

2015/33



Status in Organizations

Wing Man Wynne Lam

The word "CORE" is written in a large, bold, black sans-serif font. A thin, light blue curved line starts above the 'C', arches over the 'O', and ends below the 'E'.

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DISCUSSION PAPER

Center for Operations Research
and Econometrics

Voie du Roman Pays, 34
B-1348 Louvain-la-Neuve
Belgium

<http://www.uclouvain.be/core>

CORE

Voie du Roman Pays 34, L1.03.01

B-1348 Louvain-la-Neuve, Belgium.

Tel (32 10) 47 43 04

Fax (32 10) 47 43 01

E-mail: immaq-library@uclouvain.be

<http://www.uclouvain.be/en-44508.html>

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Abstract

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Keywords: status, coordination, promotion, authority, organization

JEL Classification: D2, L2, J3

[†]University of Liege (ULg), HEC Management School, Liege Competition and Innovation Institute (LCII).

E-mail: wingmanwynne.lam@ulg.ac.be

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Firms can motivate workers by offering them social status (e.g. access to power and privileges) instead of higher pay. Much of the literature emphasizes that status raises work incentives, ignoring the impact of status on coordination. However, I show that when workers need to cooperate with each other and each of them has their own vested interests, too much status differences may exacerbate conflict over workers' preferred actions, and hence distorts coordination. Moreover, it is likely to be profitable for firms to introduce status differential when promotions lead to a change in the roles of the workers.

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1 Introduction

Collaboration and teamwork play an important role in supporting business processes within an organization.¹ However, when vested interests are at work, firms often have difficulty in coordinating their workers. For instance, the marketing department anticipates new marketing channels through mobile computing and social networks, and the IT department develops new technology to implement these ideas. However, decisions favored by one department may not be preferred by the other, for example, the IT department favors sophisticated design, while the marketing department prefers simplicity and user-friendliness. If the two departments do not coordinate and release a technical product that consumers do not like, it will hurt the firm's profits. To improve coordination, the firm may hire a leader (e.g. through promoting

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[†]University of Liege (ULg), HEC Management School, Liege Competition and Innovation Institute (LCII).
E-mail: wingmanwynne.lam@ulg.ac.be

¹A survey of Accenture (2014) shows a growing collaboration between the IT and marketing departments in recent years.

one department head, the CIO or the CMO, to CEO to oversee all departments of the firm),² but this raises some concern over status, which, in turn, affects the behavior of workers. For example, some firms offer lavish perks ranging from large and well-equipped offices, private jets, chauffeur-driven cars to country club memberships to their senior management. On the one hand, workers on the lower layer, knowing that the senior management earns significantly more benefits than them, will work hard to get promoted to these positions. On the other hand, lower-status workers may see these differences as unfair treatment, and they are therefore less willing to cooperate with the higher-status workers. As a consequence, it is optimal to introduce some status differentiation, but not too much.

Status can more generally affect the optimal organizational structure. Some interesting questions include how does status affect the design of jobs on the career ladder and, in particular, should promotions involve empowering the leader to take a very different role or a similar role? Moreover, under what conditions it is profitable for the firm to introduce status differentiation? My results suggest that when promotions involve a change in job responsibilities, status differential is more beneficial, compared to the absence of such a change, as the power to make recommendations allows the leader to align the objectives of different parties more closely, possibly outweighing the coordination distortion caused by an increase in status differentiation. This explains why in practice some workers receive longer vacation, have access to more spacious office and better equipment, and enjoy other luxurious perks by simply having worked longer in a company; and why this is even more so when the roles of the leaders change upon promotion.

This paper presents a model, where agents care about their relative positions in the firm, to study the impact of status on coordination and promotions in organizations. I consider an organization with two workers, who need to cooperate with each other, but each of them has their own vested interest. The firm can choose whether to promote one of the workers as a leader. In the case of no promotion, both workers have identical status; in the case of promotion, the leader has a higher status than the follower. The sociological and managerial literature shows that having high status often comes with a variety of advantages: a high status worker might have a cost advantage (Podolny, 1993) and/or more power (Castellucci and Piazza, 2013). Therefore, I consider two consequences of status: First, higher status decreases the cost of the leader but increases the cost of the follower. This could be due to the fact that the leader has better access to resources, which makes his job easier to do, than the follower. Second, status empowers the leader to instruct the follower what action to take, who decides whether to obey or ignore it. In case of disobedience, the follower incurs a cost, and such cost increases with the status level of the leader. These two elements will be discussed separately in Sections 2.2 and 2.3. The objective of the firm is to choose the organization that maximizes its profit, which is determined by how well the two workers cooperate.

