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Managers as Administrators: Reputation and Incentives*

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Abstract

In many firms managers play the role of administrators, adding value by successfully implementing solutions to problems that the firm may face. We model the career concerns of administrators. When administrators receive the same information but differ in their administrative abilities, we show that they may not choose tasks that are appropriate for the problems they face. In particular, in any pure strategy equilibrium of our model, administrators do not condition their behavior on any of their private information, despite the fact that they are risk neutral and know their administrative ability. We thus identify a novel source of incentive conflicts in firms. We also examine the robustness of these results to various extensions.

JEL: D82, C72

Keywords: Incentive conflicts, career concerns, reputation, conformism

1 Introduction

Fama (1980) proposed that incentive problems within firms may be eliminated by managers' concerns about their reputations in the labor market, commonly referred to as their *career concerns*. Following Holmstrom's (1982) influential theoretical analysis of this question, a growing literature (which we survey below) has modelled the career concerns of managers and implications for incentives within firms. With only a few exceptions, this literature has

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focussed on the career concerns of managers who wish to build a reputation for having access to precise information. While this story fits a large class of applications (e.g., analysts forecasting earnings, mutual fund managers picking underpriced stocks), it is not universally applicable. In some settings, managers wish to build reputations not for being better informed, but for being better *administrators*. This arises in organizations in which managers add value not by *identifying* the appropriate solution, but simply by efficiently *implementing* it. University administrators represent a natural example. It may not take a specially capable dean to identify solutions to the problems faced by a small college. Implementing solutions, however, involves balancing several distinct stakeholder interests (academics, administrators, and students) and may be difficult. Able deans can successfully implement potentially complex changes to their universities. Civil servants in large government departments are also primarily administrators. They also require expertise to implement complex changes successfully while balancing differing interests and lobbies.

In this paper, we focus on the impact of career concerns in organizations in which managers wish to build reputations as good administrators. We argue that career-concerned administrators will engage in suboptimal behavior: they will choose solutions that are inappropriate for addressing the challenges faced by their organizations. The mechanism driving such behavior differs from those analyzed in extant models of career concerns.

1.1 Model and Results

An organization is faced with a problem that is either trivial or complex. The board of directors (principal) of the organization hires an administrator (agent) to identify and solve the problem. The appropriate solution, in turn, can be trivial or complex. The board does not know the nature of the problem faced by the organization. The agent it hires does. This agent, in turn, can have different levels of ability, high or low, in implementing (administering) a solution. The board does not know the ability of the agent it has hired. The agent does.

The type of the agent does not affect his ability to understand the nature of the organization's problem. Ability differences between agents are restricted to their relative probabilities of successfully implementing solutions. We thus focus only on implementation or administrative ability. In particular, we assume that a more able agent has a stochastic advantage in implementing complex changes to the organization. The administrative ability of the agent does not, however, affect his chances of implementing the trivial course of action.

The agent is long-lived and is faced with a labor market that values ability. His actions and the outcomes are observed by the principals and by the labor market as a whole. His current wage cannot be made contingent on his actions and their consequences, but his future wages are. Thus the agent cares only about his reputation: he is motivated by career concerns.

From the perspective of the principals, it is best if the agent, regardless of his type, chooses to take the trivial course of action when faced with the trivial problem and the more complex one to deal with the complex problem. We call this the first-best strategy profile.

1. In our main result, we show that this first-best strategy profile cannot be implemented in equilibrium in the presence of career concerns. Suppose that the first-best were an equilibrium and that the problem is complex. Taking the trivial action does not change the principal's beliefs about the agent's type in this equilibrium. Thus, the agent's expected payoff, regardless of type, from taking the trivial action is simply the prior. We show that the martingale property of Bayesian posteriors implies that if the agent did not know his type, his expected payoff from taking the complex action would also be the prior. Thus, if the agent did not know his type, he would be indifferent between the two actions. It is then not possible, when agents know their type, for *both* types of agents to prefer the *same* action. Thus, if the first-best were an equilibrium, both types of agents must be indifferent between the complex and the trivial actions when faced with the complex problem, but this cannot be true since the complex action separates the good agents from the bad, and the trivial action does not.[1]

2. We show that the only equilibria in pure strategies involve complete conformism: regardless of the nature of the problem faced by the agent and his known ability, he will, in equilibrium, take the *same* action. Thus, our model leads to substantial amounts of information being trapped in equilibrium.

3. We examine a number of natural extensions to our baseline analysis. First, instead of having complete self-knowledge, we allow the agent to receive only a noisy signal about his type. We show that for generically chosen precisions of self-knowledge, our baseline results are unaffected. Second, we consider the possibility that the high type also has a stochastic advantage in implementing the trivial action, and identify an alternative state-monotonicity condition sufficient to preserve our main result. Finally, we consider mixed-strategy equilibria. We characterize the set of mixed strategy equilibria that can exist in our model. In addition, we show via an example that it is possible to construct partially informative mixed strategy equilibria which approximate the first-best strategy profile when the implementation abilities of high and low type agents are sufficiently similar.

[1] We note that the equilibrium non-implementability of the first-best is not driven by the usual "incentive to imitate" that can destroy separating equilibria in reputational cheap talk games. Under the first-best strategy profile, both the low and the high types are required to take the *same* action in equilibrium, but choose *not* to do so. Depending on the state and on the parameters of the model, it is possible that either the low type or the high type wishes to deviate from the proposed equilibrium strategies.

Our results suggest that career-concerned administrators in the real world may be too eager to undertake (overtly) grandiose projects or too reluctant to undertake innovative (but appropriate) projects. In the conclusion, we consider whether the available anecdotal evidence about leading classes of administrators is consistent these predictions. We now relate our results to the literature.

