Eleonora Sfrappini
IWH - Halle Institute for Economic Research

FINANCIAL CONSTRAINTS AND EMISSION INTENSITY
How do high-emitting firms adjust to tighter financial constraints? And what happens to their emission intensity when they adjust?

**Winner-Picking in Dirty Firms:**
- Headquarters can reallocate scarce resources within the firm to fund relatively more profitable projects (Stein, 1997) → Winner Picking
- When dirty subsidiaries are more profitable: ↑ Emission intensity
- Are dirty subsidiaries more profitable?

**An alternative mechanism: Constraint-Minimization**
- High emitting firms can face tighter financial constraints due to their dirty status: a carbon premium in equity markets (Bolton and Kacperczyk, 2021) and bond prices (Seltzer et al., 2022)
- When the constraints are a consequence of firms’ dirty status, firms can divert funding to cleaner projects to improve access to funding: ↓ Emission intensity

**Data**
European firms active in emission-intensive sectors:
- Financial and Ownership: Bureau van Dijk Ownership Database
  - Historical parent-subsidiary links 2009-2019
  - At subsidiary and parent level
- Emissions: EU Emission Trading Scheme Data
  - Installation-level data mapped to parents and subsidiaries
- Banking Relationships: AMADEUS Bankers

**1st Natural Experiment: The EBA Capital Exercise**
- In 2011, 61 EU banks had to increase their Tier 1 capital ratios to 9%
- This led to a reduction in corporate lending (Gropp et al., 2018) and a credit crunch (Mésonnier and Monks, 2015) for borrowers of participating banks
- Difference-in-Difference approach where Treated are borrowers of EBA Banks

Do treated firms engage in winner-picking?

**First Results: Winner Picking in Dirty Firms**
- Treated firms engage in winner-picking and shrink at the margin: ↑ profitability
  - The marginal project is clean: ↑ emission intensity
  - Is this about within-firm capital allocation choices?
  - Subsidiary level: Decline in size for clean subsidiaries, not dirty ones

**Further Results: Constraint-Minimization**
- No winner-picking and no shrinking at the margin: ↓ profitability
  - Firms cater to lenders’ sustainable preferences: ↓ emissions
  - Are treated firms engaging in constraint-minimization?
    - Emission reductions are concentrated at the parent level: visible
    - Parents distance themselves from less visible emissions by increasing the number of intermediary ownership relationships to dirty subsidiaries

**Take-Aways**
How firms adjust to financial constraints matters for environmental performance:
- I link the idea of winner-picking to an increase in emission intensity for dirty firms
- I propose the alternative mechanism of constraint-minimization when the constraint is correlated with firms’ environmental performance and show this incentive at play in an empirical setting
- In the paper, I also provide a simple theoretical framework to highlight the trade-offs between winner-picking and constraint-minimization

**Policy Relevance**
- Interventions to manage transition risks in the financial sector could worsen financial constraints for dirty firms
- Policy design should preserve dirty firms’ incentives to invest in clean projects