Yellow Vests, Endogenous Beliefs, and Carbon Tax Aversion

Thomas Douenne & Adrien Fabre

Paris School of Economics, Université Paris 1

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Figure: Yellow Vests protesting against taxes

Motivations

Carbon taxation often considered as the most effective policy to reduce emissions (e.g. Goulder & Parry, 2008). However, cost-effectiveness not the only concern:

- Acceptability problem (Carattini et al, 2018): impact on purchasing power, distributive effects, etc.
- Hence, large literature on revenue recycling, and the popular Tax & Dividend (e.g. West & Williams 2004, Bento et al 2009, Williams et al 2015) including in France (Douenne, 2018).
- Tax & Dividend proposal supported by 3,354 economists in The Wall Street Journal (2019), "To maximize the fairness and political viability of a rising carbon tax".

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- Tax & Dividend proposal supported by 3,354 economists in The Wall Street Journal (2019), "To maximize the fairness and political viability of a rising carbon tax".

$\rightarrow$ *With a design that ensures that the tax has desirable properties, we should be able to generate support for carbon taxes.*

But is it really sufficient?

Objective of the paper

In this paper, we run a survey to disentangle *beliefs* from *preferences* over the carbon tax (CT). We:

- investigate whether beliefs about CT properties are consistent with objective ones;
- quantify biases, in particular regarding the costs of CT;
- show persistence of beliefs over CT;
- estimate the role of preferences, i.e. causal effects of holding beliefs on acceptance.

All along, focus on three motives stressed by the literature:

1. self-interest;
2. environmental effectiveness;
3. progressivity.

Main results

1. French people would largely reject a carbon tax policy with uniform lump-sum transfer (Tax & Dividend).
2. Their perceptions about the properties of the scheme are biased towards over-pessimism.
3. Providing information can hardly help correct these misperceptions. Beliefs are persistent, and revisions biased towards information against the tax.
4. Nonetheless: if one could convince them, the scheme would reach large majority support.

Contributions

This paper contributes to two strands of the literature:

- **On the political economy of climate policies**.

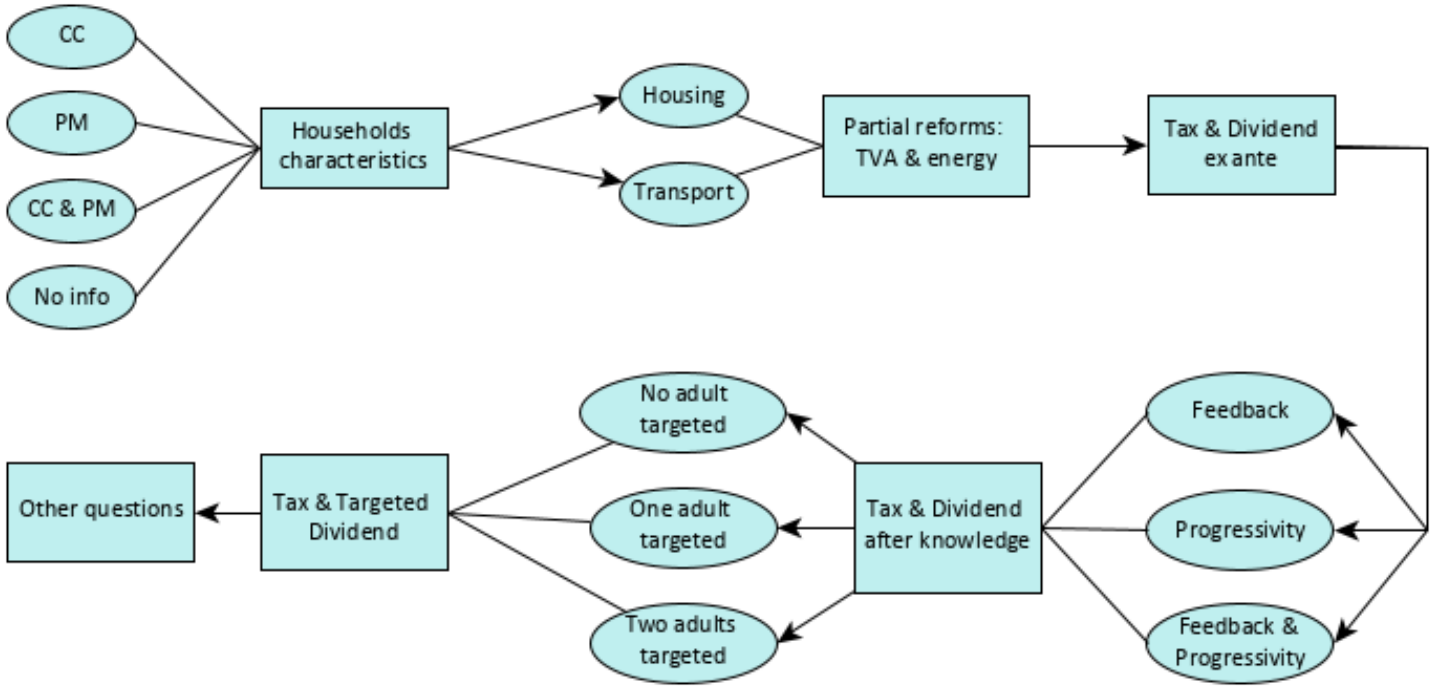
  See Carattini et al (2018) for a recent review.

  This paper is the first to:
  - quantify biases regarding the costs of carbon taxation;
  - provide robust evidence for causal effect of several motives on acceptance;
  - show how motivated reasoning could reinforce rejection of climate policies.

