"Success breeds success" or "Pride goes before a fall"? ☆ Teams and individuals in multi-contest tournaments

Qiang Fu [a,*], Changxia Ke [b], Fangfang Tan [c]

[a] NUS Business School, National University of Singapore, 15 Kent Ridge Drive, Singapore
[b] Business School, Queensland University of Technology, 2 George Street, Brisbane, Australia
[c] Department of Public Economics, Max Planck Institute for Tax Law and Public Finance, Martstallplatz 1, Munich, Germany

A R T I C L E   I N F O

A B S T R A C T

We study the impact of progress feedback on players' performance in multi-contest team tournaments, in which team members' efforts are not directly substitutable. In particular, we employ a real-effort laboratory experiment to understand, in a best-of-three tournament, how players' strategic mindsets change when they compete on a team compared to when they compete individually. Our data corroborate the theoretical predictions for teams: Neither a lead nor a lag in the first component contest affects a team's performance in the subsequent contests. In individual tournaments, however, contrary to the theoretical prediction, we observe that leaders perform worse—but laggards perform better—after learning the outcome of the first contest. Our findings offer the first empirical evidence from a controlled laboratory of the impact of progress feedback between team and individual tournaments, and contribute new insights on team incentives.

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1. Introduction

Tournament-like competitive events are widespread in the economic landscape. Economic agents expend scarce resources to vie for a limited number of prizes, and they forfeit their resources regardless of win or loss. Such competitive activities appear in a diverse array of environments, including political campaigns, sports, R&D races, warfare, and even internal labor markets within firms.

A tournament often consists of more than a single static encounter and requires that parties meet on multiple fronts (see Konrad, 2009). One's success cannot be accomplished in a single stroke of effort, but rather depends on overall performance in a series of shots. Harris and Vickers (1987) propose a seminal race model in which two firms compete in a series of

component contests to win a grand prize. Winning each component contest allows a firm to secure a discrete advance toward a given finish line; it wins the race if and only if it accumulates a sufficient number of advances ahead of its rival. Harris and Vickers use an analogy of an innovation race in which firms compete for multiple component technologies to describe their model. We label such competitions multi-contest tournaments.[1]

The economic literature on multi-contest tournaments conventionally assumes a rivalry between individual contenders, with each participating in all component contests. Many tournaments, however, involve competitions between teams (see Fu et al., 2015). Each team consists of a set of affiliated but independent players. A distinctive pair of players from rival teams are matched in each component contest, and a player's win allows his team to advance. Consider, for instance, political parties' electoral competitions for majority status—e.g., general elections in most democracies, and congressional elections in the U.S.: Candidates representing rival parties compete head-to-head for legislative seats in each constituency, and a party is allowed to form a government or set the legislative agenda if it achieves majority status. Team tournaments can also be intuitively exemplified by many sports events between teams, such as the Davis Cup for men's tennis, the Thomas Cup for men's badminton, and the Ryder Cup in golf. Alternatively, a large-scale military operation—e.g., World War II—usually includes a series of separate battles between matched individual units. The outcome of an individual battle depends on the maneuvers and commitments of the participating units.

Two common elements feature in these strategic interactions. First, unlike competitions between individuals, the tournament involves collective action. This leads to the usual free-riding problem, as individual players' efforts generate positive externality to their teammates. Second, it involves a unique team production process that differs from those previously considered in the literature. In the conventional group tournament or contest, group members join forces to perform a single task, and their efforts are aggregated into a single variable to be factored into contest success functions (see the literature reviews of Dechenaux et al., forthcoming; and Charness and Kuhn, 2011).[2] In our setting, each individual player is assigned to a distinctive component contest; team members' efforts do not simply sum up, as individual wins only discretely add to a team's margin.[3] These two common features compel us to investigate the strategic behavior in such multi-contest tournaments that take place between teams.

We present an experimental study to explore how players' behavior and the outcome of the tournament can be affected by the tournament's prevailing structure. In particular, we focus on how information on the state of the contest influences players' strategic behavior when they compete on a team. Consider, for instance, a sports event with two competing teams. How would a team's early lead affect the incentive of players who would appear in later matches and, therefore, the balance of the subsequent confrontations? Consider, alternatively, the dynamics in U.S. Senate elections, in which roughly one third of the 100 seats are up for election. How does a party's lead, due to past success or current turnover, affect rival candidates' strategies and the overall outcome of the competition?

The theoretical literature has predicted that players in multi-contest tournaments will react drastically differently to the outcomes of past component contests when standing alone vs. performing on teams. Harris and Vickers (1987) were among the first to identify a strategic-momentum or discouragement effect in multi-contest tournaments between individuals: Early victories generate additional momentum for leaders, yet discourage the laggards; as a result, early outcomes distort subsequent competitions and predict the ultimate winner (see also Klumpp and Polborn, 2006; Malueg and Yates, 2010; and Konrad and Kovenock, 2009). In contrast, Fu et al. (2015) demonstrate that the distorting effect caused by early outcomes does not loom large in team tournaments, and the outcome of each component contest— between each given pair of matched players—is independent of the prevailing feedback policy. Rather, it is determined purely by players' effort cost characteristics. To our knowledge, no studies have offered empirical or experimental evidence on how distinctive tournament structures (i.e., team vs. individual tournaments) affect players' strategic mindsets in reaction to progress feedback. We use a controlled laboratory setting to investigate this issue and bridge the gap.[4]

In reality, contests often involve nonpecuniary effort outlays, such as time, energy, and intellectual input that are typically unobservable or unverifiable. For this reason, measuring real effort directly from the field is notoriously difficult. To date, the majority of field data have been collected through piece-rate jobs in the workplace (see, e.g., Mas and Moretti, 2009; Bandiera et al., 2010; Hossain and List, 2012) or in sports contests (see, e.g., basketball: Berger and Pope, 2011; tennis: Magnus and Klaassen, 2001, and Malueg and Yates, 2010; golf: Guryan et al., 2009; and soccer: Kocher et al., 2012). While field data are of larger external validity, their problems have also been well recognized in the literature (e.g., Manski, 1993, 2000): It is difficult to isolate effort from ability, as well as other exogenous impacts exercised by institutional environments. Members of a given group may behave similarly because they share correlated, unobserved characteristics or work in similar institutional environments. It remains difficult to identify these factors and separate them from the exogenous

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[1] Such a game is equivalently called "multi-battle contests" in other studies, e.g., Fu et al. (2015).

[2] In the literature on group contests, players' efforts are usually perfectly substitute for each other within a group. See, e.g., Kandel and Lazear (1992), Schotter and Weigelt (1992), Nalbantian and Schotter (1997), Ichino and Giovanni (2000), Croson (2001), van Dijk et al. (2001), Cadigan (2007), Abbink et al. (2010, 2012), and Ahn et al. (2011). Notable example can be seen in Cason et al. (2012) and Cason et al. (2015), in which the authors assume a perfectly complementary technology for team production.

[3] Consider an electoral competition between two parties for majority status, in which a candidate's lopsided win in one constituency cannot make up for the party's marginal losses in other constituencies.

[4] For a comprehensive review of contest theories, see Konrad (2009). Dechenaux et al. (forthcoming) provide a thorough review of both experimental and empirical papers on contests and tournaments.