Will assets be stranded or bailed out? Expectations of investors in the face of climate policy

Suphi Şen Marie-Theres von Schickfus

ifo Institute

Strommarkttreffen
Berlin, October 20, 2017

Stranded Assets

- Stranded assets: assets which lose economic value before the end of their economic / technical life
- Assets related to fossil energy may become stranded due to climate policy
  - Fossil resources ("unburnable carbon")
  - Other kinds of assets (infrastructure, cars,...)
  - ... and financial assets linked to these assets (shares, bonds,...)

Stranded Assets and Financial Market Investors

- If markets still allocate capital to fossils:
  - this allocation today implies a higher cost to achieve climate goals (IPCC 2014)
  - if sudden revaluations of assets and firms occur, this can translate into macroeconomic shocks
- Important to understand: what is investors' perception regarding stranded asset risk? (How) is it priced in?

Research question

- What are investors' priors regarding stranded asset risk, and
- (how) do these priors change when climate policy proposals are announced?

What we do

- Exploit the evolution of a climate policy proposal in Germany in three stages
- Conduct event study on all three stages (effect of news on asset returns of affected companies)
- The sign pattern of the reactions to these proposals reveals information on investors' priors and updating behavior
- Investor type we look at: stock market investors (equity)

Policy background: "Klimabeitrag"

- Climate policy proposal for Germany in 2015
- Aim: to reduce CO_2 emissions from German power sector by an additional 22 million tonnes

Stage 1: "Climate levy" proposal - *Uncompensated policy*

- In March 2015, Ministry presents first draft
- Main idea: charge an extra levy on CO_2 emissions from power-generating units
  - older than 20 years, and
  - for those emissions that exceed a certain threshold (levy-free allowance)
- Most (or only) affected energy carrier: Lignite
- Proposal would have led to stranding of assets

Stage 2: "Security reserve" proposal - *Compensated policy*

- Idea: turn some share of lignite capacity into security reserve (paid for holding capacity ready)
- July 2, 2015: Coalition summit decides
  - no climate levy
  - security reserve: 2.7 GW will be mothballed and turned into security reserve

Stage 3: State aid assessments - *Challenge to compensation*

- July / August: Report for German Parliament concludes that security reserve may violate EU state aid rules
- September: EU Commission announces to open state aid case

What are investors interested in?

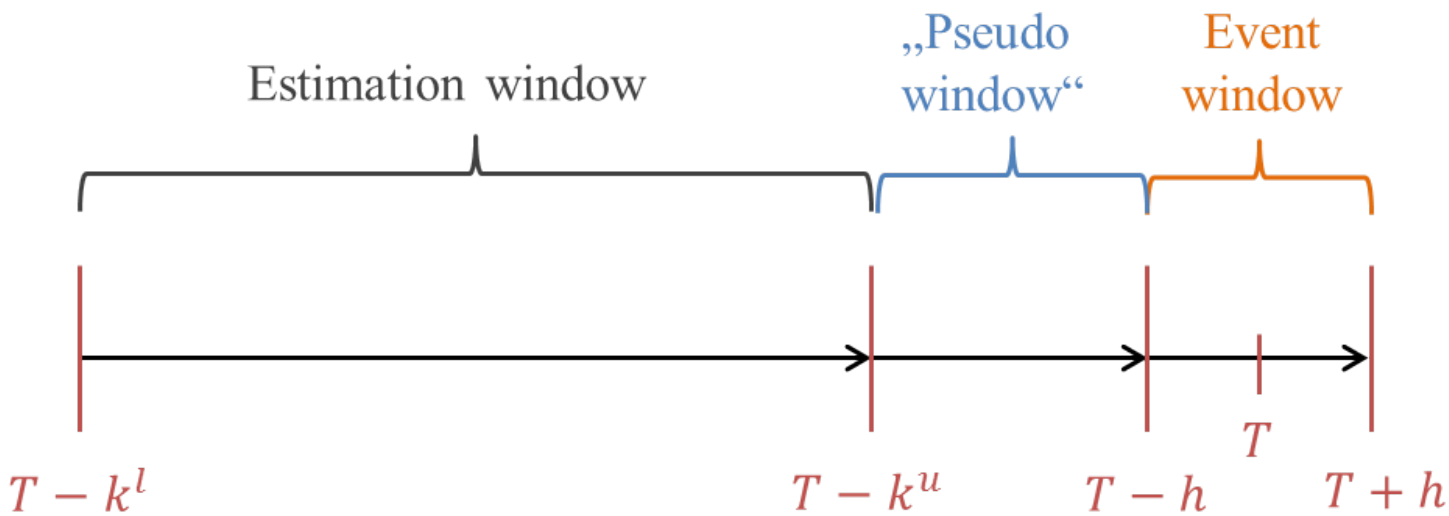
Scenarios for their priors and reactions

