

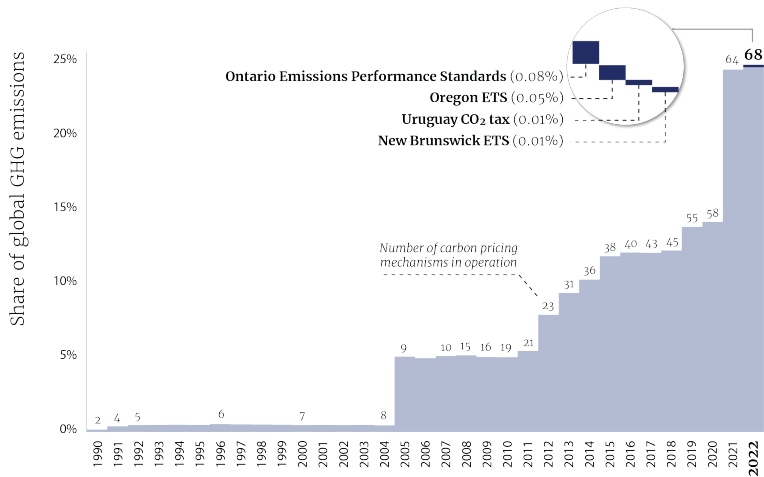
Bribing Voters to Support a State Carbon Tax

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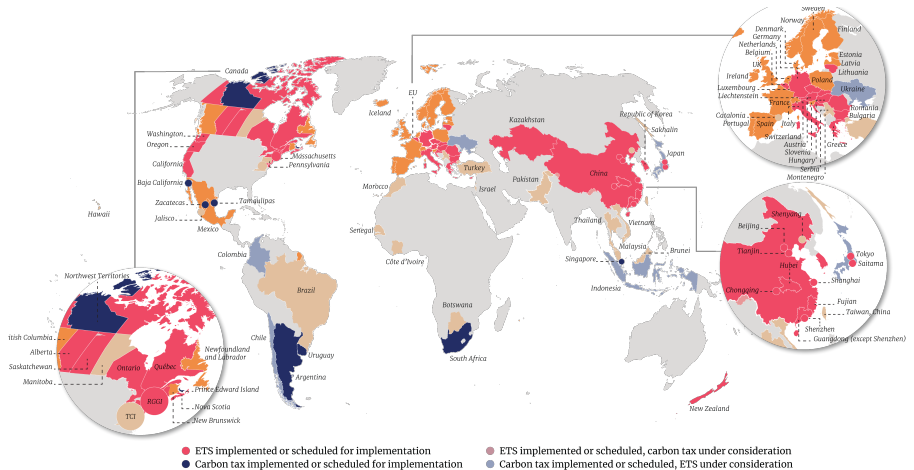
UM Decentralization Conference
April 2023

Rapid growth in carbon pricing



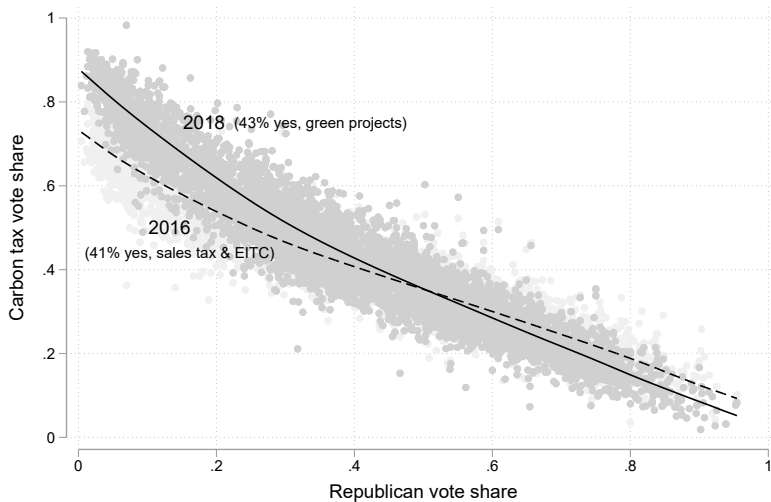
Source: World Bank (2022)

But mostly via cap-and-trade



Source: World Bank (2022)

Carbon tax is politically thorny, ex: Washington State



Anderson, Marinescu, and Shor (2023 JAERE), "Can Pigou at the Polls Stop Us Melting the Poles?"

We focus here on a carbon tax-and-rebate policy

Lots of interest (Canada's policy, many U.S. proposals)

Lump-sum rebates (vs. lower distorting taxes)

Less efficient, but political advantages

- Easy to understand (little explanation needed)
- Salient and credible ("check in the mail")
- Politically durable (if carbon emissions right-skewed)

Q: How should rebates be allocated to maximize support?