1.2 Related Literature

The literature on career concerns began with the seminal work of Holmstrom. In the oft-quoted first part of this celebrated paper, he considered the positive role of career concerns in resolving moral hazard problems. In a less-quoted second part, Holmstrom introduced a model in which agents differed in their ability to implement projects and considered whether their career concerns could prevent them from choosing productive investment projects. He focussed on a setting in which all agents received signals drawn from the same distribution (that is, ability did not turn on differences in information precision), but final output depended on managerial type, which can thus be interpreted as implementation or administrative ability. Managerial ability was unknown to the manager, who, in turn, only cared about his reputation. Agents could choose between investing and doing nothing. Investing led to the possibility the principals would learn about their types and thus produced a lottery that had the same expected value as the sure reputational payoff from doing nothing. Risk averse agents chose not to invest, even when profitability was likely to be high, and thus behaved sub-optimally.[2] The main incentive conflict in Holmstrom's model thus arose from the fact that principals and agents were both uninformed about the agent's type. Risk averse agents understood that they could not improve their expected payoff by choosing projects

[2] Such behavior on the part of the agent is often referred to as "signal-jamming", a term coined by Fudenberg and Tirole (1986). Holmstrom and Ricart-i-costa (1986) went on to show that such perverse reputational incentives could be tempered by providing explicit incentives. We are primarily interested in settings where such explicit contracting is not feasible.

We note that results similar to ours can also arise *with* explicit contracting via *different* mechanisms. Two papers in the large literature on CEO pay and incentives are worth highlighting in this context. In Dow and Raposo (2005), CEOs choose srategy, and shareholders subsequently choose compensation. Since strategies inducing dramatic change require higher effort, these strategies induce higher explicit compensation, and thus CEOs tend to propose excessively dramatic change. In contrast, in Inderst and Mueller (2008), major strategic change is achieved via CEO replacement, yet shareholders rely on reports from the CEO on the desirability of strategic change and incentivize him via severance pay. In equilibrium, the incidence of major strategic change is suboptimally low.

In section 3.2 of his paper, Holmstrom provides an example of an incentive conflict that arises even with a risk neutral agent when the agent has some private information (about the project success probability) but cannot convey it in a verifiable manner. He maintains, however, the hypothesis that the agent has no private information about his type.

and rationally chose inaction.

In sharp contrast, we consider settings in which managers are risk neutral and know their own types, thus eliminating the source of perverse behavior in Holmstrom's work.[3] Nevertheless, we show that the presence of career concerns leads to systematic incentive problems and supoptimal project-choice within firms.

A handful of papers, including Zwiebel (1995) and Biglaiser and Mezzetti (1997), have followed Holmstrom in focusing on implementation ability. The latter is more closely related to our work. Biglaiser and Mezzetti consider a career concerns model where the agent (a politician) decides whether to undertake a project, which will reveal to the principal (voters) information about the agent's ability. In contrast to our model, however, there is no asymmetry of information between the agent and the principal.[4]

Starting with Scharfstein and Stein (1990), much of the recent literature on career concerns has moved away from settings in which agents differ in implementation ability and has focussed instead on informational differences across agents. In these so-called "experts" models, agents differ in the precision of their imperfect information about some common state and receive utility from their ex post reputation based on their prediction (or action) and the realized state.[5] Ottaviani and Sorensen (2006a,b) provide a general analysis of this class of models and show that truthtelling is generically infeasible. They show that in leading versions of these models, reputational incentives lead experts to bias their predictions towards what is expected *a priori* because imperfectly informed experts anticipate that extreme predictions are likely to be viewed, ex post, as the result of low precision signals, thus damaging their reputation.

While administrators in our model share with these experts a desire to take the ex post reputation-enhancing action, our approach is very different. Unlike experts models, where different types receive different quality information, all types of administrators in our model are equally informed. In fact, they are perfectly informed about both the state of the world and about their own types. Administrators differ only in their ability to implement a course of action based on this information. The difference in the mechanisms that generate perverse behavior in the two types of models can perhaps be best illustrated by considering the effect of self-knowledge. In leading experts models, the incentive to misrepresent the

[3] Neither Holmstrom nor we consider risk-loving behavior. It is worth noting that risk-loving behavior has been shown to arise endogenously in some career concerns models, as in Li (2007).

[4] In an extension of their benchmark model (see section 5.2 of their paper), they also look at the case where the agent has private information about his own type, but still, their agent does not have any private information about the characteristics of the project, or state of the world, and the resulting equilibrium set is very different from ours.

[5] Papers in this literature include, for example, Prendergast and Stole (1996) and Brandenburger and Polak (1996).

truth is usually higher when experts do not know the precision of their own information. With self-knowledge, such incentives are tempered, and informative equilibria become possible (Ottaviani and Sorensen 2006a). In our model, exactly the opposite is true. In the baseline model, informative equilibrium behavior is *impossible* precisely when administrators are *perfectly* aware of their abilities. While such misrepresentation persists with imperfect self-knowledge, in the case where managers have no self-knowledge at all (as in the canonical "experts" model), the first-best course of action can trivially be implemented.[6]

Finally, a less related class of models defines ability as congruence of the agent's preferences with those of the principal. Sobel (1985), Benabou and Laroque (1992), Morris (2001), Ely and Valimaki (2003) and Ely et al. (2008) are some examples of such work, giving rise to reputational cheap-talk games in the tradition of Crawford and Sobel (1982). In these models, in contrast to ours, the agent has an intrinsic preference for some action.

The rest of the paper is organized as follows. In section 2 we analyze the baseline model. In section 3 we consider several extensions. Section 4 concludes.

2 The Model

A principal (a *board* of directors) in charge of an organization hires an agent (an *administrator*) to solve a problem. The nature of the problem (state ω) that the organization faces can be either *complex* ($\omega = C$) or *trivial* ($\omega = T$). The board does not observe the state ω and believes that the problem is complex with probability π_ω. The agent who is hired discovers the true state ω with certainty.

The agent's expertise also lies in implementing a course of action. The agent can take two types of actions (α) to solve the problem. He can either undertake a *complex* reorganization ($\alpha = c$) or make *trivial* changes ($\alpha = t$, i.e. do nothing substantial and simply run the day-to-day operations). Each of these actions induces a result (ρ) which may be a *success* ($\rho = S$), upon which the problem is solved, or *failure* ($\rho = F$).

