DISCUSSION OF

PIGOUVIAN INCOME TAXATION

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3649
U.S. Economists

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Former Chairs of the Federal Reserve

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Nobel Laureate Economists

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Former Chairs of the Council of Economic Advisers

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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 offers the most cost-effective lever to reduce carbon emissions at the scale and speed that is necessary. By correcting a well-known market failure, a carbon tax will send a powerful price signal that harnesses the invisible hand of the marketplace to steer economic actors towards a low-carbon future.

II. A carbon tax should increase every year until emissions reductions goals are met and be revenue neutral to avoid debates over the size of government. A consistently rising carbon price will encourage technological innovation and large-scale infrastructure development. It will also accelerate the diffusion of carbon-efficient goods and services.

III. A sufficiently robust and gradually rising carbon tax will replace the need for various carbon regulations that are less efficient. Substituting a price signal for cumbersome regulations will promote economic growth and provide the regulatory certainty companies need for long- term investment in clean-energy alternatives.

IV. To prevent carbon leakage and to protect U.S. competitiveness, a border carbon adjustment system should be established. This system would enhance the competitiveness of American firms that are more energy-efficient than their global competitors. It would also create an incentive for other nations to adopt similar carbon pricing.

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.

STARTING POINT FOR THIS PAPER

Optimal taxation problem: Trade-off between efficiency (incentives to work) and redistribution

Pigouvian taxation when you care about income inequality

These problems should be handled together

BUILDING BLOCKS

Individuals have type $\theta = (n, q, b)$ and choose how much to work (y) and whether to green their consumption ($x \in \{0,1\}$)

$$u(\theta; y, x, t, \bar{x}) = \underbrace{y - k(y, n)} - xq + b\bar{x} - \mathrm{t}$$

Standard income production function

How much consumer benefits from aggregate efforts

A distraction as long as included in SWF !

BUILDING BLOCK

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$$u(\theta; y, x, t, \bar{x}) = y - k(y, n) - xq - \mathrm{t}$$

Redistribution concern comes from welfare weights: $E[\omega u(\theta) + \bar{x}]$

Comments:

- $x \in \{0,1\}$, a good assumption for a world where emissions reduction is an extensive margin choice (largely true for carbon !)
- Consumers have different costs for emissions reduction: realistic but does not fully capture the affordability concern (budget constraint)

MAIN INSIGHT

$$t(x,y) = T(y) + \underbrace{(1-x)\tau(y)}$$

Extra tax for those not buying the green good (better? Subsidy?)

Two cases:

τ : carbon tax

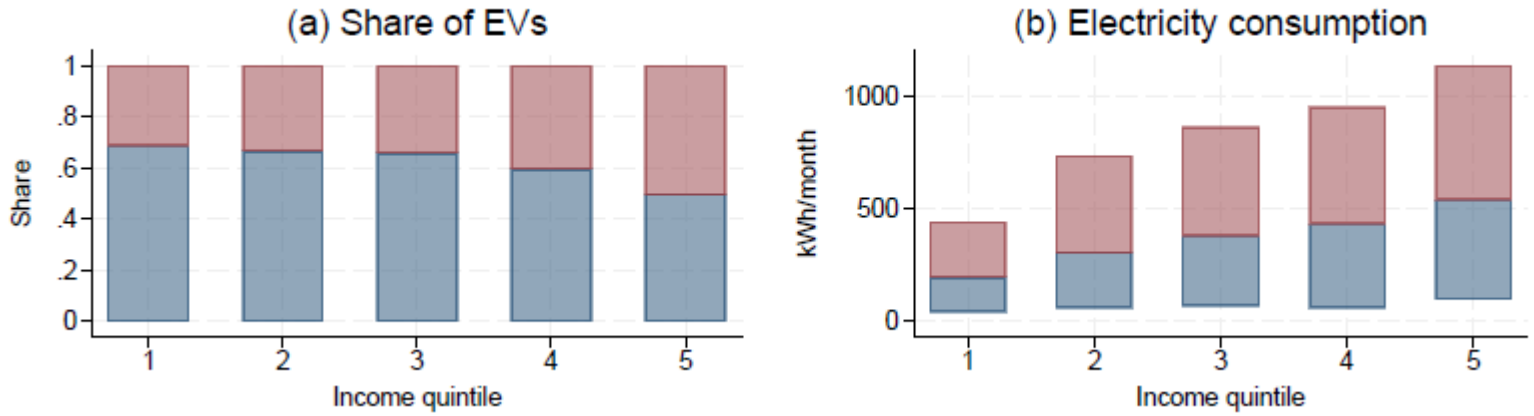
$\tau(y)$: income-dependent subsidy

Insight:

If those not buying the green good are those whose welfare you care less about, then you should set τ higher than the Pigouvian level.

