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Abstract

Unlike the textbook model of a top manager being an omniscient planner, coordinator and monitor, the real life managers suffer from discontinuity, lack of systematic information collection and limited time for analysis and reflection. Why do not business leaders set up their organizations in the way that would allow themselves to make informed choices based on thorough analysis? We argue that in some situations top managers may benefit from being less informed. In our model, additional information raises ex post flexibility of the decision-makers which may undermine the ex ante incentives of their subordinates to make specific investments. The subordinates expect less informed leaders to be more committed to the original strategy which increases the returns to the strategy-specific investments. We show that this effect is more likely to take place in more predictable environments; we also discuss how this effect depends on the hierarchical structure of the organization.

Keywords: leadership, commitment, organizational structure

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1 Introduction

This paper studies the value of information for business leaders. In theory, business leaders make important business decisions that affect payoffs of their subordinates and shareholders; the leaders should therefore invest in obtaining the best available information and in analyzing the information to provide the basis for better responses to changing business conditions.

In his classical study, Fayol (1916) introduces the four main activities of top managers: planning, organizing, coordinating, and controlling. These activities are not possible without information on the external environment and subordinates' preferences and abilities. Yet, in reality managers do not seem to have enough information; nor do they even seem to try obtaining the most precise information that is potentially available. In a famous survey of empirical studies of top managers' allocation of time, Henry Mintzberg (1973, 1975) showed that the real life managers are strikingly different from the textbook's omniscient ones. Most empirical studies have shown that managers do not rely on systematic collection of external information, nor they are engaged in reflective activities to analyze this information. Mintzberg summarizes these findings as follows: "Study after study has shown that managers work at an unrelenting pace, that their activities are characterized by brevity, variety, and discontinuity, and that they are strongly oriented to action and dislike reflective activities."

Why getting the most precise information does not seem to be a priority for many managers? Mintzberg's work suggests that managers are overworked and have no time to learn. This may not be surprising: obtaining better information about each important issue may be very costly, given the extensive span of control of a top manager and a high cost of her time. But this can only explain the problem at the middle level. Certainly, a *top* manager is by definition the ultimate decision-making authority in the organization and can re-arrange the organizational structure and his/her own schedule. Why cannot top managers delegate other work so they can focus on the accumulation and analysis of information critical for the quality of their strategic decisions? In this paper, we argue that in some cases managers may actually *be willing to*

stay less informed — even if they can get better information at no cost. Therefore, setting up an organizational structure that keeps them busy with other activities may be an effective commitment device for not being informed.[1]

Why would not managers *want* to be better informed? We suggest an explanation based on the understanding of the role of the leader in the transformational leadership theory.[2] According to this theory, a *transformational* leader is to provide the followers with a long-term vision rather than with short-term rewards and punishments (the latter being used by a *transactional* rather than transformational leader). In our model we show that less informed managers may be better transformational leaders. Indeed, information about changing business conditions provides an incentive to revise the organization's strategy. Once the manager learns that the current strategy is outdated, she may no longer want to stay the course. Instead, she behaves opportunistically (as a transactional leader). But such a change of strategy, while optimal from today's point of view, may actually be costly for the organization from the ex ante perspective. Indeed, it may undermine the returns to strategy-specific investments[3] that the other members of the organization have undertaken in the past. As long as such investments are noncontractible, the incentives to invest will be lower if the leader is expected to be better informed.

We show that the leader's payoff is non-monotonic with respect to the quality of her information: as the leader's signal about the optimal course of action becomes more precise, her welfare first decreases (due to the weaker incentives of subordinates). Only after a certain level of information quality, further improvement in the signal's precision has a positive effect – due to a higher probability of

[1] This is not an abstract speculation. So many organizations are built in the way where top management does *not* obtain internal and external information that textbooks and business school case studies give a special praise to the leaders who create structures that promote information flows. See, for example Besanko et al. (2003, ch. 18).

[2] Burns (1978) first described the concept of transformational (rather than transactional) leadership in application to the political leaders. Bass (1985) extended this concept to the case of business leaders.

