Finding Partners in Crime? How Internal Transparency Affects Employee Collusion

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Abstract

Using a lab experiment, we investigate how internal transparency affects the tendency of employees to initiate collusive efforts with colleagues from other departments in an organization. Building on behavioral economics theory, we argue that employees who are treated unkindly by their managers are more willing to collude. We hypothesize that internal transparency affects collusion in two ways. First, by revealing how employees are treated by their managers, transparency affects the probability that specific individuals are approached by colleagues as potential 'partners in crime'. Second, increasing transparency incentivizes managers to treat employees better, which in turn reduces employees' motivation to initiate collusive agreements. The results of the experiment generally support the theory and have several implications for research and practice.

1.   Introduction

Employees often need to work together to extract rents from the organization (e.g., Weisel and Shalvi, 2015). One obvious example is employee fraud, which may require collusion between employees in different roles or different departments, such as a manager and an accountant or a sales clerk and a warehouse employee (Free and Murphy, 2015). Other examples include collaborations to build budget slack (Evans et al., 2001; Zhang, 2008) or to manipulate performance reports (Maas and Van Rinsum, 2013). For instance, two managers whose teams work together on a project might agree to report more hours than they actually spent, or a department head might approach another department head to join forces during a budget meeting and use negotiation tactics to appropriate a larger share of the available resources.

While collusion is common in rent extraction activities such as fraud and misreporting, research in accounting and related fields has largely treated employee rent extraction as the act of an individual (Brown et al., 2009; Murphy and Dacin, 2011). Collusion differs from individual rent extraction because it requires accomplices to first establish collusive agreements, and then implement these agreements (Evans et al., 2016). While there is some research on how fraudsters implement collusive agreements (Evans et al., 2016), the current literature has barely dealt with how they establish collusive agreements, and thus we know very little about how collusive initiatives emerge and about how control systems affect the initiation of collusion. Our study takes a first step in closing this gap.

We argue that to understand why employees initiate collusion, it is important to consider the role of superiors. Prior research and insights from practitioners suggest that how employees are treated by superiors is a crucial determinant of employees' motivation to collude (KPMG, 2013; Zhang, 2008). We further propose that internal transparency, an important characteristic of organizations' control systems (Bol et al., 2016; Evans et al., 2016; Maas and

Van Rinsum, 2013), plays a crucial role in determining the emergence of collusion. The extent to which employees have access to information about how other employees are treated by their superiors varies substantially across organizations. Following recent research (e.g., Bol et al., 2016; Evans et al., 2016), we refer to employees' ability to observe how peers in the same organization are treated as a firm's internal transparency. Currently, there is much debate, both in academia and in practice, about the benefits and possible downsides of organizations becoming more transparent about for example salaries, performance-based rewards, resource allocation methods, and workplace conditions (Maas and Van Rinsum, 2013; Belogolovsky and Bamberger, 2014; Costas and Grey, 2014; Burkus, 2016; Hill, 2016). Evans et al. (2106) show that transparency can increase collusion in organizations, as it makes it easier for fraudsters to implement collusive agreements by informing colluders about whether their accomplices are honoring the agreement. We extend this line of investigation by examining how internal transparency affects the emergence of collusion (employees' tendency to approach each other to make collusive agreements). We argue that transparency has broader impacts beyond merely providing more information, as the consequences of the information being revealed also depend on the content of the information, and more importantly, transparency may indirectly influence employees by affecting how superiors behave.

Superiors play an important role in the initiation of collusion, because collusion initiatives often originate in an employee's sense of being treated unkindly or unfairly by their employer or direct supevisor (Adam and Ferreira, 2008; Akerlof, 1982; Chen and Sandino, 2012; Douthit and Stevens, 2014; KPMG, 2013; Kube et al., 2012; Zhang, 2008). Managers typically have discretion in how they treat the employees in their department. For example, managers can decide on whether to closely monitor and regulate their subordinates' office hours, how often they organize social events for subordinates, the extent to which they make

budget available for employee training, how much time and effort they invest in employees' personal development, and how they set salaries and allocate bonuses within their unit.

Anticipating the role of managers, aspiring colluders will take into account how other employees are treated by their managers in deciding whether to propose a collusive agreement with them. Approaching another employee with a proposal to make a collusive agreement is risky, as it may damage one's reputation or even lead to corrective actions by the organization if the employee refuses to join in, or even blows the whistle. Internal transparency determines to what extent employees can observe how others are treated. Notwithstanding the common intuition that transparency will reduce fraud, reflected in the well-known credo that "sunlight is the best disinfectant," we argue that the effect of transparency on collusion is not straightforward. When others are treated unkindly, transparency can increase collusion initiation, as it reveals to employees that others are likely to join the collusive agreement. On the other hand, when others are treated kindly, transparency reduces collusion initiation by revealing this kind treatment. Besides this information effect, we further hypothesize that transparency can indirectly affect employee collusion by incentivizing managers to treat employees better. Anticipating that acting unkindly is more likely to result in collusion when organizations are transparent, managers may act more kindly, which in turn, can reduce employees' tendency to initiate collusion.

To test our predictions, we run a lab experiment with 102 participants. In the experiment, groups of four participants form an organization which consists of two departments (each with a manager and an employee). The experiment consists of two stages. In the first stage participants in the role of manager allocate a fixed amount of money between themselves and their matched participants acting as employees. The act of sharing money with employees corresponds to kind behavior. In the second stage, participants in the role of employee decide whether or not to initiate collusion with their peer. Collusion attempts are costly to employees,

independent of whether they are successful. Collusive agreements are made if - and only if - both employees choose to initiate collusion. Collusive agreements increase the employees' payoffs at the expense of the managers' payoffs. We manipulate the transparency of the organization by varying whether or not employees are informed about their peer's manager's sharing decision in the first stage.[1]

The results are generally consistent with our predictions. We find that, compared to employees in non-transparent organizations, employees in transparent organizations are more likely to initiate collusion with peers who are treated unkindly. The results also show that employees who themselves are treated unkindly (kindly) are more (less) likely to initiate collusion in transparent than in non-transparent organizations. Finally, in support of the prediction that transparency will incentivize managers to act more kindly towards employees, we find that in later rounds of the experiment managers in transparent organizations become more likely to treat employees kindly than managers in non-transparent organizations.

Our study makes two important contributions to accounting research and practice. First, we contribute to the literature on the antecedents of fraud and opportunistic behavior in organizations by focusing on forms of rent extraction that require employees to work together. Establishing and maintaining a relationship with a 'partner in crime' is a risky, complex, and highly strategic process (Evans et al., 2016; Zhang, 2008; Weisel and Shalvi, 2015). Our study highlights one element of this process, the decision to approach a peer with a proposal to collude. We argue and show that anticipation of peers' social preferences (i.e., their tendency to exhibit negative reciprocity) plays an important role in this decision. This finding is also of interest to the more general literature on social preferences in economics and related fields. While there is ample evidence that individuals expect the people with whom they interact

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[1] The first stage of the experimental game resembles a dictator game in which managers choose a high payoff or low payoff for their employee. From the perspective of the employees, the second stage of the game is similar to a Stag Hunt coordination game in which there is a wealth-dominant equilibrium and a risk-dominant equilibrium.

directly to care about factors such as trust and fairness (e.g., Bowles and Polania-Reyes, 2012), much less is known about whether or when individuals anticipate that such factors will also play a role in the interactions of third parties (Fehr and Gächter, 2002; Singer and Fehr, 2005; Takagishi et al., 2010).