Otherwise, set τ below Pigouvian level

EMPIRICAL APPLICATION



Empirical application tests « deviation » condition.

Very dense. Could it do more in terms of developing the intuition for the results?

HOW CAN THIS PAPER INFORM OTHER POLICY DEBATES

Should we have different carbon prices ? (ubiquitous though at odd with hard-wired beliefs)

Income elasticity of demand

Different income groups consume different products

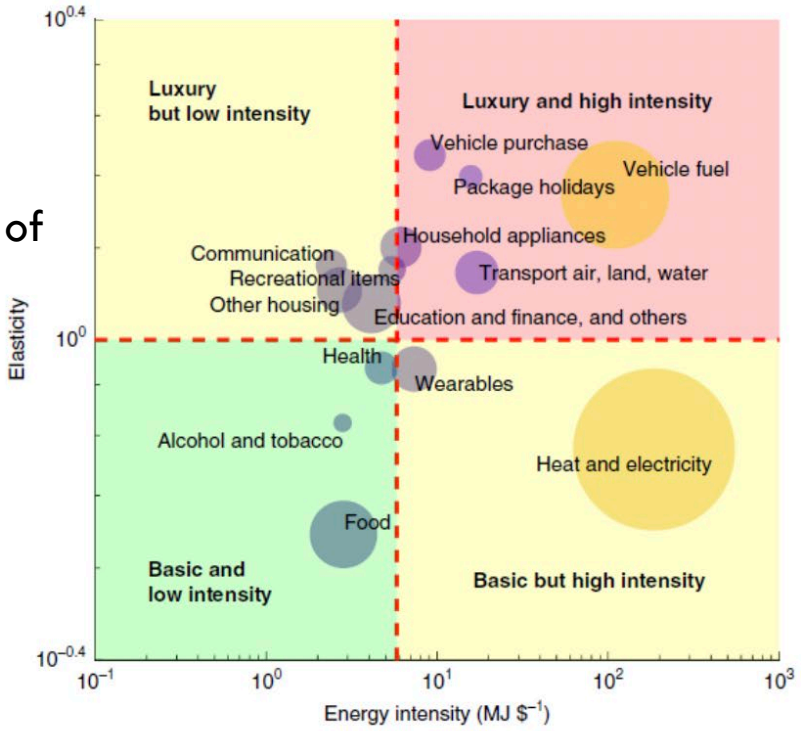


Fig. 4 | Elasticity versus energy intensity. The energy intensity of MJ €$^{-1}$ for Eurostat-based data was converted via the 2011 average exchange rate to MJ $\$^{-1}$. For indirect energy consumption (dark circles), the income elasticity of demand correlates with the given energy intensity (rank correlation: Spearman's $\rho = 0.52$, P-value = 0.04). The direct energy consumption (light circles) through vehicle fuel fits well into this relationship. The only category behaving fundamentally differently is heating and electricity, which exhibits low elasticity but the highest energy intensity.

Table 1 | Overview international energy footprint inequality over 86 countries

Consumption category	Gini coefficient	Top 10% to bottom 10% ratio	Top 10% share	Bottom 10% share
Indirect energy	0.58	30	45%	1.5%
Food	0.45	13	32.5%	2.5%
Alcohol and tobacco	0.60	40	40%	1%
Wearables	0.54	21	42%	2%
Other housing	0.70	110	55%	0.5%
Appliances and services	0.66	53	53%	1%
Health	0.56	84	42%	0.5%
Vehicle purchase	0.79	—	70%	0%
Other transport	0.60	92	46%	0.5%
Communication	0.73	580	58%	0.1%
Recreational items	0.77	—	66%	0%
Package holidays	0.82	—	76%	0%
Education and finance and other luxury	0.66	102	51%	0.5%
Direct energy	0.5	18	36%	2%
Heat and electricity	0.45	13	32%	2.5%
Vehicle fuel and operation	0.70	187	56%	0.3%
Total	0.52	20	39%	2%