Climate Regulations and Corporate Demand for ESG Talent

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Summary

- Important paper to evaluate a stringent policy to reduce corporate pollution in China and evidence of some effectiveness = increased demand for relevant human capital
- Focus on one main result
- Personal sentiment: Very plausible results, however a missing "so-what"

This discussion:
- How to paint a fuller picture?
- How to strengthen contribution?

The Paper

What is the effect of China's Environmental Protection Tax Law (EPT) on the demand for green skills?

- Setting: Implementation of EPT (effective 2018) for some industries (2015-2021)
- Main outcome: % of green jobs ads (firm-level) from a job posting platform
- Diff-in-diff: Treatment = high polluter status based on industry classification
- Heterogeneity: **province tax rate**, public attention, financial constraints, tax avoidance, pre green jobs
- Real effects: green patents, profitability

Result:

Post EPT, firms in polluting industries increase demand for green skills by 0.7% (average 3%)

Emphasize policy implication: Imposing high taxes increases green skill hiring and effectively promotes green transition

Fit into the literature? Regulation, production cost, & innovation

- IO literature: Increased cost of production will increase in investments in lower cost clean technologies (Hicks, 1932; Porter, 1991; Acemoglu et al., 2012)
- Extant literature shows that environmental regulation leads to higher investments in green technology measured as R&D and patents (Aghion et al., 2016; Calel & Dechezleprêtre, 2016; Dai et al., 2021, Brown et al., 2022)
- New literature on green hiring: green transition leads to higher demand for green skills that have a premium (Curtis & Marinescu, 2021) leading to more patents (Darendeli et al., 2022)

As it stands now: study provides evidence consistent with the literature for the Chinese EPT.

Background: How does China's EPT work?

- Implemented in 2016, replaced old fee-based EPL (1980s, 2003, 2014) which was prone to corruption
- Higher fees, more pollutants, part of legislation
- Applies to emissions of air, water, noise, solid waste, CO_2 exempt
- Categorized 16/77 industries as polluting, exemption for agriculture, transport...
- Tax payable = Total pollution volume × Applicable tax $ per unit
- Mix of tax credits, burdens, penalties
- Tax rates determined by provinces, depending on economic development goals

Very stringent policy that increases costs of production creating strong incentives to change production technology for polluters.

Hypothesis: What is the alternative hypothesis?

H1: EPL will **increase** demand for green skills among affected (polluting) firms

HA: EPL will **decrease** demand for green skills among affected (polluting) firms

- Because prices go up for green skills, so firms will demand less of it
- But if prices went up, it implies demand increased

Is the alternative hypothesis plausible?

What might be a stronger contribution?

- Existing literature shows that polluting firms respond to regulation by increasing investment in clean-tech
- Chinese EPT is a stringent regulation, so we should expect the same
- Human capital is a key input for clean-tech investments (patents, R&D), so we should expect the same

Why is it interesting to look at demand for green skill?

Tension in the literature not whether stricter environmental regulations leads to more clean-tech investments, but whether it adversely affects firm performance (underinvestment).

Documenting dynamics of labour market demand of an environmental policy would constitute an important contribution.

First: Validate green job measure

Green job posting = descriptions of functions/ responsibilities contain >=3 unique green skills.

Increase of green postings could be greenwashing/marketing of high polluters

1. Correlate with green patents, R&D, env. expenditures for high polluters (Section 4.8) - confirms these skills are needed
2. Robustness: different thresholds, scale by total # of mentioned skills

Second: Unpack increases in green hiring/ better exploit job ads data

1. Equilibrium effects - supply of green skills is constrained and so are corporate resources
   - **Does demand for green skills crowd out demand for other job? Does the no. of jobs increase or substitution?**
   - Do high polluters post higher salaries?
   - Do high polluters post jobs more quickly?

2. What kind of jobs are in high demand?
   - Based on polluter status, what experience level is in demand? Technical versus managerial roles?
   - In what locations is the demand concentrated? HQ-level, pollution plant-level? Does it benefit economically weak provinces?

Third: More accurate approximation of firms' exposure to EPT

Examine meaningful drivers of firms' **regulatory exposure** and, thus, hiring decisions:

1. Plant dispersion: does HQ location accurately reflect location of pollution?
2. Mobility (see plant dispersion) - easier to relocate production
3. Exploit difference to fees under old system
4. Product market competition - more sensitive to cost increases
5. Cost of green human capital acquisition: proximity to universities with environmental programs
6. Access to finance + past green skill hiring

Real Effects: How effective is China's EPT in promoting the green transition?

Effect size of demand for green skills is small in magnitude (0.7%; 22% of average). Does it translate into firm's bottom lines? Evidence of **real effects**:

Translation into a competitive advantage:

- Profitability: no difference between firms high and low green hiring. Not clear this is a relevant measure - interested in cost side (affected by policy)
- Other evidence possible? emissions, taxes/fines, cost of equity, loan spreads (lower risk)...

Empirical suggestion 1: Sample period - Why is 2018 the event year?

Event year is 2018. Policy was implemented in 2016; proposed in 2015. Jobs ads data available since 1999.
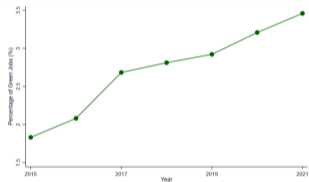

Fig.3: Green jobs over time
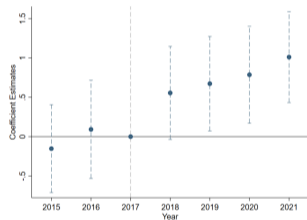

Fig. 6: Env. firm expenditures

Fig. 4: Diff-in-diff coefficient estimates (90% CIs)

Empirical suggestion 2: Matched difference-in-differences design

Ideal experiment: 2 otherwise identical firms (pollution level, industry, size..); one is randomly subject to EPT.

2 sources of variation:

1. **Province tax rate**: endogenous as based on economic development
   - Compare two firms in **two different provinces** but similar: pollution level (?), **industry**, firm size, green hiring history, asset tangibility, profitability, market competition
   - The goal is to identify firms that are as similar as possible pre EPT, except for their tax rate due to location

2. **Regulatory status** based on industry code: some industries excluded despite high pollution (e.g., agriculture)
   - Compare two firms in **two different industries** but similar: pollution level (?), **location**, firm size, green hiring history, asset tangibility, profitability, market competition (pre EPT)
   - The goal is to identify firms that should be regulated but are not

Finally: Title

Climate Regulations and Corporate Demand for **E**SG Talent

Conclusion

Novel data and policy relevant implications!

Main suggestions - Work on the **So What**: Increase depth of analysis of labour market effects