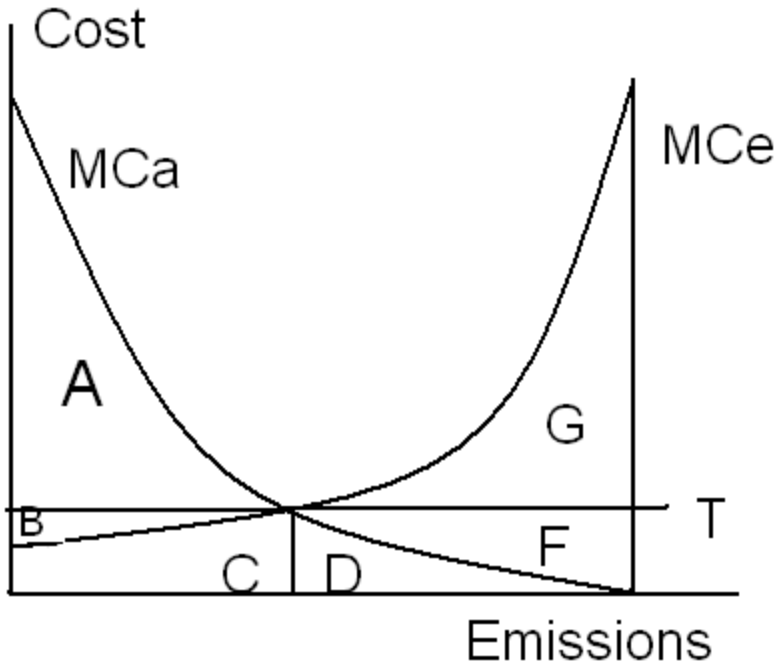
10 Politics, Distribution of Costs and Benefits

→And consequences for lobbying and political feasibility…!

General equilibrium effects etc

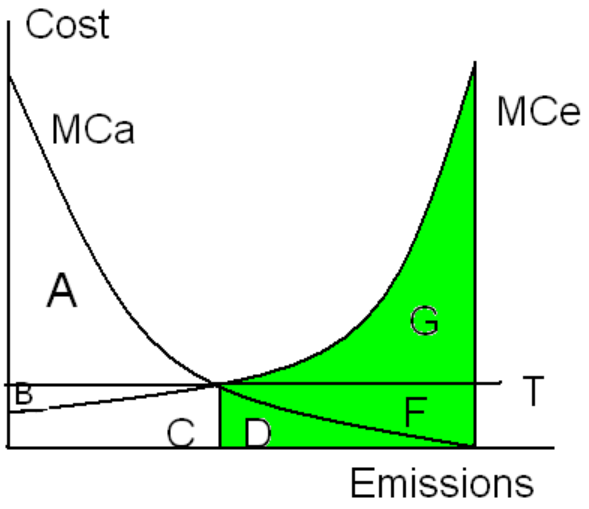
The Distribution of Costs

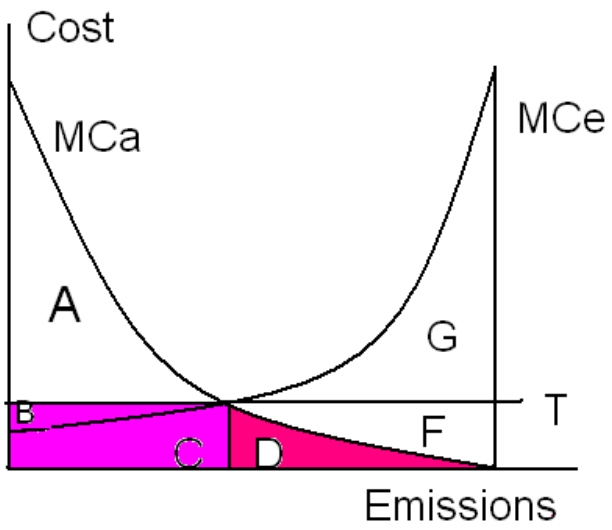


The Distribution of Costs

- Environmental benefits are D+F+G

- Abatement costs D
- Tax imply extra cost
- of B+C





	Ownership rights to the environment				
	Polluter (absolute)		*Polluter (relative)*	*Mixed*	*Victim (PPP)*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Burden of costs					
Environm BENEFIT	D + F + G		D + F + G		
Polluter costs	**F**	**0**	**-D**	**-C-D**	-B-C-D
Society	**-D-F**	**-D**	**0**	**C**	**B+C**

	***Ownership** rights to the environment*				
	Polluter (absolute)		*Polluter relative)*	***Mixed***	*PPP*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Type of instrument					
Q-type	Public cleanup		CAC VA free TEP	Hybrid	TEP auction
Mixed			Hybrid	Hybrid	Hybrid
P-type	Subsidies		REP Tax-subsidy	Partly REP	Tax DRS

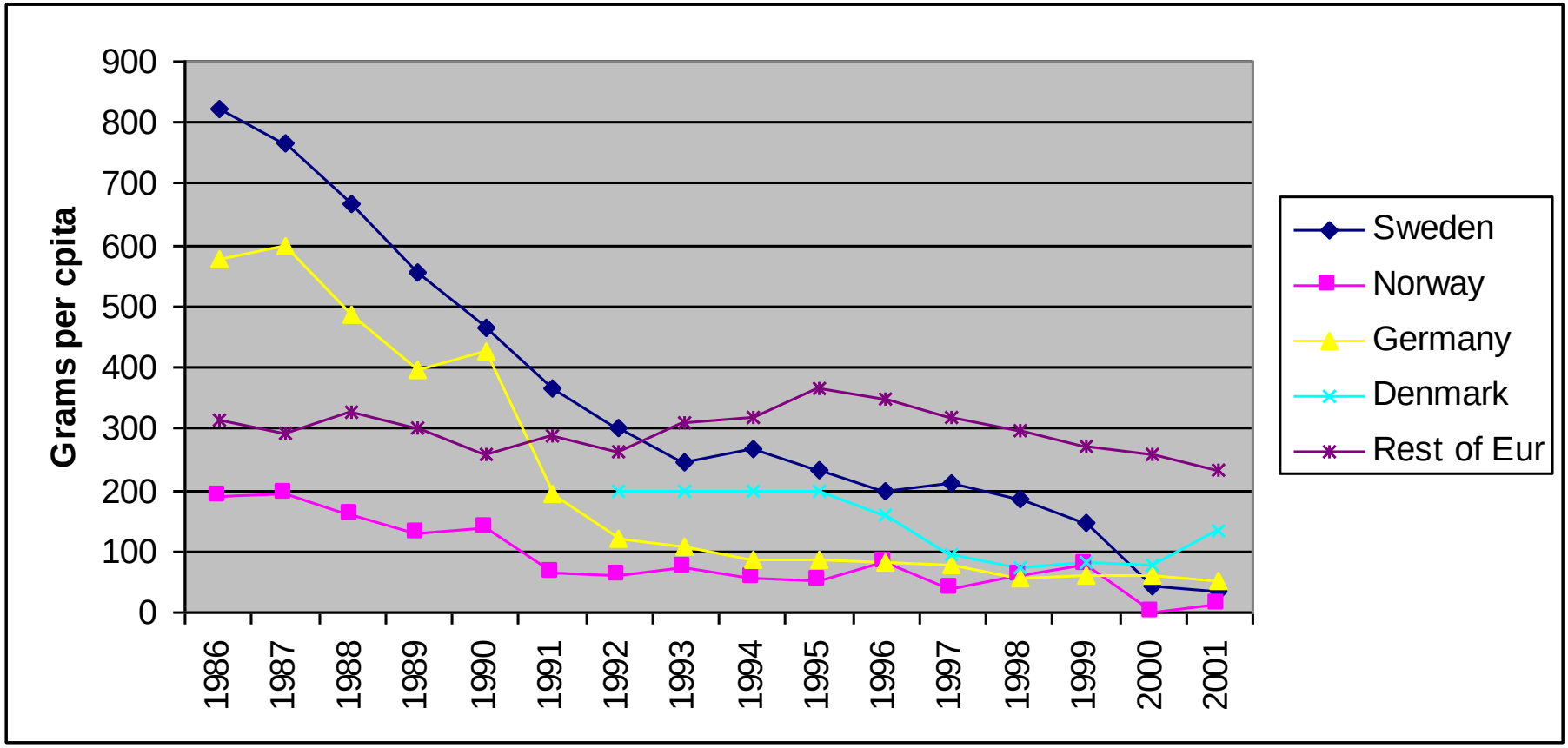
Political aspects

- Lobbying, Monopoly and market power
- The importance of PROCESS
- ***"Que tout vieil impôt est bon***
- Swedish Local Investment Funds
- Psychology of incentives crowding out moral
- Monitoring and the Harrington Paradox
- Corruption & Informal sector
- Building institutions such as EPA
- International Aspects: Transboundary , Trade,

Phase out of Trichloroethylene

- (C_2HCl_3) Degreaser. Good Fat solvent…
- Big Working Environment hazard
- Phase out of CFCs lead to increased use
- Forbidden in Sweden since 1991
- Taxed in Norway
- Very heavily regulated in Germany.

Phase out of Trichloroethylene



Nitrogen Oxides

- Grandfathering or OA in US to appease..
- REP in Sweden to make high fee feasible
- REP splits industry lobby
- Tax subsidy in Norway made low fee effective
- Technology standard best for cars (CC)

HETEROGENEOUS ABATEMENT COSTS →MBI

2 polluters 20 t each. Total to be cut in ½. $MC_1 = a_1$ and $MC_2 = 4a_2$

1. Equal abatement of 10 units each costs 250$

(½ 10*10 + ½ 10*40)

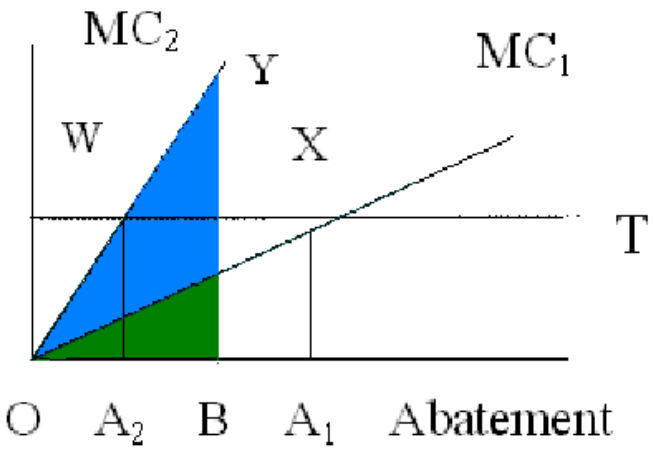
2. Equal MC due to trading means firm one will sell 6 rights to firm 2. Firm 1 abates 16 and firm 2 abates 4. Cost is 160 $ (saving 36%)

(½ 16*16 + ½ 4*16)

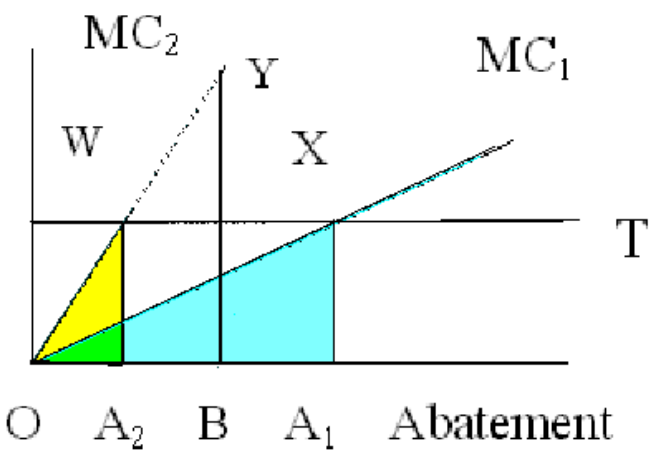
3. This can also be achieved by a tax of 16