The agent can be of two types (θ), depending on his skills as an administrator. He may be characterized by either *high* ability ($\theta = H$) or *low* ability ($\theta = L$). Though the agent knows his type with certainty, the board does not. The board believes that the agent is of the high type with probability π_θ. We explain below how ability differentiates the two types.

Whether the problem faced by the organization will be solved depends on three factors: the type of the agent (θ) who implements the action, the nature of the problem (ω), and the

[6] Milbourn et al. (2001) and Suurmomd et al. (2004) diverge from traditional experts model by allowing the agent to invest in information before he chooses which project to undertake. In Milbourn et al. the agent does not know his type. Suurmoond et al. allow for self-knowledge but, as is standard in experts models, focus only on differences in information precision.

action (α) undertaken to address the problem. We denote the success probability function by $p(\theta, \omega, \alpha) = Pr[\rho = S|\theta, \omega, \alpha]$. We assume that $0 < p(\theta, \omega, \alpha) < 1$ for all type-state-action triples (θ, ω, α).

Whether trivial changes succeed or fail does not depend on the implementor's type. Thus,

Assumption 1: $p(L, \omega, t) = p(H, \omega, t)$ for all states ω.

However, complex changes require the skills of the agent in order to be implemented, and thus the probability of successful implementation is type-dependent. We assume

Assumption 2: $p(L, \omega, c) < p(H, \omega, c)$ for all states ω.

The board observes the action taken by the agent and the result. The agent cares only about the opinion that the principal (and, by extension, the entire labor market) forms of him upon observing his action and the outcome: $q(\alpha, \rho) = \Pr[\theta = H|\alpha, \rho]$.[7] Thus, our career-concerned administrator's payoffs derive purely from his reputation.[8] We denote by $\alpha_\theta(\omega)$ the (pure) action taken by the agent of type θ when the state is ω and look for perfect Bayesian equilibria of this game.

2.1 The Impossibility of Implementing the First-Best

The first-best solution from the perspective of the board involves the agent taking the complex action $\alpha = c$ (resp. the trivial action $\alpha = t$) if and only if he faces a complex problem $\omega = C$ (resp. a trivial problem $\omega = T$). In our notation, the first-best strategy profile is given by $\alpha_\theta(T) = t$ and $\alpha_\theta(C) = c$ for all types θ.

There are several ways to justify this profile as the first-best. For example, it could be that trivial solutions hardly ever resolve complex problems, but usually resolve trivial ones. Complex solutions, on the other hand, usually resolve complex problems as well as trivial ones, but are inherently hard to implement. Thus, trivial solutions are better for trivial problems.[9] Alternately, it could be that complex solutions are more expensive to implement, so even if they are better at solving all problems, after accounting for costs, it may be better to implement the trivial solution for trivial problems. The appropriate microfoundation for the first-best would depend on the application in question. Our results do not depend on the details of such microfoundation.

We can now state our main result: The first-best can never be implemented in equilibrium.

[7] The set up we have just described gives rise to a *psychological game*, as in Geanakoplos et al. (1989).

[8] It is commonly assumed in the literature on career concerns that agents care only about their reputation (e.g., Scharfstein and Stein). It would be straightforward to micro-found the agent's payoff by using devices that are standard in the literature on career concerns.

[9] This can be captured by assuming that $p(\theta, C, c) > p(\theta, C, t)$ and $p(\theta, T, c) < p(\theta, T, t)$ for each type θ.

Proposition 1 *The (first-best) strategy profile $\alpha_\theta(T) = t$ and $\alpha_\theta(C) = c$ for all types θ cannot arise in equilibrium.*

The proof of this result, as well as those of all subsequent results, is relegated to the appendix. The intuition behind the result is both simple and general. Suppose the first-best strategy profile did constitute an equilibrium. In this equilibrium agents do not condition their behavior on their type. This means that if the principal sees the trivial action $\alpha = t$, he does not update his beliefs about the type of the agent: the action choice provides no information about the type and, for the trivial action $\alpha = t$, neither does the result. Thus, for any type of agent, in any state, the expected payoff from choosing the trivial action $\alpha = t$ is simply π_θ. Now, consider a simple thought experiment. Let the state be complex, $\omega = C$. Imagine that the agent knows that the state is $\omega = C$, but does not know his type. Then, the argument we have just made establishes that his expected payoff from choosing the trivial action $\alpha = t$ is π_θ. The crucial step in our proof is to show that his expected payoff from taking action $\alpha = c$ is also exactly π_θ. This is a consequence of two things: the Martingale property of Bayesian posteriors and the fact that, in the first-best, the principal can deduce the state from the agents' actions.

Therefore, before knowing his type the agent must be exactly indifferent between the two actions in state $\omega = C$. It is then not possible, after knowing the type, for *both* types to prefer the *same* action, unless they are both indifferent. Thus, if the first-best were an equilibrium, then both types of the agent must derive the same excess utility from taking the complex action as the trivial action. However this, in turn, cannot be true since the complex action separates the good agent from the bad while the trivial action does not. Thus, the first-best cannot be an equilibrium.

This argument clearly depends on the existence of the trivial action, $\alpha = t$, for which the probability of success is unaffected by the type. It seems reasonable to assume that administrators in most organizations always have access to the trivial action because they always have the option (in any given period) of carrying on "business as usual", that is, effectively of doing nothing. The outcome of doing nothing is unlikely to depend on the administrative ability of the agent. We thus believe that this is not a particularly strong assumption. We nevertheless show below (in section 3.2) that it can be relaxed, and our main result holds under an alternative (state monotonicity) assumption.

2.2 Conformism in Equilibrium

We now consider other possible pure strategy equilibria of our game. It is easy to see that an almost identical argument to that in Proposition 1 can rule out the symmetric strategy profile $\alpha_\theta(T) = c$ and $\alpha_\theta(C) = t$ for all types θ. We consider next strategy profiles in which the agent conditions his actions on both his type (θ) and the state (ω). We show that such profiles cannot be supported as equilibria, except in non-generic cases.

