

10 *Compensation and employee misconduct: the inseparability of productive and counterproductive behavior in firms*

IAN LARKIN AND LAMAR PIERCE

Incentive systems play a fundamental role in organizations. Financial compensation represents the largest single cost for the average company (Gerhart, Rynes, and Fulmer 2009), and compensation is intimately tied to firm strategy and performance (Larkin, Pierce, and Gino 2012; Nickerson and Zenger 2008). Well-designed compensation systems allow firms to direct employee effort toward productive activities that improve firm performance and survival. Just as importantly, compensation systems can play a key role in attracting and retaining the right types of employees based on heterogeneous ability, motivation levels, and social connections. Although financial and other extrinsic incentives built into compensation systems are powerful tools for improving productivity, they also carry substantial risks. Compensation systems can generate perverse economic incentives as well as psychological and social responses that motivate a wide class of counterproductive behaviors ranging from lack of cooperation to explicitly illegal misconduct.

This chapter focuses on illuminating the holistic implications of multiple classes of compensation systems for employee behavior. We focus on non-executive employees for several reasons. First, an extensive literature in finance, strategy, and management covers executive compensation. Second, the key issues in executive compensation, such as motivating the appropriate level of risk and minimizing high-level corporate fraud, are quite different from the tradeoffs managers face when motivating non-executive employees (Larkin et al. 2012). Finally, the pay of top executives typically accounts for only a few percentage points of total firm compensation costs (Whittlesey 2006).

Incentive systems are fundamentally about motivating employee behavior (Hall 2000). In this chapter, we focus on both productive behaviors and counterproductive misconduct that are motivated by compensation systems. Productive behaviors are defined as those that contribute to the performance and ultimate success of the firm (as measured by profitability for most for-profit firms, but that can include other metrics). Misconduct includes several types of behaviors that are counterproductive to the firm: actions that are explicitly illegal, actions that violate formal organizational rules, actions that may not violate rules but are against the spirit of the rules, and actions that are counter-normative. Fundamentally, employees engage in misconduct because they believe it will increase their utility or happiness; misconduct can generate higher extrinsic rewards, such as pay, promotion, or status, and can also increase psychological well-being.

Our primary arguments are threefold. First, we hold that the effect of compensation on the two classes of behavior – productivity and misconduct – tends to go in the same direction. That is, systems that increase productive behavior usually also increase misconduct even, at times, by the exact same employee. Second, we argue that managers and academics often make a fundamental mistake when implementing and studying compensation, in that both groups have a tendency to focus only on a single class of behavior. An incentive system that promotes a high level of productive effort might be heralded as a success because the costs of misconduct are ignored. Conversely, systems that lead to some level of misconduct are often criticized as sub-optimal, even without a careful examination of the productive actions motivated by the system. Taken together, these two points lead to our third argument: In almost any optimal incentive system, the level of misconduct is almost never zero. Put another way, the optimal compensation system will almost always foster some level of illegal, unethical, or other counterproductive behavior.

This is consistent with the idea that organizational misconduct is a normal and inevitable byproduct of necessary and important structural elements of the firm (Palmer 2012). In our view, these insights mean that academic research and managerial practice need to consider the holistic cost–benefit calculus of a given compensation system. This realization means that a compensation system which maximizes productivity often will carry unacceptable levels of misconduct, while

a compensation system that minimizes misconduct will often lead to low productivity by employees.

Classes of compensation systems

Compensation schemes differ in the immediacy of the link between performance and compensation and whether performance is measured at an individual level or at a team or group level. Only about one-third of employees in the United States are paid via a system which links pay to immediate performance measures such as job productivity (Lemieux, MacLeod, and Parent 2007). While two-thirds of employees are paid via a *flat wage*, meaning their monthly paycheck does not depend on performance, most of these employees are compensated in the long term for performance via annual salary increases, often coupled with promotions to higher-paying and/or higher-visibility jobs. These systems are often termed as *scaled wages* (Larkin et al. 2012). Employees paid via scaled wages are more likely to have their performance measured via subjective rather than objective performance measures, and the criteria determining wage increases are often not directly related to an employee's performance per se (Hall 2000). For example, length of tenure at a firm and the level of seniority compared to peers are common factors determining an employee's compensation in a scaled wage system. We consider promotion-based reward systems based on competition for advancement as a separate scheme from *scaled wages*, since the former is a type of *tournament* that relies on performance, not simply tenure or seniority.

The term *pay-for-performance* is commonly used to refer to systems where pay is based at least partly on short-term performance (Prendergast 1999). *Individual pay-for-performance* tightly links compensation to individual job performance such as productivity on a job task. *Team-based pay-for-performance* links compensation to the performance of a larger group of individuals who are typically organized in a team, group, functional area, or business unit. The size of teams varies widely. In fact, stock options and other equity-based compensation, which are used for approximately 20 percent of US employees (most often as part of a retirement plan [Hall 2000]), effectively set the size of the team as the entire firm.

The key challenge in pay-for-performance schemes revolves around whether job performance is completely observable to the manager and

firm (Baker 2000; Lazear 1979). Performance at some job tasks is inherently difficult to measure at the individual level in a way that is objective and perceived to be fair by workers simply because of production technology (Nickerson and Zenger 2008). Although production technologies that cleanly identify individual performance, such as the isolation of individual tasks, may facilitate the implementation of individual pay-for-performance, they may be grossly inefficient compared with more collaborative team-based production. Such team-based tasks may make individual pay-for-performance schemes intractable and may encourage team-based pay-for-performance systems that allow for performance observability at higher levels.

It is common for employees to have several different classes of compensation within a single plan. For example, salespeople often receive a flat, guaranteed wage; are paid commissions based on individual sales; are paid commissions based on their contribution to team-based sales; are paid stock options as part of their retirement plans; and are rewarded overtime via increases in their base pay and promotions to more senior sales positions (Dartnell 2009). The combination of compensation classes can allow firms to address employee risk aversion, create group and firm identity, and tailor specific compensation components to multiple tasks, some of which involve cooperation and some of which are individually separable.

Performance measurement for each compensation plan type can be organized around either cardinal or ordinal metrics (Baker 1992). Tournament-based compensation links rewards to individual or team performance relative to others (Lazear and Rosen 1981). In a tournament-based scheme involving promotions, for example, there are more employees vying for promotion than the number of available promotion slots. This means that the promotion reward must be allocated via consideration of relative performance, at least to some extent. In contrast, absolute performance-based systems tie pay to a cardinal scale, independent of relative performance.

It is important to emphasize that compensation encapsulates more than just monetary pay (Hall 2000). To reward strong performance, firms use non-monetary rewards, such as job awards, titles, and promotions not tied to increased pay, as well as non-monetary perks, such as a desirable workspace, flexible job hours, and autonomy in job design.

Compensation and employee actions: mechanisms and positive effects

Compensation systems are designed to influence the actions of employees. At their best, compensation systems motivate productive actions in line with the mission of the organization. However, compensation systems often cause employees to act in unexpected and/or unintended ways that detract from this mission, which we broadly define as misconduct that can range from shirking to explicit illegality. One major employee action heavily influenced by compensation is the decision to join, remain with, or leave an organization. Many scholars believe these decisions, which are referred to as *sorting*, play the largest role in determining the efficacy of a compensation system (Lazear and Oyer 2012). All other employee actions are typically referred to as *effort* (Prendergast 1999).

