Effects of a Tournament Incentive Plan Incorporating Managerial Discretion in a Geographically Dispersed Organization

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Abstract

Using retail chain data, we study the effects of a tournament incentive plan based primarily on objective performance, but incorporating managerial discretion in the selection of winners. In principle, such plans could motivate employees to perform both at a high level, based on objective criteria, and in accordance with company values, considered via managerial discretion. However, such plans could be counterproductive if enough participants (especially those who don't win) perceive that subjectivity (introduced via discretion) adds unfairness. We show that, on average, the tournament incentive plan was associated with improved store sales. We also find that such plans can be more beneficial for geographically distant participants, where the potential for improving alignment is greater. Lastly, we find some evidence that participants' resource constraints (potentially affecting unfairness concerns) can impact outcomes under the plan.

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1. INTRODUCTION

Many companies that use tournament incentive plans[1] to boost and reward performance on objective measures also allow supervisors some discretion to consider important, but difficult-to-measure, behaviors or contextual factors when choosing the winners. For example, "employee of the month" awards typically recognize not only superior performance, but also adherence to company values. While the objective criteria are often stated explicitly, the subjective criteria may be described more abstractly to allow flexibility in winner selection. In this paper, we refer to any such plans as "tournament incentive plans incorporating managerial discretion."

Introducing subjectivity to a type of incentive plan that is typically formula-based could create or exacerbate perceptions of unfairness amongst employees who do not win and thus trigger dysfunctional behaviors. It could, however, enhance perceptions of fairness; for example, if managerial discretion is used to "level the playing field." Thus, it is important to understand whether or not this kind of plan can be effective and what factors may moderate its effectiveness.

This study examines the consequences of a tournament incentive plan incorporating managerial discretion in a geographically dispersed organization, in which winners must not only outperform peers on objective criteria but also adhere to the company's values and long-term goals. In a geographically dispersed organization, the local circumstances of the business units will affect the participants' ability to achieve the results necessary to win and their expectation of being rewarded, potentially moderating the effect of the plan across units.

We use data from a growing mobile phone retail chain in India (hereafter MRET) to examine the effects of a tournament incentive plan incorporating managerial discretion introduced in

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[1] In line with Prendergast (1999), we define tournament incentive plans as plans in which agents compete with each other to obtain a fixed and limited set of rewards.

February 2013 among company-owned stores (MRET also has franchised stores). Each month, the managing director gathered information to select one-third of the company-owned stores as tournament winners. While the main criterion was sales, the stated subjective criteria on which the director exercised discretion pertained to the store team's honesty and consistency, and to store-specific circumstances.[2] A winning store received public recognition and its personnel received a bonus anytime the store reached its daily sales target in the subsequent month. To examine the effects of such a plan, we conduct two sets of analyses:

First, we test the plan's overall effect on performance by comparing the sales of tournament participants (in aggregate, and also distinguishing between winning and non-winning participants) with those of non-participants. Based on the existing literature on the effects of tournaments using objective criteria, we expect the plan to motivate participants to work hard and to try to learn from top-performing participants. However, since subjectivity could have adverse effects, the tournament's overall effectiveness is an empirical question.

Second, we examine the plan's effects on both productive and counterproductive outcomes,[3] contingent on local conditions that could affect the participants' ability to do what is required to win and their expectations of being recognized and rewarded. Specifically, we examine the participants' (a) geographic distance from headquarters and (b) resource constraints.

We expect the tournament plan will increase information flows, learning, and monitoring, and that this will be most pronounced for geographically distant participants (who received more limited information and monitoring prior to the plan, and thus had the greatest potential to enhance

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[2] Honesty was expected from store personnel in their dealings both with customers and with the company. Consistency required store personnel to be committed to the firm for the long run, to have excellent attendance, and to achieve consistently high performance. The managing director stated that discretion was also used to account for conditions that put stores at a sales disadvantage (e.g., less foot traffic, staff, or inventory).

[3] We refer to productive outcomes and performance interchangeably. By "counterproductive outcomes," we mean those contrary to company values.

their ability to perform under the plan). However, the subjective nature of the tournament could also cause distant participants to feel disadvantaged (expecting top managers to favor nearby units and monitor them more closely). Assuming participants perceive that discretion is employed fairly, we predict that sales will increase to a greater extent, and counterproductive outcomes will decrease to a greater extent, the farther the participants are from headquarters.

The tournament literature suggests that participant heterogeneity and perceptions of unfairness can make tournaments less effective (e.g., Matsumura and Shin 2006; Casas-Arce and Martínez-Jerez 2009). In our setting, participants with resource constraints (pertaining to location, inventory, or personnel) may feel disadvantaged by the tournament and have lower expectations of being rewarded, leading to worse outcomes relative to participants without such constraints. Conversely, resource-constrained participants may perceive that subjectivity is creating a "fairer" environment than in the past, providing them with a unique opportunity for rewards and recognition. This may motivate them to perform better, and to reduce counterproductive behaviors more, than well-resourced participants. Consequently, we do not state a directional prediction for the moderating effect of resource constraints.

We use two years of monthly, store-level data (February 2012 through January 2014, in the middle of which the plan was introduced) from 35 MRET company-owned stores. We examine the plan's effects on a measure of productive outcomes (store sales) and, data permitting, measures of counterproductive outcomes (sales variability, absenteeism, store manager turnover, and bad audits—those in which the company discovered cash or inventory was missing). To examine the plan's overall effect, which requires a control group experiencing similar market conditions, we also use store-level data over the same 24-month period from 60 of MRET's franchised (non-participating) stores.

A difference-in-differences analysis comparing the performance of company-owned and franchised stores reveals a positive net effect of the plan. Sales for company-owned stores rose over 50%—interestingly, whether or not a given store ever won during the sample period—relative to franchised stores, even after controlling for store trends and store fixed effects.

Focusing solely on the company-owned stores, we first verify that the choice of winners reasonably reflected the stated criteria. Next, we explore the plan's implicit tradeoffs, examining how outcomes varied with a store's distance from headquarters, and with a store's resource constraints. As predicted, the tournament proved most beneficial for stores farther from headquarters, consistent with the plan enhancing their ability to perform by promoting learning, as well as their motivation to perform through tighter monitoring and/or greater recognition for performance. Specifically, the introduction of the tournament plan was associated with more favorable changes in sales, bad audits, and manager turnover in stores that were farther from headquarters.

While we did not state a directional prediction, we tested whether and how the plan's effects differed if a store had fewer competitive resources—some combination of less inventory, fewer staff, and a less attractive location. We found evidence that the change in bad audits and store manager turnover following the implementation of the plan was better in resource-constrained stores (though they had worse audits and turnover to begin with), while the change in absenteeism was worse. We found no evidence that the incentive plan's effect on sales depended on a store's resources. Overall, we find mixed evidence for the effect of resource constraints on the effectiveness of the tournament plan.

Our study contributes to the literature in three ways. First, it is well known that incentive contracts based on objective measures can cause employees to focus on what their contracts reward

at the expense of other activities relevant to company values and goals (Baker, Jensen and Murphy 1988; Prendergast 1999; Gibbs, Merchant, Van der Stede, and Vargus 2004). To help mitigate this problem, supervisors can consider alignment with company values and goals when making personnel decisions such as promoting, firing, adjusting the salary of, or granting discretionary rewards to, employees (Murphy and Oyer 2003, Gibbs et al. 2004, Akerlof and Kranton 2005, Bol 2008; Lazear and Oyer 2013). To the best of our knowledge, our study is the first to test the effects of a tournament that incorporates subjectivity to favor participants achieving high performance (sales) "the right way" (honestly and consistently, according to company values and goals). We explore whether this plan improves objective performance, and whether it mitigates dysfunctional behaviors caused by incomplete contracts or exacerbates them (for example, if it is considered unfair). Our results suggest that such tournaments can improve performance and that honesty (fewer bad audits) and consistency (store manager retention) are more likely to improve in stores farther from headquarters. We interpret these results as evidence that (in a context like ours, where employees trust management) these tournament plans can align employees with the broader goals of a geographically dispersed organization.

Second, we contribute to the accounting literature on contingencies affecting the impact of tournament incentives. We identify *geographic distance from headquarters* and *local resource constraints* as two variables that can moderate the effect of tournament incentive plans on performance in geographically dispersed organizations. In this regard, our work is most closely related to Matsumura and Shin (2006), Casas-Arce and Martínez-Jerez (2009), and Berger, Klassen, Libby and Webb (2013), whose findings suggest that tournament incentives (in their studies, based on objective metrics) are more effective when participants perceive the plan to be fair, their abilities are homogeneous, and their degree of common uncertainty is higher. We extend

this work by showing that distance from headquarters and local resource constraints are contingencies that can affect tournament effectiveness in geographically dispersed organizations and by analyzing a tournament that uses subjective assessments as well as objective criteria.

Third, and more broadly, our study extends prior research on moderators of the effects of incentive plans on performance. For example, Gibbs et al. (2004) find that subjective bonuses are more likely to boost productivity and profitability when employees trust their managers (proxied by the manager's tenure) and Banker, Lee, Potter and Srinivasan (1996) find that the impact of an incentive plan on sales, customer satisfaction, and profit is moderated by intensity of competition, proportion of upscale customers, and level of supervisory monitoring. We examine the effects of an incentive plan not only on productive store outcomes (sales) but also on counterproductive outcomes (sales variability, bad audits, absenteeism, and manager turnover) and introduce the possibility that these effects may depend on how the plan shapes perceptions of (un)fairness and (in)equity arising from stores' differing resource constraints. Furthermore, while distance from headquarters could be seen as another proxy capturing less supervisory monitoring, it is a broader construct that also captures (a) likely information flows to and from the store and (b) exposure to company leaders and values through personal interactions.

Our study proceeds as follows: Section 2 describes our research setting and the tournament incentive plan. Section 3 develops our hypotheses. Section 4 presents our research design, empirical analyses and results, and Section 5 concludes.

2. RESEARCH SETTING

Our research setting is a growing mobile phone retail chain (which we refer to as MRET) operating in one of India's main cities. At the time of this study, MRET operated 35 stores.[4] Each store sells a full range of mobile phone products, including handsets, accessories, prepaid and postpaid minutes, and connections (activation of mobile phone numbers). Store teams typically have two MRET employees (a manager and a cashier) and one to a dozen promoters provided by the brands, such as Apple and Samsung, whose products and services are sold in the store. MRET seeks to differentiate itself from its main competitors (local mom-and-pop stores) by offering greater product and service assortment and honest interactions with customers, and by creating greater perceptions of value by bundling products in promotions.

In addition to company-owned stores, MRET has franchised stores, operating under a different name. These are mom-and-pop stores that partner with MRET to take advantage of its scale. In return for franchise fees, MRET completes the activation process for new connections sold by the franchisees, negotiates with and collects payments from suppliers (who compensate the sellers of connections once connections are activated) on behalf of the franchisees, provides franchisees with brand recognition, and keeps franchisees informed about news and promotions in the market. Although the franchised stores typically offer a smaller selection than the company-owned stores (usually selling only connections and minutes),[5] MRET's managing director confirmed that the sales for both types of store reflect the same market demand, shocks, and trends.

The managing director, who is also one of MRET's main owners, spends a lot of time at the stores and is trusted and revered by the store staff. She is the primary communicator and enforcer

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[4] Two stores in the outskirts of the city operating in a slightly different context were excluded from our study.
[5] Several franchised stores also sold products unrelated to the mobile phone industry. We have access to sales data for connections and prepaid and postpaid minutes, but not for any other products.

of the company's value-proposition ("we give more value") and core values (including honest dealings with customers). However, since MRET's stores are geographically dispersed, most of her store time is spent in stores near the headquarters. As in many young, entrepreneurial companies, resources are stretched thin; a key resource being the managing director's time.

In addition to store visits, the managing director is in constant communication with store staff through email, announcements in MRET's extensive database system, and a weekly (but optional) meeting to discuss news and best practices with store managers. Managers of stores far from headquarters seldom attend these meetings; instead, they learn about key announcements and initiatives through the database system and via email. The database system also lets store managers see the sales performance of their own store and all other MRET stores.

