



National Debate on Carbon Pricing

Workshop #1 Transversal Issues
Friday, May 5, 2017

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Outline

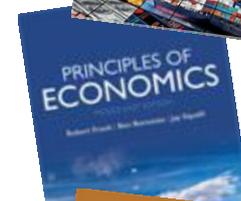
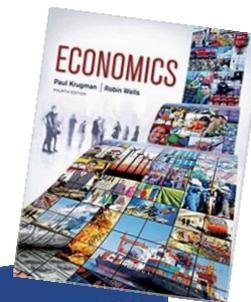
- Why should we limit carbon emissions?
- Why carbon pricing as a policy instrument?
- Complications with carbon pricing (and possible solutions)
 - Taxes (stick) versus subsidies (carrot)
 - Carbon tax at what level?
 - Carbon taxes are regressive
 - Unstable source of government revenue?
 - Carbon tax part of bigger policy package
- Conclusion and practical proposal

Why should we limit
carbon emissions?

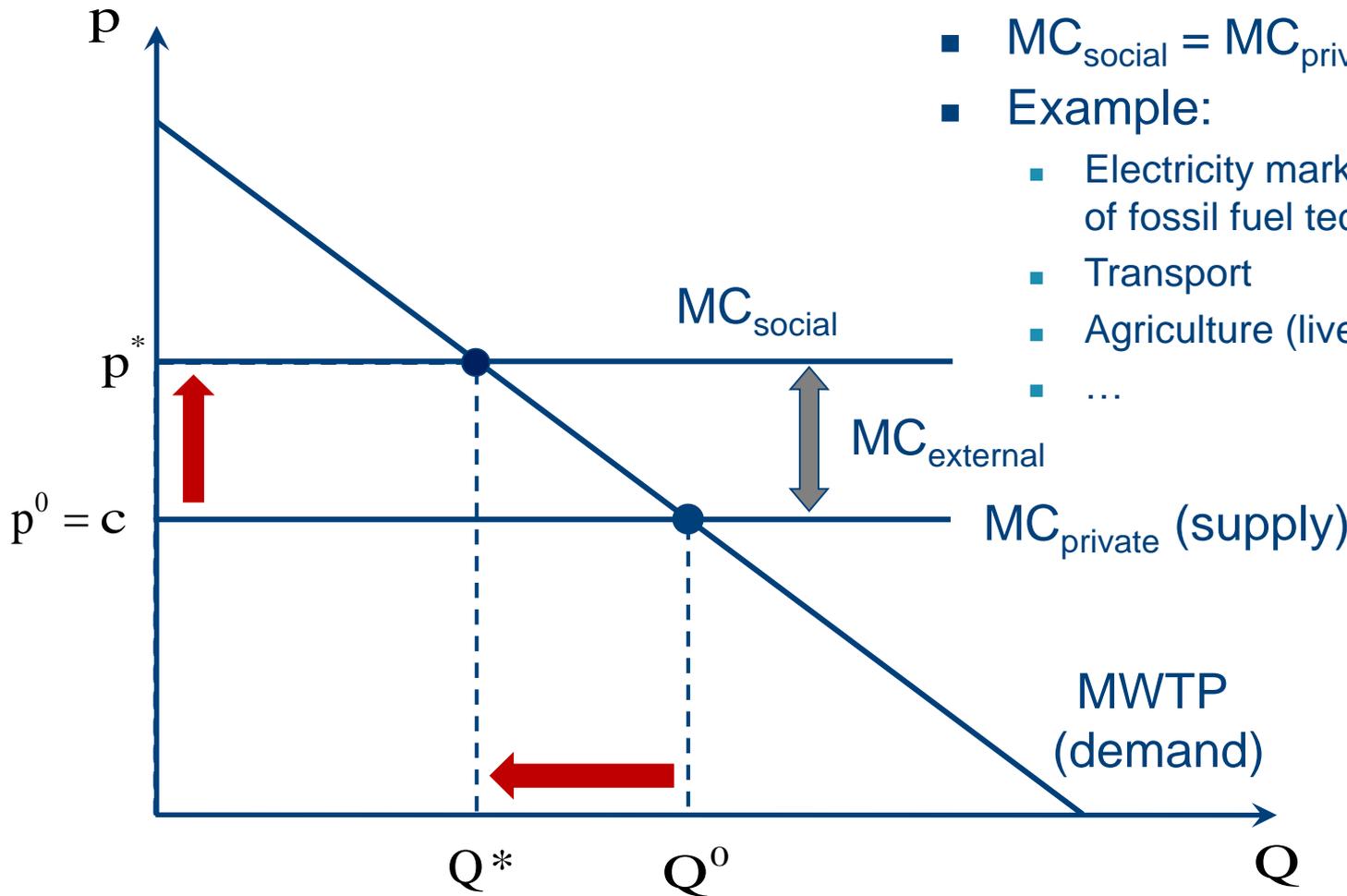


Emissions GHG's = external effect

- **Externality:** actions of economic agent have impact on actions of other agents (without compensating via market)
- External costs of burning fossil fuels are not always fully reflected in market prices.
- Market price < marginal social cost
 - Resulting in market failure (social welfare loss)
 - Too much pollution
 - Too low price, and hence too much use, of goods that require polluting input
- **Classical solutions:**
 - Emission standards
 - Internalizing externality in prices via emission tax (A. Pigou 1930ies) or tradable permits.



Negative external effect: graphically



- $MC_{\text{social}} = MC_{\text{private}} + MC_{\text{external}}$
- Example:
 - Electricity market and externality of fossil fuel technologies
 - Transport
 - Agriculture (livestock)
 - ...

Why carbon pricing as a policy instrument?



Matter of efficiency

- How to distribute reduction efforts?
 - Reduction costs & options differ widely among sectors, technologies, countries, ...
- Static cost efficiency:
 - Intuitively: those that can reduce emissions at lower cost should bear relatively more of the effort
 - Differentiate reduction efforts instead of equal suffering
 - The cheaper you can reach a target, the more ambitious you can be
- Dynamic cost efficiency:
 - Continuous incentive to improve compared to static standards
 - Incentive to invest in R&D

Broad consensus among academics

- Price instruments incentivize efficient allocation effort
 - Cost minimizing firms use unique price/tax as cut off in abatement investment decisions
 - Low information cost for regulator
- Many economists advocate carbon pricing, left and right!
