

PEER REVIEW

Carbon Valuation in UK Policy Appraisal: A revised approach DECC

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1. The DECC paper makes the case for using a target-consistent approach rather than the SCC, and provides point estimates of the “number” on the basis of estimates of abatement costs. This peer review considers the merits of this argument and the reliance that should be placed on the numbers suggested.

2. Target-consistent v SCC measures

The appropriateness of a target-consistent approach depends upon the policy questions being addressed. If the question is: “what is the mix of policies which meets the target at least cost?”, then it is the correct approach. However, the SCC is relevant if policy makers are interested in the efficiency of the targets. The practical implication is that both are required.

3. Which target?

There is no single unique target for CO₂ reductions – and as new information becomes available, they are likely to change. There is the EU target and a number of CCC targets according to time frame.

Thus the paper needs to provide estimates for each of these targets, not a single number. Furthermore when the targets change, so should the least cost estimate change too.

4. Production v consumption based targets

The UK and EU targets are all based upon production and not consumption. They therefore do not link in any clear way to the CO₂ ppm concentrations at the global level. Hence the abatement cost measures are not strictly carbon ones, but rather domestic production based. It is important therefore not to confuse the numbers produced in this exercise with climate change abatement: it is possible to hit the domestic production targets whilst at the same time increasing global emissions.

5. Measuring abatement costs

Abatement costs are inherently uncertainty – and the paper produces a spurious impression of certainty about the numbers. This uncertainty has several dimensions. First, the case for market based instruments is precisely that the costs are unknown – to be revealed through the market process. Second, the costs are revealed to government *ex ante* through a process which is riddled with economic rents, and hence interested parties are bound to lobby and behave strategically. Third, R&D is pervasive to low carbon technologies, and hence as the time period is extended, so the cost uncertainty rises. Fourth, energy is provided through systems, and hence the costs of particular technologies cannot be estimated independent of the systems in place.

Unsurprisingly therefore *ex ante* abatement costs have proved to be widely inaccurate *ex post*. Recent examples include wind energy, where the devaluation of sterling has increased costs dramatically, where the system costs are pervasive given intermittency and where manufacturing capacity has been constrained. It is remarkable that the paper provides no back-casting evidence indicating the scale of the errors.

6. Geography and carbon reductions

The abatement costs vary geographically. Thus CDMs in developing countries might be priced well below wind farms in the UK – indicating that much of UK specific emissions reductions are expensive relative to the global target-consistent abatement costs. If overseas emissions reductions are allowed to contribute towards UK and EU targets, then these may provide the marginal abatement cost.

7. Policy costs

It is extremely rare to observe the *ex ante* least cost options being selected through the policy process. On the contrary, there is considerable evidence that the political economy process can choose more expensive options in priority to cheaper ones. Policy costs are an inherent component of the climate change policy approach. This the paper should distinguish between two questions in providing estimates of abatement costs: what the cheapest way of achieving the targets is in theory, and what it is likely to cost in practice. There is an extensive literature on policy costs, rent capture and regulatory failures – yet the paper makes no serious reference to this. This is a major weakness in the analysis.

8. The MARKAL modelling and the 2003 White Paper

These errors are manifest in the DTI's 2003 white paper and in particular its use of the MARKAL model. This is a “garbage in – garbage out model”, essentially taking *a priori* exogenous cost estimates and plugging them into the input-output framework. It is notable that the paper provides no critical assessment at all of the past use of the model and especially the numbers that resulted in the 2003 White Paper. No reliance should be placed on figures 7.1 – 7.4 and 8.4.

9. The role of market process and the EUETS

Carbon policy is a miss-mash of interventions – from energy efficiency measures, subsidies, the RO/ROC, the CCL and associated agreements, the EUETS and much else. Given so many overlapping measures, the EUETS price of carbon is heavily distorted – even before the weaknesses of the EUETS are taken into account.

The EUETS is short term, subject to quantity manipulation and the permits caps are only loosely related to the overall 20% target. The EUETS price therefore provides little guidance to the marginal abatement costs.

10. The shape of the abatement cost curve

It is far from clear that the shape of the cost curve follows the pattern indicated. It is not even clear that costs will rise over time. By 2050 it is likely that technologies will have been transformed. These are at best “known unknowns”, but more likely “unknown unknowns”.

11. The role of the SCC

The SCC is important as a check on the targets. If the SCC is for example much lower than the target-consistent abatement costs, the implication is that the targets are badly set. This is important information for the CCC, and it is also important for the market, since the greater the gap, the less credible the targets are.

SCC estimates are however even more susceptible to uncertainty, since they include the damage side as well as the costs. There is a fierce debate on whether damages can be viewed within the framework of cost benefit analysis, and if so how the “fat tail” issues can be taken into account. For these reasons, the range of possible numbers is corresponding even larger than for the abatement cost and targets measures.

12. Implications

The above considerations suggest:

- (i) both the target-consistent abatement costs and the SCC are relevant to policy –they answer different questions
- (ii) abatement costs are (very) uncertain, and single numbers are therefore of little use
- (iii) the errors in past forecasts (such as via MARKAL) provide important evidence on the bounds of the uncertainties – and should be prominently reported
- (iv) policy costs are an inherent part of the abatement costs – and the political economy of rent capture should be explicit in the paper.
- (v) Production based targets are not closely related to climate change abatement, and hence abatement costs based upon production targets reveal little about the costs of limiting CO₂ ppm at the global level.