

All's fair in taxation: A framing experiment with local politicians

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21 September 2017

SSE in Riga / BICEPS Seminar

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- Notion of fairness is important for citizens and politicians
- Redistributive policies usually evoke much discussion
- Opinions driven by ethical and fairness considerations
- Schelling (1981): subject to misunderstanding and bias

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- Contested when meant to alleviate disadvantages of certain (e.g. income) groups
- Ethical and equity-driven policy-making
- Schelling's (1981) examples: rent control, food stamps, gas coupons for the poor
- Appealing options in light of rising prices, but:
 - Inefficient (i.e. valued below cost)
 - Disincentives
 - Market distortions
- 'Fair' but unsuitable instruments to deal with underlying problem: poverty
- Schelling's (1981) solution: use of multiple instruments for different issues
 - Give cash to alleviate poverty
 - Deal with food/rent/energy/other issues independently

Financing of redistribution

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- Taxes
- Fairness and equity-driven debate?
- Use of single instruments may have unintended consequences

Taxes and premiums

- Taxes and subsidies create premiums for (socially) desirable states
- Serve as incentives for one state over another
- Two-step process:
 - ① Define a baseline
 - ② Define the differential between recipients with varying characteristics (e.g. income levels)

Schelling's (1981) in-class thought experiment at the Kennedy School at Harvard:

- When parents receive benefits for having children ...
 - ... poor parents should receive more child benefit than rich parents?
 - ... poor parents should receive the same as rich parents?
 - ... rich parents should receive more child benefit than poor parents!

Schelling experiment

What if the standard is a couple with 2 children and those without children pay extra taxes?

- ... rich parents pay less taxes than poor parents?
- ... rich parents pay the same as poor parents?
- ... rich parents pay more taxes than poor parents!

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- In a world of rational decision-makers framing should not have any effect on preferences and choices (invariance axiom)
- Spoiler: They do.
- Broad literature on heuristics and biases (see e.g. Kahneman & Tversky, 2000)
- Framing and reference point dependency are well established
- Work on framing in taxation questions remains relatively sparse
- . . . with notable exception of tax compliance

What's (in) a frame?

- Important distinction between equivalency and issue framing (see e.g. Druckman 2001)
- Basic concepts:
 - Internal vs. external framing (Tverky & Kahneman 1981)
 - Strict vs loose framing (Frisch 1993)
 - Strict: 'pairs of problems that involve a redescription of the exact same situation'
 - Loose: only implies equivalence of outcomes in economic terms

What's (in) a frame?

- Different types of framing (Levin et al. 1998):
 - ① Risky-choice framing (usually associated with Prospect Theory (Kahneman & Tversky 1979))
 - ② Attribute framing
 - ③ Goal framing

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- Risky-choice framing in tax compliance
 - Taxes either presented as losses (e.g. compared to gross income) or as gains (e.g. in case of a rebate)
 - Presentation influences compliance, but not universally - demographics play a role (Cullis et al. 2006, 2012)
- Goal framing
 - Alert people to positive/negative consequences of compliance/avoidance (Hasseldine & Hite 2003)

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- Traub (1999) with a sample of German employees
- McCaffery and Baron (2004) and LeBoeuf and Shafir (2003), with mechanical Turk and students, respectively

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- Recall the levels of child benefits/taxes considered fair earlier
- Two dimensions involved: family size and income
- When asked how much benefit to grant, the family size dimension is more influential

H1a: When a premium is determined by assigning benefits across income categories, the amount considered fair is decreasing with income

- When asked how much to tax, the income dimension outweighs:

H1b: When a premium is determined by assigning tax burdens across income categories, the amount considered fair is increasing with income

- The Schelling-effect as described in his in-class thought-experiment requires both H1a and H1b to be true

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- Further research questions:

Does the Schelling effect occur outside the traditionally tested child benefit scenario?

