

# Discussion of

## Banking on Carbon: Corporate Lending and Cap-and-Trade Policy

Ivanov, Kruttli, and Watugala

by

Vidhan K. Goyal

HKUST, Department of Finance

May 26, 2021



# Research Question

How do banks manage exposure to **transition risks**?

- Do banks renegotiate loans to obtain greater flexibility around the passage of new climate regulations? How do lending terms change?
  - Total credit committed; Maturity; Term loans vs. lines of credit; Interest rates; Syndicate composition
- The focus is on **transition risk**. Is lending affected by the uncertainty surrounding new climate regulations?

# What Does it Do?

- The paper exploits two climate change policies:
  - California cap-and-trade bill:
    - ▶ Regulations passed on December 22, 2011.
    - ▶ Became effective on January 1, 2013.
  - Waxman-Markey cap-and-trade bill:
    - ▶ The Waxman-Markey bill cleared the House of Representatives on June 26, 2009.
    - ▶ Ultimately failed to pass in the Senate on July 22, 2010.

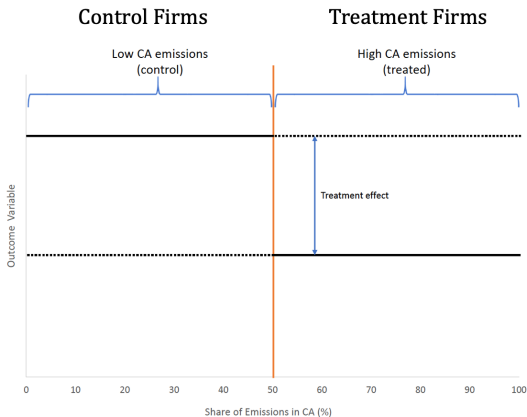
# Empirical Strategy: California Cap-and-Trade

Regulation was approved on December 22, 2011. Effective January 1, 2013

**Pre-period:** 2011 Q3 and 2011 Q4 (prior to the passage of the bill).

**Post-period:** 2012 Q3 and 2012 Q4 (After the passage, but before the bill became effective).

- Total credit committed
- Maturity
- Term loans vs. lines of credit
- Interest rates



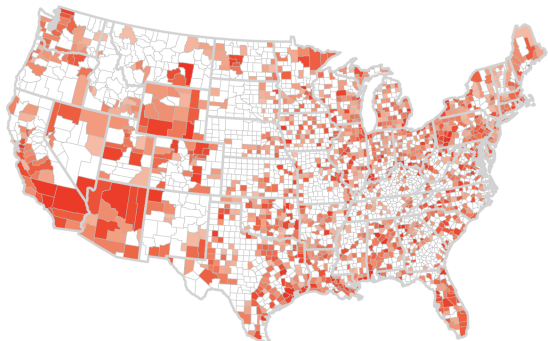
# Comments on California Cap-and-Trade

- **Pre- vs. Post-period:** The bill was discussed and debated in 2011.
  - If there was “substantial uncertainty about how stringent the emissions cap” would be, then why does that uncertainty increase after the passage of the bill?
  - The nature of this uncertainty? How does it affect banks? Cash flows? Default risk?
- **Post-2012 period:** Are the effects persistent?
  - If firms are adversely hit by the cap-and-trade bill, then do the banks continue to lend on a short-term basis at a higher interest rate?
  - If some firms benefit (because they can sell permits), then do they receive better lending terms?

# Comments on California Cap-and-Trade: Continued

- **Treatment vs. Control Firms:**
  - Full sample  $N=2,977$ . Treatment firms ( $N=212$ ): “High CA Emissions”. Control firms: “Low CA Emissions”. So, we have many more control firms.
- **Are Control Firms Good Counterfactuals?**
  - Control firms include other firms in California in non-polluting industries. And, polluting firms in other states without a cap-and-trade legislation.
  - Firms in other states could be in the same industry or a different industry.
  - State level macroeconomic effects? Lender effects?
  - Pre-trends: Controlling for pre-trends between treatment and control firms is a challenge.

# Emissions



Compare firms in the same industry across state borders  
(perhaps borrowing from the same lender).

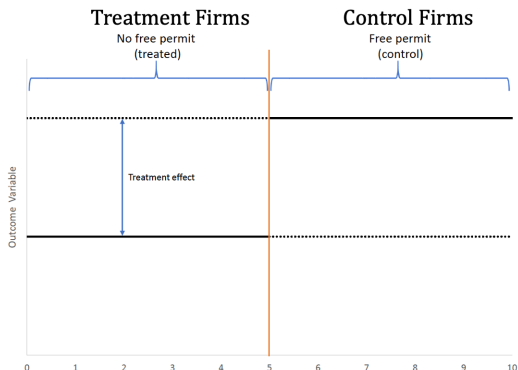
# Empirical Strategy: Waxman-Markey Legislation

Legislation cleared the House in June 2009. Failed to pass the Senate in July 2010

**Pre-period:** 2008 (Bill was in the proposal stage).

**Post-period:** 2009 (Bill passed the House. But not yet at the Senate.)

- Total credit committed
- Maturity
- Term loans vs. lines of credit
- Interest rates
- Syndicate composition
- Cash flow covenant
- Monitoring



# Treatment and Controls in Waxman-Markey Setting

Energy Intensity  
0.03 to 0.05  
No Free Permits  
“Treatment”

Energy Intensity  
0.05 to 0.07  
Free Permits  
“Controls”

## Industries by Energy Intensity

Panel C: Energy intensity [0.03,0.05)

313112	Yarn Texturizing, Throwing, and Twisting Mills	326140	Polystyrene Foam Product Manufacturing
313210	Broadwoven Fabric Mills	327112	Vitreous China, Fine Earthenw., and Other Pottery Prod. Manuf.
324199	All Other Petroleum and Coal Products Manufacturing	331319	Other Aluminum Rolling and Drawing
325131	Inorganic Dye and Pigment Manufacturing	331524	Aluminum Foundries (except Die-Casting)
325132	Synthetic Organic Dye and Pigment Manufacturing	332111	Iron and Steel Forging
325312	Phosphatic Fertilizer Manufacturing	332112	Nonferrous Forging
326113	Unlaminated Plastics Film and Sheet (except Packag.) Manuf.		

