Masatlioglu, Taylor, Uler (2012, RED) Response

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Current Mechanism Design models ignore complexity-associated costs which are imposed on agents. The paper demonstrates inconsistent behaviour with predictions of Bayes-Nash Equilibria in a first price auction. Under experimental conditions, strategically equivalent mechanisms do not lead participants to pursue equivalent strategies across these mechanisms. An increase in the relative complexity of the mechanism corresponded to an increased divergence from equilibrium predictions. Therefore, models that take costs associated with complexity into account might better explain the experimental results.

The existence of these costs and their influence on agents' behaviour can be observed at different stages of games. For instance, when modelling single item auctions we assume that all buyers know their exact valuations a priori. That assumption is not consistent with some real world auctions. In oil digging auctions for example, buyers have to expend a cost to survey the area and then arrive at an estimation for their valuation. The uncertainty of that valuation is dependent on how big their expenditure was. Furthermore, there are cases where estimating valuations for every possible outcome is unfeasible. A multi-unit auction with N distinct items would require agents to evaluate 2^N different bundles. Spectrum auctions are an example of such auctions allocating tens up to hundreds of blocks to many bidders. It seems unreasonable for firms to accurately and costlessly estimate their valuation for 2^N bundles as N grows to reach the limits of computational feasibility.

In mechanism design, the more relevant assumption to the paper is that agents costlessly deduce best responding strategies. Consider the following mechanism for allocating 100$ with two competitors: Match both competitors in a game of checkers, give the money to the winner, in case of draw split the amount equally between competitors. Modeling it with standard Nash equilibria would suggest that both players will play a best responding strategy. Checkers is a complete information game, therefore, in order to find a best responding strategy over 39 trillion contingencies must be considered. This is an extreme example where choosing a high quality strategy is associated with enormous costs -probably much higher than 100$- and the quality of strategies found by agents depends on their expenditure and level of technology. In order

for mechanism design to be applicable in such cases, the relative cost of estimating strategies and valuations must be modelled.