- **On endogenous beliefs and how they relate to policies**:
  - show asymmetric updating of beliefs w.r.t. policies depending on information being positive or not. Echos recent studies that focused on non-policy related news *(e.g. Eil & Rao, 2011; Möbius et al, 2011; Sharot et al, 2011)*;
  - provide robust evidence that beliefs shape attitudes, and attitudes shape beliefs *(see Bénabou & Tirole, 2016)*, even more so for more educated people;
  - brings empirical evidence supporting theories previously developed *(e.g. Kahan, 2013; Kraft et al, 2015; Little, 2019)*.

Survey data collection

- 3002 responses collected on-line in February/March 2019
- Representative along: gender, age, education, profession, size of town, region
- Standard procedure to ensure the quality of responses



▸ See sample characteristics

Tax & Dividend: *ex ante*

"The government is studying an increase in the carbon tax, whose revenues would be redistributed to *all households*, regardless of their income. This would involve:

- an increase in the price of gasoline by 11 cents per litre and diesel by 13 cents per litre;
- a 13% increase in the price of gas, and a 15% increase in the price of domestic fuel;
- an annual payment of 110€ to each adult, i.e. 220€ per year for a couple.

In terms of purchasing power, would your household win or lose with such a measure?"

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In terms of purchasing power, would your household win or lose with such a measure?"

Then we ask about expected loss (or gain) among 6 (or 5) intervals, and approval:

- 10% 'Yes': approval
- 19% 'PNR (I don't know, I don't want to answer): acceptance
- 70% 'No': disapproval

Biased perception of net gain

PDF of subjective vs. objective net gains from Tax & Dividend (in € per year per consumption unit).

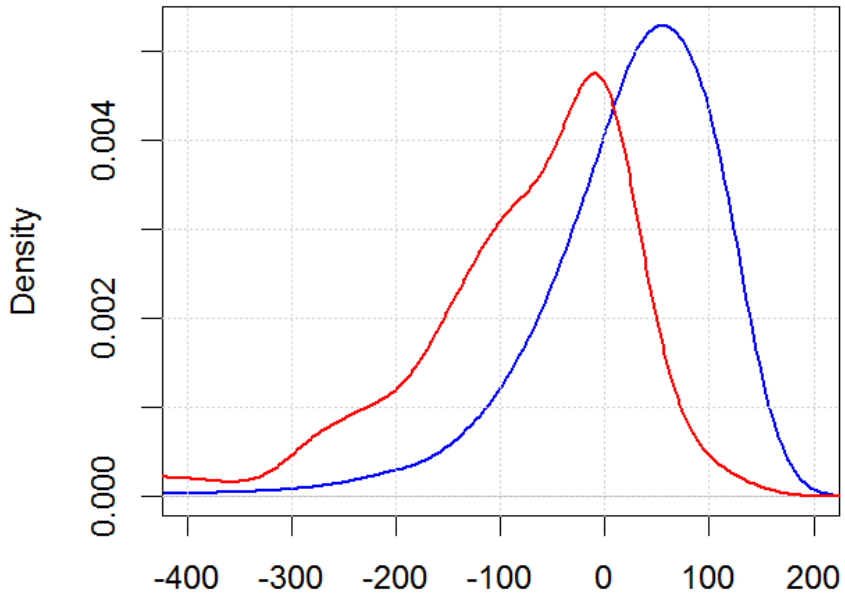

Figure: Net gain. Mean: -89/+24

- 64% think they lose; only 14% think they win
- Objectively, 70% win
- 89% underestimate their gain, 53% by more than 110€.
- Median gap of 116€.

▸ See prediction's method

(Not so) heterogeneous bias

Table: Determinants of a large bias in subjective gains.

	Large bias ($\lvert\hat{\gamma} - g\rvert > 110$)		
	OLS	*logit*	*OLS*
Initial tax: PNR (I don't know)			-0.179^{***}
			(0.023)
Initial tax: Approves			**-0.284^{***}**
			(0.031)
Sex: Female	0.036^{*}	0.030	0.042^{**}
	(0.020)	(0.020)	(0.019)
Ecologist	**-0.064^{**}**	-0.061^{**}	-0.025
	(0.026)	(0.026)	(0.026)
Yellow Vests: PNR	0.039	0.035	0.024
	(0.036)	(0.035)	(0.036)
Yellow Vests: understands	0.081^{***}	0.062^{***}	0.041^{*}
	(0.025)	(0.024)	(0.025)
Yellow Vests: supports	0.108^{***}	0.103^{***}	0.051^{*}
	(0.026)	(0.025)	(0.026)
Yellow Vests: is part	0.202^{***}	0.193^{***}	**0.147^{***}**
	(0.048)	(0.040)	**(0.047)**
Controls: Socio-demo, political leaning	✓	✓	✓
Observations	3,002	3,002	3,002
R^2	0.061		0.098

*p<0.1; **p<0.05; ***p<0.01

⇒ Motivated reasoning (Kunda, 1990): the more opposed to the tax, the more bias? Or opposite direction of causality?

Beliefs over environmental effectiveness and progressivity

Reform effective to "reduce pollution and fight climate change"?

→ 17% 'Yes', 66% 'No' and 18% 'PNR'.

▸ See possible explanations

Reform would benefit poorer households?

→ 19% 'Yes', 60% 'No', 21% 'PNR'.

Yet, the tax is progressive!

