A border adjustment for the EU ETS: Reconciling WTO rules and capacity to tackle carbon leakage

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The rationale for a BA

• Increased political pressure for some form of border adjustment (BA) to complement stringent climate policy
  • French President Nicolas Sarkozy (17 September 2010): “We will ask – France and Germany – for a mechanism to be created at the borders of Europe in the event that there are imbalances" in the Copenhagen agreement

• This would level the playing field between domestic producers and foreign producers who experience little, or no constraint on their GHG emissions.

• Arguments that justify such a trade measure generally refer to competitiveness concerns and/or carbon leakage.
The carbon leakage

• Carbon leakage compromises environmental efficiency of a climate policy
  – The energy markets channel
  – **The competitiveness channel** related to the EU ETS

• Options to limit carbon leakage (2\textsuperscript{nd} channel)
  – Free allocation: 3rd period of the EU ETS
  – Border adjustment
The BA, a trade measure

• A BA is a trade measure: It may be contested by a member of the World Trade Organization.

• Recent legal literature concluded that, under some conditions, such a BA may be WTO-compatible.
  – Depends on its design ...
  – and the way of implementing it.
  – WTO-compatibility imposes constraints to define a BA.

• At the same time, the design of a BA impacts its performances in terms of carbon leakage mitigation.
Objectives

• Not to reach conclusions on the opportunities for implementing an EU border adjustment
• but (to try) to identify the BA that would be compatible with WTO rules – or at least can increase the chances of it being so.
• And to propose a quantitative analysis of the BAs identified
  – in particular, assessment of their efficiency in limiting carbon leakage
  – as well as their impact on the production and market shares of European firms.
Outline

• Definition of a BA
• Legality of a BA
• Scenarios
• Brief presentation of the model CASE II
• Results
What is a BA?

1 ton of a GHG-intensive product from the rest of the world

EU 27

How much?

= 
1 ton of a GHG-intensive product from the rest of the world

EU 27

How much?

= 

How many CO₂eq.-tons?

(adjacentment base)  

+
1 ton of a GHG-intensive product from the rest of the world

EU 27

How much?

= How many CO\textsubscript{2}eq.-tons?
  + How much for 1 ton of CO\textsubscript{2}eq.?
How to define a BA?

• Definition of a border adjustment to an ETS
  – allocation mode: auctioning/free allocation.
  – form of the BA: price-based or allowance-based
  – coverage of the BA:
    • imports /imports and exports;
    • direct emissions /direct and indirect emissions
  – adjustment base: EU or foreign average specific emissions, best available technology emissions
  – the targeted products
  – the targeted countries
The legality of a BA

• Two options
  – the compatibility with the GATT general regime
  – the legality with the environmental exception rule, Article XX
  – Each option refers to different requirements.
The general regime of the GATT

- Not imposing a heavier burden on imported products than on domestic products
- Not advantaging domestic producers when they export.
- Use of Best Available Technology (BAT) for BA on importations
  - Similar treatment or at least a more favourable treatment of imported than European products
  - Determination of a world BAT problematic
  - Use of the product-specific benchmarks set in the EU ETS
  - If a particular exporting firm whose unitary emissions is lower than the EU benchmark can prove that its emissions are lower than the reference value, then it must be allowed to use this value.
- Most-favoured nation principle (Article I): No exemption of a group of countries

The designs envisaged
- allocation mode: auctioning;
- form of the BA: allowance-based (/price-based);
- coverage of the BA: imports and exports; only direct emissions;
- Adjustment based on the European benchmarks for imports; average EU specific emissions for exports.
Article XX

• General exception provisions of Article XX
  – Article XX allows trade restrictions to “protect human, animal or plant life or health” (Art. XX (b))
  – or to ensure “the conservation of exhaustible natural resources” (Art. XX (g))
  – It cannot be invoked to offset competitive disadvantages for domestic industry
Article XX

• No really elements of designs but rather indicators to examine
  – Real contribution to its environmental goal
    • World emissions, even more than on carbon leakage
  – Acceptance determined by the balance between its contribution to climate protection and its trade restrictiveness

• Implementation way of the measure is important for the legality
  – Country should have made all efforts to reach an international agreement
  – Initiative in negotiating with countries that might be affected by the BA.
  – The BA should take into account the efforts of trading partners to abate GHG emissions and this may result in lower (or no) BA on imports from countries having measures comparable in effectiveness.
    • Possible exemption of a group of countries
Article XX

• What to retain for our modelling?
  – Firstly, demonstrating the environmental benefits of the BA is crucial.
    • World emissions
  – Secondly, there is no clear conclusion concerning the legality of the export BA and about the adjustment base to use.
  – Lastly, examining the trade restrictiveness (or “disguised restriction”)
    • Evolution of the market shares of European firms as an indicator for demonstrating that the BA does not have trade-restricting objectives.