The Tournament Incentive Plan

MRET has always compensated employees of its company-owned stores primarily through variable pay (typically a set commission for each product sold) in order to encourage entrepreneurial behavior and to mimic the incentives of the mom-and-pop stores. In February 2013, MRET implemented a tournament incentive plan (leaving the existing compensation plan unchanged) to further motivate and single out its best store teams, since store teams greatly valued being recognized for outperforming their peers. After a pilot conducted in certain stores, the plan was rolled out across all company-owned stores in July 2013.

Figure 1 describes the tournament. To win, a store team needed (a) three consecutive months of top-tercile sales and (b) a track record of honest behavior and consistent daily execution.[6] The

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[6] This description is slightly simplified. As is common in early-stage, entrepreneurial companies, the managing director often used discretion in place of formal rules and procedures, so the exact timing of her analyses and winner selection were not necessarily strictly applied. Our characterization of the plan in the body of the paper and in Figure 1 reflects our best understanding of the criteria applied and was confirmed by the managing director.

managing director chose winners monthly, relying on "hard" information collected by the company (such as sales results and audits) and "soft" information (such as her perceptions of how hard the store team was working). She considered three months of sales as she felt that one month was too short a period over which to assess a store and she wanted *consistent* performance. She also took the stores' differing markets and resources into account. Winners were congratulated and recognized in a companywide email and received a personal call from the director. All team members (MRET employees and brand promoters) also earned the right to receive a daily incentive payout going forward if, on a given day, the team beat the store's daily sales target (set in accordance with local market demand). The daily targets did not play a role in choosing tournament winners; they were given only to stores that became winners.[7]

[Insert Figure 1 here]

A winning store team could lose its right to participate in the daily bonus scheme (that is, its "winner" status) if performance declined relative to that of top-tercile-performing stores or if it were caught cheating or engaging in counterproductive behaviors, such as (a) selling only on the few days when it would be most likely to receive the daily bonus, (b) shifting sales from one day to another, (c) misleading customers—for instance, by making them believe that the features of the products sold were better than they were, or (d) misleading the company—say, by asking friends to buy expensive products and then return them later.[8] The intent of the tournament was to encourage teams to increase sales *in the spirit of the plan*; for example, by contacting customers about new products and promotions, providing better service, and reducing absenteeism.

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[7] MRET constrained eligibility for daily incentive payouts to one third of the stores because it wanted to recognize top performers that were selling "the right way," i.e., honestly and consistently, and had budget constraints.

[8] Such behaviors could potentially be revealed via store visits by company personnel, audits at the store and/or whistleblowers.

3. HYPOTHESIS DEVELOPMENT

3.1 Overall Effects of the Tournament Incentive Plan

Agency theory predicts that employees will put forth more effort in a tournament if (a) they expect that effort to increase their chances of winning and (b) the reward is worth the incremental effort. Winners can derive utility not only from the economic payoffs of the plan but also from recognition as top performers. An emerging stream of literature in accounting has found that both monetary incentives and recognition have positive effects on performance, though through different mechanisms: tangible payoffs and social esteem motivations, respectively (Lourenco 2016). In addition to motivating employees, tournaments lower compensation risk by filtering out shocks that are common to participants, leading to increased effort and, thus, increased performance (e.g., Matsumura and Shin 2006). Prior empirical studies show that tournament incentive plans tend to have a positive effect on employee performance (e.g., Matsumura and Shin 2006, Casas-Arce and Martínez-Jerez 2009, Lazear and Oyer 2013).

Given the repeated nature of the tournament in our setting, winners should be motivated to maintain their winning status in order to remain eligible for daily bonuses, and to receive ongoing recognition as winners. Non-winning participants, too, should be motivated by a chance to become eligible for bonuses and to receive recognition. While winners' tendencies to become complacent and non-winners' tendencies to give up, documented in prior studies, can reduce the effectiveness of repeated tournaments (Casas-Arce and Martínez-Jerez 2009; Berger et al. 2013), these effects are likely to be weak in our setting for three reasons. First, winners were chosen on a monthly basis, meaning that participants had a new chance to win each month. If instead the tournament was operated on a yearly basis, top participants could have become complacent and bottom participants could have given up as their respective chances of winning or losing increased over

the year (Choi, Newman, and Tafkov 2016). Second, winners' tendencies to become complacent should be offset by the lure of the bonus payouts linked to the daily sales target. Third, the tournament feedback highlighted winning stores rather than singling out non-winning stores. Not providing feedback on the relative position of non-winning stores could strengthen the motivational effect of the tournament, since such feedback has been shown to increase the lowest ranked participants' expectations of losing and their propensity to give up (Hannan, Krishnan, and Newman 2008).

Introducing managerial discretion into a tournament incentive plan can yield additional benefits, including (a) strengthening incentive alignment (by promoting greater monitoring and information flows and by discouraging gaming of objective performance measures), (b) reducing participants' risk (for example, by considering uncontrollable circumstances or lower common uncertainties among participants), and (c) reducing perceived unfairness (for example, by taking into account differing resource endowments or tasks across participants) (Murphy and Oyer 2003; Bol 2008). Thus, a plan incorporating managerial discretion may have even more favorable effects than one relying only on objective criteria.

Yet, subjectivity (via managerial discretion) can also introduce costs. For instance, discretionary adjustments can demotivate participants by introducing uncertainty regarding exactly what is needed to win, evaluators may exhibit bias or favoritism, and employees may waste time trying to influence evaluators (Milgrom 1988; Murphy and Oyer 2003; Bol 2008). Thus, if participants view the use of subjectivity negatively, it could reduce the tournament's benefits.

Since most of the literature has focused on tournaments based only on objective criteria, whereas the tournament we study also incorporates managerial discretion, we first test the plan's

overall effect.[9] We examine its effect only on the objective tournament criteria (sales), since we have no control sample with which to test its effect on behaviors reflecting the subjective criteria. We anticipate a positive effect based on the tournament and subjectivity benefits described in the literature and on our conjecture that the repeated nature of the plan would motivate the managing director to apply subjectivity fairly, mitigating any concerns about bias (Baker, Gibbons, and Murphy 1994). Nevertheless, whether the plan leads to an improvement in performance is an empirical question. We therefore hypothesize:

Hypothesis 1 (H1): Introducing a tournament incentive plan incorporating managerial discretion will positively affect participant performance.

3.2 Factors Influencing the Effects of a Tournament Incorporating Managerial Discretion

The potential benefits and costs of a tournament plan incorporating managerial discretion may vary with the participants' circumstances. For the dispersed organization that we study, we focus on two local circumstances that could affect the participants' ability to achieve organizational goals and their expectations of winning the tournament: distance from headquarters and resource constraints.

Geographic Distance from Headquarters

Research suggests that executives of geographically dispersed organizations are better able to control, and to share best practices with, units closer to headquarters. A well-known finding in the franchising literature is that chains are more likely to franchise units farther from headquarters since it is more difficult to monitor them (Brickley and Dark 1987). A research study using data

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[9] The tournament also requires participants to meet two "hurdles" before awarding a payout: selection as a winner and then meeting the daily sales target. This feature is not unique to the tournament we study (see, for example, Matsumura and Shin 2006). Because it is difficult to disentangle the incentive effects of the tournament itself from the incentive effects associated with the daily bonuses, we view both effects as a result of the tournament.

from multi-unit businesses (and more comprehensive data on hotel chains) operating in the U.S. state of Texas shows that the distance between headquarters and an individual unit negatively impacts unit survival and revenues, while a study of over 7,000 U.S. banks finds that the difference between the efficiency of a lead bank and the efficiency of an affiliate increases with the distance between the lead bank and the affiliate (Berger and DeYoung 2001; Kalnins and Lafontaine 2013).

At MRET, stores farther from headquarters tend to experience more limited information flows, both because they are visited less often by the managing director and because prohibitive travel times mean the store managers seldom attend the weekly meetings at headquarters. Thus, they are likely to be less-informed about best practices and company values (the latter due to less exposure to the management team who most closely hold and promote these values[10]). Furthermore, since it is costlier to monitor distant units face-to-face and to make sense of their circumstances, such units are generally monitored less, which may result in lower alignment with company goals and less recognition for performance (Brickley and Dark 1987, Berger and DeYoung 2001).[11]

We expect a tournament incentive plan incorporating managerial discretion to have a more positive effect on participants farther from headquarters. First, the plan could promote greater information flows and learning by making other units, especially the winners, more salient and by prompting managers to learn what the best performers are doing well and to seek out more effective strategies (Frederickson 1992).[12] Second, by incorporating criteria related to the company's core

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[10] At MRET, as in many other dispersed firms, head office employees tend to have the most influence and are typically more likely to exemplify organizational objectives and values (Van den Steen 2010).

[11] We did not find evidence that distance from headquarters impacted the likelihood of an MRET store being formally audited in any given month prior to the tournament plan. However, since the managing director visited more distant stores less often, they would have received less of the informal monitoring she performed.

[12] Participants could learn from the best performers by reaching out to them or by observing sales patterns in the database (which reported not only their aggregate sales, but also the stores' stock on hand, and details of each transaction in terms of time, place, name of the person responsible for the sale, and the product or bundle of products sold to each customer. This information could help store managers uncover strategic information such as which products were bundled at other stores (since the company strived to create value for its customers by bundling products) or which managers or promoters were most effective at selling a particular brand. Although tournament

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values, the tournament could allow participants in distant units to learn more about these values, counteracting limited face-to-face interactions with management. Overall, participants in distant stores could learn more about where and how to direct their efforts towards improving performance and observing company values. Third, particularly for participants farther from headquarters, the tournament plan may signal tighter monitoring of performance and core values, as well as creating an opportunity for greater recognition (participants closer to headquarters were likely subject to greater monitoring and recognition before the plan).[13]

Yet, since distant stores are likely to be at an informational disadvantage, their teams may feel disadvantaged in the tournament and exert less effort. They may also believe that managerial discretion will favor nearby units that have more interactions with the managers and/or that headquarters will not make the extra effort needed to subjectively evaluate distant units with equal accuracy (Prendergast and Topel 1996; Murphy and Oyer 2003).

Given all the reasons why the plan may favor participants farther from headquarters and given the employees' trust in the managing director (who, as an owner of the company, wished to avoid any perceptions of favoritism), we hypothesize:

Hypothesis 2 (H2): The farther a participant's distance from headquarters, the more positively a tournament incentive plan incorporating managerial discretion will affect participant performance and adherence to company values.

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competition could discourage MRET's top performers from sharing information, the very top performers were unlikely to feel threatened because a relatively large proportion of the stores were chosen as tournament winners. Furthermore, the managing director of the company noted that she was hesitant to de-select tournament winners if they had proven their potential and talent in the past.

[13] Even absent increased monitoring of participants located farther from headquarters, the tournament could lead them to exert additional effort if the additional incentives substitute for a lack of monitoring (Banker et al. 1996).

Resource Constraints

A tournament plan can be inconsequential or even demotivating if some participants believe that the contest is unfair and they cannot win (Lawler and Suttle 1973; O'Keeffe, Viscusi, and Zeckhauser 1984; Prendergast 1999; Matsumura and Shin 2006).[14] Thus, participants receiving fewer resources from the company may put forth less effort than other participants if they perceive the tournament as being stacked against them (at the same time, participants with greater resources have incentives to put forth effort due to the disutility ("social loss aversion") that would arise if they lost to a competitor with fewer resources; Chen, Ham and Lim 2011). Perceptions of inequity and underpayment can lead employees not only to stop working as hard but also to engage in counterproductive behaviors, including tardiness, absenteeism, theft, and excessive risk-taking (Adams 1965; O'Keeffe et al. 1984; Greenberg 1990; Capelli and Chauvin 1991; Knoeber and Thurman 1994; Fehr and Gachter 2000; Chen and Sandino 2012).

