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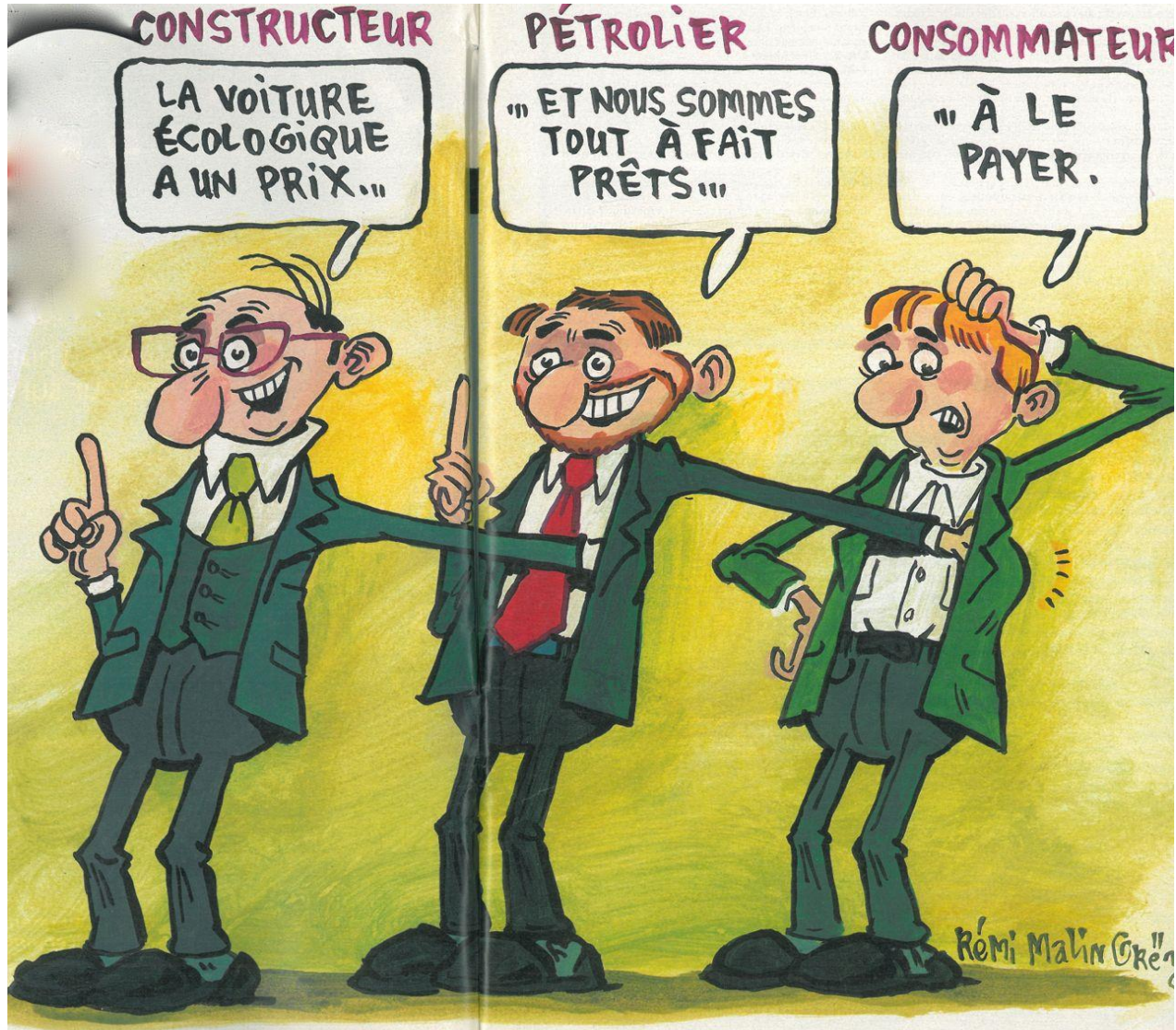
THE EU EMISSIONS TRADING SYSTEM: IS EU LAW BIASING THE RULES OF THE GAME?

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0. Introduction : cost pass-through



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“Cost pass-through is desirable from the perspective of reducing emissions as it drives demand side mitigation via demand substitution”.

