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A Simple Model of Competition Between Teams*

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Abstract

We model competition between two teams (that may differ in size) as an all-pay contest with incomplete information where team members exert effort to increase the performance of their own team. The team with the higher performance wins, and its members enjoy the prize as a public good. The value of the prize is identical to members of the same team but is unknown to those of the other team. We focus on the case in which a team's performance is the sum of its individual members' performances and analyze monotone equilibria in which members of the same team exert the same effort. We find that the bigger team is more likely to win if individual performance is a concave function of effort, less likely if convex, and equally likely if linear. We also provide a complete characterization of the equilibria for the case in which individual performance is a power function of effort and team value is uniformly distributed. For this case we also investigate how probabilities of winning, total team performance and individual payoffs are affected by the size of the team. The results shed light on the "group-size paradox".

1 Introduction

Many economic, political and social activities are performed by groups or organizations rather than individuals. When firms compete, the strategic interaction is essentially between *collectives* of individuals. Electoral competition between candidates involves strategic interaction between *teams* consisting of the candidates themselves, their consultants and the activists that support them. Similarly, R&D races are carried out between *labs* of scientists. Lobbying efforts are carried out by interest *groups* who need to coordinate the actions of their members in response to the actions of other interest groups. Likewise, ethnic

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