“Climate policy: a burden, or a gain?”

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Motivations

That climate policies are costly is evident and therefore often creates major fears in industry. Evaluations of their costs are often made in the literature. But the alternative, *i.e.* no action, is much less often presented. Yet, it also has a cost: no action means our economies incurring damages, possibly considerable, which will also be a burden. To correct for the bias introduced by this frequent neglect of estimations of the cost of the avoided damages is our first motivation in writing this paper. Our second one is that the proper use of such estimates in preparing decisions can be described in fairly simple economic terms, in spite of the apparent complexity of the modeling techniques presently in vogue in climate economics.

Short account of the research

Since for many the focus ought to be on cost, we start with distinguishing the two categories of costs involved: one caused by climate change (damages incurred), the other caused by climate policy (mitigation and other actions costs). We insist that they be considered jointly, that is, be added up to form what we call the *genuine cost* of any climate policy (with a minus sign in front of the first one, since it represents an

avoided cost). Obviously, if this cost is shown to be negative then, and only then, the policy can be deemed to be economically sound, since the global benefit of avoided damages outweighs the direct costs of mitigation and other actions.

Using a simple, but comprehensive "integrated assessment" simulation model (dubbed CWS) of the world economy, coupled with a climate module, we show numerical estimates of both categories of costs for two alternative policies that consists in putting an imposed cap on CO_2 concentration in the atmosphere (650 and 550 ppm, respectively) and compare these costs with those of two benchmark cases without such caps ("business as usual" and a world efficient policy).

Main conclusions

Numerical results obtained from the CWS model show :

that the "cap 650 ppm" policy has a negative genuine cost and thus passes the benefit-cost test for some high values of the parameters of the damage cost function. In addition this policy is identical to the one that would be optimal, *i.e.* welfare maximizing at the world level, if no cap was imposed;

that for lower values of the damage cost parameters, the said policy is not only not optimal – the cap being too stringent in this case, but even entails a positive genuine cost;

that the "cap 550 ppm" policy, being stringer, entails a sizeable genuine cost.

When presenting these results, we make the important caveat that the model we use is a highly stylized one and its parameter values are quite uncertain. Therefore, the gist of our conclusion is less in the absolute numbers themselves than in their

structure: thanks to this model, we find that a negative genuine cost of a climate policy is a possibility, and we identify conditions under which this is likely to occur.

Further results are obtained by breaking down the model in its multi-country or regional dimensions. Here one faces the well known economic fact that avoided damage costs and direct costs differ widely across countries, and therefore across conceivable policies. A simple diagram that illustrates these severe asymmetries also points to how and which international transfers can be used to make a climate policy a "win-win" one for all countries involved, when it has a negative genuine cost.

Policy implications

When both direct costs and benefits from avoided damage costs are considered jointly, the resulting genuine cost of any climate policy appears to be of an order of magnitude considerably lower than the impression one gets from measuring just direct costs. Economic modeling allows appreciating that, and is therefore to be recommended in preparing decisions on policies.

It is also an inescapable technique to compare policies and orient choices among them, when several exhibit negative genuine cost.

Finally, after appropriate breaking down of its multi country components it allows for designing inter-country transfers so as to go beyond the standard framework of selfish national benefit-cost analysis and implement instead "win-win" international climate agreements.