

# The pros and cons of workplace tournaments

## Tournaments can outperform other compensation schemes such as piece-rate and fixed wage contracts

Keywords: tournaments, competition, contracts, workplace

### ELEVATOR PITCH

Tournaments are commonly used in the workplace to determine promotion, assign bonuses, and motivate personal development. Tournament-based contracts can be very effective in eliciting high effort, often outperforming other compensation contracts, but they can also have negative consequences for both managers and workers. The benefits and disadvantages of workplace tournaments have been identified in an explosion of theoretical, empirical, and experimental research over the past 30 years. Based on these findings, suggestions and guidelines can be provided for when it might be beneficial to use tournaments in the workplace.

### KEY FINDINGS

#### Pros

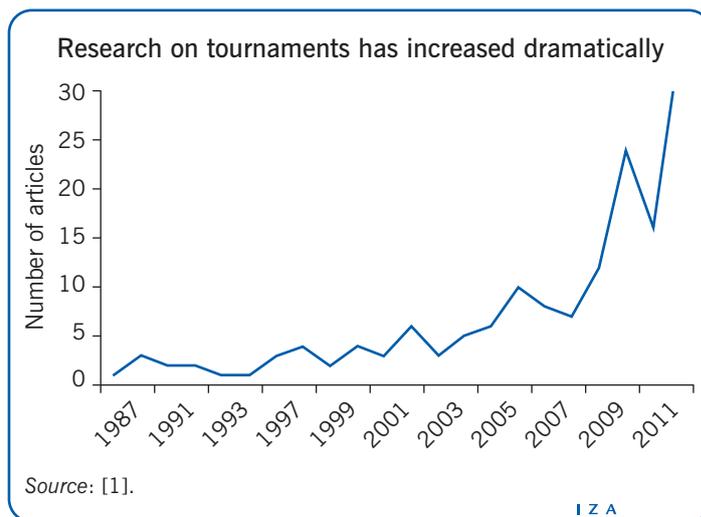
- + Tournaments can create powerful competitive incentives, motivating individuals to exert effort levels well above those predicted by the rational decision-making model.
- + Tournaments provide non-monetary incentives in the form of recognition and winning.
- + When compared to other compensation schemes, tournaments may require less information about individual performance.
- + Common shocks, such as stock market fluctuations, have less of an effect on tournament-based incentives.
- + Tournaments play an important function of matching better workers to better jobs.

#### Cons

- The win-or-lose structure of tournaments creates some winners at the expense of many losers, leading to substantial payoff inequality.
- Relative incentives create a “discouragement effect,” causing lower-ability workers to cut back effort or withdraw entirely from competition.
- Workers view each other as competitors when using relative incentives, resulting in more selfish and less helpful behavior.
- Tournaments may encourage counterproductive behaviors such as cheating, sabotage, and collusion.
- Women may be discouraged from participating in tournaments, even when they are more capable and have better skills than men.

### AUTHOR'S MAIN MESSAGE

Research on tournaments suggests that managers should exercise caution when employing competitive compensation schemes due to potentially significant negative workplace effects. They should carefully examine (1) whether the workplace conditions are appropriate for using tournaments and (2) how such conditions can be adjusted to mitigate any negative consequences. Some practical measures include: determining if worker output can be effectively measured, structuring competitions so that workers are less able/likely to cheat, and adjusting conditions or prizes to help level the playing field among differently skilled workers.



## MOTIVATION

In order to motivate workers, a manager must decide how to design a reward structure that elicits the highest possible performance from the workers. The manager can reward workers based on their relative performance (e.g. a rank-order tournament) or absolute performance (i.e. a piece-rate), or use a fixed-wage contract. A seminal paper on the subject shows that when monitoring workers' output is expensive or unreliable, rank-order tournaments can outperform other compensation schemes, including piece-rate and fixed-wage contracts [2]. Considerable theoretical [3], empirical [4], and experimental [1] research has been carried out to investigate behavior in tournaments. Given the growing body of evidence on the topic, it is helpful to provide practitioners with a better understanding of the pros and cons of workplace tournaments and to advise them on when and how to use tournaments in the workplace.

