

Valuation monotonicity, fairness and stability in assignment problems *

Marina Núñez

University of Barcelona

We investigate the possibility of having stable rules for two-sided markets with transferable utility, that satisfy some valuation monotonicity and fairness axioms. Valuation fairness requires that changing the valuation of a buyer for the object of a seller leads to equal changes in the payoffs of this buyer and seller. This is satisfied by the Shapley value, but is incompatible with stability. A main goal in this paper is to weaken valuation fairness in such a way that it is compatible with stability. It turns out that requiring equal changes only for buyers and sellers that are matched to each other before as well as after the change, is compatible with stability. In fact, we show that the only stable rule that satisfies weak valuation fairness is the well-known fair division rule which is obtained as the average of the buyers-optimal and the sellers-optimal payoff vectors. Our second goal is to characterize these two extreme rules by valuation monotonicity axioms. We show that the buyers-optimal (respectively sellers-optimal) stable rule is characterized as the only stable rule that satisfies buyer-valuation monotonicity which requires that a buyer cannot be better off by weakly decreasing his/her valuations for all objects, as long as he is assigned the same object as before (respectively object-valuation antimonotonicity which requires that a buyer cannot be worse off when all buyers weakly decrease their valuations for the object that is assigned to this specific buyer, as long as this buyer is assigned the same object as before). Finally, adding a consistency axiom, the two optimal rules are characterized in the general domain of allocation rules for two-sided assignment markets with a variable population.

*Based on joint work with René van den Brink and Francisco Robles. The paper is available at <https://papers.tinbergen.nl/18071.pdf> .