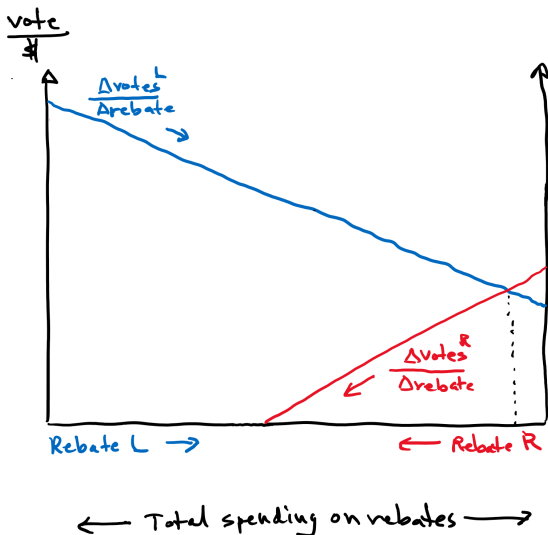
Economists' Statement on Carbon Dividends

Global climate change is a serious problem calling for immediate national action. Guided by sound economic principles, we are united in the following policy recommendations.

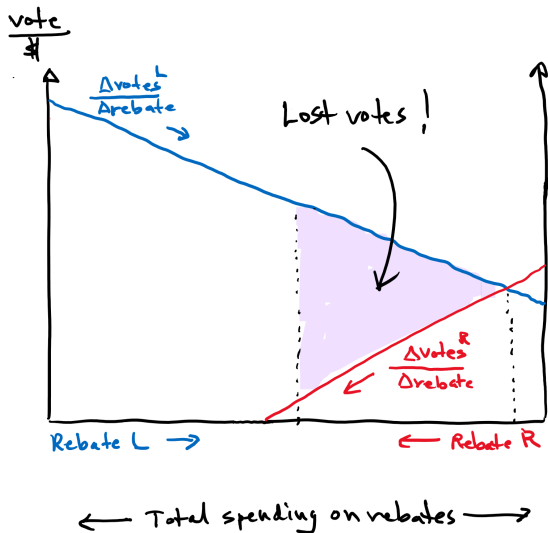
- I. A **carbon tax** ...
- II. ... should **increase** every year ... and be **revenue neutral** ...
- III. ... will **replace** the need for **carbon regulations** ...
- IV. ... a **border carbon adjustment** system should be established ...
- V. To maximize the fairness and political viability of a rising carbon tax all the revenue should be returned directly to U.S. citizens through **equal lump-sum rebates**. The majority of American families, including the most vulnerable, will benefit financially by receiving more in “carbon dividends” than they pay in increased energy prices.

Signed by 1/2 and 2/3 of paper authors in this session

Vote-maximizing allocation equates Δvotes on margin



Uniform rebate implies lost votes



We field a large survey to answer three questions

- ① How responsive are voters to rebates?
- ② Who is most responsive?
- ③ What can be gained through targeting?

We use two online survey platforms



- $\approx 3,900$ respondents
- 5-6 Nov 2018 (general election)
- 50+ issue questions, demographics



- $\approx 4,500$ respondents
- 1-11 Mar 2020 (super Tues - MI primary)
- 50+ issue questions, demographics

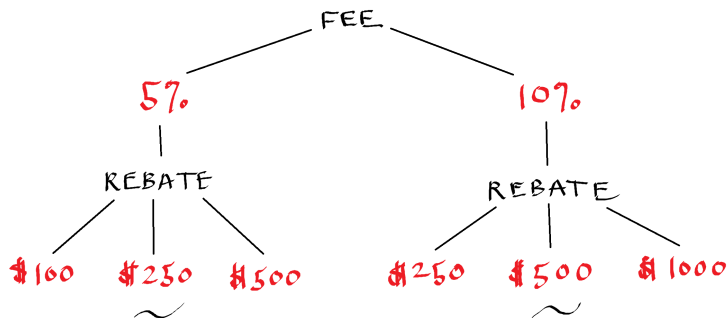
Main question: state carbon fee & rebate

*Imagine that your state held a vote to charge a pollution fee on the carbon content of energy, including gasoline, natural gas, heating oil, and electricity. For the next set of questions, consider a pollution fee that would raise energy prices in your state by about **5%**. This policy would reduce pollution, and the revenue would be used to send each resident a rebate check in the mail.*

*For a pollution fee on carbon that raises energy prices **5%** and reduces pollution: How would you vote if your rebate check were **\$250** each year?*

- Yes
- No

We randomize fees & rebates across respondents



Percent fees are approximately \$25/tCO₂ and \$50/tCO₂

Mid-level rebates are approximately revenue-neutral

Follow-up questions to pin down willingness-to-accept

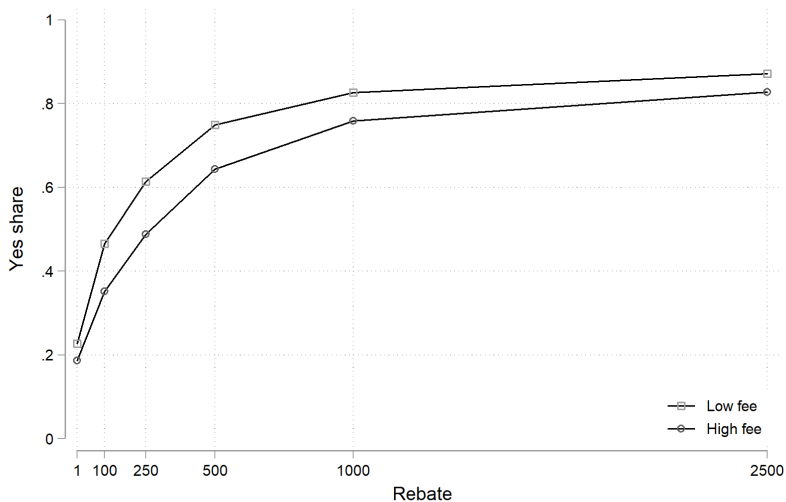
If NO, then raise rebate until they say YES

