

Klimp: socioeconomic effects of the programme

- a quantitative policy evaluation

Per Strömberg, Xing Liu, Linda Wennler, Elisa Abascal Reyes

Three main questions

- Additional effects
 - Did the instrument cause measures to be taken that else would not have been undertaken?
- Cost efficiency
 - Were measures implemented at minimum cost?
- Socio-economic benefit
 - Was the programme concluded to a cost that was less, equal or larger than the societal benefit?
- Reference points: CO₂ tax and CDM-projects

Additionality

- An important question from a tax payers'/government perspective.
- Data: 2003 and 2004
- Non-experimental analysis of a policy effect: we have a treatment group (approved applications) and a control group (disapproved applications)
- A selection model with binary probability functions.
- The additionality effect: the probability that a project is concluded with without Klimp grant, respectively: focus on the investment decision.
- The counterfactual case has not been analysed although the free-rider problem is relevant.

Some methodological issues

- Many unknown factors that probably did affect the outcome have not been possible to observe directly. The method was chosen with this in mind.
- We assessed the outcome regarding the degree of investment completed (Completely/to a large extent/to less extent/not at all).
- Variables:
 - The SWEPAS' decision to approve/disapprove the grant.
 - The project owners' investment decision
 - Reviewing agency
 - Expected environmental benefit
 - Type of applying organisation (public/private)
 - Year of investment

Results

- The probability that the treatment group would invest if they were granted the Klimp subsidy was around 75 %.
- The probability that the control group would have invested in the measure without Klimp subsidy was around 25 %.
- The additional effect is around 60%, which implies that around 40 % of the investments would have been completed anyway.
- Better than CDM – but good enough?

Cost efficiency

- A replication of the National institute of economic research (NIER) study (Samakovlis & Vredin Johansson 2007): regression analysis with cross-sectional data.
- The model have been further adjusted in order to deepen the analysis.
- Reported data.
- The cost efficiency analysis requires data on costs and effects.
- Measured costs: average grant size for project groups (11 categories).

Cost efficiency: definitions

- The (theoretical) strict necessary condition for cost efficiency is that all measures that were induced by the instrument have generated the same marginal cost: i.e. comparison within the instrument.
- The strict sufficient condition for cost efficiency is that the marginal costs that were generated by the instrument is not higher in comparison with marginal costs generated by other instruments. I.e. comparison in between instruments.

Results (1)

- For the statistically significant marginal subsidies the interval is 0,7 – 1,90 SEK kg/CO₂!
 - If we exclude the groups with less than ten observations, the interval narrows down to 0,67 – 1,42 SEK kg/CO₂ and we reject equal marginal cost.
- Klimp does not meet the requirements for the strict necessary condition for cost efficiency.

Results (2)

- After deepening the analysis we could assume equal marginal costs for around 71% of the groups which corresponds to around 84 % of the total CO₂ reductions.

→ Klimp meets the requirements for the strict sufficient condition for cost efficiency for 71% of the measures.

- After additionality adjusting the marginal cost for the remaining measure groups, the interval expands to 0,14 – 0,2 SEK.
- No significant time effects
- Systematic differences between agencies
- Systematic differences between public/private

Results (3)

- Compared to the CO₂ tax, Klimp is more cost efficient (lower marginal cost)
 - But CDM is more cost efficient than Klimp.
- Klimp was (almost) cost efficient for measures in Sweden.

Socioeconomic Cost-benefit analysis

- Costs: governments' cost, project owners costs, environmental damage costs (i.e. CO₂ costs), alternative costs (idle money).
- Benefits: Shadow price of CO₂. Based on different valuation methods (e.g. Ecovalue 08).

Results (4)

- The socioeconomic benefit is larger than the socioeconomic cost (environmental damage): i.e. profitable
- The result remains the same even if we adjust administration cost and apply different valuation methods.
- The result remains also when the alternative cost is included (idle money).

Some considerations

'Sufficient efficiency': different policy instruments address emission activities with partly different characteristics.

Thank you!

Report downloadable at:

<http://www.google.com/search?hl=sv&q=klimateinvesteringsprogrammen+klimp+rapport+6517>

Contact persons:

per.stromberg@naturvardsverket.se

elisa.abascal@naturvardsverket.se