Cost savings due to equal MC

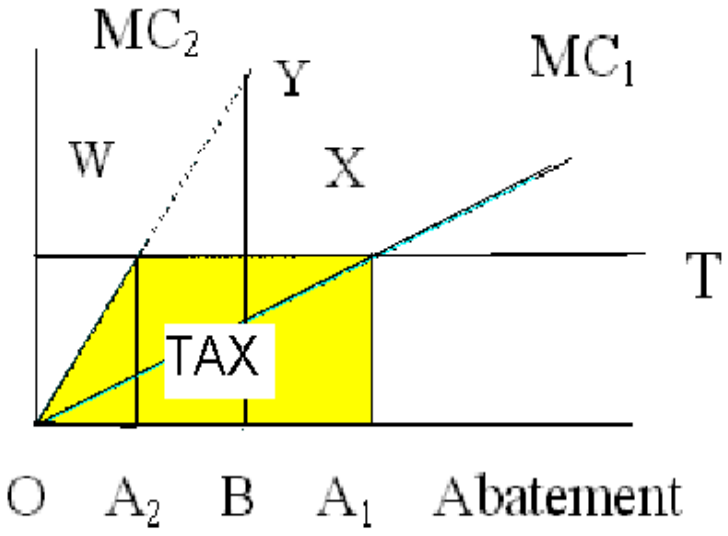
- Equal abatement

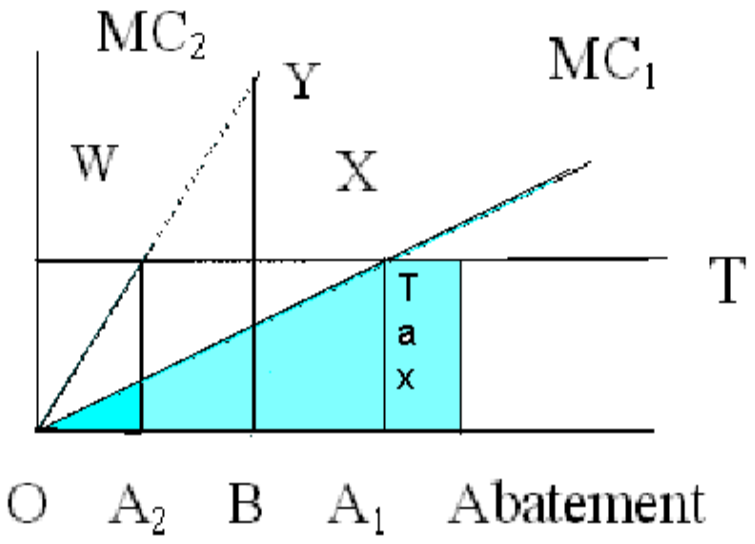


- Efficient abatement



Distributional effects of a tax at the company level





Distributional effects of a tax at the company level

- A tax (permit scheme) will compensate the firm that does the most abatement
- The effects of individual licensing (or VA) will either be good for the dirty firm (if allocation of abatement is ”optimal”) or else
- ..if equal abatement is required then it is wastefull of resources
- Different allocation schemes, subsidies etc will have different effects…

Some Conclusions

- Efficiency can be very important
- Particularly if costs of abatement are heterogeneous then big savings are possible through MBIs
- However actual implementation hinges on relative cost burdens, distribution of costs and fairness. More attention required here!

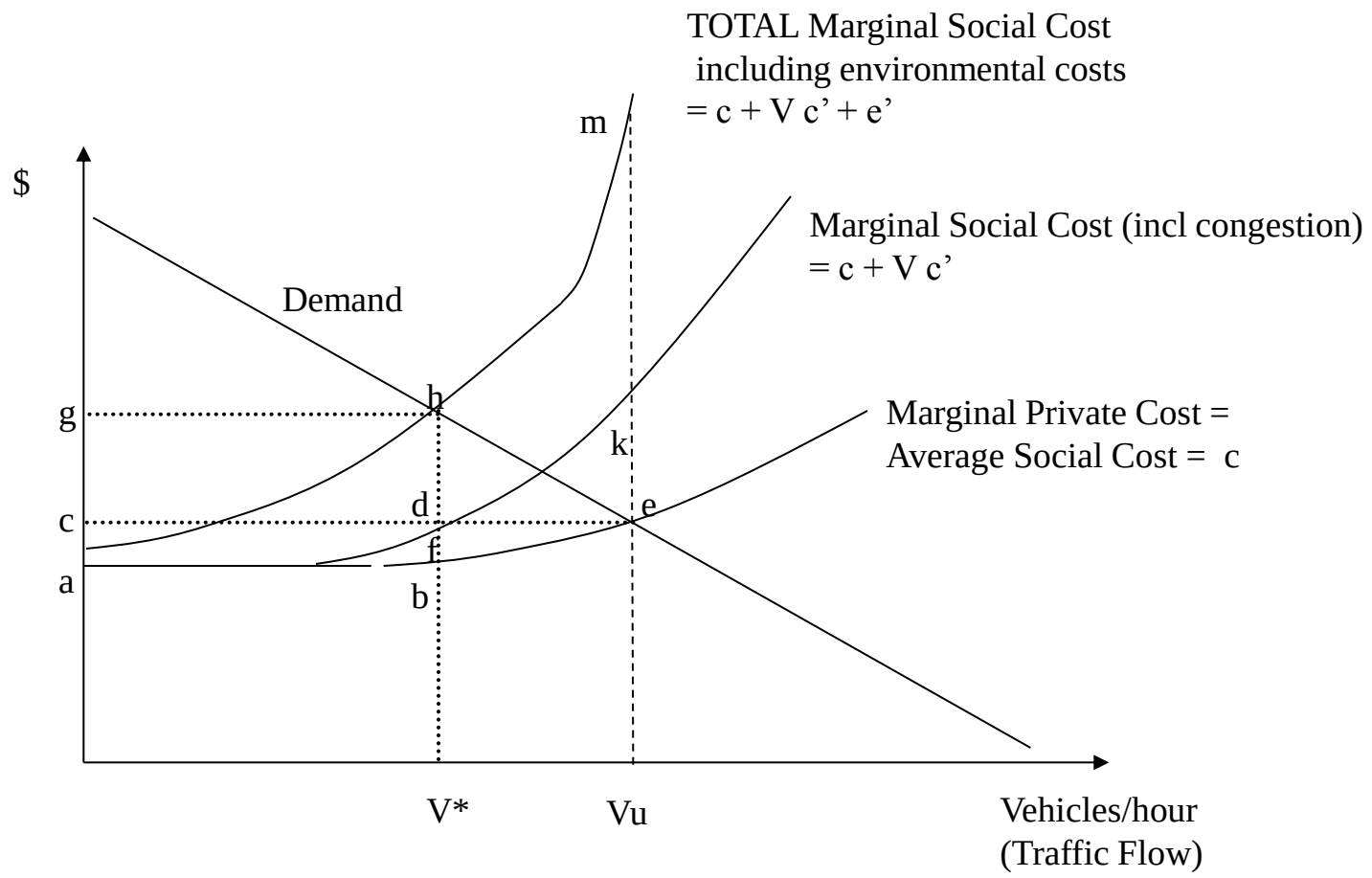
Abatement and pemit costs: 2 firms

Firm	*Equal reductions*			*Equalized MC after trading permits*		
	Abat	*MC*	*Cost*	*Abatemnt*	*Abatement cost + permit cost*	*Total cost*
1	$\hat{a}$	$\hat{a}$	$\hat{a}^2/2$	$2h\hat{a}/(1+h)$	$2h^2\hat{a}^2/(1+h)^2 - 2h\hat{a}^2 * (h-1)/(1+h)^2$	$2h\hat{a}^2/(1+h)^2$
2	$\hat{a}$	$h\hat{a}$	$h\hat{a}^2/2$	$2\hat{a}/(1+h)$	$2h\hat{a}^2/(1+h)^2 + 2h\hat{a}^2 * (h-1)/(1+h)^2$	$2h^2\hat{a}^2/(1+h)^2$

Distributional Effects of Raising Carbon Taxes in Sweden

Income group	*Loss*	
	SEK/cap/yr	*% of total consumption*
Poorest 20%	888	1.24
Richest 20%	1,026	0.78
Urban areas	1,261	0.88
Rural north	1,392	1.16

Remember: Congestion pricing



The DISTRIBUTION of costs and benefits

- Benefit to society of regulation is avoided welfare loss ***hem*** but note DISTRIBUTION
- ***BENEFITS****:*
- Victims of Pollution gain ***fkmh***
- State gains Tax revenue ***abhg***

- **COSTS**
- Motorists who continue driving gain time but pay tax ***abdc-abhg =***
- ***Loss of -cdhg***
- Motorists who stop driving lose CS ***–beh***

TAXING MONOPOLIES

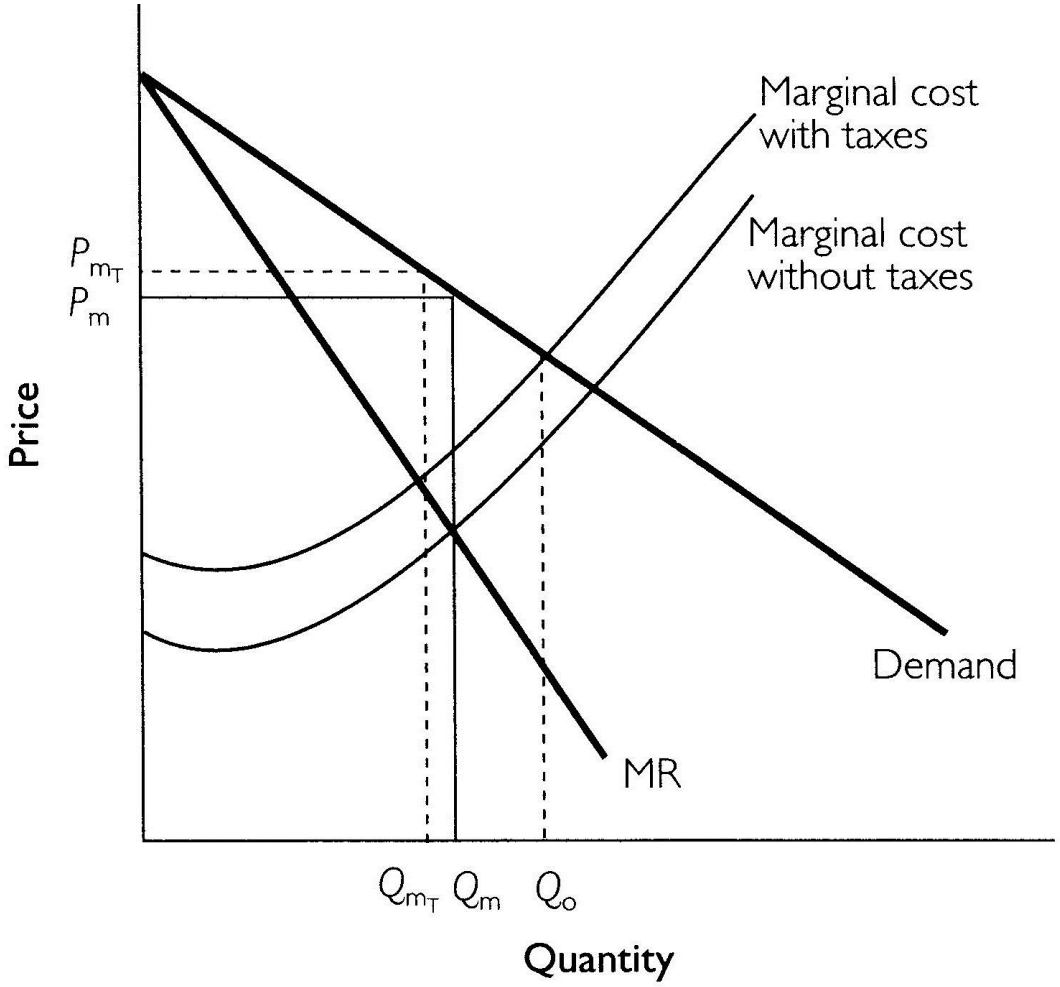


Figure 14-4. ***Environmental Taxes and Monopoly***

Notes: P_m = monopoly price; P_{m_T} = monopoly price if a Pigovian tax is (wrongly) applied;