Effort vs. shirking

The most direct mechanism by which compensation influences employee action is around the choice of overall effort level while on the job (Prendergast 1999). Economic behavioral models typically assume that in the absence of compensation, employees prefer to shirk rather than work, such that individuals will reach a point where no additional effort is being exerted, despite potential rewards. Specifically, employees exert effort only to the point at which the marginal reward for increased effort equals the marginal cost of the effort. Importantly, this means that *any* compensation plan involves employees not working “as hard as possible” because, at each person’s true effort limit, marginal effort is infinitely costly (e.g., death). Since employees have heterogeneous costs of effort and intrinsic motivation, this limit varies across individuals. Under a given compensation plan, the limit may be at 30 percent effort for one employee, while at 99 percent effort for another. This heterogeneity highlights the importance of compensation’s sorting mechanism mentioned before. Designing a compensation system that attracts the 99 percent effort individual is far more important than one that improves the 30 percent individual’s effort by 10 percent.

Although not universally accepted in the social sciences, every large-sample empirical study of pay-for-performance in actual

firms, for example, in settings such as automobile windshield installation (Lazear 2000), agriculture (Bandiera, Rasul, and Barankay 2005), enterprise software (Larkin 2014), tree planting (Paarsch and Shearer 2000), long-distance trucking (Burks et al. 2009), professional services (Hitt et al. 2001), has shown that higher compensation increases average job effort (Prendergast 1999). Consequently, the incentives provided by compensation tied to performance generally achieve some degree of increase in productive behavior via increased effort, although this increased effort does not necessarily make such schemes optimal.

Pay-for-performance at the individual level results in the greatest increase in individual effort, since gains from such effort are internalized by the individual. *Ceteris paribus*, team-based pay-for-performance produces lower levels of direct effort because the gains from such effort must be shared across multiple individuals (Prendergast 1999). This sharing of rewards leads to the classic free-rider problem, or shirking, where each individual reduces effort and relies on the contributions of teammates. Typically, the free-rider problem increases with team size due to reduced incentives and observability by managers (Holmstrom 1982).

The effort implications of tournament-based pay structures, whether through short-term pay-for-performance or through longer-term promotion systems, are more complex than those of cardinal systems (Lazear and Rosen 1981). Since tournament structures reward individuals' performance relative to others, effort will be primarily driven by the likelihood of "winning" by outperforming others. Although this competition can powerfully drive effort through both rational incentive response and competitive drive, it can also dramatically reduce effort under several circumstances. First, workers with strong preferences against competition may reduce effort to avoid intense rivalry (Niederle and Vesterlund 2007). Second, if workers perceive the probability of successfully outcompeting others to be very low, they may produce minimal effort (Boudreau, Lacetera, and Lakhani 2011; Carpenter, Matthews, and Schirm 2010) – a serious concern in organizations of diverse worker ability where stars are likely to win any tournament. Unless the tournament structure sufficiently rewards those who finish well relative to other non-stars, the returns from effort are effectively zero. These problems with tournament-based systems highlight the importance of understanding the distribution of abilities

within the firm and how those often subtly change the incentives for each worker type to exert effort.

Sorting, attraction, and selection

Perhaps even more important is how compensation motivates individuals to join, stay, or leave the firm (Lazear 2000; Zenger 1994). In a world with heterogeneous pay structures across firms, individuals tend to join those that reward them best. Although pay *levels* considerably influence this decision, so too will compensation structure. Scaled wages attract lower-ability and risk-averse workers who fear low performance-based pay. In contrast, individual pay-for-performance attracts the highest-ability workers because of their superior earning potential. Stars will avoid team-based pay-for-performance for fear of sharing the rewards of their contributions with weaker teammates. Consequently, firms using individual-based systems tend to attract more skilled and higher-effort employees, while lower-ability and lower-effort workers prefer team-based systems, where they can free-ride on better teammates. This dynamic was shown by Lazear (2000) when unproductive technicians sorted away from Safelite after the company moved to a pay-for-performance structure. Tournament settings also tend to attract higher-skill employees (Iranzo, Fabiano, and Tosetti 2008). We note that pay does not purely determine sorting. Hamilton, Nickerson, and Owan (2003) found that some high-ability workers simply prefer team-based pay, while Niederle and Vesterlund (2007) found lower preferences for tournaments among women. Larkin and Leider (2012) explain how individual-based pay attracts overconfident people.

The relative importance of effort provision versus sorting depends on the heterogeneity of employee skill within the industry (Lazear and Rosen 1981). In industries with heterogeneous employee ability, such as enterprise software sales (Larkin 2014), financial services, and law (Hitt et al. 2001), compensation systems focus on attracting star workers and sorting out low-ability workers.

Cooperation

Organizations fundamentally exist to coordinate resources, including the actions of employees; and, the incentives built into compensation

systems can dramatically alter cooperative behavior (Fehr and Gächter 2002). Individual pay-for-performance systems, for example, reward individuals for their own productivity, without consideration of the outcomes of others. Consequently, such systems tend to encourage low levels of cooperation or helping unless such behavior directly results in improved performance for the helping individual (Chan, Li, and Pierce 2014a, 2014b; Fehr and Gächter 2002). In contrast, team-based pay-for-performance not only emphasizes but also explicitly incentivizes cooperative behavior (DeMatteo, Eby, and Sundstrom 1998; Itoh 1991; Kandel and Lazear 1992), yielding superior firm performance when cooperation and learning are critical to the production technology (Chan et al. 2014a, 2014b; Nickerson and Zenger 2008).

The effect of scale-based pay on cooperation depends on whether promotions are based on tenure and/or experience or are the result of tournament-based competition. Tournament-based compensation systems produce extremely low levels of cooperation and helping behavior because a worker's pay increases not only with their own improved productivity but also with the poor performance of their peers.

Competition

Compensation systems can induce competition if the system rewards some employees while at the same time excluding others, which can directly increase effort when employees must split a fixed reward and that effort increases the share of the reward (Nalebuff and Stiglitz 1983). At the extreme, if only one person will receive the entire reward, as in a promotion tournament, increased competition may lower the probability a given employee will gain the reward at a given level of effort, possibly spurring an increased level of effort to compensate. The mechanism of healthy competition and its inducement of maximal effort is why labor economists so often believe that tournament-based compensation practices are optimal (Holmstrom 1982; Lazear and Rosen 1981).

Competition can also increase effort via psychological mechanisms absent from the "rational" reward versus cost of effort calculus. Scholars from social psychology have explored the impact of competition on employee performance for nearly a century (e.g., Whittemore 1924), with many studies suggesting that some people are motivated to perform better when competing with others, even

absent a reward. For example, schoolchildren have been shown to run faster when running next to another student (Gneezy and Rustchini 2004). Research in sports settings also finds that teams play harder against established rivals (Kilduff, Elfenbein, and Staw 2010) and when slightly behind halfway through the game (Berger and Pope 2011). Competition with peers has been shown to increase effort in non-reward settings such as online gaming (Liu et al. 2013) and Linux software coding (Hertel, Niedner, and Herrmann 2003). The simple observability of peer productivity can increase effort through social comparison processes (Blanes, Vidal, and Nossol 2011; Mas and Moretti 2009).

Fairness

A recent but burgeoning literature demonstrates that compensation systems that are viewed as fair by employees induce higher effort (Fehr, Schmidt, and Klein 2007). “Fairness” is a broad term that encompasses no fewer than twelve separate ideals (Vaughan-Whitehead 2010) from legal system requirements on compensation, such as minimum wage levels, to the degree of wage competition at the market level, to social concerns such as the wage providing an adequate standard of living.

