Fair reallocation in economies with single-peaked preferences

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Abstract

We consider the problem of fairly reallocating the individual endowments of a perfectly divisible good among agents with single-peaked preferences. As agents may have different individual endowments in this problem, the standard concept of *envy-freeness* cannot be applied directly. Thus, we propose a new concept of fairness, which we call *envy-freeness for similarities*. It requires that each agent whose best amount is strictly greater (less) than his individual endowment should not envy another agent whose best amount and assignment are strictly greater (less) than her individual endowment. We then construct a rule satisfying *envy-freeness for similarities* and some other desirable properties. In doing so, we propose a new extension of the well-known uniform rule for the reallocation problem, which we call the gross uniform reallocation rule. Moreover, we show that the gross uniform reallocation rule is the only rule that satisfies *efficiency*, *individual rationality*, *strategy-proofness*, and *envy-freeness for similarities*.

Keywords: envy-freeness; individual rationality; uniform rule; single-peaked preferences; strategy-proofness.

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