CLIMATE POLICY IN A DISTORTED WORLD: A FISCAL PERSPECTIVE

"PUBLIC FINANCES AND CLIMATE CHANGE IN THE POST-PANDEMIC ERA", 4TH ANNUAL CONFERENCE OF THE EUROPEAN FISCAL BOARD, BRUSSELS, 25 FEBRUARY 2022

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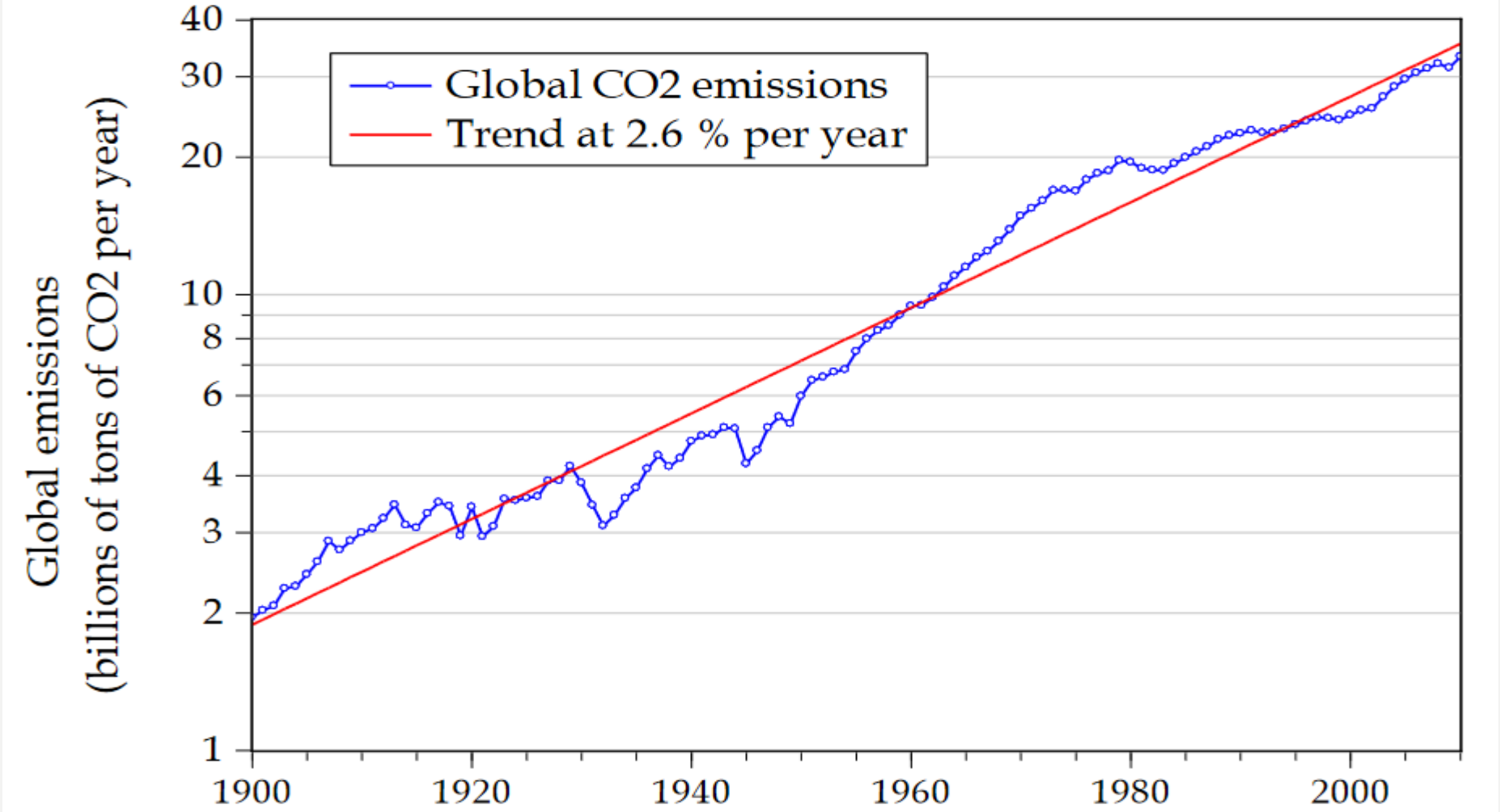
I. ALMOST NO CARBON PRICING