Yet, there are reasons why the effort exerted by participants in a tournament that incorporates managerial discretion may be similar irrespective of whether or not they are resource constrained. Unequal allocation of resources may play no role if (a) participants believe that the inequalities are being fairly taken into account through a handicap (O'Keeffe et al. 1984; Knoeber and Thurman 1994) or (b) the tournament does not motivate either the advantaged or the disadvantaged to make additional effort, as the former become complacent and the latter give up.

Moreover, there are also reasons why participants that are resource-constrained may try harder than those that are not. For instance, given that tournament participants typically care about social comparisons and beating expectations, resource-constrained participants may foresee a greater

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[14] A tournament is unfair if two participants of equal ability who exert the same effort do not have the same chance of winning (O'Keeffe et al.1984).

reward from winning than non-resource-constrained (hereafter non-constrained) participants, especially if they were to win against non-constrained participants (Chen et al. 2011). A tournament that takes into consideration participant circumstances can provide disadvantaged participants with a unique opportunity to earn rewards, leading them to increase effort and reduce "giving up" behaviors (Schotter and Weigelt 1992). Furthermore, if being resource-constrained had previously contributed to worse performance and more dysfunctional behavior because those units felt the organization wasn't being fair to them *and* if the discretionary aspect of the tournament plan "levels the playing field," resource-constrained participants may have more room for improvement and more incentive to improve than others.

Given the competing arguments for how participants will react to the tournament based on their resources, we state our third hypothesis in the null:

Hypothesis 3 (H3): The effect of a tournament incentive plan incorporating managerial discretion on participant performance and adherence to company values will not differ between resource-constrained and non-resource-constrained participants.

4. EMPIRICAL ANALYSES AND RESULTS

4.1 Sample

Our sample comprises 731 store-months of data from MRET's 35 company-owned stores. We complemented our quantitative analysis with insights from interviews with the managing director and with 11 store managers (five from winning stores), in which we asked open-ended questions about their reactions to the tournament. These interviews were conducted after the sample period to verify the validity of our results (store managers were interviewed in September 2015).

Most of our analyses focus on factors that may differentially affect the plan's effectiveness across company-owned stores. Since the tournament was not introduced in franchised stores, we also assess its overall sales effect on the company-owned stores (our treatment sample) vis-à-vis a control sample of 1,195 store-months of data from 60 franchised stores operating in the same areas as the company-owned stores.[15] Since both samples are exposed to the same market demands, shocks, and trends (as confirmed by the managing director), the data fits the common trends assumption, which is key for difference-in-differences analyses (Angrist and Pischke 2008, p. 230). Despite this, we also run a robustness test focusing only on products sold in both company-owned and franchised stores; we find equivalent results.

Our sample for the difference-in-differences analyses comprises 669 store-months of data from the 29 company-owned stores with *sales data available* both *before* the initial introduction of the tournament and *after* the tournament applied to the store. We dropped observations from November 2013 (when holiday incentives were in effect instead of the tournament incentive plan) and, for consistency, November 2012, as well as observations from February through June 2013 for 17 stores in which the tournament was delayed while the company ran a pilot study. Our final sample, described in Figure 2 and appearing in Table 1, consists of data from 532 company-owned-store–months[16] and 1,106 franchised-store–months.

[Insert Figure 2 here]

4.2 Comparison of Stores with and without the Tournament Plan

We test the plan's effect on company-owned (treatment) and franchised (control) stores' sales. Sales is the sole outcome variable of interest in these analyses, since only sales data were available

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[15] Furthermore, to be included in the control sample, a franchised store had to have operated for at least 12 of the 24 sample-period months and have data before and after the implementation of the tournament plan.

[16] The maximum number of observations that appears in Table 4 is 492 store-month observations for company-owned stores. We lost 40 of our 532 observations (including all observations pertaining to two stores) due to incomplete data.

for the franchised stores. As Figure 3 shows, sales increased more in company-owned than in franchised stores following the introduction of the tournament plan.[17] The noteworthy sales decline for company-owned stores in December 2013, observable in Figure 3, was explained by the managing director as a special circumstance: a major handset supplier temporarily withheld inventory. Using our final sample observations, average monthly sales over the sample period was 1,079,070 INR for the company-owned stores and 141,239 INR for franchised stores.

[Insert Figure 3 here]

We use the following model to test the plan's overall effect on sales (H1):

$$Ln\ (Sales)_{it} = \beta_0 + \beta_1\ Company\text{-}owned\ Store_i + \beta_2\ Post\text{-}TP_t * Company\text{-}owned\ Store_i$$
$$+ \beta_3\ Premium\ Location_i + \beta_n\ Month\text{-}Year\ Fixed\ Effects_t + \varepsilon_{it} \qquad (1)$$

where *Ln (Sales)* is the natural logarithm of the sales for store i at time t (measured in month-years), *Company-owned Store* is a dummy indicating that the store belongs to the company-owned chain; *Post-TP* is a dummy identifying months after the tournament plan began,[18] and *Premium Location* is a dummy indicating that a store is in a large market with demand for high-premium products (the classification of each location was determined in consultation with our company contacts).[19]

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[17] Figure 3 also shows that, before the plan, the treatment and control samples had similar sales trends. To validate our conclusion from our visual inspection, we created a (store-month) variable (using our sample of 1,638 store-months) capturing the monthly percentage change in (raw) sales. We performed a t-test of whether the difference in means of this variable between the treatment and control groups in the pre-period was statistically significant. Initially we found that the difference was significant (p-value = 0.03). However, once we excluded a change in sales that stood out as an outlier (from February to March 2012), the difference was not statistically significant (p-value = 0.28). We therefore conclude that the pre-period trends were sufficiently similar.

[18] We use the natural logarithm of sales to estimate the effect of our explanatory variables on percentage changes in sales rather than on the absolute value of sales. Using the absolute value as a dependent variable would have been problematic since the initial level of sales differs across stores. Furthermore, while the distribution of the absolute value of sales is right-skewed, the distribution of the natural logarithm of sales is normal. Note that the main effect of *Post-TP* does not appear, since it is fully accounted for by the month-year fixed effects.

[19] Company-owned stores were in a mix of premium and non-premium locations (with 59% of observations in premium locations and 41% in non-premium locations), while the franchised stores were mainly in non-premium locations (98% of observations). This does not seem to be a problem, however, since the stores exhibited similar trends

The results of our difference-in-differences analysis, presented in Column 1 of Table 1, show that company-owned stores experienced a sales increase 66% higher than that in franchised stores (calculated as $e^{0.508} - 1$) after the plan was in place (this captures the percentage change in performance rather than absolute performance, since the latter is affected by factors such as store size and offering). This supports H1, which predicted a positive performance effect, and is consistent with employees trusting that (a) their efforts would increase performance, and (b) their likelihood of winning the tournament coupled with the value of the prize was sufficient to compensate for their increased efforts.

[Insert Table 1 here]

To explore whether the association between the plan and the sales increase was driven strictly by winning stores, we rerun our analyses in Equation (1), splitting our company-owned store variable into a dummy identifying stores that won sometime during the sample period (*Company-owned Winning Store*) and a dummy identifying those that never did (*Company-owned Non-winning Store*).[20] Column 2 of Table 1 suggests that sales increased for both. Furthermore, our test at the bottom of Table 1 shows that the difference between the increase in sales associated with the plan in winning and non-winning stores, relative to the control group, was insignificant.[21]

Consistent with these findings, our follow-up interviews revealed that teams in both winning and non-winning stores felt motivated. The manager of a winning store explained: "When we got to know about the plan, the first thing we did was to hold a question/answer session... There is always excitement when we realize that we can achieve a goal." The manager of a non-winning

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in the pre-period. Also, we control for store location in our primary analyses and include store fixed effects in robustness tests (described below).

[20] We note that all of the winning stores were located in premium locations, while the non-winning stores were located in premium and non-premium locations.

[21] The results reported in Columns 1 and 2 of Table 1 are robust to excluding outliers (with studentized residuals > 2). We also checked variance inflation factors to rule out multicollinearity concerns; all were well below 10.

store explained: "We took it positively. We were now thinking about strategy and were determined to not lose any customer. We understood our faults and tried to overcome them." Some managers of non-winning stores expressed disappointment, but many intended to try harder; one indicated that he had discussions with winning managers to learn from them. On the other end, a manager from a winning store indicated: "They were asking us how did we [win] and are there any methods to do it . . . I gave them ideas." These reactions are consistent with the notion that the tournament promoted information flows and learning.

According to the managing director, the tournament had "a very big impact, given that everything else was where it was. We did not make any changes [during the sample period]… the only intervention was the introduction of the daily incentives contest."

Though our analysis in Columns 1 and 2 of Table 1 suggests that the plan's effect on company-owned stores was positive for both winners and non-winners, our results may be driven by store-specific characteristics or trends omitted from the analyses. To evaluate the robustness of our results, we conduct three additional analyses.

First, we replicate our analyses controlling for time fixed effects, store fixed effects, a time trend, and store trends. Our results, reported in Columns 3 and 4 of Table 1, show that our main findings are robust to this alternative specification. Specifically, the coefficient associated with the introduction of the plan is associated with (a) a sales increase that is 62% higher in company-owned stores than in franchised stores (calculated as $e^{0.484} - 1$) and (b) significant sales increases in both winning and non-winning company-owned stores, relative to franchised stores.

Second, we rule out the possibility that the limited offering in franchised stores explains the results. We obtained data on the number of phone lines activated by 22 of the franchised stores in our sample (328 store-month observations) and by all of the company-owned stores (550 store-

month observations), all of which had observations both before and during the plan. We replicate our analyses in Table 1, using the natural logarithm of the number of phones activated as the dependent variable (that is, sales of an identical service—activation—across our treatment and control samples). The untabulated results resemble those reported in Table 1, where the relevant coefficient shows that company-owned stores experienced a 56% greater increase in the number of activations (coef.=0.448, t-stat=1.56) during the post-plan period, relative to franchised stores. Also, the plan was associated with significant increases in activations in both winning stores (coef.=0.503, t-stat=1.76) and non-winning stores (coef.=0.409, t-stat=1.39), relative to franchised stores. These results alleviate the concern that different product mixes explain our results.

Third, we examine the persistence of the plan's effect on the sales of company-owned stores relative to franchised stores by splitting the post-period effect into the first seven months (including the five months of the pilot period) and the next five months. Untabulated results replicating Columns 1 and 2 of Table 1 suggest that the effect was positive and significant in both periods, but stronger during the initial seven months.[22] *Post-TP x Company-owned Store* had a coef.=0.61 with t=4.08 and p<0.01 in the first seven months, and a coef.=0.38 with t=2.17 and p=0.03 in the following five months, suggesting a decline in the sales premium relative to franchised stores (though the difference in coefficients was statistically insignificant; p=0.15). When splitting winning and non-winning stores, all of the coefficients remained significantly positive and only the decline for non-winning stores was statistically significant (the coefficient declined from

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[22] As in Table 1, we interpret our results using one-tailed p-values for directional predictions and two-tailed p-values otherwise.

coef.=0.60 with t=3.91 and p<0.01 in the first seven months to coef.=0.31 with t=1.75 and p=0.08 in the following five, the difference being significant at the 0.08 level).[23]

In summary, the tournament incentive plan lifted sales for both winning and non-winning company-owned stores (relative to franchised stores), with an initial boost in the early months. While the magnitude of this positive effect may seem large (66%, 62%, and 56%, respectively, across our three specifications), our research setting—a young, entrepreneurial firm in India's growing mobile phone retail market—had great sales-growth potential.

Having shown that the plan was associated with higher sales, we now focus on the company-owned stores to investigate the circumstances under which it was most effective.

4.3 Selection of Tournament Winners

Focusing on the subsample of stores in which the plan was implemented, we examine whether the selection process was consistent with the description offered in Figure 1. Table 2 shows that while the number of participating stores was smaller during the pilot period, the percentage of stores declared as winners stayed at roughly one-third over the sample period. We split the winning stores into those that clearly met the objective criterion required to win and those that did not. In fact, about 25% of the winners did not meet the objective criterion of having reached top-tercile average sales for the previous three months, but presumably won based on acceptable sales combined with subjective considerations. Follow-up with the managing director revealed that some sales-qualified stores had been excluded for dishonesty, inconsistent performance, or lack of leadership (either when there were issues with the store manager or the store was without one).