I show that having a leader improves the coordination between workers, but it creates status differentiation, which distorts production with respect to the first-best level. As a result, the

²Recent experimental studies find that higher-status individuals have a significant impact on lower-status individuals, and therefore status can help solve coordination problems (Eckel and Wilson, 2007; Eckel et al., 2010).

firm benefits from introducing some status differentiation, but not too much. In the case where the leader does not have authority over the follower, the firm is better off only when status differential brings more cost advantage to the leader than cost disadvantage to the follower (see Propositions 1 and 2). In the case where the leader also has authority over the follower, status differentiation is preferred even when the follower suffers a slightly larger loss than the gain enjoyed by the leader. This is because the leader has an additional instrument, which is the power to make recommendations, to improve coordination (see Proposition 3). This result has interesting implications for the design of employees' tasks in promotions: if promotion involves changes in responsibilities, for example, from routine tasks performed by junior workers to supervisory or more creative tasks performed by managers, the firm may benefit from introducing more differential treatment between senior and junior employees compared to the case where responsibilities remain the same on the promotion ladder. An implication is that firms should offer more flexible remuneration packages the inclusion of non-monetary benefits can improve their profits under two conditions: when status affects workers in an asymmetric way, and when status comes with authority.

1.1 Related Literature

This paper extends the literature in three ways. First, the literature on status focuses either on the work motivation effect of status, or on the signaling effect of status, but not on the effect of status on coordination. On work motivation, theories in the tournament literature show that when agents care about their relative ranking in organizations, status can be used to provide work incentives (Moldovanu et al., 2007; Auriol and Renault, 2008; Dubey and Geanakoplos, 2010). Hopkins and Kornienko (2010) further distinguish the effect of inequality of rewards and endowments on incentives, and show that different types of inequality have opposite effects. However, the tournament literature treats agents separately, while this paper provides a model that explains the effect of status on coordination by allowing agents to work in teams. On signaling, the literature shows that status can generally improve the matching of workers and firms (Fershtman, Hvide, and Weiss, 2006; Truyts, 2010). Since matching is positively assortative, meaning the best job is allocated to the most successful candidate, workers will care about their relative position in the population. But again, their focus on matching is very different from the emphasis on coordination here.

Second, the literature on status usually assumes that agents care about status, but this paper, instead of taking status as exogenously given, focuses on the effect of status—through changing the cost of effort and/or authority over other workers—on coordination and promotions.³ In the case of lower costs, status differential comes from the leader's access to non-monetary privileges, for example, having larger networks of contacts is an effective way of driving business processes more smoothly, and thereby lowers the leader's cost of effort. In the case of higher authority, the leader's power to make recommendations creates status differential. Indeed, the importance of status for explaining behavior has long been recognized

³Postlewaite (1998) compares different approaches to model status: people either value status itself or seek status for other purpose. I follow the latter approach.

(Veblen, 1934; Frank, 1985). Frank (1984) shows empirically that workers care about their relative ranking in a company. In particular, workers at the top are willing to accept a wage that is smaller than their productivity for being at the top. However, this literature typically focuses on the use of monetary incentives (see also Lazear and Rosen, 1981; Lazear, 1989; Lazear, 1991), while this paper focuses more on non-monetary sources of status, such as non-monetary perks and greater influence. This seems more realistic because plenty of evidence shows that relative concerns, not only in terms of income, but also in terms of property, cars, and fashion matter for human behavior—as noted by Hirsch (1976).

Finally, this paper is related to the literature on internal organization of firms, which studies coordination vs. specialization. See, for example, Hart and Moore (2005), Dessein and Santos (2006), and Alonso et al. (2008), although they do not consider status. For surveys on promotions, see Gibbons and Waldman (1999), Waldman (2013), and Lazear and Oyer (2013). Also see Fama (1980), Gibbons and Murphy (1992), and Holmström (1999), who provide models that explain how the prospect of promotion creates incentives but who do not focus on coordination. In summary, standard models on status and promotions capture work incentives but lack coordination between workers; standard models on internal organization allow coordination but lack status. This paper explores the interaction between these interesting features, which the literature to this point has largely ignored.

2 Model

Consider an organization with two workers, 1 and 2, who take actions $a \in [0, 1]$ and $b \in [0, 1]$ respectively. The success of the organization depends on the coordination between the two workers: the firm obtains a value of one with probability $1 - (a - b)^2$, which is maximized when $a = b$.⁴ The revenue is shared equally between the two workers.⁵ For example, revenue sharing schemes are commonly used in partnerships, joint ventures, and cooperatives.