Elasticities and tax erosion

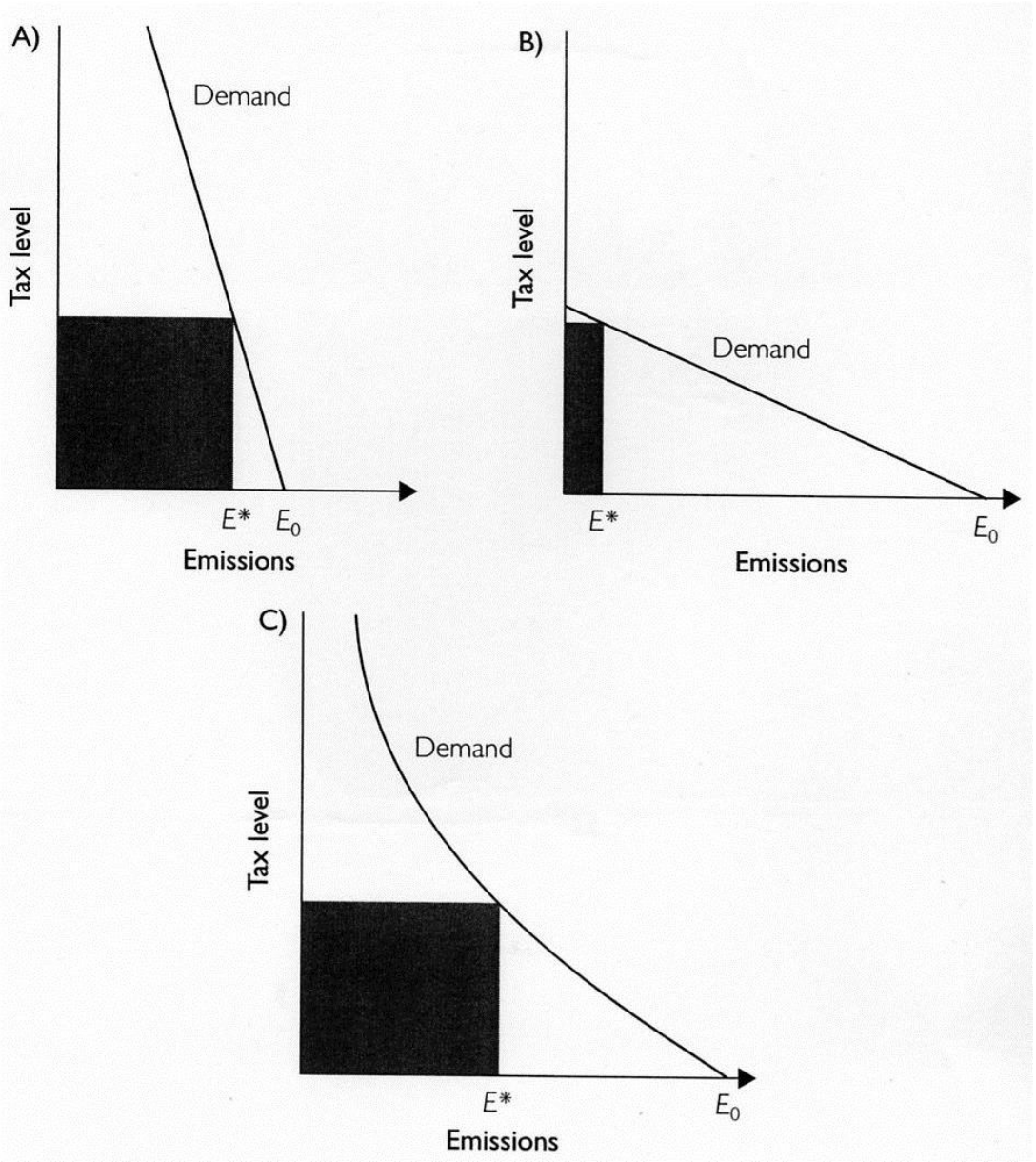


Fig 14.3

Long/short run effects of taxes

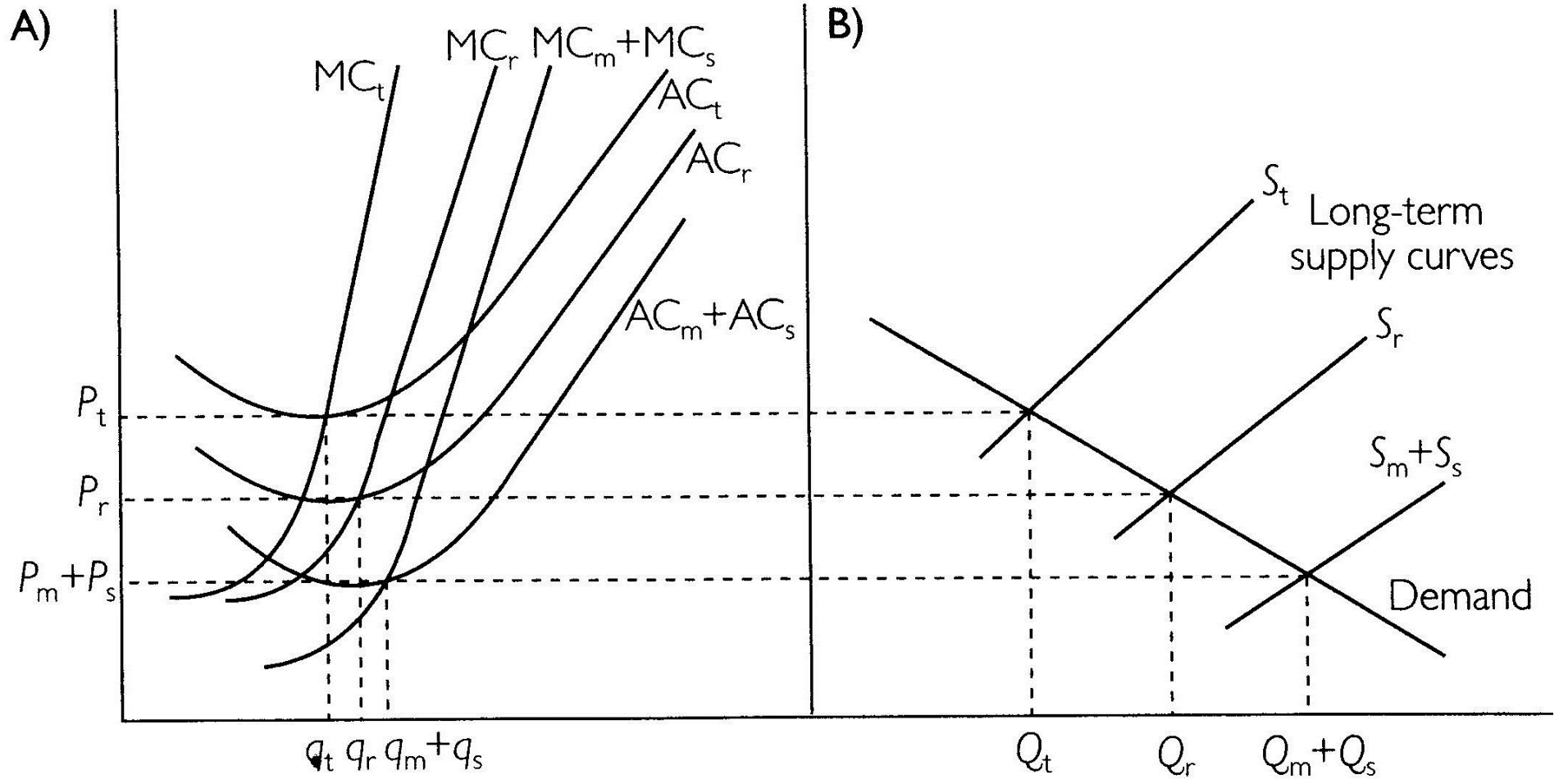
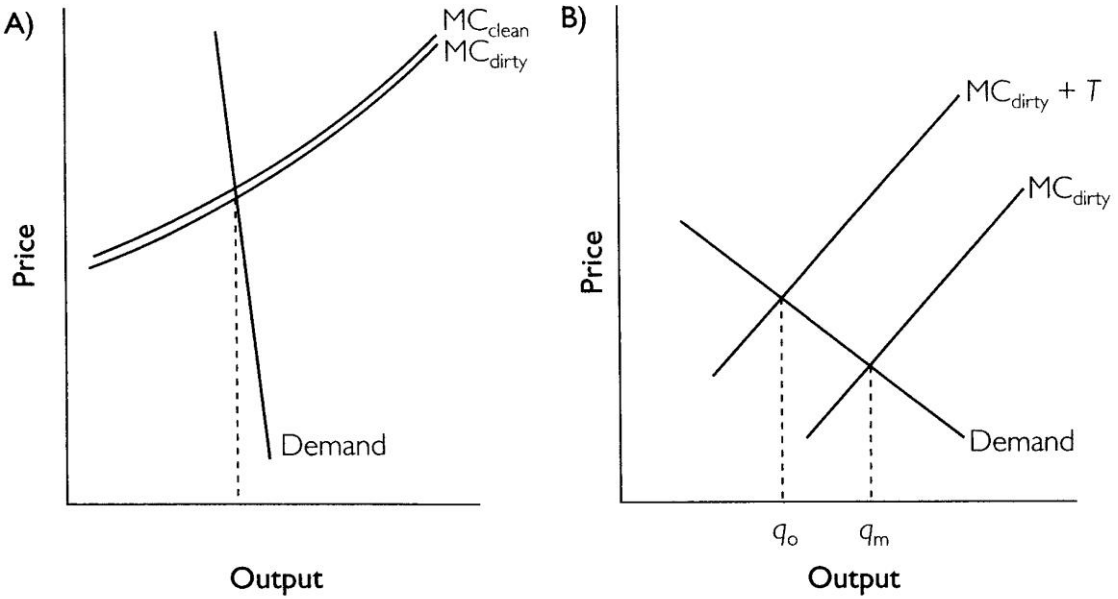


