

# Leveling the Playing Field is not Enough

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## Abstract

Contest rules can be set up by a contest administrator who is interested in maximizing the total efforts expended in the contest. In order to further her prime objective, the contest administrator can bias the contest rules in favor of one of the players. In this study we analyze optimal discrimination policy in contest games that incorporate noise into the contest setting such that encompassing the most widely studied types of contest success functions (deterministic all-pay-auctions and Lottery CSFs) as polar cases when the noise vanishes. A common theoretical finding in all-pay auction and Lottery CSFs is that optimal discrimination among ex-ante heterogeneous players requires implementation of a leveling the playing field policy, i.e., equating the players' probabilities of winning in equilibrium (See Epstein and Nitzan, 2011,2013). We however show that the effect of discrimination intended to maximize the sum of the players' efforts has fundamentally different effects on the players' optimal effort levels relative to the commonly studied CSFs. Specifically, in these contest games with noise: (i) some level of heterogeneity among the contestants is conducive to competition and yields higher total equilibrium efforts than is obtained under a leveling the playing field policy; (ii) even if the players are ex ante identical, the use of appropriate discrimination causes the discriminated player to increase his efforts by more than it causes the other player to decrease his efforts; as a result, the sum of the player's efforts increases.

**Keywords:** Asymmetric contest, All-pay auction, Random noise, Logit-lottery

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