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Emissions Trading

How to determine the efficient coverage?

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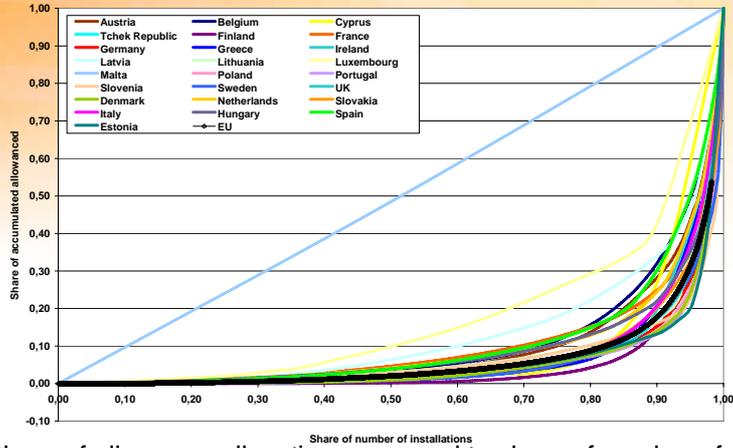
Content

- EU ETS: Emission – Installation relation
- Theory: Efficient cut-off threshold
- Transaction costs
- Evaluation of options
  - Excluding of sectors
  - Introducing emission based threshold
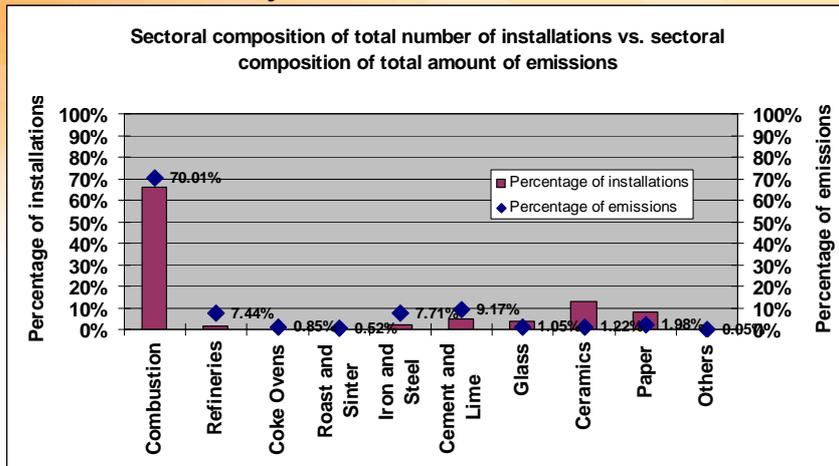- Conclusions
- Outlook

Average emission for one installation - sorted
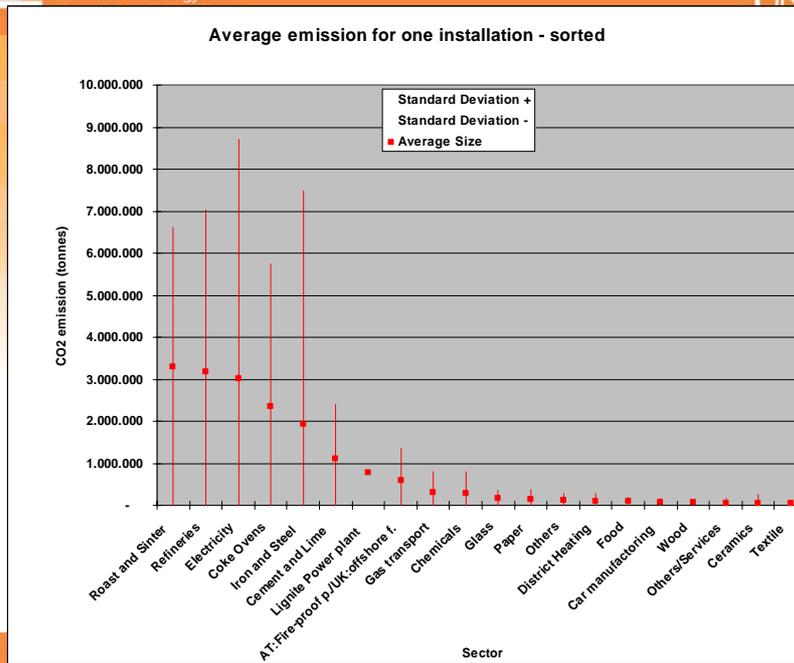
Theory: Efficient cut-off threshold