Our second main contribution is to the literature on internal transparency. While prior studies primarily focus on internal transparency with regards to employee behavior (Maas and Van Rinsum, 2013; Evans et al., 2016), this study focuses on the internal transparency about managers' behavior. In a recent paper, Bol et al. (2016), show that transparency about performance evaluation outcomes influences how managers treat their employees in performance evaluation settings. The reason is that managers anticipate that employees have social preferences which will make them interested in how others have been treated by their managers. In a similar vein, we predict and show that transparency increases the extent to which managers are willing to incur costs in order to make their employees happy as they realize that in a transparent organization employees who are treated relatively badly are not only more likely to retaliate by taking the initiative to engage in fraudulent or collusive acts, but also more likely to be singled out as potential accomplices in such acts by employees in other parts of the organization.

The paper proceeds as follows. In the next section we discuss the existing literature and the basic setting of our experiment, and we develop our hypotheses. In section 3 we describe the experiment and the participants in more detail. In section 4 we present the results. Section 5 discusses these results and the limitations of our study, and concludes with suggestions for future research.

2. Background and hypothesis development

2.1. Background

Organizational participants can increase the scope and the effectiveness of rent extracting activities by working together (Zhang, 2008; Islam et al., 2011; KPMG, 2013; ACFE, 2016; Evans et al., 2016). Yet, most research on fraud, earnings management, and dishonesty in budgeting and performance reporting looks at these rent extraction activities as the acts of individuals and ignores the role of employee collusion (Free and Murphy, 2015). While there are certain factors that likely affect individual and coordinated rent extraction similarly (e.g., personality characteristics, weak internal controls), the dynamics around collusive activities tend to be more complex and more strategic (Evans et al., 2016).

Following Evans et al. (2016), we suggest that collusion follows a two stage process. In the first stage, potential colluders come together and form a collusive agreement. In the second stage, the colluders decide whether to honor this agreement, or instead defect and possibly even report the agreement to an authority. While experiments in accounting (Towry, 2003; Zhang, 2008; Hannan et al., 2013; Evans et al., 2016) and industrial organization (e.g., Hu et al., 2011; Hinloopen and Onderstal, 2014) have shed light on individuals' behavior in settings that are reminiscent of the second stage, not much is known about the first stage, i.e. about the factors that influence employees' decisions to approach peers with a proposal to form a collusive agreement. Our study focuses on this issue and proposes that negative reciprocity is a key driver of collusion in organizations. Starting out from this basic premise we argue that the extent to which employees engage in collusive efforts depends on the internal transparency level of the organization. The reason is that transparency affects potential colluders second and third order beliefs about the collusive intentions of their peers. More specifically we argue that employees will anticipate that peers will also exhibit a preference for reciprocity. If this is

indeed the case, transparency about employees' treatment by their managers enables employees to update their beliefs about the likelihood that specific peers will be willing to act as partners in crime.

2.1.1. Reciprocity and Manager Kindness

A large literature in economics based on the fundamental idea of gift exchange (Akerlof, 1982; Kube et al., 2012) provides evidence that most individuals exhibit a general tendency to behave in a reciprocal way, such that they derive utility from being kind to others who have been kind to them (positive reciprocity) and from being unkind to others who have treated them badly (negative reciprocity, e.g., Fehr et al., 1997; Falk and Fischbacher, 2006; Martin and Moser, 2016). Studies in accounting have shown that reciprocity also exists in supervisor-subordinate relationships (e.g., Kuang and Moser, 2009; Maas et al., 2012) and, more specifically, that employees have a tendency reciprocate kind behavior of their superior. For example, Hannan (2005) shows that employees reciprocate higher wages with higher effort, Zhang (2008) shows that employees reciprocate higher wages with more honest cost reports and more whistleblowing on dishonest peers, and Chen and Sandino (2012) provide field evidence that employees reciprocate higher wages with lower levels of employee theft.

Paying relatively high wages is one clear example of superiors acting kindly towards their subordinates. However, employees will likely also reciprocate other acts of kindness and our notion of superior kindness is broader than just relatively generous monetary transfers. Specifically, we define manager kindness as any costly behavior on part a superior to improve the condition of a subordinate. Examples of superior kindness thus include the provision of non-monetary benefits such as free lunches, investments in above-standard working conditions and a suitable work environment (Shalley et al., 2000), birthday and Christmas presents, time-consuming accurate and fair performance evaluations (Maas et al., 2012), eschewing strict

control mechanisms (Christ, 2013), personal support (Wayne et al., 1997), on-the-job training and employee education programs (Loewenstein and Spletzer, 1999), social events at work (Fried et al., 2007), and getting to know - and staying up-to-date with - employees' private life, and facilitating the fulfillment of their personal needs (Bailyn et al., 1997).

2.1.2. *Internal Transparency*

There is much variation in the extent to which organizations are transparent about the actions and decisions of individual managers (Belogolovsky and Bamberger, 2014; Bol et al., 2016; Colella et al., 2007; Costas and Grey, 2014). Organizations can manage the level of transparency through policies to actively distribute information among managers and employees, or alternatively, policies to deliberately suppress information flows. Examples of the former type include intranet webpages, newsletters, meetings and publicly accessible databases. Example of the latter type policies are physical and organizational barriers that restrict access to reports and databases, and the aggregation of data, such that it cannot be traced back to the level of the individual or department (Feltham and Hofmann, 2012). In our theory development we consider a general notion of transparency. However, we acknowledge that some organizations might be transparent about certain types of decisions but not about others. To illustrate, companies are known to actively distribute or suppress information about decisions regarding salaries and salary raises (Colella et al., 2007), bonuses and performance ratings (Bol et al., 2016), department costs (Evans et al., 2016), and resource allocation decisions (Fisher et al., 2002).

2.2 *Basic Setting*

In our basic setting, four participants (two acting as manager and two acting as employee) form an organization with two departments (each with a manager and an employee). Employees earn a fixed base salary of 800 points and managers earn a fixed base salary of

1,000 points. In Stage 1, the two managers independently and simultaneously decide whether or not to share their department's discretionary budget of 400 points with the department employee. If the manager chooses Share, the manager and the employee each get half of the budget (200 points). If the manager chooses Not Share, she gets all 400 points and the department employee gets nothing. The sharing decision is our experimental operationalization of manager kindness. In Stage 2, each employee decides whether he wants to approach the other employee to propose a collusive agreement. Like the managers, the employees need to make their decision independently and simultaneously. To operationalize the costs of approaching a colleague with a collusion proposal (reputation loss, risk of being reported), an employee who chooses collusion incurs a fixed cost of 600 points. A collusive agreement is made if, and only if, both employees choose collusion. If there is a collusive agreement, the managers' payoff is reduced by 800 points, while the employees' payoff increases by 800 points. The decisions and payoffs are summarized in Figure 1. As is clear from Figure 1, the basic experimental game is completely symmetric in the sense that all managers face the same decision, and so do all employees. This setup allows us to pool the data from the two dyads that together form an organization to test our hypotheses.