▸ See distribution per income decile

Tax & Dividend: after knowledge

- Information on the effect of the reform
  - Feedback: "In five cases over six, a household with your characteristics would [win/lose] through the reform. (The characteristics taken into account are: heating using [energy source] for an accommodation of [surface] m^2; [distance] km traveled with an average consumption of [fuel economy] L for 100 km.)" (1/2)
  - Progressivity: "this reform would increase the purchasing power of the poorest households and decrease that of the richest, who consume more energy" (1/3)
  - or both (to 1/6 of respondents)
- Is the reform beneficial to the poorest? (1/2)
- Would you lose, win or be unaffected by the reform?
- Would you approve this reform?

See prediction's precision

Table: Share of respondents with new beliefs aligned with feedback

	Aligned with feedback: $G^F = \hat{\Gamma}$	
	$\hat{\Gamma} > 0$ (75.8%)	$\hat{\Gamma} < 0$ (24.2%)
Initial belief: winner ($G > 0$) (14.0%)	78.8% [73.2% ; 83.4%]	**81.5%** [65.0% ; 91.3%]
Initial belief: unaffected ($G = 0$) (21.7%)	21.6% [17.6% ; 26.2%]	44.9% [33.5% ; 56.8%]
Initial belief: loser ($G < 0$) (64.3%)	**12.2%** [10.3% ; 14.5%]	93.9% [90.9% ; 96.0%]
Initial belief: affected ($G \neq 0$) (78.3%)	26.1% [23.7% ; 28.7%]	92.9% [89.8% ; 95.1%]
All (100%)	25.1% [23.0% ; 27.3%]	85.7% [82.2% ; 88.7%]

NOTE: The 95% confidence intervals for binomial probabilities is given in brackets.

Conservatism and pessimism

Two main results:

1. Respondents' beliefs are persistent:
   - on average, they update far less than they should
2. Respondent's revisions are asymmetric:
   - they update far less when told that they should win than when told they should lose

Possible interpretations:

- Respondents think our feedback is biased.
- Respondents give too much value to their (biased) private information.
- Respondents are uncertain and risk (or loss) averse: they don't report the expected outcome but something lower.

$\rightarrow$ Impossible to disentangle these mechanisms as they all lead to more pessimism.

Determinants of correct updating

Table: Asymmetric updating of winning category

	Correct updating (U)		
	(1)	(2)	(3)
Constant	0.120***	−0.041	−0.150
	(0.012)	(0.190)	(0.189)
Winner, before feedback ($\dot{G}$)	**0.695*** **	0.685***	0.646***
	(0.078)	(0.080)	(0.080)
Initial tax: PNR (I don't know)			0.163***
			(0.031)
Initial tax: Approves			**0.158*** **
			(0.046)
Retired		0.143*	0.146*
		(0.080)	(0.079)
Active		0.165***	0.175***
		(0.055)	(0.054)
Student		0.249***	0.234***
		(0.076)	(0.075)
Yellow Vests: PNR		−0.048	−0.043
		(0.047)	(0.047)
Yellow Vests: understands		−0.090***	−0.063*
		(0.034)	(0.034)
Yellow Vests: supports		−0.101***	−0.059*
		(0.035)	(0.036)
Yellow Vests: is part		−0.172***	**−0.137** **
		(0.062)	**(0.062)**
Among invalidated	✓	✓	✓
Controls: Socio-demo, politics, estimated gains		✓	✓
Observations	1,365	1,365	1,365
R^2	0.055	0.111	0.133

*p<0.1; **p<0.05; ***p<0.01

→ Evidence of motivated reasoning: the more opposed to the tax, the less beliefs are revised following information!

Beliefs over environmental effectiveness and progressivity

Information randomly displayed about climate change / air pollution / scientific consensus over effectiveness:

$\rightarrow$ significant effect on beliefs, but small ($\simeq$ 5 p.p., not significant for air pollution). Beliefs are well anchored!

▸ See table

Correlation between belief that tax is regressive and seeing the information that it is progressive: 0.006% ! How come?

$\rightarrow$ evidence of psychological reactance from biased people!

▸ See table

Self-interest - Main identification strategy

We propose the same policy as before, except that transfers are now targeted as follows: ▸ See details

$$T_i = \begin{cases} 0, & \text{if } I_i > c_i \\ 1, & \text{otherwise} \end{cases} \tag{1}$$

where c_i is the income threshold randomly assigned to respondent i. We can write a Two-Stage Least Square model as follows:

$$G_i^T = \alpha_0 + \alpha_1 T_{1,i} + \alpha_2 T_{2,i} + \alpha_c c_i + \sum_{j=1}^{2} \left(\alpha_{1,j} I_{1,i}^j + \alpha_{2,j} I_{2,i}^j \right) + \eta_i \tag{2}$$

$$A_i^T = \beta_0 + \beta_1 \widehat{G}_i^T + \beta_c c_i + \sum_{j=1}^{2} \left(\beta_{1,j} I_{1,i}^j + \beta_{2,j} I_{2,i}^j \right) + \epsilon_i \tag{3}$$

Identification assumption: conditional on income and target, being eligible affects approval solely through beliefs of winning.

Self-interest - Alternative specifications

To ensure the robustness of our results, we run four other specifications:

- The same 2SLS with relevant control variables
- An OLS regression
- A logit regression
- An alternative 2SLS with RDD on the feedback for the first stage:

$$G_i^F = \alpha_0 + \alpha_1 \widehat{\Gamma}_i + \sum_{j=1}^{J} \alpha_{1,j} \widehat{\gamma}_i^j + \eta_i \tag{4}$$

$$A_i^F = \beta_0 + \beta_1 \widehat{G}_i^F + \sum_{j=1}^{2} \beta_{1,j} \widehat{\gamma}_i^j + \epsilon_i \tag{5}$$

Identification assumption: conditional on simulated net gains, being simulated winner affects approval solely through beliefs of winning.