\$100 start
\$250
\$500
\$1000
\$2500 end

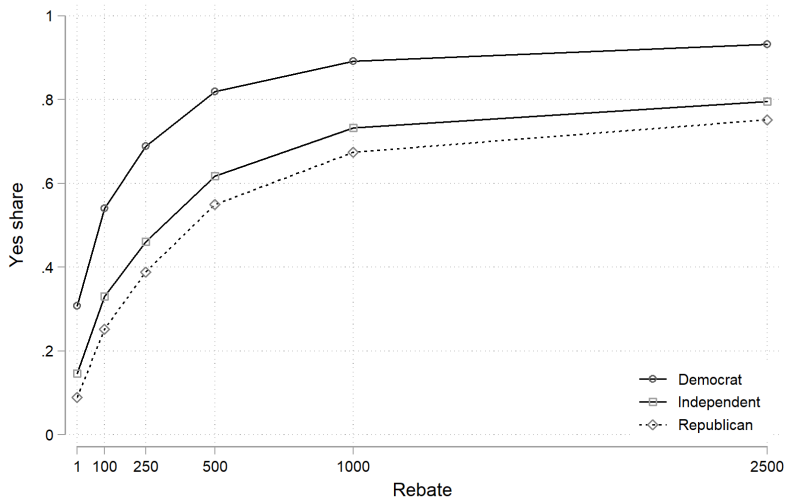
If YES, then lower rebate until they say NO

\$1000 start
\$500
\$250
\$100
\$1 end

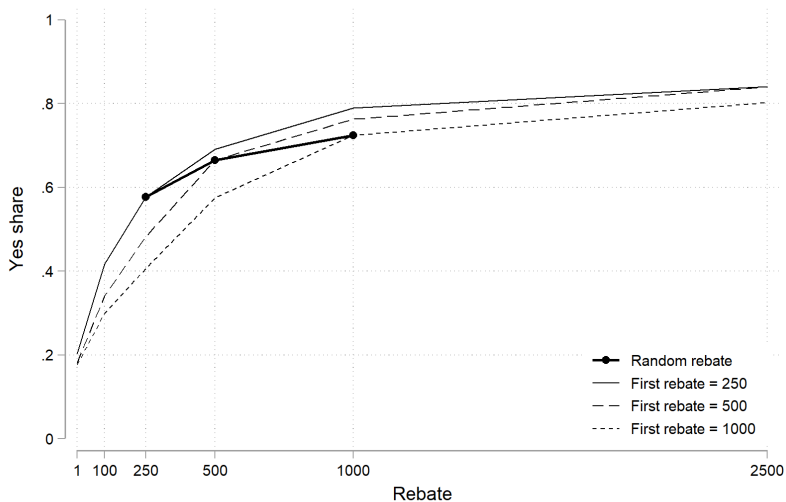
Result #1: Rebates boost support but diminishing returns



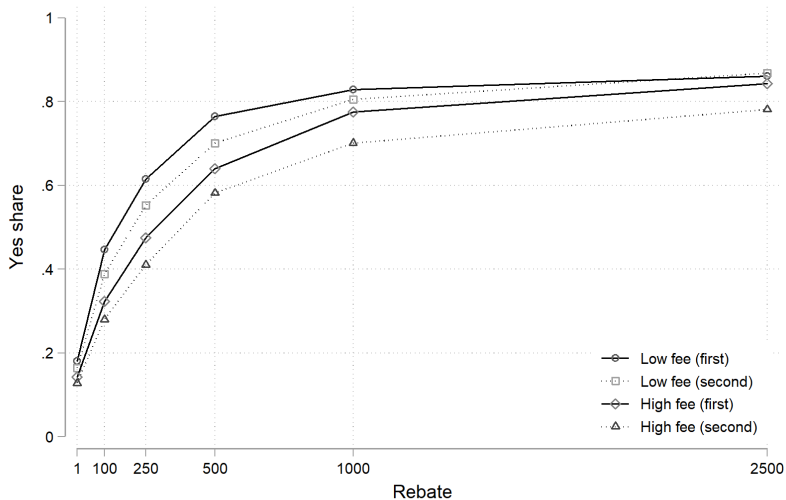
Support among Democrats > Independents > Republicans



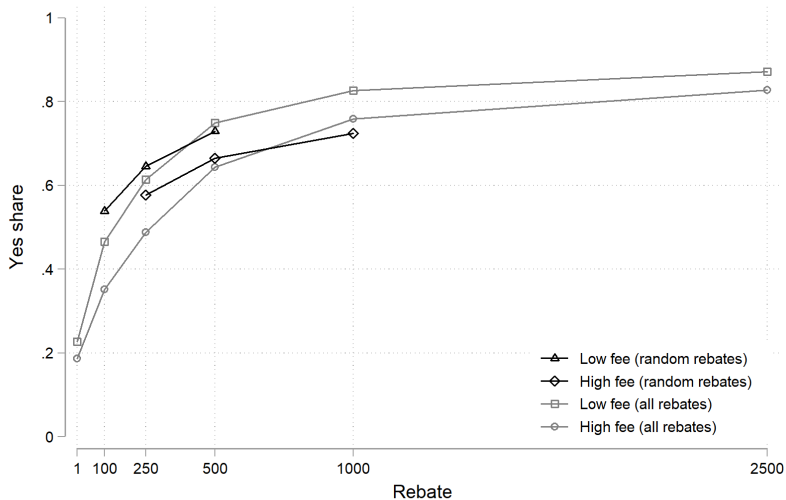
Respondents “anchor” to initial rebate level



