Monitoring your friends, not your foes: strategic ignorance and the delegation of real authority

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Monitoring Your Friends, Not Your Foes: Strategic Ignorance And The Delegation Of Real Authority*

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Abstract

In this laboratory experiment we study the use of strategic ignorance to delegate real authority within a firm. A worker can gather information on investment projects, while a manager makes the implementation decision. The manager can monitor the worker. This allows her to better exploit the information gathered by the worker, but also reduces the worker's incentives to gather information in the first place. Both effects of monitoring are influenced by the interest alignment between manager and worker. Our data confirms the theoretical predictions that optimal monitoring depends non-monotonically on the level of interest alignment. We also find evidence for hidden costs of control and preferences for control, but these have no substantial effects on organizational outcomes.

JEL: D20, D40, D63, D82, J30

Keywords: Delegation, Real Authority, Strategic Ignorance.

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1 Introduction

Numerous influential theoretical papers show that, in a variety of strategic situations, more information may hurt an individual. The underlying intuition is that if it is common knowledge that an individual is better informed, this may change the behavior of other individuals. This change in behavior can be detrimental to the better informed individual. Consequently, rational individuals may stay ignorant for strategic reasons.

One situation where strategic ignorance is likely to play a key motivational role is the effective delegation of decision rights within organizations.[1] This argument is formally developed in a pioneering contribution by Aghion and Tirole (1997). In their model a worker rightly fears to be overruled by his manager only if the latter is well-informed about the consequences of the operational decisions. This fear thwarts the worker's incentives to gather important information. An uninformed manager can credibly commit not to overrule, since she does not know the appropriate operational decision. Realizing that his preferred decision will be implemented, the worker has stronger incentives to gather information. Strategic ignorance can thus be a crucial tool to delegate effective control over decisions - called real authority - to lower level employees.

The present paper investigates strategic ignorance and the delegation of real authority in a controlled laboratory experiment. We consider the following adapted version of Aghion and Tirole (1997). A manager hires a worker to screen several potentially profitable investment projects. The payoffs associated with these different projects are initially unknown to both manager and worker. The exact strategic interaction between manager and worker runs as follows. First, the manager decides whether or not to monitor the worker at some costs.[2]

[1]The notion that less information may be beneficial has also been used in the analysis of vertical integration in Riordan (1990) and privatization in Schmidt (1996). Further, Gul (2001) shows in a hold-up context that less information may be beneficial for an individual as asymmetric information improves the investment incentives for other individuals. In finance Dewatripont and Maskin (1995) and Park and Shen (2008) demonstrate that a lack of information allows lenders to credibly commit not to refinance projects. This reduces problems of moral hazard and adverse selection from the borrowers' side.

[2]The binary monitoring choice can be interpreted as choosing between a more and a less efficient monitoring technology. Cremer (1995) develops a related model along these lines. Alternatively, the binary choice can be interpreted as choosing between delegating the monitoring to a supervisor versus doing the monitoring yourself; see Strausz (1997). In reduced form the binary monitoring choice also represents the choice between a large and a small span of control as in Aghion and Tirole (1997).

Second, the worker observes the manager's monitoring decision and then decides whether to gather costly information on the projects or not. If the worker collects information, he learns the payoffs of each of the projects. Otherwise he does not learn anything. No matter whether the worker is informed or not, he next recommends a project to the manager. Thirdly, the manager observes whether the worker has gathered information. He also observes the latter's recommendation. The manager finally decides which project to implement.

The manager's information when deciding on which project to implement depends on her monitoring choice, the information gathering choice of the worker, and the recommended project. If the worker does not gather information, he and the manager never receive any information, independent of whether the manager monitors or not. If the worker does gather information and the manager monitors, the manager receives the same information as the worker. Matters are more complicated if the worker gathers information and the manager does not monitor. We consider two variations in our experiment: under "hard information" the manager can verify any information presented by the worker. She then learns the payoffs associated with the recommended project. The payoffs associated with the other projects are not revealed to the manager. Under "soft information" the manager never learns the payoffs of any project, but only sees which project is recommended by the worker.

Parameters are chosen such that a manager who does not monitor the worker follows the worker's recommendation if the latter recommends his - the worker's - most preferred project. Our experimental design thus captures the essential observation by Aghion and Tirole (1997) in the sense that the manager's decision whether or not to monitor is governed by two opposing forces. If the worker gathers information, monitoring allows the manager to push through her most preferred project instead of the one most preferred by the worker. But since the worker anticipates that he will be overruled, monitoring reduces the worker's incentives to gather information. The strength of these effects, and thus equilibrium behavior, depend on the interest alignment between manager and worker. As our main treatment variation we therefore consider three different levels of interest alignment. Under "full interest alignment" the manager does not monitor since an informed worker recommends the project that is preferred by both. Under "strong interest alignment" the manager monitors since he can thus implement his most preferred project without destroying the worker's incentives to gather information. Under "weak interest alignment" the manager does not monitor as this would discourage the worker's information gathering. Theory thus predicts that monitoring only

occurs when interest alignment is strong, whereas there is no monitoring under full and weak interest alignment.

Our main result is as follows. Monitoring rates follow the non-monotonic pattern predicted by theory. In somewhat prosaic terms, we find that managers are more likely to monitor their lukewarm friends than their foes. The main driving force here is that monitoring decreases the worker's incentives to gather information if preferences are weakly aligned. In line with standard theory, we thus obtain strong empirical evidence for the motivational costs of control.

Our data also suggest that some subjects exhibit a behavioral inclination for keeping control. A priori we expected that managers have a natural preference for monitoring, especially when interests are more dispersed. One reason for this is that, in non-strategic situations, people frequently appear to be guided by an information bias: they display a positive willingness to pay for irrelevant or even harmful information.[3] Another intuitive reason is that in practice managers often seem to display a preference for keeping control. Rather than emphasizing the perils of lost control, the popular business press like Manzoni and Barsoux (1998) and Herzberg (2003) thus frequently warns for the negative consequences of "micromanagement," where managers closely observe and control their employees. Careful case studies like Foss (2003) provide illustrative evidence suggesting that meddling with subordinates' decisions is very tempting for top management, even though it can lead to severe losses in employee motivation.

Because behavioral preferences for keeping control are likely to be linked to the perceived informativeness of the situation, we vary in our experiment whether recommendations of the workers are based on hard or soft information. In the model of Aghion and Tirole (1997, p.7) equilibrium predictions are essentially the same in both scenarios. This also holds in our setup since under both information structures the worker has an incentive to recommend his most preferred project. In the most plausible equilibrium of the cheap-talk recommendation-game with soft information, an uninformed manager infers that the recommended project equals the worker's most preferred one. If managers have a preference for control, however, one would expect monitoring rates to be higher under soft than under hard information. This is the case because monitoring then provides managers with relatively more – though

[3]See for example Loewenstein, Moore, and Weber (2006) for experimental evidence.

essentially useless – information. We indeed find that managers are more likely to monitor when information is soft than when information is hard, irrespective of the level of interest alignment. However, the increase in monitoring is statistically significant only when preferences are fully aligned. We thus conclude that our experiment produces tentative empirical evidence for the existence of preferences for control.

Our experiment also contributes to the literature on the behavioral consequences of exerting control. Whereas our design focuses on the "overt costs of control," Falk and Kosfeld (2006) show in an important recent contribution that there may also exist so-called "hidden costs of control." In their experiment control lowers workers' intrinsic motivation to exert effort to such an extent so that the predicted benefits of control are more than nullified. In the treatment with strong interest alignment we in fact find that monitoring reduces information gathering (albeit differences are insignificant). Further, information gathering rates of monitored workers are lower under strong interest alignment as compared to full interest alignment, even though in both treatments monitoring should not discourage information gathering. Our data are thus mildly supportive for the argument by Falk and Kosfeld.