Employee perceptions of compensation system fairness are typically established via comparisons to reference points (Fehr, Hart, and Zehnder 2011). The most common reference point used by employees is the pay of similar employees, either in the same company or in other companies (Brown et al. 2008; Card et al. 2012; Carrell and Dittrich 1978), although other reference points such as prior income (Bewley 1998) or minimum wage (Falk, Fehr, and Zehnder 2006) are also important. The use of social comparisons to assess the fairness of compensation means that, unlike the standard utility model of economics, employees not only analyze their own effort and reward tradeoffs when deciding how much effort to exert but also consider the effort-reward tradeoff of others (Akerlof and Yellen 1990). A wide range of experimental and correlative studies using archival data suggests a positive relationship between wage equity and effort, meaning employees work harder in situations where others are paid similarly (Fehr and Gächter 2000).

Compensation and employee actions: negative effects

Through the same five mechanisms discussed above (effort, sorting, cooperation, competition, and fairness) compensation systems can also generate a host of negative employee actions, which we term “misconduct.” In fact, logical consideration of the five mechanisms indicates that they are often mutually contradictory within a given compensation system. For example, using an individual pay-for-performance system inevitably causes heterogeneity in pay due to differences in employee skill and/or heterogeneity in the cost of employee effort. Indeed, these sources of heterogeneity are one of the fundamental reasons many scholars espouse the use of pay-for-performance in compensation. However, the heterogeneous compensation that results in these systems, by definition, reduces perceived fairness of the system. Tournament-based pay provides another example of the tradeoffs across mechanisms when determining employee reaction to compensation. The competition inherent in tournament-based systems in many cases can increase effort, but the fact that there is such a large difference in employee outcomes in tournaments (that is, one employee is promoted while the rest are not) fundamentally reduces perceived fairness.

In the quest to increase employee productivity via the compensation system, firms often unintentionally incentivize pernicious behavior that destroys value. These negative behaviors can occur across employees, with a given compensation system promoting positive behavior in some employees and negative behavior in others; however, because of the contradictions inherent in any compensation plan, it is often the case that a given compensation system induces both productive behavior and misconduct by the same employee. For example, an employee may work harder in a given system, but also game the system in a way that is costly to the employer in order to increase pay even more. Compensation, then, acts as a double-edged sword (Jensen 2001), incentivizing both productivity and misconduct in the same employee.

Demotivation from crowding out

One key benefit of pay-for-performance systems is that they engender increased effort on desired tasks. However, in some cases, the use of financial compensation may actually reduce effort provision on desired tasks, largely through employee demotivation due to psychological

mechanisms. As noted previously, pay-for-performance incontrovertibly reduces employee shirking. Nevertheless, pay-for-performance can reduce employee effort by affecting baseline motivation for the job.

The most well-known mechanism by which pay-for-performance can reduce motivation and therefore effort is through the crowding out of intrinsic motivation (Deci, Koestner, and Ryan 1999). In crowding out theory, the introduction of a financial reward not only increases extrinsic motivation toward a task but also reduces intrinsic motivation coming from love of the job, a sense of duty toward or shared purpose with the employer, and other non-extrinsic factors. This is consistent with insufficient justification theory (Staw 1974), which argues that extrinsic and internal motivation are substitutes because individuals flexibly seek sufficient justification for prior decisions or behavior. Many scholars and practitioners mistakenly believe that crowding-out theory predicts that financial incentives reduce employee performance. In reality, crowding-out theory recognizes that financial incentives increase extrinsic motivation while reducing intrinsic motivation, leading to an ambiguous prediction of the effect on effort (Frey and Jegen 2001). If the increased extrinsic motivation is smaller than the decreased intrinsic motivation, employees will work less hard despite higher pay. This partially explains why field evidence on crowding out is so rare (Gubler, Larkin, and Pierce 2016). Identifying it requires either the combination of a weak extrinsic motivation increase and strong intrinsic motivation decreases, or else the observation of decreased productivity after the extrinsic reward is removed.

Most experimental studies of crowding out rely on measuring task performance in three periods: pre-reward introduction, the reward period, and the period after which the reward is removed. The typical study compares pre-reward task performance with performance after the reward was introduced and then removed (Esteves-Sorenson, Pohl, and Freitas 2013). These studies almost unanimously find lower performance in the period after removal compared to before introduction (Deci et al. 1999). However, in most experiments, performance in the intermediate phase, when financial rewards were paid to subjects, is actually higher than that in the pre-reward phase (Esteves-Sorenson et al. 2013). It is even more difficult to cleanly identify crowding out using real-world data because it is rare to have exogenous introductions then removals of rewards. In fact, most empirical studies of financial rewards are not suggestive of crowding out (Prendergast

1999). Nevertheless, one recent field study suggests that crowding out did occur after a reward was introduced for a previously uncompensated task; previously highly punctual employees became eight times more likely than a control group of workers to show up late after an industrial laundry plant introduced a highly visible award for punctuality (Gubler et al. 2016).

Demotivation and cheating from unfairness

Financial rewards can also reduce employee effort due to perceived unfairness or inequity in the system. Recent research has demonstrated that employee job satisfaction and reported workplace morale markedly decline when employees learn they earn less than their peers (Card et al. 2012) or that the company's CEO is paid more than their peers (Cornelissen, Himmler, and Koenig 2011). In the Card et al. (2012) study, a random group of University of California employees were told that peer salaries were publicly available via a website, leading 80 percent of these employees to access the website. Employees paid below the median for their occupational category reported a 5.2 percent reduction in job satisfaction, and a self-reported 20 percent increase in likelihood of looking for a new job. A study of mergers in Korea found a much higher likelihood of voluntary employee departure post-merger when employees were paid significantly less than similar employees of the newly merged firm (Kwon and Milgrom 2007).

Employee overconfidence exacerbates the problem of perceived inequity. Many employees feel they have higher skills or better performance than they actually do, and attribute lower-than-expected measured performance to biases in the system (de la Rosa 2011). In tandem, overconfidence and social comparisons mean that employees with below-average skill may react to pay-for-performance systems by reducing effort because of perceived unfairness (Larkin et al. 2012), a result also suggested by Card et al. (2012).

Multitasking and gaming

Until now, we have focused on the effect of compensation on the task being compensated. However, in reality, job functions are usually complex and involve a large number of related tasks. Especially in job settings where it is easier to measure performance on individual tasks

rather than holistic performance across these tasks, pay-for-performance is often focused only on a subset of the tasks important to an organization. Multitasking theory (Holmstrom and Milgrom 1991) holds that employees will over direct effort toward compensated tasks at the expense of non-compensated tasks. Because tasks are interdependent, this can cause overall employee performance to fall.

The negative effects of multitasking can represent a simple, non-strategic response by employees to the firm's incentive system. Employees may not even be aware that their misplaced emphasis on compensated tasks is hurting overall performance (Kerr 1975). Firms may find it difficult to adequately measure performance on every important task and may choose to reward the most easily measured or highly observable task (Lado and Wilson 1994).

In many cases involving multitasking problems, employees strategically "game" the system in order to maximize their own pay. Incentive system gaming refers to deliberate manipulation of an employee's task performance in a way that increases their pay in a way that is clearly outside the spirit of the incentive system, even if the action is within the system's rules (Frank and Obloj 2014; Larkin 2014; Obloj and Sengul 2012; Oyer 1998). For example, an employee may strategically delay the completion of a task so that the task is credited in a job period where pay is higher. Larkin (2014) shows that enterprise software salespeople strategically accelerate and delay deals in order to maximize their commissions and offer lower prices to customers to incentivize their cooperation. This research estimates that this deliberate "timing gaming" costs 5 percent to 8 percent of overall firm revenue.