- Participation beneficial for buyer of permits :

$Pe_i^* < MCA_i (E_i)$

$BS_i < MCA_i (E_i) - Peq^*$

- Participation beneficial for seller of permits:

$Pe_i^* > MCA_i (E_i)$

$BS_i < Peq^* - MCA_i (E_i)$
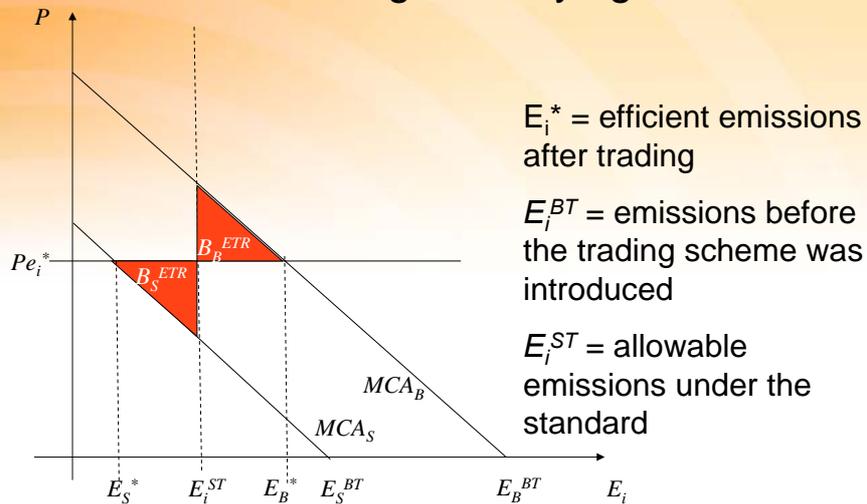
$Pe_i^* = Peq^* \pm BS_i$
$Peq^* =$ equilibrium allowance price
$BS_i =$ trading costs of i
$TRC_{iETR} =$ administration costs of i
$MCA_i =$ marginal cost of abatement of i
$E_i =$ emissions of i

- Overall:

$TRC_{iETR} < B_{iETR}$

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Net Benefits of selling and buying allowances

E_i^* = efficient emissions after trading

E_i^{BT} = emissions before the trading scheme was introduced

E_i^{ST} = allowable emissions under the standard

Transaction costs of ETS in Germany

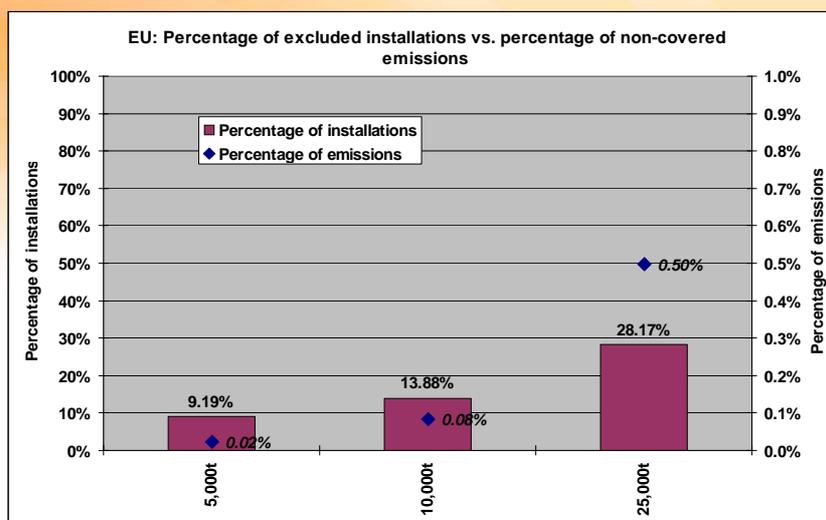|	**Administration**	**Per installation (average size)**
One-time costs	**e.g. legal framework, registry, allocation: 7,453** k€/a	**e.g. monitoring system, allocation application: 50-60** k€/a
Ongoing costs	**e.g. management of reserve, registry: 7,060** k€/a	e.g. monitoring, verification: **35** k€/a