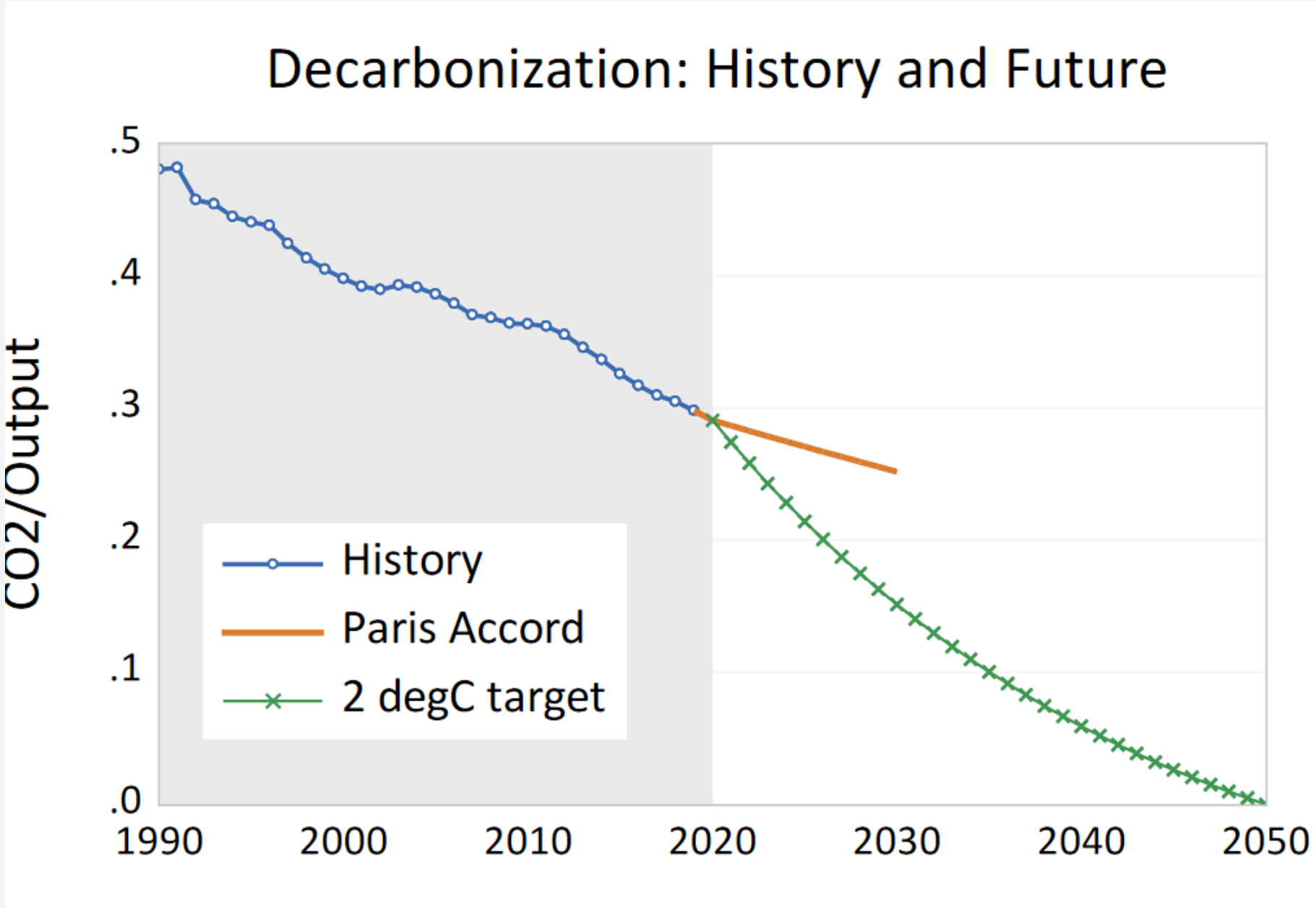
VERY LITTLE HAS BEEN ACHIEVED

- What have we learned so far:
  - Very little carbon pricing
  - With very little coverage: muddled, fragmented & low
  - Collapse of Kyoto agreements: international climate policy is at a dead end
  - Not enough investment in green technology: double externality (global warming and learning by doing)
  - Huge fossil fuel subsidies, especially coal
- See following slides from Nordhaus

Global CO_2 emissions



Source: Nordhaus (2021, Markus Academy Webinar)



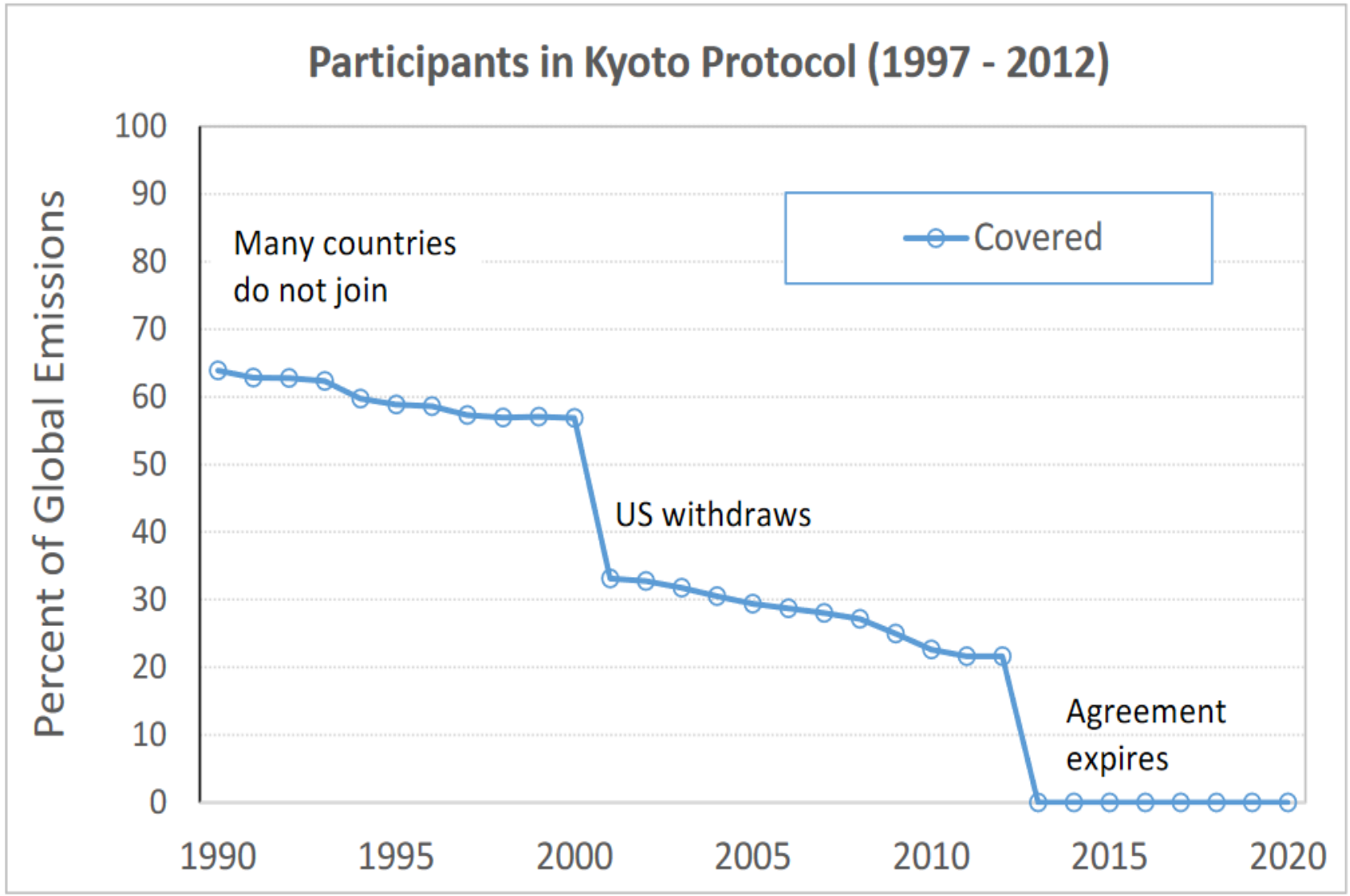
Source: Nordhaus (2021, Markus Academy Webinar)

