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No margin, no mission? A field experiment on incentives for public service delivery

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ABSTRACT

We conduct a field experiment to evaluate the effect of extrinsic rewards, both financial and non-financial, on the performance of agents recruited by a public health organization to promote HIV prevention and sell condoms. In this setting: (i) non-financial rewards are effective at improving performance; (ii) the effect of both types of rewards is stronger for pro-socially motivated agents; and (iii) both types of rewards are effective when their relative value is high. The findings illustrate that extrinsic rewards can improve the performance of agents engaged in public service delivery, and that non-financial rewards can be effective in settings where the power of financial incentives is limited.

1. Introduction

Understanding what motivates individuals to devote time and effort to work endeavors is a question that lies at the core of the social sciences. The answer is crucial both to understanding observed behavior and to designing incentive mechanisms that align the individuals' interests with the interests of the organization for which they work. As a consequence, the design of optimal incentive contracts has been the subject of extensive theoretical and empirical research.

Empirical contributions, however, mainly focus on the effect of financial rewards in settings in which employee effort only benefits the employer (Bandiera et al., 2011; Oyer and Schaefer, 2011). Much less attention has been paid to incentives in organizations, such as governmental and non-governmental organizations, which hire agents to perform pro-social tasks; namely, tasks that create benefits enjoyed by those other than the employer and employees. A notable exception is the literature on the effect of monetary incentives on teachers' performance, which finds markedly mixed results (Duflo et al., 2012; Fryer, 2013; Lavy, 2002; Glewwe et al., 2010; Muralidharan and Sundararaman, 2011).

The theoretical literature suggests reasons why the effect of extrinsic rewards on performance in private and pro-social tasks might differ. Mission-driven organizations benefit from matching with workers whose interests are aligned with the mission, and these individuals might respond less to incentives or even deliver a weaker performance if incentives displace other sources of motivation. In particular, to the extent that agents are motivated by the externalities generated through pro-social tasks, this motivation may interact positively or negatively with extrinsic incentives (Benabou and Tirole, 2003, 2006; Besley and Ghatak, 2005; Dixit, 2002).

Informed by these insights, we design a field experiment to evaluate the effect of extrinsic rewards on the performance of agents in a public health organization. The experiment is designed to compare the effects of monetary and non-monetary incentives, as both are commonly used

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in practice,[1] but their relative effectiveness for public service delivery is understudied.[2] The experiment is designed to measure the interaction between extrinsic rewards and the pro-social motivation of the agents, and to test whether this interaction differs between financial and non-financial rewards. We collaborate with a public health organization based in Lusaka, Zambia, which recruits and trains hairdressers and barbers to provide information about HIV prevention and sell condoms in their shops.

The experiment randomly assigns 205 distinct geographical clusters containing 1222 agents to one of four groups that receive different rewards based on condom sales. Agents in the control group receive no rewards, while agents in the three treatment groups receive financial margins at the bottom and the top of the feasible range, and non-financial rewards, respectively. The smaller and larger financial-margin treatments pay a 10% and 90% margin on each condom sale, respectively, whereas the non-financial scheme ("star" treatment) gives agents a "thermometer" display, showing condom sales and stamps, with one star stamp for each sale.

The first part of our empirical analysis shows that non-financial rewards are effective at promoting sales: agents in the star treatment sell over twice as many condoms as agents in any other group, on average. We track agents' performance over one year, and thus can separate responses due to the novelty of the program from long-run responses. The estimates are stable throughout the one-year period, thus ruling out novelty effects. The magnitude of the estimated treatment effects is such that, had all agents been offered non-financial incentives, they would have sold 23,102 condoms, compared to 10,732/12,006/12,562 had they all been offered the volunteer contract, small financial margins and large financial margins, respectively.

That financial incentives are ineffective might be due to earnings from condom sales being a small fraction of overall earnings, because both demand for the product and earnings from each sale are low. Since demand for the product and the cost of effort are orthogonal to treatment, our results imply that the agents' marginal utility of stars is higher than their marginal utility of money, given their initial endowments of money and stars. In general, we expect there to be a threshold level of financial rewards such that all rewards above that threshold would be more effective at eliciting effort than non-financial incentives, and indeed, as we describe below, we find suggestive evidence that financial rewards are effective for the poorest agents in the sample, for whom the relative value is higher.