Let s denote the status of the worker. Status is valued in relative terms: if worker 1 has status s , then worker 2 has status $-s$. Status and costs are complementary, and status affects the cost of action for the workers in two ways. First, there is a coordination cost. More specifically, worker 1 bears a cost of $f(s)(1 - a)^2$ for taking action a , whereas worker 2 bears $f(s)b^2$ for taking action b . Assuming such a cost function has two implications. First, the cost-minimizing action is $a = 1$ for worker 1, and $b = 0$ for worker 2, meaning each worker has a vested interest in the optimal action. Second, both workers' costs depend on their status in the firm. Assume $f'(s) < 0$, so that it is less costly for the worker with higher status to take action, which can be interpreted as it is less costly for the leader to take action because he has better access to certain contacts or resources. Assume also $f(0) = 1$, so that when there

⁴Although the value of the action does not affect the gross revenue, it affects the net profit, as will be discussed in the first-best case below.

⁵A change in bargaining power further from one-half does not affect the results qualitatively, as does the introduction of wages such as performance pay based on revenue. These variations would only reduce coordination, but it would not change how status affects incentives. Thus, for expositional simplicity, I focus on equal shares.

is no status differential, both workers' marginal cost of deviating from their ideal action is the same. Although the assumption that status is complementary with costs is widely used in the literature (see, for instance, Hopkins and Kornienko, 2004; Auriol and Renault, 2008), I will discuss this assumption in more detail in Section 3.

Second, there is a disobedience cost. More specifically, status may empower the leader (the agent with $s > 0$) to get his way by making a recommendation to the follower (the agent with $s < 0$). Suppose that worker 1 is the leader. Although worker 2 has effective control over action b , worker 1 may make a recommendation b_l , which worker 2 is free to ignore. However, if worker 2 decides to disobey worker 1, he incurs an additional cost of $g(s)(b - b_l)^2$.⁶ Assume $g'(s) > 0$, so that the lower status the worker has, the higher the cost of disobeying. Assume also $g(0) = 0$, meaning the cost of disobeying is zero when there is no status differential, i.e. $s = 0$. For simplicity, assume that $g(s) = s$.

Thus, the costs of workers 1 and 2, denoted $c_1(s, a)$ and $c_2(s, b)$ respectively, are given by

$$c_1(s, a) = f(s)(1 - a)^2,$$

and

$$c_2(s, b) = f(-s)b^2 + s(b - b_l)^2.$$

I do not consider monetary transfers. Instead I focus on non-monetary sources of status, which is an interesting issue because non-monetary incentives are widely used in practice. For example, "cafeteria plans", under which workers may receive different benefit packages in terms of day offs, access to company cars, office space and IT equipment, priority in choosing different things, etc., exist in Belgium, and it is under discussion about how to implement these non-monetary benefits.⁷

The value of the organization is defined by the total value created minus the total costs:

$$\pi_{org} = 1 - (a - b)^2 - (1 - a)^2 - b^2. \quad (1)$$

Notice that π_{org} depends only on the absolute cost of taking actions, but not how status affects each worker's perceived cost. This is either because the firm does not care about the psychological effects of status, but workers do care about them, or because the firm only cares about profit in monetary terms, but not the favorable treatment that status gives, which may take non-monetary forms of group memberships or invitations to particular events.⁸

Consider the first-best situation where one agent chooses both actions a and b . He solves

$$\max_{a,b} (1 - (a - b)^2) - (1 - a)^2 - b^2,$$

⁶We can reinterpret $g(s)(b - b_l)^2$ in a moral hazard framework, where b is an unobservable action, b_l is an order from a superior worker, and $g(s)$ is a probability of monitoring. However, this paper focuses on how status affects coordination, an issue that is not discussed in the moral hazard literature.

⁷See "Cafeteria plans—other personnel solutions," *KPMG*, September 19 2012, available at <http://www.kpmg.com/be/en/issuesandinsights/articlespublications/pages/cafeteria-plans.aspx>.

⁸In sociology, status is defined as a subjective judgment of ranking of individuals or groups. See Goldhamer and Shils (1939) and Podolny (1993).

which yields the following optimal actions:

$$a_{FB}^* = \frac{2}{3}; \quad b_{FB}^* = \frac{1}{3}.$$

Since there is only one agent, there is no concern for status, and $f(0) = 1$ and $g(0) = 0$.