[Insert Figure 1 here]

To study the impact of internal transparency, we vary whether or not employees are informed about the other department's manager's sharing decision in Stage 1 before making the decision whether or not to approach their peer to make a collusive agreement in Stage 2. In the low transparency condition, employees (and managers) are not informed about the sharing decision in the other department, and thus employees need to decide if they want to approach their peer without knowing whether their potential accomplice has been treated kindly or unkindly by their superior. In the high transparency condition, employees (and managers) are

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informed about the other department's manager's sharing decision. Therefore employees in this condition know whether their potential partner in crime has been treated kindly or unkindly by their superior before they decide whether to propose collusion.

The benchmark predictions based on conventional economic reasoning are that in the basic setting employees will not collude and managers will not share, and that the level of transparency will not influence these action choices. These predictions are based on the standard assumptions that individuals maximize their own utility, that their utility is a concave function of (only) their monetary payoff, and that this is common knowledge.[2] To see this, refer to Figure 2, which presents the Stage 1 subgame and the Stage 2 subgame separately with the actual parameters from our experiment.

[Insert Figure 2 here]

Employing backward induction, we first look at Stage 2, the employees' collusion decisions. From the employees' perspective the Stage 2 subgame is akin to a Stag Hunt-type coordination problem (e.g., Van Huyck et al., 1990).[3] In this subgame there are two pure strategy Nash equilibria: both collude and both do not collude. The collusion equilibrium is wealth dominant and the no collusion equilibrium is risk dominant. Without any information about the peer's intentions, the employee should assign a probability of 0.5 to both possible actions of their potential accomplice. With the parameters in our setting, employees should then prefer to play the risk–free no collusion strategy, because the expected marginal payoff of that strategy is 0, whereas the expected marginal payoff of choosing collusion is $-200 \times (0.5 \times 200 + 0.5 \times -600)$.

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[2] The utility function is assumed to be concave due to risk aversion. The risk aversion assumption is not critical in our setting, and the same benchmark predictions hold for risk-neutral employees.
[3] The game is different from a Stag Hunt if we take into account the payoffs of the managers, as the wealth dominant equilibrium for the employees does not maximize the social surplus.

Turning back to Stage 1, the managers' sharing decision, under conventional assumptions managers will anticipate that their choice will not affect the employees' decisions in Stage 2. Consequently, they will choose not to share the budget with the employee, and instead pocket the entire 400 points. Under conventional assumptions, the sharing decision does not affect an employee's willingness to collude, and thus the other department manager's sharing decision is not informative about the probability of the other employee choosing collusion. Therefore, informing employees about whether the other employee has received a share of the budget (i.e., introducing transparency) does not affect the equilibrium outcome.

2.3. *Hypotheses*

We build our hypotheses on the fundamental presumption that manager-employee relationships are characterized by reciprocity. While the decision to engage in rent-extracting opportunistic behaviors can be modeled as a rational economic tradeoff (Baiman and Lewis, 1989; Cornish and Clarke, 2014), much empirical evidence suggests that such decisions are in fact affected by factors that are not considered in conventional economic models. In particular, consistent with behavioral economics models (e.g., Cox et al., 2007; Falk and Fischbacher, 2006) studies have shown that frustration and anger with employers and superior managers is often an important driver of deviant workplace behavior (Chen and Sandino, 2012; Greenberg, 1990; Lau et al., 2003; Zhang, 2008). Employees who feel that they have been treated unfairly or unkindly, have a tendency to retaliate by taking actions that harm the party that is responsible for this unfair or unkind treatment (Falk and Fischbacher, 2006; Fehr and Gächter, 2000). Zhang (2008) suggests that this reasoning also extends to settings in which rent extraction requires employee collusion. In her experiment, Zhang (2008) examined a mutual monitoring setting in which agents had the opportunity to make a deal to not report each other's overstatements to the principal but there was also a high reward for whistleblowing. She found

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that employees were more likely to make such a deal after having received a low instead of a high wage. Based on the existing theory and empirical findings, we propose that, *ceteris paribus,* employees who are treated kindly by their superiors are less likely to initiate collusion attempts than employees who are treated unkindly by their superiors.

Building on this fundamental proposition, we hypothesize that internal transparency will affect employees' collusion decisions in two ways. First, increasing internal transparency provides more information to employees about the likelihood of their peers being a 'reliable' partners in crime, and we label this effect the *information effect*. Second, increasing internal transparency can influence managers' decisions to act kindly towards their employees, which in turn can influence employees' decisions to initiate collusion. We label this effect the *incentive effect*. Below we first develop hypotheses about how employees' decisions to initiate collusion will be influenced by the information effect of transparency. We then turn to the incentive effect of transparency and analyze how managers decisions to act kindly are affected by transparency. Finally, we briefly discuss the overall effect of transparency on collusion. [4]

2.3.1. The Information Effect

Research in psychology and neuro-economics suggests that individuals generally anticipate that other individuals will have thoughts and feelings that are similar to their own (Nickerson, 1999; Singer and Fehr, 2005). In line with this, we reason that employees will generally expect their peers to have similar social preferences as they themselves have. If employees who are looking for a partner in crime expect other employees to also value reciprocity, and to retaliate against unkind behavior, then they will be less likely to approach

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[4] In an experiment, the relative strength of these two effects will dependent on the specific parameters that are chosen (e.g. the fixed cost for collusion). For this reason, we focus on establishing that both these effects exist and influence participants' decisions as predicted by our theory, rather than predicting their relative strength and hypothesizing about the overall effect of internal transparency on employees' collusion attempts.

colleagues whom they know are treated well and more likely to approach employees whom they know are treated badly. Thus, in transparent organizations, an employee's treatment by his manager will influence the probability that this employee will be approached by peers as a potential partner in crime. In non-transparent organizations on the other hand, employees' treatment by their supervisor goes relatively unnoticed, such that peers in other departments cannot update their beliefs about the likelihood that a specific employee is treated unkindly (kindly) and therefore relatively willing (unwilling) to engage in collusive rent-extraction. This reasoning leads to the two following hypotheses:

H1a: Compared to employees in non-transparent organizations, employees in transparent organizations are more likely to initiate collusion with peers who are treated unkindly.

H1b: Compared to employees in non-transparent organizations, employees in transparent organizations are less likely to initiate collusion with peers who are treated kindly.

In a similar vein, we argue that increasing transparency affects the peers' decision to approach employees with collusive agreements, which in turn affects the employees' decision to initiate collusion. In a transparent organization, an employee who considers initiating collusion should take into account that peers will assess his credibility as a potential partner in crime based on how he is treated by his superior. An employee who is treated relatively kindly may anticipate that peers who in principle would be willing to collude will reason that he is relatively unlikely to be a trustworthy accomplice. In contrast, an employee who is treated unkindly may reason that he is likely to be considered a relatively trustworthy potential partner in crime. In summary, in transparent organizations, ill-intentioned employees will consider that peers use their superior's behavior as a signal of their predetermination. In non-transparent

organizations this is not the case, as the information that an employee was treated kindly or unkindly by his manager is hidden from his peers. For employees who, despite being treated kindly by their superior would like to engage in a collusive agreement, this is a blessing, whereas for ill-intentioned employees with unkind superiors it increases the risk that efforts to establish collusive agreements will fail. Thus, we expect kindly treated employees to be *less* likely to initiate collusion, and unkindly treated employees to be *more* likely to initiate collusion in transparent organizations than in non-transparent organizations. This is captured by the next two hypotheses:

H2a: Compared to employees in non-transparent organizations who are treated unkindly, employees in transparent organizations who are treated unkindly are more likely to initiate collusion.