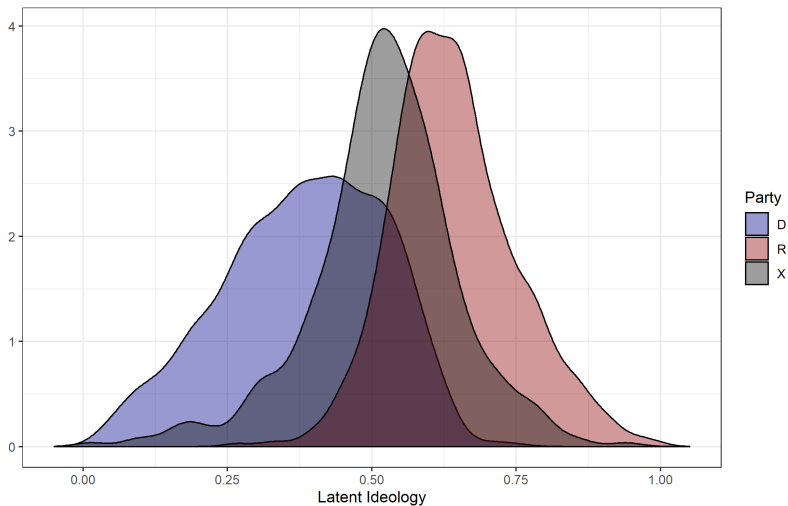
Support falls when we repeat for second-round fee



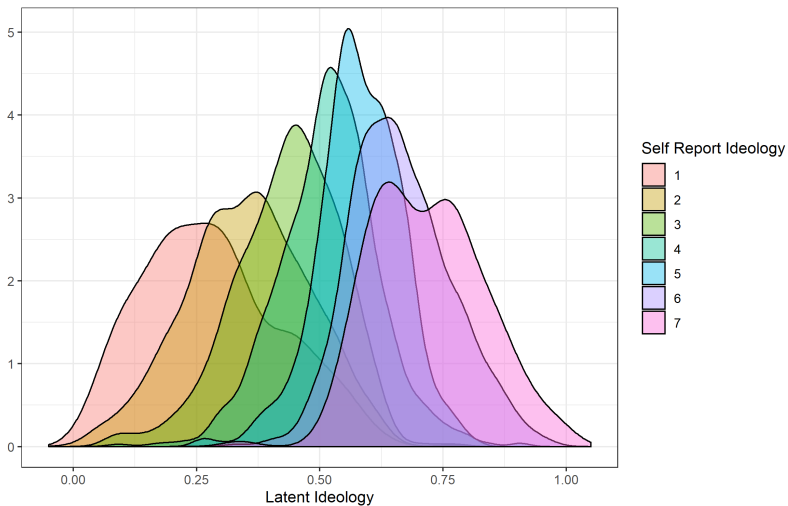
We use full follow-up sample ($\neq$ initial random sample)



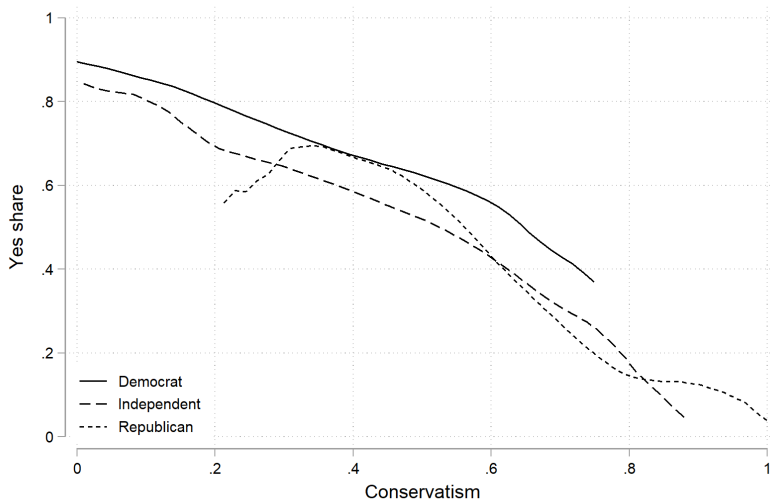
Distribution of latent ideology by party