2.1 Identical Status

The simplest case is when $s = 0$, the two workers work together as a “team”, meaning they have identical status, and each worker chooses their own action. Since $s = 0$, $f(0) = 1$ and $g(0) = 0$. Worker 1 chooses his action so as to maximize his expected payoff.

$$\max_a \frac{1}{2}(1 - (a - b)^2) - (1 - a)^2.$$

Similarly, worker 2 solves

$$\max_b \frac{1}{2}(1 - (a - b)^2) - b^2.$$

The Nash equilibrium is given by

$$a_{team}^* = \frac{3}{4}; \quad b_{team}^* = \frac{1}{4}.$$

The NE exhibits less coordination than the first-best because each worker obtains only half of the benefits from coordination and each worker does not take into account the other worker’s costs. The expected payoff for each worker is $5/16$, and that for the team is $5/8$.

2.2 Differentiated Status without Authority

Let us now examine the case where workers have different status, but without authority, i.e. there is no b_l . The case with b_l will be discussed in Section 2.3. Suppose that worker 1 is promoted to be the leader. Such promotion gives him entitlement to certain resources, and thus it lowers his cost of action by $f(s)$. As the follower, worker 2 does not have these privileges, and thus his cost is increased by $f(-s)$. Worker 1 therefore solves

$$\max_a \frac{1}{2}(1 - (a - b)^2) - f(s)(1 - a)^2,$$

whereas worker 2 solves

$$\max_b \frac{1}{2}(1 - (a - b)^2) - f(-s)b^2.$$

The equilibrium actions are given by

$$a^* = \frac{2f(s)}{1 + 2f(s)} + \frac{f(s)}{[f(s) + f(-s) + 2f(s)f(-s)](1 + 2f(s))},$$

$$b^* = \frac{f(s)}{f(s) + f(-s) + 2f(s)f(-s)}.$$

In the neighborhood of $s = 0$, we can show that

Proposition 1. *Without authority, introducing a small status differential increases the value of the organization, π_{org} , compared to the case of identical status if*

$$f'(0^+) < f'(0^-). \quad (2)$$

Proof. See Appendix A. □

The condition in Proposition 1 provides a simple rule to evaluate whether a firm should differentiate status among workers. In particular, if the benefit of increasing a worker's status outweighs the cost of decreasing another worker's status, then it is beneficial to introduce a small status differential. For example, if an executive, who receives favorable treatments that status gives (such as the possibility to travel in business class, enjoy more space and better equipment in his office, and gain access to certain memberships or events), generates more benefits through successful business deals, which outweighs the losses generated from a junior employee, who does not receive these treatments, then it is profitable for the firm to improve the status of senior management. This result also departs from standard models in the literature, in that the literature usually considers a smooth distribution of status, meaning that $f'(0^+) = f'(0^-)$ here (see, for instance, Hopkins and Kornienko 2004; 2010). Upon examining the asymmetric effects of status on the high- and the low-status workers, this model offers an alternative reason for the introduction of status differential.

Indeed, it is easy to show that

Proposition 2. *Without authority, when status has a symmetric effect on high- and low-status workers (i.e. $f'(0^+) = f'(0^-)$), for any s , it always reduces the value of the organization, π_{org} .*

Proof. See Appendix B. □

Proposition 2 shows that if the benefit of increasing a worker's status equals the cost of decreasing another worker's status, then it is desirable for the firm to push for equal treatment of workers.⁹ This is because identical status reduces uncooperative behavior from the worker with lower status: the larger the status differential is, the higher the cost of the low-status worker, which, in turn, discourages cooperation. This result explains why firms have no incentive to introduce status differential when the effect of status is smooth, and is complementary to the literature, which has not considered the interaction between status and coordination.¹⁰

⁹Note that Propositions 1 and 2 hold provided the outside option is relatively small compared to the case with identical status.

¹⁰For example, although the effect of status is smooth in Hopkins and Kornienko (2004; 2010), coordination is absent. Dye (1984) and Lazear (1989) show that wage differentials not only provide incentives for productive behavior, but also create incentives for sabotage, but they do not explicitly model status and coordination, which is the focus of this paper.

2.3 Authority

We examine another source of status differential—authority—in this section. Although the allocation of authority has been studied previously in the literature on organizations (see, for instance, Aghion and Tirole, 1997; Van den Steen, 2010), agents in these models do not need to coordinate. More specifically, while the principal and the agent each has their own preferred action in these models, they do not need to coordinate with each other. In contrast, by incorporating coordination here, I can analyze how status and authority affect coordination between workers.