[3] Such strategy-specific investments range from acquiring specific knowledge and experience to building teams that are aimed at solving particular business problems to choosing residential locations.

making the right choice ex post.[4] This relationship depends on the level of initial uncertainty about the optimal course of action: the higher the uncertainty, the less likely the negative effect of information on ex ante payoffs. Indeed, in the more uncertain environments, the value of ex post flexibility is higher – relative to the value of commitment.

Our paper is related to the growing literature on leadership and authority in organization. Hermalin (1998) is one of the first papers to develop an economic theory of leadership. In his model, a leader, possessing superior information about the returns to her team's effort, tries to persuade the followers either by working hard herself (i.e., *leading by example*) or by giving a material sacrifice (i.e. *leading by sacrifice*). While our model shares certain assumptions with Hermalin's, there are several crucial differences. First, in the main version of our model the leader has no private information which could be revealed by her actions. Second, instead of exerting effort she chooses a course of action (strategy), this choice not being associated with any direct costs. This assumption, realistic in many contexts, significantly limits the leader's opportunities to lead by example or sacrifice.

Another related work is Rotemberg and Saloner (1993) who explore how leadership style (determined by the leader's personal characteristics) can affect initiative at the lower levels of the hierarchy and, ultimately, the firm's performance. They suggest that hiring an emphatic leader, who, besides maximizing profit, cares about the well-being of her subordinates, may be a good strategy: it helps to overcome the hold-up problem with respect to the subordinates' firm-specific investment and thus fosters initiative. Moreover, Rotemberg and Saloner (1993) show that emphatic leaders are also more inclined to develop participatory, rather than autocratic leadership style, and are more likely to delegate decisions to their subordinates. Rotemberg and Saloner (2000) show that, alternatively, the firm may want to hire a "visionary" leader, who is known to be biased towards certain strategies. This bias makes it more likely that innovative projects, proposed by the subordinates, will be implemented provided

[4] This result resembles the non-monotonic value of information in Morris and Shin (2002), although the context is very different.

they are in line with the CEO's vision; this, in turn, fosters initiative at the lower levels of the hierarchy. Van den Steen (2005) shows that hiring a "visionary" leader helps to attract similarly minded subordinates to the organization.

The concept of a "visionary" leader is related to leaders' overconfidence. In a recent paper, Bolton et al. (2008) show that some degree of overconfidence (or "resoluteness") is optimal for efficient coordination of subordinates' actions, even though it impairs an organization's ability to adapt to changing circumstances. Thus, choosing a resolute leader is an effective instrument that allows an organization to ensure internal cohesion. Bolton et al. also note that restricting a rational leader's access to information – making it costly – has a similar effect. We see their work as highly complementary to ours as it reveals reasons that may encourage the organization to limit the information available to its leader (or limit her information-processing ability). While Bolton et al. focus on coordination issues when team members' incentives are aligned, we are concerned with stimulating subordinates' costly efforts when the leader cannot directly commit to reward them. For Bolton et al.'s model it is essential that there is a large number of followers who value coordination with the leader and among themselves. In our model, the argument holds with a single follower.

Our contribution is to model the benefits of uninformed leadership in a rational choice rather than behavioral model – all agents have the same prior, there is no over-confidence or over-optimism. The leader chooses to be poorly informed, e.g., by explicitly cutting information channels in the organization or choosing a very tight schedule. In this sense, our work is similar to Blanes-i-Vidal and Moller (2007) who model leaders with and without over-confidence. They show that without over-confidence, a leader may not want to share hard information. This happens because the leader cannot credibly communicate soft information and the subordinates' choices based on hard information alone may be distorted. The leader prefers not to share her own information and instead rely on subordinates' views — so that the subordinates implement the project they prefer. Blanes-i-Vidal and Moller (2007) also show that over-confidence bias helps to reduce this distortion.