For employees with multiple important tasks, the multitasking problem becomes even more complex to solve because rewarding any one task inherently causes negative spillovers to all other tasks. When a firm decides to base worker pay on performance of a specific task, they inherently devalue all other tasks in the minds of employees, who will in turn reallocate effort away from those tasks.

Fraud and theft

Compensation systems that reward performance on a specific dimension may motivate productive behavior on that dimension, but may also motivate workers to fraudulently increase the *appearance* of performance on the dimension. If the rewarded dimension is perfectly

observable and measurable, then such fraud is of little concern. But if it is possible for workers to increase their pay by faking performance, then a number of counterproductive outcomes can ensue.

Workers may directly misreport performance, either by self-reporting higher productivity or by falsifying productivity data. In pay-for-performance systems, lying produces a direct financial payoff and may be rational if the probability of and punishment associated with detection are low (Gneezy 2005; Gneezy, Rockenbach, and Serra-Garcia 2013). The incentives for overreporting performance may be further accelerated when the pay system has a tournament element, because of increased competition and the expectation of others cheating (Schwieren and Weichselbaumer 2010). Many employees will honestly report performance even under such conditions because of their own preferences for honesty; but, a substantial portion of the population is indeed willing to cheat (Mazar and Ariely 2006). This motivation to inflate performance will be accelerated for those low-ability (or low-effort) workers who earn low amounts under pay-for-performance systems, partly because they may view the unequal wages as being unfair or inequitable, which may invoke feelings of envy.

In a series of laboratory settings, Gino and Pierce (2009a, 2010a, 2010b) demonstrated that even randomly generated pay inequity can motivate dishonest performance reporting. Furthermore, they showed that this inequity need not be directly associated with the liar. Their work suggests that workers may help one another by misreporting performance to address perceptions of pay inequity, even when that dishonesty is personally financially costly. This is consistent with earlier work by Greenberg (1990, 1993) as well as a broader line of laboratory research showing that individuals justify dishonest acts based on their financial and utility benefits to others (Erat and Gneezy 2012; Gneezy 2005; Wiltermuth 2011; Wiltermuth, Bennett, and Pierce 2013). This work suggests that although team-based pay-for-performance may reduce issues of inequity and reduce incentives to overreport performance (Larkin et al. 2012), it may also help individual workers justify their dishonesty. Indeed, recent work by Conrads et al. (2013) found that teams are more likely to cheat than individuals.

In a set of laboratory experiments, John, Loewenstein, and Rick (2014) demonstrated that the inequity associated with wage comparison may dominate incentives. Under piece-rate pay systems, workers had stronger financial incentives to inflate their self-reported

performance when the rates were highest. Nevertheless, they found that those with lower piece-rates were more likely to inflate performance when able to observe others who earned higher rates. The study demonstrates that this effect is about social comparison process and not about decreasing marginal utility of money. The implication is that heterogeneity in performance-based pay rates creates psychological motivators to cheat the employer. Related work by Gill, Prowse, and Vlassopoulos (2013) shows that perceived inequity from bonuses can work in the same way, motivating increased cheating among those whose pay is disproportionately low compared to their contribution. An important finding in their study is that the best workers are most likely to cheat because they are the ones most likely to be wronged by a system where pay is not perfectly tuned to performance.

The second result is that workers, in devoting effort to generating and hiding fraud, will divert effort from other important tasks. This type of fraudulent multitasking generates spillovers to other tasks from the dishonesty of the compensated task. In recent work by Pierce, Snow, and McAfee (2015), restaurants using a pay-for-performance system experienced improved sales when theft was reduced through improved monitoring. This is consistent with workers shifting effort from theft to sales, and more broadly with compensation systems being critical conduits through which any type of misconduct might also impact other tasks.

Third, fraudulent performance reporting may expose the firm to extensive financial and legal liabilities (Baucus and Baucus 1997; Smith-Crowe et al. 2015). Overbilled clients of consulting or law firms could cancel large contracts because of the overreporting of one employee. Manipulation of financial return reporting could lead to investor lawsuits. Government contractors with inaccurate billing or performance claims could invalidate the company's qualification to bid for future contracts, and thus effectively end the firm.

Finally, fraudulent performance reporting by one worker can undermine the motivation of other workers who are either unable or unwilling to engage in the fraud. Those unwilling to report may view the fraudulent worker as unfairly achieving additional pay under the system, but rather than report the individual, may either reduce effort or leave the firm.

Although fraudulently reporting higher performance is an important type of misconduct stemming from pay-for-performance systems, it is

not the only type of fraud motivated by such compensation schemes. Workers may accurately achieve certain performance levels, but may cross ethical and legal boundaries to achieve them. One of the clearest examples of this occurred during the housing market bubble of 2005 to 2008, when real estate agents, mortgage brokers, and investment bankers were all primarily paid based on performance. Each of these groups had the ability to manipulate performance metrics by misrepresenting some aspect of a transaction in order to facilitate a sale (Ben-David 2011; Mian and Sufi 2009). Real estate agents could misrepresent the condition of a house, bringing in inspectors and appraisers who would overlook shortcomings and exaggerate positive attributes. Mortgage brokers, also paid on commission, could overstate borrower creditworthiness or income or offer mortgages to borrowers who did not truly understand the terms. Investment bankers, operating on high-powered bonuses, could knowingly package high-risk mortgages (often originated in-house) into securities for sale to unsuspecting third parties.

The likelihood that individuals will cross ethical or legal boundaries is further accelerated under compensation systems that are inherently tournament-based (Stowe and Gilpatric 2010). The sports world provides many excellent examples, where the compensation tied to winning or ranking is inherently based on relative performance. Palmer and Yenkey (2015) and Gould and Kaplan (2011) detail the use of performance-enhancing drugs in cycling and baseball. The tournament structure, particularly in cycling, generates widespread illegal drug usage because one's perception that others are gaining an advantage by breaking rules increases the motivation to break rules oneself.

In addition, compensation systems may cause spillover effects to other types of misconduct such as theft. As noted earlier, one key detrimental mechanism born from compensation systems is perceptions of inequity, unfairness, and related envy (Larkin et al. 2012). In a set of famous studies from social psychology, Greenberg (1990, 1993) showed that employees who received pay cuts that they perceived to be unfair were more likely to engage in theft. In the field, a pay cut at one plant resulted in increased inventory theft (Greenberg 1990), while in the lab, participants who were paid less than promised were more likely to steal cash (Greenberg 1993). Chen and Sandino (2012) found evidence that the psychological costs of pay comparisons may extend beyond locational boundaries in multi-unit firms. Studying

convenience stores, they found store-level theft to be correlated with pay level relative to other stores. Pierce et al. (2015), who find theft reduction from monitoring in restaurants to be correlated with productivity gains, also present fairness concerns as a possible motivator, but are unable to provide substantial evidence to support this mechanism.

Lack of cooperation

Recent research has shown that the use of ranking systems may reduce cooperative behavior and lead to excessive competition (Garcia and Tor 2007; Garcia, Tor, and Gonzalez 2006). This competition is often detrimental because it can lead to non-cooperative, value-destroying behavior. For example, Garcia et al. (2006) introduced a number of scenarios to experimental subjects, such as being at risk of exclusion from the list of Fortune 500 corporations, for example, a corporation currently ranked #500 or #501, versus a control condition where there was no risk of exclusion, for example, companies with a rank of #350 or #351. These papers indicate that experimental subjects are more likely to behave competitively, and in so doing reduce the amount of value created, when reaching to achieve a meaningful standard.