[Insert Table 2 here]

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[23] We also examine the effects of the plan splitting the post-period into the initial nine months and the subsequent three months after the plan was introduced. The results are similar but statistically weaker than those found when we split the post-period into the initial seven and the subsequent five months.

In the Appendix, we examine empirically whether winners were chosen according to the stated criteria. Our results suggest that both the *objective criterion* (sales performance) and *subjective considerations* were associated with an increased likelihood of winning. A store's honesty and its consistency in leadership (the presence of a store manager) made it more likely to win, though two additional proxies for consistency (absenteeism and the standard deviation of weekly sales) did not. We also find that resource-constrained stores were given a handicap that increased their chances of winning, which suggests that the director accounted for local circumstances at least to some degree.

4.4 Factors Potentially Influencing the Plan's Effect on Store Outcomes (H2 and H3)

Research Design

Hypotheses 2 and 3 highlight factors that might influence the plan's relative effectiveness across different participants. H2 posits that the plan could lead to more favorable results for participants far from headquarters. H3 states that its effects will be no different for resource-constrained participants compared to participants without such constraints. We test these hypotheses with the following model for the subsample of company-owned stores, using OLS regressions[24]:

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[24] Although two of our dependent variables are binary variables, we use OLS regressions (i.e. a linear probability model) rather than logit regressions. Although linear probability models (LPMs) are not bounded between 0 and 1 as logit models are, they provide consistent estimators for the coefficients. More importantly, they yield easier-to-interpret results than logit models do when using interaction terms. Specifically, in an LPM, the coefficient associated with two variables interacted with each other captures how much the effect of the first interaction variable changes with the second interaction variable: $(\partial^2 \text{E(Outcome)})/(\partial(\text{1st interaction variable}) \, \partial(\text{2nd interaction variable}))$. Unfortunately, a logit model does not allow for this interpretation and the statistical significance of the interaction effect cannot be tested with a simple t-test on the coefficient of the interaction term, since the partial derivative of the expected outcome with respect to the interaction variables is non-linear and depends on other explanatory variables (Ai and Norton 2003).

$$Outcome_{it} = \beta_0 + \beta_1 \textit{ Distance from Headquarters}_i + \beta_2 \textit{ Resource-constrained Store}_{it}$$

$$+ \beta_3 \textit{ Post-TP}_t \times \textit{Distance from Headquarters}_i$$

$$+ \beta_4 \textit{ Post-TP}_t \times \textit{Resource-constrained Store}_{it}$$

$$+ \beta_m \textit{ (Control Variables)}_{it} + \beta_n \textit{ (Month-Year Fixed Effects)}_t + \varepsilon_{it} \qquad (2)$$

where *Outcome* is measured as either (a) a *productive outcome* (*Ln(Sales)*, the natural logarithm of monthly store sales) or (b) a *counterproductive outcome* suggesting lack of honesty (*Bad Audit*, at least one bad audit in the month, involving missing cash or inventory[25]) or lack of consistency (*Sales Variability*, the standard deviation of weekly sales for the month divided by average weekly sales for the month; *Absenteeism*, the number of times the store manager had an unauthorized absence during the month; or *Turnover*, a dummy capturing whether the store manager left the company within three months of the observation).

We measure *Distance from Headquarters* in miles. To identify whether a store was resource-constrained, we considered the main resources that, according to the managing director, contribute to store performance: team size, location in a premium area or not, and inventory.[26] *Resource-constrained Store* is a dummy equal to 1 in a given month if two of the following three conditions were met: team size was at or below the company median; the days of inventory available for sale

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[25] We did not have access to this measure for the entire period. Although the company audited each store at least every two months throughout the sample period, it did not keep systematic records of its audits at the beginning. We had records for approximately two audits per store and, in a few cases, one per store, before the tournament plan. Note that although prior studies have used cash shortages and inventory shrinkage as proxies for dishonesty, bad audits could also capture employees' carelessness in handling cash/inventory or mistakes in recording transactions (Chen and Sandino 2012).

[26] All these characteristics are visible to all store teams: MRET's database includes information about all team members, inventory, and sales (while days in inventory could be calculated, this measure was not explicitly provided). Whether a store is in a premium area or not can be deduced from its address and whether the store sells premium products. We considered and discussed with the director several other possible variables that could be included: Store size could have been considered another "resource constraint" proxy, and stores with high levels of local competition could have been considered "disadvantaged". However, the managing director indicated that the three variables that she pointed out were the most relevant to a store's ability to sell. For instance, some stores in premium areas were small (due to higher real estate costs) and faced greater competition, but premium areas offered the best selling opportunities, so a small store or a store facing more competition was not necessarily constrained or disadvantaged.

was at or below the company median; [27] and the store was not in a premium location. As shown in Panel C of Table 3, resource-constrained stores sold significantly less than their peers. The model controls for various other factors defined in Tables 3 and 4 that could have affected changes in outcomes. We control for the level of store supervision, using the rank of the store's supervisor (*Supervisor Rank*, where 0 indicates the store had no district manager assigned to it and 1 to 4 indicate that increasingly higher-ranked managers supervised the store), and for the store manager's ability, measured by the presence of a manager and his or her tenure.[28] We account for store characteristics—including age, size, pre-tournament sales growth, and whether the store had a new look—and for the store's environmental conditions, including competition and the income class of the surrounding area. Finally, we control for the number of days the store was open during the month (*Sales Days*) and for time fixed effects (in month-years).

Descriptive Statistics

Panel A of Table 3 provides descriptive statistics for the sample of company-owned stores included in our empirical analyses. On average, stores had monthly sales of 1,129,369 INR (~US$19,000) throughout the sample period, ranging from 58,778 to 6,303,759 INR (~US$1,000 to 105,000). Sales variability ranged from 0.03 to 0.70, with an average of 0.20. In most store-months (80%), the auditors found at least some missing items or cash shortage that could not be

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[27] We calculate *Days in Inventory* dividing the value of inventory "in stock" by the average cost of goods sold in one day. This variable was estimated using off-sample data from October 2014 through May 2015. The inventory values were obtained on the 15th of each month and the daily costs of goods sold were averaged for each month. Differences across days of inventory of sales are stable over time, suggesting that the use of this off-sample variable is reasonable. When we did not have data because the store had closed sometime between the end of the sample period and October 2014, we assumed that the store had as many days in inventory as the median "days of inventory" in the stores in the same area. The managing director confirmed that our assumptions constructing this measure were "very reasonable because things wouldn't change, not at all. For example, [name of store location] would always be loaded and the smaller stores would always be unloaded."

[28] We replaced missing values of *Store Manager Tenure* for 106 observations corresponding to 12 store managers who were managers at the beginning of our sample period (in February 2012) but for whom MRET did not provide starting dates (we estimated their tenure using the average tenure of all store managers for our sample period at all company-owned stores, data permitting). If there was no store manager in a given month, we used the cashier's tenure.

justified.[29] Store managers had an average of 0.76 days of unauthorized absences every month, ranging from -4 to 19 days (where negative numbers represent days that a store manager attended despite not being required[30]), and the *Turnover* dummy was equal to 1 in 10% of the store-months.

The average store was approximately eight miles from headquarters and around half of the observations pertained to resource-constrained stores. The average store was supervised by an experienced district manager (ranking=2). Average store manager tenure was 39.35 months and in most instances (95%), the store had a manager for the month. Average pre-tournament monthly sales growth ranged from -3% to 23%. The average store was around 250 square feet, almost five years old, and was not of the company's new format (only 14% of store observations were). The minimum number of days that a store sold in a given month was 21 (we dropped any observations in which the store sold for fewer days; we also dropped the first month of operations if the store opened during our sample period) and the maximum was 31. Stores varied with respect to the competition and the income class of the surrounding area.

Panel B of Table 3 shows the correlations between our independent variables, ranging from nonexistent to moderate. The maximum correlation of 0.54 was between store size and level of supervision.

Panel C of Table 3 reports the mean values of the variables in Panel A, partitioning the sample into (a) stores where *Distance from Headquarters* was less than or equal to the median and stores where it was greater than the median and (b) stores where *Resource-constrained Store* was equal to 0 and stores where it was equal to 1. T-tests comparing the mean values of the subsamples suggest that stores farther from headquarters had lower performance, while resource-constrained

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[29] While this may seem high, the pervasiveness of cash shortages and inventory shrinkage in the retail industry is well-known (see Chen and Sandino 2012 for an empirical study on this topic and relevant statistics).

[30] We calculated absenteeism as the number of days the store manager was absent from the store for the month less the number of days allowed (typically four days were allowed per month).

stores had lower performance, greater sales variability, and more bad audits and turnover. We examine the moderating role of distance from headquarters and of resource constraints in Table 4.

[Insert Table 3 here]

Results

Columns 1, 3, and 5 of Table 4 support H2: the plan's effects on performance and on adherence to values were relatively more favorable for stores farther from headquarters. A store's sales increase following the introduction of the plan was 3.1% higher (calculated as $e^{0.031} - 1$) for every mile farther from headquarters. With respect to counterproductive outcomes (opposite to company values), we found more favorable changes associated with the plan for distant stores than for nearby stores in terms of bad audits and store manager turnover, the likelihood of which decreased with distance, but no significantly different effect on absenteeism or sales variability.[31] We find for every mile farther from headquarters, a 3.4-percentage-point reduction in the change in the likelihood of a bad audit in the post-period and a 1-percentage-point reduction in the change in the likelihood of store manager turnover.

The managing director agreed with the implication that the plan had greater motivational impact on stores farther from headquarters. Managers of distant stores had expressed more strongly that they appreciated the recognition stemming from the tournament, which gave them visibility within the company and a chance to interact with the managing director.

Table 4 shows that in the pre-plan period, resource-constrained stores had worse performance and adherence to company values (on certain dimensions) than non-constrained stores: sales were about 26% lower (calculated as $e^{-0.299} - 1$), bad audits were more common, and store manager

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[31] The sales and bad audit results are robust to excluding outlier observations (those with studentized residuals > 2), though the store manager turnover result is not. We also checked variance inflation factors (all were below 10) to rule out multicollinearity concerns.

turnover was higher. However, our analysis of the plan's effect on resource-constrained stores yielded mixed support for H3. Consistent with our null hypothesis, we find no difference between resource-constrained and non-constrained stores with respect to sales or sales variability (a counterproductive outcome). We find a marginally significant result that the plan was associated with greater absenteeism among resource-constrained stores (p-value = 0.101). Yet, we find that the plan also led to a greater reduction in bad audits and turnover in these stores (relative to non-constrained stores).[32] These latter effects offset a higher incidence of these two counterproductive behaviors in resource-constrained stores before the plan. This suggests that the tournament had a more favorable effect on stores that had more dysfunctional behavior before the plan was implemented.[33]

An alternative specification suggests that the mixed effects of resource-constraints on the plan's effects are not always robust. Specifically, if we redefine the resource-constrained dummy as equal to 1 if either team size was below median or the store was not in a premium location, and 0 otherwise, and rerun Table 4 adding days of inventory as a control variable instead of a criterion to identify resource-constrained stores, we fail to find evidence that the effects of the plan are contingent on whether or not the store faces resource constraints.[34]

Despite our mixed results for the moderating effect of resource constraints on the plan's effects, our interviews revealed that some of the managers of non-winning stores attributed their loss to

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[32] The bad audit and absenteeism results are robust to excluding outlier observations (p-values are <0.001 and 0.085 respectively), but the store manager turnover result is not.

[33] An alternative explanation would have been that management intervened to fix problems related to dysfunctional behaviors. We do not believe that was the case for two reasons. First, the managing director, when asked, indicated that she had not engaged in any significant intervention during our sample period other than the tournament itself. Second, we examined whether introducing the plan was associated with more audits made at resource-constrained stores than at non-constrained stores by regressing the number of audits per store-month on (a) a dummy indicating whether the store was resource-constrained, (b) an interaction between this dummy and the variable *Post-TP*, and (c) all the control variables included in Table 4. The difference in the number of audits between resource-constrained and non-constrained stores was insignificant both before and after the plan was implemented.