Our paper is also closely related to a seminal paper by Aghion and Tirole

(1997) on allocation of authority in organizations. One of the central themes there, as well as in our paper, is that the (fully rational) leader may be hurt by becoming better informed: the more informed the leader, the lower the subordinates' incentives to acquire information about the project. There are, however, important differences between the models. In Aghion and Tirole (1997), the leader and the follower are in symmetric positions: both are searching for a project that is optimal from the personal perspective. In our paper, in contrast, the leader is responsible for decision making, while the subordinate's effort contributes to the expected joint payoff from the project, chosen by the boss. While Aghion and Tirole focus on the determinants of formal and real authority in organizations in the presence of the conflict of interests between the principal and the agent, we explore how such factors as the degree of (exogenous) uncertainty with respect to the optimal course of action and the structure of the organization affect the leader's costs and benefits from obtaining better information. We also explore how leaders can establish reputation for being poorly informed by withdrawing from interference.

There is also a large contract-theoretic literature on benefits of having less rather than more information. The most influential theme is related to the career concerns model (Holmstrom, 1999). If the agent's type is not observed, the agent has an incentive to exert high effort to convince the market she is productive. Dewatripont et al. (1999) and Prat (2003) show that in this environment, better information about the agent's type may therefore undermine the agent's incentives to exert effort and reduce social surplus. The most relevant paper is Cremer (1995) where the principal may prefer an "arm-length" relationship to a close one. In the case of an arm-length relationship, information acquisition is costly, hence it is easy for the principal to commit to threats that are inefficient ex post but provide strong incentives ex ante.

The rest of the paper is structured as follows. In Section 2, we present the setting. In Section 3, we solve for the equilibrium and show that better informed leaders may be less effective. In Section 4 we discuss comparative statics and extensions. Section 5 concludes.

2 Setting

We consider a model with two risk-neutral agents, a leader L and a follower F. The leader moves first and chooses a project. The follower moves second and makes a costly investment which is specific to the project chosen by the leader. After the investment is made, the leader receives new information and may revise her initial choice. We will study the effect of the quality of this new information on the social welfare and on the leader's own welfare.

Formally, there are $m > 1$ projects, $m - 1$ of them being "regular" projects and one of them being a "star" project. Ex ante, it is not known which project is the star project. The leader and the follower have the same prior: the projects are symmetric ex ante, so that the probability of each project to be a star project is $1/m$.

After the follower's effort is sunk, the leader receives a signal which identifies the star project with probability p. With probability $1 - p$, the signal is not informative. If p is high, we will refer to the leader as being "better informed". We assume that p is known ex ante to both agents.

A regular project generates a payoff of V if it is successful. The probability of success depends on the follower's effort $a\epsilon[0, 1]$ invested in this project. For simplicity's sake, the probability of success equals this effort. The cost of the effort is $C(a)$. In what follows, we assume $C(a) = ca^2/2$ where c is an exogenous parameter; we assume that c is such that $a < 1$ in any equilibrium.

If the star project is implemented, it generates an additional payoff of V^* with probability 1, where $V^* > V$.

The assumption that the incremental payoff to the star project does not depend on the effort a is important. Essentially, it implies that the quality of the project choice and the follower's effort are substitutes rather than complements. If the star project is chosen correctly, the project is so good that the additional payoff always materializes – whatever the follower's effort a.

The payoffs are not contractible. Therefore once the uncertainty is realized, the parties bargain over the division of the joint surplus. The leader's bargaining power is γ, the follower's bargaining power is $1 - \gamma$.

The timing is as follows:

1. The leader chooses a project $i = 1, ..., m$.

2. The follower observes the leader's choice and makes her investment a. In principle, the follower can invest in any project but it is obvious that the follower will only invest in project i. The follower incurs the cost of investment $ca^2/2$

3. The leader receives a signal. With an (exogenous) probability p the leader learns the true identity of the star project i^*; with probability $(1-p)$ the leader receives no new information.

4. The leader may change the choice of the project. If the new choice j is the same as her initial choice then the follower's investment pays off. If $j \neq i$, then the follower's prior investment has no value.

5. The uncertainty is realized and the parties divide returns from the project proportionally to $\gamma : 1 - \gamma$.

Formally, whenever $i = j$, the project brings value V with probability a. If $j = i^*$, then there is an additional payoff of V^*.