Self-interest - Results

Table: Effect of self-interest on acceptance

	Targeted Acceptance (A^T)				Feedback Acceptance (A^F)	
	IV		*OLS*	*logit*	*IV*	
	(1)	(2)	(3)	(4)	(5)	(6)
Believes does not lose	**0.571*** **	0.567***	**0.443*** **	0.431***	0.517***	0.434***
	(0.092)	(0.092)	**(0.014)**	(0.018)	(0.170)	(0.135)
Initial tax Acceptance (A^I)		0.339***	0.360***	0.342***		0.428***
		(0.033)	(0.026)	(0.034)		(0.055)
Controls: Incomes	✓	✓	✓	✓		✓
Controls: Estimated gain		✓	✓	✓	✓	✓
Controls: Target of the tax	✓	✓	✓	✓		
Controls: Socio-demo, other motives		✓	✓	✓		✓
Observations	3,002	3,002	3,002	3,002	1,968	1,968
R^2	0.033	0.302	0.470		0.044	0.526

* p<0.1; ** p<0.05; *** p<0.01

NOTE: (Standard errors). For logit, average marginal effects are reported.

$\Rightarrow$ LATE around 57 p.p. $>$ ATE around 44 p.p.

▸ First stage results

Environmental effectiveness - Main identification strategy

Two types of exogenous information (randomly displayed) may affect respondents' beliefs about environmental effectiveness:

- Information on scientific agreement about carbon tax efficiency (E)
- Information on climate change (CC)

These variables are both exogenous and *a priori* relevant $\rightarrow$ we can write a 2SLS as follows:

$$E_i = \alpha_0 + \alpha_1 Z_{E,i} + \alpha_2 Z_{CC,i} + \alpha_{\mathbf{C}} \mathbf{C_i} + \eta_i \tag{6}$$

$$A_i^I = \beta_0 + \beta_1 \widehat{E}_i + \beta_{\mathbf{C}} \mathbf{C_i} + \epsilon_i \tag{7}$$

Identification assumption: being displayed information affects approval solely through beliefs over policy's environmental effectiveness.

Environmental effectiveness - Results

Table: Effect of believing in environmental effectiveness on acceptance

	Tax Acceptance (A^I)					Tax Approval ($\dot{A^I}$)
	IV	*IV*	*OLS*	*logit*	*IV*	*IV*
	(1)	(2)	(3)	(4)	(5)	(6)
Environmental effectiveness: not "No"	**0.479****	0.515	**0.391*****	0.370***		
	(0.230)	(0.344)	**(0.015)**	(0.018)		
Environmental effectiveness: "Yes"					0.505**	0.416**
					(0.242)	(0.168)
Instruments: info E.E. & C.C.	✓	✓			✓	✓
Controls: Socio-demo, other motives	✓		✓	✓	✓	✓
Observations	3,002	3,002	3,002	3,002	3,002	3,002
R^2	0.218	0.001	0.390		0.218	0.161

*p<0.1; **p<0.05; ***p<0.01

NOTE: (Standard errors). For logit, average marginal effects are reported.

$\Rightarrow$ LATE around 50 p.p. $>$ ATE close to 40 p.p.

▸ First stage results

Progressivity - Main identification strategy

Could in theory run a 2SLS with random information on progressivity.

Problem: Weak instrument... Our info does not convince

Alternative specifications:

- OLS regression with relevant controls
- Logit regression
- Again, distinguish results with 'Yes' vs not No'

Identification assumption: conditional on respondents' beliefs over self-gains, environmental effectiveness, their socio-demographic and energetic caracteristics, answer on beliefs over progressivity captures approval solely through beliefs over progressivity.

Progressivity - Results

Table: Effect of beliefs over progressivity on acceptance. Covariates refer either to broad (1-4) or strict (5-6) definitions of the beliefs, where strict dummies do not cover "PNR" or "Unaffected' answers.

	Acceptance (A^P) on *not "No"*				Approval ($\dot{A^P}$) on *"Yes"*	
	OLS			*logit*	*OLS*	
	(1)	(2)	(3)	(4)	(5)	(6)
Progressivity (P)	0.223***	0.237***	0.560***	0.544***	0.228***	0.482***
	(0.038)	(0.044)	(0.023)	(0.019)	(0.041)	(0.023)
Winner (G^P)	0.332***	0.332***			0.303***	
	(0.020)	(0.020)			(0.019)	
Effective (E)	0.258***	0.259***			0.244***	
	(0.023)	(0.023)			(0.020)	
($G^P \times E$)	0.127***	0.127***			0.126***	
	(0.034)	(0.034)			(0.037)	
Interaction: winner ($P \times G^P$)	0.183***	0.183***			0.098**	
	(0.050)	(0.050)			(0.048)	
Interaction: effective ($P \times E$)	0.172***	0.172***			0.281***	
	(0.057)	(0.057)			(0.059)	
Income (I, in k€/month)	0.017	0.018			0.037**	
	(0.022)	(0.022)			(0.018)	
Interaction: income ($P \times I$)		−0.008			−0.019	
		(0.013)			(0.014)	
$P \times G^P \times E$	−0.400***	−0.399***			−0.314***	
	(0.072)	(0.072)			(0.083)	
Controls: Socio-demo, incomes, estimated gains	✓	✓			✓	
Observations	3,002	3,002	3,002	3,002	3,002	3,002
R^2	0.460	0.460	0.162		0.391	0.130

*p<0.1; **p<0.05; ***p<0.01

NOTE: (Standard errors). For logit, average marginal effects are reported

Combined effects

Question: do these effects complement or substitute?