However, our results actually also point to the existence of "hidden returns of control." In our treatment with full interest alignment, monitoring significantly increases workers' inclination to gather information. This holds although standard theory predicts that monitoring should have no impact. A plausible explanation for this finding is that with full interest alignment workers do not consider being monitored as being controlled. The manager rather signals that she is willing to bear some costs to make sure that the mutually preferred project is chosen. Monitoring can then be seen as "supportive." When preferences are not fully aligned, monitoring provides managers with the opportunity to opportunistically overrule workers' recommendations. Being monitored - and the experience of being overruled - can then be interpreted as being controlled. This reduces worker motivation.[4]

This paper proceeds as follows. In the next section we discuss further related experimental literature. In Section 3 we describe our model of delegation and formally derive the theoretical

[4]Our findings thus support the existing experimental evidence on the hidden benefits of control. For example, Fehr and Rockenbach (2003) find that sanctions that are perceived as selfish may have a negative effect on altruistic cooperation, whereas sanctions that are perceived as fair do not affect altruistic cooperation or may even enhance cooperation. Ariely, Kamenica, and Prelec (2008) show in their experiment that if monitoring is perceived as interest in the work done, it may increase worker motivation.

predictions. In Section 4 we present the details of our experimental design, while in Section 5 we report our results. We conclude in Section 6.

2 Further Related Literature

Apart from the connected papers discussed in the introduction, our paper also contributes to an emerging experimental literature on strategic ignorance in bargaining contexts. If two parties in a bargaining game make simultaneous claims regarding the surplus division, valuable trades are lost if claims are incompatible. Such bargaining break-downs can be avoided if one party makes its claim knowing already the claim by the other. But more information reduces the bargaining power of the informed party, because the uninformed party effectively becomes first mover and thus can formulate a take-it-or-leave-it claim. In their ultimatum game experiment, Poulsen and Tan (2007) indeed show that information about the acceptance threshold set by one party backfires for the informed party, although the overall effect is small due to the presence of social preferences. Poulsen and Roos (2010) further test whether subjects in a Nash demand game understand that more information can hurt. They find that subjects learn to avoid harmful information. In the above experiments more information hurts a party as it weakens its bargaining position. In our setup more information – more monitoring – puts the manager in too strong a position. The latter only hurts the manager if the worker anticipates that he will be overruled, and therefore does not gather information. Although the strategic situation is thus different, our results corroborate the existing evidence.

Our experiment further connects to Fehr, Herz, and Wilkening (2010) who focus on the motivational consequences of *formal delegation*. In their setup the manager can credibly commit to delegate the final decision to the worker. We are more sympathetic to Baker, Gibbons, and Murphy (1999) who argue on p.56 that " ...subordinates' decisions rights are loaned not owned." The final decision right thus always resides at the top of an organization.[5] In our experiment the manager can thus effectively delegate decision rights only by purposely remaining ignorant. Although formal delegation is not possible in our setup, the patterns of delegation that we find are actually more consistent with the predictions by Aghion and Tirole than the patterns of delegation found by Fehr, Herz, and Wilkening (2010). A second major difference between the two studies is our approach towards understanding subjects' preferences for control. In both papers we observe a tendency towards too little delegation.

[5]This view is also supported by the case study of Foss (2003).

But only we vary whether information is hard or soft. This allows us to establish a causal link between the informativeness of the situation and subjects' behavioral inclination to keep too much control.

3 Model

Our model of delegation adapts the pioneering contribution by Aghion and Tirole (1997) for implementation in a laboratory experiment. In their model a manager and a worker simultaneously decide how much to invest in a costly and stochastic information gathering technology. The worker only gets real authority if he does receive information while the manager happens to receive no informative signal on the projects. We make the following adaptations to get a clean experimental test of the essential mechanism from Aghion and Tirole (1997). First, managers and workers make binary information gathering choices. This simplifies comparisons when analyzing the impact of information gathering by the manager on the information gathering by the worker. Second, managers first decide whether to monitor their worker or not; upon seeing their choices workers then decide whether to gather information on the investment projects or not. We can therefore directly see whether monitoring by managers discourages information gathering by workers. Thirdly, the information that managers and workers receive is fully determined by their behavior. Since no chance moves are involved, we need not worry that subjects make mistakes when dealing with probabilities. In the following we describe our theoretical setup in more detail.

3.1 Baseline Model of Delegation

Consider a firm that consists of a manager and a worker. In this firm some investment project $k \in \{1, 2, .., K\}$ must be implemented. Projects differ in the payoffs they yield to manager and worker. The sets of possible payoffs are $M = \{m_1, m_2, .., m_K\}$ for the manager and $W = \{w_1, w_2, .., w_K\}$ for the worker. There is a one-to-one correspondence between these sets of payoffs generating exactly K distinct payoff combinations. There is also a one-to-one correspondence between these payoff combinations and the investment projects, so that each payoff combination is connected with exactly one investment project. Manager and worker know the possible payoff combinations, but they initially do not know which payoff combination is connected to which investment project. There are $K!$ different ways of assigning the K payoff combinations to the K investment projects, and initially each of these $K!$ possible assignments is equally likely. Formally, the assignment of payoff combinations

to the investment projects depends on an initially unknown state of the world $\theta \in \Theta$, with $\Theta = \{1, 2, ..., K!\}$, where the prior probability for any the state of the world equals $1/K!$. Given state of the world θ project k yields payoffs $f_m(k, \theta)$ to the manager and payoffs $f_w(k, \theta)$ to the worker.

3.2 Sequence of Actions and Information

Within firms the information generation process is decentralized, whereas the manager always keeps formal authority. For this reason decision rights might have to be effectively delegated to the worker to improve implementation decisions and incentives to gather information. The interaction between manager and worker is as follows. The manager first chooses whether to monitor the worker or not. Monitoring costs the manager $\phi > 0$. After observing the monitoring decision, the worker decides whether to collect information or not. Collecting information costs the worker $\psi > 0$. If the worker collects information, he learns the state of the world $\theta \in \Theta$. Otherwise, he learns nothing. The worker then recommends one of the projects $r \in \{1, 2, .., K\}$ to the manager. The manager observes the recommendation and implements a project.

The information the manager holds after receiving the worker's recommendation depends on her monitoring choice and the worker's information gathering choice. If the worker gathers no information, the manager never has any information on any project. This holds no matter whether the manager monitors the worker or not. If the worker gathers information, the information of the manager depends on her monitoring choice. If she monitors the worker, she has the same information as the worker. She then knows the state of the world θ and thus the payoffs of all investment projects. If she does not monitor the worker, she has information only on the project that is recommended by the worker. She therefore knows the payoffs $f_m(r, \theta)$ and $f_w(r, \theta)$ belonging to the recommended project r but not the state of the world θ.

3.3 Interest Alignment

In our experiment we are interested in how behavior changes as we change the interest alignment of the manager and the worker. Intuitively speaking, interests are aligned if both manager and worker want the same project to be implemented. We formalize this notion as follows. We assume that the sets of payoffs M and W have unique maxima. Let m_m be the resulting payoff for the manager if her most preferred project is implemented. Define w_w

analogously. Given that the manager gets her most preferred project we are interested in the resulting payoff for the worker. Thus, let w_m be the payoff for the worker if the implemented project is most preferred by the manager. Equally, let m_w be the payoff for the manager if the implemented project is most preferred by the worker. We define the vector

$$(m_m - m_w, w_w - w_m) \tag{1}$$

as our inverse measure for the interest alignment between manager and worker. It is two-dimensional because collapsing our measure into one dimension implies that in strategically different situations - with different theoretical predictions - the interest alignment between worker and manager could be the same. A draw-back of our two-dimensional measure is that some strategic situations cannot be ordered.[6]

3.4 Equilibrium Concept and Beliefs

In the above dynamic game the manager has incomplete information on the projects' payoffs if she does not monitor and the worker gathers information. Given the recommended project the manager has to form beliefs about the state of the world. The relevant equilibrium concept is thus perfect Bayesian equilibrium. This implies the following. Whenever manager or worker make decisions without information on the projects - monitoring by the manager, information gathering by the worker, and project recommendation by an uninformed worker - beliefs remain unchanged. However, the manager must update her beliefs after receiving a recommendation by an informed worker. Let $p(\theta'; r, f_m(r,\theta), f_w(r,\theta))$ be her posterior beliefs that the state of the world equals θ' after the informed worker has recommended project r while the state of the world equals θ. This belief depends on the state of the world θ but only via the revealed payoffs of the recommended project; it also depends on the equilibrium recommendation decisions by the worker.