Options for cut-off criteria

- Excluding certain sectors
  - Reduces distortion of competition
  - Reduces leakage problem
- Introducing a more generous overall threshold
  - On what basis?
    - (i) installed capacity, (ii) emissions, (iii) energy input and (iv) output (energy related or monetary values)
    - (ii) -> (ii) emissions based (determined ex-ante): will exclude biomass, reserve capacities
- Combined approach:
  - Excluding ceramic industry + threshold

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Overall emission threshold

EU: Percentage of excluded installations vs. percentage of non-covered emissions

- Percentage of installations
- Percentage of emissions

Threshold	Percentage of installations	Percentage of emissions
5,000t	9.19%	0.02%
10,000t	13.88%	0.08%
25,000t	28.17%	0.50%

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Combined approach

Ceramics&Thresholds: EU: Percentage of excluded installations vs. percentage of non-covered emissions
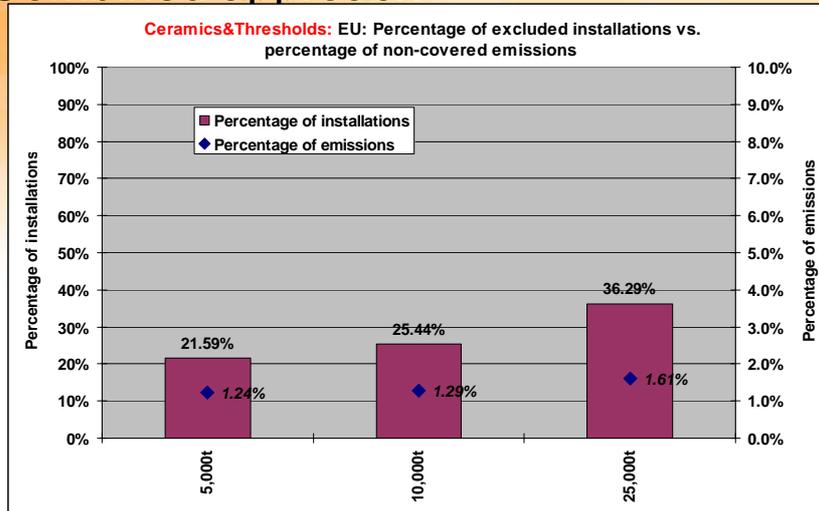
Note: Excluding the Sector of Ceramics 1,369 installations drop out

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Conclusions

- Transaction costs are high especially for small emitters since some costs are fixed costs -> German NAP 2 special treatment for emitters <25 kt CO_2 no reduction factor is applied
- Administration costs in Germany are transferred to operators via allocation fee -> substantial additional costs
- Solutions:
  - Excluding specific sectors with low emissions but high number of installations (e.g. ceramics)
  - Introducing emission specific thresholds reduces the number of installations
- Combination for EU25: 4,000 installations less (36%) but coverage only reduced by 1.6 % of emissions
- Similar results are obtained in Hessian study: small emitters face costs of <3€/tCO2e, seven times more than big emitters
- To determine efficient cut-off: installation or at least sectoral abatement costs need to be included

Outlook

- Analysis of data based on verified emissions of installations in 2005 vs. allocation
- More detailed survey on emissions trading related transaction costs of covered installations
- Modeling of benefits from trading of various sectors to be able to include a comparison of transaction costs versus benefits from trading
- Further assessment of combination of upstream approach/tax and opt-out/opt-in provision

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Thank you very much
for your attention!

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