Effects of beliefs on approval (strict definitions):

- Three motives: +97 p.p.
- SI & EE: +69 p.p.
- SI & P: +64 p.p.
- EE & P: +74 p.p.

Altruistic motives matter!

$\Rightarrow$ Correcting all beliefs (i.e. accounting for the 30% of objective losers): approval rate would go up to 90%!

Key results

1. French people would largely reject a carbon tax policy with uniform lump-sum transfer
2. Their perceptions about the properties of the scheme are biased:
   - they over-estimate the negative impact on their purchasing power;
   - they do not think it is environmentally effective;
   - they wrongly perceive it as regressive.
3. Providing information can hardly help correct these misperceptions:
   - people give little weight to these information;
   - they tend to trust more negative news about the tax than positive ones.
4. Nonetheless: if one could convince them, the scheme would reach large majority support.
   - Self-interest, environmental effectiveness and progressivity are critical motives of acceptance: $\simeq +$ 40 p.p. in likelihood to accept for the two firsts, + 27 p.p. for the latter.
   - Motives are complementary: correcting biased beliefs would lead to a 90% approval.
   - Complementarity particularly strong for altruistic motives (+74 p.p. together).

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$\rightarrow$ *Working on the design of carbon taxes is not enough to ensure their public support. Improving public trust seems necessary for the future of climate policies!*

6 Appendix

Table: Sample characteristics: quotas stratas.

	Population	Sample
gender		
woman	*0.52*	0.53
man	*0.48*	0.47
age		
18-24	*0.12*	0.11
25-34	*0.15*	0.11
35-49	*0.24*	0.24
50-64	*0.24*	0.26
>65	*0.25*	0.27
profession		
farmer	*0.01*	0.01
independent	*0.03*	0.04
executive	*0.09*	0.09
intermediate	*0.14*	0.14
employee	*0.15*	0.16
worker	*0.12*	0.13
retired	*0.33*	0.33
inactive	*0.12*	0.11
education		
No diploma or *Brevet*	*0.30*	0.24
CAP or *BEP*	*0.25*	0.26
Bac	*0.17*	0.18
Higher	*0.29*	0.31
size of town		
rural	*0.22*	0.24
<20k	*0.17*	0.18
20-99k	*0.14*	0.13
>100k	*0.31*	0.29
Paris area	*0.16*	0.15
region		
IDF	*0.19*	0.17
Nord	*0.09*	0.10
Est	*0.13*	0.12
SO	*0.09*	0.09
Centre	*0.10*	0.12
Ouest	*0.10*	0.10
Occ	*0.09*	0.09
ARA	*0.12*	0.13
PACA	*0.09*	0.09

▶ Go back

Table: Households' characteristics.

	Population	Sample
Household composition (mean)		
Household size	*2.36*	2.38
Number of adults	*2.03*	1.93
c.u.	*1.60*	1.61
Energy source (share)		
Gas	*0.42*	0.36
Fuel	*0.12*	0.09
Accomodation surface (m^2)		
mean	*97*	96
p25	*69*	66
p50	*90*	90
p75	*120*	115
Distance travelled by car (km/year)		
mean	*13,735*	15,328
p25	*4,000*	4,000
p50	*10,899*	10,000
p75	*20,000*	20,000
Fuel economy (L/100 km)		
mean	*6.39*	7.25
p25	*6*	5
p50	*6.5*	6
p75	*7.5*	7

SOURCES: Matched BdF; except for number of adults (ERFS) and domestic fuel (CEREN).

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Estimation of increase in housing energy expenditures

Table: Determinants of housing energy expenditures

	Increase in housing energy expenditures (€/year)		
	(1)	(2)	(3)
Constant	-55.51^{***}		-0.634
	(1.237)		(1.489)
Housing energy: Gas	124.6^{***}		1.173
	(1.037)		(2.323)
Housing energy: Fuel oil	221.1^{***}	129.8^{***}	130.4^{***}
	(1.719)	(3.752)	(4.002)
Accommodation size (m^2)	0.652^{***}		0.024
	(0.012)		(0.015)
Accommodation size × Gas		1.425^{***}	1.397^{***}
		(0.007)	(0.024)
Accommodation size × Fuel oil		0.945^{***}	0.922^{***}
		(0.029)	(0.032)
Observations	26,729	26,729	26,729
R^2	0.545	0.716	0.599
Error rate	0.166	0.155	0.155
Note:			*p<0.1; **p<0.05; ***p<0.01

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French households surveys

- We estimate net gains of respondents using another Insee survey:
  - *Enquête Logement 2013* (EL): 27,000 HH, good on housing
  - increase in housing expenditures $= \beta_0 + \beta_f$ fuel $+ \beta_g$ gas $+ \beta_s$ surface
  - increase in transport energy expenditures computed directly from HH characteristics
- We estimate the revenues of the reform with the database of Douenne (2018) that matches two Insee surveys:
  - *Budget de Famille 2011* (BdF): 10,000 HH, good on housing, not on transport
  - *Enquête Nationale Transports et Déplacements 2008* (ENTD): 20,000 HH, used for transport
- In 83.4% of cases, we predict correctly the winning category (win/lose) on out-of-sample (BdF) data
- Similar (or higher) error rates with other specifications or methods (e.g. regression tree, matching). Adding variables barely improves prediction.