In the following we intuitively describe equilibrium behavior of manager and worker; we will derive exact predictions for the version of the model used in the experiment. We assume that the utility of manager and worker is their payoff from the implemented investment project minus their monitoring or information gathering costs.

[6]For example, Fehr, Herz, and Wilkening (2010) consider two treatments PLOW and PHIGH in which our measures of interest alignment are (20,5) and (5,20). These two treatments thus cannot be ordered according to our criterion.

3.5 Implementation Decisions and Delegation of Real Authority

Proceeding by backwards induction, the equilibrium project implementation choices of the manager are as follows. Suppose first that the worker does not gather information. Since the manager has no information on the projects, any implementation decision is optimal and yields expected payoffs of

$$\frac{1}{K}\sum_{m_i \in M} m_i = \bar{m} \quad \text{and} \quad \frac{1}{K}\sum_{w_i \in W} w_i = \bar{w} \tag{2}$$

for the manager and the worker, respectively. Suppose second that the worker gathers information while the manager monitors the worker. The manager then has full information on all projects and implements a project that yields her the highest payoff m_m and the worker the payoff w_m. Suppose finally that the worker gathers information while the manager does not monitor the worker. The manager then sees the payoffs of the recommended project r only. Together with the equilibrium recommendation choice this reveals some information on the state of the world. The manager now has to decide whether she wants to follow the recommendation or pick another project. She follows the worker's recommendation r only if

$$f_m(r,\theta) \geq \max_{k \in K} \left\{ \sum_{\theta' \in \Theta} p(\theta'; r, f_m(r,\theta), f_w(r,\theta))\, f_m(k,\theta') \right\}. \tag{3}$$

Otherwise, she implements a project k that yields the maximum expected utility given the posterior belief. The implemented project yields her the highest expected payoff given her updated beliefs.

Monitoring affects the distribution of formal and real authority as follows. The manager always has formal authority - she makes the project implementation decision. If the worker gathers information and the manager monitors, she keeps real authority. The reason is that she implements her most preferred project, and there is nothing the worker can do about this as his recommendation has no impact on the implementation choice. If the manager does not monitor, she transfers some real authority to the worker. The reason is that the worker can choose what information to reveal to the manager by recommending a project. The worker now has some real authority since he can influence the final implementation choice.

In Aghion and Tirole (1997) there exists a project that yields the manager a very low payoff in case of implementation. An uninformed manager thus follows the worker's recommendation if an informed worker always proposes his most preferred project. Transforming (3) this

implies

$$m_w > \bar{m}. \tag{4}$$

We take up this assumption, which essentially imposes a minimum level of interest alignment between manager and worker. If the worker gathers information while the manager does not monitor, the worker thus receives all real authority since he can effectively implement his most preferred project. This yields the manager payoff m_w and the worker payoff w_w.

3.6 Information Gathering and Delegation as Worker Empowerment

Building on the implementation choices of the manager, we can now investigate the recommendation behavior and information acquisition choice of the worker. If the worker has not gathered information, his recommendation has no informational content and he and the manager receive expected payoffs $\bar{m}$ and $\bar{w}$. If the worker gathers information and the manager monitors him, the manager implements her preferred project and the worker receives payoff w_m. Finally, if the worker gathers information and the manager does not monitor him, he can implement his most preferred project since by assumption the manager follows his recommendation. The worker then receives payoff w_w. The worker then gathers information only if his increases in expected payoffs exceeds the information gathering costs ψ. We thus must have

$$\bar{w} \leq \begin{cases} w_m - \psi & \text{if the manager monitors} \\ w_w - \psi & \text{if the manager does not monitor.} \end{cases} \tag{5}$$

It is crucial to note that the incentives to gather information depend on whether the manager monitors the worker or not. Monitoring reduces the incentives to gather information by

$$w_w - w_m. \tag{6}$$

This decrease in incentives can result in a loss of initiative as discussed by Aghion and Tirole (1997) and Baker, Gibbons, and Murphy (1999).

3.7 Monitoring and Loss of Control

We finally turn to the monitoring choice of the manager. Whether it is optimal for the manager to monitor depends crucially on whether monitoring discourages information gathering by the worker. There are three cases. First, suppose the worker does not gather information no matter whether the manager monitors or not. In this case the manager always takes an uninformed decision. To save costs the manager optimally refrains from monitoring the worker. Second, suppose the worker gathers information no matter whether he is monitored

or not. If the manager monitors, she then gets her most preferred project and thus payoff m_m. If she does not monitor, the worker manages to push through his most preferred project and the manager gets payoff m_w. The manager then monitors the worker only if

$$m_m - m_w \geq \phi. \tag{7}$$

In this situation the manager loses payoffs $m_m - m_w$ by delegating real authority to the worker; this is the consequence of her loss of control as discussed by Aghion and Tirole (1997) and Baker, Gibbons, and Murphy (1999). Finally, suppose the worker gathers information if and only if he is not monitored. If the manager monitors, the worker gathers no information. The manager then makes an uninformed choice and gets expected payoff $\bar{m}$. In addition she incurs the monitoring costs ϕ. If the manager does not monitor, the worker gathers information and recommends his most preferred project. The manager then gets payoff m_w which exceeds the expected payoff resulting from an uninformed implementation decision by assumption (4).

3.8 Strategic Ignorance and Interest Alignment

In her decision whether or not to monitor the worker, the manager thus has to take into account two effects. First, monitoring reduces the worker's incentives to gather information by (6). Second, monitoring allows the manager to push through her most preferred project in case the worker gathers information.[7] In this case the manager gains

$$m_m - m_w. \tag{8}$$

Both these effects depend on the interest alignment. On the one hand, the reduction in incentives to gather information (6) decreases in the interest alignment when keeping the payoffs m_m and m_w for the manager fixed. This makes monitoring more attractive. On the other hand, the gains from keeping control (8) also decrease in the interest alignment when keeping the payoffs w_w and w_m for the worker fixed. This makes monitoring less attractive. Comparative static predictions result from these two countervailing effects, thus equilibrium monitoring decisions can depend on the interest alignment in a non-monotonic way. We test exactly such non-monotone comparative static predictions in our experiment.

3.9 Preference for Control: Soft versus Hard Information

As argued in the introduction, empirical research suggests that subjects might have a behavioral preference for keeping control or gathering information. For once, subjects might enjoy

[7] In our model monitoring does not give the manager useful decision making power in case the worker does not gather information - in that case the manager must make an uninformed choice.

being in control, or their monitoring behavior might be triggered by an instinct to gather information whenever possible. To investigate such behavioral preferences for control, we adapt the above model so that managers might be more tempted to monitor because this provides them with relatively more information. However, to isolate the potential impact of a behavioral bias, the additional information in the adapted model is useless unless subjects have a preference for control. The only difference to the original setup lies in the information that is available to the manager if she chose not to monitor and the worker chose to collect information. In the original setup - we call it hard information - the manager observes the actual payoffs of the proposed project. In the adapted setup - we call it soft information - the manager no longer observes the payoffs of the proposed project. We thus introduce cheap talk between informed worker and uninformed manager.