Proposition 2 *The strategy profile*

$$\alpha_H(\omega) = \begin{cases} c & \omega = C \\ t & \omega = T \end{cases} \quad \text{and} \quad \alpha_L(\omega) = \begin{cases} t & \omega = C \\ c & \omega = T \end{cases}$$

cannot arise in equilibrium, except in the non-generic case where $p(H, C, c) = p(L, T, c)$.

The formal proof shows that in order for this strategy profile to be an equilibrium, it must be that success and failure in implementing the complex solution lead to *precisely* the same opinion about the ability of the agent. In turn, it is shown that this can occur only in the non-generic case in which $p(H, C, c) = p(L, T, c)$. A symmetric argument rules out the analogous strategy profile

$$\alpha_H(\omega) = \begin{cases} t & \omega = C \\ c & \omega = T \end{cases}, \alpha_L(\omega) = \begin{cases} c & \omega = C \\ t & \omega = T \end{cases}$$

except in the non-generic case with $p(H, T, c) = p(L, C, c)$. It is apparent that strategy profiles in which some action perfectly reveals the type cannot arise in equilibrium. This is because when a fully revealing action exists, the low type agent will always imitate the high type agent. This argument rules out, for example, strategy profiles of the form $\alpha_H(\omega) = c$ and $\alpha_L(\omega) = t$ for all states ω and its symmetric counterpart $\alpha_H(\omega) = t$ and $\alpha_L(\omega) = c$ for all states ω. This argument also rules out strategy profiles of the form

$$\alpha_H(\omega) = \begin{cases} t & \omega = C \\ t & \omega = T \end{cases}, \alpha_L(\omega) = \begin{cases} t & \omega = C \\ c & \omega = T \end{cases}$$

and various similar counterparts.

Finally, we are left with only two remaining strategy profiles: $\alpha_\theta(\omega) = c$ for all type-state pairs (θ, ω), and $\alpha_\theta(\omega) = t$ for all type-state pairs (θ, ω). Both of these involve complete conformism. They can both be supported in equilibrium by simple off-equilibrium beliefs. For example the profile $\alpha_\theta(\omega) = c$ for all type-state pairs (θ, ω), can be supported as a Perfect Bayesian equilibrium with the following off-equilibrium belief: $q(t, \rho) = \Pr(\theta = H | \alpha = t, \rho) = 0$ for all results ρ. Equilibrium payoffs for both types of agents are positive while deviation payoffs are 0. Thus we can state

Proposition 3 *The only possible equilibria in pure strategies consist of the strategy profiles* $\alpha_\theta(\omega) = c$ *for all type-state pairs* (θ, ω)*, and* $\alpha_\theta(\omega) = t$ *for all type-state pairs* (θ, ω)*.*

Therefore, the pure strategy equilibrium set is characterized by complete conformism. Though agents have perfect information about two different variables (their ability and the nature of the problem faced by the organization), their actions reveal none of this information in equilibrium. Note that our model is silent about which of these two equilibria will arise. The unifying theme of our results is that the presence of career concerns can lead administrators to choose either overtly ambitious or excessively cautious projects with no regard to the needs of their organizations.[10]

Our result on conformism complements the large literature on herd-like behavior in sequential settings arising either purely from observational learning (e.g. Banerjee 1992 and Bikhchandani et al. 1992) or from a combination of observational learning and reputational concerns (e.g. Scharfstein and Stein 1990, Dasgupta and Prat 2008). The mechanism inducing conformism in our model is different, and conformism arises in a purely static setting.

3 Extensions

In this section, we consider a number of natural extensions of the model.

3.1 Imperfect Self-Knowledge

We first relax the assumption that the agent knows his ability perfectly. We show that as long as the agent has some degree of self knowledge, our results will hold. We assume that the agent does not know his type but, instead, at the beginning of the game receives a signal, $s \in \{L, H\}$, about his ability. The signal is drawn from the following distribution

$$Pr[s = i|\theta = i] = k \geq \frac{1}{2} \text{ for } i = L, H \tag{1}$$

where k parameterizes the extent of self-knowledge. When $k = 1$ we obtain the baseline model. When $k = \frac{1}{2}$ the agent has no private information about his type. As we have already seen, an agent who has no private information about his type is indifferent between taking either action and our model is trivial. We thus focus on the case where $k > \frac{1}{2}$.

Denote the strategy of an agent who has received signal s in the state ω by $\alpha_s(\omega) \in \{t, c\}$. Thus, the first-best strategy profile in the game with signals is $\alpha_s(T) = t$ and $\alpha_s(C) = c$ for all signals s. We show that this cannot be an equilibrium.

Proposition 4 *For $k > \frac{1}{2}$ the strategy profile $\alpha_s(T) = t$ and $\alpha_s(C) = c$ for all signals s cannot be an equilibrium.*

[10] We examine the possibility of partially informative equilibria in mixed strategies in section 3.3.

An identical argument rules out the strategy profile $\alpha_s(T) = c$ and $\alpha_s(C) = t$ for all signals s. Next we show that there cannot exist equilibria in which the agent conditions on both his signal and on the state.

Proposition 5 *For $k > \frac{1}{2}$ the strategy profile*

$$\alpha_H(\omega) = \begin{cases} c & \omega = C \\ t & \omega = T \end{cases} \quad \textit{and} \quad \alpha_L(\omega) = \begin{cases} t & \omega = C \\ c & \omega = T \end{cases}$$

cannot be supported as an equilibrium other than for non-generic values of k.

An identical argument rules out the analogous strategy profile where the low type behaves optimally. Finally, it is clear that there are no equilibria of the form where the agent's action reveals perfectly his signal as having the high signal leads to a higher probability of being of the high ability type, and thus agents with low signals would wish to imitate agents with high signals. Thus, again, the only remaining pure strategy equilibria are of complete conformism, just as in the baseline case.