The carbon price landscape, 2019

Region	Percent of region covered by price	Carbon price ($/tCO2)	Effective price ($/tCO2)	% of global emissions
Sweden	40	127	50.8	<1
Norway	60	59	35.4	<1
Switz	33	96	31.7	<1
BC	70	26	18.2	<1
France	33	50	16.5	1
Calif	85	16	13.6	2
ETS	43	25	10.8	8
Japan	70	3	2.1	5
Argentina	20	6	1.2	<1
Chinese cities	40	3	1.2	1
Northeast US	18	5	0.9	1
Mexico	45	1	0.5	1.5
Uncovered	100	0	0.0	80
Global average			**1.7**	

Source: World Bank

Source: Nordhaus (2021, Markus Academy Webinar)



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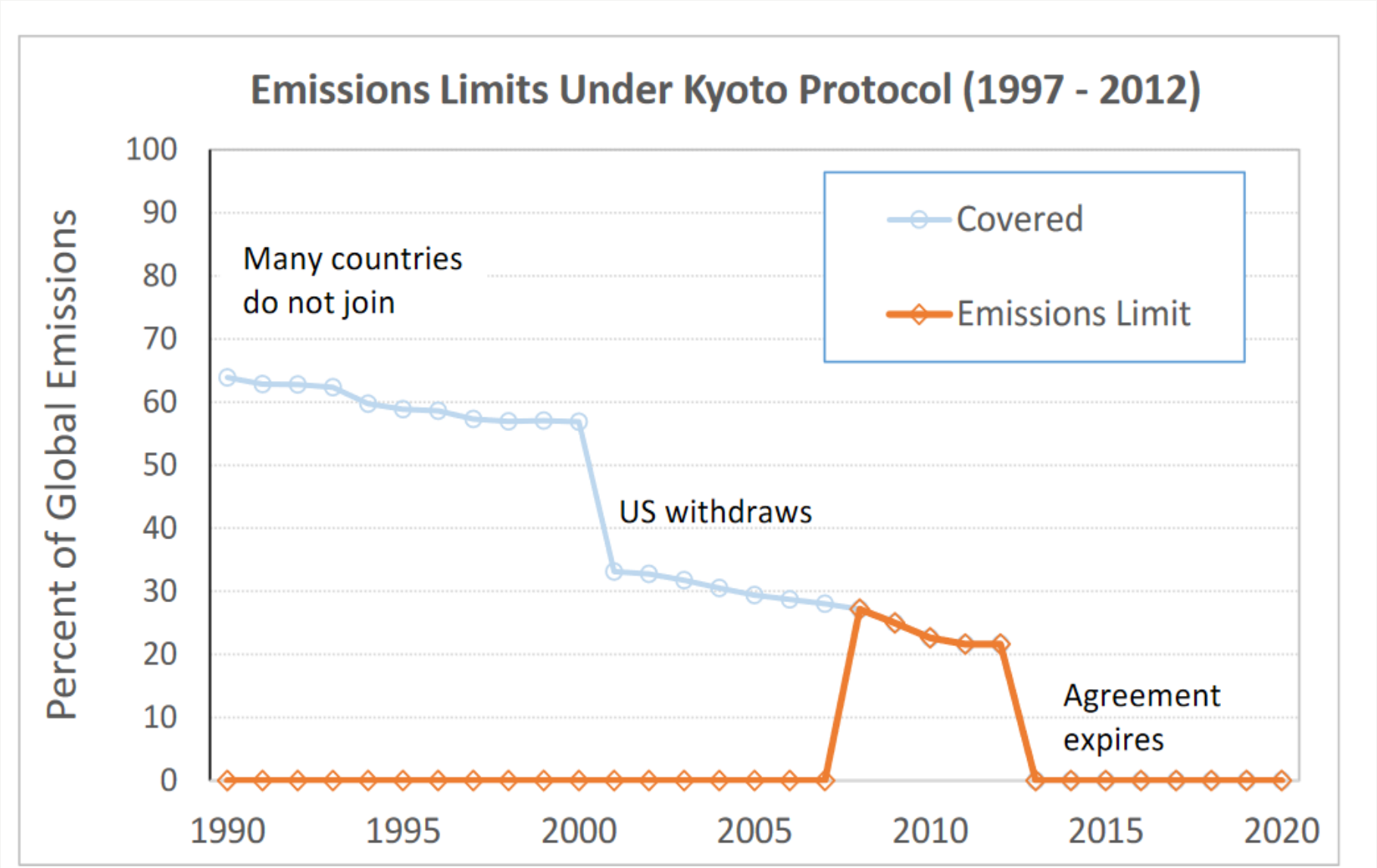
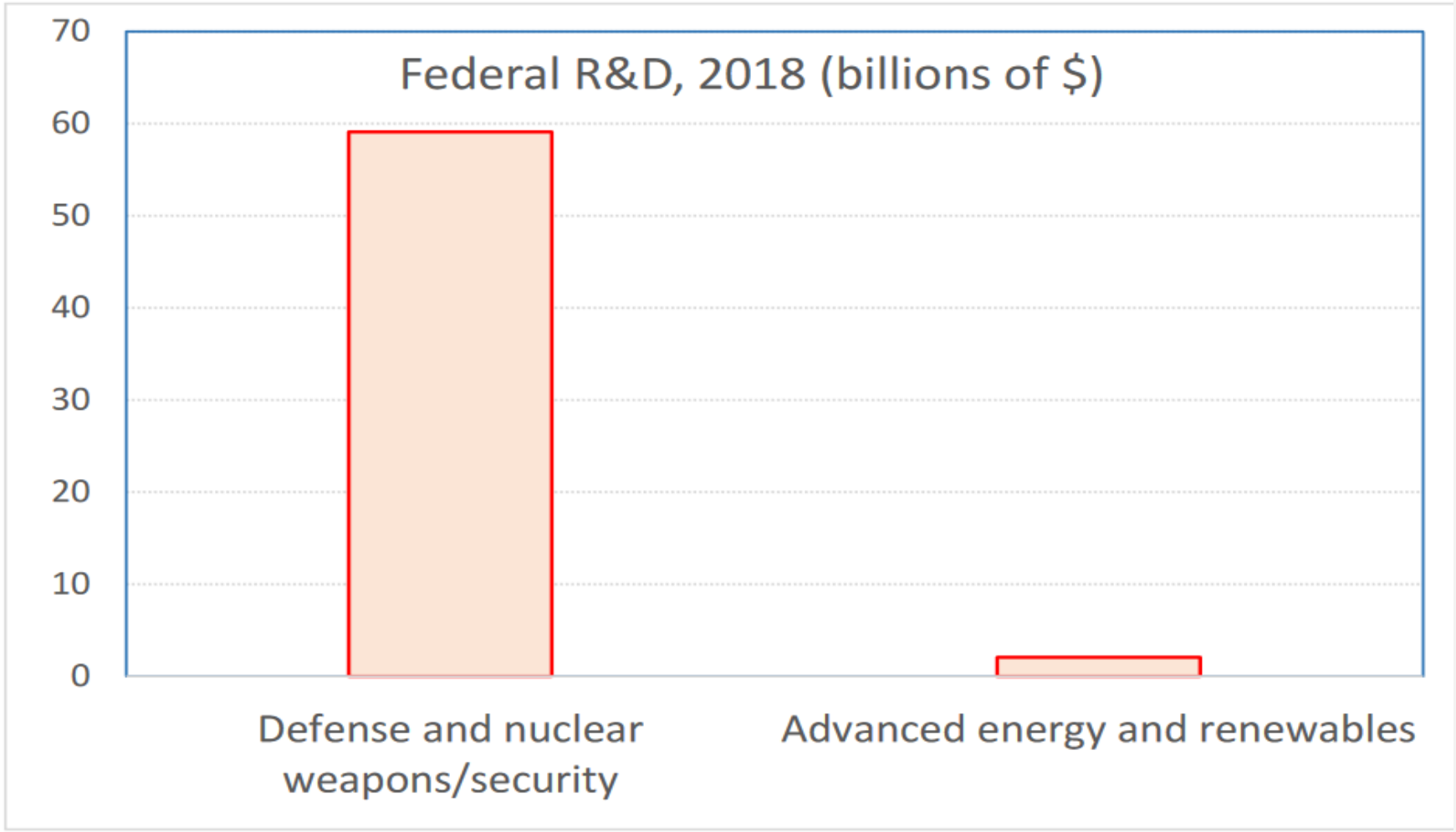


