

Fiscal Affairs Department

# Designing Fiscal Policy for Greener Energy




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## Plan of talk



- How to design pricing policies
  - focus on tax policies (rather than ETS equivalent)
- How to gauge appropriate price levels

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## Major Environmental Problems



- Carbon emissions
  - projected warming 2-7°C by 2100
  
- Local air pollution
  - 3.2 million premature deaths a year
  
- Road congestion/accidents
  - London motorists impose congestion cost of €8/liter
  - accidents cause 1.2 million deaths

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**Green energy taxes should include  
three elements**



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## Charge for Carbon Emissions



- Administration
  - charge fuel supply in proportion to emissions factors (extension of motor fuel excises)
  
- Environmentally effective
  - shifting to cleaner power generation fuels; reducing electricity, motor fuel, heating fuel demand

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## Charges for Local Air Emissions



- Fine particulates are most damaging, from
  - coal
  - SO<sub>2</sub> (coal)
  - NO<sub>x</sub> (coal, natural gas, petroleum products)
  
- Administration
  - charge fuel supply in proportion to emissions factors
  
- Highly effective
  - e.g. (*with crediting*) promotes emissions control technologies which can cut power plant emissions  $\geq 80\%$

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## Charges for Congestion, Accidents



- Excessive because motorists do not consider
  - congestion costs
  - pedestrian injuries, property damage, etc.
  
- Ideal policy: km-based charges
  - for busy roads (for congestion)
  - varying with driver/vehicle risks (for accidents)
  
- Interim: reflect congestion/accident costs in fuel taxes

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**Tax levels should reflect  
environmental damages**



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## Damages from Carbon



- €25/ton CO<sub>2</sub> (US govt.) or 80% of world coal price, 30% of nat. gas price
  - discounted global damage (e.g., agric., sea level)
  - but sensitive to discounting and extreme risks
- For comparison
  - starting price of €25/ton consistent with 3.0°C target
  - current prices €17/ton (Australia), €5/ton (EU)

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## Damages from Air Pollution



- Involves
  - estimating average population exposure to emissions (smokestack emissions travel  $\geq 2,000$ km)
  - inferring health effects (using WHO evidence on pollution/mortality link)
  - monetizing health effects (contentious)
  - use emissions factors to express per unit of fuels

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## Corrective Motor Fuel Taxes (€/liter 2007)



	Gasoline (cars)		Diesel (trucks)	
	US	Chile	US	Chile
<b>Total</b>	<b>0.25</b>	<b>0.47</b>	<b>0.26</b>	<b>0.42</b>
Contribution of:				
local pollution	0.02	0.12	0.07	0.11
carbon	0.04	0.04	0.04	0.04
congestion	0.10	0.13	0.07	0.11
accidents	0.08	0.19	0.02	0.08
noise	0	0	0.01	0.01
road damage	0	0	0.04	0.08
<b>Current tax</b>	<b>0.08</b>	<b>0.21</b>	<b>0.09</b>	<b>0.07</b>
<b>Revenue from tax reform</b>		US		Chile
(% of GDP)		0.9		0.8

Source. IMF (2012), Parry (2011).

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## Concluding



- IMF report (January 2014) will provide
  - efficient taxes for coal, nat. gas, gasoline and diesel for 187 countries (where data allows)
  - revenue, health, emissions impacts of tax reform
  - user-friendly spreadsheets

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