 - Run up to COP Paris 2015 petitions
 - Petition Toulouse School Economics: Tirole*, ...
 - Editorials by Krugman*, Stiglitz*, Weitzman, Nordhaus, ...
 - Mankiw, Feldstein and others(2017)
<https://www.nytimes.com/2017/02/08/opinion/a-conservative-case-for-climate-action.html>
 - Metcalf and other (2008)

And in financial / economic press

RCH

The New York Times

2.



With \$8 Billion Deal on Health Bill, House C.O.P. Leader Says 'We Have Enough...'

3.



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The Opinion Pages | EDITORIAL

A Rare Republican Call to Climate Action

By THE EDITORIAL BOARD FEB. 13, 2017

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Climate change + Add to myFT

The compelling case for global carbon pricing

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Background image: Industrial smokestacks emitting smoke.

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Climate change

In praise of second best

A carbon price would be better, but Barack Obama's plan to cut emissions from power plants is welcome

Print edition | Leaders > Jun 7th 2014

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NOTHING is too good for the United States Congress. The Capitol even has its own power station. The Capitol Power Plant in south-east Washington is still puffing away, though it was built in 1910—making it older than most museums of power—and even though it has not generated any electricity

Even among oil and steel businesses

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Widespread carbon pricing is vital to tackling climate change

5 Save

JUNE 1, 2015

Sir, Ahead of UN [talks on climate change](#) in Paris in December, we write to highlight the major role natural gas can play in addressing climate change. We believe the pragmatic step of implementing a widespread and effective pricing of carbon emissions is critical to realising the full and positive impact natural gas can have

As a group of business people, we are united in our concern about the challenge — and the threat — posed by climate change. We urge governments to take decisive action at December's UN summit. We are also united in believing such action should recognize the vital role of natural gas and carbon pricing in helping to meet the

Letter to FT signed by BP, Total, StatOil, ENI, ...