## DISCUSSION OF PROS AND CONS

### What is a tournament?

A tournament is a contest in which participants compete for prizes that are awarded based on relative rank. A key idea underlying the tournament theory is that a tournament designer (a manager) can evaluate the relative performance of contestants (workers) and, based on this performance, determine winners and losers [3]. The most common objective of a tournament designer is to choose prizes that maximize the aggregate total performance from all contestants. If the prize spread (i.e. the difference between the winner's and loser's prize) is too small, contestants may not be sufficiently incentivized to produce high performance. However, a prize spread that is too high can also be detrimental because it may induce inefficient (i.e. very high) competition.

The three canonical models of tournaments developed in the mid-1970s to early 1980s include the model of rent-seeking, the rank-order tournament model, and the all-pay auction. Although the underlying assumptions of the three tournament models vary, all models assume that (i) contestants exert costly irreversible efforts while competing for prizes and (ii) an individual contestant's probability of winning the prize depends on the contestants' relative efforts and skills. The contestants' objective is to maximize their respective payoffs by choosing appropriate effort levels. Higher effort implies a higher probability of winning more valuable prizes, but it also implies a higher cost of effort. Therefore, a rational contestant will equalize the marginal benefit of effort (the additional benefit received from an incremental increase in effort) to the marginal cost of effort, given the behavior of the other contestants. In other words, contestants are expected to exert as much effort as necessary to win the tournament, so long as the cost of that effort is not too high in their individual assessment, while considering the effort levels of other participants.

### Tournaments as a tool to incentivize performance

Theoretical research shows that tournaments can be very powerful at incentivizing performance. Empirical studies in economics, management, and sports show that tournament-like incentives increase the individual performance of workers, managers, and athletes. Experimental research, which is now well-accepted in economic research,

### Tournaments

*Rank-order tournament:* Contestants compete for prizes that are awarded based on relative rank.

*Rent-seeking tournament:* Contestants compete for a rent (or a political favor) and the likelihood of receiving such rent depends on the contestants' relative efforts and skills.

*All-pay auction:* A contestant exerting the highest effort receives the best prize with certainty (as is the case in auctions—the highest bidder wins).

*Lottery contests:* A contestant exerting the highest effort has the highest likelihood of receiving the best prize.

*Real-effort tournaments:* Contestants compete by exerting physical or mental efforts (but no direct monetary costs).

shows that tournament incentives are even more powerful than predicted by the rational decision-making model [1]. Controlled experiments allow researchers to test theoretical predictions about tournaments without dealing with the confounding effects of self-selection and unobservable characteristics. Moreover, most experiments allow direct measurement of individual effort, while controlling for the relative abilities of individuals, as well as relevant parameters of interest (such as the number of players, the number of prizes, the length of the tournament).