Once again, suppose that worker 1 is the leader. He decides on action a as before, but now he also makes a recommendation b_l to worker 2. Introducing status has two effects: First, as before, the leader’s cost of action is decreased by $f(s)$ for being placed above another worker, while the follower’s cost is increased by $f(-s)$ for being placed below. Second, the follower decides whether and to what extent to obey the leader’s suggestion and chooses the action b he prefers. In case of $b \neq b_l$, there is a cost of disobedience given by $s(b - b_l)^2$. In other words, authority creates status differential: the more powerful the leader is, the higher the cost of disobedience.

The payoff of the leader is

$$\pi_l = \frac{1}{2}(1 - (a - b)^2) - f(s)(1 - a)^2,$$

and that of the follower is

$$\pi_f = \frac{1}{2}(1 - (a - b)^2) - f(-s)b^2 - s(b - b_l)^2.$$

Thus, given the recommendation made by the leader, b_l , there is an equilibrium in the second stage where the two workers choose their actions such that

$$\begin{aligned} a^*(b_l) &\in \arg \max_a \pi_l, \\ b^*(b_l) &\in \arg \max_b \pi_f. \end{aligned}$$

Let \underline{U} denote the value of the outside option for worker 2.¹¹ The leader’s maximization problem can be written as

$$\max_{b_l} \pi_l(a^*(b_l), b^*(b_l)) \tag{3}$$

$$\pi_f(b^*, a^*) \geq \underline{U}. \tag{4}$$

Solving the problem, we have the following result:

Proposition 3. *With authority, introducing a small status differential increases the value of the organization, π_{org} , compared to the case of identical status if*

$$2f'(0^+) - f'(0^-) < 0. \tag{5}$$

¹¹The qualitative result does not depend on the outside option. See Appendix D.

Proof. See Appendix C. □

Proposition 3 shows that the firm benefits from status differentiation when Equation (5) is satisfied, which means that status differentiation does not make the low-status worker too unhappy, i.e. $f'(0^-)$ is not too small. The intuition is that without status differential, all workers are treated equally, so no one will be unhappy about being placed under another worker. With status differential, a leader creates more value by improving coordination, but the follower, who has lower status, will be unhappy. Increasing status differentiation is desirable when the benefit of improved coordination outweighs the cost of upsetting the low-status worker.

The crucial difference between Equation (2) and Equation (5) is that with authority, status differentiation is preferred even when the low-status worker suffers a slightly larger loss than the benefit enjoyed by the high-status worker. Formally, when status differential has a symmetric effect on high- and low-status workers, i.e. $f'(0^+) = f'(0^-)$, Equation (5) is always satisfied, but not for Equation (2) (see Proposition 2.). The reason is that with authority, the leader can further improve coordination by making a recommendation that helps induce the follower to do what the leader wants, an instrument that is absent in the case without authority.

This has interesting implications for the design of employees' tasks on the promotion ladder. The case of status differentiation without authority can be interpreted as the firm introduces status differentiation by promoting a worker to be the leader, but does not change his job duty, meaning if he is responsible for task a before promotion, he still performs the same task after promotion. For example, in academics, the main responsibility of professors is to teach and to do research, whether they are promoted or not; similarly for doctors in the healthcare industry and other specialized professions.¹² The case of status differentiation with authority can be interpreted as changing the leader's responsibilities upon promotion, for example, while he performs task a before promotion, he is responsible for both tasks a and b after promotion. This is applicable to many private and public sectors, where managers perform a very different role from junior workers. The result then implies that if promotion involves job changes, it does not hurt to increase status differentiation among workers compared to the case when promotions do not involve a change in responsibilities.

While Proposition 3 is robust to variation in the functional form of $f(s)$, under large status differential the optimal actions depend on the limit of $f(s)$. To keep things simple, consider the case where

$$f(s) = \begin{cases} \frac{1}{1+s} & \text{if } s \geq 0 \\ 2 - \frac{1}{1-s} & \text{if } s < 0. \end{cases} \quad (6)$$

We can then show that

Proposition 4. *With authority, large status differentiation reduces the value of the organization, π_{org} .*

Proof. See Appendix D. □

¹²Auriol and Renault's (2008) also discuss incentives and promotions, but promotions in their model do not involve job changes.