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Prediction's precision

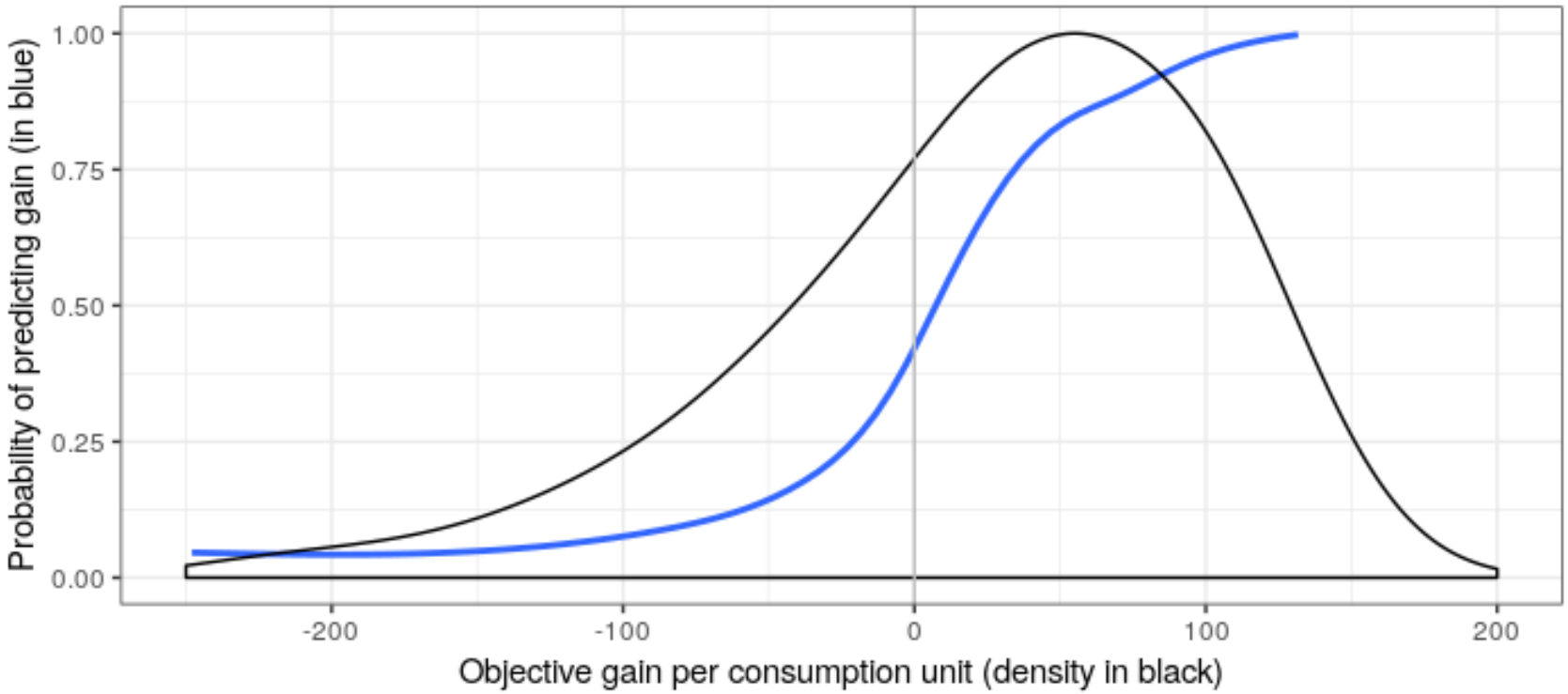

Figure: Probability that our estimation of net gains correctly predicts the winning category.

Go back

Subjective elasticities

→ Tempting interpretation: people perceive aggregate consumption as inelastic (Kallbekken & Sælen, 2011; Carattini et al, 2018)

Table: Effect of subjective elasticities on perceived environmental effectiveness

	Environmental effectiveness: not 'No'			
	(1)	(2)	(3)	(4)
Price elasticity: Housing	−0.062*		−0.055*	
	(0.032)		(0.032)	
Price elasticity: Transports		−0.056*		−0.060**
		(0.030)		(0.030)
Controls: Socio-demographics, energy			✓	✓
Observations	1,501	1,501	1,501	1,501
R^2	0.003	0.002	0.089	0.090
Note:			*p<0.1; **p<0.05; ***p<0.01	

Effect too low to explain the beliefs. Those can be due to low objective impact of the reform: –0.8% of *French* GhG emissions, vs. official goal of –1.8% *per year*.

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Beliefs over progressivity

Average gain of Tax & Dividend by income decile...