Are policy-makers with authority over tax system relevant considerations are susceptible to tax framing effects

- Additional explorative analysis of demographic and political influences on potential framing effects

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- Survey experiment among local Flemish politicians
- Invitations sent to 5,928 publicly available email-addresses in spring 2016 (7,457 politicians elected in 2012)
- Multiple sections with questions on social and economic preferences
- Participation voluntary and not incentivised

Mix of within and between-subject design with random assignment to two versions of our 'Schelling questions'

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In Belgium couples receive financial benefits from the state. Suppose that it is not relevant how the transfer is funded, and ignore any other benefits which might come into play. How much **more** should a couple **with their first child** receive per month than a couple **without children**? Please name amounts you consider appropriate if each couple has a combined monthly net income of:

- €2000
- €4000
- €6000

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- €2000
- €4000
- €6000

- Child benefit systems are typically well established and major reforms rare
 - Not a direct competence of our sample (though their opinions may influence higher level decision-making)
 - Flemish municipalities receive taxes and tax-surcharges:
 - Surcharge on car tax
- Hypothetical scenario with a new environmental certificate

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Suppose that Flemish municipalities want to financially support environmentally friendly cars. For this purpose a new certificate is introduced by an independent agency. Consider a car from each of the following price classes (more or less corresponding to city, medium, and luxury cars). How much **[more/less]** should the owner of a **[non-certified/certified]** car have to pay in annual tax than the owner of an equally priced car that is **[certified/non-certified]**?

- €15.000
- €30.000
- €45.000

869 responses sent in, of which 678 answered the Schelling questions

N in (sub-)sample	Total 869	Non-respondents 191	Respondents 678	Difference	Sig.
Gender (1 = female)	27.8%	32.4%	26.6%	$\chi^2 = 2.48$	
Age	53.5	55.2	53.0	$t = 2.25$	$p < .05$
Education				$\chi^2 = 20.11$	$p < .01$
<i>Secondary</i>	24.2%	36.8%	20.9%		
<i>Bachelor</i>	35.6%	32.8%	36.3%		
<i>Master</i>	37.3%	28.7%	39.5%		
<i>PhD</i>	3.0%	1.8%	3.3%		
Party (index score)				$\chi^2 = 9.10$	
<i>CD&V (5.5)</i>	31.9%	33.9%	31.3%		
<i>Groen (2.2)</i>	6.8%	3.5%	7.7%		
<i>N-VA (6.7)</i>	21.5%	19.5%	22.2%		
<i>OpenVLD (6.6)</i>	11.4%	15.5%	10.6%		
<i>sp.a (2.6)</i>	14.3%	13.8%	14.1%		
<i>Vlaams Belang (9.3)</i>	2.8%	4.0%	2.3%		
<i>Other (-)</i>	11.5%	9.8%	11.9%		

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- Mandate
- Family status and number of children
- Monthly net household income
- Preferred tax system
- Ratings of local/federal tax levels / fairness / efficiency of use
- Ratings of statements on social differences

Respondents by frame

After removing incomplete and nonsensical answers:

	N	Frame	
		Benefit	Tax
Scenario	Child	320	288
	Car	267	258

Main estimation

- Responses to the different levels in each scenario treated as individual observations
- Individual fixed-effects models to estimate the different premiums respondents assigned in either of the two presented frames

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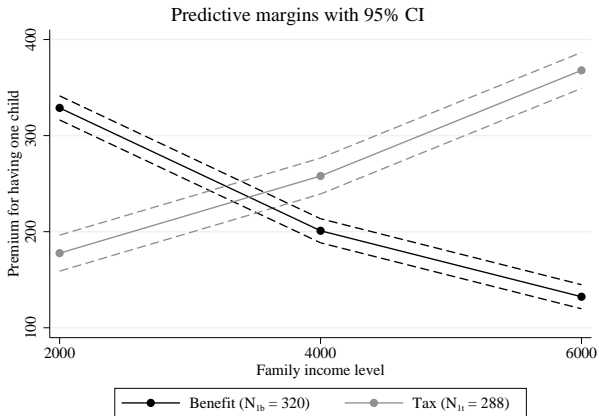
Fixed-effects

OLS

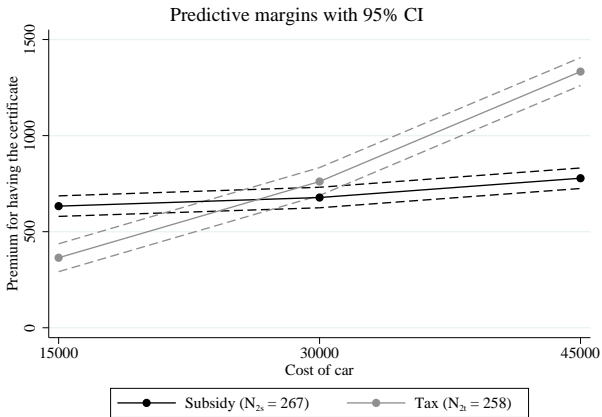
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OLS with controls