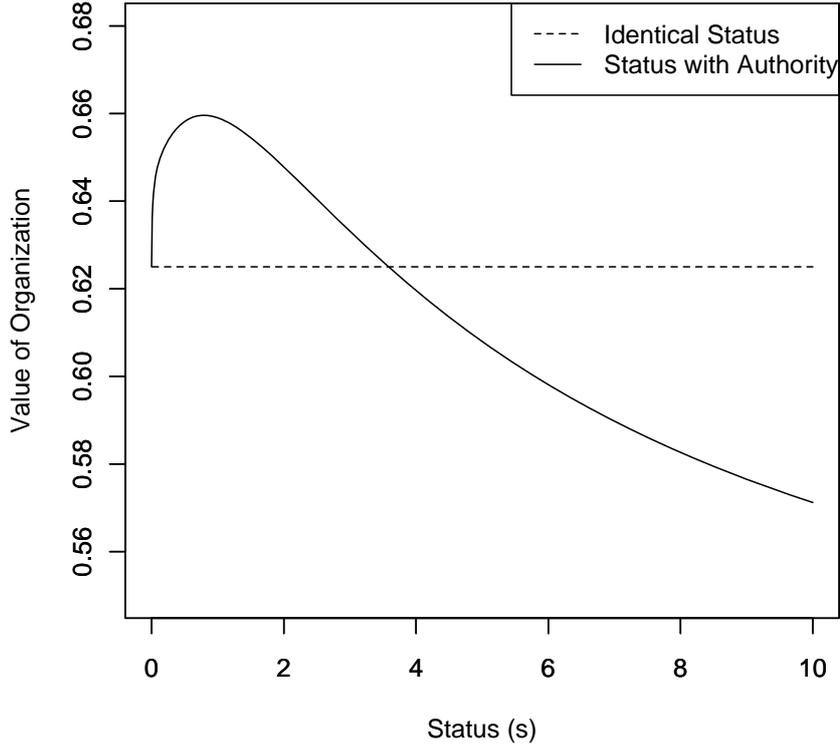


Figure 1: Identical or Differentiated Status.

When large status differentiation is introduced, the low-status worker becomes very unhappy and a large distortion in the leader’s action with respect to the first-best level is needed in order to induce the follower to participate. More particularly, introducing status differential reduces the leader’s cost but increases the follower’s cost. The larger the status differential is, the lower is the leader’s cost, and the more willing he is to distort his action in order to compensate the disutility of the follower arising from lower status. As a consequence, it is not optimal to differentiate status among workers when such loss from distortion more than offsets the gain in improved coordination.

Figure 1 illustrates Propositions 3 and 4. It compares the value of organization with different status differentials, which is shown with a solid line, and that without status differential, which is drawn as a dotted line when Equation (6) is satisfied. It shows that it is profitable for the firm to introduce some status differentiation, but not too much.

This result relates to the literature on status. The basic result of this literature is that workers are willing to work hard to improve their status in organizations, and therefore status generates work incentives (see, for instance, Moldovanu et al., 2007; Auriol and Renault, 2008; Dubey and Geanakoplos, 2010). However, agents in these models do not have different favorite choice of action. In reality, differences of opinion between individual workers and between departments within a firm on different stages of a production process, ranging from product design to input sourcing, manufacturing and delivery of the final product, are very common. When vested interests are at work, I show that too much status differences may exacerbate conflict over workers’ preferred actions, and hence distorts coordination. This result highlights the cost of status, which must be traded off against the benefit of raising work incentives

emphasized in the previous literature.

3 Robustness: Does status create or destroy money?

Under the assumption of complementary between status and costs, status may create or destroy money for the firm, depending on the functional form of $f(s)$. More specifically, “creating money” means that workers are better off by simply gaining a label of high status. Thus, by introducing status, the firm can pay less without losing the workers. However, in this case, the result that it is profitable for the firm to introduce status will not be interesting because it is driven by the fact that status creates extra money for the firm. In what follows, I show that in this model, a small status differential increases the value of the organization and at the same time destroys money, so that my results are not driven by the complementarity assumption.

Let C denote the total costs of action for the workers:

$$C = f(s)(1 - a)^2 + f(-s)b^2.$$

Status destroys money when evaluated at $s = 0$ if the total costs for the workers are higher with status than without. Formally,

$$\frac{\partial C}{\partial s} \Big|_{s=0} > 0,$$

which is satisfied if

$$\frac{1}{16}(f'(0^+) - f'(0^-)) + \frac{1}{2}\left(\frac{\partial b(s)}{\partial s} - \frac{\partial(a(s))}{\partial s}\right) \Big|_{s=0} > 0. \quad (7)$$

If the impact of status on cost is symmetric for the high- and low-status workers, then Condition (7) is satisfied when Equation (5) holds, which implies that a small status differential increases the value of the organization and at the same time destroys money. Even if the impact of status is asymmetric such that agents are more willing to avoid low status than they are to gain high status as suggested by the Prospect Theory, i.e. $f'(0^+) - f'(0^-) > 0$, the result in Proposition 3 remains valid provided Equation (5) is satisfied.

