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2019

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Michele G. Giuranno* Marcella Scrimitore† Giorgos Stamatopoulos‡

March 21, 2019

Abstract

Two well-known mechanisms for enhancing managers' accountability are yardstick competition and internal monitoring. Yardstick competition puts managers in direct competition when firms make decisions for re-appointment (Tirole, 2006). Monitoring is used by firms to detect managers' rent-seeking activities. While common wisdom suggests that the joint use of the two means would reinforce each other in promoting managers good practices, we find that their interplay distorts managers' behavior who may end up acting in a less accountable way. Furthermore, differences in monitoring across firms bias that distortion, yielding even more counterintuitive results.

Keywords: Tullock context success function; rent seeking; managerial discretion

JEL: D, D2, D7, M2.

1 Introduction

Due to the separation of management from ownership, decision making within modern corporations implies that managers are in charge of firms strategic decisions, whereas owners exert their control rights over these decisions. According to Tirole (p. 29, 2006) and Williamson (1963), asymmetric information between owners and managers leads to the possibility of rent extraction by managers, which resembles the rent seeking behavior of politicians in public choice (Tullock, 1967; Allers, 2012; Congleton, 2015; Di Liddo and Giuranno, 2016, among others). In this regard, Tirole (p. 28, 2006) argues that a competitive environment among managers plays a role in mitigating this problem as "close competitors offer a yardstick against which the firms quality of management can be measured". Yardstick competition occurs when agents perceive their probability of being reappointed depending on firms' relative performance (Congleton and Hillman, 2015). This creates a strategic interaction among managers that could enhance their accountability.

*University of Salento, Dipartimento di Scienze dell'Economia "A. De Viti De Marco", Lecce, 73100 Italy. Tel.: +39 348 8941 967; fax: +39 0832 298757; E-mail: michele.giuranno@unisalento.it

†University of Salento, Dipartimento di Scienze dell'Economia "A. De Viti De Marco", Lecce, 73100 Italy. Tel.: +39 0832 29 8772; fax: +39 0832 298757; E-mail: marcella.scrimitore@unisalento.it

‡University of Crete, Department of Economics, 74100 Rethymno, Crete, Greece. Tel.:+30 28310 77427; Email: gstamato@uoc.gr

According to Williamson's (1963) celebrated position, one common form of rent-seeking behavior occurs through managers under-reporting of the true profits of firms, which might be detected through an auditing process (Williamson, 1975). Assessment based on relative profits and auditing are two separate discipline mechanisms. One would expect that the joint use of the two would reinforce each other in promoting managers good practices. Instead, in this paper we find that the interplay between yardstick competition and auditing may hamper managerial accountability.

In the next section we present the model and the results, while section 3 concludes.

2 A model of yardstick competition and auditing

We consider an environment with two firms, 1 and 2, their owners and their managers.[1] We assume that, unlike managers, owners cannot observe the actual profits of their firms. This generates current and future rent-seeking opportunities for the managers. In our model rent seeking occurs through under-reporting of true profits, as in Williamson (1963). The profit each manager reports balances present and future incentives. Each manager is interested in appropriating the difference between actual and reported profits today, facing the possibility of internal auditing, and being re-appointed by her firm's owner in the future.

Let Π_i be the true profit of firm i in the present period, for $i = 1, 2$. We assume that firms are symmetric implying that their true profits are equal. This allows us to disentangle the impact of asymmetric auditing on managers' behavior. Furthermore, we let $\pi_i \geq 0$ be the profit reported by manager i in the current period.[2] Then, $\Pi_i - \pi_i$ is the rent of manager i (Williamson, 1963).

Denote by λ_i the probability of manager i getting caught for under-reporting. If i is caught, she is not reappointed with certainty and she also has to pay a positive fine α_i. Otherwise, she will be re-appointed with probability $f_i(\pi_1, \pi_2)$. In this case, she gets a future payoff A_i, with $A_1 = A_2 \equiv A$.

The expected utility of manager i is

$$V_i = \lambda_i(\Pi_i - \pi_i - \alpha_i) + (1 - \lambda_i)\big(\Pi_i - \pi_i + \delta f_i A\big), \tag{1}$$

where δ is the discount factor and f_i is Tullock's contest success function, i.e.,

$$f_i = \begin{cases} \frac{\pi_i}{\pi_1 + \pi_2}, & \pi_1 + \pi_2 > 0 \\ \\ \frac{1}{2}, & \pi_1 = \pi_2 = 0. \end{cases}$$

The best reply function of manager i is

$$\pi_i(\pi_j) = \begin{cases} \sqrt{(1 - \lambda_i)\delta\pi_j A} - \pi_j, & 0 < \pi_j < (1 - \lambda_i)\delta A \\ \\ 0, & \pi_j \geq (1 - \lambda_i)\delta A, \end{cases}$$

where $i, j = 1, 2$, $i \neq j$. Notice that the sign of the slope of the best reply function is

[1] The paper also applies to the case of two divisions of a firm.