Although the strategic situation is different under hard and soft information, we argue that economic outcomes should be the same if subjects have no preference for control. In the cheap-talk sub-game between uninformed manager and informed worker there are many equilibria; in particular there exists a babbling equilibrium in which the worker makes a random suggestion, and the manager makes a random implementation decision. Since the recommendation of the worker has then no information content, implementing a project at random is optimal for the manager. Given that the recommended project has no impact on the implementation decisions, randomly recommending a project is optimal for the worker. Yet given assumption (4) there also exists an equilibrium in which the worker always proposes his most preferred project and the manager follows the recommendation. We expect this equilibrium to be played, a conjecture that can also be tested with the data. Equilibrium predictions for the delegation models with hard and soft information are then the same. However, if we see that monitoring rates are higher under soft than under hard information, this suggests that subjects have a preference for control.

4 Experimental Design

4.1 Parameters and Equilibrium Predictions

In our experiment we test the non-monotonic impact of the interest alignment of manager and worker on equilibrium monitoring and information gathering decisions. We consider three treatments: full, strong and weak interest alignment. In all treatments there are three investment projects, while $B = W = \{15, 80, 100\}$ so that $b_b = w_w = 100$ and $\bar{b} = \bar{w} = 65$.

Table 1 shows the possible payoff combinations of the investment projects for each treatment separately, and which projects are preferred by manager and worker.

Table 1: Payoff Combinations in Treatments

Treatment	Manager Preferred	Worker Preferred	Others
Full Alignment	(100,100)		(80,80) (15,15)
Strong Alignment	(100,80)	(80,100)	(15,15)
Weak Alignment	(100,15)	(80,100)	(15,80)

Note: the table shows the possible payoff combinations. The first entry corresponds to the payoff for the manager, the second entry corresponds to the payoff for the worker.

The inverse measures for the alignment of interest are thus (0,0) in full alignment, (20,20) in strong alignment, and (20,85) in weak alignment. Our measure of interest alignment therefore generates a clear ordering. In the treatments with strong and weak interest alignment, the manager actually gets the same payoff if the workers implements his most preferred project. The gains of keeping control as measured in (8) thus equals 20 in both treatments. However, the loss of incentive as measured in (6) strongly increases from 20 to 85. The monetary costs for monitoring ϕ and information gathering ψ are 10 in all treatments.

Given these parameters the theory generates the following predictions. With full interest alignment both manager and worker have the same most preferred project. The manager thus implements the worker's most preferred project. Since the worker is never overruled, his incentives to gather information are not affected by whether the manager monitors him or not. The worker gathers information since $w_w - \psi = 100 - 10 > 65 = \bar{w}$. As the worker implements the manager's most preferred project anyway, the manager does not monitor in equilibrium to save costs. With strong interest alignment an informed manager implements her most preferred project. However, the costs of gathering information are sufficiently low so that the worker nevertheless has incentives to gather information even if he is monitored because $w_b - \psi = 80 - 10 > 65 = \bar{w}$. It is then optimal for the manager to monitor the worker as $w_w - w_b = 100 - 80 > 10 = \phi$. Under weak alignment an informed manager again implements her most preferred project, but this time this really hurts the worker. Consequently, the

worker only gathers information if the manager abstains from monitoring since $w_b - \psi = 15 - 10 < 65 = \bar{w}$. Because the manager otherwise has to make an uninformed implementation decision, it is optimal for her not to monitor the worker. Under weak alignment we should thus observe that the manager uses strategic ignorance to effectively delegate real authority to the worker. These equilibrium predictions are summarized in Table 2.

Table 2: Equilibrium Predictions in Treatments

Treatment	Monitoring	Information Gathering	Discouragement
Full Alignment	No	Yes	No
Strong Alignment	Yes	Yes	No
Weak Alignment	No	Yes	Yes

Note: equilibrium predictions are based on the assumption that subjects maximize their monetary payoffs. Discouragement means that monitoring by managers discourages information gathering by workers.

4.2 Procedures

For each treatment we ran three sessions. Each session contained 18 or 20 participants. Overall 170 subjects participated in the experiment. The subject pool was the undergraduate student population of the University of Amsterdam. Most of them were students in economics (58%). The experiment was programmed using the z-tree programming package by Fischbacher (2007).

Each session consisted of four parts. Subjects were informed about this at the beginning of the experiment, but the subjects did not learn anything about the content of the different parts until the part actually started. After completing the instructions of part 1 and answering some control questions, each subject learned his role (either Manager or Worker). Throughout the experiment subjects kept the same role. The experiment was framed in an organizational setting. Hence, in the experiment we used the same phrasing as here. In total the first two parts of each session contained 30 periods. The experiment used a stranger design. Each period the manager and the worker were anonymously and randomly matched. In each session we had two matching groups of 8 or 10 subjects. This yielded six independent observations per treatment.

The first part contained 20 periods in which subjects played the baseline model with hard information as explained in Section 3. At the end of each period, a summary of the managers' and worker's decisions and the resulting payoff in that period was shown to the subjects. The second part contained 10 periods in which subjects played the model with soft information. The interest alignment was kept constant. We also conducted two additional parts in which we tried to measure subjects' preferences for control more directly. Unfortunately, our efforts were in vain. We briefly come back to these parts only in the conclusion.

In part one and two the payoff to each subject in each period equalled the number of points of the implemented project minus possible costs the subjects incurred by becoming informed. The overall payoff for each subject equals the sum of points earned over all periods. The conversion rate was 150 points for 1 euro. Apart from that the subjects received 5 euro for filling in the questionnaire. Subjects earned on average 23 euros for 90-100 minutes. Sample instructions are included at the end of the paper.

5 Results

In this section we first investigate how the interest alignment affects aggregate behavior of managers and workers. Detailed summary statistics can be found in Tables 3 and 4 in the appendix. Some observations are immediate. First, managers' monitoring decisions follow the pattern as predicted by theory: under strong interest alignment managers keep real authority, whereas under full and weak interest alignment they delegate real authority to workers by remaining ignorant. Second, monitoring harms information acquisition only in the treatment with weak interest alignment. Managers' monitoring behavior thus seems to be an optimal response to workers information gathering. Since managers delegate real authority under weak interest alignment, workers by and large gather information in all treatments. Finally, monitoring occurs quite often under full interest alignment. Moreover, changing from hard to soft information increases monitoring behavior. This suggests that some managers have a preference for control.

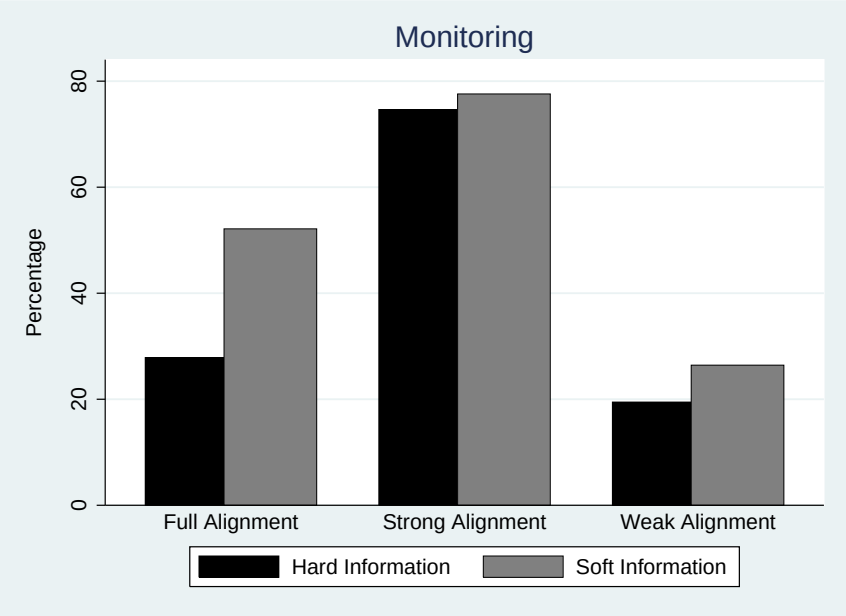

Figure 1: Monitoring

In the remaining section we look at the above findings in greater detail. We first study managers' monitoring behavior and then investigate workers' information gathering decisions conditional on whether managers have kept real authority or not. We next look at the project recommendation and implementation stage. Finally, we analyze how the type of information (hard or soft) impacts on workers' monitoring choices.