Climate change
A carbon border tax is the best answer on climate change
The aim should be both to reduce emissions from Europe's production and consumption
Lakshmi Mittal



A steel plant in Duisburg, Germany © Getty

Year 2060: The search for a breakthrough technology to solve climate change continues.

IT'S A TIME MACHINE WE HOPE WILL TAKE US BACK 50 YEARS WHEN WE SHOULD HAVE PUT A PRICE ON CARBON.

WE BETTER HURRY!

NO! THAT'S THE GREAT THING ABOUT THIS TECHNOLOGY!

TLES

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Complications with carbon pricing (and possible solutions)



Taxes versus subsidies

- Relative prices of technologies matter
 - carbon free versus carbon intensive
- Why not use carrot (subsidies) instead of stick (tax)?
 - Subsidizing renewables, electric vehicles, ...
- But taxes and subsidies are NOT equivalent:
 - Subsidies implicitly stimulate underlying polluting activity (electric vehicles and mobility, renewable energy and energy efficiency, ...)
 - Public finance: taxes yield revenue, subsidies drain public funds (subsidies are paid from government budget that has been raised by distortionary, i.e. labour taxes)
- Political feasibility and visibility matters of course

A carbon tax at what level?

- Pigou: tax should equal to marginal external cost
 - Social Cost of Carbon (SCC):
discounted sum of all future damages in all countries of the world of emitting one ton of GHG today taking into account uncertainty
 - Very challenging to determine, wide range of estimates:
EPA: between 11 & 212\$/ton CO₂ & central estimate 39\$/ton CO₂
- Current market price of CO₂ in EU ETS market?
 - Between 4 and 6 €/ton CO₂ last year
- Implicit tax linked to a constraint on emissions?
 - Any emission target level implies an implicit price of carbon
- Be pragmatic:
 - Start at the low side and gradually increase over time
 - Close to ETS price aspirations for cost efficiency

EPA and the social cost of carbon

- Highly controversial issue in US currently. Googling “EPA social cost carbon” yields:



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This page is being updated.

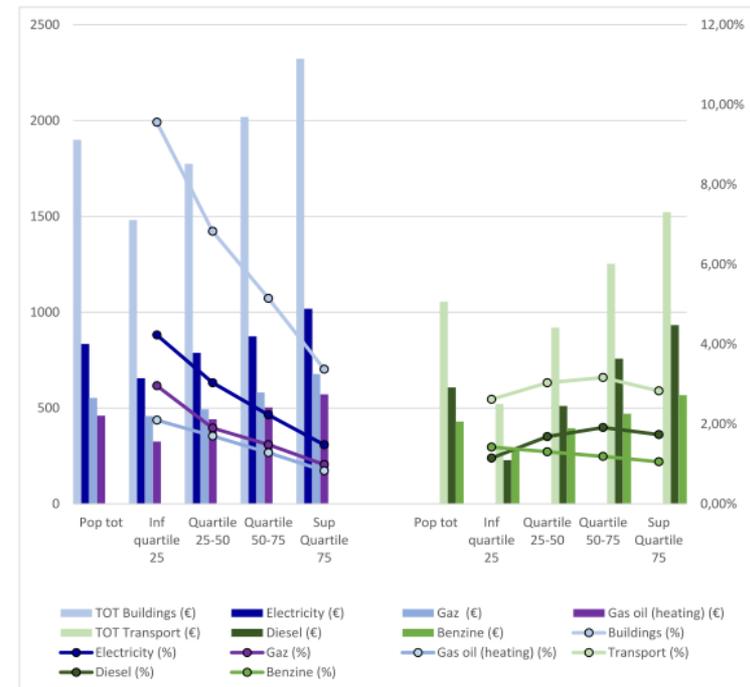
Thank you for your interest in this topic. We are currently updating our website to reflect EPA's priorities under the leadership of President Trump and Administrator Pruitt. If you're looking for an archived version of this page, you can find it on the [January 19 snapshot](#).