Panel D: Energy intensity [0.05,0.07)

325191	Gum and Wood Chemical Manufacturing	327122	Ceramic Wall and Floor Tile Manufacturing
325193	Ethyl Alcohol Manufacturing	331419	Prim. Smelting and Ref. of Nonferrous Metal (except Copper and Alu.)
325199	All Other Basic Organic Chemical Manufacturing	331512	Steel Investment Foundries
325211	Plastics Material and Resin Manufacturing	335991	Carbon and Graphite Product Manufacturing

Empirical strategy is to compare lending to firms in industries in Panel C (treatment firms) with firms in industries in Panel D (control firms) between 2008 and 2009

## Comments on Waxman-Markey Bill

- How should we interpret these results? Are controls really unaffected firms?
- The Waxman-Markey bill would have affected both treatment and controls. It gives free permits to firms above the 5% threshold.
  - Do banks improve lending terms to firms getting free permits? Which differences matter?
  - Could we plot pre- and post-trends in lending terms for both treatment and controls?
- Global Financial Crisis: The post-period is year 2009, the year in which the crisis worsened. Could it have affected industries in Panel C differently compared to those in Panel D?
- How do these industries generally do in recessions?

# Table 7: Public/Private Split – Waxman-Markey Bill

Panel A: Log committed credit								
	Private firms				Public firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$I_{i \in Treated} \times I_{t=2009}$	-0.072 (0.082)		-0.049 (0.059)		0.107 (0.090)		0.108 (0.088)	
$I_{i \in TreatedWide} \times I_{t=2009}$		0.046 (0.085)		0.053 (0.071)		0.056 (0.064)		0.066 (0.062)
Observations	170	276	170	276	172	348	172	348
R2	0.959	0.952	0.965	0.954	0.944	0.961	0.945	0.963
Panel B: Remaining maturity (in months)								
$I_{i \in Treated} \times I_{t=2009}$	-9.642* (5.605)		-10.317* (5.181)		-0.421 (2.366)		-0.532 (2.304)	
$I_{i \in TreatedWide} \times I_{t=2009}$		-7.757 (5.083)		-8.354* (4.573)		2.001 (2.415)		1.969 (2.368)
Observations	170	276	170	276	172	348	172	348
R2	0.802	0.842	0.820	0.852	0.924	0.856	0.926	0.858
Panel C: Term loan share (0 to 1)								
$I_{i \in Treated} \times I_{t=2009}$	-0.277*** (0.060)		-0.240*** (0.068)		0.060 (0.052)		0.060 (0.056)	
$I_{i \in TreatedWide} \times I_{t=2009}$		-0.239*** (0.055)		-0.214*** (0.052)		0.051 (0.049)		0.041 (0.051)
Observations	170	276	170	276	172	348	172	348
R2	0.834	0.831	0.868	0.842	0.866	0.832	0.876	0.858

# Understanding Private versus Public Firms

- Effects are concentrated among private firms. It will help to understand why that is so.
  - Private firms do have greater financial constraints than public firms.
  - If so, then small public firms should also exhibit similar effects. Or, unrated public firms. If the argument is about access to financing, it needs to be explored more fully.
  - Private firms also differ in terms of agency frictions and managerial myopia. Which of these differences matter?

## Other Comments: Interest Rates

	Full sample				Private firms				Public firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$I_{CA\_Emissions_i > 25\%} \times I_{Post\ CA\ bill}$	0.667*		0.538*		1.748**		1.013*		0.175		0.082	
	(0.395)		(0.270)		(0.719)		(0.552)		(0.458)		(0.474)	
$I_{CA\_Emissions_i > 50\%} \times I_{Post\ CA\ bill}$		0.294		0.137		2.299**		1.356		-0.967*		-0.958*
		(0.662)		(0.523)		(1.031)		(0.889)		(0.480)		(0.508)
Observations	1,191	1,191	1,191	1,191	610	610	609	609	390	390	384	384
R2	0.911	0.910	0.919	0.918	0.953	0.954	0.959	0.959	0.916	0.917	0.925	0.927
Controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Interest rate increases by up to 2.3 percentage points (column (6)). This appears large!

## Comments on the Mechanism

- What concerns do lenders have? Are they concerned about higher default risk? Reduction in the value of collateral? How do these variables change for borrowers?
- The paper argues that banks are selling loans to shadow banks. Are banks required to hold more capital if their borrowers are GHG emitting firms?

# Conclusions

- Addressing an important research question!
- **Key message:** Banks can contract around the transition to a low carbon economy. Lenders negotiate loan contracts to mitigate their exposure to climate transition risks.
- Only private firms are affected.
- My suggestions:
  - More on transition risks.
  - More on why the effects are concentrated among private firms.
  - Improve inferences by refining the two experiments.
  - Examine a longer time period.

Thank you!