[2] We assume that owners impose a minimum profit below which managers will not be re-appointed. W.l.o.g. this profit threshold is set equal to zero.

$$\frac{\partial \pi_i(\pi_j)}{\partial \pi_j} \begin{cases} > 0, & \pi_j < (1-\lambda_i)\delta A/4 \\ < 0, & (1-\lambda_i)\delta A/4 \leq \pi_j < (1-\lambda_i)\delta A \\ 0, & \pi_j \geq (1-\lambda_i)\delta A. \end{cases}$$

Consider manager i. Her choice of π_i balances two opposite effects, the effect on the current rent and the effect on the re-appointment probability. The former effect is independent of π_j, whereas the latter depends negatively on it; i.e., a higher π_j reduces the impact of π_i on the probability of re-appointment. In other words, it reduces the marginal gain of a higher π_i. The higher (lower) π_j, the higher (lower) this reduction.

The equilibrium reported profit of i is

$$\pi_i^* = \frac{(1-\lambda_i)^2(1-\lambda_j)}{(2-\lambda_i-\lambda_j)^2}\delta A. \tag{2}$$

From the above, we get the following result.

Proposition 1 *There is an inverse relation between λ_i and π_i^*. Furthermore, if $\lambda_i \geq \lambda_j$ then $\pi_i^* \leq \pi_j^*$.*

According to Proposition 1, there exists a paradoxically inverse relation between monitoring and accountability. The reason is that as λ_i, for instance, goes up, future gains of manager i become less relevant. To compensate for this loss, manager i tends to report less in the current period. As a result, the manager who is caught with a higher probability than her opponent, reports lower profits than her. Furthermore, that manager extracts higher current rent, but she is re-appointed with a lower probability.

Notice that auditing has two effects on the expected payoff of manager i. First, it reduces her current rent by α_i. Second, it reduces her probability of re-appointment by a factor of $\lambda_i f_i$. The first effect is independent of λ_i at the margin, whereas the second is not. If λ_i is higher than λ_j, the probability of manager i's reappointment is affected more severely than j's. To overcome this relatively higher future loss, manager i will choose to report a lower profit than j.

In the following Corollary we study how the equilibrium strategy of manager i is influenced by changes in the auditing probability of the rival manager j. Interestingly, we find a non-monotonic pattern.

Corollary 1 *The following comparative statics hold:*

(i) $\frac{\partial \pi_i^*}{\partial \lambda_j} < 0$ *if* $\lambda_i < \lambda_j$,

(ii) $\frac{\partial \pi_i^*}{\partial \lambda_j} \geq 0$ *if* $\lambda_i \geq \lambda_j$.

The impact of λ_j on the equilibrium behavior of manager i depends on the relation between the two probabilities λ_i and λ_j. Specifically, tougher monitoring within firm j makes manager i less (more) accountable provided λ_j is higher (lower) than λ_i. Consider case (i) where $\lambda_i < \lambda_j$. According to Proposition 1, $\pi_i^* > \pi_j^*$ and hence $f_i > f_j$. As λ_j increases, then, given the inverse relation described in Proposition 1, π_j^* declines and f_i increases. This gives manager i space to reduce her reported profit and still maintain a relatively high re-appointment probability. The opposite forces work in case (ii).

Another way to see the mechanics of Corollary 1 is by looking at the best replies. Recall that the best reply of manager i is an increasing function of π_j if $\pi_j < (1-\lambda_i)\delta A/4$ and it is decreasing otherwise. It turns out that $\pi_j^* < (1-\lambda_i)\delta A/4$ if and only if $\lambda_j > \lambda_i$. Hence, if $\lambda_j > \lambda_i$, we are in the case of increasing best replies and a marginal change of λ_j affects both π_j^* and π_i^* in the same way: namely both decrease in λ_j (see Corollary 1 (i)). On the other hand, if $\lambda_j \leq \lambda_i$, we are in the case of decreasing best replies so that a marginal change of λ_j affects π_j^* and π_i^* differently (see Corollary 1 (ii)).

3 Conclusions

The joint use of different mechanisms for enhancing managers' accountability, such as yardstick competition and auditing, has not received adequate attention in literature. We have shown that the use of auditing is detrimental to the self-regulating behavior of managers under yardstick competition. When facing the possibility of being audited, managers end up increasing rent extraction in order to compensate for the loss of future expected payoffs, leading to an inverse relation between auditing and accountability. Furthermore, when managers are hit asymmetrically by auditing, yardstick competition generates a bias in the sense that the manager who faces tougher auditing behaves in a less liable way. Our results suggest the two instruments should not be used jointly.

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