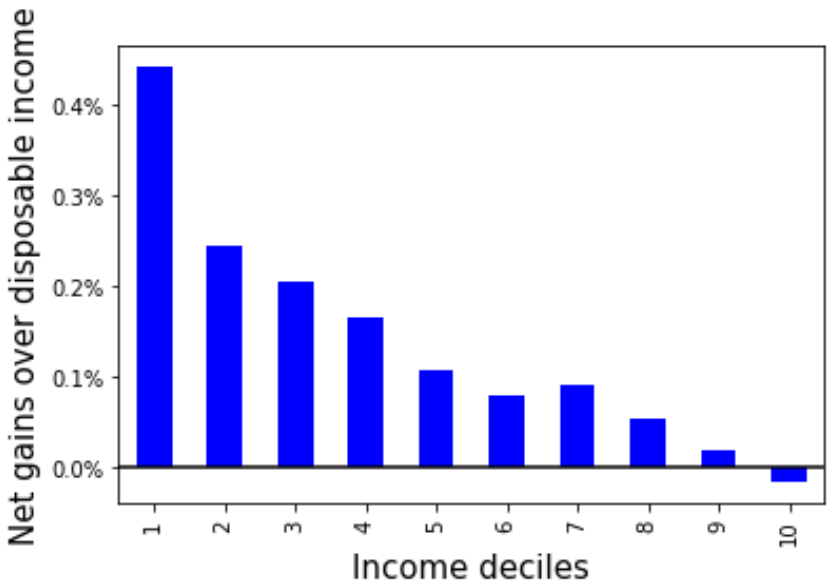

Figure: ...as a share of disposable income

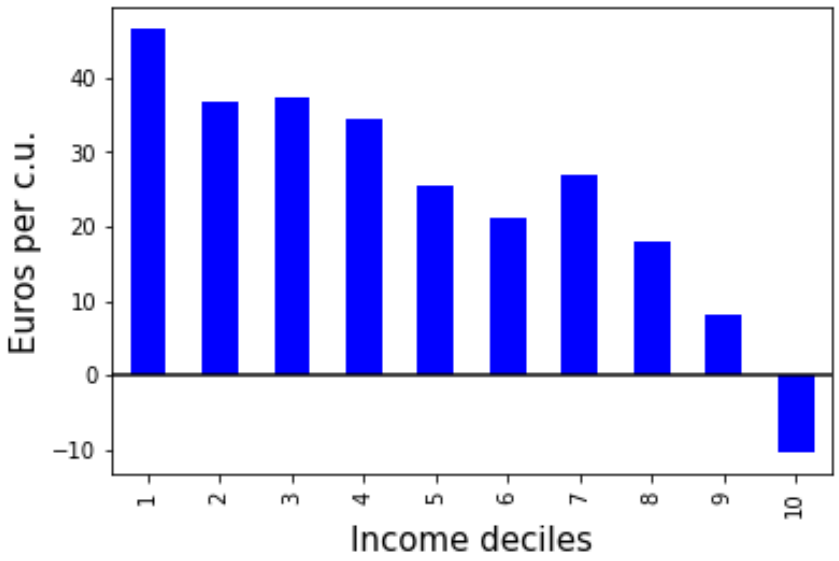

Figure: ...in euros per consumption unit

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Beliefs over environmental effectiveness

Table: Effect of primings on beliefs about environmental effectiveness

	Environmental effectiveness			
	not "No"			"Yes"
	OLS		*logistic*	*OLS*
	(1)	(2)	(3)	(4)
Info on Environmental Effectiveness (Z_E)	0.043**	0.063***	0.052***	0.059***
	(0.017)	(0.018)	(0.018)	(0.014)
Info on Climate Change (Z_{CC})	0.044*	0.041*	0.043*	0.029
	(0.024)	(0.024)	(0.024)	(0.018)
Info on Particulate Matter (Z_{PM})	0.039	0.029	0.037	0.017
	(0.024)	(0.024)	(0.024)	(0.019)
$Z_{CC} \times Z_{PM}$	−0.040	−0.033	−0.042	−0.005
	(0.035)	(0.034)	(0.033)	(0.027)
Controls: Socio-demographics		✓	✓	✓
Observations	3,002	3,002	3,002	3,002
R^2	0.003	0.047		0.075

*p<0.1; **p<0.05; ***p<0.01

⇒ Primings do increase beliefs about effectiveness, but the effect remains limited. Beliefs well anchored.

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Beliefs over progressivity

Evidences of psychological reactance from biased people:

Table: Effect of information on perceived progressivity

	Progressivity: not No (P)		
	(1)	(2)	(3)
Constant	0.419***	0.435***	0.386**
	(0.022)	(0.033)	(0.186)
Information on progressivity (Z_P)	−0.021	0.050	0.014
	(0.027)	(0.040)	(0.239)
Large bias ($\left\|\widehat{\gamma} - g\right\| > 110$)		−0.028	−0.019
		(0.045)	(0.045)
Interaction $Z_P \times (\left\|\widehat{\gamma} - g\right\| > 110)$		−0.130**	−0.126**
		(0.055)	(0.055)
Controls: Socio-demo, politics			✓
Observations	1,444	1,444	1,444
R^2	0.0004	0.018	0.100

