The Economics of Carbon Disclosure

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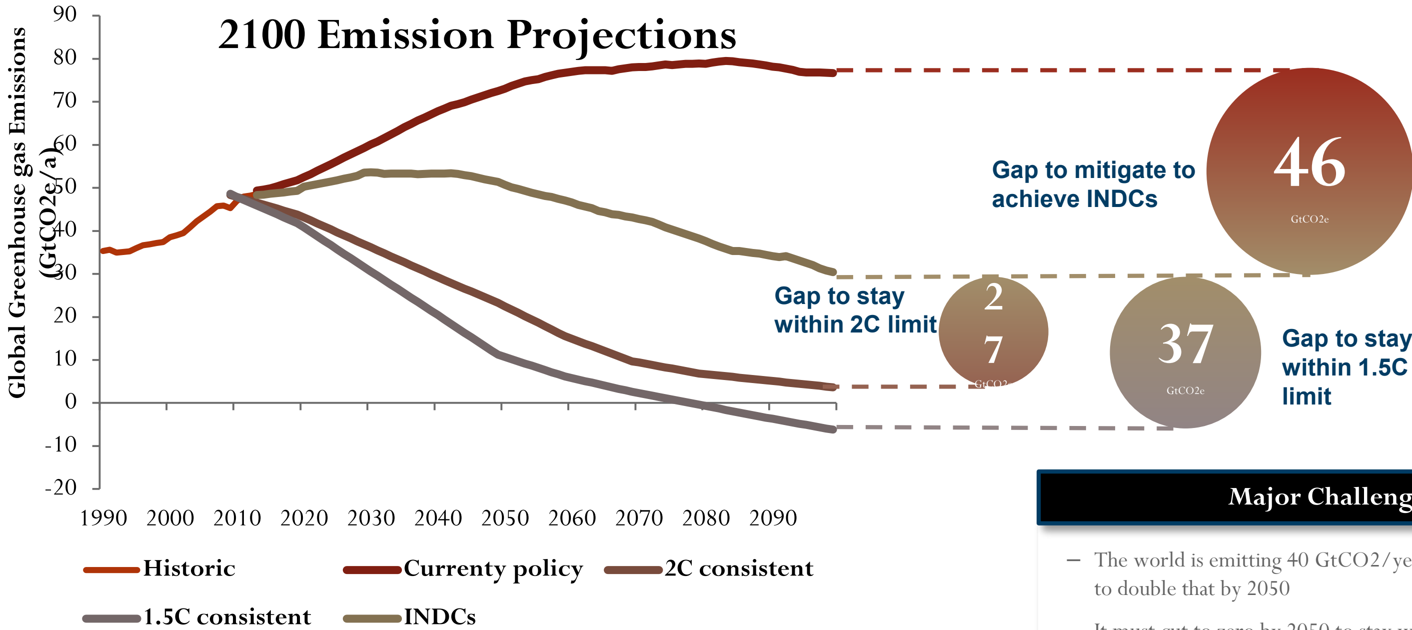
The Global Net Neutrality Target

Global emission gaps



Major Challenge

- The world is emitting 40 GtCO2/year and is on its way to double that by 2050
- It must cut to zero by 2050 to stay within the 1.5-degree limit

Source: Climate Action Tracker Database, Global emissions time series, updated November 2017. Time series data for INDCs, 2C consistent, 1.5C consistent time series are computed as medians of highest and lowest potential global emission level results.

Motivation

- Transition risk is dilated by limited observation of firm-level emissions and abatement plans
- Carbon disclosure as a tool to moderate this risk
  - *Voluntary disclosure vs. mandatory disclosure*
- Consequences of carbon disclosure are not fully understood
- <u>My research (with Patrick Bolton):</u>
  - study the (stock) market consequences of firm-level carbon emissions disclosure globally
  - separate the effect of disclosure from the effect of fundamentals
  - emissions are less subject to manipulation and moral hazard issues

Conceptual Framework

- Benefits: disclosure to mitigate asymmetric information problems
  - Reduce adverse selection: Grossman & Hart (1980); Milgrom (1981)
  - Reduce uncertainty: Easley & O'Hara (2004)
  - Shaping society perception (easier or better access to capital by increasing investors' and lenders' confidence that the company's climate-related risks are appropriately assessed and managed)
- Costs:
  - Direct costs to produce information (e.g., higher for smaller firms)
  - Indirect costs through information spillovers: Verecchia (1983)
=> shareholder (competition) vs. stakeholder (political retribution) view
  - Divestment channel

Data: Sources

- We take a global investor perspective on the emissions disclosure using a large panel of over 14,400 firms from 77 countries over the 2005-18 period

- The database is largely a result of matching two data sets by Trucost and FactSet

  - Trucost: information on firm-level corporate carbon and other greenhouse gas emissions globally (follows the Greenhouse Gas Protocol that sets the standards for measuring corporate emissions)

  - Provides information on whether emissions (scope 1 and scope 2) are directly disclosed by the firm or estimated by Trucost

Disclosure and Carbon Premia

- Does the disclosure affect carbon transition risk globally?

- Firms that decide to disclose emissions voluntarily experience about 25% reduction in their cost of capital

- **The result is consistent with the uncertainty reduction and signaling theory**

Disclosure and Ownership

- Does the disclosure effect work through the divestment channel?

- Companies that decide to disclose experience lower institutional ownership

- **The result underscores the "salience aspect" of disclosure**

Mandatory Disclosure and Carbon Premia

- Does the mandatory disclosure affect carbon transition risk? Use evidence from 2013 change in UK disclosure law
- 1) Firms that are mandated to disclose emissions experience a reduction in their cost of capital relative to firms that already did that
- 2) The reduction is smaller for firms with higher emissions
- **The result is consistent with the uncertainty reduction and signaling theory**

Spillover Effects

- Does the disclosure change spill over into other markets?
- 1) Firms located outside UK respond positively to the UK law. They are more likely to disclose their emissions as well (European countries twice as likely as the North American and Asian firms)
- 2) Firms located in Europe experience the reduction in their cost of capital and show the evidence of signaling element of disclosure
- 3) Lack of evidence of uncertainty reduction for both North American and Asian markets