H2b: Compared to employees in non-transparent organizations who are treated kindly, employees in transparent organizations who are treated kindly are less likely to initiate collusion.

2.3.2. *The Incentive Effect*

While the first two sets of hypotheses deal with what we call the *information effect* of transparency, we now turn to transparency's *incentive effect*. Our reasoning implies that, for managers, acting kindly will be more effective in preventing collusion initiatives in transparent than in non-transparent organizations. The reason is that under high transparency, acts of kindness will be observable throughout the organization. This will deter potential colluders under a kind manager's supervision from approaching peers (H2b), and it will simultaneously deter employees in other parts of the organization from approaching people in a kind manager's department as potential accomplices (H1b). In contrast, acts of unkindness will encourage unkind managers' employees to approach peers with proposals for collusive agreements (H2a)

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and will also encourage other employees in other parts of the organization to approach employees in the unkind manager's department as potential accomplices (H1a). We predict that managers in transparent organizations will quickly learn that kindness "pays off", and will therefore be relatively likely to improve the condition of their employees. For managers in non-transparent organizations, on the other hand, costly acts of kindness will only reduce collusion by fueling employees' direct reciprocity. In such organizations, kindness does not further reduce collusion by demotivating ill-intended employees from approaching potential accomplices. This prediction is captured by our last hypothesis:

H3: Compared to managers in non-transparent organizations, managers in transparent organizations are more likely to treat employees kindly.

Finally, we consider the overall effect of transparency on employees' initiation of collusion. On the one hand, it follows from our reasoning that in transparent organizations managers will act more kindly, and that therefore employees will be less likely to initiate collusion. Thus, we should expect relatively fewer collusion initiatives to emerge in more transparent organizations. On the other hand, transparency also enables aspiring colluders to identify "trustworthy" partners by revealing to them how other employees are treated, which in turn may increase collusion. In other words, aspiring colluders will find it easier to find a trustworthy accomplice in transparent organizations, and could therefore be more likely to not only consider initiating collusion but actually take the crucial step of approaching a colleague. As a result, transparency can also increase the number of collusion initiatives. Our theory does not lead to a clear prediction about which effect will dominate, and thus, rather than specifying a hypothesis we pose this as a research question.

RQ: Are attempts to establish collusive agreements more or less common in transparent organizations than in non-transparent organizations?

3. Experiment

Our experiment follows the basis setup described above and summarized in Figures 1 and 2. Manager kindness is operationalized by letting manager-participants choose whether they want to share a 'discretionary department budget' with their employee. The collusion initiation decision is operationalized by making employee-participants choose between approaching and not approaching the employee from the other department to make a collusive agreement. Internal transparency is manipulated by either informing or not informing employees and managers about the outcome of the sharing decision of the manager in the other department before they make their collusion decision. Our main dependent variables are the probability of an employee choosing to initiate collusion and the probability of a manager choosing to act kindly.

3.1. Participants

We conducted our experiment at the experimental economics lab of a large European university. In total, 104 members of the lab's subject pool, who responded to an email invitation to sign up, participated in our experiment. There were four sessions, two for each condition (High transparency and Low transparency). Each session contained either 24 or 28 participants.[5] The participants' age varies from 17 to 44, with a mean of 22.16 and a median of 22. In total, 58 participants (55.8%) are male and 46 (44.2%) are female. The majority (78 participants / 75%) indicated that their major was economics or business. Most participants (94 / 90.4%) indicated they had at least some work experience, and 62 (59.6%) indicated that they had a (part time) job at the time of the experiment. All participants received a €5 show-up fee in addition to the payoff from the experiment. On average participants earned a total of €14.50

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[5] The number of participants per session varies because some registered participants did not show up.

for about 45 minutes of their time. The average earnings of participants in the role of manager (€15.89) were somewhat higher than that of participants in the role of employee (€13.12).

3.2.   Experimental Procedures

Participants first arrived individually in a waiting room and publicly received brief basic instructions before moving to the computer lab. Detailed instructions were provided in the form of a hard copy handout. The participants had ten minutes to read the instructions before the computer task started. They could refer back to the handout at all time during the session.

The computer task was programmed in z-Tree (Fischbacher, 2007). It consisted of four stages: a quiz to assign roles (employee or manager), a quiz to check participants' understanding of the instructions, the main task consisting of eleven rounds including one practice round, and an exit questionnaire. Participants first worked on the quiz to assign roles. The quiz consists of fifteen multiple choice questions and an open question. All questions ask participants to estimate a number. In each session, participants with an above-median number of correctly answered multiple choice questions were assigned the role of manager, and participants with a below median score were assigned the role of employee (the open question served as a tie breaker). We assigned roles based on a quiz score to strengthen participants' perception of the legitimacy of the role assignment and the manager-participants' deservingness of their 'privileged' position (Douthit and Majerczyk, 2016; Oxoby and Spraggon, 2008). To prevent assigning roles based on participant characteristics, the quiz contained questions to which very few people know the correct answer, but anyone would be able to make a guess. [6] Results show that manager and employee-participants indeed are

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[6] Examples of included questions are: "What is the maximum depth of the Atlantic Ocean in meters?" and "What is the number of neck vertebrae of a Giraffe?" See Appendix A for the complete set of questions and answer options.

similar with respect to demographics, including age, gender, work experience, major, risk attitude, and social value orientation (smallest $p > 0.27$). The two groups of participants also self-rated their math ability similarly ($M = 5.08$ vs. $M = 5.33$, $t_{102} = -0.83$, $p = 0.41$).[7] Participants remained in their role (employee or manager) throughout the eleven rounds of the experiment.

The role assignment quiz was followed by a task-understanding quiz. Participants had to correctly answer eight questions about the task instructions before they could proceed to the next step. Participants then entered the main task, which consisted of one practice round and ten real rounds. At the end of each session, one real round was randomly selected as pay round and only the payoffs from this round were paid out.

At the beginning of each round, the computer randomly and anonymously matched two employees and two managers to form one organization with two departments. Managers received a fixed salary of 1000 points and employees received a fixed salary of 800 points.[8] In addition, managers had discretion over how to spend a 400 point 'discretionary department budget.' Specifically, they needed to decide whether to transfer 200 points of this budget to their employee or keep the 400 points for themselves.

Each round proceeded as follows. First, the managers independently and simultaneously made their sharing decisions. Then the employees were informed about the sharing decision of their own manager. In the high transparency condition, managers and employees were also informed about the sharing decision of the manager of the other department. Subsequently, the employees simultaneously chose whether to initiate collusion. Employees choosing to initiate collusion incur a fixed cost of 600 points. If both employees choose to initiate collusion, a collusive agreement is made, and employees earn an extra 800

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[7] All reported p-values in this manuscript are based on two-tailed statistics.
[8] Points were paid out at an exchange rate of €0.01 per point.

points while managers lose 800 points. If at least one employee chooses not to initiate collusion, there is no agreement and no change to the managers' and employees' payoff. At the end of each round, all players learned their payoff for that round. Managers learned whether a collusive agreement was made, but when there was no agreement they did not learn whether their own employee or the employee in the other department attempted collusion.