*p<0.1; **p<0.05; ***p<0.01

▸ Go back

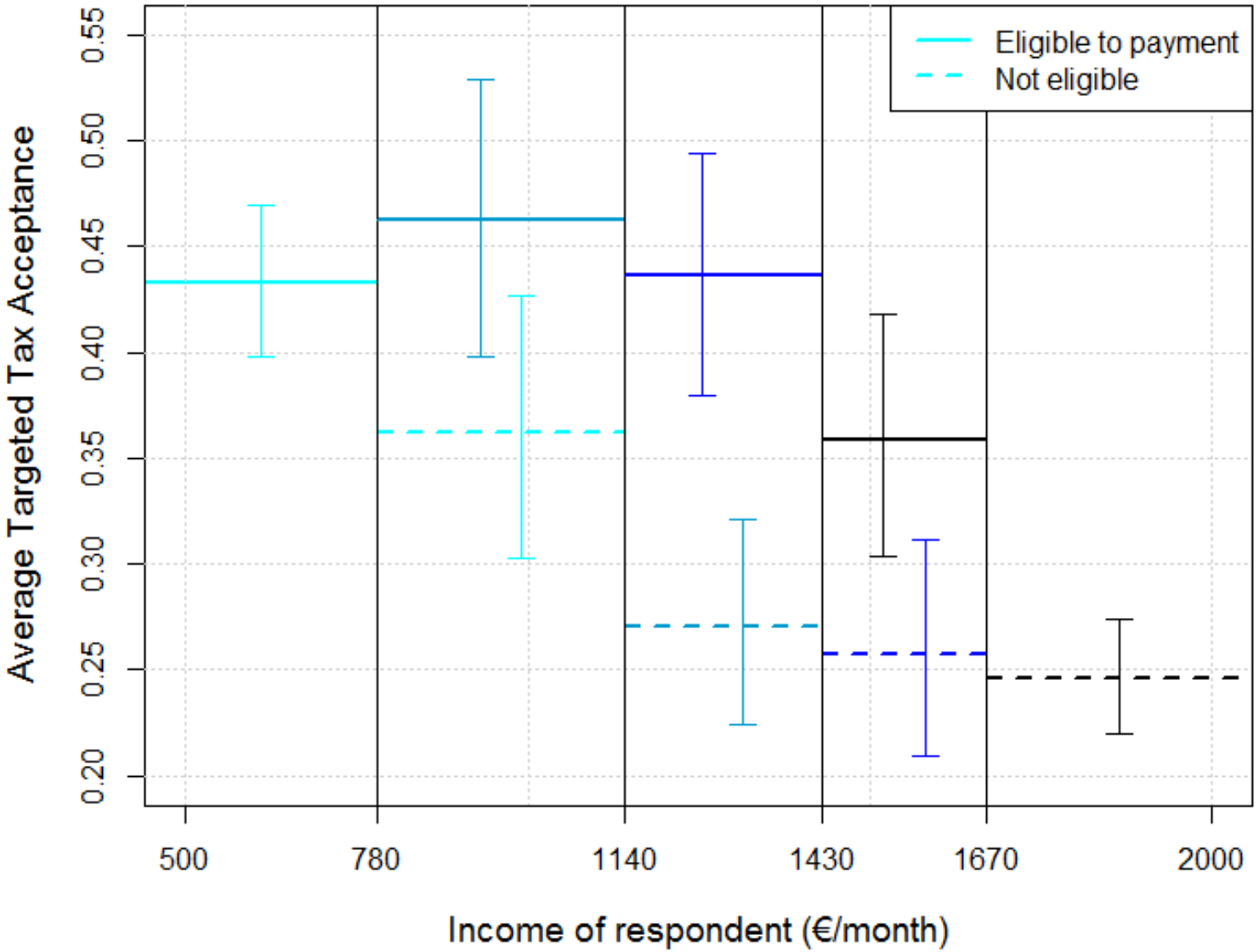
Tax & Targeted Dividend: questions

We propose the same policy as before, except that transfers are now targeted to adults below some income threshold:

- Respondents allocated to different thresholds: bottom 20, 30, 40 and 50%
  - Randomly between two thresholds if respondent's income is within them
  - When income close to only one threshold (i.e. percentile < 20 or in $[50; 70]$), allocated to that one
  - When percentile is > 70, threshold determined by spouse's income
  - If no spouse or if both have high incomes, threshold allocated randomly
- Would you lose, win or be unaffected by the reform?
- Would you approve this reform?

Go back

Tax & Targeted Dividend: a primer



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Descriptive statistics on income targets

Table: Characteristic of the targeted reform by target of the payment.

Targeted percentiles (c)	≤ 20	≤ 30	≤ 40	≤ 50
Income threshold (€/month)	780	1140	1430	1670
Payment to recipients (€/year)	550	360	270	220
Proportion of respondents	.356	.152	.163	.329
Expected proportion of respondents	*.349*	*.156*	*.156*	*.339*

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First stage self-interest

Table: First stage regressions results for self-interest

	Believes does not lose			
	Targeted tax (G^T)		After feedback (G^F)	
	(1)	(2)	(5)	(6)
Transfer to respondent (T_1)	0.268^{***}	0.227^{***}		
	(0.028)	(0.027)		
Transfer to spouse (T_2)	0.180^{***}	0.174^{***}		
	(0.031)	(0.030)		
$T_1 \times T_2$	-0.190^{***}	-0.161^{***}		
	(0.038)	(0.037)		
Initial tax Acceptance (A^I)		0.163^{***}		0.333^{***}
		(0.033)		(0.038)
Simulated winner ($\widehat{\Gamma}$)			0.217^{***}	0.210^{***}
			(0.036)	(0.035)
Controls: Incomes	✓	✓		✓
Controls: Estimated gain		✓	✓	✓
Controls: Target of the tax, single	✓	✓		
Controls: Socio-demo, other motives		✓		✓
Effective F-Statistic (Montiel & Pflueger, 2013)	44.093	40.834	37.966	57.866
Observations	3,002	3,002	1,968	1,968
R^2	0.082	0.177	0.131	0.319

*p<0.1; **p<0.05; ***p<0.01

Go back to second stage

First stage environmental effectiveness

Table: First stage regressions results for environmental effectiveness

	Environmental effectiveness		
	not "No"		"Yes"
	(1)	(2)	(5,6)
Info on Environmental Effectiveness (Z_E)	0.062***	0.043**	0.059***
	(0.017)	(0.017)	(0.014)
Info on Climate Change (Z_{CC})	0.030*	0.024	0.028**
	(0.017)	(0.017)	(0.013)
Controls: Socio-demo, other motives, incomes, estimated gains	✓		✓
Effective F-Statistic (Montiel & Pflueger, 2013)	5.866	2.523	11.145
Observations	3,002	3,002	3,002
R^2	0.121	0.003	0.123

*p<0.1; **p<0.05; ***p<0.01

Go back to second stage