects) really more profitable?
  Suggestion: test the assumption with data.
- [Assumption 2]: regulatory costs on liabilities sounds hardly realistic
  Are regulatory costs asset-specific or type-specific?
  Personal thought: shifting the return distributions sounds more likely as in Oehmke and Opp (2022).

Empirical Strategy

Standard, with a nice twist:

- Event study with stock, then focus on the difference between green and conventional bond announcements
- Firm-level ABR based on event study estimates with bonds, again the difference between green and conventional
- Triple DID on yields to maturity

Richer than an event study:

- Dissect the ABR difference by important firm characteristics
- Dissect the stock volatility to identify the impact on market expectations

Thoughts on Empirics

- Matching with the same issuer: some advantages but also some disadvantages, including
  - potential OVB from time-related factors (e.g. market sentiment to "ESG investing"; flow-driven returns to green assets, Van der Beck (2021))
  - connecting to the model: are these firms in fact "flexible" that can switch between green and conventional bonds?

  Sanity check: regress CABR on convCABR with time (e.g. monthly) FE? ($\rightarrow$ for constant estimate)
- Identification of the triple DID: even cleaner with higher-level FE (e.g. firm FE + announ. day FE) if the focus is on the triple difference term?

Reference mentioned:

Oehmke, M., & Opp, M. M. (2022). Green capital requirements. Swedish House of Finance Research Paper, (22-16).

Van der Beck, P. (2021). Flow-driven ESG returns. Swiss Finance Institute Research Paper, (21-71).