Is there a room for a $\text{CO}_2$ Central Bank?

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European University Institute
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Outline

1. Do we need more carbon market regulation?
2. The components of a carbon market regulation
3. Enhancing Carbon market security
4. Promoting Carbon Market transparency

ANNEXES
Do we need more carbon market regulation? (1)

- According to textbook theory, the public authority sets up the cap => trading will spontaneously emerge

- The European carbon market is functioning:
  - For almost 12000 industrial plants, emitting CO\textsubscript{2} now has a cost
  - This cost is an international reference
  - It reflects market fundamentals (See Graph 1 in annex).

- A large part of the market is already under regulation:
  - The largest part of derivatives transactions (80-90% of the market) is already under European financial regulation
  - There will be significant extension of harmonized regulation as of Phase 3 with large scale auctions on the primary market.

- VAT frauds or Cyber criminality are not specific to carbon markets
The EU carbon market was essentially created as a result of a regulation aimed at reducing GHG emissions. It features:

- A new class of assets: the right to emit CO₂ in the atmosphere
- A compliance market on which industries have to trade this new asset.

The value of the associated carbon asset relies on the credibility of the regulation.

Disturbances on this market, due to weak regulation, undermine confidence, credibility and reputation.

Without appropriate and credible regulation, this market could simply disappear.
The components of a carbon market regulation (1)

- Using existing regulation:
  - Financial regulation covers already most of the trading
  - Energy regulation helps but is not effectively harmonized among European Union

- No basic conflict between a “tailor-made” regulation and a “financial based” regulation:
  - In a tailor-made regulation, 80 to 90% of trading would be covered by the financial regulation under ESMA supervision
  - In a “financial based” regulation, EUA would be qualified as “financial instruments”, but most of the compliance players would be exempted of standard obligations
  - In both cases it is necessary to define specific rules tailored to a new compliance market.

- A governance challenge: The EU-ETS has been established in a very decentralized framework. Enhanced regulation requires more coordination and some centralization.
The components of a carbon market regulation (2)

- Enhanced market security (on implementation)
  - Security of market infrastructures is essential for confidence.
  - Confidence of market players is a prerequisite.

- Greater market transparency (on process)
  - Preventing market abuses and manipulations
  - Market transparency with release of information understandable by the public is a condition of political acceptance.

- Facilitated carbon price discovery (to be discussed)
  - Reducing volatility and avoiding price shocks
  - Primary and secondary market regulations have to be linked
  - Towards a quantitative regulation (similar to a Central Bank)?
At the launching of carbon markets, main concerns were on derivative markets (risks of “speculation”, manipulation ...).

So far, the main difficulties have appeared on the spot market.

What is at stake ?
  – Carbon assets worth 30-50 Bn €
  – Carbon transactions valuing more than 70 Bn € per year
  – High costs of regulation failures : VAT frauds = 5 Bn € ; EUA-thefts = 50 Mn € compared to the cost of regulation.

The real challenge is not the cost but a new governance to find with 27 State members :
  – stronger coordination and centralization in registries management;
  – Harmonized legal status of Allowances and liabilities among EU.
Market Transparency: The information challenge

- A lot of partial data is available, generally at a price:
  - Pre-trade and post-trade data on trading platforms
  - Private data providers: Point Carbon, Reuters, etc.
  - Brokers, banks analysts, consultants, etc.

- A huge quantity of information is sleeping in registries
  - Each spot transaction in the EU is registered in two accounts
  - It is technically possible to get rapidly exhaustive, reliable and traceable information via registries on the carbon spot market
  - This information is not released to the public before 5 years, and has been marginally used for market oversight by public authorities.

- Crucial need of information consolidation:
  - There is a lack of information on the fundamentals of the market (links with energy markets, CER and ERU entering the market, etc.)
  - Market oversight needs greater consolidation of information and clear interpretation by public authorities in charge of regulation.
Facilitated carbon price discovery: An initial observation

- Before the implementation of a carbon market, the main concern is the risk of excessive prices:
  - Theoretical approach on cost-containment in the case of imperfect information (Weitzman)
  - “Safety valves” debates in the US
  - Over-allocation during the first period of EU-ETS and discussions during the Energy-Climate Package negotiation.

- When observed *Ex Post*, there is also a risk of carbon price collapse, which could undermine the environmental goals of the market: EU-ETS; regional & voluntary markets in the US

- A more general rule: usually an over-evaluation of the costs of environmental policies by *Ex Ante* assessments.
Facilitated carbon price discovery: The risk of market instability

**Demand change on a standard Market:**

**Demand change on a cap and trade market:**
To reach its goals, the carbon market regulator has to:
- Create scarcity on the present rights to emit CO2 (short term emission cap)
- Create scarcity on the future rights to emit CO2 (long term emission goals)
- Organize the market such that players face a price signal in line with short and long term emission/abatement targets.

Standard answers to avoid market instability:
- Full banking (avoiding a price collapse in case of surplus of allowances)
- Some borrowing (covering actual emission with future rights is a “safety valve” with some risks for the future compliance periods)
- Use of offsets to supplement allowances makes the supply curve more elastic in the short run.

Achieving the full effect of these measures implies:
- Availability of perfect information on the CO₂ market (present and future);
- Long term anticipation by market players (implicit condition of perfect capital market, without any liquidity constraint).
Facilitated carbon price discovery: the case for a CO$_2$ European Central Bank (ECB)

- So far important decisions (banking, borrowing, offsets) are taken without explicit assessments of their economic implications; 
  =>$\Rightarrow$ a CO$_2$ ECB could do the job with insight.