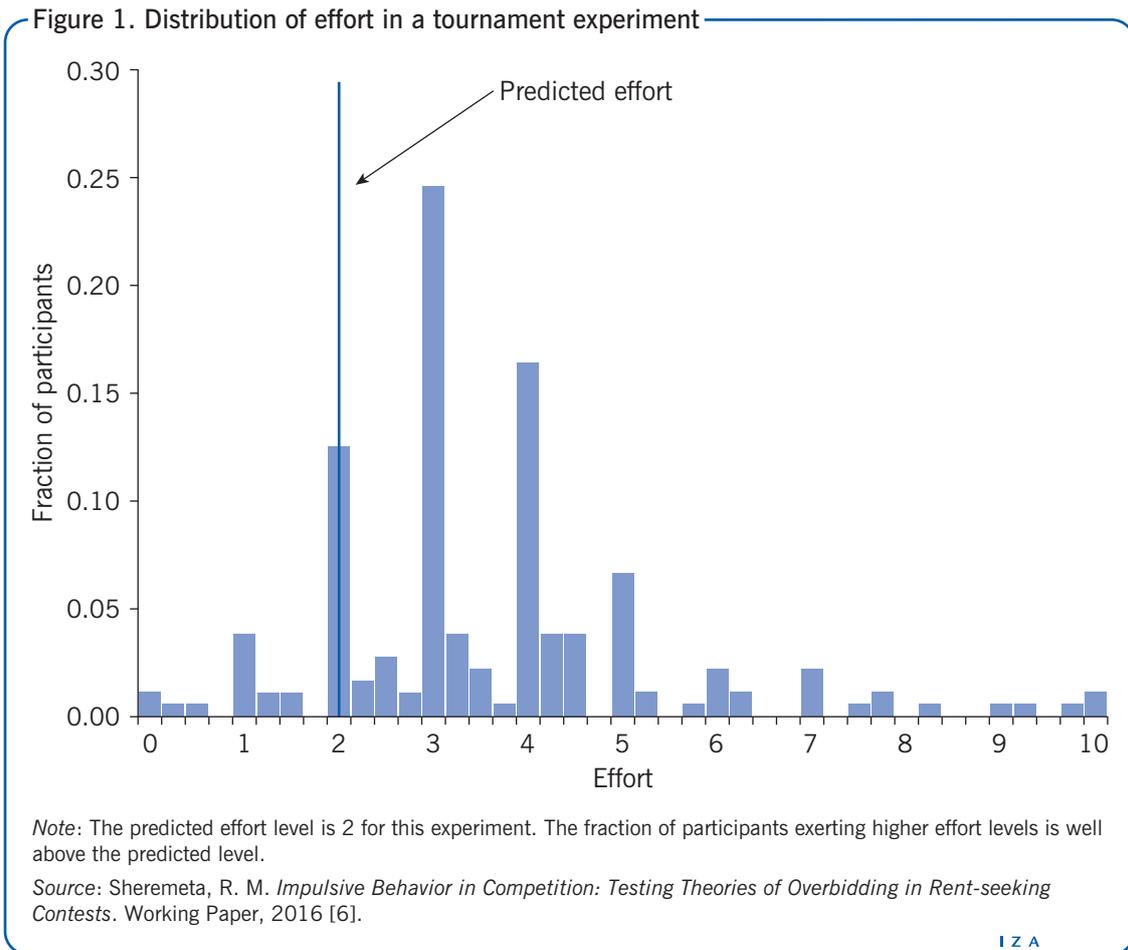
A survey article examining a sample of 30 contest experiments finds that the average participant effort level is 72% higher than predicted by the rational decision-making model. In some cases, the extent to which participants over-exert effort is so high that participants, on average, receive negative payoffs [5], [6].

### Rational decision-making mode

The model of rational decision-making assumes that the decision-maker carefully evaluates all possible alternatives and does not make any mistakes.

Figure 1 displays a distribution of effort levels for one study, and similar distributions are also commonly observed in other tournament experiments. Almost 80% of participants exert higher than predicted effort, suggesting that tournaments create powerful competitive incentives. Different theories have been offered to explain the overly competitive behavior seen in tournaments, including the non-monetary incentives to win [7], bounded rationality, relative payoff maximization, and impulsivity [6].

Besides pure monetary incentives, tournaments also provide non-monetary incentives. Research shows that people value winning itself, and enjoy the recognition afforded by relative rankings. For example, a simple laboratory experiment shows that more than 40% of individuals are willing to exert positive costly effort to win a tournament in which the winning prize is \$0 [7]. Similarly, field experiments show that by simply honoring the best performance publically with a symbolic award, a manager may increase the average performance of individuals. These findings suggest that managers need not impose a full-fledged tournament in order to reap some of the benefits of tournament-like incentives.



Even under piece-rate and fixed-wage contracts, managers can increase workers’ performance by announcing performance ranks (i.e. “salesman of the year”; “employee of the month”).

