Session #3: How to devour the carbon pricing elephant

Michael Pahle (PIK)
AHEAD Pathfinder Workshop
Davis, 3 December 2018
Germany seems to move away from first best

- Economics 101: equal marginal abatement costs in all sectors \( (c'_i = c'_j) \) minimizes total costs

→ Economy wide climate target, uniform carbon price (first best)

- Germany has only partial carbon pricing (ETS sectors), and recently even formulated sector-specific climate targets

<table>
<thead>
<tr>
<th>Area of action</th>
<th>1990 (in million tonnes of CO(_2) equivalent)</th>
<th>2014 (in million tonnes of CO(_2) equivalent)</th>
<th>2030 (in million tonnes of CO(_2) equivalent)</th>
<th>2030 (reduction in % compared to 1990)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy sector</td>
<td>466</td>
<td>358</td>
<td>175 – 183</td>
<td>62 – 61 %</td>
</tr>
<tr>
<td>Buildings</td>
<td>209</td>
<td>119</td>
<td>70 – 72</td>
<td>67 – 66 %</td>
</tr>
<tr>
<td>Transport</td>
<td>163</td>
<td>160</td>
<td>95 – 98</td>
<td>42 – 40 %</td>
</tr>
<tr>
<td>Industry</td>
<td>283</td>
<td>181</td>
<td>140 – 143</td>
<td>51 – 49 %</td>
</tr>
<tr>
<td>Agriculture</td>
<td>88</td>
<td>72</td>
<td>58 – 61</td>
<td>34 – 31 %</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,209</td>
<td>890</td>
<td>538 – 557</td>
<td>56 – 54 %</td>
</tr>
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</table>

Source: Climate Action Plan (2016)
The story behind the sectoral targets

• In the past **substantial progress in power sector**, very **little progress in transportation sector**
• Policy makers were keen to establish **sectoral burden sharing**
• Why not implement **uniform carbon price** in the first place?

*Source:* Pahle, based on UBA data

Insert figure to illustrate high policy stringency in power sector, low stringency in transportation
Non-normative (positive) view on carbon pricing

• Policy choice is endogenous and determined by “contributions” from interest groups (Grossman & Helpman 1994, Aidt 1998)

\[ G(\tau) = \Theta W(\tau) + C_i(\tau); \; C_i'(\tau) < 0 \]

\[ G \quad \text{Government obj. function} \]
\[ W \quad \text{Welfare function (weighted)} \]
\[ C \quad \text{Interest groups i contribution} \]
\[ \tau \quad \text{Carbon tax} \]

• Choosing level of uniform carbon tax influenced by sector contributions (and reduction thereof)

• In case of lobby groups organization failure (cf. Olson 1965), inefficient bias of high-contributing sectors → choice externality

→ Potential way out:
  • Differentiated carbon prices (\( \tau_i \)), i.e. sectoral policies and targets
  • Explicitly addressing the organization failure (→ Peter’s talk)
Differentiated (sectoral) policies to address lobbying failures

Cross-sectoral policy

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<th>Stringency</th>
<th>Sector A lobbying barrier</th>
<th>Sector B lobbying barrier</th>
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Sectoral policies

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<explain that it is similar in the ETS>

• Reason: free allocations needed to “please” industry
• This may put a limit on price increases, which also effects power sector
• Use material from Dallas’ paper on “Distribution of Emissions Allowances and the Use of Auction Revenues in the European Union Emissions Trading System”
<sequencing perspective on ETS>

• Would it have been better if the industry sector had not been included?
  • Fragmenting political opposition, buying time to remedy lobbying failure
• Or is it dangerous because this would fragment policies too much blocking the pathway to a uniform carbon price?
Contact

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BACKUP
Sequencing to weigh the alternatives

- **Policy sequencing** is an approach in which the barriers to future, more stringent climate policy guide current policy choices to the end of overcoming these barriers over time.

![Diagram](Fig. 2) | Sequencing to overcome barriers to stringency. Barriers (circles) and dynamic climate policy stringency (blue arrows) are shown for two subsequent periods ($t_1$, $t_2$). Relaxation of the most constraining barrier (here, $A_1$) in the first period enables increased policy stringency over time, to the level of the new most constraining barrier ($D_2$).

Source: Pahle et al.(2018), available [here](#)