One explicit example comes from the different compensation systems studied by Chan and Pierce (2014a, 2014b) among cosmetics salespeople in a Chinese department store. In that setting, some counters employed individual commissions, while others used team-based commissions. The differences in both productive and counterproductive behavior were striking. In individual-based counters, star salespeople focus most of their effort on stealing customers from their own teammates, forcing those teammates to compete through price reductions. This internal competition was in lieu of the coordinated effort and specialization necessary to compete with adjacent counters, who benefited from the internal poaching of customers. Even more costly, stars at individual-based counters put no effort into teaching new salespeople, permanently impeding their sales ability growth. In contrast, team-based counters showed better cooperation, better teaching, and more successful cross-firm competition.

Competition has been shown to produce negative emotions such as disappointment, frustration, and anger both when an employee's

expectations are higher than actual achievement (McGraw, Mellers, and Tetlock 2005) and when competition occurs between employees where at least one employee feels threatened by another's status or control over resources (Fiske et al. 2002).

Negative sorting

There are several ways in which pay-for-performance systems can lead to negative sorting, defined as the attraction and retention of undesirable employees, or the failure to retain desirable employees. Negative sorting commonly occurs because pay-for-performance systems can affect the culture of an organization, and employees have heterogeneous preferences around an organization's cultural traits. For example, laboratory experimental research has demonstrated that peer effects play a strong role in predicting unethical behavior; employees often learn about the methods of unethical behavior, as well as the organizational acceptability of this behavior, by observing peers (Jones and Kavanagh 1996). In a field study of automotive emissions testers, where fraudulent manipulation of testing results is fairly common, Pierce and Snyder (2015) show that these peer effects also lead to clustering of unethical employees within certain firms. These results suggest that employees prone to engage in unethical behavior will learn about it from their more experienced colleagues, while those who find such behavior unacceptable will choose to leave a firm with unethical employees. Similarly, Hoffman and Morgan (2015) found that prosocial individuals naturally self-select out of industries with higher levels of "cutthroat" competition. If attracting and retaining ethical employees is important to an organization, either for its own sake or because it is correlated with other positive employee traits, the fact that pay-for-performance often leads to fraud will in turn lead to negative sorting of ethical employees.

Negative sorting can also play out on dimensions other than employee ethics. For example, employees are heterogeneous regarding their preferences for competition. Significant research has suggested that, for many tasks, a higher percentage of women tend to avoid individually competitive environments (Niederle and Vesterlund 2007). Tournament-based pay-for-performance schemes are inherently competitive and may therefore lead to a negative sorting of women. The effects of this negative sorting on workplace diversity

can be pernicious; indeed, some scholars hold that the relative paucity of senior female executives is as much due to negative sorting as it is to outright discrimination (Eagly and Carli 2007). Furthermore, if men and women have distinctly different moral preferences or ethical standards, as a body of experimental research suggests (Tenbrunsel and Smith-Crowe 2008), any compensation system that encourages misconduct may increase voluntary attrition of female workers and hinder diversity in workforce recruitment.

Negative sorting can also occur if competitors use pay-for-performance schemes to poach “superstar” employees from competitors. Research has demonstrated that star employees are rarely as successful at their new firms as their old ones (Groysberg 2012; Groysberg, Nanda, and Nohria 2004), likely because superstars rely, more than anticipated, on organizational support.

Sabotage

Although choosing not to cooperate when expected is passive misconduct, even more costly behavior occurs when workers actively act to sabotage the work of others. This most commonly occurs under a tournament-based compensation system, where workers benefit not only from their own success but also from others’ failures (Charness, Masclet, and Villeval 2013; Lazear 1989). For a worker who can easily undermine their peers’ productivity, it may be rational for them to expend effort on sabotaging coworkers rather than attempting to improve their own behavior. Such sabotage may involve actively reducing the objective performance of the coworker, but it may also involve politically undermining them in a longer-term promotion- or bonus-based tournament either through rumors or true revelations of undesirable behavior. Even when short-term compensation is relatively flat, the tournament incentives embedded in promotions can motivate widespread sabotage (Drago and Garvey 1998).

Although sabotage is most likely to occur under a tournament-based system because of incentives, workers under other systems may also sabotage if they feel a system is producing unfair outcomes (Fehr and Gächter 2000; Rabin 1993). Any system that produces pay disparity can potentially produce perceived inequity and the associated emotion of envy (Larkin et al. 2012; Nickerson and Zenger 2008). Individual pay-for-performance, for example, can generate feelings of inequity

and envy if workers cannot agree that the performance on the rewarded dimension is accurately measured. Ambrose, Seabright, and Schminke (2002) detail a large organizational behavior literature on how feelings of injustice, which are closely related to inequity, can generate sabotage and aggression on multiple dimensions. Given the saliency of compensation as a job attribute, any compensation system deemed unjust, either because of its pay levels or distribution across employees, can motivate sabotage.

Although compensation systems with wide pay dispersion are most likely to engender feelings of inequity or injustice that lead to sabotage, recent work by Bose, Pal, and Sappington (2010) explains that sabotage can also result from the equal pay policies in scaled wages. Since inequity is a function of the ratio of rewards to contributions, if the rewards are equal for all workers but contributions are not, misconduct, such as sabotage, can occur. This further highlights why jobs with wide arrays of ability typically use pay-for-performance. Similarly, though team-based compensation typically removes localized sabotage, both through the motivation to cooperate and the incentive to monitor peers, it can generate sabotage *across* teams (Gürtler 2008).

Excessive risk-taking

Another class of misconduct that can be influenced by compensation systems is excessive risk-taking, where individual employees risk substantial losses or liabilities for the firm to attempt to achieve financial rewards for themselves. Excessive risk-taking by employees can include reducing product safety to cut costs (e.g., food contamination), reducing environmental safety precautions (e.g., BP Deep Water Horizon), or excessively risky lending or financial instruments (e.g., Countrywide). Explicitly illegal or forbidden misconduct can also be classified as risk-taking in and of itself, since it involves a probability of detection and punishment, particularly when such misconduct creates legal liability for the individual or firm. In each case, individuals are likely to dramatically increase risk-taking when the compensation system strongly rewards successes in ways that cannot be counterbalanced by failures.

The underlying source of this excessive risk-taking is the asymmetry in the potential gains and losses to the individual built into the

compensation system. This asymmetry is inherent in any system with high-powered incentives from pay-for-performance for several reasons. First, even though compensation can increase significantly with positive outcomes, it is typically guaranteed at a minimum level. Even high-powered commission-based pay, as is typical in sales, almost always includes a base salary that insures risk-averse workers against uncontrollable outside economic factors. Although guaranteed base pay helps smooth incomes and attract workers, it also can encourage excessive risk-taking because it insures workers against the financial downside of major mistakes such as losing a large sales contract.

The second reason is that workers are typically protected from being held liable by their employers for such financial losses except in cases of extreme malfeasance. As employees take larger risks, the upside increases while the downside has a floor at termination. Even if employees fear that their behavior might hurt their reputation, they frequently need not. Firms are typically reluctant to publicly reveal large losses or misconduct by employees for fear of its effect on their own reputation.

Potential for misconduct leading to excessive risk is particularly high in a tournament-based system for three additional reasons. First, the financial or promotion-based reward for finishing first is typically much better than a second-place prize, thereby creating strong non-linear incentives to take risks when performance is near a competitor. Second, such tournament structures can lead to a “race to the bottom,” where competing individuals (or teams or firms) iteratively increase their risk-taking and rule-breaking to outperform one another (Bennett et al. 2013; Snyder 2010). Bothner, Kang, and Stuart (2007) provide evidence of such risk-taking among close competitors in a tournament-based system in NASCAR. Competitive cycling, where widespread drug usage made a competitive finish without doping nearly impossible, presents another clear example (Palmer 2012; Palmer and Yenkey 2015). Third, tournament-based systems create the potential for loss-aversion mechanisms to motivate leaders to take extreme risks to avoid losing their position (Kern and Chugh 2009).