5.1 Monitoring behavior

Figure 1 summarizes the monitoring behavior conditional on both interest alignment and on whether information is hard or soft. The exact monitoring fractions can be found in Table 5 in the appendix. Monitoring rates follow the non-monotonic comparative statics as predicted by theory: with hard information monitoring increases from 29% to 75% as we change from full to strong interest alignment, and monitoring decreases to 19% as we change to weak interest alignment. The pattern is the same with soft information. A succinct way to reformulate the data is that managers are indeed more likely to monitor their lukewarm friends than their foes.

We next verify whether the observed differences are statistically significant. To take account of the interdependencies between subjects from the same matching group, all non-parametric tests are based on the comparison of matching group averages. Table 6 in the appendix

reports the outcomes of the performed between-group comparisons based on Wilcoxon rank-sum tests. In all tables most numbers are rounded, where a reported p-value of 0.00 indicates that the p-value is less than 0.005.

The p-values reveal that managers are significantly more likely to monitor when interest alignment is strong than when interest alignment is weak. Moreover, monitoring fractions do not differ between full and weak interest alignment with hard information. The single deviation from standard theory is that the monitoring rate in case of full interest alignment is very high at 53% when information is soft even once learning effects are accounted for. In fact, the high monitoring rate is then not significantly lower than the monitoring rate of 74% under strong alignment and it is significantly higher than the monitoring rate of 20% under weak alignment. We summarize our findings as follows.

Result 1 (Monitoring)**.** *(a) Monitoring occurs significantly more often under strong interest alignment than under weak interest alignment. (b) In case of soft information, the monitoring rate under full interest alignment is well above the predicted rate of zero and does not differ significantly from the observed rate under strong interest alignment.*

5.2 Information Gathering

To better understand managers' monitoring behavior, we next turn to workers' information gathering decisions. Since the information gathering is not sensitive to the information condition, we pool observations from the parts where information is hard and soft. Figure 2 summarizes our finding. The exact information gathering rates conditional on hard and soft information plus all non-parametric tests can be found in Tables 7 and 8 in the appendix.

As predicted by theory monitoring significantly decreases workers' information gathering under weak interest alignment. The difference is not only statistically, but also economically highly significant. The loss of initiative resulting from monitoring makes it optimal for managers to remain ignorant and abstain from monitoring.

Our experiment sheds new light on what Falk and Kosfeld (2006) call "hidden costs of control." These authors show in their experiment that exerting control can erode individuals' intrinsic motivation to cooperate. In our experiment an aversion to being monitored could increase the disincentive effect of monitoring. In consequence, monitoring might discourage information gathering under strong interest alignment, even though information gathering

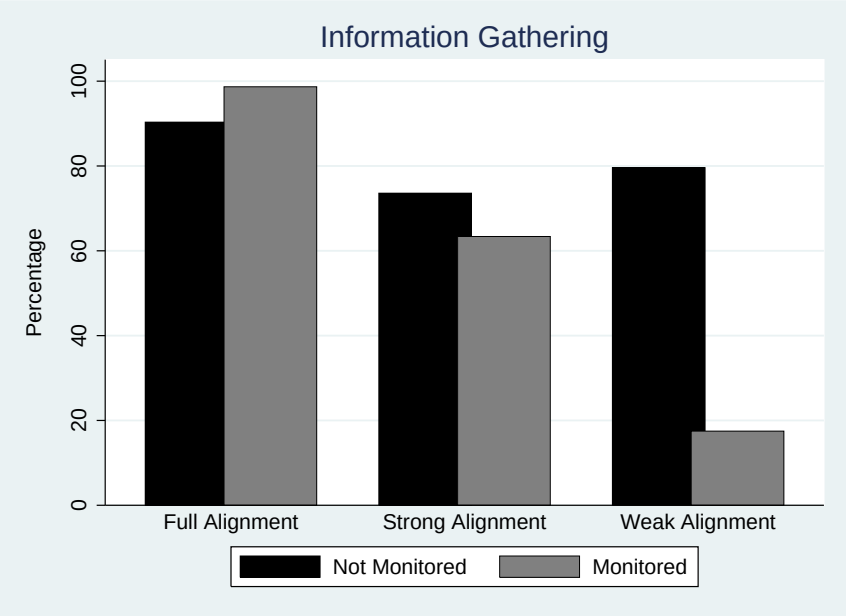

Figure 2: Information Gathering

then maximizes workers' expected payoffs. We find that monitoring reduces information gathering under strong interest alignment with hard information from 77% to 60%, but this effect is statistically not significant. There is no such effect with soft information. Information gathering is unexpectedly infrequent under strong interest alignment as compared to information gathering under full interest alignment, in particular when managers monitor. The non-parametric tests reported in Table 8 indeed show that monitored workers are significantly less likely to acquire information under strong interest alignment than under full interest alignment. This stands in contrast to the theoretical predictions according to which we should observe no treatment difference.

Although our data is thus mildly supportive for the presence of hidden costs of control under strong interest alignment, the observed behavior under full interest alignment suggests that there might also be hidden "benefits of control." In this case monitoring actually *increases* workers' willingness to gather information.[8] A potential explanation here is that, given that interests are fully aligned, workers do not consider being monitored as being controlled. Rather, monitoring signals managers' sincere interest in securing that the best project outcome for both is implemented. By monitoring managers show that they are willing to bear

[8]The increase is statistically significant when information is hard but insignificant when information is soft. There are no learning effects.

some costs as well as to make sure that the mutually preferred project is chosen. From that perspective monitoring can be seen as "supportive." In contrast, when interests are not fully aligned, being monitored may be interpreted by workers as being controlled, because it provides managers with the opportunity to overrule workers to their own private benefit. We summarize our results as follows.

Result 2 (Information Gathering)**.** *(a) Under weak interest alignment, monitoring harms information acquisition by workers. (b) Under full interest alignment, monitoring increases workers' willingness to acquire information (only) when information is hard. (c) Under strong interest alignment, monitoring leads to less information acquisition than under full interest alignment.*

5.3 Recommendation and Implementation

After describing the monitoring and information gathering decisions, we now turn to the recommendation and implementation stage. The general overview depicted in Tables 3 and 4 in the appendix suggests that project implementation decisions are by and large as predicted. In particular, managers typically can implement their most preferred project under strong alignment, whereas workers manage to push through their most preferred project under weak alignment. The delegation of real authority thus reacts to the interest alignment of managers and workers as predicted by theory.

The above mentioned tables only describe the *outcome* of the recommendation and implementation stage. We next take a closer look at the actual proposals and project implementation choices made. If the worker does not acquire information, his recommendation is based on no information at all and thus effectively random. We therefore focus on the observations in which the worker did acquire information. Under full interest alignment, the worker always recommends the project that is best for both and his recommendation is always followed. This holds irrespectively of whether he is monitored or not, and it also does not depend on whether information is hard or soft.[9] Recommendation and implementation decisions are more dispersed when preferences diverge. Table 9 provides an overview of the choices then

[9]For the 520 observations under hard information (Part I) this is literally always the case. Under soft information we observe only 2 exceptions out of 264 observations (in these the worker proposes the project that yields 15 to both; in one of these cases the manager is informed as well and implements the project that yields both 100).

observed, showing that behavior is essentially consistent with the theoretical predictions.[10] This indicates that managers' and workers' behavior in the cheap talk game with soft information is largely consistent with an equilibrium in which workers always propose their most preferred project and managers follow the recommendation.