[34] With this redefinition, our results documenting the effects of the tournament for distant stores remain robust.

not having enough stock (although we found that their stores generally had more days of inventory than winning stores did[35]) or to being in areas with fewer walk-ins.

Examining the control variables, we find that stores that were larger, older, or sold for more days had greater sales. Sales variability increased with pre-plan sales growth and decreased with a store's age and with the number of sales days for the month. Older stores and stores in lower-income areas had greater absenteeism. Stores with lower store manager tenure reported higher store manager turnover. Surprisingly, we found that the presence and tenure of store managers was associated with more bad audits, perhaps due to these store managers' knowledge of—and greater access to—the company's systems. Somewhat surprisingly, we also found a positive association between pre-plan sales growth and store manager turnover, possibly because these stores were more demanding from the employees' standpoint or because these store managers had better outside opportunities.

[Insert Table 4 here]

Overall, our results suggest that the tournament plan helped motivate employees working in distant stores to sell more, produce better audit results, and stay with the company. Thus, a tournament plan incorporating managerial discretion can improve goal alignment among participants far from headquarters, despite potential concerns that management might not make the extra effort to subjectively assess their behavior or might favor nearby participants.

If, however, resources are unequally allocated, the plan's effects may be harder to predict. We found mixed effects on the counterproductive outcomes of stores experiencing resource constraints and no discernible effect on sales for resource-constrained stores vis-à-vis non-constrained stores.

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[35] Those stores may have been more concerned about the particular items in their inventory than the days of inventory.

The plan might correct for significant pre-period problems potentially caused by perceptions of unfairness, yet not fully overcome resource-constrained participants' low expectations of winning.

5. CONCLUSIONS

This paper studies the effect of a tournament incentive plan incorporating managerial discretion. In principle, such a plan could (a) encourage employees to perform at a high level on objectives metrics, without neglecting difficult-to-measure tasks that reflect broader company values and goals and (b) correct for distortions when participants compete under unequal conditions that might otherwise seem unfair. However, adding subjectivity to a tournament could end up creating more problems than solutions if participants perceive that it will add unfairness and dysfunction rather than correcting for them.

We find that the introduction of such a plan at MRET brought a significant sales increase relative to a control group. Furthermore, sales increased in both stores that won during our sample period and those that did not. Our analyses reveal some of the factors that can influence a plan's effectiveness. Specifically, we show that such plans can be more beneficial the greater the participants' distance from headquarters. We conjecture that the plan corrects for the distant participants' tendency to be less exposed to information flows, less connected to company goals and values, and monitored less often. A tournament incorporating managerial discretion could help a company motivate geographically dispersed teams to drive financial results and adhere to core values.

We also identify the presence of resource constraints as a particular circumstance where tournaments with managerial discretion could have mixed effects, though our results are dependent on how we define our proxy: participants with fewer resources—such as inventory, location, and

personnel—reported higher increases in absenteeism under the plan than other participants did, but also greater decreases in bad audits and manager turnover, offsetting larger preexisting problems. Our findings also suggest the possibility of mitigating some of the concerns related to differences in resources across participants by (subjectively) incorporating handicaps into the tournament, since we found no evidence that the sales performance of resource-constrained participants under the plan was worse than that of non-constrained participants. Consideration of all these factors may allow business managers to assess whether tournament incentive plans incorporating managerial discretion are likely to work at their companies.

Our findings suggest that a tournament incentive plan with managerial discretion can motivate employees to improve performance. They also uncover circumstances in which such tournaments can have greater effects on effort and on behaviors that are essential to company objectives, such as honesty and consistency. These insights contribute to research on the use of subjective assessments and promotions as complements to incomplete incentive contracts (e.g., Gibbs et al. 2004; Campbell 2008) and to research on contingencies that moderate the effect of tournaments and other incentive plans (e.g., Banker et al. 1996; Matsumura and Shin 2006; Casas-Arce and Martínez-Jerez 2009).

Our results should be interpreted with caution. We studied a single company; firm-specific factors may have made its tournament as effective as it was. For example, Gibbs et al. (2004) suggest that subjective incentives cannot be effective without trust; MRET's managing director, who was primarily responsible for selecting the winners, was trusted and respected by store managers. Additionally, the particular prize structure in this tournament—the right to earn daily bonuses if daily sales targets were subsequently reached—should have reduced any complacency amongst top performers, an issue documented in prior work (e.g., Casas-Arce and Martínez-Jerez

2009). Furthermore, the favorable market environment offered MRET stores significant opportunity to improve sales in various ways, which could have motivated and enabled both winning and non-winning stores to boost their sales. Our results are therefore most likely to generalize to geographically dispersed, early-stage companies, especially those in which interactions with top management are an important mechanism for transmitting company values.

Since we studied the effects of one tournament incentive plan incorporating managerial discretion, we could not study in greater detail how elements of such plans—such as the extent of managerial discretion or the types of manager involved in the selection process—influence their effectiveness. The impact of all these contingencies—trust, potential for improvement, elements of the plan—on the effectiveness of tournament incentive plans incorporating managerial discretion invites future research.

APPENDIX
Verification of Selection Criteria

The analysis in Table A tests whether the selection criteria described in Figure 1 were followed.

Table A: Coefficients of Logit Regressions Showing How Various Store Characteristics Were Associated with the Likelihood of Being Selected as a Tournament Winner
(Sample comprises monthly data of all company-owned stores in the post-tournament plan period, regardless of whether they had pre-tournament plan data.)

Variable	Prediction	Pr(Winning Store This Month) (1)	Pr(Winning Store This Month) (2)	Criterion associated with tournament plan
Intercept		-8.083***	-8.487***	
		(-2.816)	(-2.663)	
Average Monthly Sales$_{t-3 \text{ to } t-1}$	+	0.003***	0.002**	Sales
		(2.424)	(2.248)	(objective)
Std Deviation Weekly Sales$_{t-3 \text{ to } t-1}$	-	0.000011†	0.000005	Consistency
		(2.523)	(1.040)	(subjective)
Average Absenteeism$_{t-3 \text{ to } t-1}$	-	0.048	0.181	Consistency
		(0.311)	(1.493)	(subjective)
Store Manager Present (Dummy)	+	2.263***	2.245**	Consistency
		(2.348)	(2.107)	(subjective)
Bad Audit $_{t-3 \text{ to } t-1}$ (Dummy)	-	-2.654***	-1.496**	Honesty
		(-2.448)	(-1.891)	(subjective)
Resource-constrained Store (Dummy)	+	2.893***	1.188**	Handicap
		(3.116)	(2.107)	(subjective)
Pilot Store (Dummy)		0.778	1.395	
		(0.709)	(1.204)	
Distance from Headquarters		-0.105	0.086	
		(-0.847)	(0.699)	
Supervisor Rank		0.170	0.741*	
		(0.303)	(1.652)	
Observations		215	246	
Pseudo R^2		0.688	0.520	

t-statistics in parentheses based on robust standard errors adjusted for clustering at the store level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively (stars are based on one-tailed p-values for directional predictions and two-tailed p-values otherwise). †denotes two-tailed significance at the 0.05 level in the opposite direction than predicted. The number of observations differs between Columns (1) and (2) because observations with a missing value for *Bad Audit* do not appear in Column (1) but do appear in Column (2); in Column (2), those missing values were set to zero. *Winning Store This Month* indicates that the store won the tournament in the month being analyzed. *Average Monthly Sales* are the average monthly store sales in thousands of Indian rupees over the prior three months. *Std Deviation Weekly Sales* is the standard deviation of weekly sales over the prior three months (i.e., the 12 weeks preceding the beginning of the month). *Average Absenteeism* is the average number of unauthorized days the store manager was absent per month during the prior three months. *Store Manager Present* equals 1 if the store had a manager in the month. *Bad Audit* is an indicator indicating whether, during the prior three months, the store received at least one "bad audit" (one that revealed at least one missing item or a cash shortage without a reasonable explanation). *Resource-constrained Store* indicates whether two of the following three conditions were met: team size at or below company median, days of inventory at or below company median, and non-premium location. *Pilot Store* equals 1 if the store was included in the tournament plan during the pilot period, 0 otherwise. *Distance from Headquarters* is in miles. *Supervisor Rank* equals 0 if the store is not overseen by any head-office manager, 1 if overseen by a district-manager-in-training, 2 if by a district manager, 3 if by the managing director, and 4 if by both a district manager and the managing director.

Interpretation of Results from the Selection Model

The results reported in Table A suggest that the four selection criteria reported in Figure 1 were applied at least to some degree. We interpret the results criterion by criterion:

- *Sales:* Past sales was a significant predictor of whether a store won. We find that a one-standard-deviation increase in monthly sales around the average, holding all other explanatory variables at their means, translated into a 65-percentage-point increase in the probability of winning (from 3% to 68%).

- *Adjustments to account for local circumstances:* Table A suggests that resource-constrained stores received a handicap. Holding all other variables at their means, stores we identified as resource-constrained had a 43-percentage-point higher probability of winning the tournament than non-resource-constrained stores.

- *Honesty:* We find that honesty was associated with a higher likelihood of winning. Holding other explanatory variables at their means, a store having at least one bad audit over the last three months had a 56-percentage-point lower probability of winning.

- *Consistency:* Consistency in leadership was taken into account, but consistency in attendance (absenteeism) was not. Stores with a store manager had a 22-percentage-point higher probability of winning than stores without one (holding all other variables at their means). Surprisingly, we find stores with greater sales variability (captured by the standard deviation of weekly sales)—which should have been considered less consistent—were more likely to win, perhaps because stores that sold more also tended to report greater sales variability.

With respect to the control variables, we find no evidence that being a pilot store, distance from headquarters, or supervision affected the likelihood of winning. Column (2) of Table A repeats the analysis contained in Column (1), except that missing values for *Bad Audit* were replaced with zero. The results are the same as those for Column (1), except that the coefficient on the average standard deviation of weekly sales is no longer significant and the coefficient on supervisor rank becomes significant at the 10% level.[36]

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[36] The significant results in Columns (1) and (2) are robust to excluding outlier observations with standardized residuals > 2. When outliers are excluded, the coefficient on *Pilot Store* becomes significant in both columns. Furthermore, the results for Column (2) when excluding outliers also suggest that stores were more likely to win when they had greater absenteeism (opposite to our expectation) and when they were farther from headquarters. We checked variance inflation factors (all of which were below 3) to verify that there were no multicollinearity concerns.

REFERENCES

Adams, J. S. 1965. Inequity in social exchange. In *Advances in Experimental Social Psychology*, edited by L. Berkowitz, 271-296. New York: Academic Press.

Akerlof, G.A. and R. E. Kranton. 2005. Identity and the Economics of Organizations. *The Journal of Economic Perspectives* 19: 9-32.

Ai, C., E. C. Norton. 2003. Interaction terms in logit and probit models. *Economics Letters* **80**: 123-129.

Angrist, J. D., J. Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press.

Baker, G. P., R. Gibbons, K. J. Murphy. 1994. Subjective performance measures in optimal incentive contracts. *Quarterly Journal of Economics* **109**: 1125-1156.

Baker, G. P., M. C. Jensen, K. J. Murphy. 1988. Compensation and incentives: Practice vs. theory. *Journal of Finance* **43**: 593-616.

Banker, R. D., S. Lee, G. Potter, D. Srinivasan. 1996. Contextual analysis of performance impacts of outcome-based incentive compensation. *Academy of Management Journal* **39**: 920-948.

Berger, A., R. DeYoung. 2001. The effects of geographic expansion on bank efficiency. *Journal of Financial Services Research* **19**: 163-184.

Berger, L., K. Klassen, T. Libby, A. Webb. 2013. Complacency and giving up across repeated tournaments: Evidence from the field. *Journal of Management Accounting Research* **25**: 143-167.