Finally, it is worth noting that this excessive risk-taking under pay-for-performance schemes is accelerated by overconfidence bias. Because individuals commonly overestimate their own ability (Zenger 1992), they miscalculate their ability to successfully achieve high performance-based pay (Larkin and Leider 2012). This problem is

particularly severe in tournament-based systems such as promotion, since excessive risk-taking by overconfident employees will often yield a few successful decisions (and a lot of failures), purely by chance. This can lead to problems where overconfident individuals, who take excessive risks (either financial or ethical), end up being promoted to higher levels of management (Goel and Thakor 2008) and then, in turn, attract and hire other overconfident individuals (Van den Steen 2005).

From individual- to organization-level effects

Thus far, we have considered the effects of compensation systems on employee productivity and misconduct. One clear implication from a careful read of the literature is that the optimal level of employee misconduct is greater than zero. Compensation systems that tend to spur greater misconduct also tend to lead to factors that increase productivity via higher employee effort and the attraction and retention of higher-ability workers.

One additional factor that managers must consider when designing compensation systems is the potential for misconduct by one employee to spill over to other employees. Misconduct by a small number of employees has the potential to induce other employees to engage in misconduct and can lead to widespread organizational misconduct that can quickly swamp any productivity gains from the original compensation system. Any highly performing organization will have some level of misconduct, but organizations that are rife with misconduct will never perform at an optimal level. It is, therefore, critical to review the processes by which individual misconduct can spur broader organizational-level misconduct by spillovers to other employees.

First, misconduct by even small numbers of employees can begin to shift organizational culture toward one where misconduct is accepted or even celebrated. The most direct shift in culture happens through employee learning. New workers may adopt the misconduct patterns of coworkers (Pierce and Snyder 2008) either by learning the culture (Roy 1952) or by observing specific peer behaviors (Gino, Ayal, and Ariely 2009). This learning may be accelerated if the focal employee is in a leadership position (supervisor or manager) (Brown, Treviño, and Harrison 2005). Each of these learning processes will not only impart the means of misconduct, but also downplay the moral judgment of it, leading to a normalization of corruption (Ashforth and Anand 2003).

Surprisingly, the slower these practices disseminate, the less likely it is that employees will recognize them as unethical (Gino and Bazerman 2009).

Second, the problem of peer learning of the methods of misconduct is exacerbated when top employees are both highly skilled and highly prone to engage in misconduct. Learning the skills needed to be a top employee is often very difficult, but learning how to game the system, cheat employers or customers, or engage in other types of misconduct is relatively easier. When compensation systems lead to disproportionately higher rewards for top performers, average performers may fixate on the misconduct carried out by top performers and downplay top performers' effort and skills (Larkin 2011). This can lead to a widespread view by employees that the most effective method by which to be recognized and rewarded as a top employee is to engage in misconduct (Larkin 2011).

Third, feedback loops from the results of misconduct may in turn generate more misconduct. In team-based compensation, one worker shirking their responsibility inherently incentivizes others to do so as well. Similarly, in a tournament-based setting, the explicit misconduct of one employee may force others to compete through misconduct. Again, professional sports provide an illuminating example. Performance-enhancing drug use was endemic in baseball and cycling throughout the 1980s, 1990s, and 2000s, and the most common rationales athletes gave for taking the drugs were that, "everyone else is using them," and "I could not compete if I didn't follow along" (Green et al. 2001).

Fourth, misconduct by a few employees may also lead to "negative sorting," where employees who refuse to engage in misconduct choose to completely depart from a firm where peers engage in this misconduct (Pierce and Snyder 2015). Again, "negative sorting" is exacerbated when the rewards to top employees are disproportionate. In almost any compensation scheme, an employee willing to engage in misconduct will earn higher rewards than an employee with the exact same skill level and effort provision. Given the strong peer effects and fairness concerns that govern employee perception of job satisfaction, ethical high performers are more likely to seek out jobs where misconduct is minimal.

Finally, compensation systems can also signal the types of behaviors that are valued by the firm, thereby setting culture across

a multitude of behaviors that are not formally measured or compensated (Brown et al. 2005). Individual pay-for-performance, for example, signals the primacy of solo productivity and individuality and the secondary importance of cooperation and group identity. In contrast, team-based pay can signal the value of cooperation and coordination, which in turn can change behavior across many job tasks that are not explicitly compensated. Tournament-based systems, which emphasize relative performance, can frame coworkers as the enemy and generate excessive competition and lack of coordination even on tasks where this is explicitly destructive. The use of employee forced ranking systems at firms such as Microsoft and Enron, for example, have been widely blamed for hurting team culture and motivating multiple classes of misconduct (Ackman 2002; Eichenwald 2012). The broader organizational impact of compensation on one job task is analogous to what Gubler et al. (2016) refer to as “motivational spillovers,” where formally rewarding one task can reduce internal motivation for a host of others. This may occur because an employee feels it is unfair for the firm to reward a certain task over others.

Conclusion

Compensation systems represent one of the most important tools for firms to improve employee performance through sorting and motivation. Yet, compensation systems also produce counterproductive behaviors that range from legal but costly behavior, such as shirking or lack of cooperation, to explicitly unethical and illegal behaviors, such as fraud, theft, and sabotage. In this sense, compensation systems represent a strong example of what Palmer (2012) refers to as “normal organizational wrongdoing.” Misconduct is an inevitable byproduct of structures, roles, and abilities in the organization necessary to achieve goals and objectives. The challenge for managers is balancing the productivity rewards and misconduct costs that come from each compensation system. For example, individual pay-for-performance may attract star workers and motivate improved effort, but does the lost cooperation and potential sabotage and fraud overwhelm the benefits?

The key recognition for managers is that a compensation policy intended to improve productivity is also likely to generate misconduct.

Similarly, a compensation policy intended to reduce misconduct is likely to reduce productivity. This recognition allows managers to begin to evaluate the net benefit of a policy change, rather than being surprised by unexpected costs after the change has been implemented.

One of the key shortcomings in the literature on employee compensation is the shortage of papers that simultaneously measure both the productivity and misconduct implications of compensation policy. Although a substantial body of work does so for more minor types of misconduct, such as gaming (Frank and Obloj 2014; Larkin 2014), lack of cooperation (Chan and Pierce 2014a), and free-riding (Hamilton et al. 2003), there is a dearth of fieldwork jointly estimating productivity and misconduct that explicitly violates organizational or legal rules. Pierce et al.'s (2015) study of restaurant theft represents a rare example. The shortage of such work is understandable, given that it would require both variation in compensation system (cross-sectionally or across time) and detailed productivity and misconduct data.

Despite these challenges, we believe it is of paramount importance for scholars to focus on settings where they can jointly estimate the impact of compensation on productivity and misconduct. Sports settings provide some potential for this (e.g., Palmer and Yenkey 2015), presuming that one is observing an unbiased sample of misconduct and not just those who are caught. Notwithstanding, changes to compensation systems are relatively rare. Real estate or sales settings, where one can measure both sales and fraud, and where there is cross-sectional variation in pay across firms, might also provide potential.