		Stage 1: Uncompensated policy	Stage 2: Compensated policy	Stage 3: Challenge of compensation
0	don't care	0	0	0
1	respond to policies, didn't price in stranded asset risk before	−	+	−
2	have priced in expected loss, but are surprised by compensation	0	+	−
3	price in loss and expect compensation	0	0	−

Methodology: Event study

- Underlying assumption: markets price in information as soon as it becomes publicly available (semi-strong form of market efficiency hypothesis)
- Terminology: Returns of asset i: $r_{it} = \ln p_{i,t} - \ln p_{i,t-1}$, i.e. daily change in the logarithm of asset prices

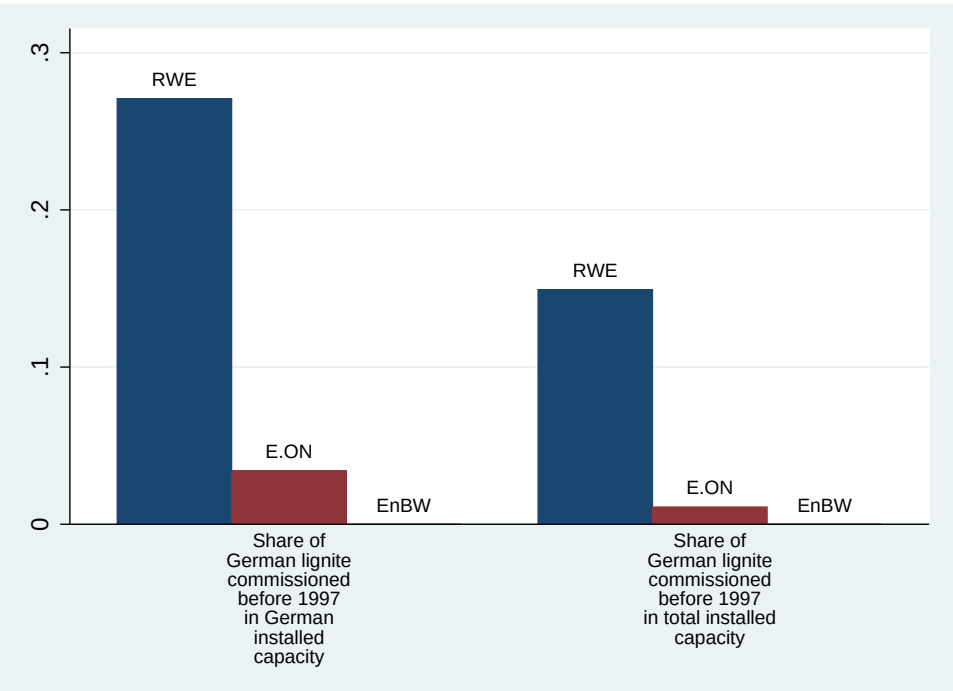
Timeline and basic approach



- Basic approach:
  - Predict “normal” returns of an asset
  - Calculate abnormal returns (= prediction error)
  - Calculation of cumulative abnormal returns (CARs) over event window
  - Formally: Test whether event window dummy is significant

Affected companies

- In 2015, three stock-listed firms active in German electricity production: RWE, E.ON and EnBW
- RWE and E.ON have lignite capacity older than 20 years, EnBW does not



Results by event type

Table: ACAR by Event Type

Companies	Event types		
	Climate levy proposal	Security reserve proposal	State aid assessment
RWE	0.018	0.016	-0.105***
	(0.024)	(0.019)	(0.020)
E.ON	0.014	-0.011	-0.074***
	(0.020)	(0.015)	(0.016)

Baseline specification: 5-day event window, 90-days estimation window, error distribution $\epsilon_{it} \sim NID(0, \sigma^2)$; explanatory variable: DAX. The results are robust to changes in all these specifications.

Conclusion

- Investors are concerned about stranded asset risk...
- ...but they also believe in the lobbying power of firms (or other political economy mechanisms which enable compensations)
- Results are robust to controlling for firm-specific and industry-specific shocks

Conclusion

- The analysis is specific to the German context
- But: implications for the design of climate policy
  - Expectations of investors are crucial for a transition to clean capital
  - If compensations are expected, they may be necessary to avoid larger shocks
  - Policymakers and researchers need to better understand the interactions between policymaking and investors' expectations

Thank you!

Sen, Suphi and Marie-Theres von Schickfus (2017): "Will Assets be Stranded or Bailed Out: Expectations of Investors in the Face of Climate Policy", *ifo Working Paper No. 238*.

Contact: `vonschickfus@ifo.de`