3.2 No "trivial" action

In the baseline model we assumed that the agent has access to a trivial action whose likelihood of success is independent of the implementor's type. We now eliminate Assumption 1 and assume instead that the function $p(\theta, \omega, \alpha)$ is strictly monotonic in ω, for all type-action pairs (θ, α). We then extend Assumption 2 to incorporate *both* actions so that $p(L, \omega, \alpha) < p(H, \omega, \alpha)$ for all state-action pairs (ω, α). Our main result is still valid:

Proposition 6 *If $p(\theta, \omega, \alpha)$ is strictly monotone in ω for all (θ, α) and $p(L, \omega, \alpha) < p(H, \omega, \alpha)$ for all (ω, α), then the first-best strategy profile cannot arise in equilibrium.*[11]

To derive intuition for this result, suppose that $p(\theta, C, \alpha) < p(\theta, T, \alpha)$ for all (θ, α). If the first-best strategy profile were an equilibrium, it must be the case that in the trivial state, $\omega = T$, both agents prefer to take the trivial action, but state monotonicity implies that the payoff to each type of agent from taking the complex action in the state $\omega = T$ will be strictly higher than the payoff to each type of taking the complex action in the complex state, $\omega = C$. This is due to the fact that the complex action (by state monotonicity) fails more often in state $\omega = C$ than in state $\omega = T$, thus increasing the probability of a negative evaluation for the agent. In sum, if the first-best strategy profile were an equilibrium, it would be the case

[11] If $p(\theta, \omega, \alpha)$ is only weakly monotonic in the state ω, then Proposition 6 would still hold for generically chosen values of $p(\cdot, \cdot, \cdot)$.

that *each* type of agent would *strictly* prefer to take the trivial action in state $\omega = T$ than the complex action in state $\omega = C$. However, since these are both equilibrium actions, we can reapply the thought experiment utilized for the main result to note that before the agent knew his type, he must receive the same expected payoff (π_θ) from taking the equilibrium action in each state. This leads to a contradiction.

3.3 Mixed Strategies

While our focus has been on equilibria in pure strategies, we now provide some analysis of mixed-strategy equilibria. We begin with the following observation. In any equilibrium where $q(c,S) - q(c,F) > 0$,[12] if in any state ω the high (low) type either mixes or prefers the trivial (complex) action, then the low (high) type must strictly prefer the trivial (complex) action.[13]

We represent a mixed-strategy profile as a matrix where rows refer to states (C,T) and columns refer to types (H,L). An element of this matrix, $m_{i,j}$ is the probability that type j chooses the complex action in state i. For example, the first-best strategy profile is represented by the matrix $\begin{array}{|c|c|}\hline 1 & 1 \\ \hline 0 & 0 \\ \hline \end{array}$. Then, the observation above implies that equilibrium matrices can only be comprised by the following rows:

$$\begin{array}{|c|c|}\hline 1 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 0 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline \end{array}$$

where $m \in (0,1)$. Therefore, we can have $5 \times 5 = 25$ types of equilibria. Out of these 25 candidate equilibria, $3 \times 3 = 9$ are pure-strategy equilibria, which we have already fully characterized. Out of the remaining 16 candidate equilibria the following ones cannot arise because the trivial action would reveal that the agent must be of low type:

$$\begin{array}{|c|c|}\hline 1 & 1 \\ \hline 1 & m \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline 1 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & 0 \\ \hline 1 & m \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline 1 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline 1 & n \\ \hline \end{array}.$$

Similarly, the following candidate equilibria cannot arise because the complex action would reveal that the agent must be of high type:

$$\begin{array}{|c|c|}\hline 0 & 0 \\ \hline m & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline 0 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & 0 \\ \hline m & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline 1 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline n & 0 \\ \hline \end{array}.$$

Hence, we are left with the following six candidate equilibria:

$$\begin{array}{|c|c|}\hline 1 & 1 \\ \hline m & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline 0 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline n & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline 1 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 0 & 0 \\ \hline 1 & m \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline m & 0 \\ \hline 1 & n \\ \hline \end{array}.$$

[12] Equilibria which violate this condition are unnatural and could be ruled out by introducing a infinitesimal cost of effort in successfully implementing the complex action.

[13] The proof is straightforward, and we omit it for brevity.

Of these only three can approximate the first-best strategy profile. These are

$$\begin{array}{|c|c|}\hline 1 & 1 \\ \hline m & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline 0 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|}\hline 1 & m \\ \hline n & 0 \\ \hline \end{array}.$$

Given the substantial degrees of freedom in the choice of the function $p(\cdot,\cdot,\cdot)$, the analysis of these mixed-strategy equilibria is complex. Nevertheless, we can show, by example, that (a) such equilibria can exist for reasonable parameter values, and (b) they can approximate the first-best when the stochastic advantage of the high type in implementing the complex action becomes vanishingly small.

For example, suppose that $\pi_\theta = \pi_\omega = \frac{1}{2}$, $p(\theta, T, t) = p$, $p(\theta, T, c) = 0$ and $p(\theta, C, t) = 0$ for all θ. Let $p(H, C, c) = p$ and $p(L, C, c) = x$, where $x < p$. Consider the candidate equilibrium $E_1 = \begin{array}{|c|c|}\hline 1 & 1 \\ \hline m_1 & 0 \\ \hline \end{array}$. The indifference condition for the high type in the trivial state yields $m_1 = \frac{p-x}{2-x}$. It can be shown that with this value of m_1 no type-state pair (θ, ω) wishes to deviate from the strategy profile E_1. Finally, notice that as $x \to p$, we have $m_1 \to 0$ (i.e., the mixed-strategy equilibrium E_1 approaches the first-best). For the same parameter values, there also exists another equilibrium, $E_2 = \begin{array}{|c|c|}\hline 1 & m_2 \\ \hline 0 & 0 \\ \hline \end{array}$, in which the low type mixes in the complex state. This equilibrium can be shown to share with E_1 the property that $m_2 \to 1$ as $x \to p$.

4 Conclusion

In this paper, we have identified a new mechanism for incentive conflicts within organizations arising out of the career concerns of administrators. We have shown that career concerned administrators will typically not choose actions that are ideal for their organizations.

At the outset, we motivated administrative career concerns by appeal to university administrators and civil servants. While our model is stylized, we now consider briefly whether our assumptions and conclusions are appropriate for these two leading classes of administrators.