### Information and common shocks

Compared to other compensation schemes, tournaments may require less information for evaluation [2]. For example, it may be easier to evaluate the relative performance of individuals (which is needed to assign prizes in the tournament) than to measure the exact output of each individual (which is needed to make payments under the piece-rate system). When it is less costly to observe rank than an individual’s level of output, tournaments may dominate piece-rates as they are less costly to implement while providing similar incentives.

Another important advantage of tournaments over alternative compensation schemes is that rank-order incentives are not affected by common shocks. There are always some shared risks at the workplace that affect the ability of many or all workers to complete certain tasks. Such risks can be individual-specific (e.g. individual trauma) or common (e.g. bad weather). The possibility of these types of shocks may discourage individuals from participating in tournaments and exerting high enough effort. However, since common shocks do not change the relative ranking of workers’ efforts, individuals may

view tournaments as more attractive than other compensation schemes. Without the relative evaluation metrics found in tournaments, the evaluation of workers' performance under most other schemes will be negatively affected by common shocks, leading to potential negative impacts on workers' compensation. Indeed, experimental studies provide evidence that, in the presence of common shocks, tournaments outperform fixed-wage and piece-rate contracts by eliciting higher effort levels.

### Matching jobs and workers

Finally, tournaments play an important function of matching workers to jobs. The main prediction from theoretical literature is that higher-skilled individuals should sort into jobs offering higher potential returns. This prediction has been supported by empirical studies [4] and experiments [1]. For example, it is well-documented that competitive runners with greater ability are more likely to choose tournaments with greater prize spreads.

One relevant experiment allows participants to self-select into one of four payment schemes, including fixed-wage, piece-rate, tournament, and revenue-sharing [8]. The results of the experiment demonstrate that individuals systematically sort into different payment schemes. When the choice is between a fixed payment and a tournament, individuals are more likely to enter a tournament if they are more productive, less risk-averse, and more optimistic. Similarly, other studies document that when choosing between different compensation schemes, more able and less risk-averse individuals prefer to enter tournaments. It is also well documented that less risk-averse individuals exert higher efforts in tournaments than more risk-averse individuals. (For further discussion on how risk-aversion impacts behavior in tournaments see [1].)

In sum, tournament-like incentives can “kill two birds with one stone,” as they both improve the allocation of talented workers to better-suited jobs and provide incentives to increase effort levels.

### The flip side of tournaments

Despite many advantages, some negative consequences may arise when employing tournaments in the workplace. Perhaps the most obvious one is that tournaments create a large inequality of payoffs. In a book titled *The Winner-Take-All Society*, the authors argue that the economy has become increasingly dominated by a stark win-or-lose payoff structure [9]. Incentives in tournaments are organized exactly in such a way: some winners are created at the expense of many losers. Therefore, by design, rank-order tournaments will produce highly unequal payoffs in the workplace.

Although tournaments create powerful competitive incentives, there are several disincentive effects that may arise when employing competitive compensation schemes. For example, it is well-established that when a group is composed of individuals with mixed abilities, tournaments may create a “discouragement effect,” which describes how a lower ability individual often reduces his/her effort when competing against a higher ability individual. The discouragement effect has been shown to hold both in theory [3] and in the field [4].

For example, an average golf player performs worse when a superstar (such as Tiger Woods in his prime years) is present in the tournament. Similarly, other studies document

that individuals exert more effort when they perceive that there is a reasonable chance of winning, while lower-ability individuals are less likely to enter the tournament at all, even when they would benefit from participating. The discouragement effect has also received substantial support from a large body of experimental research, which includes competitive structures such as rank-order tournaments, all-pay auctions, lottery contests, and real-effort tournaments [1]. Together, these findings indicate that tournaments create substantial disincentive effects when individuals are of mixed abilities.

