# Lorenz Rankings of Rules for the Adjudication of Conflicting Claims

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For the problem of adjudicating conflicting claims (O'Neill, 1982; for a survey, see Thomson, 2003), we offer simple criteria to compare rules on the basis of the Lorenz order. They exploit several recently developed techniques to structure the space of rules.

The first results concern the family of "ICI rules" (Thomson, 2008, forthcoming). This family contains the constrained equal awards (Maimonides, 12th Century), constrained equal losses (Maimonides, 12th Century), Talmud (Aumann and Maschler, 1985), and minimal overlap (Ibn Ezra, 12th Centrury; O'Neill, 1982) rules. We obtain a condition relating the parameters associated with two rules in the family guaranteeing that one Lorenz dominates the other. We prove parallel results for a second family (CIC family, Thomson, 2008, forthcoming), which is obtained from the first one by exchanging, for each problem, how well agents with relatively larger claims are treated as compared to agents with relatively smaller claims. This second family also contains the constrained equal awards and constrained equal losses rules.

The next results concern the family of "consistent" rules (Young, 1987). A rule is consistent if the recommendation it makes for each problem is never contradicted by the recommendation it makes for each reduced problem obtained by imagining some claimants leaving the scene with their awards and reassessing the situation at that point. The main result here is the identification of circumstances under which the Lorenz order is "lifted by consistency" from the two-claimant case to arbitrarily many claimants. (The concept of lifting is adapted from one developed for properties of rules by Hokari and Thomson, 2008, forthcoming.) This means that if two rules are consistent and one of them Lorenz dominates the other in the two-claimant case, this domination extends to arbitrarily many claimants.

Finally, we exploit the notion of an operator on the space of rules (Thomson and Yeh, 2008, forthcoming). An operator is a mapping that associates with each rule another one. The operators we consider are the duality operator, the claims truncation operator, and the attribution of minimal right operator. We also consider the operator that associates with each rule and each list of non-negative weights for them adding up to one, their weighted average. An operator "preserves an order" if whenever a rule Lorenz dominates another one, this domination extends to the two rules obtained by subjecting them to the operator. We identify circumstances under which certain operators preserve the Lorenz order (or reverse it), and circumstances under which a rule can be Lorenz compared to the rule obtained by subjecting it to the operator.

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