Numerous experiments suggest that many individuals are not only interested in their own payoff, but are also influenced by fairness or equity concerns. In the context of our experiment, distributional fairness models like Fehr and Schmidt (1999) predict that sufficiently inequity averse informed managers do not implement their favorite project if this really hurts the worker. Intention based fairness models like Rabin (1993) or Dufwenberg and Kirchsteiger (2004) might also suggest that informed managers reciprocate the kind action of workers - gathering information - by not abusing their real authority. This is not what we observe in the data. Even in the treatment with weak interest alignment, informed managers overrule workers to increase their payoffs from 80 to 100 although this reduces the workers' payoffs from 100 to 15 and increases payoff inequality from 20 to 85. This behavioral pattern is particularly striking with hard information, yet even with soft information 60% of monitoring managers implement their favorite project. One reason for this finding could be that our setup does not trigger managers' fairness concerns: they think that since they have the power, it is fine to overrule their workers. Alternatively, managers with fairness concerns might refrain from monitoring in the first place. The subsample of monitoring managers is then predominantly selfish and behaves accordingly. In any case, the data suggest that fairness concerns do not have a strong impact on behavior in the recommendation and implementation stage.

Our results illustrate that ignorance (no monitoring) indeed serves a useful purpose as a commitment device not to overrule the worker. The finding that managers typically do not monitor under weak interest alignment indicates that they see the strategic commitment value of remaining uninformed. We summarize our findings as follows.

[10]Under strong interest alignment uninformed managers do not always follow workers' recommendations as they implement the workers' most preferred project in only around 57% of the cases. In consequence, dominated projects are sometimes implemented by uninformed managers. This happens less frequently under weak interest alignment. Whether information is hard or soft does not seem to have any substantial impact on this behavioral pattern.

Result 3 (Recommendation and Implementation)**.** *(a) Under weak interest alignment project implementation favors workers, whereas under strong interest alignment project implementation favors managers. (b) If managers do not monitor they typically follows their workers' recommendations, whereas if managers monitor they typically overrule their worker to implement their favored project. (c) The type of information (hard or soft) has no effect on project implementation decisions.*

5.4 Preference for Control

So far we have discussed the behavioral consequences of changes in interest alignment. We now investigate how managers' and workers' behavior depends on whether information is hard or soft. Based on the existing literature, making information soft could trigger managers' behavioral inclination to gather information. Figure 1 and Table 5 in the appendix illustrate that managers are more likely to monitor when information is soft than when information is hard. Irrespective of the level of interest alignment the monitoring frequency increases when information becomes soft: it increases by 86% under full interest alignment, by 3% under strong interest alignment, and by 39% under weak interest alignment. However, the increase in monitoring is statistically significant only under full interest alignment. There are no learning effects.

A tentative explanation here is that a preference for "control" boosts managers' incentives to monitor when information is soft. Under full interest alignment this is not expected to adversely affect the worker's subsequent information acquisition behavior, so the manager can simply give in to her inclination to control without bearing costs beyond the direct costs of monitoring. Under weak interest alignment monitoring destroys workers' incentives to gather information. Since the strategic costs of monitoring are thus high, managers delegate real authority to workers. Nevertheless, the increase in monitoring when moving from hard to soft information is almost significant. Under strong alignment managers should monitor anyway. Since there is little scope for control preference to impact behavior, it is perhaps not surprising that we cannot observe a significant increase in monitoring.

Note that the observed increase in monitoring - especially under full interest alignment - cannot be a response to changes in behavior in the information gathering or recommendation and implementation stages. Tables 3, 4, and 9 in the appendix indicate that the type of information (hard or soft) has no impact on behavior in the recommendation and implementation

stage. Concerning the information gathering, signrank tests reveal that only one difference out of twelve comparisons is statistically significant at the 5% level when comparing information gathering fractions across information conditions from Table 7. Under strong interest alignment the information acquisition fraction conditional on being monitored significantly increases when information becomes soft and we consider the second halfs of the periods only (p-value of 0.05). In absolute size the increase is relatively small, from 0.57 to 0.65. There is no significant effect when we take all periods into account. We therefore conclude that the type of information has a negligible impact on workers' information acquisition behavior.[11]

Since the type of information has no substantial effect on recommendation, implementation, and information gathering behavior, the finding that managers in the full alignment condition monitor more under soft information than under hard information suggests a preference for control, rather than being induced by a expected positive reaction of workers. We summarize our findings as follows.

Result 4 (Preference for Control)**.** *(a) Changing the information from hard to soft increases monitoring, but the effect is statistically significant only under full interest alignment. (b) The increase in monitoring is not induced by an expected positive reaction of workers.*

6 Conclusion

In this laboratory experiment we studied whether subjects use strategic ignorance to delegate real authority. In a firm a worker could gather information on investment projects, while a manager finally made the implementation decision. The manager could monitor the worker. For once this allowed her to better exploit the information gathered by the worker. But monitoring also reduced the worker's incentives to gather information in the first place. Both effects of monitoring were influenced by the interest alignment between manager and worker. Optimal monitoring therefore could depend non-monotonically on the interest alignment,

[11] At the 10% level three additional statistically significant differences are found. Under weak interest alignment the information gathering fraction conditional on not being monitored is significantly higher after soft information, both when we consider all periods (p-value of 0.08) or only the second halfs of each part (p-value of 0.08). For the full alignment treatment the fraction conditional on being monitored is significantly lower under soft information when we consider all periods (p-value of 0.09). Both effects make monitoring *less* attractive for the manager under soft information as compared to hard information. These marginally significant differences thus cannot explain why managers monitor more when information is soft than when information is hard.

which we changed in our experiment as our main treatment variation. The data confirms the relationship between interest alignment and delegation as predicted by the theory of Aghion and Tirole (1997). We also found mild empirical evidence for preferences for control and hidden costs of control, but these had no substantial effects on organizational outcomes.

Management studies and the popular business press often argue that many executives are overly inclined to meddle in subordinates' decision making, even though this frequently leads to an enormous loss of employee motivation.[12] Apart from changing the informativeness of the strategic situation, we also tried to measure subjects' preferences for control more directly. In a third part of the experiment, worker or manager again had to decide which project to implement. As before both worker and manager knew the possible payoff combinations of the projects, but neither of the two knew which payoff combination corresponded to which project. In contrast to the previous parts, they now had no opportunity to collect any additional information on the investment projects. Whether worker or manager had the right to choose the project was determined via a first-price auction. First, both worker and manager simultaneously made a bid to buy the implementation decision right. Second, whoever made the highest bid, had to pay his bid, but in turn acquired the right to decide which project was implemented. The final part of the experiment was a questionnaire including a big five personality test from psychology.

Unfortunately, the third part did not add anything to our analysis: even though we do observe some bidding, the bidding behavior was not consistently connected to any prior delegation and monitoring decisions. We concluded that a first-price auction was not a suitable mechanism to elicit subject's willingness to make the implementation decision. Equally, the measures from the big five personality test were uncorrelated to behavior in the experiment. Finding a good experimental setup to directly measure subjects' preferences for control, and connecting these measures to behavior in the laboratory and in the field, thus remain interesting topics for future research.

[12] See Manzoni and Barsoux (1998), Herzberg (2003), and Foss (2003) as cited in the introduction. See also the comments by Williamson (1996, pp.150-151) on the connection between undesirable managerial meddling and desirable selective intervention.

Appendix A: Tables

Aggregate Outcomes

Table 3: Outcomes (Hard Information)

	Monitoring and Information Gathering				Project Implemented		
	No Monitoring		Monitoring				
Treatment	No Info	Info	No Info	Info	$M_{\succ}$	$W_{\succ}$	$d_{\prec}$
Full Alignment	6.96	**65.18**	0.18	27.68	**95.18**		4.82
Strong Alignment	5.52	19.83	29.14	**45.52**	**61.21**	24.14	14.66
Weak Alignment	19.29	**61.25**	15.54	3.93	17.68	**65.00**	17.32

Note: percentage wise overview of outcomes. Predictions from standard theory in bold. $M_{\succ}$ and $W_{\succ}$ refers to manager's and worker's best project, $d_{\prec}$ denotes a dominated project.