The crucial assumption on observables in our model is the lack of explicit incentive contracts. It is clear that the provision of sufficient explicit incentives would eliminate perverse behavior in our model.[14] There is, however, ample evidence that university administrators and civil servants do not face explicit incentive contracts. Cornell (2004, 37) points out that university presidents "lack any meaningful incentive clauses in their contracts." Likewise, civil servants' current wages are rarely contingent on current performance, but there is evidence that future pay is. For example, with regard to senior civil servants, the U.K. Practitioner's

[14] This critique applies more broadly to the literature on career concerns.

Guide (2007, 9) states that, "Base salary rewards value or contribution which is marked by confidence in the individual's future performance, based on sustained past performance." Dewatripont et al. (1990, 199) refer to this as the "preponderance of career concerns." It seems reasonable to assume, therefore, that these types of administrators are principally motivated by career concerns.

Our theoretical conclusion is that career-concerned administrators may indulge in excessively grandiose or excessively conservative behavior. While detailed empirical analysis is difficult, there is some anecdotal evidence that is consistent with these findings. For example, writing in the Chronicle of Higher Education about presidents of colleges in the United States, Rita Bornstein (2003, B20) states: "The higher education landscape is littered with those who failed because their vision greatly exceeded available resources or they neglected important institutional needs." Civil servants, on the other hand, are often accused of excessively cautious behavior. In a recent National Audit Office report (2000, 2), the United Kingdom's Comptroller and Auditor General argues that it is the fear of failure that prevents civil servants from undertaking innovative projects: "Civil Service culture... has traditionally been risk averse. This is partly because departments have tended to associate risk taking with increasing the possibility of something going wrong, of project failure which could lead to Parliamentary and public censure".[15]

Our model is stylized and simple. Richer models with greater institutional detail, built around the central incentive conflict identified here, represent potential tools for modelling public sector organizations. Such analyses remain interesting territory for future research.

[15] Note that our model, like all models with multiple equilibria, is silent about whether administrators will overindulge or underindulge in complex reorganizations. Thus, the model does not differentiate between the anecdotal evidence outlined here about civil servants and university administrators. *Both* pieces of evidence are consistent with our model.

Appendix

Proof of Proposition 1. Suppose the first-best strategy profile were an equilibrium. Let the state be complex, $\omega = C$. Since neither type must be willing to deviate from the equilibrium strategies, it must be the case that the following inequalities hold for the high and low types respectively:

$$p(H, C, c)q(c, S) + [1 - p(H, C, c)]q(c, F) \geq p(H, C, t)q(t, S) + [1 - p(H, C, t)]q(t, F), \quad (2)$$

$$p(L, C, c)q(c, S) + [1 - p(L, C, c)]q(c, F) \geq p(L, C, t)q(t, S) + [1 - p(L, C, t)]q(t, F). \quad (3)$$

Notice that in this equilibrium the posterior $q(t, \rho)$ equals the prior probability π_θ for all results ρ since the observed outcome from the trivial action does not distinguish across types and the choice of action does not depend on the type. Simple computation utilizing the equilibrium strategies yields

$$q(c, S) = \frac{p(H, C, c)\pi_\theta}{p(H, C, c)\pi_\theta + p(L, C, c)(1 - \pi_\theta)}$$

$$q(c, F) = \frac{(1 - p(H, C, c))\pi_\theta}{(1 - p(H, C, c))\pi_\theta + (1 - p(L, C, c))(1 - \pi_\theta)}.$$

Multiply the previous inequalities by the prior probabilities π_θ and $1 - \pi_\theta$, respectively. Then, add them up to obtain

$$\pi_\theta \geq \pi_\theta.$$

This implies that neither of the original inequalities can be strict. Thus, they must be equalities. Subtracting one from the other yields

$$[p(H, C, c) - p(L, C, c)][q(c, S) - q(c, F)] = 0 \Rightarrow q(c, S) = q(c, F). \quad (4)$$

Using the expressions for $q(c, S)$ and $q(c, F)$ provided above, $q(c, S) = q(c, F)$ holds if and only if $p(H, C, c) = p(L, C, c)$, a contradiction. ■

Proof of Proposition 2. If this strategy profile were an equilibrium, then the following would hold:

$$p(L, T, c)q(c, S) + [1 - p(L, T, c)]q(c, F) \geq p(L, T, t)q(t, S) + [1 - p(L, T, t)]q(t, F) \quad (5)$$

$$p(H, T, t)q(t, S) + [1 - p(H, T, t)]q(t, F) \geq p(H, T, c)q(c, S) + [1 - p(H, T, c)]q(c, F) \quad (6)$$

$$p(L, C, t)q(t, S) + [1 - p(L, C, t)]q(t, F) \geq p(L, C, c)q(c, S) + [1 - p(L, C, c)]q(c, F) \quad (7)$$

$$p(H, C, c)q(c, S) + [1 - p(H, C, c)]q(c, F) \geq p(H, C, t)q(t, S) + [1 - p(H, C, t)]q(t, F). \quad (8)$$

Note that $p(L,T,t) = p(H,T,t)$, so the RHS of (5) is equal to the LHS of (6). Thus, combining these two inequalities, we have

$$p(L,T,c)q(c,S) + [1 - p(L,T,c)]q(c,F) \geq p(H,T,c)q(c,S) + [1 - p(H,T,c)]q(c,F), \quad (9)$$

which reduces to

$$[p(H,T,c) - p(L,T,c)][q(c,S) - q(c,F)] \leq 0. \quad (10)$$

Since $p(H,T,c) > p(L,T,c)$ we conclude that

$$q(c,S) \leq q(c,F). \quad (11)$$

Similarly, combining inequalities (7) and (8), we obtain

$$q(c,S) \geq q(c,F). \quad (12)$$

Now, by (11) and (12), we have that

$$q(c,S) = q(c,F). \quad (13)$$

A simple calculation yields that

$$q(c,S) = \frac{p(H,C,c)\pi_\theta\pi_\omega}{p(H,C,c)\pi_\theta\pi_\omega + p(L,T,c)(1-\pi_\theta)(1-\pi_\omega)}$$

$$q(c,F) = \frac{[1 - p(H,C,c)]\pi_\theta\pi_\omega}{[1 - p(H,C,c)]\pi_\theta\pi_\omega + [1 - p(L,T,c)](1-\pi_\theta)(1-\pi_\omega)}.$$