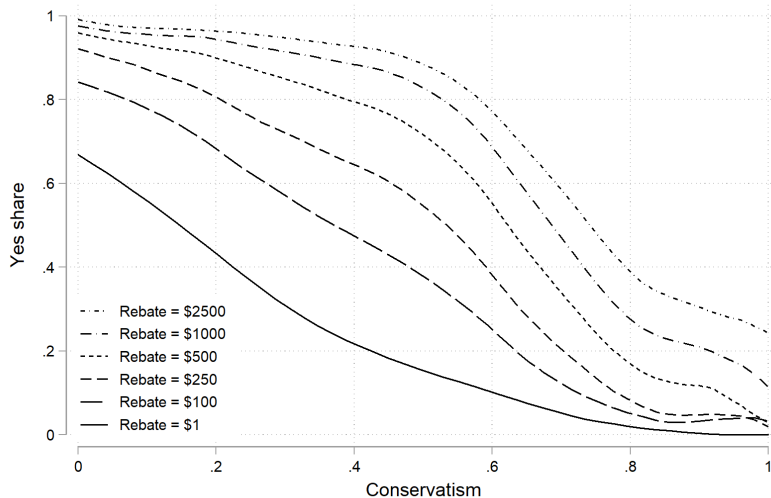
Distribution of latent ideology by *self-reported* ideology



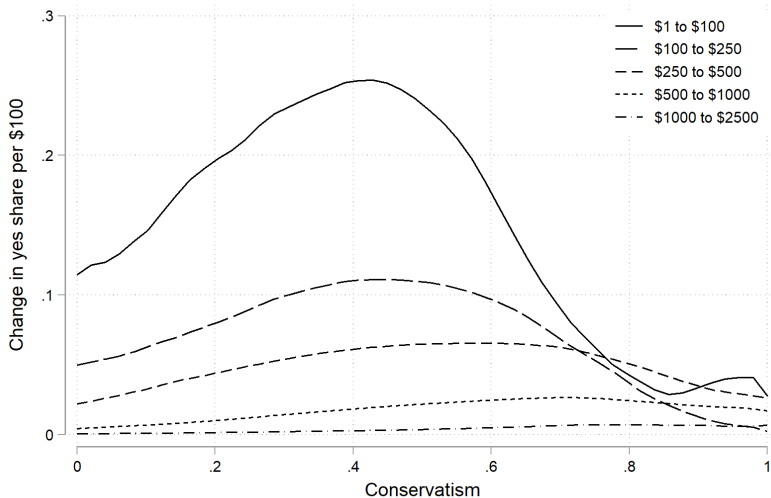
Partisan gaps conditional on latent ideology



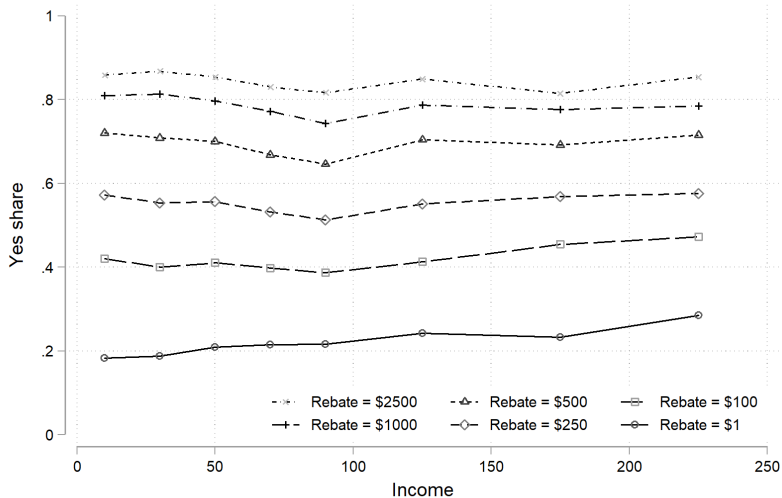
Liberals love the carbon tax, and conservatives hate it



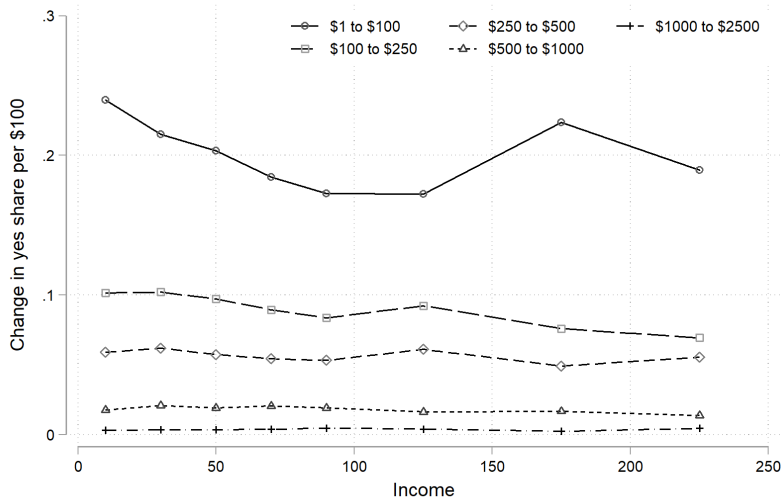
Result #2: Moderates are most responsive to rebates