Figure 14-2. *Effects of Subsidies and Taxes*

Abatement vs Output reduction



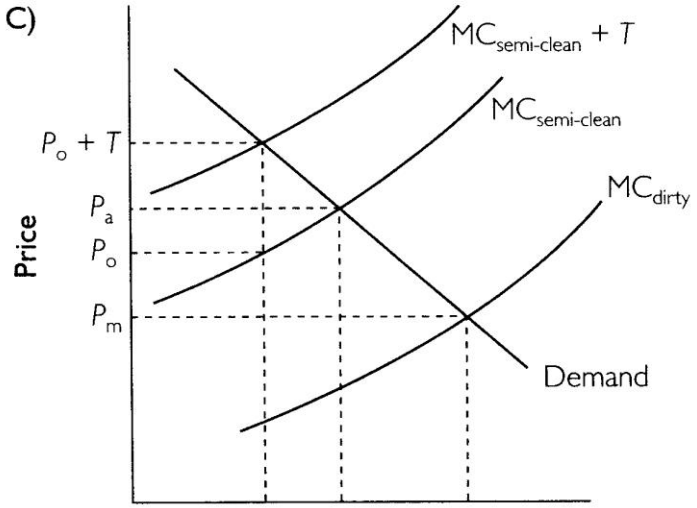
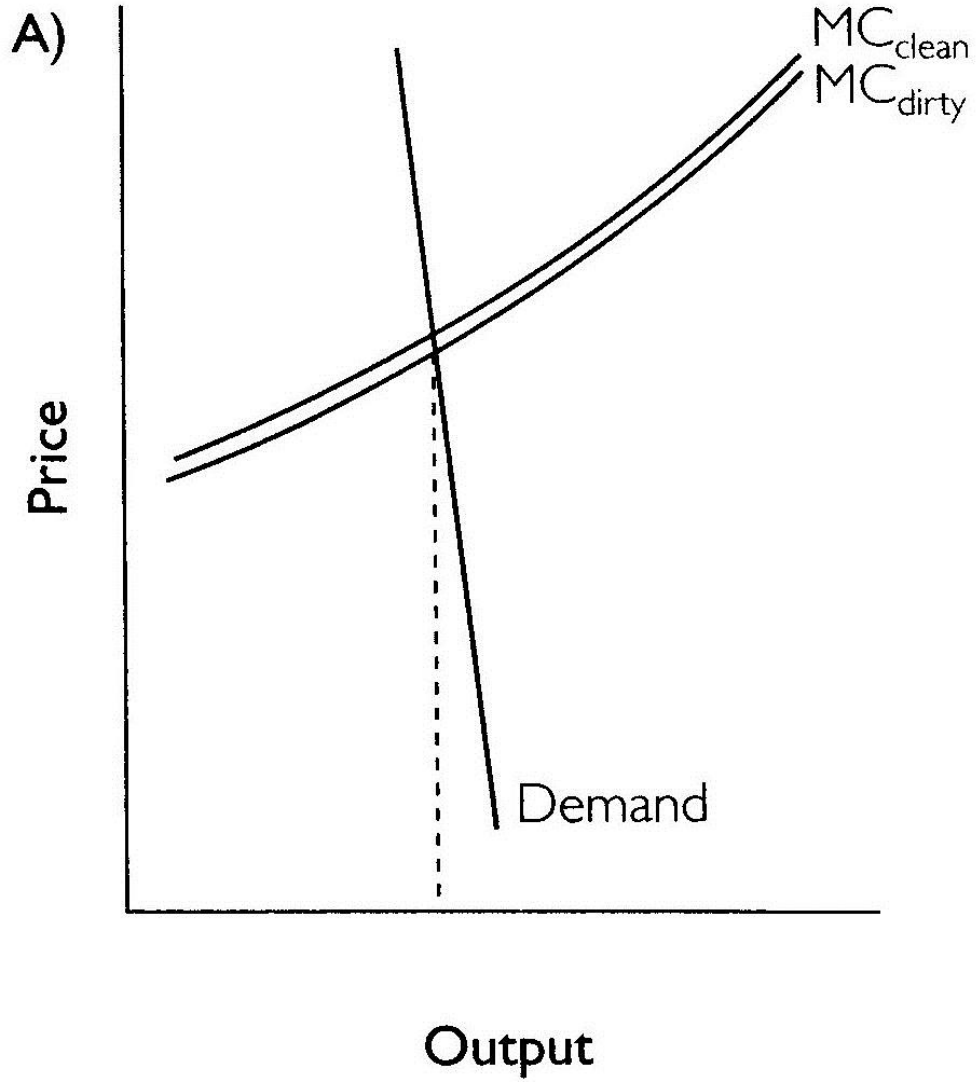
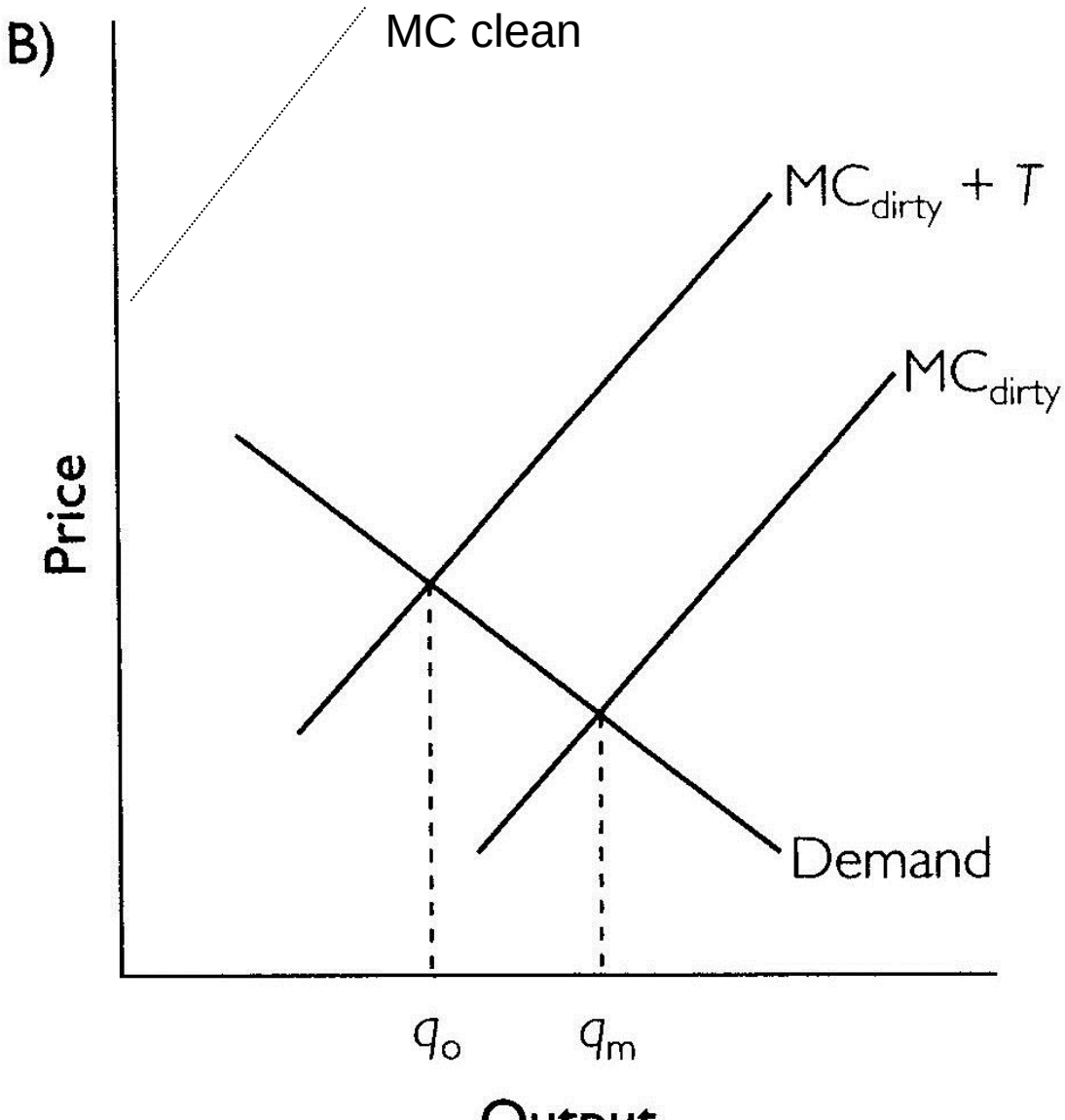