In the last stage of the experiment, participants filled out an exit questionnaire that contains a few items intended to provide some insight into the thoughts and feelings of the participants during the experiment, and also includes instruments to measure participants' social value orientation (SVO) and risk attitude. SVO was measured using the six primary items from the instrument of Murphy et al. (2011). Risk attitude was measured using a version of the Holt and Laury (2002) instrument with hypothetical payoffs. After filling out the exit questionnaire, the participants received their payment in a closed envelope, and were dismissed.

4.   Results

4.1.   *Summary statistics and preliminary analyses*

We first check whether the random assignment is successful and compare participant demographics in the two transparency conditions. We find that participants in the two conditions are similar in terms of age, gender, work experience, self-reported math ability, self-reported risk preferences, and social value orientation (all $p > 0.1$). We do find a marginally significant difference in mean risk-preferences measured with the Holt and Laury (2002) instrument. Participants in the high transparency condition are slight more risk averse than participants in the low transparency condition ($t_{102} = -1.77$, $p = 0.08$). [9]

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[9] Our results are inferentially unchanged if we control for demographics, including risk aversion.

We then look at the variables of interest. In total, we have data from 572 departments / manager-employee dyads ([104 participants ÷ 2 roles] × 11 rounds). In all further analyses we ignore the observations from the 52 dyads from the practice round, and focus on the data from the remaining 520 dyads (240 in the low transparency condition and 280 in the high transparency condition). Table 1 displays summary statistics. We first look at the decisions of the managers. Managers in 41.7% of the dyads decided to share the discretionary budget with their employee. Sharing occurred in 34.6% of the dyads in the low transparency condition, and in 47.9% of the dyads in the high transparency condition. Turning to the employees, we find that employees initiated collusion in 44.4%. In the low transparency condition, employees in 45.4% of the dyads attempted collusion, while in the high transparency condition employees in 43.6% of the dyads attempted collusion. Collusive agreements were established in 24.2% of the organizations (combinations of two matched dyads). The proportion of organizations in which collusive agreements emerged was 19.2% in the low transparency condition and 28.6% in the high transparency condition.

[Insert Table 1 here]

Table 2 contains descriptive statistics about the employees' collusion initiation decisions in the eight possible scenarios in the experiment, i.e. for each different combination of transparency, own manager kindness, and other manager kindness. The data in Table 2 show that when peers were treated unkindly (i.e., the manager in the other department of the organization was unkind), 47% of employees chose to initiate collusion in the low transparency condition, whereas 60% of employees did so in the high transparency condition. In a similar vein, when the other manager was kind to her employee, 42% of employees chose to initiate collusion in the low transparency condition, as compared to 25% of the employees in the high transparency condition. These figures are consistent with our predictions in H1a and H1b. Also,

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in line with H2a and H2b, when employees themselves were treated unkindly (kindly), they initiated collusion in 48% (40%) of the cases in the low transparency condition and 65% (20%) of the cases in the high transparency condition.

[Insert Table 2 here]

4.2.   Hypothesis tests

We begin our formal hypothesis tests with the analysis of the employees' decisions to initiate collusion. For this purpose we create three dummy variables: *Transparency*, which equals 1 if the observation is from the high transparency condition and 0 if the observation is from the low transparency condition, *Own_manager_kind*, which equals 1 if the employee's manager acted kindly (shared the budget) and 0 if the own manager did not share, and *Other_manager_kind,* which equals 1 if the manager in the other department of the organization shared the budget with her employee and 0 if the other manager did not share.[10]

We analyse the data using Generalized Estimating Equations (GEE) (Ballinger, 2004; Hanley et al., 2003; Zeger and Liang, 1986).[11] This method is well suited for our dataset, which is characterized by non-independent observations (due to the repeated observations at the level of the individual participants) and a binary dependent variable, and our purpose, which is estimating the population average effect of the independent variables (e.g., Hubbard et al., 2010). We use GEE to estimate a binary logistic model. The dependent variable is *Collude*, which is a dummy that equals 1 if the employee initiated collusion and 0 otherwise. The

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[10] Note that these three variables are not independent because the level of transparency likely affected the managers' sharing decisions. Thus, like for example Maas et al. (2012), our experimental design combines elements of a quasi-experiment with those of a controlled experiment. For the purpose of analyzing the determinants of the employees' collusion decisions, the fact that the managers' sharing decisions are endogenous is inconsequential. However, the quasi-experimental setup does result in unequal cell sizes (i.e., unequal numbers of observations per experimental cell). Our data analysis method does not assume equal cell sizes.

[11] Specifically, we use the xtgee command in Stata 13.

independent variables are *Transparency*, *Own_manager_kind*, and *Other_manager_kind* and the model also includes the three two-way interaction terms. In addition, it includes *Period*, a variable that indicates the experimental round of the observation, as a covariate. We estimate the model with an AR(1) working correlation matrix structure. [12]

The results of the analysis are reported in Table 3 as model 2. For comparison, this table also reports the results for a model without interaction terms (model 1).[13] Table 3 reports parameter estimates, odds ratios, robust standard errors, z-statistics and the two-tailed p values for each term in the models. The model 1 results show significantly negative effects of *Own_manager_kind* (B= −1.34; SE = 0.30; $p < 0.01$) and *Other_manager_kind* (B= −0.99; SE = 0.23; $p < 0.01$). Consistent with our hypotheses, the model 2 results indicate that these direct effects depend on the level of *Transparency*. Specifically, the model 2 estimates show that the coefficient of the interaction between *Transparency* and *Other_manager_kind* is negative and significant (B = −1.99; SE = 0.61; $p < 0.01$), indicating that the extent to which increasing transparency reduces employees' tendency to initiate collusion depends on how potential partners in crime are treated by their manager. This provides preliminary evidence for H1a and H1b. The results of Model 2 also show that the interaction between *Transparency* and *Own_manager_kind* is negative and significant (B = −1.41; SE = 0.51; $p < 0.01$), suggesting that increasing transparency is also more likely to reduce collusion initiation for employees who are treated kindly by their own manager than for employees who are treated unkindly by their manager. This result, in turn, provides preliminary evidence for H2a and H2b.[14]

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[12] The results are robust and inferentially similar if we use alternative correlation structures, including an independent structure. Model fit, as assessed using the Corrected Quasi Likelihood under Independence Model Criterion (QICC), varies very little across alternative specifications of the correlation structure.

[13] We also estimate a model with the three-way interaction between *Transparency*, *Own_manager_kind*, and *Other_manager_kind* included. Untabulated results show that the three-way interaction is insignificant ($z = 0.58$, two-tailed $p = 0.56$).

[14] As is clear from Table 3, there is a significantly negative effect of *Period* on *Collude* indicating that employees were less likely to choose collusion in later rounds of the experiment compared to earlier rounds. Specifically, the odds ratio for *Period* in model 2 is 0.90, roughly indicating that in every period the odds of an employee choosing collusion are 90% of what they were in the previous round.

[Insert Table 3 here]

To provide a direct test of our hypotheses about employee collusion initiation, we compare predicted marginal means of *Collude*. Table 4 displays the results. These results show that when the other department's manager acted unkindly the predicted mean of *Collude* is 0.47 in the low transparency condition and 0.62 in the high transparency condition. This difference is marginally significant (Wald χ^2 (1) = 2.89, p = 0.09), suggesting that increasing transparency increases collusion initiation when the manager in the other department treats her employee unkindly. This finding supports H1a. Conversely, when the other department's manager acted kindly towards her employee, the predicted mean of *Collude* is 0.40 in the low transparency condition and 0.28 in the high transparency condition. This difference is statistically insignificant (Wald χ^2 (1) = 1.43, p = 0.23), and therefore does not support H1b. In summary, our results provide support for H1a, but not H1b.

