

## Discussion of

“The Behavioral Effects of Carbon Taxes – Experimental Evidence”  
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# Summary of the paper

**Focus:** understanding the behavioural effects of carbon taxes.

## Questions:

1. Can carbon taxes influence consumers' personal motivation to reduce emissions?
2. Does the effect depend on the policy design?

**Framework:** incentivized laboratory experiments where participants make decisions on buying a consumption good entailing a negative externality in the form of CO<sub>2</sub> emissions.

## Set ups:

1. *Mechanism*: “single-player” vs market
2. *Tax treatments*: no tax, tax with revenues absorbed by general budget, tax with revenues redistributed to consumers, tax with earmarked revenues for environmental purposes

# Findings

1. Carbon taxes can impact consumers' motivation
2. Consumption of polluting goods can be reduced only if revenues are either used for the general budget (“burnt”) or redistributed to consumers
3. Earmarking of revenues for environmental purposes reduces consumers' motivation to reduce emissions, with perverse effects on their consumption choices (“moral licensing”)

Super interesting paper, in that it provides useful insights on the behavioural effects of carbon taxes, which can be used as guidance for policy-making and are not generally captured in macro models.

## Comments

- Some of the results are aligned with findings of macro models, which also show how results crucially depend on the assumptions made on green investments
- Are these results easily generalizable? Concerns on: i) composition effects of the sample; ii) possible confounding factors.

## What macro models already say

- Macro models suggest that transferring revenues to households is generally better from a welfare standpoint.
- When it comes to earmarking, results are fundamentally driven by green investments, as proxied for instance by abatement costs (i.e. the cost firms face to invest in technology that allow to abate their emissions).

# The role of green investments

**Abatement costs:**  $\theta_1 \mu_t(k)^{\theta_2}$

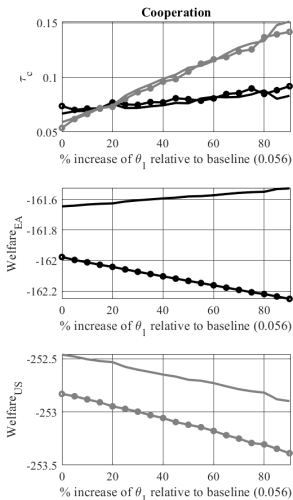
**Optimal abatement:**

$$\mu_t(k) = \left[ \frac{\tau_t (Y_t^b(k))^{1-\gamma}}{\theta_1 \theta_2} \right]^{\frac{1-\theta_2}{\theta_2}}$$

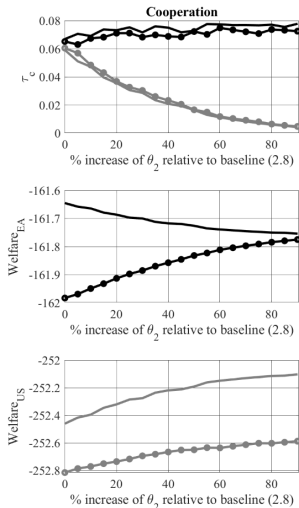
⇒ The shape parameters  $\theta_{1,2}$  impact the results of carbon taxes accompanied by “greening” of polluting products

# The role of green investments - illustration

## Sensitivity to $\theta_1$



## Sensitivity to $\theta_2$



*Legend:* solid lines - transfers to households; dots - subsidies to green firms; black lines - EA; gray lines - US.

# Results of a multi-sector multi-country DSGE model

	Adverse (1)	Transfer to households			Transfer to green firms		
		EA (2)	US (3)	Coop. (4)	EA (5)	US (6)	Coop. (7)
$\tau_{EA}$	0.00	0.07	0.00	0.07	0.07	0.00	0.07
$\tau_{US}$	0.00	0.00	0.06	0.06	0.00	0.06	0.06
$\Delta\%E(e_{EA})$	-8.81	-50.00	0.01	-50.17	-50.00	0.00	-50.06
$\Delta\%E(e_{US})$	-10.80	0.00	-50.00	-49.87	0.00	-50.00	-49.96
$\Delta\%E(e_{joint})$	-9.86	-23.61	-26.38	-50.01	-23.61	-26.39	-50.01
$\Delta\%E(W_{EA})$	-14.18	0.02	0.06	0.05	0.02	-0.15	-0.16
$\Delta\%E(W_{US})$	-8.68	0.13	-0.09	0.04	-0.14	0.04	-0.12
$\Delta\%E(W_{joint})$	-10.32	0.09	-0.05	0.04	-0.10	-0.02	-0.13
$\Delta\%E(C_{EA})$	-15.62	-0.21	0.06	<b>-0.19</b>	0.22	-0.14	<b>0.03</b>
$\Delta\%E(C_{US})$	-15.11	0.18	-0.46	<b>-0.31</b>	-0.20	0.23	<b>-0.01</b>

Source: Ferrari & Pagliari (2022).



# Takeaways

- Generally speaking, macro models can predict a decrease in consumption when tax revenues are used to subsidise green investments.
- However, earmarking of revenues can give rise to unintended effects on aggregate consumption, which depend also on the structure of the economy of interest.
- Such interplay between production and consumption, as well as other important general equilibrium effects, are of relevance when designing a climate policy.

## Comments (i) - sample

- Your results might be specific to the participants to the experiment.
- Participants are indeed young people, who tend to discount the future more than other age groups.
- Though the inter-temporal dimension of climate policies is not taken into account in the experiment, perceptions about the effectiveness of earmarking in the future can have an important impact on current decisions.
- In order to get a better idea of the potential impact on aggregate consumption, then, a more expanded age coverage is warranted.

## Comments (ii) - confounding factors

- Regression results might suffer from an omitted variable bias.
- For instance, literature has shown that exposition to news can influence decisions (Born & al. (2022)).
- It could be worth adding some covariates to the regressions providing infos on the background of participants (e.g. whether they have been more or less exposed to news related to climate issues).