• The design envisaged
  – allocation mode: auctioning;
  – form of the BA: allowance-based;
  – coverage of the BA: only imports; only direct emissions;
  – Adjustment based on the European benchmarks (or foreign specific emissions) for imports; average EU specific emissions for exports.
Scenarios

• **Common features**
  – Emission reduction of 15% in 2020 compared to 2005 (-21% with flexibility)
  – No policy in the rest of the world
  – Comparison with a no-policy scenario (BAU)

1. **Auction:** ETS - 100% auctioning, no border adjustment
2. **Allowance-based BA (M+X):** ETS - 100% auctioning with a BA on exports & imports for direct emissions. Adjustment base: European benchmark for imports and EU average for exports.
3. **Price-based BA (M+X):** ETS - 100% auctioning with a BA on exports & imports for direct emissions. Adjustment base: European Benchmark for imports and EU average for exports.
4. **Allowance-based BA (M):** ETS - 100% auctioning with a BA on imports for direct emissions. Adjustment base: European Benchmark for imports.
The model CASE II

- CASE II for the EU (and CASE-ASIA for Japan)
- Static and partial equilibrium model (2020)
- 2 regions: EU27 & rest of the world (RoW)
- 4 sectors: cement, aluminium, steel, electricity (CASE)
  - Around 75% of the emissions covered by the EU ETS
  - Potential large cost impact of carbon pricing but uneven characteristics on their direct and indirect emissions or on their exposition to international competition.
The model CASE II

• Simulations
  – Different objectives in terms of emission reduction
  – Different "anti-leakage" options: free allocation and border adjustment
  – Different designs for each option

• For each sector
  – Production, prices and trade flows
  – Unitary emissions and total emissions variations
  – Leakage-to-reduction ratio

\[ CLrate = \frac{Emissions_{SC}^{RoW} - Emissions_{BAU}^{RoW}}{Emissions_{EU}^{BAU} - Emissions_{EU}^{SC}} \]
Structure of the model

- CO2 Market
- Electricity
- Steel
- Aluminium
- Cement
- Clinker

EU 27

TRADE

Rest of the World
The model

• A representative consumer in each region
  – A two-tier utility function
    • Upper tier: Cobb–Douglas function of the utility derived from consumption of the goods in each industry
    • Lower-tier: CES aggregate of the domestic variety and the foreign variety for the industries C, A and S.
    • Median values of Armington elasticity

• Firms are assumed strategic (cement, aluminium and steel)
  – Competition in quantities + free entry
  – Each firm sells in the two regions.
  – Increase of the production cost with climate policy
    • Abatement costs
    • Increase in electricity price
    • Purchase of allowances
$\text{CO}_2$ price (€/allowance) and public revenues (billion €)
The public revenues

• Around €25 and €30 billion in 2020
• A part could be used for climate change mitigation and/or adaptation in developing countries.
  – It could facilitate an international agreement on climate change
  – ...and demonstrate the “good faith” of the EU.
Carbon leakage

leakage-to-reduction ratio

1. Auction: 10%
2. allowance-based BA...
3. price-based BA (M+X)
4. allowance-based BA (M)
World emissions (CASE)

![Bar chart showing world emissions (% vis-à-vis BAU)]

- 1. Auction: -1.20%
- 2. Allowance-based BA (M+X): -1.15%
- 3. Price-based BA (M+X): -1.10%
- 4. Allowance-based BA (M): -1.05%

The chart indicates the percentage decrease in world emissions compared to BAU for different scenarios.
The performance to limit carbon leakage and/or world emissions

• Leakage-to-reduction ratio at least halved by border adjustments.
  – Importance to include the exportations in the BA.
    • GATT’s general regime and Article XX exceptions are not equivalent.
  – A little more efficient when the BA is based on allowance rather than on price

• Concerning the world emissions
  – Biggest reductions when the BA is based on allowance
  – Inclusion of an export part is less important.
Market shares of the EU firms

Cement sector

Steel sector
The rationale for a BA

• What is the objective of a BA?
  – Competitiveness loss and carbon leakage often considered like the two sides of the same coin
  – One instrument, here a BA, could contribute both to carbon leakage limitation and to domestic production preservation.
  – In fact, it depends on which you call “competitiveness”.

EU production level (% vis-à-vis BAU)
Conclusion

• A BA, an interesting option to limit carbon leakage (competitiveness channel).

• And maybe a necessary option if regions want to continue to move ahead with climate policy
  – Increasing the stringency of the objective
  – implementing auctioning

• But implementing a BA must be made with care.
  – Ensuring WTO compatibility
  – Ensuring the efficiency of the mechanism
  – Certainly long process (after 2020?)
  – Pay attention not to discredit the mechanism
Thank you for your attention

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Cement sector

• Cement may be imported as a finished product, or imported clinker may be milled and blended into cement at the point of arrival.

• Representation of the substitution between clinker (the CO2-intensive intermediate product) and CO2-free substitutes (e.g. fly ashes or blast furnace slag) as well as the substitution between domestic and imported clinker.

• Market share of imported clinker in the EU and the clinker ratio (the share of clinker in cement) modeled through nested logit functions
  – Conservation of the mass