We then look at H2a and H2b. When the employees' own manager acted unkindly, the predicted mean of *Collude* is higher in the high transparency condition than in the low transparency condition (0.68 vs. 0.48, Wald χ^2 (1) = 4.34, p = 0.04). This is consistent with H2a. Conversely, when the employee's own manager acted kindly, the predicted mean of *Collude* is significantly lower in the high transparency condition than in the low transparency condition (0.20 vs. 0.39, Wald χ^2 (1) = 3.44, p = 0.06), which is consistent with H2b. In summary, we find support for both H2a and H2b.

[Insert Table 4 here]

Our final hypothesis, H3, predicts that managers will be more likely to act kindly under high transparency than under low transparency. To evaluate this hypothesis, we first create a dummy variable *Kind* which equals 1 if a manager acted kindly towards her employee (i.e.

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shared the discretionary department budget) and 0 otherwise. We then specify a GEE model in which *Transparency* is the independent variable and *Kind* is the dependent variable. We also include *Period* as a covariate. The results are reported as model 1 in Table 5.

[Insert Table 5 here]

As is clear from Table 5, inconsistent with H3, the effect of *Transparency* on *Kind* is not significant at conventional levels ($z = 1.40$, $p = 0.16$). To examine whether the effect of transparency on manager kindness changes over the course of the ten rounds of the experiment, we also run the model with a *Transparency* × *Period* interaction term included. The results are reported as model 2 in Table 5. Results show that the interaction term is significantly positive ($z = 2.61$, $p < 0.01$), indicating that *Transparency* had a more positive effect on *Kind* in later periods. To further examine the nature of this interaction we plot the sharing decisions of the managers in the two transparency conditions in each of the ten rounds. The results are in Figure 3. As can be seen in Figure 3, the proportion of managers acting kindly gradually decreases over the time in the low transparency condition, but not in the high transparency condition. The significant coefficient of *Period* in model 2 in Table 5 ($B = -0.12$, $z = -2.92$, $p < 0.01$) also indicates that the effect of *Period* on *Kind* is negative in the low transparency condition (i.e. when *Transparency* = 0). Untabulated results furthermore show that the effect of *Period* on *Kind* is insignificant in the high transparency condition ($B = 0.05$, $z = 0.96$, two-tailed $p = 0.34$). Finally, we estimate a model with only *Transparency* as a predictor of *Kind*, but using only the observations from the second half of the experiment (periods 7 through 11) (See model 3 in Table 5). Results suggest a significant effect of *Transparency* on *Kind* ($B = 1.10$, $z = 2.18$, $p = 0.03$). We conclude that, overall, there is mixed support for H3, as the predicted difference in manager kindness between the high and low transparency conditions is only present in later periods. We discuss this finding, along with our other findings, in the next section.

[Insert Figure 3 here]

Finally, we look at our research question which asks about the overall effect of transparency on employees' tendency to initiate collusion. To answer this question, we compare the predicted marginal means of *Collude* based on model 2 in Table 3. The estimated marginal means in the high transparency and low transparency condition are 0.48 and 0.44, respectively. This difference is insignificant (ΔM = 0.04, SE = 0.09, Wald χ^2 (1) = 0.23, p = 0.63). Thus, we cannot answer the research question RQ affirmatively. Transparency has no overall directional effect on the frequency of collusion attempts in our experimental setting.

5.   Discussion and conclusion

In this paper we investigate employees' decisions to initiate collusion with colleagues from other departments. Building on the fundamental idea that reciprocity drives employees' willingness to engage in rent extraction, such that employees who feel mistreated by their superior are more willing to join in collusive efforts than employees who are treated well, we argue that internal transparency is an important factor in understanding collusion. Increasing transparency about managerial decisions and employee actions is sometimes seen as a method to reduce fraud and collusion. We focus our analysis on transparency about managers' treatment of the employees in their department and develop hypotheses about the conditions under which employees are more likely to initiate collusion, and how these depend on the level of internal transparency. Using a lab experiment, we find support for most of our theory's predictions.

Our results show that increasing internal transparency on the one hand provides information to aspiring colluders (the information effect), but on the other hand, also influences managers' behavior, which in turn affects employee collusion (the incentive effect). Specifically, when employees are treated unkindly (kindly) by managers, increasing internal

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transparency increases (decreases) their tendency to approach peers for collusion and simultaneously increases (decreases) the probability that they will be approached by peers as potential partners in crime. Consistent with the incentive effect, we find that under high internal transparency managers learn to act more kindly towards their employees than under low transparency, which in turn discourages employees from approaching colleagues in other departments for collusion.

Our study contributes to the literature in a number of ways. First, the findings highlight the importance of considering the role of middle managers in evaluating organizational policies. Much of the existing accounting literature has focused on principal-agent settings, ignoring that middle managers often have substantial discretion in implementing organizational policies and making economically relevant decisions (e.g., Baiman, 2014). However, recent studies show, for example, that middle managers influence employees' honesty in reporting (Cardinaels and Yin, 2015; Zhang, 2008), effort and motivation (Balakrishnan et al., 2011; Christ et al., 2012), and whistleblowing decisions (Zhang, 2008). Our study adds to this literature by showing that the consequences of organizational policies are more subtle once we take into account the organizational hierarchy. Increasing internal transparency not only directly affects employee collusion, via informing employees about each other's treatment, but also indirectly affects collusion by changing the behavior of managers. Our results have important implications for designing organizational policies. When designing these policies, firms should take into account the indirect effect of these policies, such as the effects of these policies on related parties in the organizational hierarchy.

Our study also contributes to the emerging literature on collusion in the organizations. While examining the determinants of how fraudulent parties implement their collusive agreements is clearly important (Evans et al., 2016), investigating why and when potential fraudsters initiate collusion, and how they select their partners in crime, is also likely to help

us to better understand corporate crime and rent extraction. Our theory and results show that two crucial factors in determining how potential fraudsters initiate collusion are direct reciprocity and potential partners' willingness to join in. Specifically, unkind treatment of employees by managers triggers employees to initiate collusion attempts. Knowing how others are treated by their managers helps employees to assess whether others are willing to join in. Thus, if colleagues are treated unkindly (kindly), knowing this increases (decreases) employees' tendency to approach these colleagues for possible engagement in a collusive effort.

Of course, our study is subject to a number of limitations. First, we designed our study in such a way that managers are either kind or unkind, whereas in the real world manager kindness likely varies along a continuum. Similarly, we manipulated internal transparency to be either absent or present. In real world organizations, transparency is not necessarily dichotomous, and how much employees know about the employee-related decisions of managers of other departments will depend on a combination of factors (e.g., the content and/or frequency of intranet webpages, newsletters, meetings and publicly accessible databases etc.). Second, our experiment is single-period in nature. Outside the laboratory, managers and employees will generally interact for multiple periods, such that reputations can be formed and interpersonal (dis-)trust can develop. In summary, as is standard practice in economic experiments, we analyzed a stylized and simplified version of the real world. While this stylization and simplification allows us to focus on the cause-effect mechanisms predicted by our theory, it provides an important caveat when drawing implications for real-world control system design.

