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ABSTRACT

We develop a model of career concerns in teams. We draw a distinction between *individual talent* which is associated with a member in the team and *team talent* which is common to all members of the team. With team talent, members have less of an incentive to free ride and effort is more efficient. With team talent, we also show that group incentive pay can yield higher profits than monitoring even when monitoring is costless.

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1. Introduction

Workers in many organizational settings have *career concerns*: they care about how the labor market perceives them and they work hard to alter these perceptions. These concerns are most clearly portrayed in Holmstrom (1982a), where a worker's performance depends not just on his effort but also on his (unknown) *talent*. In Holmstrom's model, a worker cares about the labor market's perception of his talent because it affects his future wage. As a result, he works hard because better performance leads to an inference of more talent.

In this paper we study career concerns in teams. As in Holmstrom (1982a), the labor market uses performance to make inferences about talent. Our main innovation in this paper is to consider two types of talent. Each member of the team has their own *individual talent*. The second type of talent – which is novel in our analysis – is what we call *team talent*: this is a talent which is common to every member of the team. Think of team talent as knowledge, ideas, or culture, which members of a team gain from working together. We show that these two types of talent affect incentives for effort in very different ways. We also analyze two "explicit" incentive instruments, group incentive pay and monitoring, within the context of these different talents.

Our model is a two period version of Holmstrom (1982a) with four main differences. First, individual performance measures are not observable. Only team performance measures are. Second, we consider two types of talent: individual and team talent. Both types of talent are excludable: a firm can use talent only if it hires a member with it. But team talent is non-rival: it can be used simultaneously across firms.¹ Third, because the employer of a team determines team membership

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¹ This is for analytical convenience. The critical assumption is that team talent is sufficiently valuable when used in more than one firm.

(and thus who gains team talent) we assume that this employer has *initial bargaining power* at the time of hiring the team. The employer can thus extract future benefits from team members in the hiring stage. Finally, we assume *turnover* where members of a team switch firms.

Given this framework, we start with a setting where career concerns are the only form of incentives for a team. We show that increasing the importance of team talent relative to individual talent makes effort more efficient. This is because members have an incentive to free ride when inferences are being made about their individual talent from team performance. As team talent becomes more important this free riding problem goes away.

To understand the key intuition underlying this result, it is useful to look at two polar cases where only one type of talent matters: individual talent or team talent. In the individual talent case, free riding arises for two reasons. First, team performance (because of the individual talents of other members) is a noisy measure of the talent of a team member. This makes inferences of a given member's talent more noisy which dilutes incentives for effort. Second, in equilibrium there is a *dynamic budget constraint* on the provision of incentives through career concerns: the sum of future wages to members of the team equals the value of talent in the team to the current employer. This limits incentives that can be provided to the team. So in this individual talent case, we have free riding in teams along the lines of Alchian and Demsetz (1972) and Holmstrom (1982b).²

On the other hand, with only team talent, there is no individual component to the inference problem and thus free riding is eliminated. Furthermore, the non-rival feature of team talent eases the dynamic budget constraint: the sum of future wages to members of the team exceeds the value of talent in the team to the current employer which allows for the provision of more incentives to the team. So, by symmetry, this case with team talent reduces to a career concerns problem with a single agent as in Holmstrom (1982a).

Career concerns provide implicit incentives: future wages offered by a labor market induce effort in the current period. But in many settings firms also have explicit incentive instruments to help induce effort. We compare two common incentive instruments. The first one is group incentive pay where each team member is paid a share of the output and where the sum of these shares across team members cannot exceed one. The second incentive instrument is monitoring where a firm can observe and thus directly control a team member's effort (say by using a termination contract).

Without the implicit incentives of career concerns, monitoring clearly dominates group incentive pay in terms of profits. With monitoring, the firm can directly control a worker's effort level to maximize profits. With group incentive pay, on the other hand, incentives are low powered because the budget constraint leads to inefficiently low effort. However, we show that with career concerns and team talent, effort can become excessive which reverses the ranking. In particular, the budget constraint associated with group incentive pay helps a firm to *commit* not to induce too much effort.

To see why this is the case, notice that a firm with initial bargaining power cares about the surplus in the first period and the surplus offered to team members who leave the firm in the next period (because it can extract this surplus at the time of hiring). So with career concerns, firms are trapped into inducing excessive effort levels. Since the market is not fooled in equilibrium, this results in lower profits for the firm. Given this, group incentive pay does better than monitoring because it imposes a limit on the effort that can be induced in the current period.

From the perspective of incentive theory, there is a general lesson to take away: dynamic incentives in the form of career concerns are strong when productive attributes are non-rival. In particular, the two additional dimensions of time and alternative employers help to relax the budget constraint for rewarding teams and thus make effort more efficient. But this implicit incentive cuts both ways. Specifically, it induces too much effort when combined with yet another strong incentive instrument (monitoring, in our case). Thus, designing optimal incentives in these settings involves balancing strong implicit incentives with weaker explicit incentives. This is where the advantage of group incentive pay lies.

There are papers in the literature that look at how implicit incentives, in the form of peer monitoring, lower the costs of group incentive pay when teams interact in an infinitely repeated setting. The key difference is that our story holds for teams that interact for finite periods. In Kandel and Lazear (1992), profit sharing (a form of group incentive pay) creates externalities across team members and thus provides incentives for workers to monitor one another. To make this point, they modify an individual's effort cost function (as a proxy for repeated interaction possibly) to include peer punishments. Che and Yoo (2001) consider a repeated setting and show how joint performance evaluation, where workers are rewarded for good performance only when their co-workers also perform well, provides incentives for workers to punish their peers and thus lowers the cost of providing incentives. Finally, Rayo (2007) also considers a repeated framework with peer monitoring and endogenous partnership shares.

Our paper is also related to a large literature on career concerns starting with Fama (1980) and Holmstrom (1982a). Two closely related papers are Gibbons and Murphy (1992) and Meyer and Vickers (1997). Both consider explicit incentives in a career concerns setting. There are two key differences though. First, in their papers, the output that an individual team member produces is observable to firms. Second, there is no turnover in their models and thus no over-provision of effort.

² In Alchian and Demsetz (1972) and Holmstrom (1982b), total output (because of the efforts of other members in the team) is a noisy performance measure of an individual team member's effort. This makes it difficult for a firm to target an individual member's effort. Furthermore, incentives which are scarce (because of a budget constraint where total wage payments to the team cannot exceed total output) must be allocated across multiple people rather than a single person. Thus a team member who is rewarded with a share of the output of a team, gets only a fraction of his marginal product of effort whereas he bears the entire marginal cost. This leads to free riding.

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