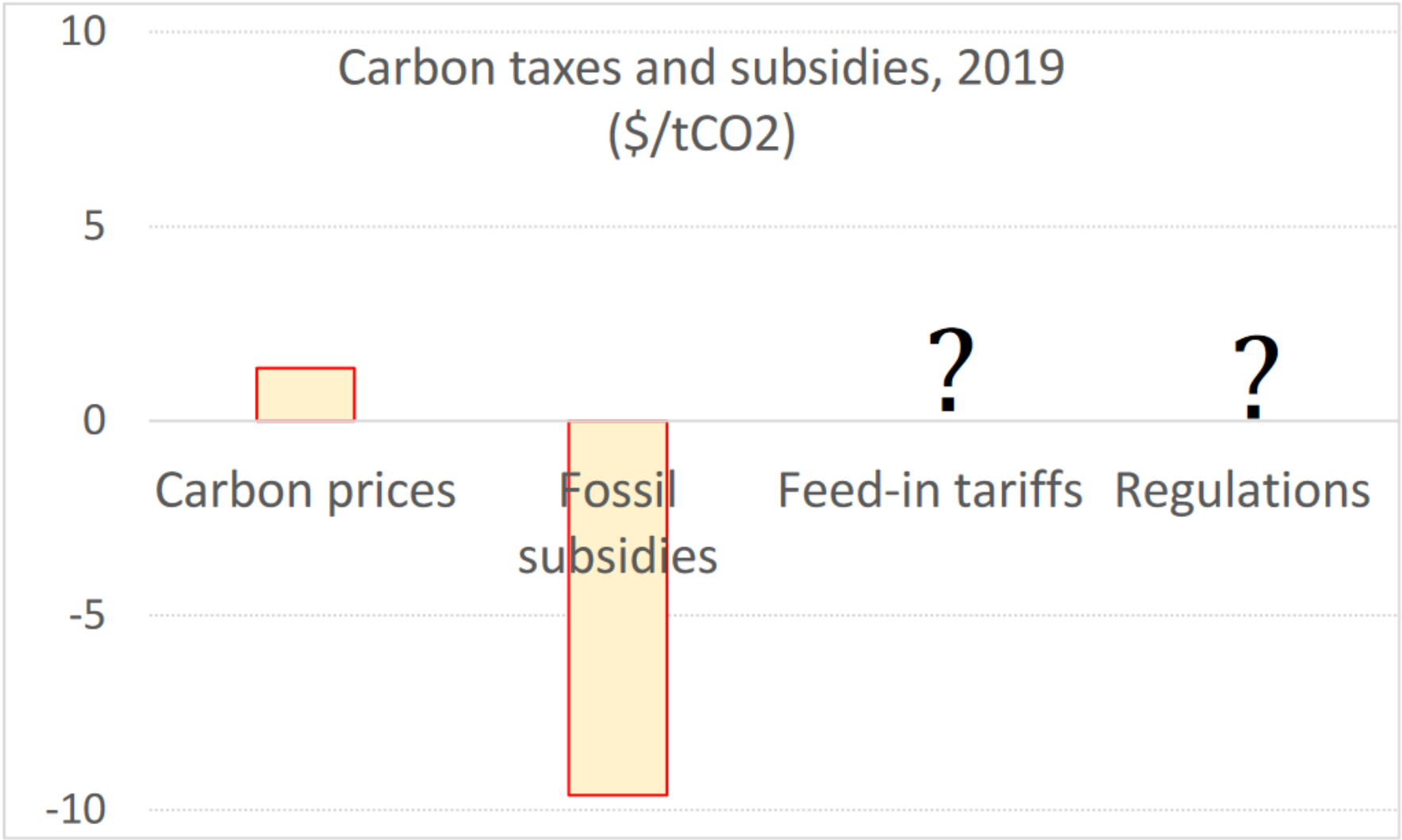
Source: Nordhaus (2021, Markus Academy Webinar)

