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When higher prizes lead to lower efforts—The impact of favoritism in tournaments

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HIGHLIGHTS

- We study a tournament where the winner is picked endogenously.
- The supervisor trades off personal taste and the chosen agents' expected talent.
- We show that for high tournament prizes, efforts decrease in the prize spread.
- The classical result that prizes raise incentives does not hold under favoritism.

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ABSTRACT

We investigate the relationship between tournament prices and effort choices in the presence of favoritism. High tournament prizes can decrease agents' effort supply when the choice of the winner is not perfectly objective but affected to some extent by personal preferences of an evaluator.

1. Introduction

Since the seminal contribution of Lazear and Rosen (1981), numerous papers have explored the incentive effects of tournaments. One of the most prominent results is that higher prize spreads lead to higher efforts. A key assumption in many tournament models is that the agent with the highest output always wins the tournament. However, in reality tournaments are often based on subjective decisions by other individuals. For instance, in organizations managers decide upon promotions. Or in sport contests, referees either directly determine the winner or make decisions which crucially affect the tournament outcome. In these settings not only output, but also personal preferences may affect the choice of the winner. We show in a simple extension of the standard Lazear/Rosen framework that the existence of favoritism can reverse the relationship between tournament prize and effort. The effect of higher prizes is then twofold. On the one hand, higher prizes make it still more attractive to win. But on the other hand there are higher incentives for a biased evaluator to pick her favorite, and as the tournament becomes more uneven, incentives are reduced. We show that the latter effect always dominates the former when prizes are beyond a certain threshold, such that efforts then are strictly decreasing in the prize spread.

Similar to recent papers of the so-called market-based tournament approach (see, for instance, Zabojník and Bernhardt, 2001, Ghosh and Waldman, 2010, or Waldman, 2012 for an overview) or to Fairburn and Malcomson (2001) (who show that promotion-based incentives can reduce detrimental influence activities as

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managers who benefit from promoting more able agents are less susceptible to bribery), we also assume that the winner of the tournament is picked by an actor who benefits from promoting the more able competitor.[1] However, we add that this actor may have biased preferences for one of the competitors.

The effects of favoritism in subjective evaluations have been studied by Prendergast and Topel (1996) and Prendergast (2002) in a principal agent framework. In Prendergast and Topel (1996) favoritism increases the uncertainty imposed on the agent and, hence, reduces the optimal strength of incentives. Prendergast (2002) shows that favoritism can lead to a reversed relationship between risk and incentives. Though in both settings favoritism might reduce *optimal* incentives and thus leads to lower efforts, the direct relationship between the strengths of incentives and effort is unaltered as higher-powered incentives still lead to higher efforts. We contribute to the literature by showing that in promotion tournaments the presence of favoritism can even reverse the direct effect of higher powered incentives.

2. The model

Consider a model with a supervisor S and two agents $i = A, B$ who compete in a tournament. The agents choose an unobservable effort level e_i at costs $c(e_i)$ and produce outputs

$$s_i = a_i + e_i + \varepsilon_i$$

where $a_i \sim N\left(m_a, \sigma_a^2\right)$ denotes agent i's unknown ability and $\varepsilon_i \sim N\left(0, \sigma_\varepsilon^2\right)$ is an error term. We assume a_i and ε_i to be independent and their distributions to be common knowledge. All players are risk neutral. After the agents have exerted their efforts, the supervisor S observes the unverifiable performance signals s_i and picks the winner of the tournament $\phi \in \{A, B\}$. The winning agent receives a tournament prize P_H and the losing agent P_L. The prize spread is $P = P_H - P_L$.

The supervisor benefits when the more able agent wins the tournament. For instance, a manager earns more when picking the more able candidate for a promotion as her division output is higher. Or, the reputation of a judge in a sport contest is affected by the future performance of the winner. But the supervisor also cares for the well-being of the agents. Similar to Prendergast and Topel (1996) or Prendergast (2002) we assume that these preferences are measured by a parameter η_i which is common knowledge and indicates how much the supervisor cares for an agent i. The supervisor's overall utility is a function of the agents' efforts[2] but also of the chosen winner ϕ and is given by

$$V(\phi) = m \cdot (e_A + e_B) + k \cdot a_\phi + \eta_\phi \cdot P.$$

Hence, m measures the supervisor's marginal return to the agents' efforts and k the degree of alignment, i.e., the higher the k the higher are the incentives for the supervisor to pick the better performing agent.[3] But when the η_i differ strongly she may favor the agent whom she likes more even when this comes along with a lower expected ability.