Thus, $q(c,S) = q(c,F)$ implies that $p(H,C,c) = p(L,T,c)$, which is ruled out by assumption, thus leading to a contradiction. ■

Proof of Proposition 4. Upon receiving a signal, s, the agent forms the following beliefs about his own ability:

$$\pi_\theta(L) = \Pr\{\theta = H|s = L\} = \frac{\pi_\theta(1-k)}{\pi_\theta(1-k) + (1-\pi_\theta)k} \quad (14)$$

$$\pi_\theta(H) = \Pr\{\theta = H|s = H\} = \frac{\pi_\theta k}{\pi_\theta k + (1-\pi_\theta)(1-k)} \quad (15)$$

where $\pi_\theta(s)$ denotes the probability that the agent is of high ability given that he received signal s. Note that for $k > \frac{1}{2}$, we have $\pi_\theta(H) > \pi_\theta(L)$. Suppose this strategy profile were an equilibrium. Consider the complex state, $\omega = C$. Notice that the posteriors induced by the strategy profile are identical to those in Proposition 1. Write

$$\chi(H,C,c) = p(H,C,c)q(c,S) + (1 - p(H,C,c))q(c,F) \quad (16)$$

$$\chi(L, C, c) = p(L, C, c)q(c, S) + (1 - p(L, C, c))q(c, F). \tag{17}$$

Thus the necessary conditions are as follows. For the agent who has received signal H,

$$\pi_\theta(H)\chi(H, C, c) + (1 - \pi_\theta(H))\chi(L, C, c) \geq \pi_\theta, \tag{18}$$

and for the agent who has received signal L,

$$\pi_\theta(L)\chi(H, C, c) + (1 - \pi_\theta(L))\chi(L, C, c) \geq \pi_\theta. \tag{19}$$

Note that

$$\Pr(s = H) = \pi_\theta k + (1 - \pi_\theta)(1 - k) \tag{20}$$

$$\Pr(s = L) = \pi_\theta k + (1 - \pi_\theta)(1 - k). \tag{21}$$

Multiplying the first necessary condition by $\Pr(s = H)$ and the second by $\Pr(s = L)$ and adding up gives us

$$\pi_\theta \geq \pi_\theta$$

as before, so both the inequalities must be equalities. However then, if we subtract the second equality from the first, we get

$$\chi(H, C, c)[\pi_\theta(H) - \pi_\theta(L)] - \chi(L, C, c)[\pi_\theta(H) - \pi_\theta(L)] = 0. \tag{22}$$

This can be shown to be equivalent to

$$[\pi_\theta(H) - \pi_\theta(L)][p(H, C, c) - p(L, C, c)][q(c, S) - q(c, F)] = 0. \tag{23}$$

Since $\pi_\theta(H) > \pi_\theta(L)$ when $k > \frac{1}{2}$, and since $p(H, C, c) > p(L, C, c)$, it must be then the case that $q(c, S) = q(c, F)$, but this is impossible. A contradiction. ■

Proof of Proposition 5. Suppose this were an equilibrium. Consider the case when the state is trivial, $\omega = T$. Define

$$\chi(H, T, c) = p(H, T, c)q(c, S) + (1 - p(H, T, c))q(c, F), \tag{24}$$

$$\chi(L, T, c) = p(L, T, c)q(c, S) + (1 - p(L, T, c))q(c, F), \tag{25}$$

and, analogously, $\chi(H, T, t)$ and $\chi(L, T, t)$. Necessary conditions in this equilibrium are as follows. For the agent who has received the high signal,

$$\pi_\theta(H)\chi(H, T, t) + (1 - \pi_\theta(H))\chi(L, T, t) \geq \pi_\theta(H)\chi(H, T, c) + (1 - \pi_\theta(H))\chi(L, T, c), \tag{26}$$

and for the agent who has received the low signal,

$$\pi_\theta(L)\chi(H, T, c) + (1 - \pi_\theta(L))\chi(L, T, c) \geq \pi_\theta(L)\chi(H, T, t) + (1 - \pi_\theta(L))\chi(L, T, t). \tag{27}$$

Since $p(H,T,t) = p(L,T,t)$, we have that $\chi(H,T,t) = \chi(L,T,t)$. Thus, the LHS of the first inequality is simply $\chi(H,T,t)$, which is equal to the RHS of the second inequality. Therefore, we have

$$\pi_\theta(L)\chi(H,T,c) + (1-\pi_\theta(L))\chi(L,T,c) \geq \pi_\theta(H)\chi(H,T,c) + (1-\pi_\theta(H))\chi(L,T,c). \quad (28)$$

This implies that

$$[p(H,T,c) - p(L,T,c)][q(c,S) - q(c,F)] \leq 0. \quad (29)$$

Since $p(H,T,c) > p(L,T,c)$, we have that $q(c,S) \leq q(c,F)$. Similarly, by considering the necessary conditions in the state $\omega = C$, we would obtain that $q(c,S) \geq q(c,F)$. Thus, it must be the case that $q(c,S) = q(c,F)$. Tedious computations yield the following expression for $q(c,S)$:

$$\frac{p(H,T,c)(1-k)\pi_\theta\pi_\omega^{'} + p(H,C,c)k\pi_\theta\pi_\omega}{p(H,T,c)(1-k)\pi_\theta\pi_\omega^{'} + p(H,C,c)k\pi_\theta\pi_\omega + p(L,T,c)k\pi_\theta^{'}\pi_\omega^{'} + p(L,C,c)(1-k)\pi_\theta^{'}\pi_\omega}$$

where $\pi_\omega^{'} = 1-\pi_\omega$ and $\pi_\theta^{'} = 1-\pi_\theta$. The expression for $q(c,F)$ is identical except for the fact that all $p(\cdot,\cdot,\cdot)$ are replaced by $1-p(\cdot,\cdot,\cdot)$. Given the parameters of the model, the equation $q(c,S) = q(c,F)$ defines a polynomial in k which can have at most a finite number of roots. This is easiest to see in the case when $\pi_\omega = \frac{1}{2}$ when the resulting polynomial is linear, thus resulting in at most a single value of k for which the equation is satisfied. ■

Proof of Proposition 6. We prove the result for the case where $p(\theta,T,\alpha) > p(\theta,C,\alpha)$, for all type-action pairs (θ,α). A similar argument proves the claim for the case where the preceding inequality is reversed.