Support is weakly related to income



Low-income voters a bit more responsive to rebates



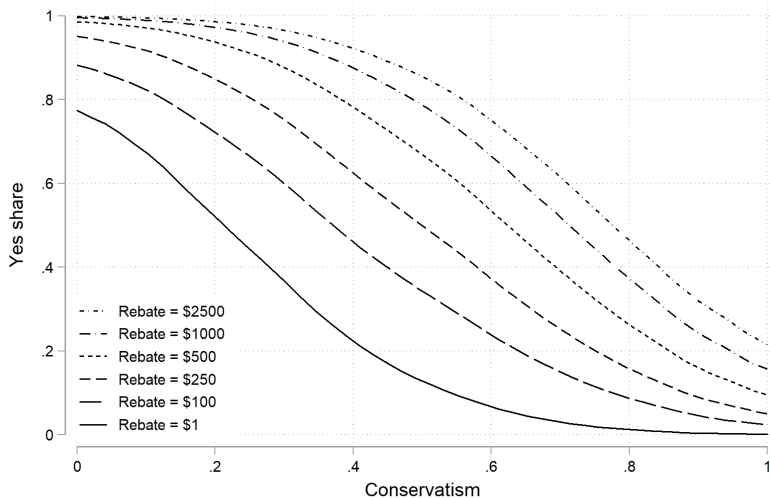
Probit model to predict individual support

	(1) Base	(2) Ideology	(3) Party	(4) Demographics	(5) Survey
highfee	-0.256*** (0.008)	-0.303*** (0.009)	-0.303*** (0.009)	-0.304*** (0.009)	-0.162*** (0.019)
rebate=100	0.589*** (0.012)	0.694*** (0.015)	0.696*** (0.015)	0.697*** (0.015)	0.555*** (0.019)
rebate=250	0.952*** (0.015)	1.116*** (0.017)	1.119*** (0.018)	1.121*** (0.018)	0.794*** (0.028)
rebate=500	1.339*** (0.017)	1.570*** (0.020)	1.574*** (0.020)	1.576*** (0.020)	1.077*** (0.038)
rebate=1000	1.643*** (0.019)	1.933*** (0.022)	1.938*** (0.023)	1.941*** (0.023)	1.309*** (0.049)
rebate=2500	1.863*** (0.020)	2.194*** (0.024)	2.199*** (0.024)	2.203*** (0.024)	1.486*** (0.060)
score01		-3.930*** (0.091)	-3.882*** (0.116)	-3.886*** (0.117)	-3.994*** (0.120)
independent			-0.190*** (0.040)	-0.196*** (0.040)	-0.200*** (0.040)
republican			-0.016 (0.033)	-0.017 (0.033)	-0.007 (0.034)

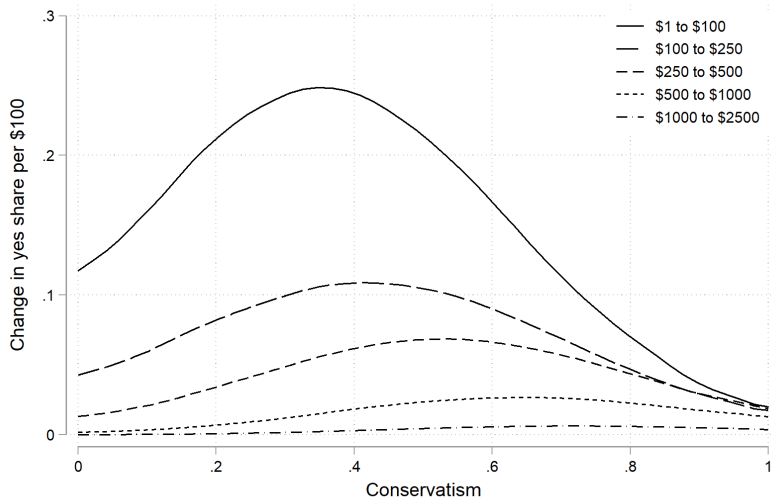
Probit model to predict individual support (survey effects)

	(1)	(2)	(3)	(4)	(5)
firstfee					0.155*** (0.026)
highfee_firstfee					0.006 (0.046)
dn4					-0.550*** (0.053)
dn3					-0.583*** (0.037)
dn2					-0.472*** (0.026)
dn1					-0.280*** (0.016)
up1					0.090*** (0.015)
up2					0.225*** (0.027)
up3					0.278*** (0.041)
up4					0.314*** (0.060)
Observations	88128	86412	86412	86340	86340

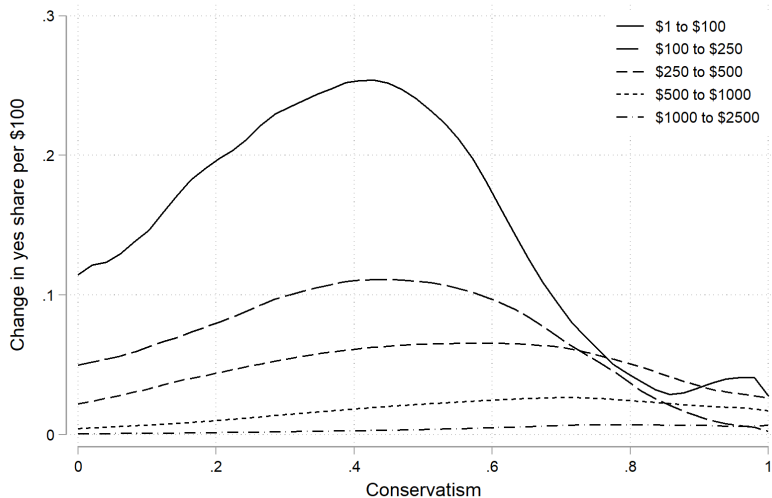
Average predicted probabilities similar to raw data



