Carbon-intensive industries and international competition: impacts and options


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Outline

Part 1: Fact base
  Which sectors?
  What impacts?
  How much?
  How fast?

Part 2: Structuring analysis

Part 3: Instruments for tackling carbon leakage
Potential for significant impacts is restricted to specific subsector activities that comprise a small fraction of value-added but significant emissions.

CO₂ costs/GVA for UK manufacturing "top 20"
Sister analysis of German industry confirms main themes..

Source: OekoInstitut, Berlin
Even for the most impacted sectors, *profit margins* can easily be protected by free allocation.

EU cement and steel profit margins for different C prices, allocations and pass-through.

a) EU cement industry
b) EU steel industry

Profit margins can be maintained or grown by government allocation decisions and by industry decisions about passing costs onto consumers.
... but profit-maximising response will still raise prices, resulting in trade impacts of a ‘few percentage points’ for the most impacted sectors.

Note: Trade sensitivities estimated from range of historical variability

Source: Data from CIRED, as presented in Carbon Trust (2008)
Outline

Part 1: Fact base on scope and scale of the problem
    Which sectors?
    What impacts?
    How much?
    How fast?

    [Climate Strategies Update report, July 2008]

Part 2: Structuring analysis

Part 3: Instruments for tackling carbon leakage
Identifying sectors ‘significantly at risk’ will be a difficult and contentious task ultimately driven by political judgements on definitions and boundaries.

➤ How big is ‘significant’?

➤ Do criteria apply only at EU aggregate level and conditions, or:
  - Different countries?
    - Eg. electricity in some eastern European countries
  - Different dependencies?
    - Eg. electricity-intensive operations dependent upon carbon-intensive power sources?
  - Different facilities?
    - Eg. some coastal cement or possibly refineries?

➤ At what carbon prices?
  - At EU aggregate level at €20/tCO2, list confined to top 2-4 activities, but might expand rapidly at much higher carbon prices if no mitigating factors
Options for tackling leakage

...... fall into three main classes

No mechanism (fixed free allocation)

- Uncertain trade-off between profits and leakage

Levelise at non-carbon costs

- Conditional allocation/revenue recycling
- Value of allocation cancels out cost of CO2

Support consistent differential Border adjustments

- Fiscal, process standard or allowance adjustment at border
- Potential problems with WTO/trade relations
- Requires at least informal international cooperation

Globalise carbon costs

- Full-cost sectoral Agreements
- Requires strong policies of developing countries
- Risk of CO2 price set by lowest common denominator

Price with carbon cost

- Sectoral agreement with CO2 cost in all major production

Profit-maximising or Strategic protection

- Price without carbon cost
- Inside EU ETS
- Outside EU ETS

Levelise at non-carbon costs

- Inside EU ETS
- Outside EU ETS

Support consistent differential Border adjustments

- Inside EU ETS
- Outside EU ETS

Globalise carbon costs

- Inside EU ETS
- Outside EU ETS

Outline

Part 1: Fact base on scope and scale of the problem
   Which sectors?
   What impacts?
   How much?
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Part 2: Structuring analysis

Part 3: Instruments for tackling carbon leakage
(i) Levelling down (‘third best’): free allocation or revenue recycling can prevent leakage only if conditional on the activity that the system itself is trying to deter

**Investment relocation ✓**

i) **Free new entrant reserve for new C-intensive investment**
   *Issues:*
   - Duration of guarantee required. To 2020? Beyond?
   - Weakens incentives for radical innovation in any process that might not qualify for the same level of free allocation
   - Benchmarking on capacity installed overcomes most perverse incentives

ii) **Targeted investment subsidies**
   - May allow more specific targeting, particularly at Member State level whilst preserving harmonised treatment for allocation
   - Easier for power-related component?
   - Subject to State Aid clearance – both an asset and a constraint
   - Could consider as ‘stop-gap’ option

Neither may solve production leakage from the facility without other fix (eg. investment subsidy conditional on full output, take or pay??), OR =>

**Production/carbon leakage [X]**

i) **Free allocation in proportion to production levels (ex-post)**
   *Issues:*
   - Complex, major rewrite of principles
   - Has to be conditional on the primary carbon intensive part of the supply chain (eg. clinker not cement)
   - Takes carbon price out of all downstream activities
   - Removes incentives for radical innovation that avoids the carbon-intensive production step

ii) **Targeted production subsidy**
   - Extremely difficult to defend in context of State Aids or WTO

Other forms of indexing for allocation or revenue could be considered but then less effective at tackling carbon leakage
(iii) Levelling up to include carbon cost (‘first best’): International (‘sectoral’) agreements can only effectively stop leakage if they equalise C prices with all competing producers.