### **Selfishness and unethical behavior**

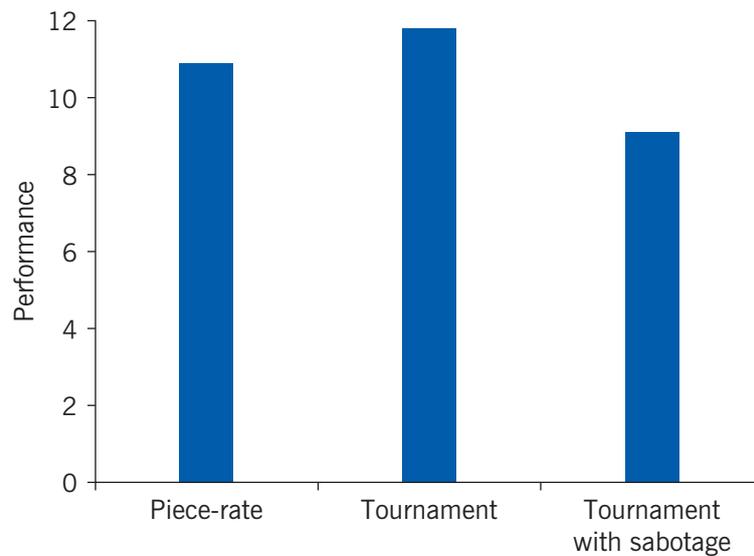
Another disincentive effect of tournaments is that individuals may view others as direct competitors, thus resulting in more selfish and less helpful behavior. Survey data from the Australian manufacturing sector has been used to show that workers are unlikely to help their competitors (e.g. they are less likely to let others use their equipment, tools, or machinery) in the presence of strong promotion incentives (i.e. tournament-like incentives) [10]. Several experimental studies show that tournament incentives discourage knowledge sharing more than other incentive schemes [1].

In addition to disincentive effects, tournaments may encourage counterproductive behaviors. For example, tournament incentives increase incidences of cheating by athletes in sports competitions. This is also true in the academic field, which has become dominated by tournament-like incentives. As a result, cheating, as measured by the retraction rates at *Nature*, have increased almost 10 fold in the past decade. The reason why the retraction rate is a good measure of cheating is that most retractions in academic journals are due to misconduct and plagiarism. Similarly, winning a competition in a laboratory experiment leads to more dishonest behavior in subsequent unrelated tasks. Laboratory experiments also show that individuals competing in tournaments often find ways to collude by exerting low efforts. Not only are individuals more likely to cheat and collude in tournaments, but also they often take deliberate actions to reduce each other's performance. This type of behavior may result in further negative emotional impacts on workers, though the effect of tournament-incentives on workers' emotional well-being has been understudied.

One experiment that attempts to measure the prevalence of dishonest behavior in tournaments has participants engage in a clerical task of stacking envelopes [11]. Participants privately evaluate each other's quantity and quality of performance in three treatments: (i) piece-rate, (ii) tournament, and (iii) tournament with sabotage. In treatment (iii) sabotage was possible because participants could miscount the output of their rivals. Figure 2 displays the performance of participants in these three treatments. When sabotage is not feasible, tournament outperforms piece-rate. However, when sabotage is feasible, the opposite is true.

Finally, many field and laboratory studies find robust evidence that women are less likely to enter tournaments than men and that women do not perform as well as men in tournament settings [12]. Although differences in risk preferences, overconfidence, and beliefs have been suggested as possible explanations for the gender gap in competitiveness, the main source and driving forces are still under debate [1], [8]. Therefore, another potentially negative consequence of using tournament-like incentives in the workplace is that such incentives may discourage women from participating, even in cases where women are more capable and have better skills than men. Having said that, some research shows that

Figure 2. Sabotage and performance in tournaments



Note: The Y-axis shows the number of envelopes stacked, representing performance in this experiment.

Source: Carpenter, J., P. Matthews, and J. Schirm. "Tournaments and office politics: Evidence from a real effort experiment." *American Economic Review* 100 (2010): 504–517 [11].

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women may behave even more competitively than men in certain tournament settings (such as all-pay auctions and lottery contests) [1].