Fig 14.1

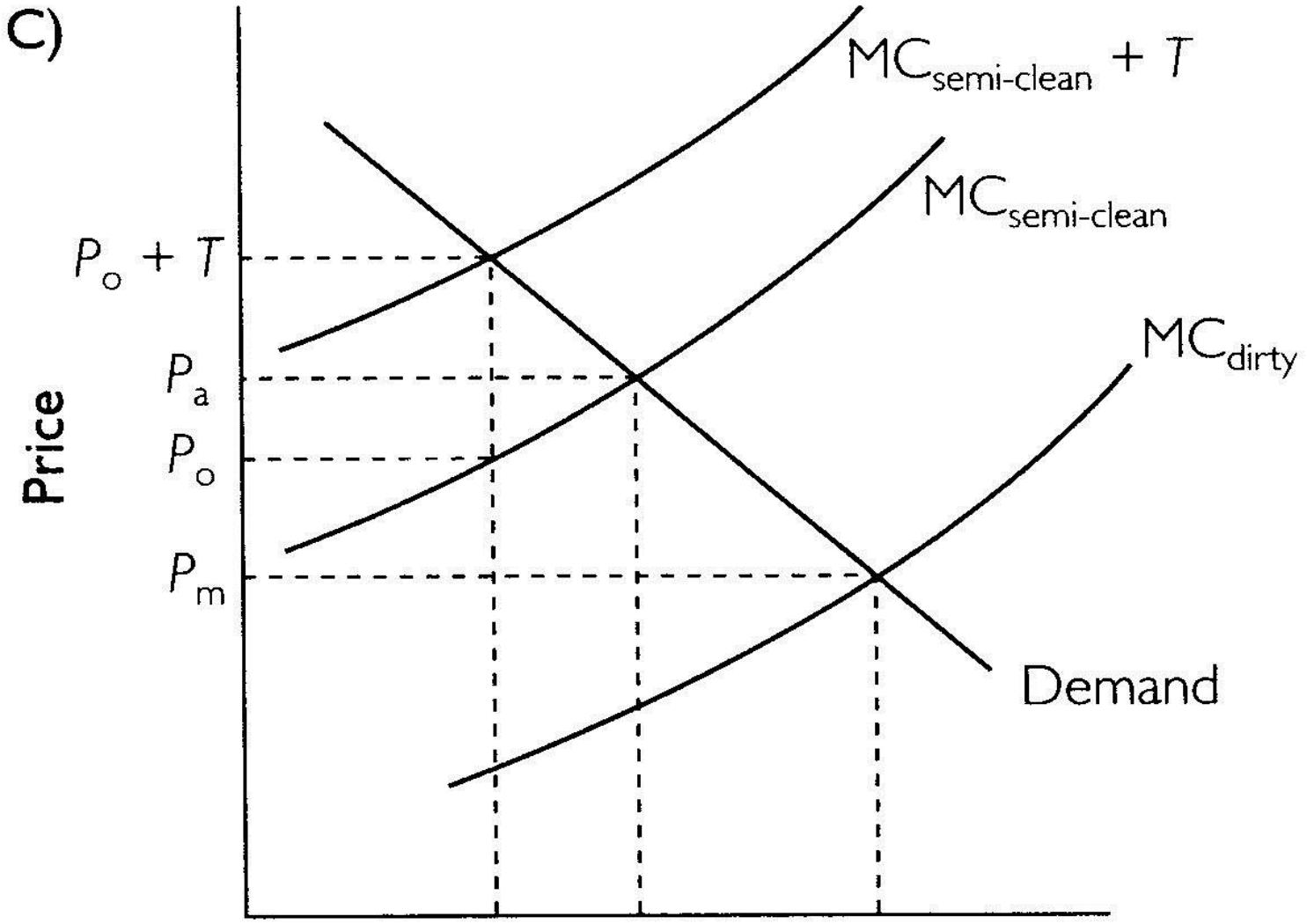
A Easy Fix – Necesity good



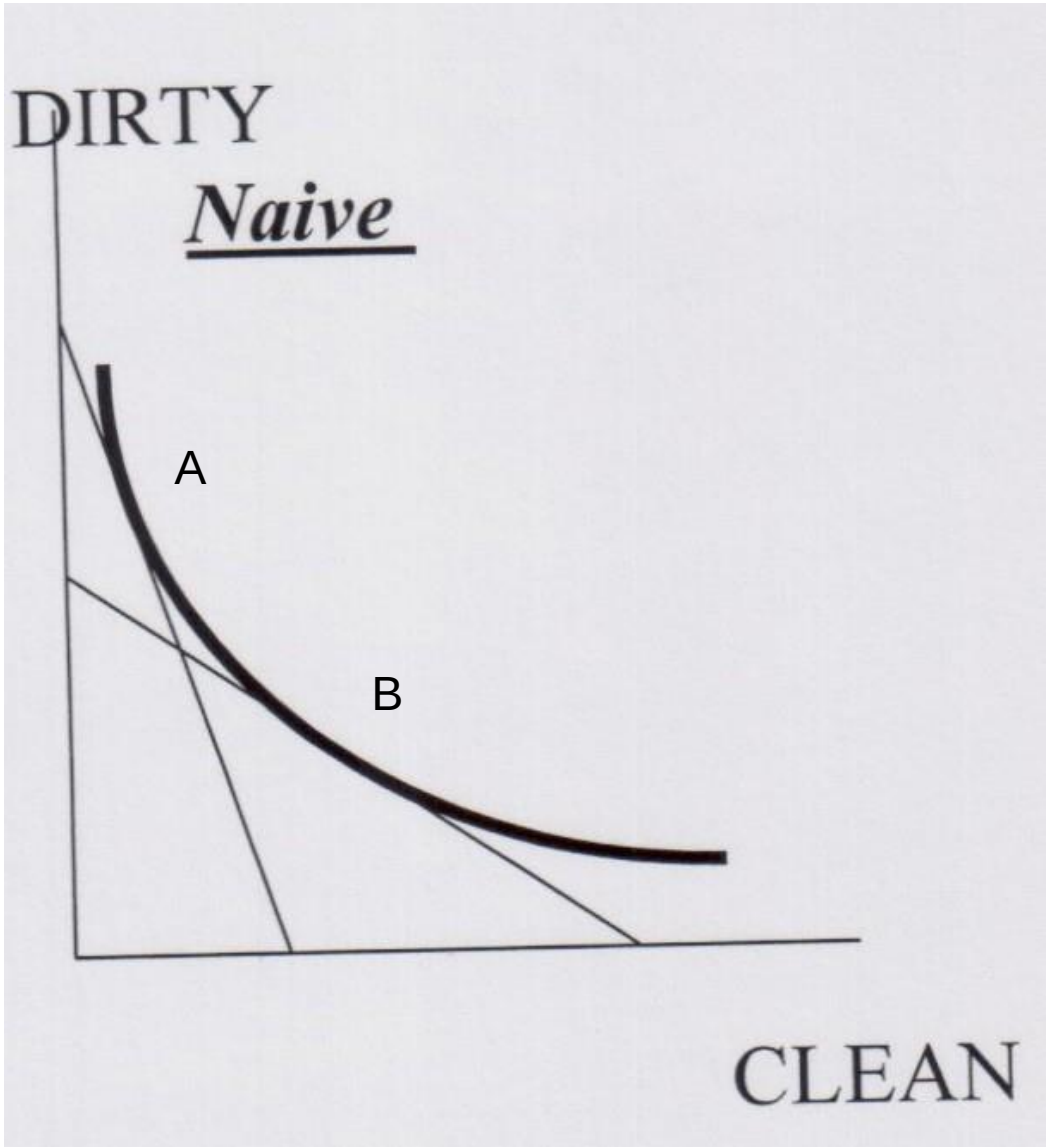
B Technically hard: reduce demand



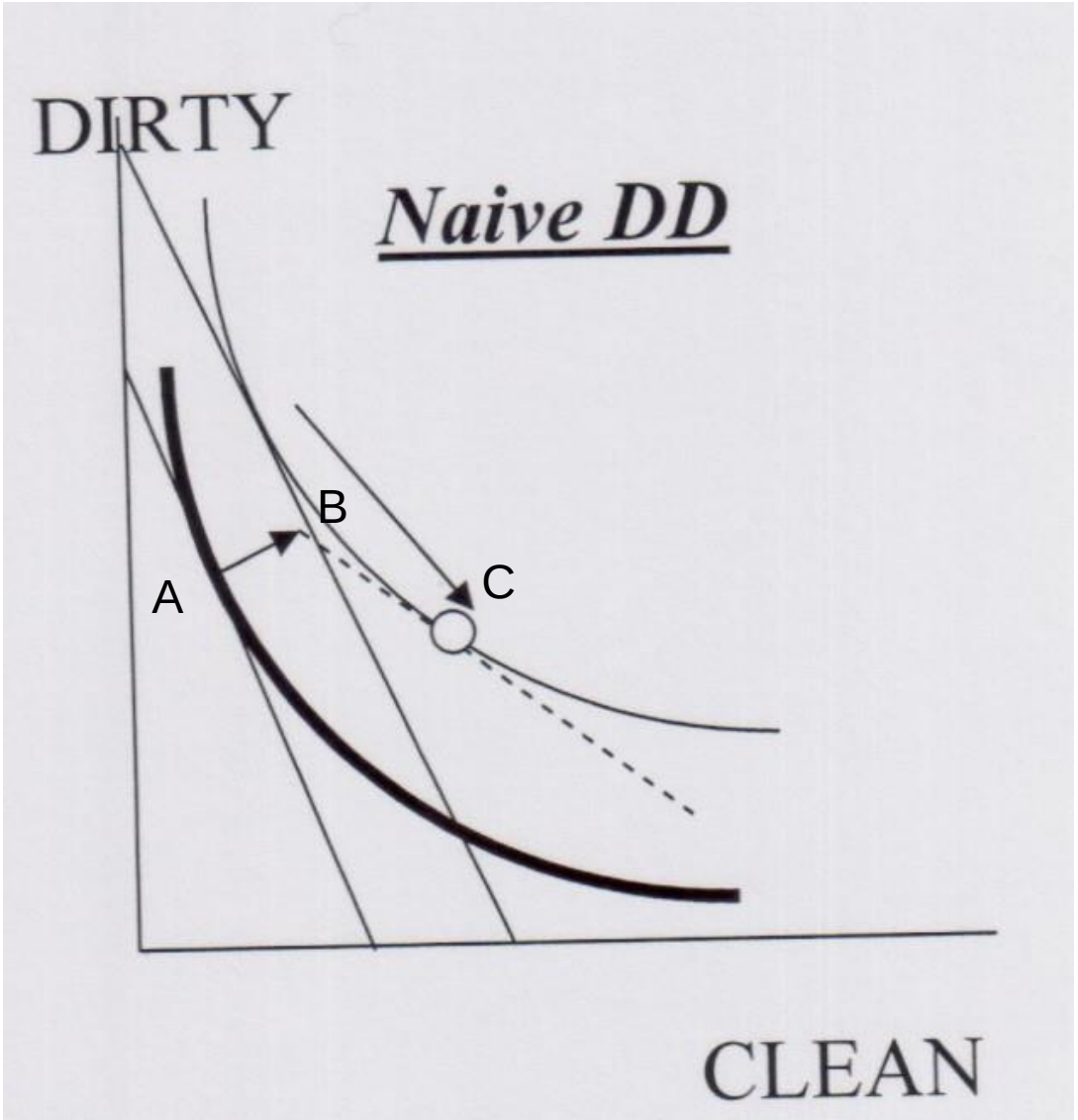
Clean-up & reduced Demand



Tax bads not goods A→B

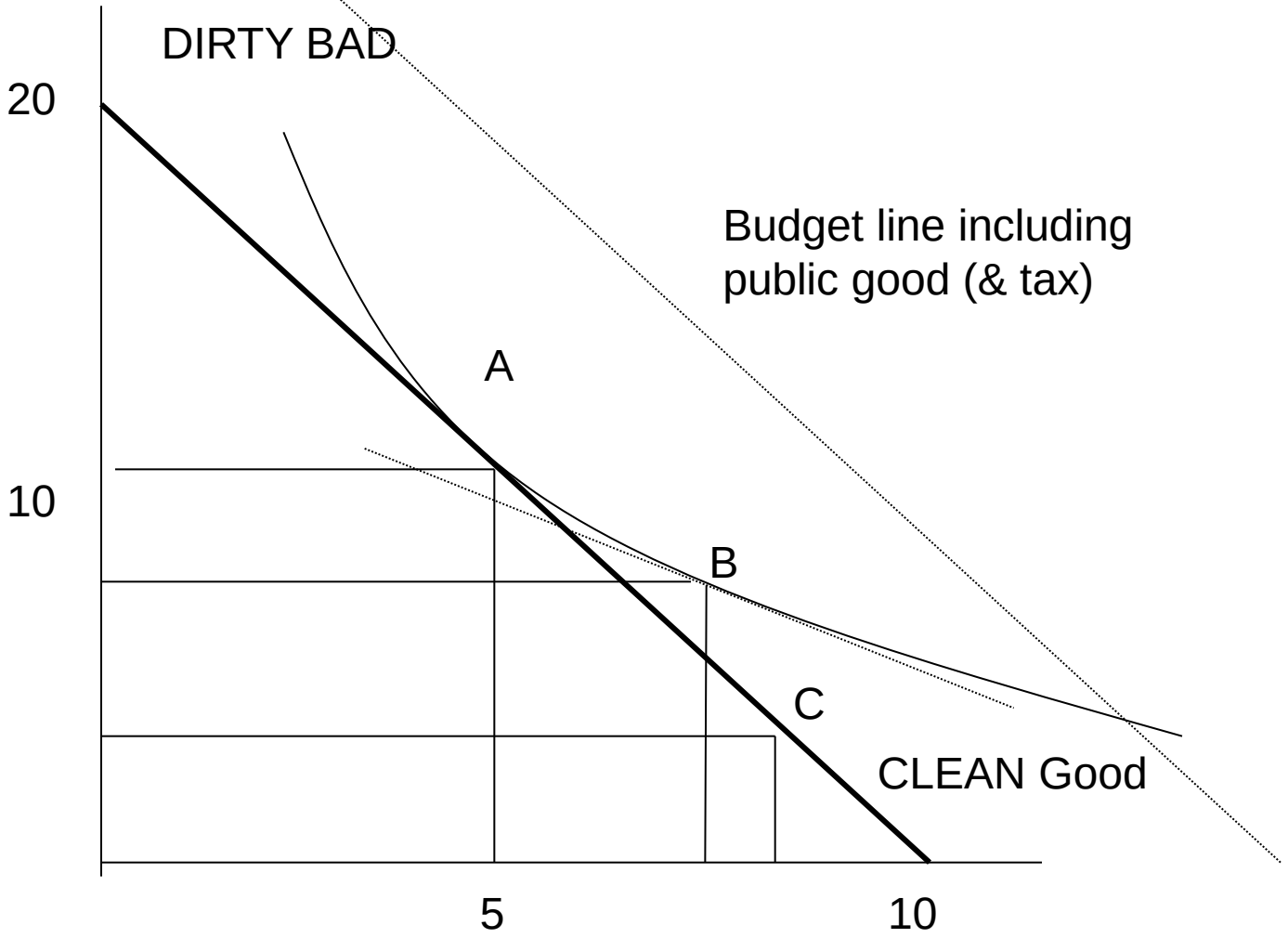


Reduce income taxes (A→B) & tax bads (B→C) = Dbl Dividend?

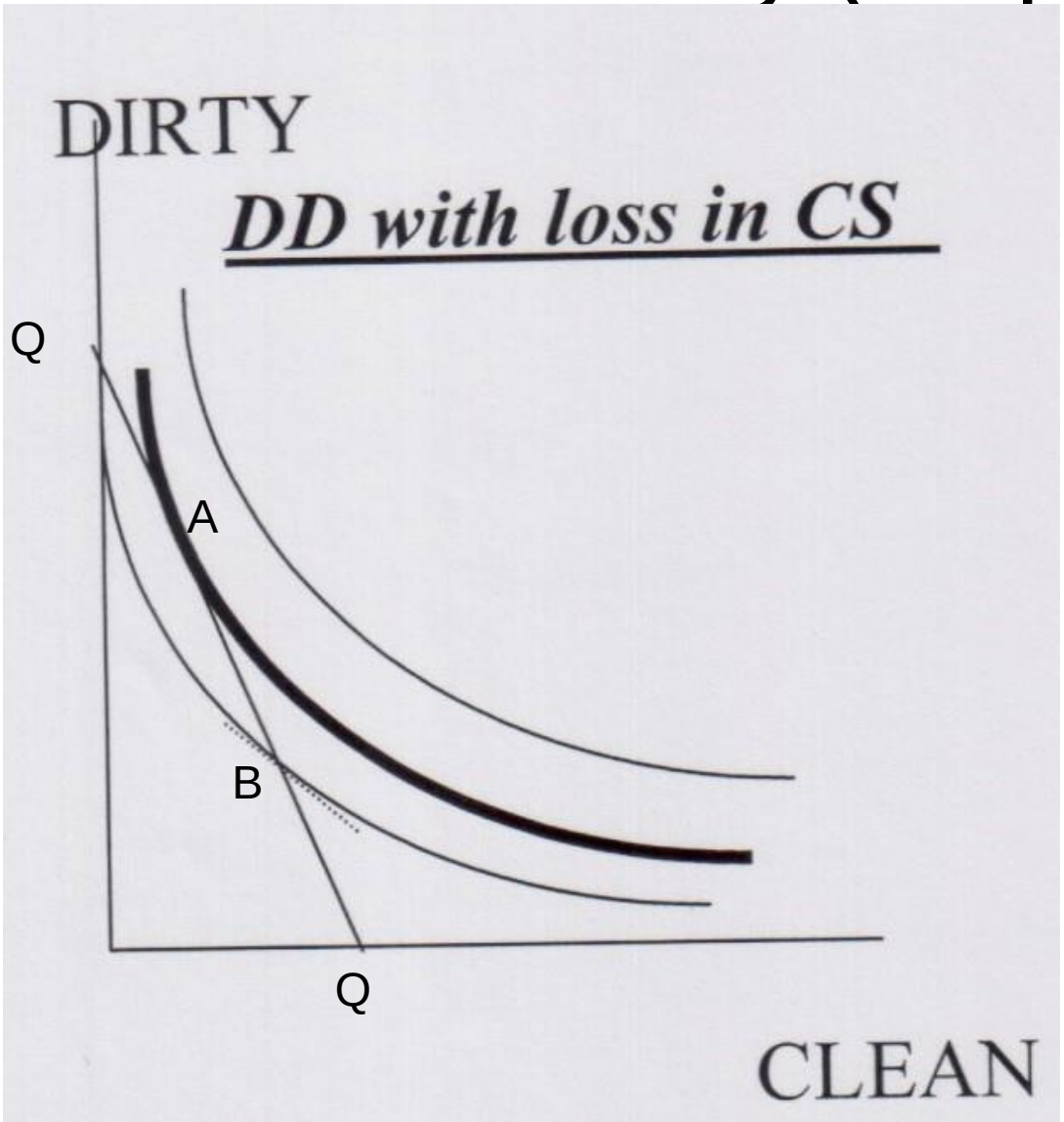


Income – tax = Net inc.	Dirty good P = 10	Clean good P = 20	Public good
300 – 100 = 200	Buy 10 cost 100	Buy 5 cost 100	100 paid by tax
Green tax reform. Remove income tax. Tax 10 on dirty good (10*10=100 but tax erosion…)			
300	8 à 20 = 160	7 à 20 Spend 140	Tax rev only 80
Erosion of the tax base effect →raise tax more			
300	4 à 35 = 140	8 à 20 = 160	Tax 4*25 = 100
*NB **Poss** w old prices*	*4*10=40*	*8*20=160*	*Total 200 +100 tax*