4 Conclusion

While the literature typically focuses on how status concerns affect, at the micro level, work incentives within organizations, and at the macro level, labor market issues such as the quality of matches between firms and workers, the determination of equilibrium wage and output, this paper addresses different issues: their impact on coordination and promotions. In particular, I characterize two conditions under which it is profitable for firms to introduce status differentiation: when status affects workers in an asymmetric way, and when status comes with authority. I also discuss the implications on promotions: large status differentiation is more beneficial to the firm when promotion involves a change in job duties compared to without such a change. This suggests that the effect of status will be different in different organizations, depending no whether there are significant changes in responsibilities at a higher position.

There are several directions in which this analysis can be extended. First, one may want to endogenize s . In this model, status is exogenously determined, although I can easily show that the optimal s^* is at some intermediate value (see Figure 1). It seems equally interesting to correlate status with workers' effort. This is because, in reality, workers may compete for a higher position, and the firm can promote, and thus award a higher status to, the worker who produces larger profits. To see its effect, we can introduce a new stage of competition for promotion before the previous game. In this new stage, two workers with identical status compete, and the one who produces higher profit (or equivalently lower cost) wins the leader position and is awarded a higher status in the next stage. Worker 1 will choose $a > 3/4$, since it improves his chance of winning the promotion and thereby earning more as a leader in the next period, even though it lowers his first-period profit, while worker 2 will choose $b < 1/4$ for similar reasons. Increasing status differentiation therefore worsens coordination. This is because the prospect of promotion causes the two workers to focus on their own agenda in minimizing costs rather than improving coordination.

Second, status is only one of many ways incentives are provided in organizations. Another important incentive contract is performance pay based on revenue, but the main results are robust to this compensation scheme because the introduction of this scheme would only affect the share of revenues between workers, but they would not affect the costs of actions, in other words, priority access to resources and the power of issuing orders, and hence would not affect the analysis of status. However, it is possible that other more sophisticated compensation schemes such as bonuses and stock options might improve efficiency over revenue-sharing schemes considered here. By assuming that actions are unobservable (hence, noncontractible), the focus of this paper is not on optimal contracts. Although optimal contracts have been analyzed extensively in a different literature (see Gibbons and Roberts (2013) for a survey), status—and hence the issue of whether status rewards or other incentive contracts fare better—has been largely ignored. Thus, further work on this issue could be fruitful.

Finally, it would be interesting to consider the possibility of hiring a leader from outside the firm instead of promoting a worker from within, which broadens the modes of coordination from one (internal leader only) to two (internal vs. external leader). In reality, there are advantages and disadvantages to recruiting internally or externally. While external recruitment brings fresh ideas to the firm, internal candidates know the firm's culture better and the firm knows the candidates' abilities better. Thus, external recruitment may be more relevant for certain industries, where innovations are more important, than others.

Appendices

A Proof of Proposition 1

Substituting a^* and b^* into Equation (1), we obtain

$$\pi_{org} = \frac{2f(s)f(-s)[1 + 2f(s) + 2f(-s)]}{[f(s) + f(-s) + 2f(s)f(-s)]^2}.$$

Differentiating and simplifying it, we have

$$\frac{\partial \pi_{org}}{\partial s} \Big|_{s=0} = -f'(0^+) + f'(0^-)$$

Therefore, when status differentiation is limited (i.e. $s \rightarrow 0$),

$$\frac{\partial \pi_{org}}{\partial s} \Big|_{s=0} > 0 \text{ if } f'(0^+) < f'(0^-).$$

B Proof of Proposition 2

For large s , suppose $f(+\infty)$ and $f(-\infty)$ exist. Let f^+ denote $f(+\infty)$ and f^- denote $f(-\infty)$. Then $\pi_{org}(s \rightarrow +\infty) > 5/8$ (where $5/8$ is the profit without status differential) if

$$\frac{2f^+f^-(1 + 2f^+ + 2f^-)}{(f^+ + f^- + 2f^+f^-)^2} > \frac{5}{8},$$

which depends on the exact value of f^+ and f^- .

Consider a special case where status affects both workers' costs in a symmetric way, i.e. $f(s) - f(0) = f(0) - f(-s)$. Rearranging it, we have $f^+ + f^- = 2f(0) = 2$. The above condition then becomes

$$\frac{10f^+f^-}{(2 + 2f^+f^-)^2} > \frac{5}{8} \Leftrightarrow (1 - f^+f^-)^2 < 0,$$

which is never satisfied.

