

Discussion of
Do Venture Capitalists Value Climate Risk?
Evidence from State Climate Adaptation Plans

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Harnessing Finance for Climate
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What is this paper about?

- States adopt Climate Adaptation Plans to address climate change's impact on society and the economy.
 - Increased frequency of floods, heat waves, droughts, wildfires, etc. Sea levels are rising, coastal regions are eroding, and ecosystems are changing.
 - Lives and livelihoods are at risk.
- Objective:
 - A resilient society and economy, less vulnerable to climate-related risks.
 - Create a foundation for sustainable economic growth
- How does this affect the entrepreneurial ecosystem?
 - Startups' innovation policies?
 - VCs' investment strategies?
 - Startup success?

What this paper does and finds

- Study the response in startup innovation policies and VC investment strategies to the (staggered) adoption of **SCAP**.

Baseline specification:

$$y_{ijst} = \beta SCAP_{st} + \gamma' X_{ijst} + \text{Lead VC FE} + \text{State FE} + \text{Industry-year FE} + \varepsilon_{ijst}$$

- Looks at many different outcomes reflecting how startups respond to the SCAP adoption:
 - Startups (mostly those with green profiles) increase green innovation output
 - At the expense of total innovation output.
 - Startups are more likely to raise VC financing following the adoption of SCAP. Green startups receive more VC funding and brown startups less
 - Differential effects when considering startups funded by experienced VCs
 - No impact on startups exit performance unless funded by experienced VCs

What is SCAP?

- From California Climate Adaptation Strategy 2009: Adaptation, in this context, “generally refers to efforts that respond to the *impacts* of climate change [...]”
- Primary focus: Addressing the consequences of climate change, i.e., reducing overall climate risk exposure
 - E.g., improving resilience to extreme weather events, sea level rises, flooding, and wildfires.
 - Minimizing adverse impact on people and property
- Some states have an integrated perspective on adaptation vs mitigation.
 - California plan focuses only on adaptation (with a simultaneous mitigation bill)
 - Alaska’s Climate Change Strategy has an integrated approach.
- Not one uniform policy, large variation across states.

Heterogeneity in SCAP across states

Planning

Content

Implementation

Heterogeneity in SCAP across states

Planning

- Initiation - what/who are the driving forces?
 - Events and vulnerabilities
 - Politicians, agencies, researchers, citizens
- Development
 - Who was involved in the development of the plan?
- Legislative process
 - Executive or legislative action

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- Objective: Adaptation vs mitigation
- Ambition: Large/small scope
- Goals vs. actions: Type of goals, the extent to which an action plan is proposed, and what actions
- Targeted sectors: Which are located in the state and which are affected

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Implementation

- Monitoring of progress
- Revisions and new action plans
- Democratic process

Heterogeneity in SCAP across states

	Mean	Min	Median	Max
Number of goals	134.5	20	102.5	373
<i>Share of goals by type</i>				
Planning and capacity building	72.2%%	46%	73.9%	93.1%
Law and policy	26.5%	5.6%	26.1%	52.9%
Post-implementation monitoring	0.8%	0%	0%	5%

Note: Adapted from Ray and Grannis, 2015. Classification by Georgetown Climate Center.

- **Planning and capacity building:** Increase awareness, provide information and knowledge, building resources to facilitate resilience and transition
- **Law and policy:** Reduce regulatory uncertainty, increase regulatory burden, promote innovation, penalize offenders
- **Post-implementation monitoring:** Expected follow-up, long-term vision

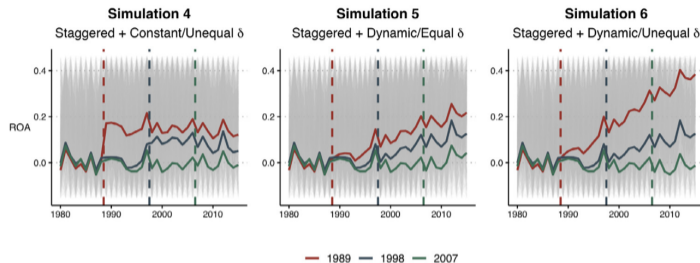
How should SCAP affect startups?

- Increased awareness of climate risks and climate change
 - Shift in demand?
 - Different effects within the cross-section of firms
 - Changes which projects are profitable
- Reduced climate risk and increased resilience to climate-related events
 - Better business environment, positive for startup establishment and success rate
 - Cross-state and cross-section of firms
- Resolved regulatory uncertainty or increased regulatory burden?
- Shift focus from mitigation to adaptation
 - Less disruptive innovation with a structural impact?

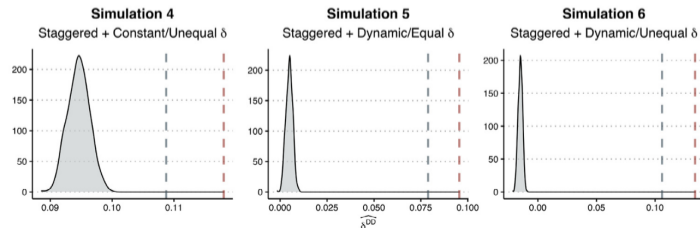
Different mechanisms are in play in different states.

What goals and actions are most effective in achieving the desired objective?

Empirical challenges: Heterogeneous treatment



(ii) TWFE DiD Estimates on Simulated Data



- Staggered timing and heterogeneous treatment
 - Content varies across states and sectors.
- Dynamic and significant long-run effects?
- \Rightarrow Standard TWFE estimators are biased (Simulation 6)

Figure from Baker, Larcker, and Wang (JFE, 2022)

Addressing treatment heterogeneity

- Use alternative estimators (e.g., Stacked, CS, SA) to obtain sample ATT.
- Main result robust to alternative (stacked) approach: Green startups shift to more green innovation.
 - Mitigated by a large number of never-treated?
- Use stacked approach as the baseline
 - Very close to standard TWFE
 - Already implemented
 - Does not exclude looking also at alternative estimators

Study the heterogeneity

- Alternative: Estimate each event separately—Analyze heterogeneity.
 - Carefully construct clean control groups.
 - Pay attention to anticipatory effects and pre-treatment heterogeneity across states.
 - Analyze the distribution in treatment and relate to heterogeneity in adaptation plans.
- Shed light on the effectiveness of different plans—which plans effectively achieve different objectives?
 - Unintended consequences and conflicts between different objectives.

Summary

- Nice paper and interesting question!
- Important to understand how young innovative firms responds to policy changes.
 - Any or none? Intended or unintended?
- Some suggestions for directions to pursue.

Thank you!