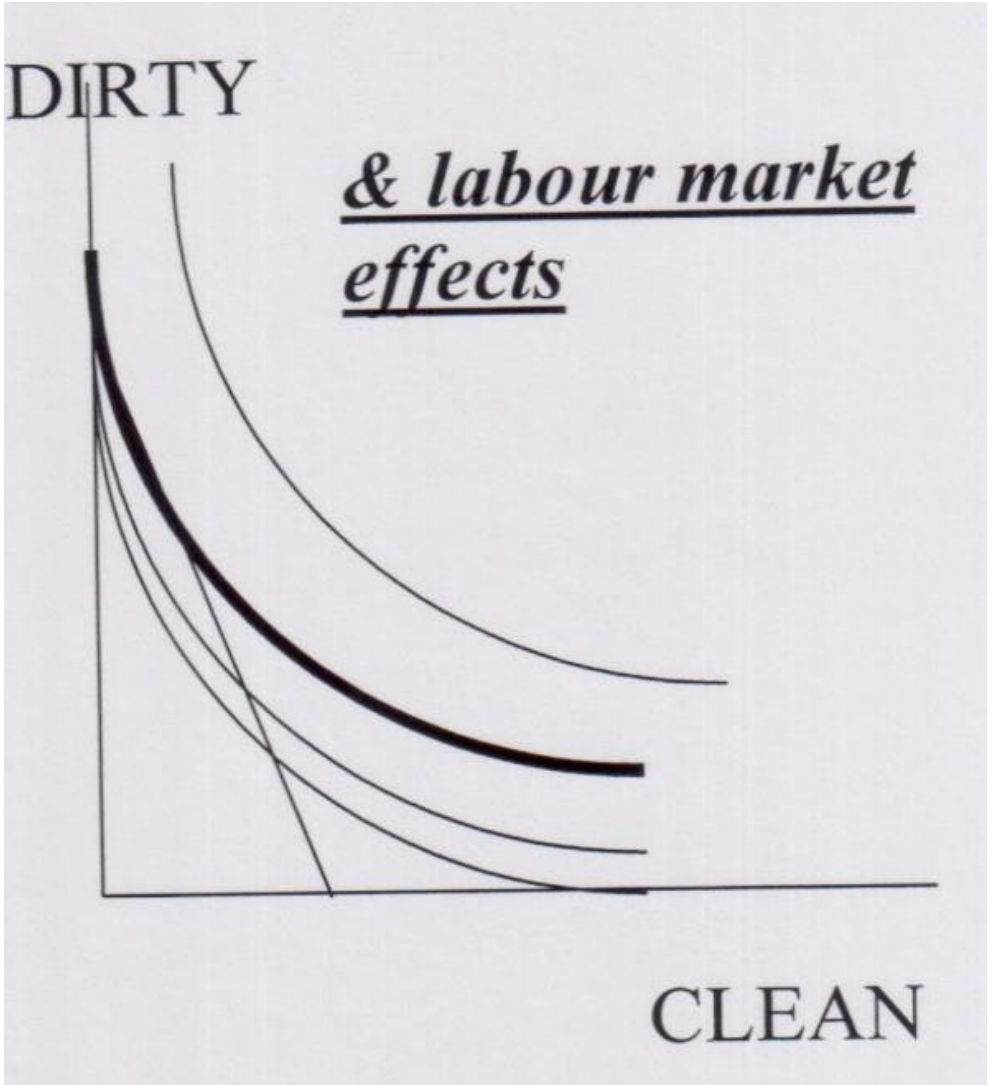
You cant go from A→B because of tax erosion Pub G not financed. Got to C but A is prefered



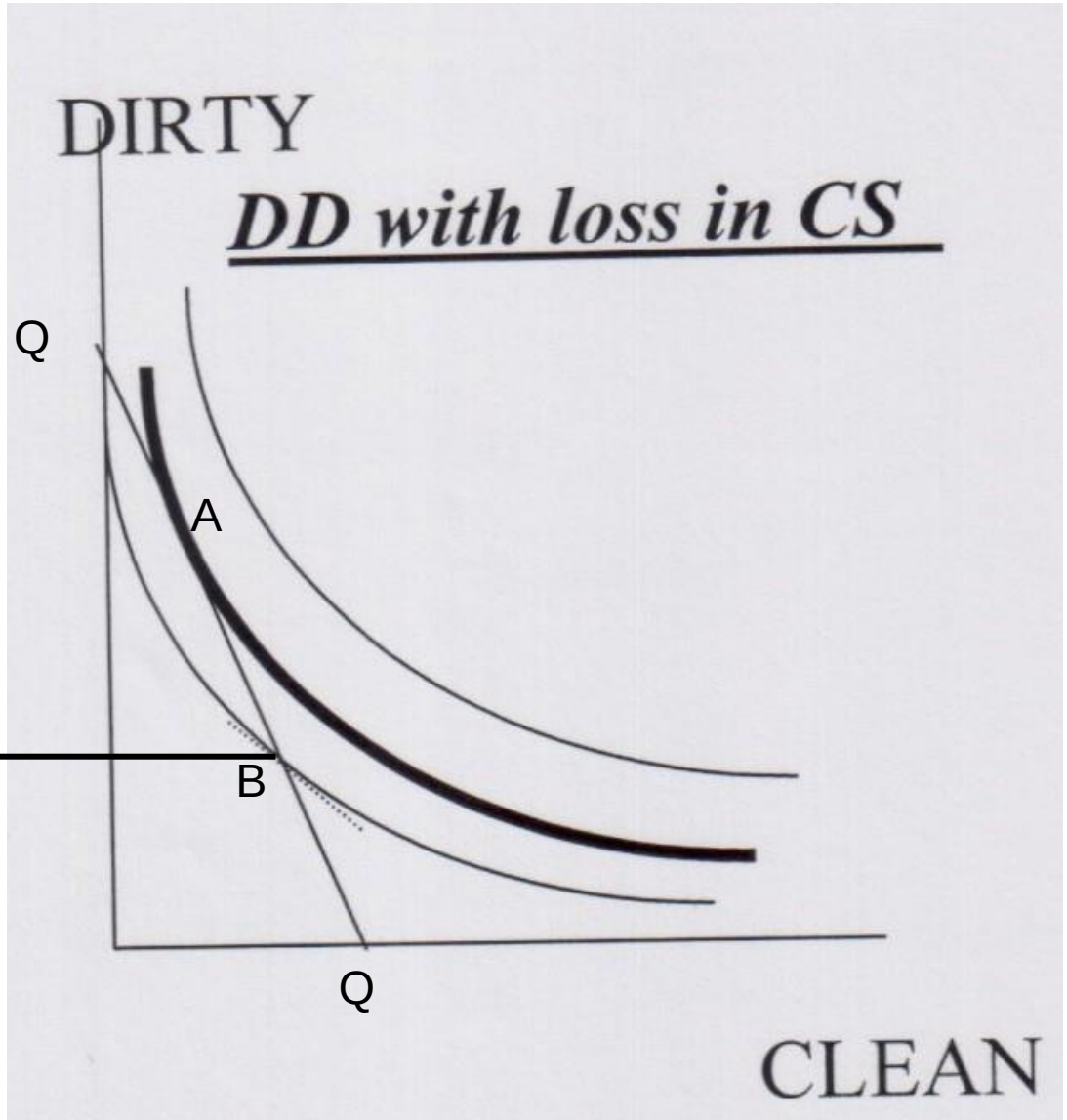
But you **have** to be on QQ
so A→B with lower utility (for privC)

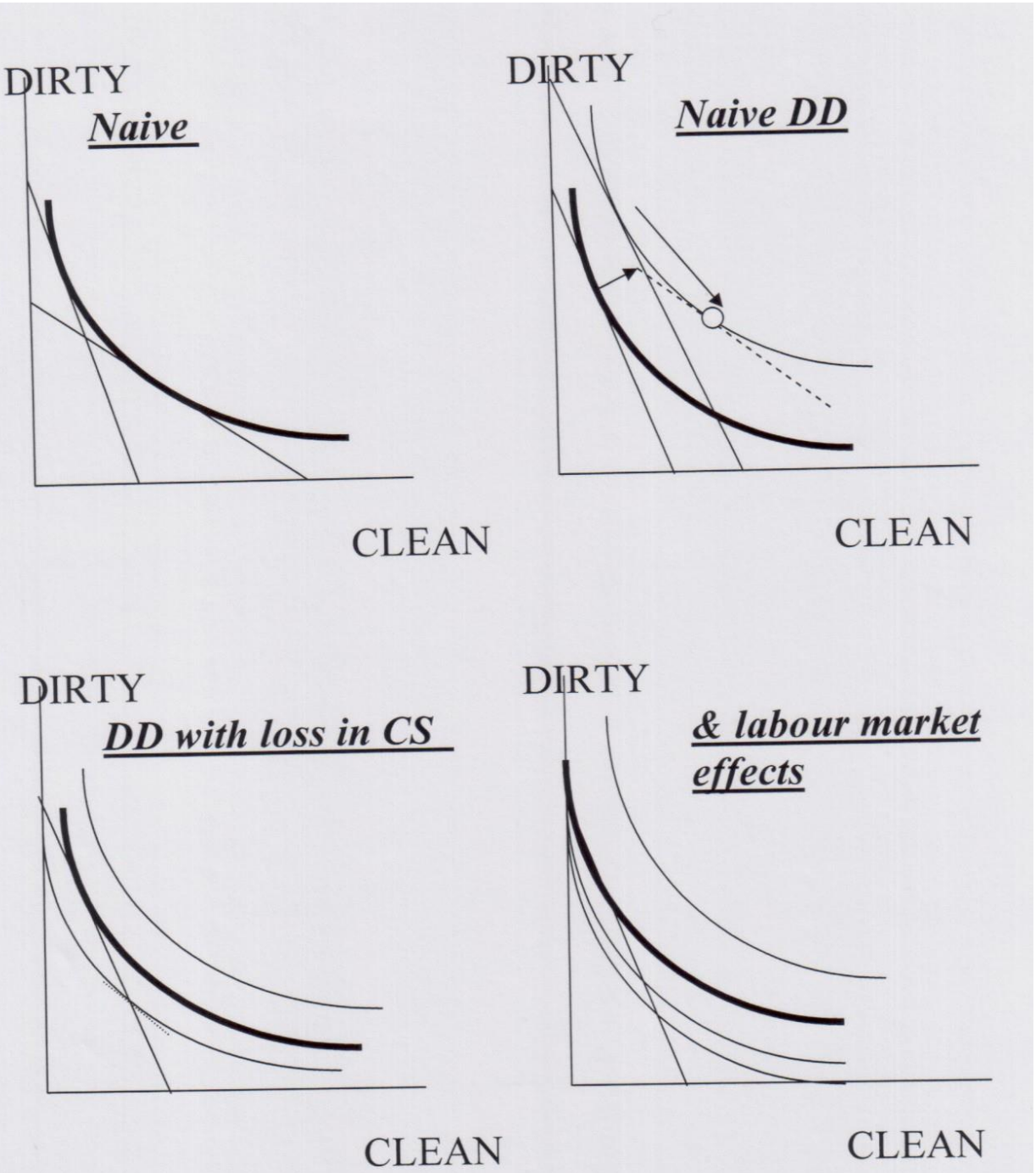


To make things worse…Taxes on bads are taxes on W and lower real wages →? Effect on labour Supply



On the other hand a regulation would do no better…




DIRTY
Naive
CLEAN
DIRTY
Naive DD
CLEAN
DIRTY
DD with loss in CS
CLEAN
DIRTY
& labour market effects
CLEAN

Policy Instr Exercise

Choice of instrument for cleanup
in the paper industry

CASE STUDY for Spring 2012

- The ministry has decided to cut emissions from paper industry. Biological waste is destroying rivers. Total emissions 300 ton/year, goal is to cut emissions 50% by tax of $40 per ton or other instrument. Taxes can lead to resistance. You are board members of 6 companies. Your task is to negotiate. You realise this is a serious problem: some cleanup is needed but you consider the pros and cons of the various instruments the regulator could select.

Consider these instruments

- Equal abatement of 25 tons each, Benchmarking (equal emission coeff); Equal % reductions
- Tax of 40 for each ton of emission
- Auctioned permits
- Subsidy of 40 for each ton of abatement
- REP (refundable emission payments of 40/ton refunded in proportion to current output)
- Permit trading ”grandfathered”.w r t historic output or emissions
- Voluntary Agreements.

Firm	Year	Emision	Outp	MC abate
ABB paper Delhi	2000	55	323	
	2012	47	520	MC=15+a
BABCOX paper & pulp Delhi	2000	123	421	
	2012	50	312	MC=10+a
Christchurch Paper Ltd,Delhi	2000	29	365	
	2012	30	156	MC=10+3a
DRESDNER paper,Delhi	2000	33	82	
	2012	37	96	MC=2a-10
ENRON Paper, Calcutta	2000	55	323	
	2012	60	356	MC=0.8a
Faraday Co Ltd, Calcutta	2000	80	821	
	2012	76	760	MC=4a

Methods for working with this assignment

- Use Excel
- Read the literature on different policy instruments
- Work out consequences for your own firm **and** *for all other firms* of each instrument.
- Prepare a briefing – written and oral of your results that you can present.
- Remember you have to **convince** me and others…

Allocation of permits

- Permits can be allocated in proportion to:
- Historical pollution: Grandfathering
- (Historical/)current production: Output allocation or benchmarking.
- Equally
- By WTP ie through an auction
- NB Duration, bankability, updating…

Properties of GF Permits

- $L = pq_i – c_i(q_i, a_i) + P_e(\hat{e}_{i0} - e_i(q_i, a_i))$
- Kuhn-Tucker conditions are:
- $c'_a = - P_e e'_a$ MC Abatement is optimal
- $P = c'_q + P_e e'_q$ Output price is optimal
- If number of permits is related to output then second condition does not hold

Grandpa fair but has no effect…

- $Pq_i - c_i(q_i, a_i) - \mathrm{p}\{e_i(q_i, a_i) - \hat{\mathrm{e}}\}$
- Where ê is based on some historic date from the past – like 80% of pollution in 1995.
- Something you might fight over but nothing you can change today…
- SO $P = c'_q + p\, e'_q$
- $c'_a = - p\, e'_a$

But what happens in the long run?