Finally, we note that a host of additional psychological factors (see Moore and Gino [2015] for deeper discussion) may arise from compensation systems that, in turn, influence both misconduct and productivity. Although we have touched on a select set of emotional responses (e.g., envy), others have been widely shown to emerge as a function of compensation. A growing literature shows how the love of money can influence several classes of misconduct (Gino and Pierce 2009b; Tang and Chiu 2003; Vohs, Mead, and Goode 2006). Similarly, if pay-for-performance compensation systems use non-linear schemes that involve quotas or accelerators, then they may evoke misconduct that has been associated with goals (Ordóñez et al. 2009). Furthermore, a much broader literature on how incidental emotions can influence unrelated ethical decision-making (Andrade and Ariely 2009; Yip and Schweitzer 2015) implies that employee

emotional responses to compensation (of which there are many) may produce a myriad of types of misconduct. Anxiety and stress are thought to increase unethical behavior (Fast and Chen 2009; Kouchaki and Desai 2015), which implies that the pay uncertainty of pay-for-performance, particularly in tournament settings, may systematically increase misconduct across the firm. The universe of psychological responses to compensation and their implications for misconduct is an important subject far beyond the limits of this chapter.

References

- Ackman, D. 2002. "Pay madness at Enron," *Forbes.com*. Available from www.forbes.com/2002/03/22/0322enronpay.html.
- Akerlof, G. and Yellen, J. 1990. "The fair wage-effort hypothesis and unemployment," *Quarterly Journal of Economics* 105(2): 255–283.
- Ambrose, M., Seabright, M., and Schminke, M. 2002. "Sabotage in the workplace: The role of organizational injustice," *Organizational Behavior and Human Decision Processes* 89(1): 947–965.
- Andrade, E. and Ariely, D. 2009. "The enduring impact of transient emotions on decision making," *Organizational Behavior and Human Decision Processes* 109(1): 1–8.
- Ashforth, B. and Anand, V. 2003. "The normalization of corruption in organizations," *Research in Organizational Behavior* 25: 1–52.
- Baker, G. 1992. "Incentive contracts and performance measurement," *Journal of Political Economy* 100(3): 598–614.
- Baker, G. 2000. "The use of performance measures in incentive contracting," *American Economic Review* 90(2): 415–420.
- Bandiera, O., Rasul, I., and Barankay, I. 2005. "Social preferences and the response to incentives: Evidence from personnel data," with Rasul, I. and Barankay, I, *Quarterly Journal of Economics* 120(3): 917–962.
- Baucus, M. and Baucus, D. 1997. "Paying the piper: An empirical examination of longer-term financial consequences of illegal corporate behavior," *Academy of Management Journal* 40(1): 129–151.
- Ben-David, I. 2011. "Financial constraints and inflated home prices during the real estate boom," *American Economic Journal: Applied Economics* 3(3): 55–87.
- Bennett, V., Pierce, L., Snyder, J., and Toffel, M. 2013. "Customer-driven misconduct: How competition corrupts business practices," *Management Science* 59(8): 1725–1742.

- Berger, J. and Pope, D. 2011. "Can losing lead to winning?" *Management Science* 57(5): 817–827.
- Bewley, T. F. 1998. "Why not cut pay?" *European Economic Review* 42(3–5): 459–490.
- Blanes, I., Vidal, J., and Nossol, M. 2011. "Tournaments without prizes: Evidence from personnel records," *Management Science* 57: 1721–1736.
- Bose, A., Pal, D., and Sappington, D. E. 2010. "Equal pay for unequal work: Limiting sabotage in teams," *Journal of Economics and Management Strategy* 19(1): 25–53.
- Bothner, M., Kang, J., and Stuart, T. 2007. "Competitive crowding and risk taking in a tournament: Evidence from NASCAR racing," *Administrative Science Quarterly* 52(2): 208–247.
- Boudreau, K. J., Lacetera, N., and Lakhani, K. R. 2011. "Incentives and problem uncertainty in innovation contests: An empirical analysis," *Management Science* 57(5): 843–863.
- Brown, G., Gardner, J., Oswald, A., and Qian, J. 2008. "Does wage rank affect employees' well-being?," *Industrial Relations* 47(3): 355–389.
- Brown, M., Treviño, L., and Harrison, D. 2005. "Ethical leadership: A social learning perspective for construct development and testing," *Organizational Behavior and Human Decision Processes* 97(2): 117–134.
- Burks, S., Carpenter, J., Goette, L., and Rustichini, A. 2009. "Cognitive skills affect economic preferences, strategic behavior, and job attachment," *Proceedings of the National Academy of Sciences* 106(19): 7745–7750.
- Card, D., Mas, A., Moretti, E., and Saez, E. 2012. "Inequality at work: The effect of peer salaries on job satisfaction," *American Economic Review* 102(6): 2981–3003.
- Carpenter, J., Matthews, P., and Schirm, J. 2010. "Tournaments and office politics: Evidence from a real effort experiment," *American Economic Review* 100(1): 504–517.
- Carrell, M. and Dittrich, J. 1978. "Equity theory: The recent literature, methodological considerations, and new directions," *The Academy of Management Review* 3(2): 202–210.
- Chan, T., Li, J., and Pierce, L. 2014a. "Compensation and peer effects in competing sales teams," *Management Science* 60(8): 1965–1984.
- Chan, T., Li, J., and Pierce, L. 2014b. "Learning from peers: Knowledge transfer and sales force productivity growth," *Marketing Science* 33(4): 463–484.
- Charness, G., Masclet, D., and Villeval, M. 2013. "The dark side of competition for status," *Management Science* 60(1): 38–55.

- Chen, C. X. and Sandino, T. 2012. "Can wages buy honesty? The relationship between relative wages and employee theft," *Journal of Accounting Research* 50(4): 967–1000.
- Conrads, J., Irlenbusch, B., Rilke, R., and Walkowitz, G. 2013. "Lying and team incentives," *Journal of Economic Psychology* 34: 1–7.
- Cornelissen, T., Himmler, O., and Koenig, T. 2011. "Perceived unfairness in CEO compensation and work morale," *Economics Letters* 110(1): 45–48.
- Dartnell Corporation. 2009. *Dartnell's 30th Sales Force Compensation Survey*. Chicago: The Dartnell Corporation.
- de la Rosa, L. 2011. "Overconfidence and moral hazard," *Games and Economic Behavior* 73(2): 429–451.
- Deci, E., Koestner, R., and Ryan, R. 1999. "A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation," *Psychological Bulletin* 125: 627–668.
- DeMatteo, J., Eby, L., and Sundstrom, E. 1998. "Team-based rewards: Current empirical evidence and directions for future research," *Research in Organizational Behavior* 20: 141–183.
- Drago, R. and Garvey, G. T. 1998. "Incentives for helping on the job: Theory and evidence," *Journal of Labor Economics* 16(1): 1–25.
- Eagly, A. H. and Carli, L. L. 2007. "Women and the labyrinth of leadership," *Harvard Business Review* 85(9): 62.
- Eichenwald, K. 2012. "Microsoft's lost decade," *Vanity Fair* 54(August): 108.
- Erat, S. and Gneezy, U. 2012. "White lies," *Management Science* 58(4): 723–733.
- Esteves-Sorenson, C., Pohl, V., and Freitas, E. 2013. "Efficiency wages and its mechanisms: Empirical evidence," Working Paper, Yale University.
- Falk, A., Fehr, E., and Zehnder, C. 2006. "Fairness perceptions and reservation wages: The behavioral effects of minimum wage laws," *Quarterly Journal of Economics* 121(4): 1347–1381.
- Fast, N. J. and Chen, S. 2009. "When the boss feels inadequate power, incompetence, and aggression," *Psychological Science* 20(11): 1406–1413.
- Fehr, E. and Gächter, S. 2000. "Fairness and retaliation: The economics of reciprocity," *Journal of Economic Perspectives* 14(2): 159–181.
- Fehr, E. and Gächter, S. 2002. "Altruistic punishment in humans," *Nature* 415: 137–140.
- Fehr, E., Hart, O., and Zehnder, C. 2011. "Contracts as reference points – Experimental evidence," *American Economic Review* 101(2): 493–525.

