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Relative performance information in tournaments with different prize structures

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A B S T R A C T

Objective: We investigate whether the effect of relative performance information on tournament performance depends on the tournament's prize structure. We focus on the effect of relative performance information on two tournament prize structures: a two-tier structure in which only the top performer receives a reward and all other contestants receive an equal payoff that is lower (reward tournament) and a three-tier prize structure in which the top performer receives a reward, the bottom performer receives a penalty equal to the amount of that reward, and all remaining contestants receive an equal intermediate payoff (reward *and* punish tournament).

Materials Method: We investigate how RPI affects performance in tournaments with different prize structures via an experiment. In our experiment, each participant competes in a multi-period tournament against four other participants on a task in which performance is a function of both individual effort and common uncertainty.

Results: We find that, compared with when relative performance information is not present, relative performance information has a *negative* effect on performance in a reward tournament but a *positive* effect on performance in a reward *and* punish tournament. Supplementary analysis reveals that bottom and middle performers drive these differences in performance, which are due to both differences in effort and in adoption of overly risky strategies.

Introduction

A tournament incentive scheme evaluates employees based on their relative, rather than absolute, performance level. Tournament compensation is pervasive as more than half of U.S. corporations use some sort of tournament ranking system that pits employees against colleagues (Berger, Klassen, Libby, & Webb, 2013; Chen, Williamson, & Zhou, 2012; Hazels & Sasse, 2008; McGregor, 2006). Firms use tournaments for a variety of employee-types ranging from production-line workers to salespersons to mutual fund managers. Employees compete for promotions, bonuses, and even prizes such as luxurious trips or prime parking spots (Backes-Gellner & Pull, 2013; Cerdin & Pargneux, 2009; Kempf & Ruenzi, 2008). Tournaments are common because they can increase productivity by motivating employees, allow firms to avoid paying risk-averse employees for bearing additional risk associated with common uncertainty, and help firms differentiate the talent of their workforce (Grote, 2002, 2005; Ng & Lublin, 2010). Much prior research has focused on understanding when tournaments produce superior outcomes for the firm relative to other compensation schemes (e.g., Hannan, Krishnan, & Newman, 2008; Lazear & Rosen, 1981;

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Nalebuff & Stiglitz, 1983). Beyond understanding the settings in which tournaments may be preferable to other incentive schemes, it is also important for firms to understand how the design of the tournament itself can influence its effectiveness.

We investigate two key elements of tournament design: relative performance information (RPI) and prize structure. We focus on RPI and prize structure because accountants help firms determine the feedback that should be provided to decision-makers (Bonner & Sprinkle, 2002) as well as design employee compensation plans (Atkinson, Banker, Kaplan, & Young, 2001; Indjejikian, 1999). Specifically, we are interested in whether the tournament's prize structure influences the effect that RPI has on tournament performance.

In terms of tournament prize structure, many firms incorporate rewards such as monetary bonuses, trips, and promotions (Gilpatric, 2009; Grote, 2005). Meanwhile, according to a recent survey, 60% of Fortune 500 companies use some form of relative performance-based compensation scheme that incorporates both reward and punishment (Cohan, 2012; Kwoh, 2012). Firms such as General Electric, Metlife, Microsoft, American Express, AIG, Hewlett Packard, and Yahoo! have used tournaments that incorporate both rewards and punishment, with punishments coming in such forms as job reassignment, demotion, or even firing (Cohan, 2012; Grote, 2005; Kwoh, 2012).[1] For example, General Electric used relative performance assessments to sort employees into three groups: a top 20% to whom rewards, promotions and stock options are showered, a middle 70%, and a bottom 10% who are either fired or face other disciplinary actions.