**Investment relocation**

- All potential countries for hosting new investment agree that new facilities will pay carbon costs through their lifetime.

  *Not credible for most governments to make, implement and enforce long-term binding commitment of this nature.*
  
  - Even if they wanted to (which most developing countries don’t)

**Production leakage**

- All producing countries agree to charge equivalent carbon price on production activities that generate a given product:
  - For internal consumption (to not discriminate against EU goods within that country)
  - For export (for equivalence abroad)

  *Requires robust monitoring, tracking and verification in addition to political willingness globally – all are lacking*

‘First best’ – but neither institutional nor political conditions exist.
Border adjustments (a ‘Stern’ warning) understanding the options ...

<table>
<thead>
<tr>
<th>Category</th>
<th>Mechanism</th>
<th>Issues</th>
</tr>
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</table>
| Import cost adjustment (imports into capped region) | Importers to buy EU Allowances:  
   * Process specific, or  
   * Product benchmarked  
   Product / Process standards (see Ismer presentation) | Most directly linked to EU ETS objectives and therefore clearest defence under WTO exception clauses  
   Mechanisms could be combined (eg. Holcim proposal)  
   Exports much harder to address |
| Export cost adjustment (exports from capped region) | Analogous to re-imbursement of VAT on exports | Addresses exports – but intent of VAT system is to prevent double-taxation  
   Difficult with volatile prices  
   Only credible for direct (auction) costs, not opportunity costs |
| Import taxes (imposed by capped region(s)) | Tariff on imported products | Most direct conflict with thrust of trade liberalisation (though eg. VAT precedent) |
| Export taxes (imposed by uncapped regions) | Charges on exports (eg. Egyptian cement exports), Chinese realignment of export taxes | No conflict with WTO  
   Difficulty of coordination and enforcement |

Introductory overview: See T. Brewer, Climate Policy, Vols.3:4 and 4:1
Border adjustments

- reducing the risks

- Focus on *specific sector characteristics*, not generalised protection of a ‘carbon pricing’ zone
- Separate the four categories of action
- Recognise the debate in other regions - notably the US
- Pursue in a multilateral setting, *not* as unilateral protection of EU (or US, or other) industry:
  - as a legitimate element in protecting integrity of multilateral agreement
  - link to sectoral negotiations as a way of incentivising cost internalisation between major producers
- Engage the trade community from the outset and don’t dump the core political problems on the WTO
Conclusions (1)

- We have tenable, mid-term solutions to parts of the problem:
  - investment relocation (NER benchmarked on capacity, or investment subsidies) and profit impacts (free allocation), but these are far from perfect and
  - They do not prevent production / carbon leakage in key sectors;
- Solutions to production / carbon leakage based on levelising cost of carbon globally are untenable for Phase III:

<table>
<thead>
<tr>
<th>Economic principle</th>
<th>Mechanisms</th>
<th>Contribution to solving climate problem</th>
<th>Other features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levelise at non-carbon cost</td>
<td>Conditional ex-post allocation or production subsidy</td>
<td>&lt;3rd best: shields most carbon-intensive component of production &amp; all downstream choices</td>
<td>Complex; deters radical innovation; Serious risk of lock-in</td>
</tr>
<tr>
<td>Internalise carbon cost in all competing countries</td>
<td>Quasi-global cost-internalising agreements</td>
<td>1st best: though sector-specific nature may create tensions between sectors</td>
<td>Politically and institutionally impossible to create tabula rasa</td>
</tr>
</tbody>
</table>
Conclusions (2):

- Sector-specific border adjustment options exist and at least some dimensions can be WTO-compatible
- The challenge will be gaining political acceptance of their application in specific sectors
- The options should be analysed as a multilateral instrument to support post-2012 agreement
- Additional time and research engaging impacted industries and Parties within and outside the EU is required

- The interim scale of leakage is not a “show stopper”:
  - Investment relocation or deferral moderate whilst options developed
  - Production leakage not relevant until 2013
  - Focused on a few sectors
  - Otherwise trivial except in extreme price scenarios, even if no solution developed

- Sequential processes are possible
- We have time to get this right and we should take it
Drawing upon research convened by Climate Strategies:

Differentiation and dynamics of competitiveness impacts, led by:

Karsten Neuhoff & Misato Sato
EPRG, Faculty of Economics, Cambridge

Jean-Charles Hourcade & Damien Demailly,
CIRED, Paris

Additional contributions from Felix Matthes, Oeko-Institute, Berlin and
Joachim Eichammer, Fraunhofer ISI Karlsruhe

Options for tackling carbon leakage, led by:

Susanna Droege
Stiftung Wissenschaft Politik, Berlin

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