Corrigendum

Strategy-proof and individually rational social choice functions for public good economies

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Summary. This note is to inform about a mistake in my paper (Serizawa, 1996). In that paper, I characterized strategy-proof, individually rational, budget-balancing, non-exploitative and non-bossy social choice functions for economies with one public good and one private good. I established as Theorem 3 (page 507) that a social choice function is strategy-proof, individually rational with respect to endowment, budget-balancing, non-exploitative and non-bossy if and only if it is a scheme of “semi-convex cost sharing determined by the minimum demand principle”. I also exposed one example (Example 2, page 507) in order to emphasize that non-bossiness is indispensable for this characterization. I claimed that the social choice function in that example satisfies the above axioms except for non-bossiness, and is not a scheme of semi-convex cost sharing. However, the social choice function in the example is actually not strategy-proof, as shown in the simple discussion below. Therefore it is an open question whether or not a similar characterization theorem holds without non-bossiness.

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In this note, I use the same model, assumptions and definitions as Serizawa (1996). Thus I omit them here. In the following, I expose Theorem 3 and Example 2 of Serizawa (1996), and then show that the social choice function in the example is not strategy-proof.

Theorem 3¹. *A social choice function is strategy-proof, e-individually rational, non-exploitative and non-bossy if and only if it is a scheme of semi-convex cost sharing determined by the minimum demand principle.*

[★] I thank Professor Rajat Deb, who kindly pointed out my mistake.

¹ Budget-balance is assumed in the beginning of the paper (Serizawa, 1996). Thus it is not mentioned in the theorem.

Example 2. There are three agents, say, agent 1, 2 and 3. The cost function C of the public good is linear, that is, $C(y) = y$ for any production level $y \in \mathbf{R}_+$ of the public good. The endowment e is the allocation such that all the agents have one unit of the private good and no public good is produced. The allocation a^1 (respectively a^2) is the allocation such that one unit of the public good is produced, agent 1 (respectively agent 2) pays the whole cost, and the other agents consume their endowment of the private good. The social choice function f is specified as follows. Let $u = (u^1, u^2, u^3)$ be a preference profile, where u^i , $i = 1, 2, 3$, denote agent i 's preference respectively. If $u^1(e) \geq u^1(a^1)$ or $u^2(e) \geq u^2(a^2)$, then $f(u) = e$; and if $u^1(a^1) > u^1(e)$, $u^2(a^2) > u^2(e)$ and the slope of agent 3's indifference curve through $(1, 1)$ is "steep" (respectively "not steep"), then $f(u) = a^1$ (respectively $f(u) = a^2$).

Now I show that the social choice function f in the example is not strategy-proof. Let $u = (u^1, u^2, u^3)$ be the preference profile such that $u^1(a^1) > u^1(e)$, $u^2(a^2) > u^2(e)$ and the slope of agent 3's indifference curve through $(1, 1)$ is steep. Then $f(u) = a^1$. Let $\hat{u}^2$ be agent 2's preference such that $\hat{u}^2(a^2) < \hat{u}^2(e)$. Then since $f(u^1, \hat{u}^2, u^3) = e$ and $\hat{u}^2(a^1) > \hat{u}^2(e)$, it follows that $\hat{u}^2(f(u)) > \hat{u}^2(f(u^1, \hat{u}^2, u^3))$. Hence f is not strategy-proof.

I apologize to the readers for the inconvenience owing to this mistake.

Reference

Serizawa, S: Strategy-proof and individually rational social choice functions for public good economies. *Economic Theory* 7, 501–512 (1996)