Bol, J. C. 2008. Subjectivity in compensation contracting. *Journal of Accounting Literature* **27**: 1-24.

Brickley, J., F. Dark. 1987. The choice of organizational form: The case of franchising. *Journal of Financial Economics* **18**: 401-420.

Campbell, D. 2008. Nonfinancial performance measures and promotion-based incentives. *Journal of Accounting Research* **46**: 297-332.

Capelli, P., K. Chauvin. 1991. An interplant test of the efficiency wage hypothesis. *Quarterly Journal of Economics* **106**: 769-787.

Casas-Arce, P., F. A. Martínez-Jerez. 2009. Relative performance compensation, contests, and dynamic incentives. *Management Science* **55**: 1306-1320.

Chen, C. X., T. Sandino. 2012. Can wages buy honesty? The relationship between relative wages and employee theft. *Journal of Accounting Research* **50**: 967-1000.

Chen, H., S. H. Ham, N. Lim. 2011. Designing multiperson tournaments with asymmetric contestants: An experimental study. *Management Science* **57**: 864-883.

Choi, J., A. H. Newman, I. D. Tafkov. 2016. A marathon, a series of sprints, or both? Tournament horizon and dynamic task complexity in multi-period settings. *The Accounting Review* **91**: 1391-1410.

Fehr, E., S. Gachter. 2000. Fairness and retaliation: The economics of reciprocity. *Journal of Economics Perspectives* **14**: 159-181.

Frederickson, J. 1992. Relative performance information: The effects of common uncertainty and contract type on agent effort. *The Accounting Review* **64**: 549-647.

Gibbs, M., K. A. Merchant, W. A. Van der Stede, M. E. Vargus. 2004. Determinants and effects of subjectivity in incentives. *The Accounting Review* **79**: 409-436.

Greenberg, J. 1990. Employee theft as a reaction to underpayment inequity: The hidden cost of pay cuts. *Journal of Applied Psychology* **75**: 561-568.

Hannan, R. L., R. Krishnan, A. H. Newman. 2008. The effects of disseminating relative performance feedback in tournament and individual performance compensation plans. *The Accounting Review* **83**: 893-913.

Kalnins, A., F. Lafontaine. 2013. Too far away? The effect of distance to headquarters on business establishment performance. *American Economic Journal* **5**: 157-179.

Knoeber, C. R., W. N. Thurman. 1994. Testing the theory of tournaments: An empirical analysis of broiler production. *Journal of Labor Economics* **12**: 155-179.

Lawler, E., J. Suttle. 1973. Expectancy theory and job behavior. *Organizational Behavior and Human Performance* **9**: 482-503.

Lazear, E. P., P. Oyer. 2013. Personnel economics. In *The Handbook of Organizational Economics*, edited by R. Gibbons and D. J. Roberts, 479-519. Princeton, NJ: Princeton University Press.

Lourenco, S. M. 2016. Monetary incentives, feedback, and recognition—Complements or substitutes? Evidence from a field experiment in a retail services company. *The Accounting Review* **91**: 279-297.

Matsumura, E. M., J. Y. Shin. 2006. An empirical analysis of an incentive plan with relative performance measures: Evidence from a postal service. *The Accounting Review* **81**: 533-566.

Milgrom, P. R. 1988. Employment contracts, influence activities, and efficient organization design. *Journal of Political Economy* **96**: 42-60.

Murphy, K., P. Oyer. 2003. Discretion in executive incentive contracts: Theory and evidence. Stanford University Working Paper.

O'Keeffe, M., W. K. Viscusi, R. J. Zeckhauser. 1984. Economic contests: Comparative reward schemes. *Journal of Labor Economics* **2**: 27-56.

Prendergast, C. 1999. The provision of incentives in firms. *Journal of Economics Literature* **37**: 7-63.

Prendergast, C., R. Topel. 1996. Favoritism in organizations. *Journal of Political Economy* **104**: 958-978.

Schotter, A., K. Weigelt. 1992. Asymmetric tournaments, equal opportunity laws and affirmative action: Some experimental results. *Quarterly Journal of Economics* **107**: 511-539.

Van den Steen, E. 2010. On the origin of shared beliefs (and corporate culture). *RAND Journal of Economics* **41**: 617-648.

Figure 1: Tournament Plan Implemented at MRET
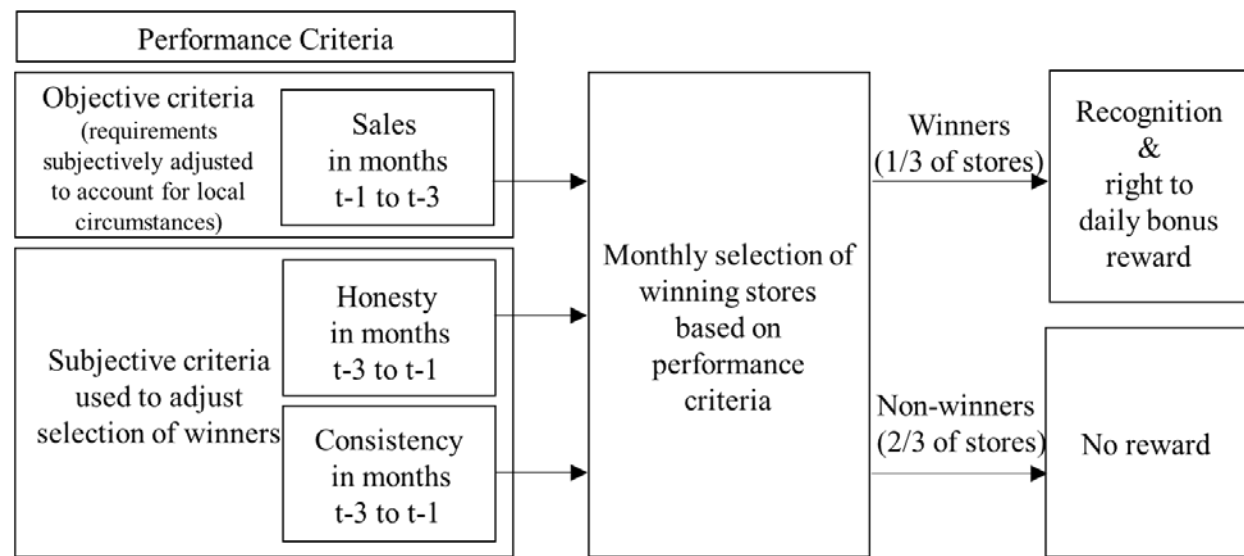
Performance Criteria Used to Select Winning Stores:

The definitions of (a) sales, (b) adjustments for local circumstances, (c) honesty, and (d) consistency were not made explicit to the store teams. Yet, the managing director offered the following explanations:
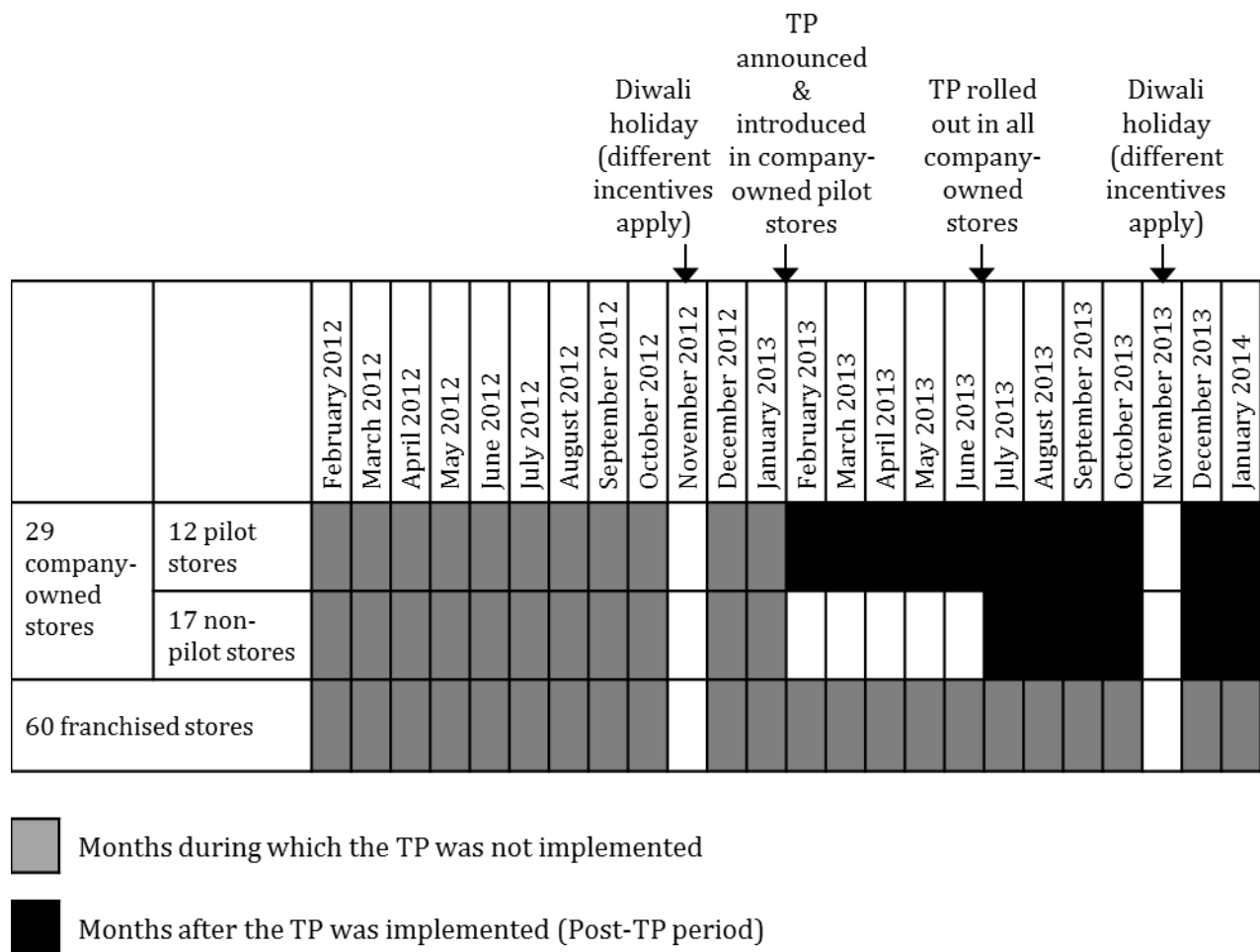
- *Sales:* The director compared each store's sales for the past three months to the sales of other stores. She communicated to the store managers that she would evaluate their stores' sales relative to other stores' recent sales, but that she would take into account their specific circumstances. She also set an expectation that, in order to win, a store had to reach a minimum sales threshold of 100,000 Indian rupees (INR)/day, roughly US$1,670/day, at least occasionally. The managing director told us that she chose not to set a specific sales target for each store to avoid resetting targets if stores' circumstances changed.

- *Adjustments to account for local circumstances:* The director took into consideration a store's potential, which she estimated based on times when the store performed at its best, and factors outside its control that could negatively affect its performance, such as out-of-stock issues or promoter turnover.

- *Honesty:* The director took into account whether there were missing items, intentional theft, or fake invoices. Stores are audited on a periodic basis. Since the retail site does not have a strong measure of honest dealings with customers, the director assessed honesty based on what was revealed by audits and whistleblowers.

- *Consistency:* The director looked at a store's absenteeism, average sales, minimum sales, maximum sales, and deviation in sales (specifically, volatility at the weekly level) over the last three months. She also examined consistency of execution by observing whether the store team members were asking for help to close sales, by making sure they were not gaming the system by shifting sales to specific days or weeks just to earn bonuses, and by ensuring that the store manager persisted in his position. (Since the store manager assumed primary responsibility for a store, a store without a store manager in a given month was unlikely to win.)

