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Regulatory performance of audit tournaments and compliance observability

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ABSTRACT

This paper examines the effectiveness of traditional regulatory schemes and newly emerging social information schemes for achieving compliance. Our experiment focuses on two stochastic audit schemes for enforcing regulatory compliance. In the Random Audit mechanism firms are randomly chosen for inspection. In the Tournament Audit mechanism the probability of inspection increases with the degree of estimated under-reporting. To study the effects of social information, the experiment varies the observability of identity, output, and compliance decisions. Optimal output is theoretically independent of the auditing scheme, but equilibrium reporting is higher under the Tournament mechanism than Random auditing. Experimental findings are broadly consistent with the theoretical predictions for reporting, but deviate modestly for output. In particular, we find that average output is lower and reporting is higher in the Tournament treatment compared to the Random Audit treatment. At the individual level, a majority of participants misreported in most periods. Social observability does not affect output or reporting significantly in either of the audit treatments.

1. Introduction

Policy makers employ various approaches to encourage individuals to consider the impact of their actions on others. Some of these approaches are formal and rely on monitoring and auditing, with penalties for observed non-compliance. Others can be more informal and allow the use of information mechanisms to influence behavior. Our goal in this paper is to examine the effectiveness of audit mechanisms and information observability and the interaction between these different approaches. This is important to study because information policies are often implemented in conjunction with traditional enforcement measures, perhaps due to budget constraints faced by enforcement agencies. For example, environmental regulators in the U.S. are committed to using "Next Generation compliance that takes advantage of new information and monitoring technologies," in addition to traditional enforcement programs (US EPA, 2014a, p. 39). As budgets available for traditional enforcement tighten while the costs of informal enforcement via information disclosure fall due to the rising prevalence of social media, it is important to know whether and how these different approaches complement each other. To provide insight about the potential value of these new information-based approaches as either beneficial or detrimental for traditional regulations, it is critical to better understand how they interact.

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Auditing is a traditional enforcement approach that helps ensure that the regulatory programs instituted by governments are effective and that individuals and organizations are appropriately compliant with regulations. Beyond auditing of financial accounts for tax reporting, this can include inspections for compliance with health, safety and environmental regulations. Auditing however is expensive and consumes scarce regulatory budgets, so substantial benefits can arise from audit mechanisms that improve compliance cost-effectively. In particular, audit mechanisms that choose whom to audit randomly may spend limited resources auditing mostly compliant agents, so regulators may prefer to introduce targeting schemes that are more likely to apprehend the biggest or most frequent violators. There is some evidence of growing use of such non-random audit schemes (e.g., IRS, 2014). This paper examines one such mechanism in which firms compete with each other to avoid being audited by the regulator. An individual firm's probability of being audited depends on its own actions as well as the actions of the other similar firms in the industry or region. Our interest in a competitive mechanism stems from the notion that tournaments can be efficiency enhancing and audits based on relative performance could help improve social outcomes cost effectively.

The information mechanism that we investigate in this paper focuses on whether increasing the visibility of actions can lead to improved compliance. Firms and individuals are often motivated by their public image. For example, they may suffer disutility when being revealed as violators of social norms (Perez-Truglia and Troiano, 2015; Samek and Sheremeta, 2014; Coricelli et al., 2010; Andreoni and Petrie, 2004) or face adverse market valuations when poor compliance is publicly revealed (Konar and Cohen, 2001). Therefore, making actions and audit outcomes public is another potential method for improving compliance with regulatory goals. If individuals or firms are motivated by shame, prestige, or status in social settings their desire for social approval could lead to more compliance. Reputational concerns and customer, employee and shareholder preferences for investments in corporate social responsibility may influence compliance behavior (Kitzmueller and Shimshack, 2012). Effectively communicating compliance with different regulatory goals, such as honest reporting of taxable income, eschewing creative (or fraudulent) accounting practices to shelter income, and complying with product, workplace and environmental safety measures can affect corporate image. For policy makers, the positive impact of social observability on compliance rates could create significant benefits, especially if the costs associated with public disclosure are mostly negligible.

We conduct an experiment to evaluate the effectiveness of audit tournaments and social observability as compliance mechanisms. Laboratory experiments are a useful methodology for investigating the effects of alternative policy options. Especially for innovative mechanisms, that combine different approaches, it is difficult to find appropriate counterfactuals, making empirical evaluation based on field data challenging. In addition to comparing performance across different schemes, comparing the experimental outcomes with equilibrium predictions in a controlled environment further allows us to evaluate empirically the insights arising from the theory. The experimental approach also allows for random assignment of treatment conditions, which permit unambiguous inferences regarding causality.

We consider a scenario in which firms choose an output level, with higher choices providing private benefits but imposing negative externalities on others in society. These externalities lead to direct, negative payoff consequences due to others' increased output, and they are a primary reason why public exposure may motivate more socially-beneficial choices. In the model firms are required to report their output to the regulator but reporting incurs a cost, for example through a per-unit tax. To avoid this reporting cost, they may choose to misreport and enjoy private benefits from a high output. Output is not easily observable and to better align aggregate output to what is socially optimal by accounting for the externalities, regulators need to audit or inspect the firms. This scenario applies in several areas of the economy where regulatory effort is exerted by governments to improve compliance, such as environmental and health and safety regulations, as well as sales, VAT and income tax reporting.

We consider two auditing schemes, varied exogenously across experimental treatments. In the Random Audit treatment firms are randomly inspected with a constant and exogenously determined probability. In the Tournament Audit treatment, firms are ranked based on their reporting. The probability of inspection in this treatment increases with the estimated degree of underreporting. Hence firms have an incentive to compete with each other in terms of compliance, since lower underreporting compared to others in the industry or regulatory group results in lower chances of an audit. This competition amongst firms can be characterized as a Rank-Order Tournament (Lazear and Rosen, 1981). Firms that are found to be non-compliant by an equivalent amount incur identical fines in both treatments.

To examine the influence of social visibility and observability we implement the two audit treatments described above with two levels of information disclosure. In the Low information condition participants only learn the reporting choices of others, who always remain anonymous. In the High information scenario we add feedback about actual output and compliance of the inspected group members, and also display digital photographs of all the participants. The social visibility of actions and identities may influence output and reporting choices by increasing the stigma associated with choices that deviate from the social norm. Further, the impact of visibility could differ across audit treatments. We hypothesize that increased compliance will occur in the audit tournament, and based on previous experimental results summarized in Section 2, we expect that increased information disclosure about reporting and compliance may also increase compliance. The effects of these enforcement and disclosure margins may reinforce each other or perhaps unexpectedly conflict, so we also include an interaction treatment where they are both present.

Our study contributes by investigating how the resources deployed in traditional enforcement could be used more effectively by using competition, as well as studying whether formal regulatory rules can be complemented through informal policies such as the disclosure of past compliance. Furthermore previous studies have considered information