Average partial effects similar to raw data



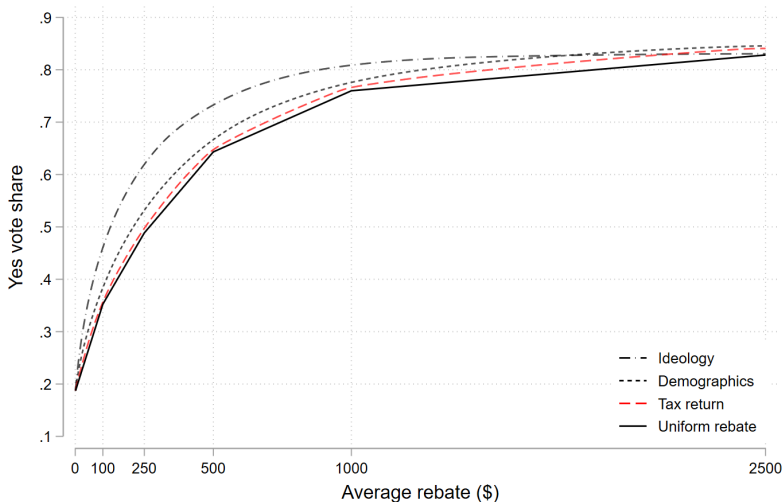
Average partial effects (raw data for comparison)



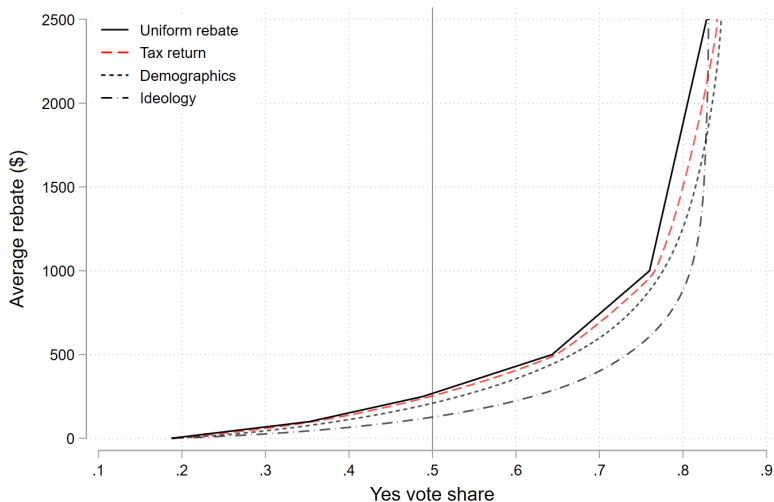
Targeting rebates to maximize votes

- ① Predict average marginal effects based on observables using ML
 - Tax return (income, married, kids)
 - All demographics
 - Ideology
- ② Sort respondents high-to-low based on marginal effects
- ③ Calculate cumulative vote share as function of average rebate

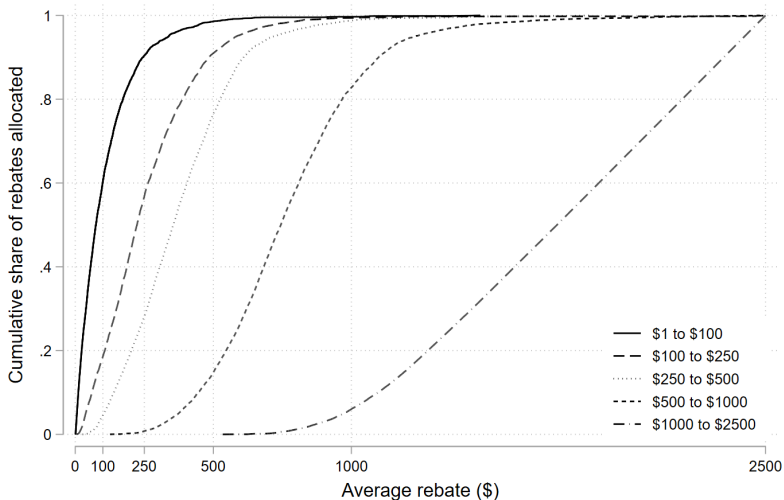
Result #3: Targeting leads to modest gains in support



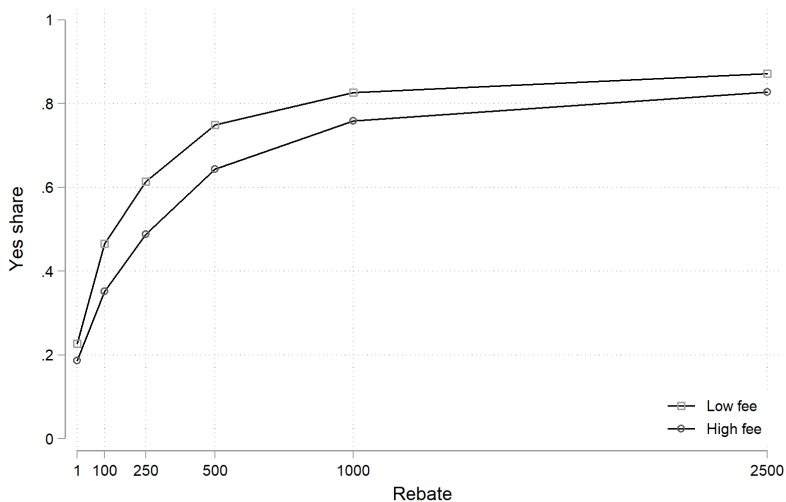
Targeting lowers the average cost of bribery