3 Equilibrium

3.1 Project choice and effort

Let us now describe the ex ante and ex post choice of the project. Ex ante, all projects are symmetric, so that each project can be a "star" with probability $1/m$. Thus the leader chooses the project i randomly.

The ex post choice depends on the leader's information. If the leader does not receive any new information (this happens with probability $1 - p$), the projects are again symmetric. Therefore there are no incentives to revisit the ex ante choice. Indeed, changing course would destroy the follower's investment but would not generate any additional gains. Therefore the leader keeps her

initial choice $j = i$. Notice that the leader may be lucky: with probability $1/m$, her original choice is correct $i = i^*$.

If the leader receives information on the star project (this takes place with probability p), then her choice may change. As we have assumed above $V^* > V > aV$, it always pays off to choose the star project $j = i^*$. It may happen that there is no need to change the ex ante decision (if $i = i^*$). But even if the original choice was wrong $i \neq i^*$, the leader prefers to lose the gains of sticking to the prior decision aV and receive the benefits of the right choice V^*.

Therefore, the joint surplus (gross of sunk cost of effort $ca^2/2$) is

$$(1-p)\left(aV + \frac{V^*}{m}\right) + \frac{p}{m}\left(aV + V^*\right) + p\left(1 - \frac{1}{m}\right)V^*.$$

The first term in the expression above is the payoff in the case when the leader is not informed. The second term corresponds to the case where the leaders learns the true identity of the star project and it happens to be the same as the ex ante choice $i = i^*$. The third term is the contingency when the leader is informed and the star project is different from the one chosen ex ante $i \neq i^*$.

Taking into account the outcome of bargaining, we obtain the following expected utilities for the leader and the follower, respectively:

$$U^L = \gamma aV\left(1 - p + \frac{p}{m}\right) + \gamma V^*\left(\frac{1-p}{m} + p\right); \quad (1)$$

$$U^F = (1-\gamma)aV\left(1 - p + \frac{p}{m}\right) + (1-\gamma)V^*\left(\frac{1-p}{m} + p\right) - \frac{ca^2}{2}. \quad (2)$$

The follower's effort a maximizes U^F, which is a concave function of a. The first order condition implies

$$a = \frac{1-\gamma}{c}V\left(1 - p + \frac{p}{m}\right). \quad (3)$$

3.2 When are better informed leaders less effective?

In this section we show that a higher quality of information p may reduce the leader's payoff and the social welfare.

Let us substitute the effort choice (3) into (2)-(1)

$$\begin{aligned} U^L &= \frac{1}{c}\gamma(1-\gamma)V^2\left(1-p+\frac{p}{m}\right)^2+\gamma V^*\left(\frac{1-p}{m}+p\right); \\ U^F &= \frac{1}{2c}(1-\gamma)^2V^2\left(1-p+\frac{p}{m}\right)^2+(1-\gamma)V^*\left(\frac{1-p}{m}+p\right), \\ U^F+U^L &= \frac{1-\gamma^2}{2c}V^2\left(1-p+\frac{p}{m}\right)^2+V^*\left(\frac{1-p}{m}+p\right). \end{aligned}$$

Straightforward differentiation of these expressions leads to the following

Proposition 1. *If $V^* < 2(1-\gamma)V^2/c$, the leader's payoff U^L is non-monotonic in p. Indeed, it decreases with the quality of information p as long as $p < \frac{m}{m-1}\left(1-\frac{cV^*}{2(1-\gamma)V^2}\right)$ and increases otherwise. If $V^* \geq 2(1-\gamma)V^2/c$, the leader's payoff is an increasing function of p. Similarly, the follower's payoff U^F is non-monotonic in p whenever $V^* < (1-\gamma)V^2/c$. The social welfare U^F+U^L is non-monotonic if and only if $V^* < (1-\gamma^2)V^2/c$.*

In all the three cases, the non-monotonicity is explained by the trade-off between the costs and the benefits of being better informed. If the leader gets better information (p increases), she becomes more likely to choose the right project ex post. However, this may result in changing the project mid-course; therefore, the follower's incentives to invest are weaker. When the leader is well informed (p is high), the project is likely to be changed anyway, so a decrease of the agent's effort is not essential. In contrast, for low values of p the loss of the agent's incentives may overwhelm the positive effect from better information.

