Green fiscal reform and equity

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A brief history

- Pigou, Ramsey, Sandmo,
- Doubble dividend-- Tax interaction
- Depends on ref point for comparison
- Inflation
- Distribution: Regressive? Not necessarily. Depends on what is taxed + use of revenue. And ref point for comparison. + Distrib of damage

	Policy	y Instruments	
PRICE- TYPE	RIGHTS	REGULATION	INFO/LEGAL
Taxes	Property rights	Technological Standard	Public participation
Subsidy (Reduct.)	Tradable permits	Performance Standard	Information disclosure
Charge , Fee/Tariff	Tradable Quotas	Ban	Voluntary Agreement
Deposit- refund	Certificate	Permit	Liability
Refunded Charge	CPR	Zoning	

A few principles and some stories

- Carbon taxes in US and Sweden
- Carbon taxes in the transport sector

Imagine... 🔆

- All Cars electric or biofuel
- Most power renewable
- All buildings "0 energy"
- Cities with public transport, district heat...
- All industrial processes factor 10
- Use less plastics, aluminium etc ?
- People eat less meat
- Bike more
- Work more at home
- Manage personal use
- Fly less

What will make this happen: ?

What will make this happen:

- Technology mandates?
- Recomendations

- Yes and No
- Price on carbon.
- Technology

Taxes and Emission Trading



Source: State and Trends of Carbon Pricing, May 2014, World Bank



CONT	CONTROL PANEL		SUMMARY RESU	SUMMARY RESULTS		(billions)	SOLVER	SOLVER		Target (billions)	
(€ Sir	Simple Advanced (scroll right)		5-year Revenue P 10-year Revenue Emission Reduction	5-year Revenue Projection (2013-2017): 10-year Revenue Projection (2013-2022): Emission Reduction in 2020 (% of 2005):		\$315.56 \$700.94 24.0%	S-year Revenue Projection (2012-2017): \$0 10-year Revenue Projection (2012-20 Emission Reduction in 2020 (% of 2005):				
CARB	ON PRICE DESIGN		COVERAGE & STA	ART YEAR			DETAILED CONTROL PANE	iL	*n.b. inflati	on rate car	ı still be ı
In the second	Carbon Drive (Č (4002))	Ć15.00	<u>Sector</u>	Coverage (%)	Start Year		Price Schedule	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>201</u>
Annua	Carbon Price (\$/tCO2):	\$15.00	Commercial	100%	2013		Gasoline Surcharge (\$/gal)	\$15.00	\$15.75 \$0.184	\$16.54	\$17.3
	\$ per year % per year		Industrial Electricity	100% 100%	2013 2013		Diesel Surcharge (\$/gal) Jet Fuel Surcharge (\$/gal)	\$0.244 \$0.000	\$0.244 \$0.000	\$0.244 \$0.000	\$0.24 \$0.00
Surcha	arges		<u>Transportation</u>				Coverage Schedule				
Gasali	Initial Amount (\$/gal):	\$0.184	Aviation	100%	2013		Residential	100%	100%	100%	1009
Gason	Annual Increment (\$/gal):	\$0.000	Freight	100%	2013		Commercial	100%	100%	100%	1009
Diese	Initial Amount (\$/gal):	\$0.244	Ground - Light	100%	2013		Industrial	100%	100%	100%	1009
	. Annual Increment (\$/gal):	\$0.000	Ground - Heavy	100%	2013		Electricity	100%	100%	100%	100%
let Fu	Initial Amount (\$/gal):	\$0.000	Other	100%	2013						
	Annual Increment (\$/gal):	\$0.000					Aviation	100%	100%	100%	100%
	\$/gal per year						Freight	100%	100%	100%	100%
	% per year						Ground - Light	100%	100%	100%	100%
							Ground - Heavy	100%	100%	100%	100%
1							Other	100%	100%	100%	1009



CO2 tax Sweden 165 \$/Ton



Parlament also:

- Abolished wealth tax, inheritance tax
- Heavily simplified and reduced progressivity
- Modified property tax
- Broadened tax base for VAT etc
- includes Services, energy, télévis., heat etc
- Reduced profit taxes for companies
- Total 10 billion € (30% environnemental)

This is a big **FAT** Carbon **TAX**

- Nordhaus: 17 \$/tonne
- Stern speaks of 20-50 \$/tonne
- 2008: RGGI 3.80 Chicago 4.50 MDP 17-25
- EU ETS : ~ 5 20\$
- French Tax: 32 -- 17 €/tonne
- US 10 or 20
- Swedish Tax 165 \$/ton + energy tax, fuel tax
 VAT etc. Gasoline costs about 9\$/gal

NOT Perfect

- Exceptions for industry from the start
- Constant process of lobbying to introduce exeptions
- Some railways,
- Some shipping
- Fishing
- District heating...