Federal R&D: Military v. Green Energy



Source: National Science Foundation

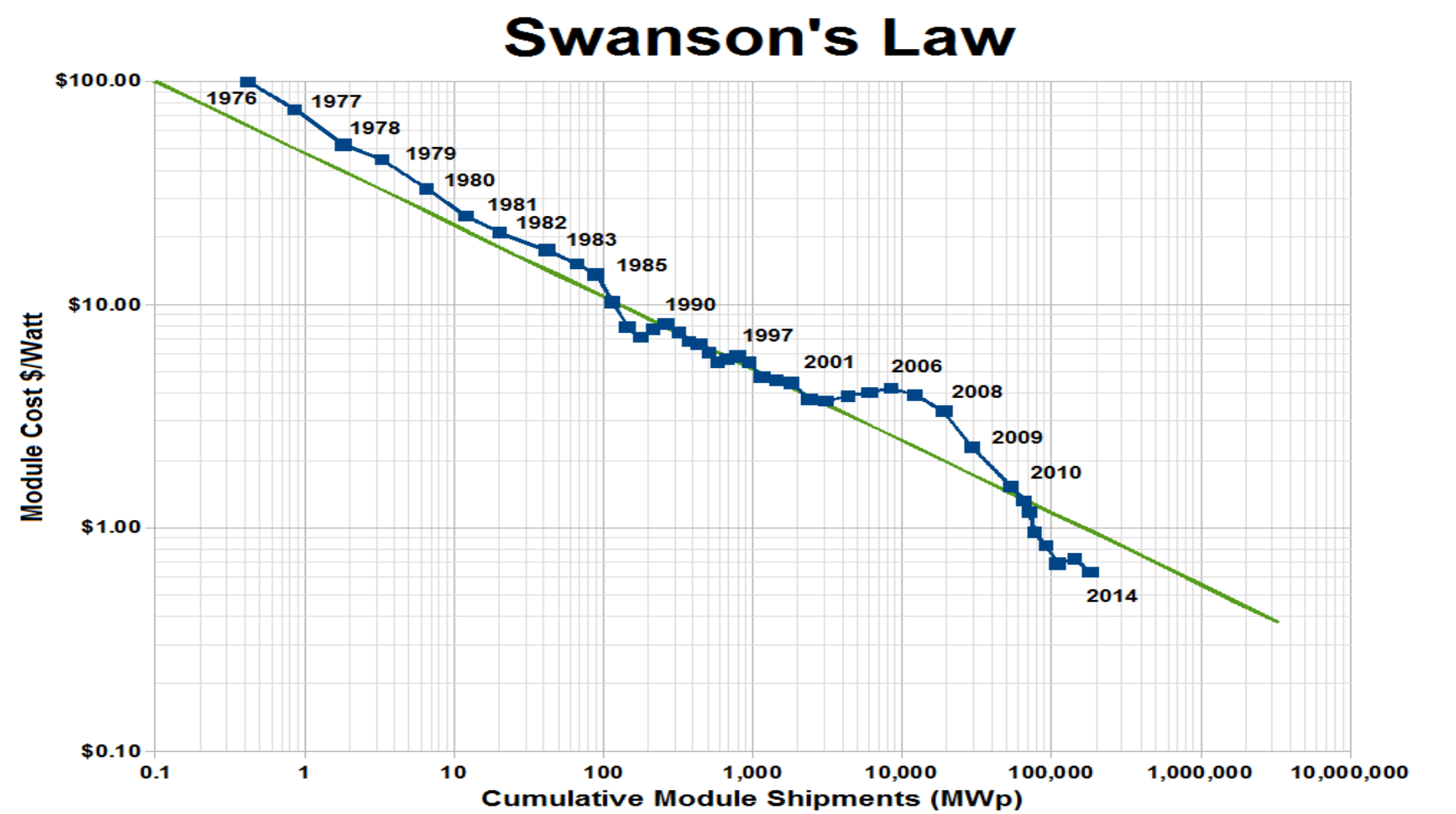
Source: Nordhaus (2021, Markus Academy Webinar)



Source: Nordhaus (2021, Markus Academy Webinar)

BUT WE NEED GREEN LEARNING-BY-DOING SUBSIDIES:

COST OF SOLAR PANELS DROPS 20% FOR EVERY DOUBLING OF CUMULATIVE SHIPPED VOLUME



CARBON PRICING IS FRUSTRATED DUE TO POLICY FAILURE AND CAPTURE

- Non-price controls are susceptible to capture: energy efficiency standards, mandatory sequestration, renewable mandates, etc.
- Bio-fuel mandate puts up land price & creates food poverty
- Exceptions too: ETS – grandfathering; if coal is excluded from tax or subsidised
- Government picks winners & faces lobbies: solar, wind, …
- Solar costs are dropping dramatically: infant industry?

Carbon pricing also frustrated due to violation of efficiency principle:

cost per saved ton CO2 must be same for all countries, but also for each sector and each policy measure (whether tax, subsidy or a ban)

Tabel: emissiereducties en kosten

Klimaattafel	Streefreductie (tCO_2)	Kosten (mln euro)	Reductiekosten (euro/tCO_2)
Mobiliteit	7.3	niet bekend	niet bekend
Gebouwde omgeving	3.7	500	135
Elektriciteit	18.6	1300-2300	70-124
Industrie	15	1000	67
Landbouw	4.5	100	22

Bron: Eigen berekeningen op basis van PBL (2018)

Van der Meijden en Siegmann (2018, CDA)

II. DOUBLE DIVIDENDS WITH CARBON PRICING ARE UNLIKELY

Green tax reform: raise carbon tax and use revenue to cut labour income tax
Cannot have cleaner environment and more employment without increasing inequality
However, MCPF may fall in which case there may be a “red” dividend