- Permit programs do not last for ever.
- Suppose we are talking of the European trading system to deal with Kyoto.2008-12
- What happens 2012? A new scheme ?
- Suppose Grandfathering is used again – this time with 2008's values as "year 0".
- This is ***updating. S***uppose the agents in the economy start to reckon with this….

”Minskad kvot hotar jobben”

EU-kommissionen ger Sverige bakläxa och stryker drastiskt i de svenska kraven på handel med utsläppsrätter. Miljörörelsen jublar, men regeringen är försiktig och socialdemokraterna varnar för att jobb är i fara.

EU-kommissionen visade på onsdagen att den nu ställer betydligt hårdare krav på att utsläppen av växthusgaser ska minskas, genom minskade utsläppsrätter.

Alla EU-länder har fått begära ett antal utsläppsrätter att fördela till industri och elproducenter under perioden 2008-2012. EU-kommissionens beslut var tuffare än de flesta hade trott.

Av de tio länderna i denna första omgång fick bara Storbritannien de utsläppsrätter man hade begärt. Av övriga nio kräver kommissionen en neddragning med i genomsnitt 7 procent. Men kravet på Sverige är tuffare: Hela 9,5 procent av de utsläppsrätter regeringen begärt försvinner. Utsläppsrätterna 2008-12 får bara uppgå till 22,8 miljoner ton koldioxid per år. Det är 2,4 miljoner ton mindre än regeringen begärt.

- Vi vet inte hur det drabbar oss enskilt utan vi får avvakta beslut om vilken tilldelning vi får, säger Karin Törnblom, energihandelschef på Fortum Värme.

På kraftvärmeverket Värtan strax utanför Stockholms innerstad överväger man att investera i en ny bioeldad panna. Det kan innebära en minskning av de totala koldioxidutsläppen i EU med en miljon ton, genom att importen av relativt miljövänlig kolkraft från Tyskland kan minska. Den nya pannan innebär en investering på tre miljarder kronor.

- Det är viktigt att veta spelreglerna eftersom investeringarna är långsiktiga. Det här är en signal från EU om att man vill minska utsläppen, säger Karin Törnblom.

Den tyska ekonomiministern reagerade med ilska över EU-kommissionens besked och sade att beslutet kommer att leda till ökade energipriser i Europa. Men Sveriges miljöminister Andreas Carlgren valde att hålla en låg profil. Han nöjde sig med ett försiktigt formulerat skriftligt uttalande.

”Jag delar kommissionens syn att tilldelningen totalt sett inom EU bör vara restriktiv”, säger Carlgren i uttalandet.

”Kommissionens beslut, och framförallt argumenten, måste nu analyseras innan regeringen går vidare och vidtar åtgärder”, skriver Carlgren.

Det kan tolkas så att regeringen vill undersöka om det finns anledning att försöka ta strid mot EU-kommissionen.

Enligt Fredrik von Malmborg, departementssekreterare på miljödepartementet, var EU-kommissionens besked överraskande. Han menar att Sverige följt alla kriterier som funnits.

- För ett år sedan uttryckte kommissionen att Sverige är ett av de länder som både kan behålla sin tilldelning och få ett tillägg för anläggningar som tidigare inte var med i systemet.

Men i våras kom svensk industri med sin första rapport om utsläppen av koldioxid. Den visade att man släppt ut mindre än man hade rätt till.

- Det har nu EU-kommissionen tagit som skäl för att det delades ut alldeles för mycket utsläppsrätter förra gången, säger Fredrik von Malmborg.

ANDERS YGEMAN, socialdemokraternas miljötalesman, varnar för att minskade utsläppsrätter hotar jobben.

- Det är bra att man minskar antalet utsläppsrätter, men jag är tveksam till om minskningarna för Sverige är rimliga.

- Vi har den kanske mest energieffektiva basindustrin i världen. Om man inte tar någon hänsyn till att svensk industri minskat sina koldioxidutsläpp kan det på sikt hota jobben. Vi riskerar att svensk industri slås ut och att samma varor produceras på ett mindre miljövänligt sätt i ett annat land, säger Anders Ygeman.

Miljörörelsen välkomnar dock beskedet.

- Jag hade inte vågat hoppas på detta Svante Axelsson, generalsekreterare i Svenska naturskyddsföreningen.

- Jag är mycket glad, för äntligen kan jag börja tro på att EU tänker använda detta styrmedel för att nå sitt eget klimatmål.

Enligt miljöpartiets Peter Eriksson ville socialdemokraterna och vänsterpartiet kräva ännu fler utsläppsrätter, men miljöpartiet höll tillbaka och lyckades nå en kompromiss.

- Det är sällan jag känner behov av att gå ut och hurra för EU-kommissionen, men den här gången har de varit tuffare än den tidigare svenska regeringen, säger Peter Eriksson.

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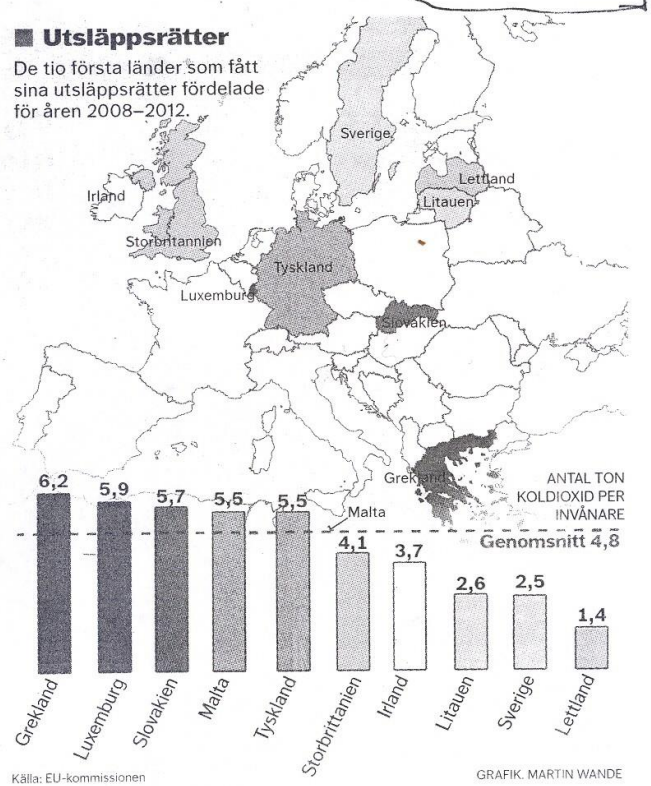


Grandfathering does not fit in EU

- Nothing for new entrants
- But continue giving permits to those who close their plant ????

- Use-it-or-lose-it
- New entrant reseres
- No auctions

Criterias to allocate permits

Scheme		Number of free permits $\bar{e}_t$		
Auction (AU)		0	0	0
		Allocation criterion		
	Time	Output (q)	Input (h)	Emissions (e)
Grand-fathering (GF)	t_0	ϵq_0	ηh_0	αe_0
Updating (UP)	$t-1$	ϵq_{t-1}	ηh_{t-1}	αe_{t-1}
Current Allocation (CA)	t	ϵq_t	ηh_t	n.a.

Permit Allocation
Grand-dad is complicated

	Output (q)	Input (h)	Emissions (e)
Grand-fathering (GF)	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t}$	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t}$	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t}$
Updating (UP)	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t} - \frac{\epsilon}{1+r} p^e_{t+1}$	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t} - \frac{\eta}{1+r} p^e_{t+1} h'_{t,q_t}$	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t} - \frac{\alpha}{1+r} p^e_{t+1} \hat{e}'_{t,q_t}$
Current Allocation (CA)	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t} - \epsilon p^e_t$	$p_t = \hat{c}'_{t,q_t} + p^e_t \hat{e}'_{t,q_t} - \eta p^e_t h'_{t,q_t}$	n.a.

Table 2: Output effects of the various allocation schemes.

Abatement effects

	Output (q)	Input (h)	Emissions (e)
Grand-fathering (GF)	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$	$\tilde{c}'_{t,a_t} = -p^e_t e'_{t,a_t}$	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$
Updating (UP)	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t} + \frac{\alpha}{1+r} p^e_{t+1} \tilde{e}'_{t,a_t}$
Current Allocation (CA)	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$	$\tilde{c}'_{t,a_t} = -p^e_t \tilde{e}'_{t,a_t}$	n.a.

Table 4: Abatement effects of the various allocation schemes.

GF → Updating

- GF an american idea and fits with Prior Appropriation concept of Rights
- It means closing plants loose rights
- New plants get nothing.
- Does not fit European concept of rights
- Elements of updating or even Current Allocation creep in.

GRANDFATHERING

Maria Damon, NYU
Daniel H. Cole, Indiana University
Elinor Ostrom, Indiana University
Thomas Sterner, Gothenburg

Grandfathering

Allocates entitlements and burdens according to a “rule of first possession” (Nash 2008)

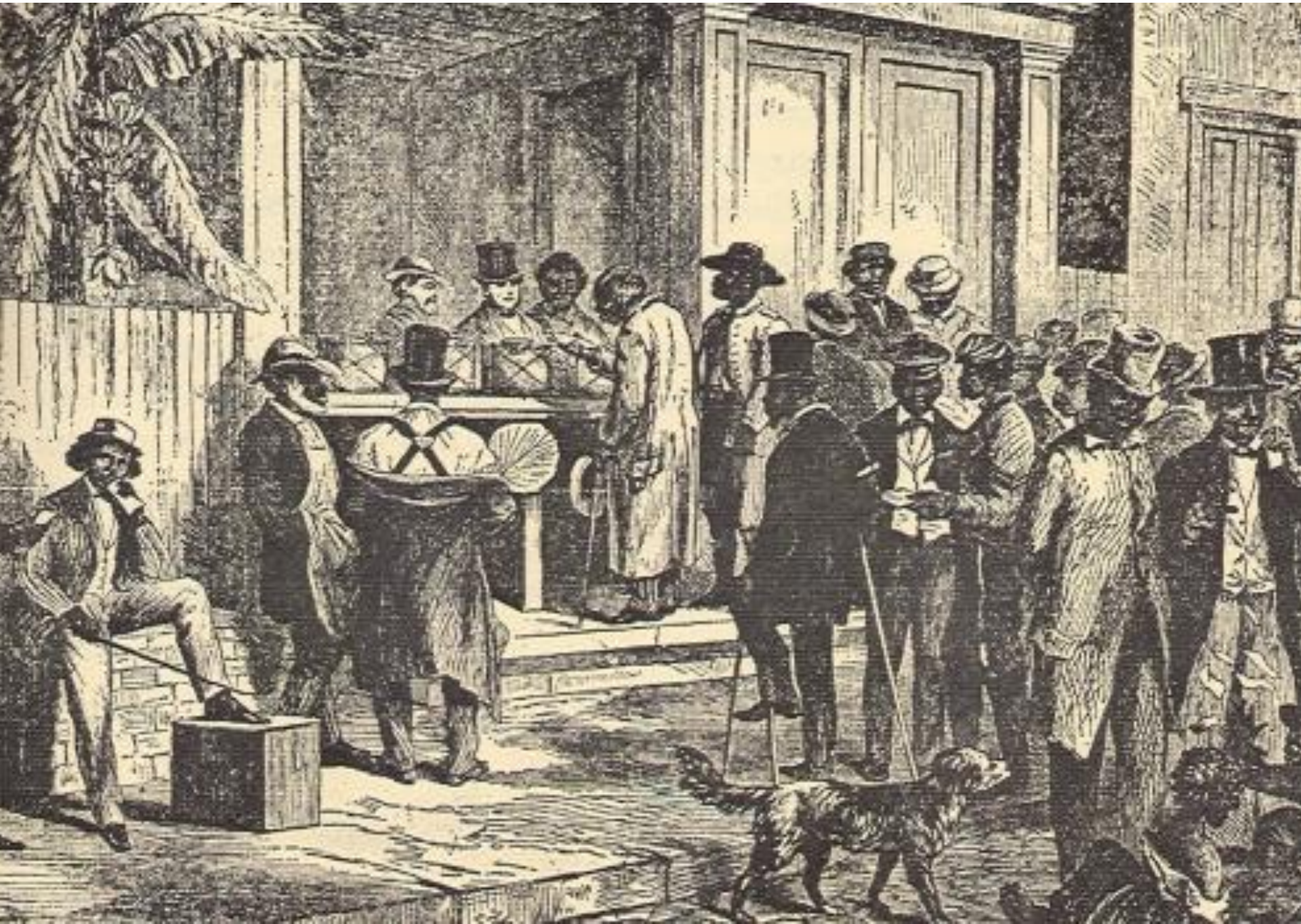
Grandfathering

- New Source Performance Standards
  Permit trading
  Kyoto Protocol
  Allocation of EU or US ag support
  Affordable Care Act
  US land law
  ITQs

Origins: 1 man 1 Vote

Negate the 15th Amendment
Stop African Americans by literacy tests…

but exempt descendants of persons who were voters in 1867.