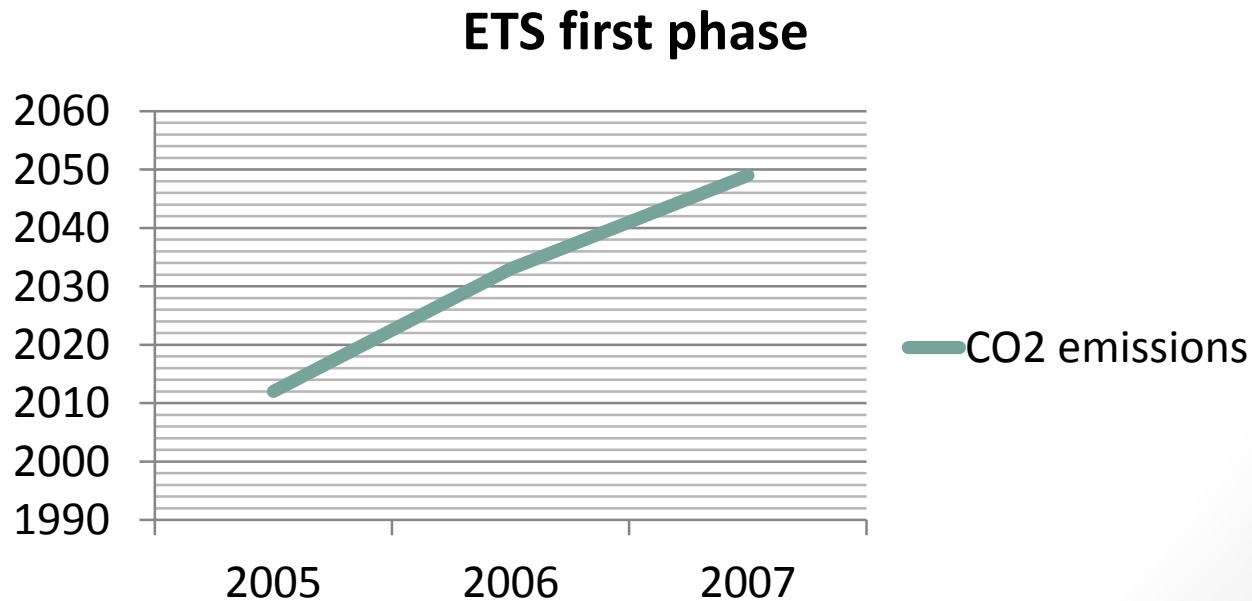
(Laing et alii, 2013 ; Neuhoff, 2011)

Summary

- I. Historical perspective of the ETS
- II. The objectives of the paper
- III. The production function and EU ETS impact on equilibrium
- IV. The six options
- V. The impact of other firms decisions

I. Historical perspective

- Emissions trading system history
 - First phase (2005-2007)
 - Almost free allowances ;
 - 40 % of the CO2 emissions covered ;
 - 1,9 % overall average increase in the CO2 emissions



I. Historical perspective

- Second phase (2008-2012)
 - 90 % of free allowances;
 - the aviation sector was included as of 2012, but political pressure led to a suspension of international non-EU flights.
 - the surplus was estimated at 2,1 billions allowances and the price dropped under 10 EUR as of 2012.



I. Historical perspective

- Third phase (2013-2020)
 - 45 % of the CO2 emissions covered ;
 - 21 % global reduction by 2020
 - Decreasing global European cap instead of the national caps ;
 - Auctioning is the default method of allocation (but still not the case for 2014) ;
 - European commission announced a structural reform, including the postponing of permits allocation in order to :
“rebalance supply and demand in short term and reduce price volatility without any significant impacts on competitiveness” (EC, 2014) .

II. The objectives of the paper

- Changing the point of view
 - from a macroeconomic point of view to a microeconomic point of view ;
 - from a European centered vision to a international comparison ;
 - from a political decision taker to a manager room for maneuver.
- Identify and assess the point of attention for economics competitiveness and production process.
- Include in the discussion the importance of the other firms decisions on the actors players as a potential game.

III. The production function and the EU ETS integration

- We start with a classical Cobb-Douglas function, and we added a third component in the production factors, the carbon-based energy (C).

$$Y = A \cdot C^\gamma \cdot K^\alpha \cdot L^\beta \quad \uparrow$$

- The profit function at the equilibrium price p^*

$$\pi(p^*) = Q \cdot p^* - (A \cdot C^\gamma \cdot K^\alpha \cdot L^\beta) \quad \uparrow$$

III. The production function and the EU ETS integration

- With the introduction of the EU ETS permits mandatory acquisition, the equilibrium will be modified as the following :