Table 4: Outcomes (Soft Information)

	Monitoring and Information Gathering				Project Implemented		
	No Monitoring		Monitoring				
Treatment	No Info	Info	No Info	Info	$M_{\succ}$	$W_{\succ}$	$d_{\prec}$
Full Alignment	4.64	**43.21**	1.07	51.07	**95.71**		4.21
Strong Alignment	8.28	14.14	24.83	**52.76**	**67.24**	17.24	15.52
Weak Alignment	9.29	**64.29**	22.86	3.57	18.21	**62.14**	19.64

Note: percentage wise overview of outcomes. Predictions from standard theory in bold. $M_{\succ}$ and $W_{\succ}$ refers to manager's and worker's best project, $d_{\prec}$ denotes a dominated project.

Monitoring

Table 5: Monitoring

Treatment	Periods	Hard Information	Soft Information	p-values
Full Alignment	All	0.29	0.54	0.04
	2^{nd} Half	0.23	0.53	0.04
Strong Alignment	All	0.75	0.77	0.75
	2^{nd} Half	0.74	0.74	0.75
Weak Alignment	All	0.19	0.26	0.12
	2^{nd} Half	0.09	0.20	0.14

Note: Monitoring fractions. p-values from a Wilcoxon matched-pairs signed-ranks test based on the distribution of matching group averages.

Table 6: Monitoring Treatment Differences

Treatment Comparison	Periods	Hard Information	Soft Information
Full vs. Strong Alignment	All	0.01	0.20
	2^{nd} Half	0.02	0.20
Full vs. Weak Alignment	All	0.52	0.11
	2^{nd} Half	0.52	0.05
Strong vs. Weak Alignment	All	0.00	0.00
	2^{nd} Half	0.00	0.00

Note: p-values from a Wilcoxon rank-sum test based on the distribution of matching group averages.

Information Gathering

Table 7: Information Gathering

Treatment	Periods	Not Monitored	Monitored	p-values
Full Alignment	All	0.89 (0.90)	0.99 (0.97)	0.04 (0.17)
	2^{nd} Half	0.94 (0.94)	1.00 (0.98)	0.09 (0.43)
Strong Alignment	All	0.77 (0.62)	0.60 (0.67)	0.17 (0.89)
	2^{nd} Half	0.83 (0.67)	0.57 (0.65)	0.12 (0.69)
Weak Alignment	All	0.77 (0.88)	0.17 (0.12)	0.03 (0.03)
	2^{nd} Half	0.79 (0.89)	0.02 (0.07)	0.03 (0.03)

Note: Information gathering fractions. p-values from Wilcoxon matched-pairs signed-ranks test based on the distribution of matching group averages. Numbers without brackets refer to the part with hard information; the corresponding numbers for the part with soft information are in parentheses.

Table 8: Information Gathering Treatment Differences

Treatment Comparison	Periods	Not Monitored	Monitored
Full vs. Strong Alignment	All	0.42 (0.02)	0.00 (0.00)
	2^{nd} Half	0.80 (0.03)	0.00 (0.00)
Full vs. Weak Alignment	All	0.04 (0.81)	0.00 (0.00)
	2^{nd} Half	0.02 (0.18)	0.00 (0.00)
Strong vs. Weak Alignment	All	0.26 (0.02)	0.00 (0.00)
	2^{nd} Half	0.11 (0.05)	0.00 (0.00)

Note: p-values from Wilcoxon rank-sum tests based on the distribution of matching group averages. Numbers without brackets refer to the part with hard information; the corresponding numbers for the part with soft information are in parentheses.

Recommendation and Implementation

Table 9: Recommendation and Implementation

Treatment	Monitoring	Project	Recommended	Implemented
Strong Alignment	No	$M_{\succ}$	0.07 (0.02)	0.26 (0.17)
		$W_{\succ}$	0.89 (0.90)	0.57 (0.56)
		$d_{\prec}$	0.04 (0.07)	0.17 (0.27)
	Yes	$M_{\succ}$	0.24 (0.18)	0.97 (0.99)
		$W_{\succ}$	0.73 (0.78)	0.03 (0.01)
		$d_{\prec}$	0.03 (0.03)	0.00 (0.00)
Weak Alignment	No	$M_{\succ}$	0.01 (0.02)	0.09 (0.11)
		$W_{\succ}$	0.98 (0.96)	0.84 (0.75)
		$d_{\prec}$	0.01 (0.02)	0.07 (0.14)
	Yes	$M_{\succ}$	0.00 (0.00)	0.82 (0.60)
		$W_{\succ}$	0.95 (1.00)	0.18 (0.40)
		$d_{\prec}$	0.05 (0.00)	0.00 (0.00)

Note: Fractions of recommended and implemented projects conditional on the worker being informed. $M_{\succ}$ and $W_{\succ}$ refers to manager's and worker's best project, $d_{\prec}$ denotes a dominated project. Numbers without brackets refer to the part with hard information; the corresponding numbers for the part with soft information are in parentheses.

References

Aghion, P., and J. Tirole (1997): "Formal and Real Authority in Organizations," *Journal of Political Economy*, 105(1), 1–29.

Ariely, D., E. Kamenica, and D. Prelec (2008): "Man's Search for Meaning: The Case of Legos," *Journal of Economic Behavior and Organization*, 67(3-4), 671–677.

Baker, G., R. Gibbons, and K. J. Murphy (1999): "Informal Authority in Organizations," *Journal of Law, Economics, and Organization*, 15, 56–73.

Cremer, J. (1995): "Arm's Length Relationships," *Quarterly Journal of Economics*, 110(2), 275–295.

Dewatripont, M., and E. Maskin (1995): "Credit and Efficiency in Centralized and Decentralized Economies," *Review of Economic Studies*, 62, 541–555.

Dufwenberg, M., and G. Kirchsteiger (2004): "A Theory of Sequential Reciprocity," *Games and Economic Behavior*, 47, 268–298.

Falk, A., and M. Kosfeld (2006): "The Hidden Costs of Control," *American Economic Review*, 96(5), 1611–1630.

Fehr, E., H. Herz, and T. Wilkening (2010): "The Lure of Authority: Delegation and Incentives in Organizations," mimeo, University of Zurich.

Fehr, E., and B. Rockenbach (2003): "Detrimental Effects of Sanctions on Human Altruism," *Nature*, 422, 137–140.

Fehr, E., and K. M. Schmidt (1999): "A Theory of Fairness, Competition, and Cooperation," *Quarterly Journal of Economics*, 114(3), 817–868.

Fischbacher, U. (2007): "z-Tree: Zurich Toolbox for Ready-made Economic Experiments," *Experimental Economics*, 10(2), 171–78.

Foss, N. J. (2003): "Selective Intervention and Internal Hybrids: Interpreting and Learning from the Rise and Decline of the Oticon Spaghetti Organization," *Organization Science*, 14(3), 331–349.

Gul, F. (2001): "Unobservable Investment and the Hold-Up Problem," *Econometrica*, 69(2), 343–376.

Herzberg, F. (2003): "One More Time: How Do You Motivate Employees?," *Harvard Business Review*, 81(1), 87–96.

Loewenstein, G., D. A. Moore, and R. A. Weber (2006): "Misperceiving the Value of Information in Predicting the Performance of Others," *Experimental Economics*, 9, 281–295.

Manzoni, J.-F., and J.-L. Barsoux (1998): "The Set-Up-to-Fail Syndrom: How Bosses Create Their Own Poor Performers," *Harvard Business Review*, 76(2), 101–113.

Park, A., and M. Shen (2008): "Refinancing and Decentralization: Evidence from China," *Journal of Economic Behavior and Organization*, 66(3-4), 703–720.

Poulsen, A. U., and M. W. M. Roos (2010): "Do People Make Strategic Commitments? Experimental Evidence on Strategic Information Avoidance," *Experimental Economics*, 13(2), 206–225.

Poulsen, A. U., and J. H. W. Tan (2007): "Information Acquisition in the Ultimatum Game: An Experimental Study," *Experimental Economics*, 10(4), 391–409.