III. CLIMATE POLICIES ARE ASSOCIATED WITH NON-NEGLIGIBLE FISCAL COSTS

Four scenarios: (i) first best; (ii) second best without lump-sum taxes; (iii) as in (ii) but labour income tax rate fixed; (iv) as in (ii) but capital income tax rate fixed

INSIGHTS FROM BARRAGE (2020)

- Substantial welfare gains from carbon taxation
- More than 33% once account is taken of fiscal impacts
- Largest effects when labour income tax rates are fixed between BAU and OPT and capital income tax varies: scenario (iii) has $7.1 trillion higher welfare gain than scenario (i)!
- Second-best carbon pricing is lower than first-best carbon pricing: cf. double dividend literature
- Unmitigated climate change (i.e., under BAU) requires higher adaptation spending to compensate and thus higher income taxes to finance this (as a result MCPF higher too)
- E.g., in scenario (iii) capital income taxes must rise by about 4%-points so MCPF rises from 1.42 under OPT to 1.53 under OPT

Table 1: Fiscal costs of climate change

Scenario	Carbon & energy	Capital tax	Labour tax	MCPF	Adapt Y (%GDP)	Adapt U (%GDP)	Carbon tax	Welfare
(i)	BAU OPT	0 0	0 0	1.00 1.00	0.65% 0.22%	0.11% 0.05%	0 $76/tC	 $21.7 T
(ii)	BAU OPT	3.5% 3.6%	42.7% 42.4%	1.07 1.06	0.68% 0.24%	0.09% 0.05%	0 $62/tC	 $23.3 T
(iii)	BAU OPT	37.5^ 33/7%	38.4% 38.4%	1.53 1.42	0.68% 0.24%	0.07% 0.04%	0 $51/tC	 $28.8 T
(iv)	BAU OPT	34.6% 34.6%	38.9% 38.5%	1.06 1.06	0.67% 0.24%	0.09% 0,05%	0 $61/tC	0 $22.4 T

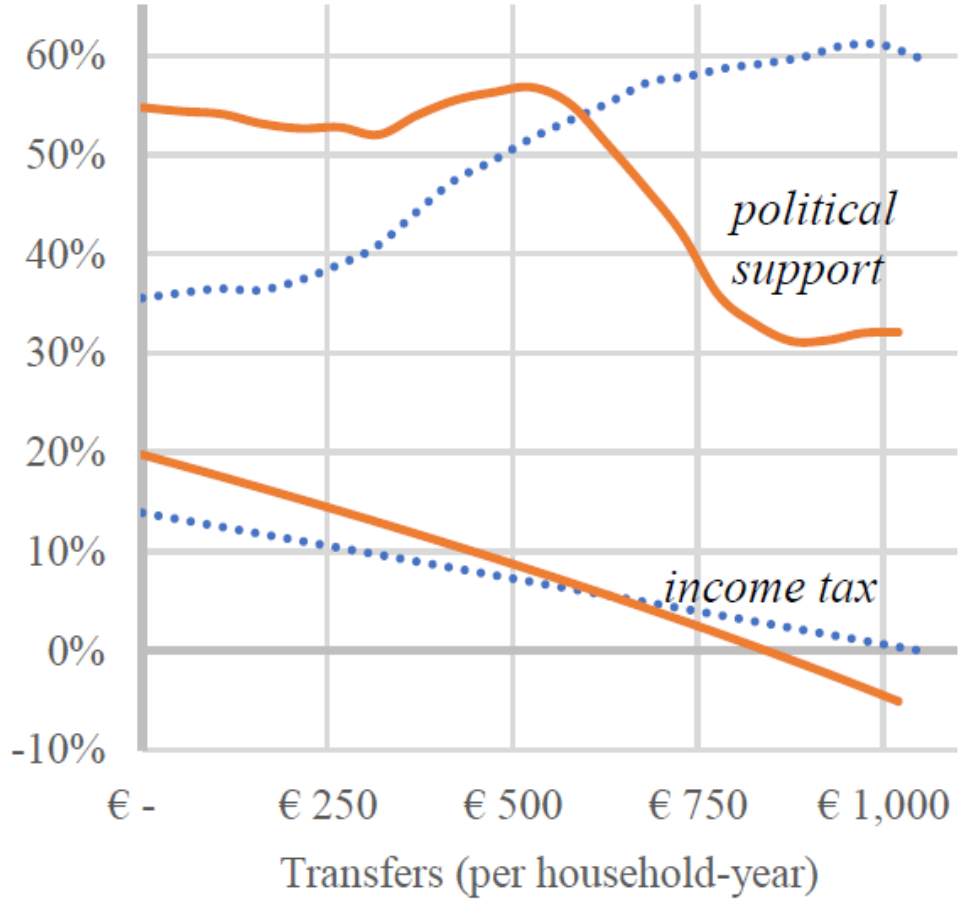
Notes: "Adapt Y" and "Adapt U" refer to adaptation measures to protect aggregate production and utility, respectively, against global warming impacts. Welfare is initial (2015) equivalent change in aggregate consumption relative to business as usual (measured in trillions 2005 dollars). BAU refer to no carbon or energy taxes until 2115. The capital scenarios under scenario (ii) represent the average of the high 2025 rate (57%) and then converging to 0% afterwards. The carbon tax is measured in dollars per metric ton of carbon. To convert them into dollars per ton of emitted carbon dioxide multiply by 12/44.