The second part of the analysis explores mechanisms driving the estimated treatment effects. We begin by assessing whether treatments differ because they make the agents exert different levels of effort, or because they affect demand directly. We provide three pieces of evidence on this matter. First, we show that agents in the star treatment behave differently on dimensions correlated with sales effort, such as displaying promotional materials and filling in sales records. This rules out that the star treatment increases sales exclusively by increasing demand. Second, we survey a random sample of customers to probe the effectiveness of different promotional materials; most surveyed customers recall and correctly describe the promotional posters given to agents in all treatments, but only a negligible minority mentions the thermometer that is only given to agents in the star treatment. Third, we implement a "placebo" star-reward treatment; namely, we randomly provide a subsample of salons in the control and financial reward treatments with a thermometer that, to a third party, looks identical to the treatment thermometer, and hence is an equally effective advertising tool, but carries no reward for the agent, as the stars stamped on it represent the average sales in the area. We find that the placebo star treatment has no effect on sales, which allays the concern that the star treatment increases sales by stimulating demand.

The next step of our analysis provides evidence on the interaction between extrinsic incentives and intrinsic motivation for the cause. To this purpose, we measure motivation through an adapted dictator game where agents can make a donation to an existing charity that provides care to HIV/AIDS patients. We find that the donation is a strong predictor of sales performance; agents who donate more than the median sell 51% more condoms than the average agent in the control group. We find that agents who are motivated by the cause respond more strongly to financial rewards, which is in direct contradiction to the hypothesis that extrinsic incentives crowd out intrinsic motivation. We also find a positive interaction between high donation and non-financial rewards, suggesting that extrinsic incentives are complementary to pro-social motivation in this context.

Findings from the final step of our analysis reveal that the point estimates of responses to both financial and non-financial incentives are larger when the utility associated with financial and non-financial rewards, respectively, is high. In particular, our results suggest that financial incentives increase sales for the poorest agents in our sample, for whom the relative value of rewards is higher. To measure the relative value of non-financial incentives, we exploit the intuition that these might be more valuable when they are visible to a larger peer group. To implement this test, we exploit the naturally occurring variation in the number of salons in each neighborhood. We find suggestive evidence that the marginal effect of non-financial incentives is increasing in the number of neighboring salons that also received non-financial incentives, whereas the response to the other incentive treatments is not affected by the number of neighboring salons that receive the same treatment.

Our findings contribute to the broad literature evaluating the effect of incentives in for-profit firms and to the nascent literature studying how to motivate agents engaged in pro-social activities (see, for example, Gneezy and Rustichini, 2000; Lacetera et al., 2011; Meier, 2007; Mellström and Johannesson, 2008). Most of the related literature on public services delivery focuses on performance incentives for teachers (Duflo et al., 2012; Fryer, 2013; Lavy, 2002; Glewwe et al., 2010; Muralidharan and Sundararaman, 2011) with two recent exceptions, both of which analyze the delivery of health services. Miller et al. (2012) evaluate the effect of providing financial incentives to school principals to reduce anemia among students in rural China and find a modest effect. Olken et al. (forthcoming) study an intervention that links the disbursement of aid to the performance of health services at the village level in Indonesia and find that linking aid to performance improves health indicators.[3] In the context of this literature, our paper provides the first field comparison of monetary and non-monetary incentives and how these interact with motivation for public services delivery.

The rest of the paper proceeds as follows. Section 2 describes the context, data and research design. Section 3 discusses the identification strategy. Sections 4 and 5 present the findings, and Section 6 concludes with a discussion of costs and benefits of the different schemes and the external validity of our findings.

2. Context, data and research design

2.1. Context

The field experiment was run in collaboration with the Society for Family Health (SFH), a public health organization based in Lusaka,

[1] Many organizations, ranging from large corporations to NGOs, use a range of non-financial performance rewards to motivate their employees. For example, Larkin (2011) uses observational data to study a non-linear incentive scheme that provides employees of a software firm with a "gold star" and company-wide recognition if they meet an annual performance threshold. His evidence suggests that employees forgo 27,000 USD worth of revenue to obtain the non-financial reward.

[2] Kube et al. (2012) compare the effect of monetary and non-monetary rewards on the performance of agents engaged in a task (book sorting) that has no pro-social elements. They find that the non-monetary reward, a water bottle, is more effective than the equivalent cash amount.

[3] Related research examines the effect of salary levels on selection into the health sector and performance (Propper and Van Reenen, 2010; Dal Bó et al., 2013).