

Pollution Tax Heuristics: an Empirical Study of Public Attitudes Towards Gasoline Taxes

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Pigouvian taxes: economists vs. everybody else

especially with respect to gasoline taxes

or congestion pricing, user fees, tolls, or any form that even inches closer to MC pricing

Why? What are economists not understanding?

- public choice
- equity considerations, regressiveness
- local control (Hannay & Wachs, 2003)
- behavioural explanations.....

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- behavioural explanations.....
 - framing gains/losses (Loftus, 2003)
 - isolation effects (McCaffery & Baron, 2006)
 - metric effects (McCaffery & Baron, 2006)
 - do no harm (Baron, 2005)
 - "technology" effect (Hsu, Walters & Purgas, 2007)

Survey sample: Vancouver, BC, June 23 – Aug 4

A gasoline tax increase of 50 cents per litre

1. "to reduce motor vehicle pollution by reducing driving"
2. **and** used the funds to reduce income taxes by 17 %
3. **and** used the funds to reduce the GST from 6% to 3%

Would you favour this proposal?

- 1 – Strongly oppose
- 2 – Somewhat oppose
- 3 – Somewhat favour
- 4 – Strongly favour

Hypotheses:

- Revenue recycling enhances gas tax acceptability
- "Technology effect" – spending money on technological fixes enhances gas tax acceptability
- "Metric effect" – for tax proposals couched in percentage terms, providing information on the absolute amounts makes them less attractive

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1. "fund research projects to reduce pollution from motor vehicles, such as developing hybrid electric vehicle technology, hydrogen fuel cell technology, or alternative fuel sources."
2. **and** used the funds to reduce income taxes by 17 %.
The average Canadian household paid about \$12,000 in income taxes last year, and would pay about \$2,000 less under this proposal.
3. **and** used the funds to reduce the GST from 6% to 3%.
The average Canadian household paid about \$4,000 in GST last year, and would pay about \$2,000 less under this proposal.

**Technology effect:
Table 2**

	A and B (reduce driving)	C and D (fund research)
n	400	397
Mean	2.155	2.401
Variance	1.109	1.109
t-stat	-3.291	

Revenue Recycling:
Gas tax increase vs. Gas tax increase
with **income tax reduction**

	Gas tax increase alone	with income tax reduction
n	797	797
mean	2.277	2.650
variance	1.123	1.049
t-stat	-7.138	

Revenue Recycling:
Gas tax increase vs. Gas tax increase
with **GST reduction**

	Gas tax increase alone	With GST reduction
n	797	797
mean	2.277	2.452
variance	1.123	1.047
t-stat	-3.343	

Metric effect:

Gas tax increase with income tax reduction

sample C (no add'l info) vs. D (add'l info)

	C	D
N	202	195
Mean	2.520	2.590
variance	1.077	1.119
t-stat	-0.665	

Metric effect:

Gas tax increase with **GST reduction**
sample C (no add'l info) vs. D (add'l info)

	C	D
N	202	195
Mean	2.248	2.549
variance	1.073	1.063
t-stat	-2.903	

Willingness to pay increased gasoline tax (ordered probit)

	Gas tax increase alone	with income tax reduction	with GST reduction
n	755	759	758
<u>Variable</u>	<u>Coeff</u>	<u>Coeff</u>	<u>Coeff</u>
Proceeds used to fund tech research (formats C and D)	0.311**		
Quant info provided (format D)			0.134
Commuter	-0.496**		
Weekly commuting distance		-9.86e-4**	-1.71-3e**
Drives minivan			-0.401**
Does not own car	0.246**	0.383**	0.347**
Level of Education (1 through 6)	0.161**	0.084**	
Gender (1=female)			0.207**
Household Income level (1 through 7)		0.078**	0.033
Vancouver, North Vancouver, West Vancouver resident	0.176**		

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Determinants of revenue recycling behavior (Probit)

	<i>More willing to support gas tax increase if coupled with income tax reduction</i>	<i>More willing to support gas tax increase if coupled with GST reduction</i>
n	767	764
<u>Variable</u>	<u>Coeff</u>	<u>Coeff</u>
Constant	-16.529**	-15.070**
Proceeds used to fund tech research (formats C and D)	-0.329**	-0.405**
Quant info provided (format D)		0.378**
Commuter	-0.243**	-0.334**
Weekly commuting distance		-1.54-3e**
Drives minivan		-0.401
Level of Education (1 through 6)		-0.110**
Age	8.34e-3**	7.85e-3**
Household Income level (1 through 7)	0.049**	

Conclusions:

- Revenue recycling enhances gas tax acceptability
- In *Vancouver*, income tax refunds are preferred to GST refunds as a gas tax revenue recycling measure
- If gas tax revenues are not recycled, people are willing to spend money on technological research
- In describing revenue recycling measures, specific quantitative estimates should be provided in any public presentation alongside gas tax increases
- Over longer term, if increased funding of transit reduces commuting and car ownership, public acceptance of gas taxation will increase