

Finitely Repeated Bilateral Trade: Extended Abstract

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We study a bilateral trade problem that is repeated finitely many times. In each period seller may sell to a buyer a unit of indivisible good; the valuations for the goods are independent both across agents and across periods. We assume that the budget needs to be balanced in every period. We assume that the agents' announcements can be made simultaneous and the terms of trade are non-negotiable once the announcement is made, hence we impose *interim* IC constraints. After each period, either player can refuse the exchange; thus, we impose *per-period ex-post* IR constraints. The relationship breaks down exogenously after a (commonly known) number of repetitions. In the last period of relationship, imposing budget balance, IC and IR leads to inefficient trade, as described by Myerson and Satterthwaite (1983) and Gresik (1991). However, in any period but last, the agents value future relationship. The ex-ante surplus that this relationship generates enters per-period ex-post IR constraint, thus relaxing it and allowing for more trade in each round but the last, as compared to static bound found by Myerson and Satterthwaite. We show that if the relationship lasts long enough, trade in the first periods is fully efficient. We thus can conclude that, as the number of periods gets large, trade approaches the fully efficient level and the speed of convergence is exponential.

Our result does not rely on the assumption that, if an agent deviates and does not follow the prescription of the mechanism, her future surplus is set to zero. In fact, we assume that agents are able to return to the equilibrium path in case of the deviation by the start of the next period. However, the mechanism sets a disagreement point for the deviation: it prescribes that the continuation play after the deviation is take-it-or-leave-it offers, made by

the party who has not deviated, until the end of the relationship. As ex-ante surplus of take-it-or-leave-it offers is higher than ex-ante surplus of an efficient mechanism for the party making offers (Williams 1987), that party needs to be compensated to return to the equilibrium path (We assume a worst-case scenario that the deviator holds all the bargaining power as the parties divide an extra total surplus generated by moving from take-it-or-leave-it offers to an efficient mechanism, yet the party that is to make take-it-or-leave-it offers would need to be compensated for the lost surplus. Note that they are to agree to switch back to the equilibrium path before the beginning of the next period. So, there is no incomplete information at this stage.). This compensation gives us the ex-ante surplus that would enter into per-period ex-post IR constraint and allow to generate higher levels of trade. The relaxation of IR constraint is akin a subsidy discussed by Myerson and Satterthwaite; thus, it is a straightforward extension of their results to show that relaxed IR leads to higher levels of trade. We show how the relaxation comes naturally when relationship is repeated.

As a benchmark, we consider a model where N goods, each i.i.d. may be traded (assuming away intratemporal structure of the problem). It is clear that, if ex-post IR is imposed for each good individually, the maximum surplus that can be achieved is N times the bound obtained by Myerson and Satterthwaite. We also consider the situation when ex-post IR is imposed over all goods (the party can either execute all the trades that are prescribed or walk away from all of them). This comparison is still work in progress.

References:

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