Recognition and Right to Daily Bonus Reward:

Winners were congratulated (though not ranked) in a companywide email, which recognized the store teams that won but made no reference to non-winning stores. The managing director also communicated personally with the winners. The daily bonus reward enabled winning participants to earn daily formula-based bonuses based on predetermined sales targets, following the date when they were chosen as winners (and, if de-selected, up until they were de-selected as winners). An individual in a winning store received an average of 450 INR (~$US7.50) per month in daily bonus payments (not including holiday months, when other incentives kicked in, or December of 2013, when there was an unusual decline in sales due to a conflict with a supplier). The payouts varied by store: the daily incentive payout to each person in a winning store was about 150 INR (~US$2.5) every time the store reached its daily sales target, plus 50 INR (~US$0.83) for every additional 50,000 INR the store sold beyond that. This was a significant bonus for employees whose fixed salaries were typically lower than 150 INR per day and whose total compensation (including commissions) was about 500 INR (~US$8.3) per day in a non-holiday month.

Figure 2:   Store-months Included for the Sample of Company-owned Stores Where the Tournament Incentive Plan (TP) Was Introduced and Franchised Stores Where It Was Not

Diwali holiday (different incentives apply)

TP announced & introduced in company-owned pilot stores

TP rolled out in all company-owned stores

Diwali holiday (different incentives apply)

Months: February 2012, March 2012, April 2012, May 2012, June 2012, July 2012, August 2012, September 2012, October 2012, November 2012, December 2012, January 2013, February 2013, March 2013, April 2013, May 2013, June 2013, July 2013, August 2013, September 2013, October 2013, November 2013, December 2013, January 2014

29 company-owned stores
- 12 pilot stores
- 17 non-pilot stores

60 franchised stores

■ Months during which the TP was not implemented

■ Months after the TP was implemented (Post-TP period)

Figure 3:   Indexed Monthly Sales
Base (1): February 2012
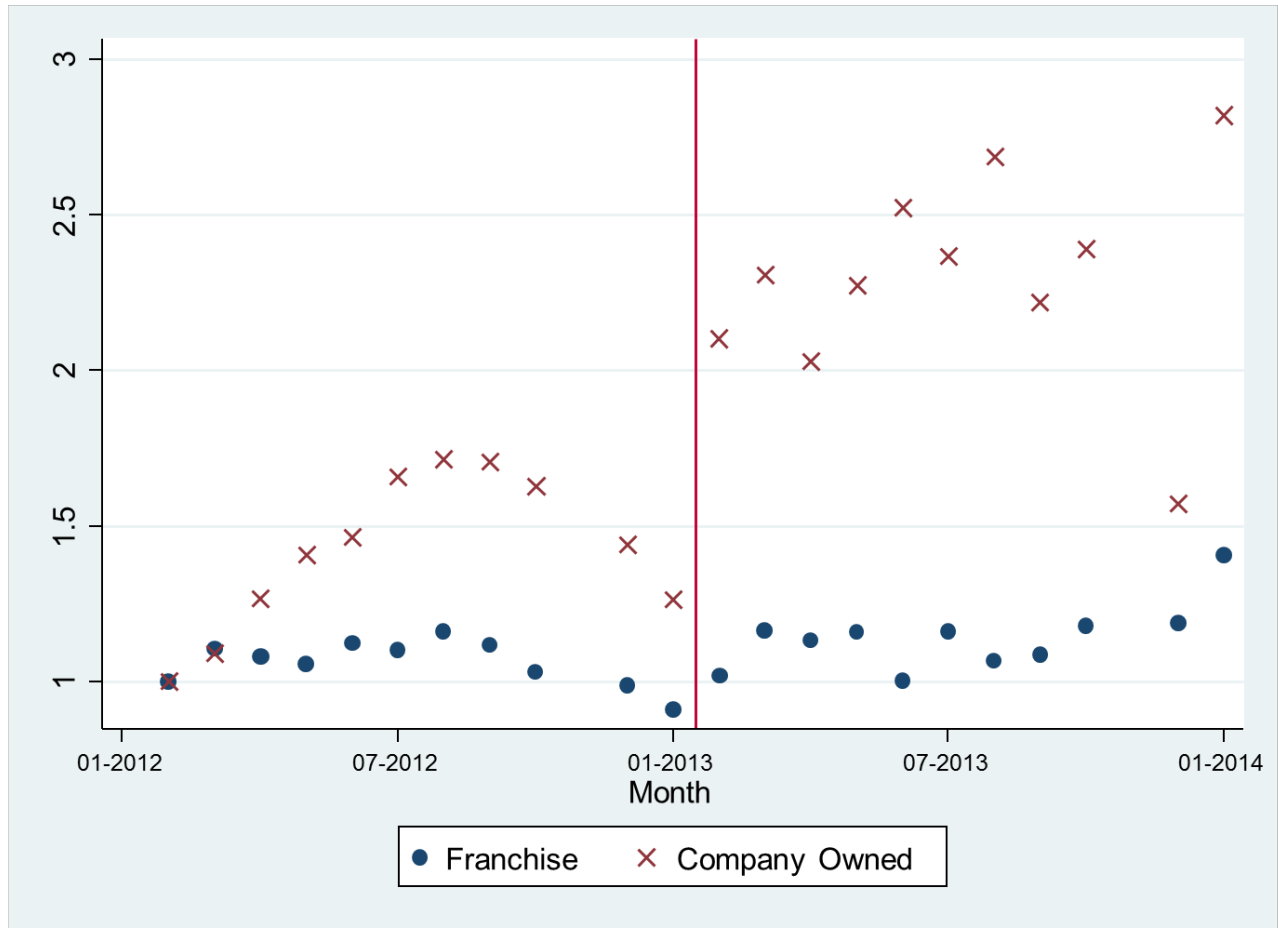
This chart compares the average monthly sales of company-owned stores where the tournament incentive plan (TP) was introduced with the average monthly sales of franchised stores where it was not introduced. The vertical line separates the periods before and after the TP was introduced in company-owned stores. November 2012 and November 2013 are excluded as they were holiday seasons during which different incentives applied. A noteworthy decline in sales in December 2013 was the result of one of the company's major handset suppliers temporarily having a conflict with—and withholding inventory from—the company.

Table 1: Coefficients of OLS Regressions Showing the Effect of Introducing the Tournament Incentive Plan at Company-owned Stores on Sales
(Sample comprises monthly data of company-owned and franchised stores with data available pre- and post-tournament plan.)

Variable	Prediction	Ln(Sales)			
		(1)	(2)	(3)	(4)
Intercept		11.165***	11.175***	13.028***	13.035***
		(75.382)	(76.401)	(184.218)	(186.307)
Company-owned Store (Dummy)		1.137***			
		(6.047)			
Company-owned Winning Store (Dummy)			2.035***		
			(7.295)		
Company-owned Non-winning Store (Dummy)			1.099***		
			(6.546)		
Post-TP (Dummy) x Company-owned Store	+	0.508***		0.484***	
		(3.669)		(3.908)	
Post-TP x Company-owned Winning Store			0.548***		0.439***
			(2.938)		(3.265)
Post-TP x Company-owned Non-winning Store			0.469***		0.508***
			(3.255)		(4.002)
Premium Location (Dummy)		1.241***	0.762***		
		(5.469)	(4.574)		
Time fixed effects?		Yes	Yes	Yes	Yes
Store fixed effects?		No	No	Yes	Yes
Time trend and store trends?		No	No	Yes	Yes
Observations		1,638	1,638	1,638	1,638
R-squared		0.523	0.545	0.909	0.909
Difference in coefficients:					
Coef. [Post-TP x Company-owned Winning Store]-					
Coef. [Post-TP x Company-owned Non-winning Store]	+		0.079		-0.069
p-value			(0.619)		(0.420)

t-statistics in parentheses based on robust standard errors adjusted for clustering at the store level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively (p-values are one-tailed for directional predictions and two-tailed otherwise). *Ln(Sales)* is the natural logarithm of monthly store sales in Indian rupees. *Company-owned Store* equals 1 if the store is company-owned (that is, the store participated in the tournament plan). *Company-owned Winning Store* equals 1 for a company-owned store that won the tournament at any time during the sample period. *Company-owned Non-winning Store* equals 1 for a company-owned store that never won during the sample period. *Post-TP* equals 1 for any month after the tournament incentive plan began. *Premium Location* equals 1 if the store is in a large market with demand for high-premium products (as identified by the managing director).

Table 2: Stores Participating in the Tournament Incentive Plan
(Sample includes all company-owned stores, not just those with data available pre- & post-tournament plan.)

	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014
	Plan implemented in pilot stores					Plan applied to all stores						
Company-owned stores participating in the tournament	12	12	13	14	14	32	32	34	34	-	33	33
Winning stores (% in parentheses)	4 (33%)	4 (33%)	5 (38%)	5 (35%)	5 (35%)	9 (28%)	10 (31%)	10 (29%)	10 (29%)	-	11 (33%)	12 (36%)
Winning stores meeting objective criterion (top-tercile sales in t-3 to t-1)	3	3	3	3	4	7	8	9	9	-	9	8
Winning stores subjectively included (not meeting objective criterion)	1	1	2	2	1	2	2	1	1	-	2	4
Stores subjectively excluded despite meeting objective criterion for winning	1	1	1	1	0	3	2	2	2	-	2	3

Table 3: Summary Statistics

Panel A: Descriptive Statistics for Main Variables
(Sample includes monthly data of company-owned stores with data available pre- and post-tournament plan.)
n = 492 store-months, unless indicated otherwise in []

Variable	Mean	Standard deviation	Min	Max
Sales (INR)	1,129,369	1,169,783	58,778	6,303,759
Sales Variability	0.20	0.12	0.03	0.70
Bad Audit (Dummy) [n=151]	0.80	0.40	0.00	1.00
Absenteeism [n=486]	0.76	2.91	-4.00	19.00
Turnover (Dummy) [n=465]	0.10	0.30	0.00	1.00
Distance from Headquarters	8.20	5.04	0.03	16.00
Resource-constrained Store (Dummy)	0.50	0.50	0.00	1.00
Post-TP (Dummy)	0.42	0.49	0.00	1.00
Supervisor Rank	2.39	0.97	0.00	4.00
Store Manager Present (Dummy)	0.95	0.23	0.00	1.00
Store Manager Tenure	39.35	25.33	0.00	95.00
Pre-TP Sales Growth	0.07	0.05	-0.03	0.23
Store Size	251.16	163.06	100.00	1092.00
New Store Look (Dummy)	0.14	0.35	0.00	1.00
Store Age	4.82	1.54	1.75	8.58
Competition	1.88	0.77	1.00	3.00
Income Class	3.46	1.26	1.00	6.00
Sales Days	29.36	2.16	21.00	31.00

Sales is monthly store sales in Indian rupees. *Sales Variability* is the standard deviation of weekly sales for the month divided by average weekly sales for the month (using the last four calendar weeks of the month). *Bad Audit* equals 1 if the result of at least one of the store's audits in the month was "bad" (i.e., revealed at least one missing item or a cash shortage without a reasonable explanation). *Absenteeism* is the number of unauthorized days the store manager was absent in the month. *Turnover* equals 1 if the store manager left the company within 3 months (at time t, t+1, or t+2). *Distance from Headquarters* is in miles. *Resource-constrained Store* indicates whether two of the following three conditions were met: team size at or below company median, days of inventory at or below company median, and non-premium location. *Post-TP* equals 1 for any month after the tournament incentive plan began. *Supervisor Rank* equals 0 if the store is not overseen by any head-office manager, 1 if overseen by a district-manager-in-training, 2 if by a district manager, 3 if by the managing director, and 4 if by both a district manager and the managing director. *Store Manager Present* equals 1 if the store had a manager in the month. *Store Manager Tenure* is the store manager's tenure in months since joining the company (or the cashier's tenure if there was no store manager). *Pre-TP Sales Growth* is the average monthly store-sales growth for the 12 months before the tournament incentive plan. *Store Size*

is in square feet. *New Store Look* equals 1 if the store has a new format adopted by the company which resulted in larger stores with a modern and clean look. *Store Age* is in years. *Competition* is equal to 1 if competition is low, 2 if medium, and 3 if high, based on the managing director's opinion. *Income Class* is equal to 1 if very low, 2 if low, 3 if low-to-middle, 4 if middle, 5 if high, and 6 if very high, according to the managing director. *Sales Days* is the number of days in the month that the store was open.