Figure 1 presents a numerical example where the leader's payoff and the social welfare are non-monotonic functions of the quality of information.

Our analysis implies that the leader's payoff increases in the quality of information when this quality is high – and decreases in the quality of information when this quality is low. This is an important observation which can predict that the leaders should prefer extremes – either being perfectly informed (and neglect the follower's investment) or being perfectly uninformed (which provides very strong incentives for the followers).

Note also that the leader's payoff is a convex function of p. This implies that leaders prefer situations where there is uncertainty about how competent

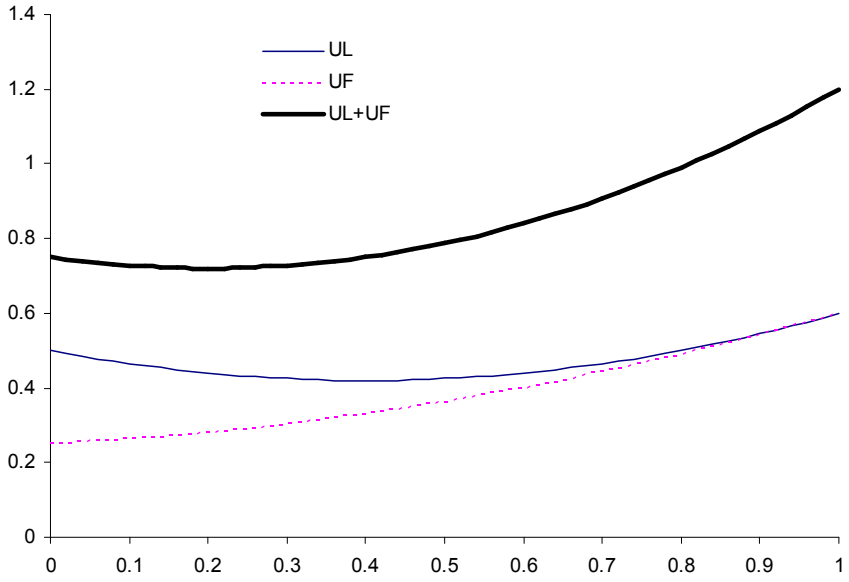

Figure 1: Utility of the leader U^L, utility of the follower U^F, and the joint surplus $U^L + U^F$ as a function of the quality of the leader's information p. Parameters: $\gamma = 0.5$, $V = 1$, $c = 0.5$, $V^* = 1.2, m = \infty$.

they are in realizing a forthcoming project (assuming that p becomes common knowledge before the leader chooses the course of action), and gain from a mean-preserving spread in the distribution of p.

4 Comparative statics and extensions

4.1 Effect of uncertainty

In this section we discuss the effect of the leader's information on welfare when the environment becomes more uncertain and it gets harder to identify the star project ex ante (i.e. the number of initially available projects m grows). An increase in m reduces the range of parameters $p \in \left[0, \frac{m}{m-1}\left(1 - \frac{cV^*}{2(1-\gamma)V^2}\right)\right]$ where the leader's payoff decreases in the quality of information provided such a range exists (condition for the existence of non-monotonicity $V^* < 2(1-\gamma)V^2/c$ is not affected).

On the other hand, an increase of uncertainty is not equivalent to a mere increase in m. To preserve the expected value of the star project, we need to consider a proportional increase in both m and V^*. In this case, the effect is even stronger. Indeed, consider two situations: (i) the case of low uncertainty, low m and low V^* and the case of (ii) high uncertainty where both m and V^* are high. In (i) both the condition of non-monotonicity $V^* < 2(1-\gamma)V^2/c$ is less likely to hold than in case (ii) and, if this condition does hold, the range $p \in \left[0, \frac{m}{m-1}\left(1 - \frac{cV^*}{2(1-\gamma)V^2}\right)\right]$ is smaller.