Allocating rebates “within” and “across” individuals



Diminishing “within” returns limits gain from targeting



Conclusions

- Voters can be bribed
 - Modest rebates boost vote share substantially
 - Political moderates are 2X as responsive
 - Strongly diminishing returns
- Targeting boosts support modestly ($<10\%$)
 - Requires a strong correlate of “moderate”
 - Tax return variables not helpful
- Revenue-neutral rebate yields 65%-70% support
 - Implies “excess revenue” for budget
 - But surveys tend to overstate average support

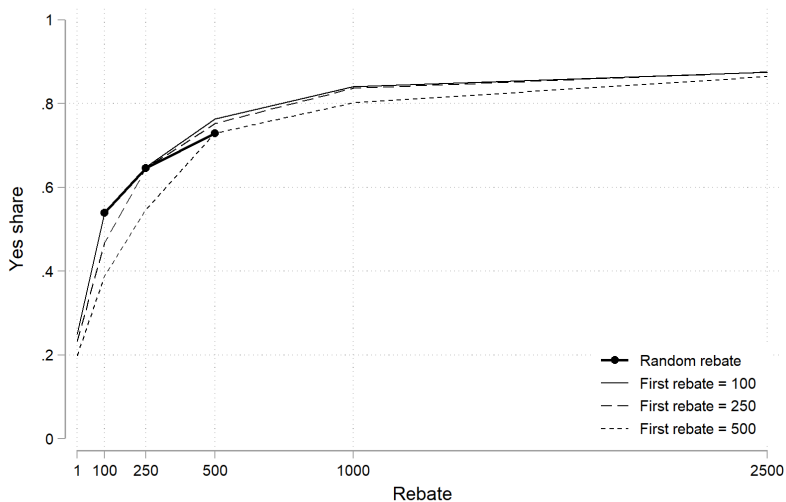
Follow-up questions re: higher or lower fee

*Again imagine that your state held a vote to charge a pollution fee on the carbon content of energy, including gasoline, natural gas, heating oil, and electricity. But now, for the next set of questions, consider a **higher** pollution fee that would raise energy prices in your state by about **10%**. This policy would reduce pollution **more** than before, and the revenue would be used to send each resident a rebate check in the mail.*

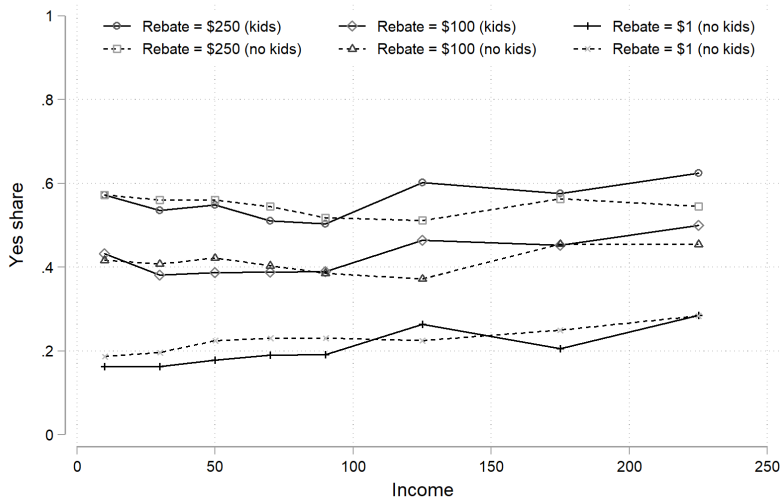
*For a pollution fee on carbon that raises energy prices **10%** and reduces pollution: How would you vote if your rebate check were **\$250** each year?*

- Yes
- No

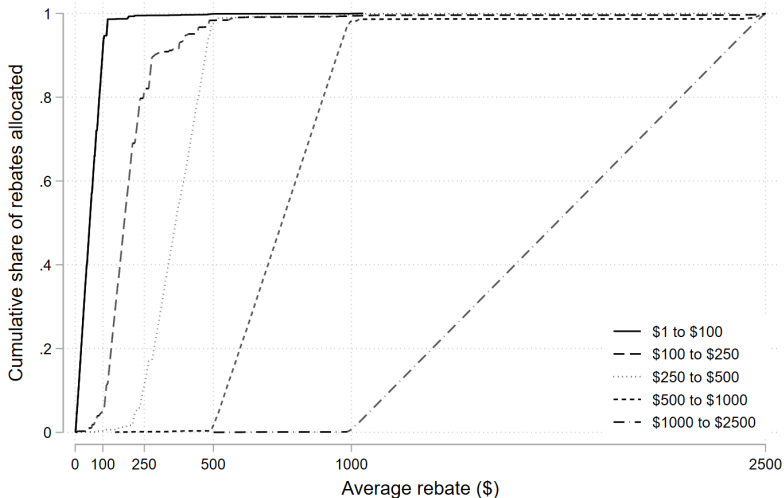
Anchoring: support conditional on initial rebate (low fee)



Support is weakly related to presence of children



Targeting based on tax variables



Rebate allocation based on ideology

