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AN INCENTIVE COMPATIBLE PLANNING PROCEDURE FOR PUBLIC GOOD PRODUCTION: A CORRIGENDUM

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The problem mentioned by Mori arises from the fact that, for simplification, we did not maintain the exact parallelism between the mechanism presented and the static version of the incentive compatible mechanism referred to as the pivotal mechanism; see e.g. Green, Kohlberg & Laffont (1976). By doing so we can insure the truthfulness of preference revelation at each t, and the results in Green & Laffont (1978) are sustained.

With the same definition of the set of pivotal agents as in the paper, namely,

$$i \in P(t) \Leftrightarrow \sum_{j \neq i} (\psi^j(t) - \delta^j \gamma(x(t)))\,(\sum_j \psi^j(t) - \gamma(x(t))) < 0$$

and with one public good, the process must be defined as follows

$$\begin{aligned} \dot{x}(t) &= +1 \quad \text{if} \quad \textstyle\sum_i \psi^i(t) - \gamma(t) > 0 \\ &= \ \ 0 \qquad\qquad\qquad\qquad\quad = 0 \\ &= -1 \qquad\qquad\qquad\qquad\quad < 0. \end{aligned}$$

If $\sum_i \psi^i(t) - \gamma(t) \neq 0$

$$\dot{S}(t) = -2 \sum_{i \in P(t)} \sum_{j \neq i} (\psi^j(t) - \delta^j \gamma(t))$$

$$\dot{y}^i(t) = -\delta^i \gamma(x(t))\,\dot{x}(t) + 2 \sum_{j \neq i} [\psi^j(t) - \delta^j \gamma(x(t))]\,\dot{x}(t) + \frac{1}{n}\dot{S}(t) \quad \text{if } i \in P(t)$$

$$= -\delta^i \gamma(x(t))\,\dot{x}(t) + \frac{1}{n}\dot{S}(t) \quad \text{if } i \notin P(t)$$

If $\sum_i \psi^i(t) - \gamma(t) = 0$

$$\dot{y}^i(t) = -\left|\sum_{j \neq i} (\psi^j(t) - \delta^j \gamma(t))\right| + \frac{1}{n}\sum_i \left|\sum_{j \neq i} (\psi^j(t) - \delta^j \gamma(t))\right| \tag{1}$$

It is also necessary to specify a rule for stopping the process. With one public good, as above, the natural rule is to stop at the instant that $\dot{x}(t)$ becomes zero. Convergence is assured, as demonstrated in the paper, as long as individuals behave myopically. Note that agents anticipate a non-zero transfer at this date, according to (1), but because (1) applies only at the very last instant of the process it affects individuals' utilities only infinitesimally. Nevertheless, transfers must be defined in this way, rather than being defined linearly in $\dot{x}(t)$ as we did in eqs. (5) and (6) in our original paper, if truth-telling is to be a dominant strategy.

The results of our paper for several public goods continue to be valid for the system given above. Under the rule: stop if and only if $\dot{x}_k(t)=0$ for all public goods k, convergence is assured when preferences are separable. Non-separable preferences with several public goods remain a problem. The counter-example in Section III.B of our paper can be modified straightforwardly to yield the same cyclical behavior under the system given above. For further details see, Green & Laffont (1979, ch. 16).

The results of incentive compatibility obtained in our procedure are not as amazing as Mori believes and in no way contradict Hurwicz's theorem. Incentive compatibility is only local. That is, it reflects a first-order approximation to the change in utility at an instant in time. Hurwicz considers strategic behavior which would in principle allow manipulation of the entire path followed by the process. (His payoff function would presumably be $\lim_{t\to\infty} u_i(t)$ in our context.) This linearization of utility functions plus the individuals' neglect of their impact on the surplus generated, $\dot{S}(t)$, enables us to use the Clarke–Groves results in order to obtain incentive compatibility.

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