- Estimated differences in premiums across income levels for each frame
- Within-subject approach, stated amounts not independent of each other → SE clustered at the level of the individual (Note: OLS sensitive to between-subject variation)

-

$$Y_i = \alpha + \beta_i \mathbf{Level}_i + \gamma \mathbf{Controls}_i + \varepsilon_i \quad (1)$$

- **Level_i** is a vector describing the differences between income/car class categories

OLS with controls

	Child scenario		Car scenario	
	Benefit (1)	Tax (2)	Subsidy (3)	Tax (4)
Family income	<i>Low income is reference group</i>		Car class	<i>Low income is reference group</i>
<i>Middle income</i>	-140.96 *** (10.70)	69.89 *** (10.97)	<i>Middle class</i>	45.68 (32.10) 372.52 *** (33.65)
<i>High income</i>	-215.38 *** (14.10)	173.73 *** (21.25)	<i>Luxury</i>	150.20 ** (63.90) 908.47 *** (82.67)
Gender (1 = female)	15.81 (24.93)	-4.54 (21.24)		128.04 (92.22) -24.63 (138.67)
Age	1.12 (1.28)	-0.48 (1.11)		-6.62 (4.53) 3.33 (5.32)
Children (#)	2.89 (8.10)	7.10 (8.13)		
Income	3.30 (5.67)	-7.26 (6.45)		-27.19 (22.88) 9.51 (32.22)
Education	<i>Secondary is reference group</i>		<i>Secondary is reference group</i>	
<i>Bachelor</i>	-16.37 (31.96)	23.07 (26.08)		97.55 (135.11) 258.46* (155.79)
<i>Master</i>	-0.05 (33.58)	43.95 (27.11)		-9.09 (136.46) 275.75* (156.99)
<i>PhD</i>	9.81 (49.98)	-33.10 (31.45)		12.78 (235.82) 673.47 *** (254.63)
Party index	4.87 (6.47)	-0.49 (8.84)		3.34 (36.80) -115.76 *** (36.61)
Constant	177.12 (149.88)	261.58 ** (125.42)		-130.74 (554.24) 438.62 (688.11)
Full controls	yes	yes		yes yes
Observations	756	678		630 600
N	252	226		210 200
R ²	0.251	0.162		0.119 0.235

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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OLS with interactions

- Interactions between assigned premiums across income categories and demographic variables



$$Y_i = \alpha + \beta_i \mathbf{Level}_i + \theta_i Level_i \times Demographics + \gamma Controls_i + \varepsilon_i \quad (2)$$

- main effect described by vector **Level**_{*i*}
- θ_i describes interaction effect (interpretation as additive to main effect)

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- No significant interactions for *household income*, number of *children*, and *tax system*
- Some small effects for *gender* only in the child benefit scenario
 - Women assign higher premiums to low income level ($\text{€}+55.88$, $SE = 32.48$, $p - \text{value} = 0.087$),
 - but lower premiums to middle income level ($\text{€}-49.38$, $SE = 21.20$, $p - \text{value} = 0.021$),
 - and lower premiums to high income level ($\text{€}-70.83$, $SE = 29.23$, $p - \text{value} = 0.016$)

OLS with interactions

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		Child scenario		Car scenario	
		Benefit	Tax	Subsidy	Tax
Level		<i>Low is reference group</i>			
	<i>Middle</i>	-218.87 *** (35.43)	130.50 *** (36.26)	-145.09 (91.51)	778.17 *** (134.39)
	<i>High</i>	-348.38 *** (43.94)	293.68 *** (70.64)	-209.73 (169.21)	1940.66 *** (323.48)
Party index		-8.56 (8.58)	10.89 (7.29)	-31.16 (30.66)	-25.19 (26.21)
		<i>Low × Party index is reference group</i>			
	Middle × Party index	14.88 ** (6.18)	-11.46* (6.50)	35.86 ** (16.92)	-76.65 *** (21.98)
	High × Party index	25.40 *** (7.79)	-22.69* (12.54)	67.65 ** (32.40)	-195.05 *** (53.95)
Full Controls		yes	yes	yes	yes
Observations		756	678	630	600
N		252	226	210	200
R ²		0.260	0.169	0.124	0.254