Consistent with the evidence that some firms rely solely on rewards while others rely on both rewards and punishment, we focus on two tournament prize structures: a two-tier structure in which only the top performer receives a reward, and all other contestants receive an equal payoff that is lower (hereafter, a reward tournament) and a three-tier structure in which the top performer receives a reward, the bottom performer receives a penalty equal to the amount of that reward, and all remaining contestants receive an equal intermediate payoff (hereafter, a reward *and* punish tournament). Both prize structures reward the top performer, and the key difference across the two structures relates to the treatment of the nonwinners.[2]

In terms of understanding the effect of RPI in tournaments, prior research has focused only on tournaments that reward the top performers (Casas-Arce & Martinez-Jerez, 2009; Ederer, 2010; Hannan et al., 2008).[3] The empirical evidence shows that RPI informing participants that they are likely to win the tournament can motivate higher performing participants to increase or at least maintain their performance levels. If only the top performers are rewarded, however, the majority of participants will receive RPI indicating that they are unlikely to win the tournament. This leads these participants either to reduce effort or adopt overly risky strategies, both of which have a negative effect on their performance. In total, any positive RPI effect on performance for higher performing participants is outweighed by the decrease in performance of participants who receive RPI indicating that they are unlikely to win, resulting in an overall negative effect of RPI on performance.

Prior findings suggest that, because RPI can negatively affect performance in tournaments, firms may reap greater benefits from not providing RPI to tournament participants. Given the extensive focus on reward tournaments, our primary focus is to investigate whether this implication from reward tournaments also applies to another form of tournament, the reward *and* punish tournament. Understanding the scope of this implication regarding RPI across alternative prize structures is important because it has critical ramifications for how firms design their tournaments as well as their information systems.

We investigate how RPI affects performance in tournaments with different prize structures via an experiment. In our experiment, each participant competes in a multi-period tournament against four other participants on a task in which performance is a function of both individual effort and common uncertainty. We use a multi-period setting because it allows for a more precise test of our theory and enhances the generalizability of our results as tournaments are strategic contests (Rankin & Sayre, 2011) and organizational decisions are typically made in dynamic multi-period contexts (Hollenbeck, Ilden, Phillips, & Hedlund, 1994). We manipulate our first factor, tournament prize structure, between participants at two levels: reward or reward *and* punish. Our reward prize structure provides the winner of the tournament with a monetary reward while giving all other participants an equal lower payoff. In contrast, our reward *and* punish prize structure provides the winner with a monetary reward, punishes the loser with a monetary penalty equal to the amount of the reward, and gives all other participants an equal intermediate payoff. We hold participants expected pay and prize spread, i.e., the range of payouts between the top

[1] These companies use names like "rank and yank," "forced ranking," "stack ranking," "relative performance rating system," "talent assessment system," and "performance procedure" to describe such schemes.

[2] The term "prize structure" can also be used to refer to any aspect of the compensation design of a tournament contract. For example, prior research uses the term to refer to the number of positive rewards present relative to the number of tournament participants as well as to refer to the prize spread of any such positive rewards (e.g., Ehrenberg & Bognanno, 1990a, 1990b; Freeman & Gelber, 2010; Knoeber & Thurman, 1994; Lazear & Rosen, 1981; Lynch, 2005; Orrison, Schotter, & Weigelt, 2004).

[3] An exception is Freeman and Gelber (2010) who investigate the effect of RPI in a six-tier reward prize structure in which all contestants but one receive a reward and the reward amount per contestant increases gradually with rank. Freeman and Gelber's setting differs from ours in an important way. They use a static, one-period tournament in which contestants compete after receiving information on their relative abilities. Such a setting leaves room for effort intensity, but not strategy development, to influence performance. In contrast, we focus on a dynamic, multi-period setting in which participants must make strategic decisions after being periodically updated on their chances of winning. We do so because prior research acknowledges that strategy development is an important dimension of effort (Bonner & Sprinkle, 2002) and shows that it can affect tournament performance (Hannan et al., 2008). We discuss the implications of Freeman and Gelber's study as they pertain to our study in the conclusion.