We see several potentially interesting avenues for future research. First, we are looking forward to studies that take the limitations of our experiment as a starting point for further exploration of the how transparency in firms affects collusion. For example, while in our experiment managers either hold the discretionary funds entirely for themselves or choose an

equal split, future research might provide managers with a continuum of possible sharing decisions. What would make this setting interesting, is that employees would need to subjectively assess to what extent a specific level of sharing signals (un-)kindness. Second, we believe it would be interesting to study collusion in organizations – and whether and how it is affected by transparency - using other research methods. For example, using anonymous questionnaires and proprietary firm data, researchers might examine how and where collusive rent extraction emerges in organizations. Finally, we encourage accounting researchers to continue examining the role of middle managers in determining the effectiveness of control systems and organizational policies. Accounting research that follows the behavioral economics literature in incorporating non-monetary factors in economic models of organization, is likely to produce valuable new insights about the effectiveness of management accounting and control practices.

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Appendix

Role Assignment Quiz

1. How long is a light year in meters?
   A) 9,460,730,472,580,800;   B) 8,601,998,222,783,101;   C) 8,771,209,923,600,240;
   D) 9,128,651,649,058,943

2. Which number is closest to the market capitalization of Google at the end of February 2015 (in billion US$)?
   A) 390;   B) 400;   **C) 380;**   D) 410;

3. How long is the world's longest river, the Nile, in kilometers
   A) 7,038;   B) 6,870;   C) 6,912;   **D) 6,690;**

4. How many separate patents did Thomas Edison file?
   A) 1,082;   B) 1,074;   C) 1,087;   **D) 1,093;**

5. How many steps are there to the top of the Eiffel tower?
   A) 1,006;   **B) 1,007;**   C) 1,008;   D) 1,009;

6. What is the number of neck vertebrae of a Giraffe?
   A) 10;   B) 9;   C) 8;   **D) 7;**

7. Which number is closest to the size of Singapore in square kilometers?
   A) 922;   B) 523;   **C) 718;**   D) 261;

8. On January 1, 2015, what was the population of Amsterdam?
   A) 817,411;   B) 809,343;   **C) 821,927;**   D) 828,909;

9. What is the maximum depth of the Atlantic Ocean in meters?
   A) 7,200;   B) 10,092;   C) 10,432;   **D) 8,605;**

10. How many people survived the sinking of the Titanic?
    A) 621;   **B) 706;**   C) 717;   D) 588;

11. Which number is closest to the amount of salt (in grams) in the average human body?
    A) 250;   B) 120;   C) 175;   D) 400;

12. For how many days did the Vietnam War last?
    A) 7,382;   B) 7,010;   C) 6,873;   D) 7,991;

13. How many completed operas did Pyotr Ilyich Tchaikovsky compose?
    A) 8;   B) 10;   C) 12;   D) 14;

14. What is the equatorial circumference of the Moon in kilometers
    A) 8,893;   **B) 10,916;**   C) 9,334;   D) 12,569;

15. In which year was Coca Cola sold for the first time?
    A) 1882;   B) 1884;   **C) 1886;**   D) 1888;

16. On October 1, 2013, how many students were enrolled at the University of Amsterdam? (Please give your answer in whole numbers. Do not use commas or periods to separate thousands.)

This appendix shows the quiz to assign roles. The correct answers are indicated in bold font. Participants with an above-median score in their session on the first 15 questions are assigned the role of manager. The last question is used to break ties.

Table 1

Summary statistics

	Low Transparency			High Transparency			Overall		
	n	**M**	**SD**	**n**	**M**	**SD**	**n**	**M**	**SD**
% kind managers	240	34.58	0.48	280	47.86	0.50	280	41.73	0.49
% employees initiating collusion	240	45.42	0.50	280	43.57	0.50	280	44.42	0.50
% collusive agreements	120	19.17	0.40	140	28.57	0.45	260	24.23	0.43

This table presents summary statistics about the decisions of the managers and the employees.

Table 2

Collusion initiation under different scenarios

		Own manager					
		Unkind		**Kind**		**Overall**	
	Other manager unkind	n	104	n	53	n	157
		M	0.50	M	0.42	M	0.47
		SD	0.50	SD	0.50	SD	0.50
Low Transparency	**Other manager kind**	n	53	n	30	n	83
		M	0.45	M	0.37	M	0.42
		SD	0.50	SD	0.49	SD	0.50
	Overall	n	157	n	83	n	240
		M	0.48	M	0.40	M	0.45
		SD	0.50	SD	0.49	SD	0.50
	Other manager unkind	n	82	n	64	n	146
		M	0.85	M	0.28	M	0.60
		SD	0.36	SD	0.45	SD	0.49
High Transparency	**Other manager kind**	n	64	n	70	n	134
		M	0.39	M	0.13	M	0.25
		SD	0.49	SD	0.34	SD	0.44
	Overall	n	146	n	134	n	280
		M	0.65	M	0.20	M	0.44
		SD	0.48	SD	0.40	SD	0.50
	Other manager unkind	n	186	n	117	n	303
		M	0.48	M	0.48	M	0.53
		SD	0.04	SD	0.04	SD	0.50
Overall	**Other manager kind**	n	117	n	100	n	217
		M	0.42	M	0.20	M	0.32
		SD	0.50	SD	0.40	SD	0.47
	Overall	n	303	n	217	n	520
		M	0.56	M	0.28	M	0.44
		SD	0.50	SD	0.45	SD	0.50

This table presents descriptive statistics about the proportions of employees choosing to initiate collusion in different scenarios constituted by the levels of *Transparency*, *Own_manager_kind*, and *Other_manager_kind*. For variable definitions see Table 3.

Table 3

Parameter estimates in models predicting employee collusion

	(1)					(2)				
	B	**Std. Error**	**Exp(B)**	**z-stat**	**Sig.**	**B**	**Std. Error**	**Exp(B)**	**z-stat**	**Sig.**
(Intercept)	1.32	0.41	3.73	3.23	< 0.01	0.71	0.41	2.03	1.72	0.09
Transparency	0.32	0.40	1.38	0.80	0.42	1.55	0.57	4.70	2.69	< 0.01
Own_manager_kind	−1.34	0.30	0.26	−4.48	< 0.01	−0.47	0.40	0.63	−1.17	0.24
Other_manager_kind	−0.99	0.23	0.37	−4.30	< 0.01	−0.40	0.30	0.67	−1.32	0.19
Transparency × Own_manager_kind						−1.99	0.61	0.14	−3.29	< 0.01
Transparency × Other_manager_kind						−1.41	0.51	0.24	−2.76	< 0.01
Own_manager_kind × Other_manager_kind						0.31	0.51	1.37	0.61	0.54
Period	−0.13	0.03	0.88	−3.67	< 0.01	−0.10	0.04	0.90	−2.85	< 0.01

This table presents the parameter estimates of two binary logistic models estimated using Generalized Estimating Equations. The dependent variable in both models is *Collude*. Model 1 is a main effects only model and Model 2 includes the two-way interactions between the independent variables. *Period* is included as control variable in both models. Both models are estimated with an AR(1) working correlation matrix structure. The standard errors are robust.

