
Prize Scarcity and Bidding Behavior in All-Pay Contests with Multiple Prizes

Aric Shafran*¹, Jason Lepore*², and Blake Allison*³

¹California Polytechnic State University – Orfalea College of Business San Luis Obispo, CA 93407, United States

²California Polytechnic State University – Orfalea College of Business San Luis Obispo, CA 93407, United States

³Emory University – Department of Economics 201 Dowman Drive Atlanta, Georgia 30322, United States

Abstract

We compare bidding behavior in complete information all-pay contest experiments that vary in the number of prizes and number of players. All-pay contests in which players must exert costly effort or commit resources in an attempt to win a prize are a fundamental aspect of modern society. Examples of these contests include R&D contests, academic grant writing, elections, lobbying, and sales among others. A common feature of these particular examples is that these contests often award several prizes, one to each of the best contestants. Furthermore, these prizes are often awarded deterministically. For example, in an R&D contest, rather than simply being more likely to go to the better proposals, the prizes are awarded with certainty to the most valuable innovations. Thus, these are examples of multi-prize all-pay auctions. There is a vast literature studying such contests, and significant divergence of behavior from theoretical predictions has been observed in experiments. Despite the prominence of the aforementioned contests, however, there have not been any experimental tests of behavior in multi-prize all-pay auctions. In this paper, we provide such a test, varying both the number of players and number of prizes in an all-pay auction. In doing so, we are able to properly observe and test a novel explanation for the disparity between theory and behavior: the scarcity of the prize, that is, the proportion of prizes to players. Our experiments reveal that the scarcity of the prize is largely responsible for the amount of overbidding in contests, which is the most commonly observed behavioral phenomenon in previous experimental studies. In particular, we find that when the proportion of prizes to players is 1 in 3, there is significant overbidding relative to equilibrium predictions, while bidding is at or below equilibrium predictions when this proportion is 2 in 3. Our results also demonstrate that overbidding is not restricted to single prize contests, as we observe significant overbidding when 6 players compete for 2 prizes.

Keywords: All pay contest, auction, experiment, Nash equilibrium, overbidding

*Speaker