## LIMITATIONS AND GAPS

Over the past thirty years there has been a significant amount of research done on tournaments. Tournaments have been extensively studied by economic theorists in what has become known as the field of contest theory [3]. The most important theoretical results have been tested with laboratory experiments [1]. Despite extensive and established theoretical and experimental literatures, much less effort has been devoted to studying tournaments in the field. This limitation presents a great opportunity for firms and researchers to work together in order to experiment and establish the best practices for using tournaments in the workplace.

Another limitation of the existing research on tournaments is that most studies focus on simplified environments in which individuals are assumed to work only on one type of task. In reality, however, individuals typically work on multiple tasks. While some research has been done to investigate how individuals work on multiple tasks while facing piece-rate and fixed-wage contracts, this issue has not been addressed in tournament settings [3]. This is a fruitful avenue for future investigation.

Finally, it is important to emphasize that much of the research discussed here is based on the assumption that interactions between managers and workers are “one-shot” and anonymous (i.e., the manager hires an unknown worker to do a specific task only once), while in reality interactions are repeated and established on reputation. Although there is some theoretical [3] and experimental research [1] addressing reputation and dynamic behavior in tournaments, this research does not compare alternative compensation

schemes such as piece-rate and fixed-wage contracts. Again, this is a fruitful avenue for future investigation.

## SUMMARY AND POLICY ADVICE

Research has identified many advantages of using tournaments in the workplace. Not only do tournaments create powerful competitive incentives, motivating individuals to exert efforts well above predictions from the rational decision making model, but they also provide non-monetary incentives in the forms of recognition and winning. When compared to other compensation schemes, tournaments require less information about individual performance and they are less affected by common shocks. Therefore, one could be tempted to make a policy recommendation in favor of using tournament-like contracts in the workplace over other types of contracts. However, it is important to recognize that using highly competitive incentives comes with a cost. Rank-order tournaments create some winners at the expense of many losers, leading to a large inequality of payoffs and the discouragement of low skill workers. Tournaments also induce workers to engage in more selfish and less helpful behavior, as well as counterproductive behaviors such as cheating, sabotage, and collusion. Finally, tournament-like incentives may discourage women from participating, even when they are more capable and have better skills than men.

Academic research on tournaments suggests that managers should exercise caution when employing competitive compensation schemes, carefully weighing the pros and cons of instituting workplace tournaments to determine if the benefits exceed the costs. When deciding whether to employ tournament-like contracts, managers should carefully examine the following two things.

The first practical implication is that managers should carefully examine whether the workplace conditions are appropriate for using tournaments. For example, if a worker's output cannot be easily observed or measured then it could be easier to use tournament-like incentives rather than piece-rates. Also, it could be a good idea to assign bonuses using a tournament structure when employees work independently and at different locations, so there is not much room for sabotage. Similarly, tournaments could be used when workers perform independent tasks, making it difficult for them to collude. Conversely, tournaments may be less useful when the work tasks are more interrelated and when there is room for collusion (e.g. by purposely delaying the production process).

The second practical implication is that managers should try to adjust the working conditions to mitigate potential negative consequences of using tournaments. For example, to mitigate the "discouragement effect," managers could level the playing field by handicapping more able workers or by using rules that favor less able workers. These types of policies have been shown to work both in theory and in practice. Moreover, such policies can be successful at encouraging women (who are usually more susceptible to the discouragement effect) to participate in tournaments. If managers are concerned that using a stark win-or-lose structure of payoffs may demoralize some workers and create unnecessary competition in the workplace, they can employ more equitable proportional prizes (i.e. prizes that are allocated proportionally to each worker's performance) or tournaments with multiple prizes, which still provide rank-order incentives but also decrease the associated payoff inequality.

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In summary, before employing tournaments in the workplace, managers should assess the workplace environment and try to adjust the working conditions to be more suitable for using tournaments. Given the tradeoff between tournaments' pros and cons, managers should evaluate if the potential benefits of using tournaments outweigh the costs given their specific workplace contexts.

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### **Competing interests**

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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