The analysis above implies that if uncertainty is high, it is more likely that the leader benefits from being better informed. Indeed, in this case information and flexibility are more valuable. There are several effects at work. First, ex post the leader is more likely to change course (the probability that the initial choice is the right one, $1/m$, decreases) so the value of the follower's investment is lower. Moreover, this effect is magnified since the follower has weaker ex ante incentives to invest in any specific project as it is less likely to be the star project ($1/m$ is low). Lastly, as V^* is high, the gain from learning the star project is higher.

4.2 Multiple followers

In Bolton et al. (2008), the resolute leaders encourage cooperation between a continuum of followers. In the model above, we consider the effect of the leader's information on the incentives of a single subordinate. What would happen in our model with a finite number of followers? Would the uninformed leaders be more effective as the number of followers/subordinates in the corporate hierarchy increases (i.e. as the hierarchy becomes flatter)?

Let us consider a model above where the probability of success of a regular project consists of the efforts of N followers: $a = \sum_{n=1}^{N} a_n$. We assume that their effort decisions a_n are independent and their cost functions are symmetric $C_N(a_n)$. The cost functions $C_N(\cdot)$ depend on the number of followers in such a way that the probability of success a in equilibrium is constant with regard to N. In particular, if the cost functions are quadratic, then $C_N(a_n) = \frac{1}{2}Nca_n^2$.

What would be the effect of change in N on the effect of information on welfare in this case, $\partial^2 U^L/(\partial N \partial p)$? It is easy to check that in the case of quadratic effort function there is no effect of N on $\partial U^L/\partial p$. The intuition is very simple. In the case of quadratic function, the follower's effort choice is a linear function of the project's payoff and of the quality of information (3). Therefore there is no interaction between the effects of information and that of the number of subordinates on the followers' efforts.

The situation would be very different if the cost function were not quadratic. For example, if $C(a) = a^k$, $k > 2$, marginal cost is convex rather than linear, therefore the optimal effort function (the inverse marginal cost function) is concave. In this case, the effect of information on effort (and therefore the effect on welfare) increases with N. Indeed, if there are many followers, each of them strongly responds even to a small change in incentives. The overall increase in incentives is therefore larger.

In the case where $C(a) = a^k$, $k < 2$, the effect of N is just the opposite. The optimal effort function $C'^{-1}(\cdot)$ is convex. The greater the number of followers N, the weaker the response in incentives of each follower, and the impact on the aggregate probability of success.

This brief analysis shows that the interaction between the effect of information and the structure of hierarchy is complex and depends on parameters of technology. In particular, it would be misleading to study this interaction based on the quadratic case (like it is done in many papers in this literature).

4.3 Endogenous quality of information

In the model above, the quality of information p is exogenous. Let us consider a different setting where the leader can invest in building an information structure with a higher p. Let us suppose that before the game in Section 2 begins, the leader can increase the probability p of learning the true identity of the star project at a constant marginal cost β. Then she maximizes the function $U^L(p) - \beta p$. As $U^L(p)$ is a convex function, the optimal quality of information is either $p = 0$ or $p = 1$. Thus we arrive at the following result.

The leader will prefer to be perfectly informed $p = 1$ if and only if $\beta < U^L(1) - U^L(0) = -\frac{1}{c}\gamma(1-\gamma)V^2\left[1 - \frac{1}{m^2}\right] + \gamma V^* \frac{m-1}{m}$. Otherwise, the leader prefers to be perfectly uninformed $p = 0$.

Notice that if the marginal cost of information β is increasing rather than constant, than the leader's payoff does not have to be a convex function of p; in this case there may be an intermediate solution $p \in (0, 1)$.