NORTH CAROLINA,

Alamance County,

Patterson Precinct.

I do solemnly swear (or affirm) that I am a citizen of the United States and of the State of North Carolina: I am 20 years of age: I was on the first day of January, A. D. 1867, or prior to that date, entitled to vote under the Constitution and laws of the State of N. C., in which I then resided (or, I am a lineal descendant of ..... who was on January 1, 1867, or prior to that date, entitled to vote under the Constitution and laws of the State of ..... wherein he then resided).

his
John X Weaver
mark

Sworn and subscribed before me, this 23 day of Oct 1902.

A. L. McPherson
Registrar.

- No person shall be registered as an elector of this state or be allowed to vote in any election held herein, unless he be able to read and write any section of the Constitution of the state of Oklahoma; but no person who was, on January 1, 1866, or any time prior thereto, entitled to vote under any form of government . . . shall be denied the right to register and vote because of his inability to so read and write sections of such Constitution.

GF in ordinary regulation

New Source Performance standards

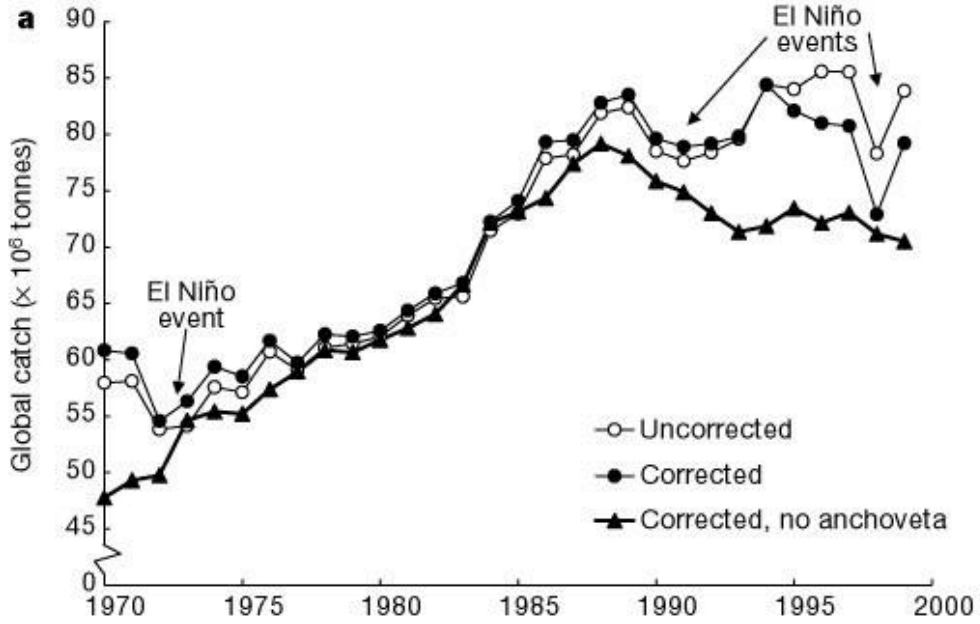
For fairness or because of lobbyism: exempt old plants

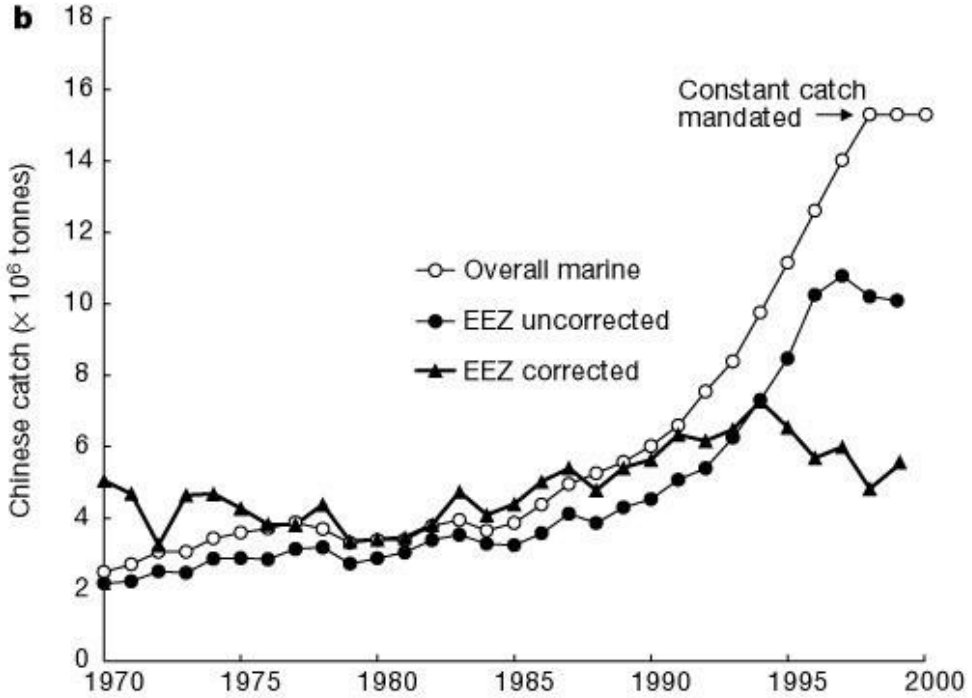
Become licence to pollute for old plants –extending their life

GF in Tradeable Permit programs

Free allocation requires some rule. Otherwise auction or sale. Equal, random, in proportion to output or in proportion to past use. Chosen for SO2 trading (1980)

Case	Implications of GF	Comment
Unexpected Regulation	Might be defended, at least for limited time	If science changes suddenly then complying should be compensated
B Predictable changes	Negative; destroys incentives for R&D	Anticipation of legal change should be incorporated into firm decisions; Encourage new technology
C Repeated Changes	Negative; undermines proactive. May promote rapacious behavior	If GF expected for new resource problems, creates incentives for overuse to get good baseline
D Asymm. information/ uncertainty	Avoid; firm incentives to seek information are advantageous.	GF, like negligence rather than strict liability, -- firms seek to avoid knowledge of problems





Fishy statistics?

GF in International Climate Negotiations

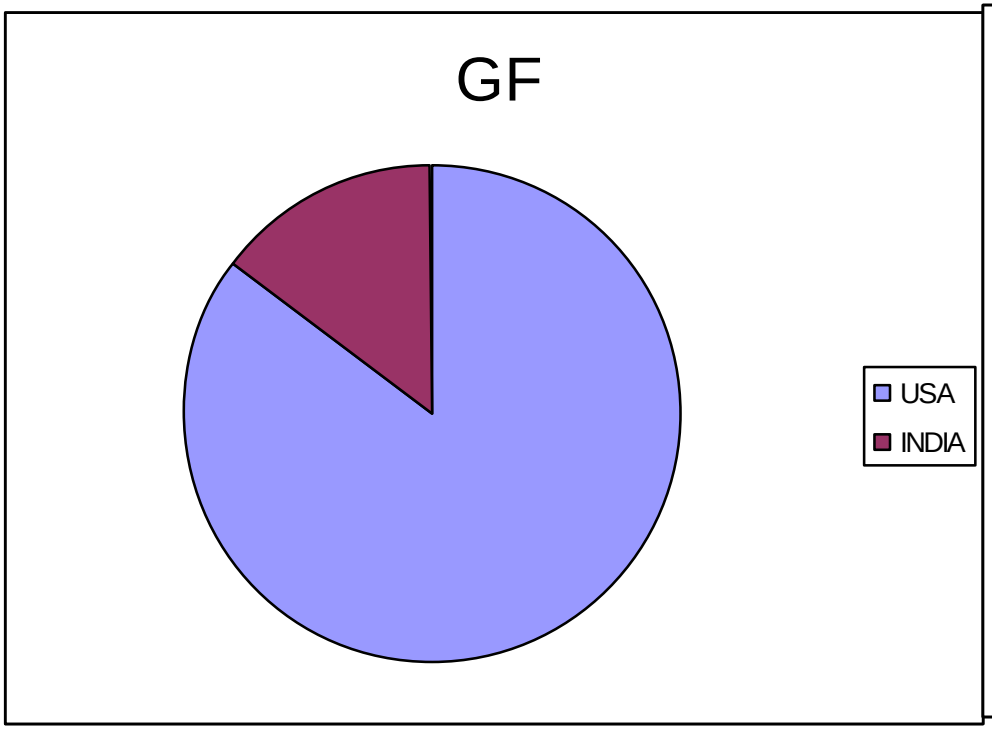
BINDING TREATY OR Pledges

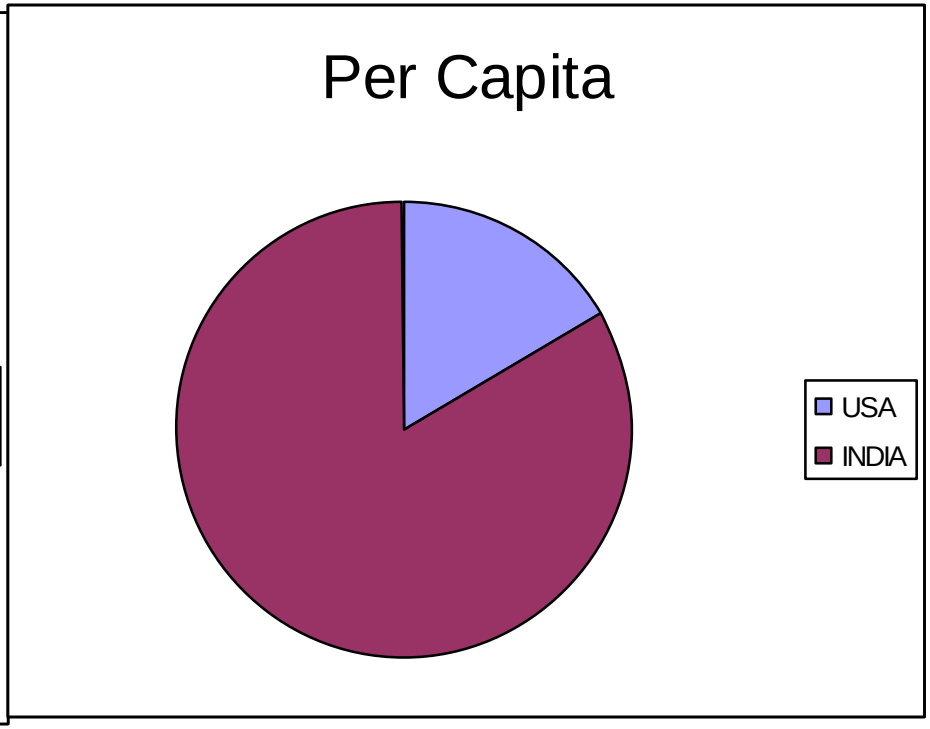
	Reduction	
EU	20-30%	
Jap	25%	
Russia	20-25%	
Canada	20%	
Austr	5-25%	
USA	17%	

BINDING TREATY OR Pledges

	Reduction	
EU	20-30%	
Jap	25%	
Russia	20-25%	
Canada	20%	
Austr	5-25%	
USA	17%	
And what about you	INDIA	CHINA?

The allocation between US and India





The right to emit **valuable**

20 Gtons CO_2 à 50 $/t = 1000 B$

	Grand father	Per capita
INDIA	4%	16%
USA	16%	4%

Common property resources

- *Are rights grandfathered in successful commons?*

HUERTA IRRIGATION SYSTEMS

- Some rights are GF-ered – like membership to the association

- but
- You do not get more water rights by taking more water…

ALANJA, TURKEY

- Again – you have to gain entry – typically by being a fisherman for a long time or inheritance.

- But then – you do not get more fishing rights by being rapacious

Törbel; Switzerland

- "Fremde" excluded even if landowners
- "Cowrights" allotted according to:
- Pasture, Number of cows fed in winter; Hay; Land (Acres or Value); Coop Shares

- Not just number of cows...

GF sometimes natural and useful

Mapping the rights to under-ground water in California Basins

GF basis for discovery of resource, users and rights.

Dont select rules that reward rapacious behavior.
Reward pro active behavior

Key is democratic process