- See also <https://www.carbonbrief.org/qa-social-cost-carbon>

Carbon tax is regressive

- Carbon taxes are regressive
 - Directly: budget share of energy products is often higher for poorer than for richer households
 - Indirectly: higher costs of goods that are carbon intensive to produce (cost pass through)
- But all other carbon policies are regressive as well
 - Stricter insulation standards drive up cost of renting/building

Figure 13: Distribution of households energy expenditures in the buildings and transport sectors in 2014: in euros (left scale) and as a percentage of total expenditures (right scale)



Carbon tax is regressive

- Different compensation schemes are possible but all face an equity versus efficiency trade off
- Ex ante: tax exemption:
poorest households do not pay carbon levy
(difficult to manage, stigma, ...)
- Ex post compensation:
 - Use part of carbon tax revenue to finance transfer or tax rebate
(see Metcalf's and Mankiw's proposals for US)
 - Use other part to stimulate economy (labour tax cut, double dividend)
- Crucial is not to dilute the incentive effect too much
 - Preferably lump sum, i.e. not linked to emission behaviour
 - Hence, no gasoline or gas oil cheques!

Carbon tax is unreliable source of government funding

- Public finance reason to tax goods & services:
 - Tax goods with lower elasticity of demand relatively stronger in order to minimize welfare cost of taxation (F. Ramsey)
- Many other externalities to tackle than climate change
 - Road congestion, local air pollution, noise, ...
 - Different reasons to tax should be cumulated
- Indeed, if tax really starts to change behaviour, tax base is eroded and might eventually evaporate
 - Same critique applies also to labour taxes to some extent
- And it will take several decades before revenues fall to zero
- Effect is mitigated by increasing tax rate over time

Carbon tax part of bigger policy package

- Need for long term green tax shift:
 - “Tax bads, not goods”
 - Remove implicit subsidies on carbon intensive goods/technologies, tax exemptions, ...
 - Long standing OECD recommendation for Belgium
 - See inventory in background document of Federal Services
 - Company cars, fuels in agriculture and transport sector, heating fuels, ...
- Incentives should be realigned:
 - Example: house owner and renter face little incentive to improve energy efficiency of house
 - New business models based on services might help
 - Energy service companies (ESCO's)
- Carbon taxes reinforces other climate policies
 - Returns of energy efficiency investment improves

Conclusion and practical proposal

- Big consensus among academic economists: carbon pricing preferred over other regulatory instruments
- Practical proposal:
 - Start with low rate (40€/ton CO₂) and build up (70 €/ton CO₂)
 - Long term commitment and time consistency crucial!
 - Remove exemptions and hidden carbon subsidies
 - Carbon tax on top of many other good reasons to tax fossil fuels
 - Use x% of carbon tax revenues to soften regressive impact
 - Give ex post tax rebate of y €/year to lowest income households
 - Use (1-x)% of revenues to lower labour taxation
 - Aiming for double dividend
 - Coordinate tax policy on EU level for sectors facing strong international competition
 - Other market failure need to be tackled
 - information asymmetries, ...

Some references

- Grainger, C.A. & Kolstad, C.D. (2010), Who pays a price on carbon? *Environmental & Resource Economics* 46(3), 359–376
- Metcalf, G.E. (2009), Designing a carbon tax to reduce U.S. greenhouse gas emissions, *Review of Environmental Economics & Policy* 3(1), 63-83
- Metcalf, G.E. (2017), *Implementing a Carbon Tax*, Resources for the Future RFF Report, Washington
- Federaal Planbureau <http://www.plan.be>
- OECD: <http://www.oecd.org/tax/tax-policy/tax-and-environment.htm>