4.4 Asymmetric information about the quality of information

So far we have assumed that the quality of the leader's information p is common knowledge. Indeed, as far as it is determined by the leader's deliberate choice, such as the scope of her responsibility in the organization, her working schedule etc., assuming that p is observed by the agent may be a reasonable approximation. Yet, it is also interesting to investigate what happens when we depart from this assumption and treat p as the leader's private information. In this case, the leader's behavior may reveal to the follower how well the leader is informed. In this subsection we consider a version of the model in which there are two consecutive projects with identical characteristics. The leader's deci-

sion whether to switch the strategy for the first project may affect the agent's incentives to work on the second one. Let us explore this effect more formally.

Assume that it is common knowledge that the quality of the leader's information p is distributed on $[\underline{p}, \bar{p}]$ with a c.d.f. $F(p)$ and a continuous density $f(p) > 0$, the precise value of p being the leader's private information. Let us also assume that the events that the leader learns the "star" strategy in periods 1 and 2 are independent. For simplicity, we normalize the discount factor to one. The agent does not observe whether the leader obtained the signal in period 1, but can infer it from her decision whether to switch projects. We shall look for Perfect Bayesian Equilibria (PBE) of this game. We assume that the principal does not switch strategies if indifferent (this assumption can be easily justified by introducing a small switching cost).

Denote by p_S and p_N the quality of the leader's information estimated by the follower after the strategy was changed in the first period or not changed, respectively. Then, the follower's second-period efforts in case of switching the first project or not, e_2^S and e_2^N, are given by (3) with $p = p_S$ or $p = p_N$. The first-period effort e_1 can be also found from (3) with p be replaced by its expected value $E[p]$. Since the leader's second-period decision has no impact on the follower's effort, she always switches to the star strategy whenever she learns which strategy it is. In the first period, however, the leader's decision whether to switch potentially affects the follower's beliefs about how informed is the leader.

Proposition 2. *In any PBE there exists $\hat{p} \in [\underline{p}, \bar{p}]$ such that the leader switches to the "star" strategy in period 1 if $p > \hat{p}$ and does not switch otherwise.*

Proof. Let $U_S^L(p)$ and $U_N^L(p)$ be the leader's expected second-period payoff if she switches strategies in period 1 or not as a function of her type p. It is easy to see that

$$\Delta(p) = U_N^L(p) - U_S^L(p) = \frac{\gamma(1-\gamma)V^2}{c}(1 - p + \frac{p}{m})(\frac{m-1}{m})(p_S - p_N). \qquad (4)$$

If some type of leader with $p = \tilde{p}$ prefers not to switch, then $\Delta(\tilde{p})$ is at least as large as the short-term gain from switching to the star strategy, $V^* - a_1 V$. This

implies that $p_S \geq p_N$ – swithcing strategies the follower's expectation of the quality of the leader's signal. Hence, $\Delta(p)$ is a decreasing function of p and it is optimal not to switch to the star project for all types of the leader $p \leq \tilde{p}$. $\square$

Proposition 2 implies that[5]

$$p_S = \frac{E[p^2|p > \hat{p}]}{E[p|p > \hat{p}]} \tag{5}$$

and

$$p_N = \frac{E[p] - E[p^2|p > \hat{p}](1 - F(\hat{p}))}{1 - (1 - F(\hat{p}))E[p|p > \hat{p}]}. \tag{6}$$

We can now fully characterize all the three possible types of equilibria. In the first kind of equilibria, all types of leaders prefer to switch to the star project if they get a signal about its identity, i.e. $\hat{p} = \underline{p}$. Then, the necessary and sufficient condition for the existence of this equilibrium is $\Delta(\underline{p}) < V^* - a_1 V$ with $p_S = \frac{E[p^2]}{E[p]}, p_N = \frac{E[p]-E[p^2]}{1-E[p]}$. Note that although all types of the leader behave identically, the fact of switching projects affects the leader's reputation because this event is more likely when p is high.

In the second type of equilibrium the leader never switches to the star project, so that $p_N = E[p]$. Note that in this case switching strategies is an out-of-equilibrium event and the follower can have any beliefs. If such an equilibrium exists, it exists with the "worst" beliefs, $p_S = \overline{p}$, so the necessary and sufficient condition for the existence of this equilibrium is $\Delta(\overline{p}) > V^* - a_1 V$ with $p_S = \overline{p}, p_N = E[p]$.

