Corporate Environmental Performance, Disclosure and Leverage: An Integrated Approach

Elizabeth Connors
Northeastern University

Lucia S. Gao
University of Massachusetts, Boston
Leverage/Environmental Performance

• Poor environmental performance:
  Regulatory risk
  High compliance and potential remediation costs
  Indicate inefficiencies in production processes (Nehrt 1996) and innovation (Porter and van der Linde 1995)

• This causes volatility in future cash flows
  Lower debt due to bankruptcy risk (Kraus and Litzenberger 1973)
  Lower tax benefits of debt (Frank and Goyal 2009)
  Represent un-recorded liabilities which affect debt capacity (Barth and McNichols 1994)
Voluntary Disclosure/Env. Perform

• Firms with better performance tend to disclose more information voluntarily to differentiate from poor performers (Dye 1985, Verrechia 1983)
• Clarkson et al. (2008) supports this prediction
• Delmas and Blass (2010) does not
Leverage/Voluntary Disclosure

- Higher leverage entails higher agency and monitoring costs – voluntary disclosure reduces the costs (Fama and Miller 1972, Alsaeed 2006)
  - Empirical results are mixed

- Disclosure quality impacts cost of equity capital (Botoson 1997, Leuz and Verrecchia 2000) and reduces information asymmetry (Healy and Palepu 1993, 1995)
Voluntary Disclosure

Leverage

TRI Performance
Empirical Model

\[
\text{Leverage}_{it} = \beta_0 + \beta_1 \text{Environmental Performance}_{it} + \beta_2 \text{Environmental Disclosure}_{it} + \\
\beta_3 \text{Market to Book}_{it} + \beta_4 \text{Return on Assets}_{it} + \beta_5 \log(\text{Total Assets})_{it} + \\
\beta_6 \text{Tangibility}_{it} + \beta_7 \text{Non Debt Tax Shields}_{it} + \varepsilon_{it}
\]

\[
\text{Environmental Disclosure}_{it} = \gamma_0 + \gamma_1 \text{Environmental Performance}_{it} + \gamma_2 \text{Market to Book}_{it} + \\
\gamma_3 \text{Leverage}_{it} + \gamma_4 \text{Return on Assets}_{it} + \gamma_5 \log(\text{Total Assets})_{it} + \gamma_6 \text{Newness}_{it} + \\
\gamma_7 \text{Capital Intensity}_{it} + \varepsilon_{it}
\]
Measures and Sample

- Environmental Performance – TRI totals
- Leverage – Debt/Debt+Equity+Preferred
- Disclosure – Clarkson, et al. (2008)

- Electric Utilities (SIC 49) – 2001 to 2007
  - Nearly all revenues from U.S.
  - Chemical emissions are relatively similar
  - Clustered analysis by company (49) (Wooldridge 2002, 2003)
Results

When simultaneity is considered:

• Environmental Performance is positively associated with leverage

• Environmental Performance is positively associated with Voluntary Disclosure

• Leverage is negatively associated with Voluntary Disclosure
  – Higher equity financing relative to debt is associated with higher disclosure
But…

- TRI is only one measure of environmental performance
- Leverage is only one financial choice variable
- Environmental reports are only one method of environmental disclosures
  - 10-Ks do have some voluntary disclosures
- Results for electric utilities may not reflect other industries