Source: Barrage (2020)

IV. NEED JUDICIOUS RECYCLING OF CARBON TAX REVENUES TO ENSURE POLIICAL ACCEPTABILITY

Figure 1. Political and economy-wide effects of revenue recycling schemes

(a) Political support & income tax



(b) Labour supply & dividend (Euros)

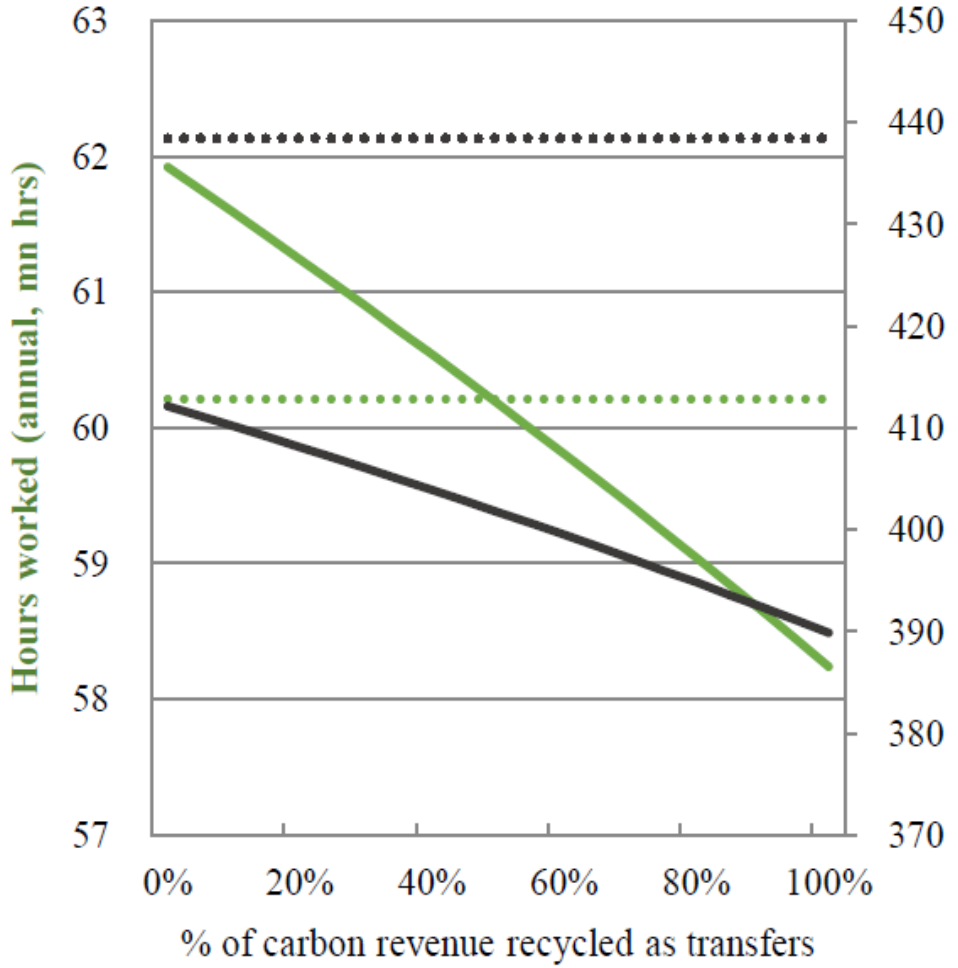
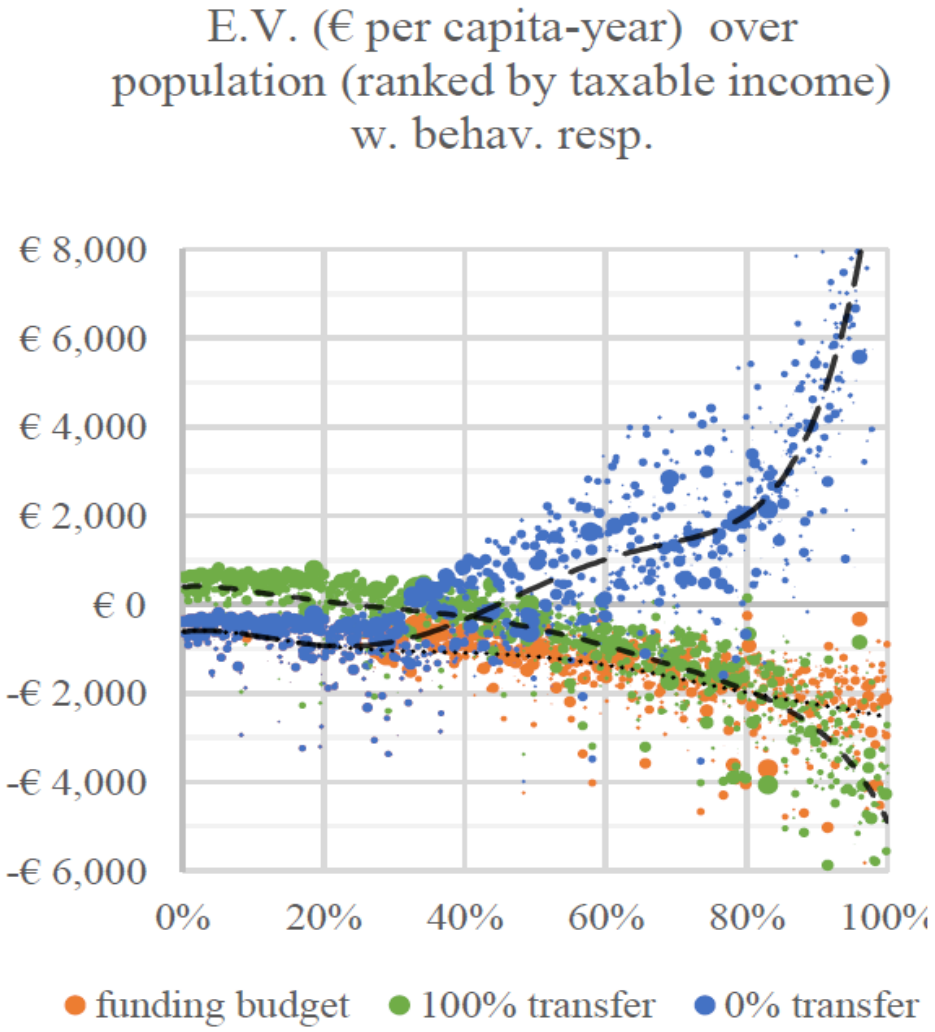
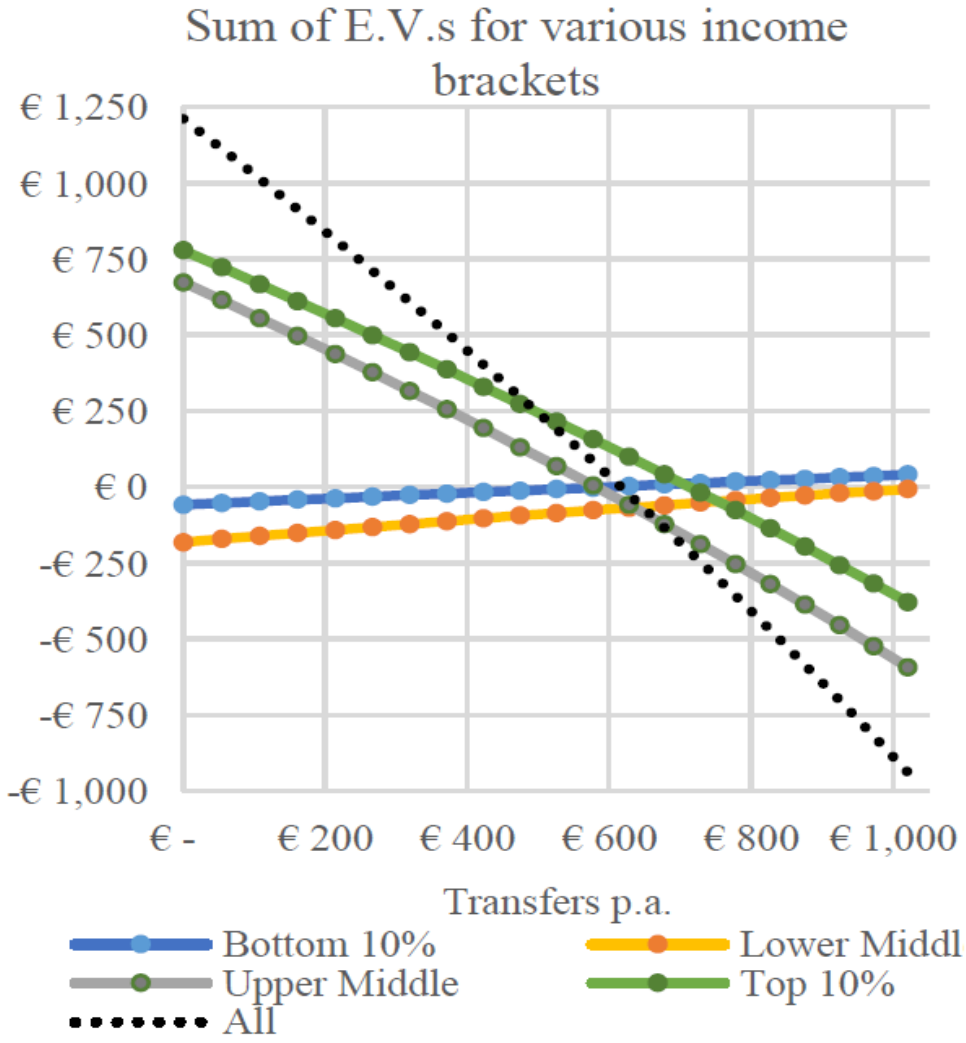