Rabin, M. (1993): "Incorporating Fairness into Game Theory and Economics," *American Economic Review*, 83(5), 1281–1302.

Riordan, M. (1990): "What is Vertical Integration?," in *The Firm as a Nexus of Contracts*, ed. by M. Aolu, B. Gustafsson, and O. Williamson. Sage Publications, London.

Schmidt, K. M. (1996): "The Costs and Benefits of Privatization: An Incomplete Contract Approach," *Journal of Law, Economics, and Organization*, 12, 1–24.

Strausz, R. (1997): "Delegation and Monitoring in a Principal-Agent Relationship," *Review of Economic Studies*, 64(3), 337–357.

Williamson, O. E. (1996): *The Mechanisms of Governance*. Oxford University Press, Oxford, U.K.

Monitoring Your Friends, Not Your Foes:

Strategic Ignorance And The Delegation Of Real Authority

By

Silvia Dominguez-Martinez and Randolph Sloof and Ferdinand A. von Siemens

General Remarks

The instructions for all three treatments were identical except for the payoff combinations of the three investment projects. These sample instructions are from the treatment with strong interest alignment. The current general remarks and the title were, of course, not included in the instructions for the experimental subjects. Instructions for the different parts of the experiment were handed out separately, and only after all subjects had completed the previous part or parts. Part 4 was a questionnaire including a short version of the big five personality test.

Instructions

General Information

Thank you for participating in this experiment. The amount of money you earn depends upon the decisions you and the other participants make. Your earnings are given in points. The experiment consists of four parts. Your overall earnings equal the sum of your points in each part. The conversion rate is 150 points for 1 euro. We will pay out your overall earnings in cash after you have completed the entire experiment and filled out a final questionnaire. We ensure that your final earnings remain confidential: no other participant from the experiment will learn your final earnings.

There are two types of participants: managers and workers. One half of the participants will be managers, and the remaining half will be workers. You will be randomly assigned one of these roles. Which role you have, you will learn at the start of the experiment. Your role will not change during the experiment.

The experiment consists of four parts. This sheet contains the instructions for part one. Instructions for the next part follow after this part has been completed (and so on). Please do not communicate with other participants during the experiment. If you have a question, please raise your hand. The experimenter will then come to your table to answer your question in private.

Part 1 of the Experiment

General information

The first part of the experiment consists of 20 project implementation decisions. For each project implementation decision, one manager and one worker are randomly paired. You are never paired

with the same other participant twice in a row. You cannot predict when you will be paired with the same other participant again.

In every project implementation decision, manager and worker face three projects **(A,B,C)** that can be implemented. These projects differ in the points that they yield manager and worker upon implementation. Three payoff combinations are possible. One project yields **80 points to manager and 100 points to worker**, one project yields **100 points to manager and 80 points to worker** and one project yields **15 points to manager and 15 points to worker**. The problem is that manager and worker do not a priori know which payoff combination corresponds to which project.. Each period the payoff combinations are randomly assigned to project A, B and C. Thus over the periods project A corresponds to different payoff combinations etc.

Before the manager finally decides which project to implement (either A, B, or C), the worker can decide whether to gather information on the payoffs of the projects or not, and the manager can decide whether to monitor the worker's information gathering or not. Gathering information on the projects costs the worker **10 points**. Monitoring the worker costs the manager **10 points**.

Sequence of Actions

The precise timing of the decisions and the resulting distribution of information that follows from these decisions are as follows. There are four phases.

Phase 1
The manager chooses between **Monitoring** the worker and **Not Monitoring** the worker**.** Monitoring the worker costs the manager **10 points.**

Phase 2
The worker observes the manager's choice. He then chooses between **Information** and **No Information**. Information costs the worker **10 points**.

Depending on the worker's information gathering decision, he may or may not learn the characteristics of the three projects.

- If the worker has chosen **Information**, the payoff characteristics of all three projects (A, B, and C) are revealed to him.
- If the worker has chosen **No Information**, no information about the projects is revealed to him.

Phase 3
The worker proposes a project to the manager, either A, B, or C.
The manager observes which project the worker has proposed.

Depending on the manager's and the worker's earlier decisions, additional information may be revealed to the manager.

- If the worker has chosen **No Information**, no information about the projects is revealed.
- If the worker has chosen **Information** and the manager has chosen **No Monitoring**, the manager learns the payoff characteristics of the proposed project only.
- If the worker has chosen **Information** and the manager has chosen **Monitoring**, the manager learns the payoff characteristics of all three projects.

Phase 4
The manager finally decides which project to implement, either A, B, or C.

Payoff

The number of points earned by manager and worker respectively are their points from the implemented project minus their respective costs of the monitoring decision (either 10 or 0 points) and the information gathering decision (either 10 or 0 points).

The three possible payoff combinations of the projects are summarized in the table below

	(100, 80)	(80, 100)	(15, 15)
Manager	100	80	15
Worker	80	100	15

Your overall payoff from part 1 of the experiment is the sum of points earned in the 20 project implementation decisions.

Part 2 of the Experiment

The second part of the experiment consists of 10 project implementation decisions. As compared to part 1 the main difference is the amount of information that is revealed to the manager after the worker has gathered information and proposed a project. In this part, if the manager does **not monitor** the worker, he **never** learns anything about the payoff characteristics of the projects. In particular, this means that he also does not learn the characteristics of the project proposed by the worker. If the manager monitors the worker, he learns the payoff characteristics of all three projects if the worker chooses to gather information.

The remainder of part 2 is identical to part 1. This means that for each project implementation decision you will be randomly paired with another participant. Again you are never paired with the same other participant twice in a row. You cannot predict when you will be paired with the same other participant again. You keep the same role as in part 1 of the experiment.

Like in part 1, the manager can decide whether to monitor the worker or not. Monitoring the worker costs the manager **10 points**. Then the worker observes the manager's choice and can decide whether to learn the payoff characteristics of the projects (A, B, or C) or not. Gathering information on the projects costs the worker **10 points**. After that the worker proposes a project to the manager (either A, B, or C). Finally, the manager decides which project to implement. The three possible payoff combinations of the projects are just as before:

	(100, 80)	(80, 100)	(15, 15)
Manager	100	80	15
Worker	80	100	15

The number of points earned by manager and worker respectively are their points from the implemented project minus their respective costs of the monitoring decision (either 10 or 0 points) and the information gathering decision (either 10 or 0 points). Your overall payoff from part 2 of the experiment is the sum of points earned in the 10 project implementation decisions. The overall payoff from part 2 is added to the overall payoff of part 1.

Part 3 of the Experiment

The third part of the experiment consists of 5 project implementation decisions. In every project implementation decision, manager and worker face three projects **(A,B,C)** that can be implemented. These projects differ in the points that they yield manager and worker upon implementation. As in the previous parts three payoff combinations are possible. One project yields 100 to manager and 80 to worker, one project yields 80 to manager and 100 to worker and one project yields 15 to manager and 15 to worker. Both the manager and the worker do not know which payoff combination corresponds to which project and cannot obtain additional information about this.

What also differs from the previous parts of the experiment is that an auction between the worker and the manager determines who has the right to choose which project is implemented. Both worker and manager simultaneously make a bid to buy the implementation decision right. The bid has to be an integer (0, 1, 2, 3, … etc); it cannot exceed 120. Whoever has made the highest bid, decides which project is implemented. If both manager and worker make the same bid, the decision right is randomly assigned to either the manager or the worker, with equal probability. Note that the decision maker chooses the project (either A, B, or C) <u>without</u> knowing which payoff combination corresponds to which project. After the project implementation decision has been made, manager and worker learn the payoffs of the project that will be implemented and observe the highest bid made for the decision right.

The number of points earned by the decision maker are the points from the implemented project minus his bid. The other participant simply gets his points from the implemented project. Your overall payoff from part 3 of the experiment is the sum of points earned in the 5 project implementation decisions. The overall payoff from part 3 is added to the overall payoff of part 1 and part 2.