- The introduction of a large primary market in 2013 with harmonized regulation enlarges the scope of the market under regulation;
  =>$\Rightarrow$ This provides the CO$_2$ ECB with the means of adjusting the supply of carbon currency to market conditions.

- There is a risk of decisions by Member States to intervene at national levels on carbon prices undermining collective efficiency.
  =>$\Rightarrow$ Better to delegate all the market intervention prerogatives to a European CO$_2$ ECB.

- EU-ETS is an instrument helping the public authority to find the right carbon price to reach its short and long term goals;
  =>$\Rightarrow$ a CO$_2$ ECB would help this long term discovery process.
The job of an independent European CO₂ Central Bank

<table>
<thead>
<tr>
<th></th>
<th>Monetary Market</th>
<th>Carbon Market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final target</strong></td>
<td>Long term monetary stability</td>
<td>Long term emissions reduction trajectory</td>
</tr>
<tr>
<td><strong>Market oversight</strong></td>
<td>Integrity and liquidity of transactions</td>
<td>Integrity and liquidity of transactions</td>
</tr>
<tr>
<td><strong>Price instrument</strong></td>
<td>Interest rates</td>
<td>Carbon prices</td>
</tr>
<tr>
<td><strong>Quantitative regulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Primary market</td>
<td>Supply of central money (M₀)</td>
<td>Allowances auctioning</td>
</tr>
<tr>
<td>• Secondary market</td>
<td>- Open Market (sell and buy monetary assets)</td>
<td>- Sell, buy, set aside carbon assets</td>
</tr>
<tr>
<td></td>
<td>- Exchange rate</td>
<td>- Links with other markets (offsets, other cap &amp; trades, ...)</td>
</tr>
<tr>
<td>Reporting to public</td>
<td>Impacts of monetary policy on inflation and economics performances</td>
<td>Impacts of carbon market on transition toward low carbon economy</td>
</tr>
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<td>authorities</td>
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</tbody>
</table>
Concluding remarks

- The three main issues of a carbon market regulation:
  - **Security of transactions**: an information challenge which are tackled by new rules on registries and private initiative to secure the market
  - **Transparency and fairness of transactions**: the main challenge of the market oversight currently discussed, which raises a complex governance and legal challenge
  - **Carbon price discovery**:
    - in case of perfect information and perfect capital market the market would deliver the “right carbon price”
    - In the real world many market imperfections justify the existence of an independent CO₂ ECB whose job id to help the collectivity to find the “right price”.
Thank you for your attention!

For more information, please visit our website:

www.ChaireEconomieduClimat.org
Annex 1: Carbon price on EU-ETS

Annex 2: Transaction on the market

Annex 3: prices volatility
What does the allowance price reflect?

- **Release of 2005 verified emissions data**
- **Announcement of 2020 EU ETS objectives**
- **Long market**
- **Economic recession**
- **New equilibrium in a context of slow recovery**
- **Nuclear debate changes expectations about future emissions**

*Source: Climate Economics Chair*
Trades on the EU-ETS

EUA transaction volumes and values

<table>
<thead>
<tr>
<th>Year</th>
<th>Volumes exchanged (millions of EUAs)</th>
<th>Value exchanged (millions of euros)</th>
<th>Average EUA spot price, €/t</th>
<th>Average EUA price, period 2 (Dec. 2012 contract, €/t)</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
<td>262</td>
<td>5,659</td>
<td>22.5</td>
<td>21.6</td>
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<tr>
<td>2006</td>
<td>809</td>
<td>18,283</td>
<td>17.3</td>
<td>22.6</td>
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<tr>
<td>2007</td>
<td>1,455</td>
<td>31,574</td>
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<tr>
<td>2008</td>
<td>2,713</td>
<td>69,724</td>
<td>22.33</td>
<td>25.7</td>
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<tr>
<td>2009</td>
<td>4,952</td>
<td>75,766</td>
<td>13.15</td>
<td>15.3</td>
</tr>
<tr>
<td>2010</td>
<td>4,834</td>
<td>74,444</td>
<td>14.34</td>
<td>15.4</td>
</tr>
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</table>

Source: Author’s calculations using data from Point Carbon, BlueNext and ECX.
An unstable price?

Volatility of energy commodities (in %, 15-day moving average)

<table>
<thead>
<tr>
<th>Year</th>
<th>EUA spot period 1</th>
<th>EUA spot period 2</th>
<th>EUA Dec. 2012</th>
<th>Gas (Month ahead)</th>
<th>Coal (Month ahead)</th>
<th>Oil (Month ahead)</th>
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<tbody>
<tr>
<td>2005</td>
<td>39</td>
<td>-</td>
<td>43</td>
<td>83</td>
<td>13</td>
<td>29</td>
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<tr>
<td>2006</td>
<td>57</td>
<td>-</td>
<td>44</td>
<td>102</td>
<td>16</td>
<td>25</td>
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<tr>
<td>2007</td>
<td>160</td>
<td>-</td>
<td>34</td>
<td>88</td>
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<td>2008</td>
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<td>37</td>
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<td>51</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>2009</td>
<td>-</td>
<td>44</td>
<td>43</td>
<td>73</td>
<td>28</td>
<td>44</td>
</tr>
<tr>
<td>2010</td>
<td>-</td>
<td>26</td>
<td>26</td>
<td>50</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Range</td>
<td>39-160</td>
<td>26-44</td>
<td>26-44</td>
<td>50-102</td>
<td>13-34</td>
<td>25-49</td>
</tr>
</tbody>
</table>

Source: Climate Economics Chair calculations