3. Equilibrium analysis

We now determine the Perfect Bayesian Equilibrium of the game. The supervisor will pick agent i when

$$E\left[V(i)|s_i\right] > E\left[V(-i)|s_{-i}\right] \Leftrightarrow$$

$$E\left[a_i|s_i\right] - E\left[a_{-i}|s_{-i}\right] > \frac{\Delta\eta_{-i} \cdot P}{k} \quad (1)$$

where $\Delta\eta_{-i} = \eta_{-i} - \eta_i$. Hence, if the other agent is favored (i.e., $\Delta\eta_{-i} > 0$), then i wins the tournament only if she is believed to be sufficiently more able than this other agent. In the absence of favoritism ($\Delta\eta_i = \Delta\eta_{-i} = 0$), the right hand side in Eq. (1) is zero. In this case, S's decision is solely driven by her expectations about the agents' abilities. As the abilities are drawn from the same prior distribution the agent with the higher performance s_i is chosen and therefore the model then boils down to a standard Lazear and Rosen (1981) type tournament. If, however, favoritism matters, S gains additional utility from picking the favored agent. The more S favors an agent, the more likely it is that she does not promote the more able agent. The higher k the smaller is the distortion.

The conditional expectation on agent i's ability is given by

$$E\left[a_i|s_i\right] = m_a + \frac{\sigma_a^2}{\sigma_a^2 + \sigma_\varepsilon^2}\left(a_i + e_i + \varepsilon_i - m_a - \hat{e}_i\right) \quad (2)$$

where $\hat{e}_{i1}$ denotes S's belief about agent i's equilibrium effort choice.[4] Hence, agent i will be promoted if

$$m_a + \frac{\sigma_a^2}{\sigma_a^2 + \sigma_\varepsilon^2}\left(s_i - m_a - \hat{e}_i\right) - m_a - \frac{\sigma_a^2}{\sigma_a^2 + \sigma_\varepsilon^2}\left(s_{-i} - m_a - \hat{e}_{-i}\right) > \frac{\Delta\eta_{-i} \cdot P}{k}.$$

This directly leads to the following result.

Lemma 1. *The supervisor picks agent i as the winner of the tournament if and only if*

$$s_i - s_{-i} > \frac{\sigma_a^2 + \sigma_\varepsilon^2}{\sigma_a^2}\frac{\Delta\eta_{-i} \cdot P}{k} + \hat{e}_i - \hat{e}_{-i}.$$

Even at identical effort levels, i wins the tournament only if she outperforms her colleague with a sufficiently large margin when this colleague is favored by the supervisor. Anticipating S's decision agent i's expected utility is given by

$$\Pr\left(a_i + e_i + \varepsilon_i - a_{-i} - \hat{e}_{-i} - \varepsilon_{-i} > \frac{\sigma_a^2 + \sigma_\varepsilon^2}{\sigma_a^2}\frac{\Delta\eta_{-i} \cdot P}{k} + \hat{e}_i - \hat{e}_{-i}\right)P - c(e_i)$$

$$= \Pr\left(e_i - \hat{e}_i - \frac{\sigma_a^2 + \sigma_\varepsilon^2}{\sigma_a^2}\frac{\Delta\eta_{-i} \cdot P}{k} > a_{-i} - a_i + \varepsilon_{-i} - \varepsilon_i\right)P - c(e_i).$$

[1] See also Meyer (1992), Hoeffler and Sliwka (2003), or Kwon (2012) for ‘subjective’ tournament models where the winner is chosen by an evaluator interested in post-promotion abilities.

[2] Note that the supervisor thus may well be identical to a principal who is the residual claimant on all the surplus created.

[3] Berger et al. (2011) show that distortions due to favoritism can be reduced by higher-powered incentives for the supervisor and provide empirical evidence for a positive association between management incentives and promotion quality.

[4] For the conditional expectation of normally distributed random variables, see for instance DeGroot (1970, p. 167).