Let the state be $\omega = T$. If the first-best were to be an equilibrium, then the following would hold:

$$\begin{aligned}
p(L,T,t)q(t,S) + [1-p(L,T,t)]q(t,F) &\geq p(L,T,c)q(c,S) + [1-p(L,T,c)]q(c,F) \\
p(H,T,t)q(t,S) + [1-p(H,T,t)]q(t,F) &\geq p(H,T,c)q(c,S) + [1-p(H,T,c)]q(c,F).
\end{aligned}$$

Due to type-monotonicity, under the first-best profile, it is always true that $q(c,S) > q(c,F)$. Now, state-monotonicity implies that

$$\begin{aligned}
p(L,T,t)q(t,S) + [1-p(L,T,t)]q(t,F) &> p(L,C,c)q(c,S) + [1-p(L,C,c)]q(c,F) \\
p(H,T,t)q(t,S) + [1-p(H,T,t)]q(t,F) &> p(H,C,c)q(c,S) + [1-p(H,C,c)]q(c,F).
\end{aligned}$$

Multiply each inequality by the prior probabilities $1-\pi_\theta$ and π_θ respectively. The law of iterated expectation implies that adding up the inequalities will yield

$$\pi_\theta > \pi_\theta,$$

a contradiction. ■

References

Banerjee, A. 1992. A simple model of herd behavior. Quarterly Journal of Economics 107, 797-817.

Biglaiser, G., Mezzetti, C. 1997. Politicians' decision making with re-election concerns. Journal of Public Economics 66, 425-447.

Bikhchandani, S., Hirshleifer, D., Welch,I., 1992. A theory of fads, fashion, custom, and cultural change as information cascades. Journal of Political Economy 100, 992-1026.

Benabou, R., Laroque,G., 1992. Using privileged information to manipulate the markets: Insiders, gurus and credibility. Quarterly Journal of Economics 107, 921-58.

Bornstein, R., 2003. Why college presidents don't last. The Chronicle of Higher Education, 14 November 2003, B20.

Brandenburger, A., Polak, B., 1996. When managers cover their posteriors: Making the decisions the market wants to see. RAND Journal of Economics 27, 523-541.

Cornell, B., 2004. Compensation and recruiting: Private universities vs private corporations. Journal of Corporate Finance 10, 37-52.

Crawford, V., Sobel, J., 1982. Strategic information transmission. Econometrica 50, 1431-1451.

Dasgupta, A., Prat, A. 2008. Information aggregation in financial markets with career concerns. Journal of Economic Theory 143, 83-113.

Dewatripont, M., Jewitt, I., Tirole, J. 1999. The economics of career concerns, part II: Application to missions and accountability of government agencies. Review of Economic Studies 66, 199-217.

Dow, J., Raposo, C. 2005. CEO compensation, change, and corporate strategy. Journal of Finance 60, 2701-2727.

Ely, J., Fudenberg, D., Levine,D., 2008. When is reputation bad? Games and Economic Behavior 63, 498-526.

Ely, J., Valimaki, J., 2003. Bad reputation. Quarterly Journal of Economics 118, 785-814.

Fudenberg, D., Tirole, J., 1986. A "signal-jamming" theory of predation. RAND Journal of Economics 17, 366-376.

Geanakoplos, J., Pearce, D., Stachetti, E., 1989. Psychological games and sequential rationality. Games and Economic Behavior 1, 60-79.

Holmstrom, B., 1982 [1999]. Managerial incentive problems: A dynamic perspective. In: Essays in Economics and Management in Honor of Lars Wahlbeck. Helsinki: Swedish School of Economics. Reprinted in Review of Economic Studies 66, 169-182.

Holmstrom, B., Ricart-i-Costa, J., 1986. Managerial incentives and capital management. Quarterly Journal of Economics 101, 835-60.

Inderst, R., Mueller, H. 2008. CEO replacement under private information. Working paper, NYU.

Li, W., 2007. Changing one's mind when the facts change: Incentives of experts and the design of reporting protocols. Review of Economic Studies 74, 1175-1194.

Milbourn, T., Shockley, R., Thakor, A., 2001. Managerial career concerns and investments in information. RAND Journal of Economics 32, 334-351.

Morris, S., 2001. Political correctness. Journal of Political Economy 109, 231-265.

National Audit Office, 2000. Supporting innovation: Managing risk in government departments. Report by the Comptroller and Auditor General, United Kingdom, 17 August 2000.

Ottaviani, M., Sorensen, P., 2006a. Reputational cheap talk. RAND Journal of Economics 37, 155–175.

Ottaviani, M., Sorensen, P., 2006b. Professional advice. Journal of Economic Theory 126, 120-142.

Prendergast, C., Stole, L., 1996. Impetuous youngsters and jaded old-timers: Acquiring a reputation for learning. Journal of Political Economy 104, 1105-34.

Scharfstein, D., Stein, J., 1990. Herd behavior and investment. American Economic Review 80, 465-479.

Sobel, J., 1985. A theory of credibility. Review of Economic Studies 52, 557-573.

Suurmomd, G., Swank, O., Visser, B., 2004. On the bad reputation of reputational concerns. Journal of Public Economics 88, 2817-2838.

U.K. Practitioner's Guide to Senior Civil Service Reward, Benefits and Recruitment (2007). http://www.civilservice.gov.uk/management/performance/publications/doc/ HR_Reward_guide_2007.doc

Zwiebel, J., 1995. Corporate conservatism and relative compensation. Journal of Political Economy 103, 1-25.