Collude equals 1 if the employee chooses to approach their peer for collusion and 0 otherwise.
Transparency equals 1 in the high transparency condition 0 in the low transparency condition.
Own_manager_kind equals 1 if the manager of the employee shared the discretionary budget with the employee and 0 otherwise.
Other_manager_kind equals 1 if the manager in the other department of the organization shared the discretionary budget with their employee and 0 otherwise.
Period is the period in the experimental session, ranging from 2 to 11 (period 1 is the practice period).

Table 4

Hypotheses tests using contrasts of predicted margins

	Transparency = 0	*Transparency = 1*	Δ	χ^2	**Sig.**
H1a and H1b					
Other_manager_kind = 0	0.47	0.62	0.15	2.89	0.09
Other_manager_kind = 1	0.40	0.28	-0.12	1.43	0.23
H2a and H2b					
Own_manager_kind = 0	0.48	0.68	0.20	4.34	0.04
Own_manager_kind = 1	0.39	0.20	-0.19	3.44	0.06

This table contains contrasts of estimated marginal means of *Collude* to test the hypotheses H1a, H1b, H2a, and H2b. For variable definitions see Table 3.

Table 5

Parameter estimates in models predicting manager kindness

	Model 1					Model 2					Model 3				
	B	Std. Error	Exp(B)	z	Sig.	B	Std. Error	Exp(B)	z	Sig.	B	Std. Error	Exp(B)	z	Sig.
(Intercept)	-0.46	0.40	0.63	-1.15	0.25	0.14	0.39	1.15	0.37	0.72	-0.94	0.38	0.39	-2.45	0.01
Transparency	0.60	0.43	1.82	1.40	0.16	-0.49	0.57	0.61	-0.86	0.39	1.10	0.50	3.00	2.18	0.03
Period	-0.03	0.04	0.98	-0.73	0.47	-0.12	0.04	0.89	-2.92	< 0.01					
Period × Transparency						0.17	0.07	1.19	2.61	< 0.01					

This table presents the parameter estimates of three binary logistic models estimated using Generalized Estimating Equations. The dependent variable in both models is *Kind*. Model 1 is a main effects only model and Model 2 includes a *Transparency × Period* interaction term. Model 3 includes only *Transparency* as independent variable and is estimated using data from periods 7-11 only. All models are estimated with an AR(1) working correlation matrix structure. The standard errors are robust.

Kind equals 1 if the manager shared the discretionary budget with the employee and 0 otherwise.
Transparency equals 1 in the high transparency condition 0 in the low transparency condition.
Period is the period in the experimental session, ranging from 2 to 11 (period 1 is the practice period).

					Manager decision:	
					NOT SHARE	SHARE
Employee decision:	NOT APPROACH		NO AGREEMENT	Manager points	1400 (1000 + 400 – 0)	1200 (1000 + 200 – 0)
				Employee points	800 (800 + 0 – 0 + 0)	1000 (800 + 200 - 0 + 0)
	APPROACH	Other employee decision: NOT APPROACH	NO AGREEMENT	Manager points	1400 (1000 + 400 – 0)	1200 (1000 + 200 – 0)
				Employee points	200 (800 + 0 - 600 + 0)	400 (800 + 200 - 600 + 0)
		APPROACH	AGREEMENT	Manager points	600 (1000 + 400 – 800)	400 (1000 + 200 - 800)
				Employee points	1000 (800 + 0 – 600 + 800)	1200 (800 + 200 - 600 + 800)

Fig. 1. The decisions of employees and managers and the payoffs of the decisions. This figure presents the normal form of the experimental game. A copy of this figure was presented to the participants in the instructions handout.

Stage 1 Subgame:

Manager Decisions and Payoffs

Manager :	Other Manager:	Share	Not Share
Share		1,200 – Collusion cost *1,200 – Collusion cost*	1,200 – Collusion cost *1,400 – Collusion cost*
Not Share		1,400 – Collusion cost *1,200 – Collusion cost*	1,400 – Collusion cost *1,400 – Collusion cost*

Stage 2 Subgame:

Employee Decisions and Payoffs

Employee:	Other Employee:	Collude	Not Collude
Collude		1,000 + Share from manager *1,000 + Share from manager*	200 + Share from manager *800 + Share from manager*
Not Collude		800 + Share from manager *200 + Share from manager*	800 + Share from manager *800 + Share from manager*

Fig. 2. The experimental game in the extensive form. This figure presents the extensive form of the experimental game. Payoffs in regular font are for the row player (i.e. the manager or employee in the focal department). Payoffs in italics are for the column player (i.e. the manager or employee in the other department).
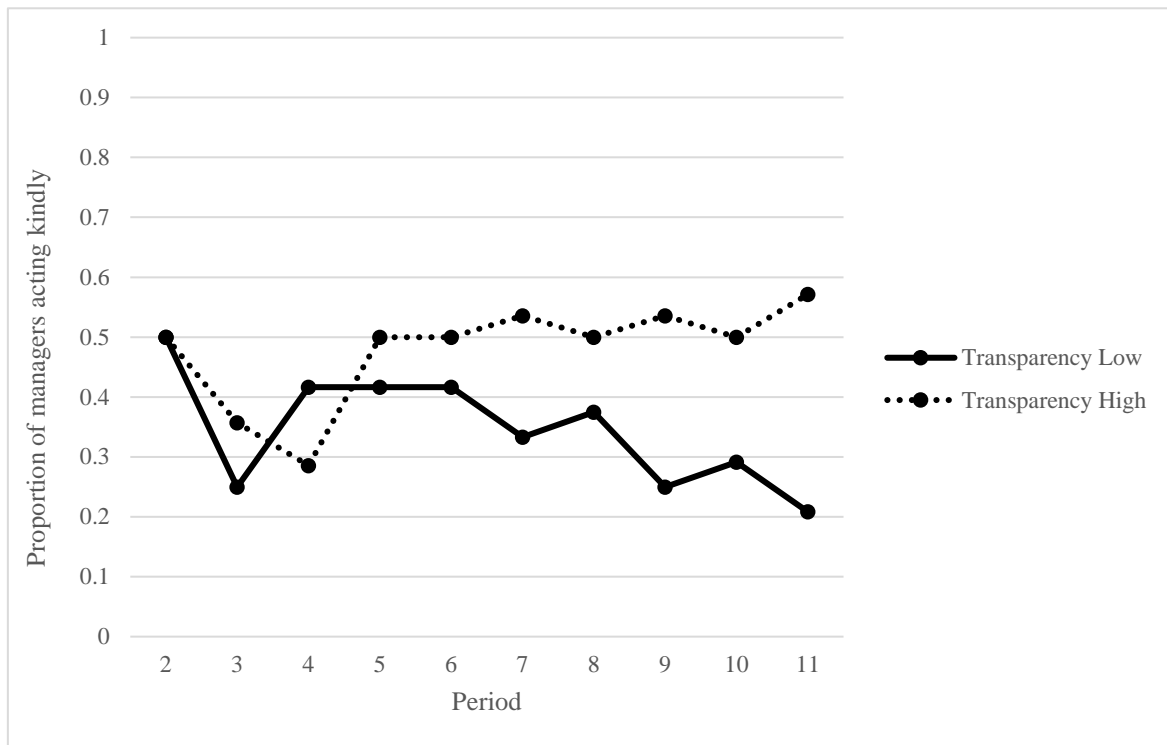
Fig. 3. Proportion of managers acting kindly in different periods. This figure presents the percentage of managers choosing to share the discretionary budget with their employee from period 2 to 11 in the high transparency and the low transparency conditions.