[5] To see this, note that the followers' beliefs if the leader does and does not switch strategies, provided $\hat{p} < \overline{p}$, are as follows

$$f_S(p) = \begin{cases} 0 \text{ if } p < \hat{p} \\ \frac{pf(p)}{(1-F(\hat{p}))E[p|p>\hat{p}]} \text{ if } p > \hat{p} \end{cases}$$

and

$$f_N(p) = \begin{cases} \frac{f(p)}{1-(1-F(\hat{p}))E[p|p>\hat{p}]} \text{ if } p < \hat{p} \\ \frac{(1-p)f(p)}{1-(1-F(\hat{p}))E[p|p>\hat{p}]} \text{ if } p > \hat{p} \end{cases}$$

Then, the likelihood ratio $f_S(p)/f_N(p)$ is increasing, $p_S > p_N$. If $\hat{p} = \overline{p}$, so that no type of leader interferes, $f_N(p)$ is given by the same formula, while $f_S(p)$ is not restricted by Bayesian updating.

Finally, if there exists $\hat{p}$ such that $\Delta(\hat{p}) = V^* - a_1 V$ with p_S and p_N given by (5),(6), then there exist equilibria in which more informed types of the leader ($p > \hat{p}$) prefer to switch strategies, while the less informed types ($p < \hat{p}$) withdraw from doing this. In this case the leader's reputation is affected both by the likelihood of getting information about the star strategy and by the difference in the reaction to this information of different types of the leader.

Why different types of the leader behave differently? The reason is that the less informed types (those with lower values of p) are less likely to learn the star strategy in the second period. Hence, they are less likely to switch strategies in the second period, so their return to the subordinate's effort is higher and, thus, incentives to build reputation are stronger.

5 Conclusions

Our paper shows that less informed managers may be better leaders. In our model, managers are fully rational; their job is to choose a strategy for the firm. Yet, they may gain from restricting their own access to information. The reason is that less informed leaders can commit in a more credible way to their original choice of strategy. This, in turn, provides stronger incentives for specific investments by the followers. If the followers know that their leaders are better informed, they will expect the leaders to adapt to changing business conditions which will in turn undermine the value of the followers' specific investments. With uninformed leaders such flexibility is less likely.

In this paper, a more informed leader is the one who is more likely to *become* well informed at some interim stage. Of course, an alternative setting would be that a more informed leader is more likely to choose the "star" project from the beginning. In our model getting better information in that sense would be unambiguously good for the leader. Yet, if we think of a more general model, in which the leader's decision to seek more information gives her actually a bundle – an informative signal with probability p_0 at the ex ante stage and with probability p_1 at the interim stage – the leader may well want to avoid seeking information under certain parameters, as in our simpler model. Moreover, being

better informed from the beginning may also hurt a leader. In a complementary work, Guriev et al. (2009), we explore a model in which the leader may compensate her imperfect knowledge by actively participating in the project; such involvement is costly for the leader but guarantees success of the project. The leader's contribution (via the right choice or via active involvement) and the follower's effort are complementary. We show that if the leader cannot directly commit to work hard, being poorly informed acts as an implicit commitment and may benefit her by boosting the agent's incentives. As in the current paper, the leader prefers extremes: being poorly informed or perfectly informed.[6]

Our other main result–that a leader prefers extremes with respect to how well she is informed–has important dynamic implications. It predicts that a leader should either get involved in a series of related projects to get experience and become well informed in a specific field, or, alternatively, frequently switch activities in which she is involved – otherwise, she cannot credibly convince the subordinates that she is poorly informed. This dynamic choice problem is an interesting topic for future research.

[6] The fact that leaders prefer extremes in both models is in stark contrast with Lazear's (2005) theory of entrepreneurship, in which he shows that a successful entrepreneur must be a "jack-of-all-trades". To what extent an entrepreneur must be a leader and a leader must possess entrepreneurial qualities is an interesting question for further research.

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