CO₂ -9% & GDP + 48% 1990 - 2007



District heating 1970-2006 2007 54 TWh (+ 32 % > 1990) & Bio 24 → 70 % 50 % of total heat. 76 % of flats.



Tons CO2 / \$ GDP



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40



Carbon Tax Billion € CO2 3 Tot Env 10 Tot Taxes 111 367 GDP

Taxes in Sweden did NOT go up in total

Unemployment not higher



Some results on distribution

- SIKA 2008, SOU 2004, Kriström, Brännlund etc
- Rural areas affected by fuel price
- However less affected w r t heating and rent
- Carbon tax still overall regressive w r t Income
- However revenue use dominant

Some results on distribution

- 3 types of redistribution studied:
- 1. Reduced VAT
- 2. Reduced VAT for pubic transport
- 3. Reduced income tax
- 1 better than 3 for low income people. 2 is good for low income urban but not rural...
- Point of comparison: BAU, some regulation to reduce CO2?

Some results on distribution

- National Auditor 2012
- Business generates 80% of emissions but households pay half taxes.
- Why,
- Leakage, incidence, lobbying
- Functional income distribution, Classic regressivity, Regional Aspects.
- Anyone negatively affected please stand up!

FUEL TAXES and the Poor

THE DISTRIBUTIONAL EFFECTS OF GASOLINE TAXATION AND THEIR IMPLICATIONS FOR CLIMATE POLICY

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Sectoral C taxes on carbon

Europe, Japan, Some LDCs

Growth and Environment 2020

- Can we increase income 50% & reduce fossil emissions 50% ?
- Take the transport sector: A simple modell for fuel demand is
 Q = Y^a P^b
- Elasticities 1 for income Y, -0.8 for price P

Simple-minded economist solves major problem:

• All you need is to raise price of fuel by 300% !

• Because $P = (0.5/1.5)^{-1/0.8} = 3.95$



Petrol

prices Consumption/cap



Transport Fuel Use in OECD Gtons fuel (and ~C*(12/14))

UK US prices prices Real **Fuel** use 1,13 1,47 0,72 +30%-36%

Reactions?



















Why are they so angry?



Nigeria abolished fuel subsidy Jan 1



Mexico



Carros y gasolina Transporte público

Regressive?



Income deciles*

Nairobi (private)



Nairobi (public)

Household income decile

Nairobi (total)

Household income decile

A summary measure....

Calculating Suits (1-L/K)

Using expenditures

Does a gas tax hurt the poor?

- •WHO PAYS THE TAX?
- **CAN ANY HIGHER TAX EVER BE GOOD?**
- Share of income spent on good X?
- Indirect uses..
- Definition of income
- Adaptation behaviour
- OTHER ASPECTS: WHO SUFFERS POLLUTION
- TRANSITORY EFFECTS

Progressivity vs Income

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SPECIAL FEA

Debate on fuel subsid

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Find

If you really care about poverty you should subsidis things the poor need the most - and that is surely not

hen fuel prices jumped 30% at the pump, increasing from GHc0.857 (US\$0.60) to GHc1.11 (US\$0.78) per litre for petrol, the initial response by many was to ask

50

Conclusion

- In Poor countries progressive
- In most rich countries neutral
- If regressive –easily compensated

Context: Piketty

Progressivity only in demand ...

• When trying to stop sensible climate policy?

- Or should we see this the other way round.
- We are do-gooders
- Our ideas not necessary only tolerated if winwin
- Progressivity been pushed back past point of acceptability and issue is more sore than we think

Why so hard?

- Lobbying
- Behavioral explanations
- Will Cap and trade be easier?
- Combine C&T with Tax?

Is it POSSIBLE ?

Accumulated global capacity

MМ

RENEWABLE ENERGY

RENEWABLE ENERGY