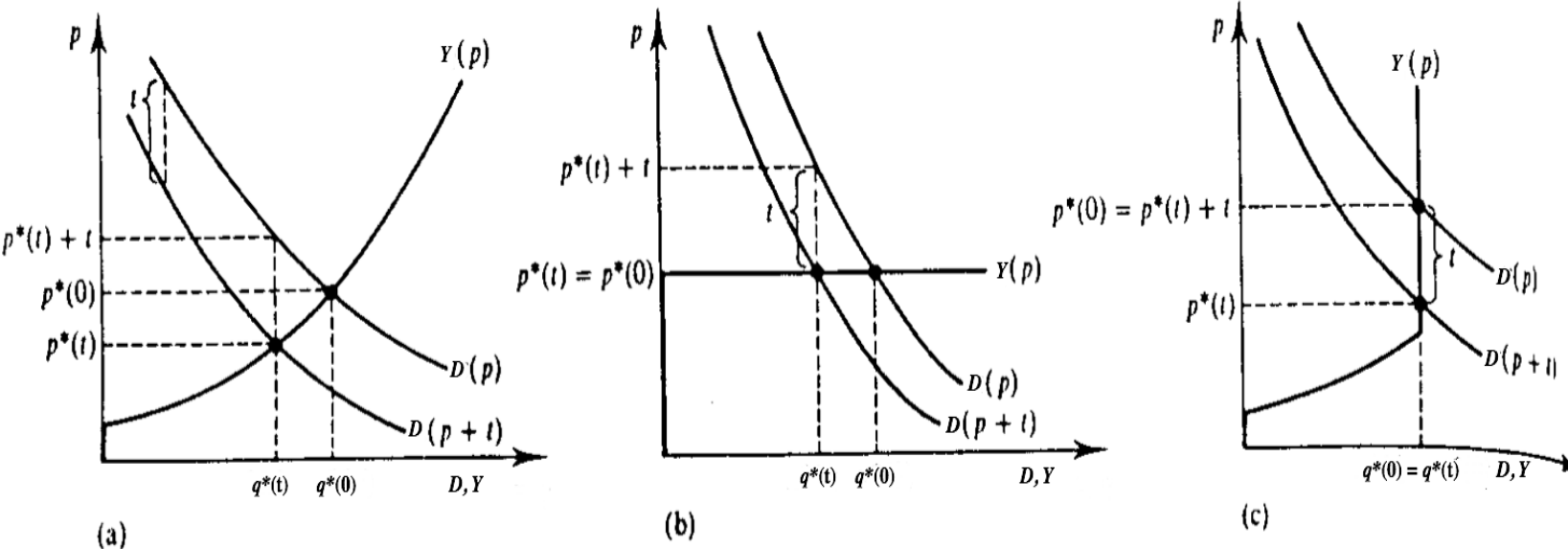
$$D(p^*(t) + (1 - \delta)t) = Y(p^*(t) - \delta t)$$

- The differentiation at the point $p^*(t)$ is:

$$p'^*(t) = \delta - \frac{D'(p(t) + (1 - \delta)t)}{D'(p(t) + (1 - \delta)t) - Y'(p(t) - \delta t)}$$

III. The production function and the EU ETS integration

Graphically :



(Mas-Colell *et alii*, 1995)

IV. The six options

- 1/ Reduce its margin

$$\pi = q \cdot p^* - A \cdot (1 + t) C^\gamma \cdot K^\alpha \cdot L^\beta$$

- 2/ Reduce the other than C production inputs

$$\pi = q \cdot p^* - A \cdot (1 + t) C^\gamma \cdot K^\alpha \cdot L^\beta$$

IV. The six options

- 3/ Increase the A, C or γ factor (here, the C input)

$$\sum_{j=1}^n Q_n \cdot p^* - A \cdot (1 + t_n) C^\gamma \cdot K^\alpha \cdot L^\beta$$
$$\leq \sum_{j=1}^n (Q_j p^* - A \cdot (1 + t_j) (1 - i)^{nj} C^\gamma \cdot K^\alpha \cdot L^\beta - \frac{I}{n})$$

- 4/ Lack of return or incomplete return
 - Reputational risk
 - Fines are becoming more and more severe :
 - 40 EUR/t under Phase I
 - 100 EUR/t under Phase II
 - 100 EUR/t + inflation indexation under Phase III

IV. The 6 options

- 5/ Negotiate with the national authorities
 - The Mittal case
 - Article 107 TFEU prohibits State Aids which are seen as :
 - an advantage
 - favoring certain economic actors/granted under certain undertaking
 - through State resources
 - which distort or threaten to distort competition



IV. The 6 options

- 6/ Relocate the production outside the European Union (carbon leakage)
 - The decision between relocation or efficient investment can be summarized in the following inequation:

$$(1 - r_{EU})Q^*p^* - ((1 - e)b_A \cdot p^* \cdot Q) - \left(A \cdot (1 + t)(1 - i)^n C_{EU}^{\gamma} \cdot K_{EU}^{\alpha} \cdot L_{EU}^{\beta} + \frac{I}{n} \right) \leq \pi$$

$$(1 - r_A)Q^*p^* - (\epsilon b_{EU})(p^* \cdot Q) - (A \cdot C_A^{\phi} \cdot K_A^{\chi} \cdot L_A^{\psi}) + \frac{R}{n} \geq \pi$$

- The relocation can be operated by reducing the production in EU when the demand for the products decreases rather than in third countries.

V. The impact of the other choice

- The decision process described in this presentation is envisaged as a non cooperative game where players are acting partially informed.
- The more the enterprise has final consumers located outside the Union in comparison with the other companies, the more the relocation is attractive. In this case, the respective border tax adjustments of every country will play a decisive role.
- The less other enterprises are already located outside the EU, the more the relocation is attractive.

C. Conclusive remark

- Is finally the European Union biasing the rules of the market game with the Emissions trading system?



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Tak for din opmærksomhed!