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Between-subject

- Estimate of the difference in granted premiums between the two frames
- Between-subject estimation
- Data from both frames pooled
-

$$\begin{aligned}
 Y_i = & \alpha \\
 & + \beta_1 \text{Frame} \times \text{Level low} \\
 & + \beta_2 \text{Frame} \times \text{Level middle} \\
 & + \beta_3 \text{Frame} \times \text{Level high} \\
 & + \delta_i \text{Level}_i \\
 & + \gamma \text{Controls}_i + \varepsilon_i
 \end{aligned} \tag{3}$$

- Each β for the interaction terms indicates the estimated change in the premium by switching from the benefit/subsidy frame ($\text{Frame} = 0$) to the taxation frame ($\text{Frame} = 1$)
- δ_i describes the main effect for the Level_i vector for the three levels i of income/car classes

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- Interaction terms: estimated difference of changing frame

	Child premium		Car premium
Child tax × Low income	-168.64*** (17.53)	Car tax × City car	-293.61*** (49.05)
Child tax × Middle income	42.21*** (15.21)	Car tax × Middle class	31.88 (72.25)
Child tax × High income	220.47*** (21.48)	Car tax × Luxury	461.38*** (119.95)
Family income	<i>Low income is reference group</i>	Car class	<i>City car is reference group</i>
<i>Middle income</i>	-140.96*** (10.60)	<i>Middle class</i>	45.68 (31.66)
<i>High income</i>	-215.38*** (13.96)	<i>Luxury</i>	150.20** (63.03)
Constant	287.27*** (101.00)	Constant	418.71 (447.42)
Full controls	yes		yes
Observations	1434		1233
N	478		411
R ²	0.180		0.125

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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- First test of Schelling-type framing with decision-makers
- Question whether 'experts' are susceptible in the framing literature
 - Research on seniority, numeracy, need-for-cognition, etc (e.g. Druckman 2001, Gächter et al. 2009, Kuehnhanss et al. 2015, Peters et al. 2006)
 - Meta-analysis by Kühberger (1998): Experts are susceptible, but maybe less than the typical student samples
 - Linde & Vis (2016): Framing experiments with Dutch parliamentarians - same conclusions
- Our findings are particularly relevant as
 - All participants are elected politicians
 - The sample has relatively high average age
 - All have authority over budgetary questions

- McCaffery & Baron (2004)
 - 49 participants recruited via Mechanical Turk
 - Fairness judgement of fixed example schedules on Likert-type scale (too much/too little statements)
 - Within-subject design
 - Confirm Schelling effect
- Traub (1999)
 - 219 German employees as sample
 - Two rounds over two weeks asking participants to state fair tax amounts
 - Within-subject design
 - Rejects Schelling effect
- Advantages of our between-subject design component:
 - Less vulnerable to carry-over and demand effects (Charness et al. 2013)
 - Reduction of confounds through elicitation of multiple dimensions (e.g. family size vs income)

Caveats and Limitations

- Vignette experiment may not adequately reflect real-world behaviour
 - Need to further validate results with additional samples and actual behaviour
- Expressed preferences may not reflect voting behaviour in the councils
 - Further exploration: susceptibility of expressed preferences to frame or elicitation of different underlying beliefs?
- Lack of incentivisation
 - Arguably reflective of real world: No direct consequence of decision on personal income
 - No performance-based incentives possible in this type of framing experiments
 - Ethical restrictions
- Identification of mechanism in future research
 - Exploration of cognitive mechanism leading to framing effects
 - Thinking types ('System 1' vs 'System 2', heuristic or rational (Kahneman, 2003))
 - Personality: Rational-Experiential Inventory (Epstein 2012, Pacini & Epstein 1999)

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- Framing effects in taxation also among politicians with relevant competencies
- Strong effect of the choice of baseline and mechanism on the size of premiums that are judged fair for tax subjects with different income levels
- Political ideology identified as moderator of this framing effect
- Schelling's original conclusion: use of different instruments facilitates consolidation of perceived and actual fairness in taxation

All's fair in
taxation

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Thank you for your attention

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