Table 3: Summary Statistics (Continuation)

Panel B: Pearson's Correlation Coefficients for Main Independent Variables
(Sample includes monthly data of company-owned stores with data available pre- and post-tournament plan.)
n = 492 store-months

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Distance from Headquarters	1.00												
(2) Resource-constrained Store	-0.01	1.00											
(3) Post-TP	-0.11**	0.05	1.00										
(4) Supervisor Rank	-0.06	-0.42***	-0.19***	1.00									
(5) Store Manager Present	0.01	-0.06	-0.17***	0.09*	1.00								
(6) Store Manager Tenure	0.15***	-0.19***	-0.07	0.19***	0.24***	1.00							
(7) Pre-TP Sales Growth	0.22***	0.21***	-0.00	-0.04	-0.34***	-0.10**	1.00						
(8) Store Size	0.05	-0.29***	0.08*	0.54***	0.11**	0.06	-0.12**	1.00					
(9) New Store Look	0.11**	0.03	0.47***	-0.05	-0.06	-0.15***	0.06	0.20***	1.00				
(10) Store Age	0.04	-0.46***	0.35***	0.42***	0.04	0.16***	-0.16***	0.34***	0.28***	1.00			
(11) Competition	0.07	-0.15***	-0.06	0.43***	0.17***	0.16***	-0.09*	0.28***	0.03	0.31***	1.00		
(12) Income Class	0.46***	-0.27***	-0.06	0.27***	0.09*	0.23***	-0.01	0.13***	0.07	0.49***	0.42***	1.00	
(13) Sales Days	0.16***	-0.26***	0.01	0.08*	0.16***	0.11**	-0.30***	0.18***	0.10**	0.14***	-0.07	-0.05	1.00

*, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively. *Distance from Headquarters* is in miles. *Resource-constrained Store* indicates whether two of the following three conditions were met: team size at or below company median, days of inventory at or below company median, and non-premium location. *Post-TP* equals 1 for any month after the tournament incentive plan began. *Supervisor Rank* equals 0 if the store is not overseen by any head-office manager, 1 if overseen by a district-manager-in-training, 2 if by a district manager, 3 if by the managing director, and 4 if by both a district manager and the managing director. *Store Manager Present* equals 1 if the store had a manager in the month. *Store Manager Tenure* is the store manager's tenure in months since joining the company (or the cashier's tenure if there was no store manager). *Pre-TP Sales Growth* is the average monthly store-sales growth for the 12 months before the tournament incentive plan. *Store Size* is in square feet. *New Store Look* equals 1 if the store has a new format adopted by the company which resulted in larger stores with a modern and clean look. *Store Age* is in years. *Competition* is equal to 1 if competition is low, 2 if medium, and 3 if high, based on the managing director's opinion. *Income Class* is equal to 1 if very low, 2 if low, 3 if low-to-middle, 4 if middle, 5 if high, and 6 if very high, according to the managing director. *Sales Days* is the number of days in the month that the store was open.

Table 3: Summary Statistics (Continuation)

Panel C: Mean Value for Main Variables—Subsample Splits
(Sample includes monthly data of company-owned stores with data available pre- & post-tournament plan.)
n = 264 store-months in column (1), except for Bad Audit (n = 88), Absenteeism (n = 262) and Turnover (n = 248)
n = 228 store-months in column (2), except for Bad Audit (n = 63), Absenteeism (n = 224) and Turnover (n = 217)
n = 245 store-months in column (3), except for Bad Audit (n = 73), Absenteeism (n = 243) and Turnover (n = 235)
n = 247 store-months in column (4), except for Bad Audit (n = 78), Absenteeism (n = 243) and Turnover (n = 230)

Variable	Distance from Headquarters <=median	Distance from Headquarters >median	Resource-constrained Store = 0	Resource-constrained Store = 1
	(1)	(2)	(3)	(4)
Sales (INR)	1,300,634***	931,063***	1,673,597***	589,548***
Sales Variability	0.20	0.21	0.17***	0.23***
Bad Audit (Dummy)	0.78	0.83	0.70***	0.90***
Absenteeism	0.94	0.54	0.85	0.66
Turnover (Dummy)	0.09	0.12	0.03***	0.17***
Distance from Headquarters	4.09***	12.97***	8.27	8.13
Resource-constrained Store (Dummy)	0.47	0.54	-	-
Post-TP (Dummy)	0.47**	0.37**	0.40	0.45
Supervisor Rank	2.47*	2.30*	2.80***	1.98***
Store Manager Present (Dummy)	0.94	0.95	0.96	0.93
Store Manager Tenure	35.01***	44.36***	44.30***	34.43***
Pre-TP Sales Growth	0.06***	0.09***	0.06***	0.08***
Store Size	246.02	257.10	298.05***	204.64***
New Store Look (Dummy)	0.14	0.14	0.13	0.15
Store Age	4.87	4.77	5.53***	4.13***
Competition	1.88	1.89	1.99***	1.77***
Income Class	2.89***	4.12***	3.80***	3.12***
Sales Days	29.24	29.50	29.91***	28.81***

*, **, and *** denote that the t-test difference between the two subsamples compared is significant at the 0.10, 0.05, and 0.01 level, respectively. *Sales* is monthly store sales in Indian rupees. *Sales Variability* is the standard deviation of weekly sales for the month divided by average weekly sales for the month (using the last four calendar weeks of the month). *Bad Audit* equals 1 if the result of at least one of the store's audits in the month was "bad" (i.e., revealed at least one missing item or a cash shortage without a reasonable explanation). *Absenteeism* is the number of unauthorized days the store manager was absent in the month. *Turnover* equals 1 if the store manager left the company within 3 months (at time t, $t+1$, or $t+2$). *Distance from Headquarters* is in miles. *Resource-constrained Store* indicates whether two of the following three conditions were met: team size at or below company median, days of inventory at or below company median, and non-premium location. *Post-TP* equals 1 for any month after the tournament incentive plan began. *Supervisor Rank* equals 0 if the store is not overseen by any head-

office manager, 1 if overseen by a district-manager-in-training, 2 if by a district manager, 3 if by the managing director, and 4 if by both a district manager and the managing director. *Store Manager Present* equals 1 if the store had a manager in the month. *Store Manager Tenure* is the store manager's tenure in months since joining the company (or the cashier's tenure if there was no store manager). *Pre-TP Sales Growth* is the average monthly store-sales growth for the 12 months before the tournament incentive plan. *Store Size* is in square feet. *New Store Look* equals 1 if the store has a new format adopted by the company which resulted in larger stores with a modern and clean look. *Store Age* is in years. *Competition* is equal to 1 if competition is low, 2 if medium, and 3 if high, based on the managing director's opinion. *Income Class* is equal to 1 if very low, 2 if low, 3 if low-to-middle, 4 if middle, 5 if high, and 6 if very high, according to the managing director. *Sales Days* is the number of days in the month that the store was open.

Table 4: Coefficients of OLS Regressions Showing the Moderating Effect of Distance from Headquarters and Resource Constraints on the Effects of the Tournament Incentive Plan (Sample includes monthly data of company-owned stores with data available pre- and post-tournament plan.)

Variable	Prediction	Ln(Sales)	Prediction	Sales Variability	Bad Audit	Absenteeism	Pr(Turnover)
		(1)		(2)	(3)	(4)	(5)
Intercept		9.215***		0.575***	1.041	-1.629	0.332
		(11.707)		(4.934)	(1.641)	(-0.688)	(0.956)
Distance from Headquarters	-	-0.042**	+	0.002	0.027*	-0.025	0.003
		(-1.835)		(0.956)	(1.430)	(-0.746)	(0.636)
Resource–constrained Store (Dummy)	-	-0.299**	+	-0.001	0.360**	-0.182	0.122**
		(-1.927)		(-0.039)	(1.750)	(-0.641)	(2.038)
Post-TP (Dummy) x Distance from Headquarters	+	0.031***	-	-0.001	-0.034**	0.049	-0.010*
		(2.738)		(-0.617)	(-2.031)	(0.775)	(-1.543)
Post-TP x Resource-constrained Store	?	0.140	?	0.002	-0.388*	0.989*	-0.124**
		(1.019)		(0.106)	(-1.729)	(1.698)	(-2.336)
Supervisor Rank		0.070		-0.004	0.044	-0.223	-0.017
		(0.817)		(-0.389)	(0.830)	(-0.680)	(-0.574)
Store Manager Present (Dummy)		0.066		0.018	0.384***	-	-
		(0.591)		(0.551)	(3.055)		
Store Manager Tenure		0.000		-0.000	0.003*	0.005	-0.001*
		(0.193)		(-0.318)	(1.753)	(0.671)	(-1.758)
Pre-TP Sales Growth		-1.226		0.262*	0.994	2.947	1.531***
		(-0.922)		(1.700)	(1.071)	(1.128)	(3.448)
Store Size		0.002***		-0.000	-0.000	0.000	0.000
		(5.682)		(-1.232)	(-1.232)	(0.036)	(0.177)
New Store Look (Dummy)		-0.095		-0.003	0.156	-0.703	0.057
		(-0.702)		(-0.107)	(1.428)	(-1.151)	(0.922)
Store Age		0.321***		-0.015*	-0.072	0.412***	-0.003
		(4.199)		(-1.874)	(-1.367)	(3.027)	(-0.119)
Competition		0.076		0.005	-0.122	0.283	0.046
		(0.774)		(0.459)	(-1.689)	(1.397)	1.670)
Income Class		0.018		-0.004	0.001	-0.245**	-0.010
		(0.190)		(-0.341)	(0.014)	(-2.170)	(-0.433)
Sales Days		0.084***		-0.014***	-0.023	0.064	-0.015
		(2.985)		(-3.153)	(-1.447)	(0.822)	(-1.389)
Month-year fixed effects?		Yes		Yes	Yes	Yes	Yes
Observations		492		492	151	486	465
R^2		0.796		0.343	0.360	0.102	0.197

t-statistics in parentheses based on robust standard errors adjusted for clustering at the store level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively (stars are based on one-tailed p-values for directional predictions and two-tailed p-values otherwise). *Ln(Sales)* is the natural logarithm of monthly store sales in Indian rupees. *Sales Variability* is the standard deviation of weekly sales for the month divided by average weekly sales for the month (using the last four calendar weeks of the month). *Bad Audit* equals 1 if the result of at least one of the store's audits in the month was "bad" (i.e., revealed at least one missing item or a cash shortage without a reasonable explanation). *Absenteeism* is the number of unauthorized days the store manager was absent in the month. *Turnover* equals 1 if the store manager left the company within 3 months (at time *t*, *t+1*, or *t+2*). *Distance from Headquarters* is in miles. *Resource-constrained Store* indicates whether two of the following three conditions were met: team size at or below company median, days of inventory at or below company median, and non-premium location. *Post-TP* equals 1 for any month after the tournament incentive plan began. *Supervisor Rank* equals 0 if the store is not overseen by any head-office manager, 1 if overseen by a district-manager-in-training, 2 if by a district manager, 3 if by the managing director, and 4 if by both a district manager and the managing director. *Store Manager Present* equals 1 if the store had a manager in the month. *Store Manager Tenure* is the store manager's tenure in months since joining the company (or the cashier's tenure if there was no store manager). *Pre-TP Sales Growth* is the average monthly store-sales growth for the 12 months before the tournament incentive plan. *Store Size* is in square feet. *New Store Look* equals 1 if the store has a new format adopted by the company which resulted in larger stores with a modern and clean look. *Store Age* is in years. *Competition* is equal to 1 if competition is low, 2 if medium, and 3 if high, based on the managing director's opinion. *Income Class* is equal to 1 if very low, 2 if low, 3 if low-to-middle, 4 if middle, 5 if high, and 6 if very high, according to the managing director. *Sales Days* is the number of days in the month that the store was open.