Figure 2: Who gains from tax of €100/CO_2 depends on recycling scheme.

(a) Per-capita equivalent variations



(b) Sum of equivalent variations



V. CAN ALL GENERATIONS AND COUNTRIES BE MADE BETTER OFF WHEN CLIMATE POLICY IS IMPLEMENTED?

Kotlikoff et al. (2021, 2022) analyse this with a multi-country OLG model: huge computational challenge

WIN-WIN?

- Need uniform carbon price in the global economy for efficiency, but problem of international free riding
- Need border-tax adjustments (BTA's) and transfers to poor countries and to countries with large fossil fuel reserves

- Big ask from current generations to make sacrifices to curb global warming for future, perhaps much richer, generations

VI. WEAK EVIDENCE FOR SUBSTANTIAL GREEN SPENDING MULTIPLIERS

VII. PROCRASTINATION AND OVER-USE OF SUBSIDIES LEAD TO GREEN PARADOX EFFECTS AND HIGHER COSTS

GREEN PARADOX EFFECTS

Politicians: procrastinate and prefer carrot to the stick (e.g., Europe has focused on renewable energy subsidies, not on carbon pricing)

Anticipation of green policies: sheiks pump oil faster to avoid capital losses, which accelerates global warming

Green Paradox effect large if price elasticity of supply is low and of demand is high
Welfare then goes up; also if ecological discount rate is high

Delayed implementation of climate policy even more costly

VIII. FEAR OF "YELLOW VESTS" LEAD TO UNDER-PRICING OF CARBON AND EXCESSIVE GREEN SUBSIDIES

Behavioural public finance: heightened salience of carbon tax distorts the optimal policy mix

POST-COVID

GREEN RECOVERY: WHAT TO DO?

- Moratorium on coal and fossil fuel subsidies & asap phase out diesel/ petrol-based transport
- Give a clear price signal: steady growing path of carbon price for next 30 years
- Mitigate leakage via output-based carbon price rebates
- Each year delay makes realising our climate targets more costly
- CO2 prices also has local collateral benefits of less air pollution (no freerider problems)
- Invest in clean infrastructure, efficient retrofitting of buildings, investment in education and training, natural capital investment, and clean R&D
- Invest in control of pandemic (test, track and contain),vaccines, border checks & safe travel and trade, food security and shorter local supply chains including sanitary standards, renewable energy (batteries, solar, wind, electric vehicles), circular economy, ad secure ICT networks
- Make sure new jobs and sectors are wherever possible Corona-proof (e.g. part-time in office, part-time at home, less commuting is win-win): improve resilience
- “Create army of zero-carbon workers, retraining and redeploying those who can't work into different industries, from home insulation to wind turbine manufacture to tree planting”

MEASURES FOR FINANCING GREEN RECOVERY

- Do not bailout carbon-intensive firms in the pandemic unless they fundamentally reform
- Make sure all firms are carbon-free or can prove that they capture and sequester all their carbon emissions
- Credit market imperfections in pandemic: soft and easy-to-access loans
- Part renewable energy subsidy to internalise learning-by-doing externalities and to get things going
- Government as launching customer and finance facilitator, especially cities
- Spatial planning pandemic and climate proof: central government, provinces, cities
- Golden Covid-19 opportunity: do not keep living zombies from the fossil era alive, but invest in the inevitable companies that are going to make the green transition possible (“never waste a crisis”)
- Independent carbon central bank: carbon reductions are too important to leave to the discretion of politicians (and lobby groups)