PAY-BACK TIME: THE IMPACT OF PRIVATE INTEREST CONTRIBUTIONS ON RENEWABLE ENERGY POLICY MAKING AT THE U.S. STATE LEVEL.

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Overview

In the last two decades, many U.S. states introduced support policies to promote electricity generation from renewable energy sources. Renewable portfolio standards are their most popular policy choices to date. This paper tackles the question why some state legislators were front-running the trend of RPS implementation while others adopted policies just recently, and again others have not incentivized investment so far. In short, what drives states to support renewable energy? We base our empirical analysis on sound theoretical reasoning. First, we present an application of the common agency model developed by Dixit et al. (1997) to better understand the impact of special industrial interests on policy decision-making. Second, we develop nuanced instruments that capture the financial firepower of conventional energy interests (CEI) and renewable energy interests (REI). Third, in a series of logistic and tobit random-intercept regression models, we test the impact of these instruments on (i) the probability of a state to adopt a RPS policy in a certain year and (ii) on the stringency of the RPS, while also controlling for a set of socio-economic and political controls. Combining our empirical framework with the theoretical model produces some key insights into U.S. state level energy policy making. First, CEI have donated over-proportionally to state-level legislators affiliated with the Republican Party while contributions from REI went largely to Democrats. Second, removing the party-bias from the estimates, we reveal a significant negative impact of CEI contributions on the probability of a state to adopt a RPS scheme. Third, there is a significant positive impact of contributions from REI on the stringency of RPS schemes. We conclude that CEI contributions tend to postpone the adoption of RPS schemes at U.S. state level. Later than socially optimal, a majority of states operates RPS policies to date. After enactment, REI contributions gain in relative importance and make RPS more stringent than they would actually be under socially optimal conditions.

Methods

Economic Theory and Modelling

We develop a stylized partial equilibrium model for the electricity sector of a large, open economy. We then apply the Common Agency Model (Dixit et al. 1997) on the electricity sector to analyze how special interests' financial contributions affect the decision making process for both RPS adoption, and level setting.

Data Analysis and Regressions

We assemble 1998-2010 panel data on RPS policies, campaign contributions, and the most prominent control variables for the U.S. 50 states sample. Our independent variable of interest represents the campaign contributions donated by CEIG, REIG to Republican candidates, Democratic candidates, and both combined. Data has kindly been provided by the "National Institute on Money in State Politics", a non-partisan, non-profit organization (Follow The Money.org). Other data has been derived from the EIA, EPA, DSIRE, BLS, BEA, FERC, and NCSL. We run both logistic and tobit regessions. The logistic random-intercept model regresses the instruments and a set of control variables on the binary code of RPS adoption. It reveals the impact of the instruments captured in the vector X and the impact of the controls captured in the vector Z on the conditional probability $P_1=P(t,X,Z)$ of a state to adopt regulation in a certain year, given the state did not adopt such regulation before: $P_0=1-P(t,X,Z)$.

$$logit\{\Pr(RPS=1)|X_{i,t-1}, Z_{i,t-1}, \varsigma_i\} = \lambda_0(t) + \beta'X_{i,t-1} + \beta'Z_{i,t-1} + \varsigma_i + \epsilon_{it}$$

The logistic model investigates the link between our instruments and the likelihood of RPS adoption. As soon as an RPS is adopted, the binary code does not show any variance anymore. In order to analyze the effect of our

instrument on the policy stringency after the RPS has been enrolled; we apply a tobit regression model. It allows using a stringent metric, the ISI (Yin and Powers 2009), as the dependent variable.

$$ISI_{it} = \lambda_0(t) + \beta' X_{i,t-1} + \beta' Z_{i,t-1} + \varsigma_i + \epsilon_{it}$$

Results

In the theoretical model, we find that the optimal support level for renewable energy deviates from the socially efficient level when the policymaker values campaign contributions from special interests. Our empirical results corroborate these findings. From our logistic regression results, we can conclude that there is a significant negative connection between CEI contributions to Republicans and the likelihood of RPS adoption. CEI contributions effectively signal the policymaker not to adopt a RPS scheme. Further, we find that REI contributions to Democrats come with a positive impact on the likelihood of RPS policy adoption. In other words, private industrial interests of the renewable energy sector effectively signal their support of a RPS policy to policymakers from the Democratic Party. Our tobit regression shows that REI contributions affect policymakers of both parties to make RPS more stringent. The CEI contributions do not seem to make a huge difference for the stringency of a RPS. That means after the RPS is adopted the design is also left to the maximization over social welfare and REI contributions.

Conclusions

Combining theoretical model with our empirical framework produces some key insights into U.S. state level energy policy making. First, CEI have donated over-proportionally to state-level legislators affiliated with the Republican Party while contributions from REI went largely to Democrats. Second, removing the party-bias from the estimates, we reveal a significant negative impact of CEI contributions on the probability of a state to adopt a RPS scheme. Third, there is a significant positive impact of contributions from REI on the stringency of RPS schemes. We conclude that CEI contributions tend to postpone the adoption of RPS schemes at U.S. state level. Later than socially optimal, a majority of states operates RPS policies to date. After enactment, REI contributions gain in relative importance and make RPS more stringent than they would actually be under socially optimal conditions. From a theoretical perspective the results verify our key hypothesis. They prove that policymakers set the optimal level of RES-E not only by maximizing benefits over social welfare but they also integrate financial contributions from private industrial interests. From an empirical perspective the results show that policymakers pay back the financial contributions to private industrial interests by means of policy choices and policy stringency.

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