C Proof of Proposition 3

Given b_l , the equilibrium actions are given by:

$$\begin{aligned} a_v^* &= \frac{2f(s)}{1 + 2f(s)} + \frac{f(s)}{[f(s) + f(-s) + s + 2f(s)(f(-s) + s)](1 + 2f(s))} \\ &\quad + \frac{sb_l}{f(s) + f(-s) + s + 2f(s)(f(-s) + s)}, \\ b_v^* &= \frac{f(s) + sb_l(1 + 2f(s))}{f(s) + f(-s) + s + 2f(s)(f(-s) + s)}. \end{aligned}$$

Since $a_v^*|_{s=0} = 3/4$ and $b_v^*|_{s=0} = 1/4$, the impact of introducing a small status differential on the value of the organization is as follows:

$$\begin{aligned} \frac{\partial \pi_{org}}{\partial s} \Big|_{s=0} &= [-2(a - b)\left(\frac{\partial a}{\partial s} - \frac{\partial b}{\partial s}\right) + 2(1 - a)\frac{\partial a}{\partial s} - 2b\frac{\partial b}{\partial s}]_{s=0} \\ &= \frac{1}{2}\left(\frac{\partial b(s, b_l)}{\partial s} - \frac{\partial a(s, b_l)}{\partial s}\right) \Big|_{s=0}. \end{aligned}$$

Using $b_v^* = (1 + 2f(s))a_v^* - 2f(s)$, we obtain

$$\frac{\partial \pi_{org}}{\partial s} \Big|_{s=0} = \frac{1}{3}\frac{\partial b}{\partial s} \Big|_{s=0} - \frac{1}{12}f'(0^+).$$

Differentiating π_l with respect to b_l gives

$$\begin{aligned}\frac{\partial \pi_l}{\partial b_l} = 0 &\Leftrightarrow 2f(s)(1 - a_v^*)\frac{\partial a_v^*}{\partial b_l} - (a_v^* - b_v^*)\left(\frac{\partial a_v^*}{\partial b_l} - \frac{\partial b_v^*}{\partial b_l}\right) = 0 \\ &\Leftrightarrow 2f(s)(1 - a_v^*)\frac{\partial a_v^*}{\partial b_l} - 2f(s)(b_v^* - a_v^*)\frac{\partial a_v^*}{\partial b_l} = 0 \\ &\Leftrightarrow b_v^* = 1.\end{aligned}$$

Hence, we have $a_v^* = b_v^* = 1$, which violates the follower's participation constraint, Equation (4). Therefore, the choice of b_l is such that Equation (4) binds, which means

$$\pi_f(a_v^*(s, b_l), b_v^*(s, b_l)) = \underline{U}.$$

By Implicit Function Theorem, we obtain

$$\frac{\partial b}{\partial s}\Big|_{s=0} = -\frac{1}{2}f'(0^+) + \frac{3}{8}f'(0^-).$$

Therefore,

$$\frac{\partial \pi_{org}}{\partial s}\Big|_{s=0} = -\frac{1}{4}f'(0^+) + \frac{1}{8}f'(0^-),$$

which is positive if

$$2f'(0^+) - f'(0^-) < 0.$$

D Proof of Proposition 4

When status differential is very large (i.e. $s \rightarrow \infty$),

$$\begin{aligned}\lim_{s \rightarrow \infty} f(s) &= \lim_{s \rightarrow \infty} \frac{1}{1+s} = 0, \\ \lim_{s \rightarrow -\infty} f(s) &= \lim_{s \rightarrow -\infty} \left(2 - \frac{1}{1-s}\right) = 2,\end{aligned}$$

and

$$a = b = b_l.$$

Since the disobedience cost is too big with large status differential, the follower will choose $b = b_l$. The leader will choose $a = b$, creating perfect coordination, because his cost of action is very small.

The optimal b_l is determined by the follower's participation constraint:

$$\frac{1}{2} - 2b_l^2 = \underline{U}.$$

Clearly, b_l is decreasing in \underline{U} , and $b_l = 1/2$ if $\underline{U} = 0$. Moreover, the value of the organization, given by

$$\pi_{org} = 1 - (1 - b_l)^2 - b_l^2,$$

is increasing in $b_l \in [0, 1/2]$. Therefore, π_{org} is maximized at $\underline{U} = 0$. Even if the follower's outside option is zero, the value of the organization with status differential, $\pi_{org} = 1/2$, is less than that without, $5/8$. Thus, for any positive outside option, it is not optimal to differentiate workers.

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