- Fehr, E., Schmidt, K., and Klein, A. 2007. "Fairness and contract design," *Econometrica* 75: 121–154.
- Fiske, S., Cuddy, A., Glick, P., and Xu, J. 2002. "A model of (often mixed) stereotype content: Competence and warmth respectively follow from status and competition," *Journal of Personality and Social Psychology* 82(6): 878–902.
- Frank, D. H. and Obloj, T. 2014. "Firm-specific human capital, organizational incentives, and agency costs: Evidence from retail banking," *Strategic Management Journal* 35(9): 1279–1301.
- Frey, B. and Jegen, R. 2001. "Motivational crowding theory," *Journal of Economic Surveys* 15(5): 589–611.
- Garcia, S. M. and Tor, A. 2007. "Rankings, standards, and competition: Task vs. scale comparisons," *Organizational Behavior and Human Decision Processes* 102: 95–108.
- Garcia, S. M., Tor, A., and Gonzalez, R. D. 2006. "Ranks and rivals: A theory of competition," *Pers. Social Psychology Bulletin* 32(7): 970–982.
- Gerhart, B., Rynes, S., and Fulmer, I. 2009. "Pay and performance: Individuals, groups, and executives," *Academy of Management Annals* 3(1): 251–315.
- Gill, D., Prowse, V., and Vlassopoulos, M. 2013. "Cheating in the workplace: An experimental study of the impact of bonuses and productivity," *Journal of Economic Behavior & Organization* 96(C): 120–134.
- Gino, F., Ayal, S., and Ariely, D. 2009. "Contagion and differentiation in unethical behavior the effect of one bad apple on the barrel," *Psychological Science* 20(3): 393–398.
- Gino, F. and Bazerman, M. 2009. "When misconduct goes unnoticed: The acceptability of gradual erosion in others' unethical behavior," *Journal of Experimental Social Psychology* 45(4): 708–719.
- Gino, F. and Pierce, L. 2009a. "Dishonesty in the name of equity," *Psychological Science* 20: 1153–1160.
- Gino, F. and Pierce, L. 2009b. "The abundance effect: Unethical behavior in the presence of wealth," *Organizational Behavior and Human Decision Processes* 109(2): 142–155.
- Gino, F. and Pierce, L. 2010a. "Robin Hood under the hood: Wealth-based discrimination in illicit customer help," *Organ Science* 21(6): 1176–1194.
- Gino, F. and Pierce, L. 2010b. "Lying to level the playing field: Why people may dishonestly help or hurt others to create equity," *Journal of Business Ethics* 95(1): 89–103.

- Gneezy, U. 2005. "Step-level reasoning and bidding in auctions," *Management Science* 51(11): 1633–1642.
- Gneezy, U., Rockenbach, B., and Serra-Garcia, M. 2013. "Measuring lying aversion," *Journal of Economic Behavior & Organization* 93: 293–300.
- Gneezy, U. and Rustichini, A. 2004. "Gender and competition at a young age," *American Economic Review Papers & Proceedings* 94(2): 377–381.
- Goel, A. and Thakor, A. 2008. "Overconfidence, CEO selection, and corporate governance," *The Journal of Finance* 63(6): 2737–2784.
- Gould, E. and Kaplan, T. 2011. "Learning unethical practices from a co-worker: The peer effect of Jose Canseco," *Labour Economics* 18(3): 338–348.
- Green, G. A., Uryasz, F. D., Petr, T. A., and Bray, C. D. 2001. "NCAA study of substance use and abuse habits of college student-athletes," *Clinical Journal of Sport Medicine* 11(1): 51–56.
- Greenberg, J. 1990. "Employee theft as a reaction to underpayment inequity: The hidden cost of pay cuts," *Journal of Applied Psychology* 75: 561–568.
- Greenberg, J. 1993. "Stealing in the name of justice: Informational and interpersonal moderators of theft reactions to underpayment inequity," *Organizational Behavior and Human Decision Processes* 54(1): 81–103.
- Groysberg, B. 2012. *Chasing Stars: The Myth of Talent and the Portability of Performance*. Princeton: Princeton University Press.
- Groysberg, B., Nanda, A., and Nohria, N. 2004. "The risky business of hiring stars," *Harvard Business Review* 82(5): 92–101.
- Gubler, T., Larkin, I., and Pierce, L. 2016. "Motivational spillovers from awards: Crowding out in a multitasking environment," *Organization Science*. Forthcoming.
- Gürtler, O. 2008. "On sabotage in collective tournaments," *Journal of Mathematical Economics* 44(3): 383–393.
- Hall, B. 2000. "Incentives and controllability: A note and exercise," Harvard Business School Background Note 801–334.
- Hamilton, B., Nickerson, J., and Owan, H. 2003. "Team incentives and worker heterogeneity: An empirical analysis of the impact of teams on productivity and participation," *Journal of Political Economy* 111(3): 465–497.
- Hertel, G., Niedner, S., and Herrmann, S. 2003. "Motivation of software developers in open source projects: An Internet-based survey of contributors to the Linux kernel," *Research Policy* 32: 1159–1177.

- Hitt, M. A., Bierman, L., Shimizu, K., and Kochhar, R. 2001. "Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective," *Academy of Management Journal* 44: 13–28.
- Hoffman, M. and Morgan, J. 2015. "Who's naughty? Who's nice? Experiments on whether pro-social workers are selected out of cutthroat business environments," *Journal of Economic Behavior & Organization* 109: 173–187.
- Holmstrom, B. 1982. "Moral hazard in teams," *The Bell Journal of Economics* 13(2): 324–340.
- Holmstrom, B. and Milgrom, P. 1991. "Multitask principal-agent analyses: Incentive contracts, asset ownership, and job design," *Journal of Law, Economics, & Organization* 7: 24–52.
- Iranzo, S., Fabiano, S., and Tosetti, E. 2008. "Skill dispersion and firm productivity: An analysis with employer-employee matched data," *Journal of Labor Economics* 26(2): 247–285.
- Itoh, H. 1991. "Incentives to help in multi-agent situations," *Econometrica: Journal of the Econometric Society* 59(3): 611–636.
- Jensen, M. 2001. "Corporate budgeting is broken, let's fix it," *Harvard Business Review* 79(10): 94–101.
- John, L., Loewenstein, G., and Rick, S. 2014. "Cheating more for less: Upward social comparisons motivate the poorly compensated to cheat," *Organizational Behavior and Human Decision Processes* 123(2): 101–109.
- Jones, G. and Kavanagh, M. 1996. "An experimental examination of the effects of individual and situational factors on unethical behavioral intentions in the workplace," *Journal of Business Ethics* 15(5): 511–523.
- Kandel, E. and Lazear, E. 1992. "Peer pressure and partnerships," *Journal of Political Economy* 100(4): 801–817.
- Kern, M. and Chugh, D. 2009. "Bounded ethicality the perils of loss framing," *Psychological Science* 20(3): 378–384.
- Kerr, S. 1975. "On the folly of rewarding A, while hoping for B," *Academy of Management Journal* 18(4): 769–783.
- Kilduff, G., Elfenbein, H., and Staw, B. 2010. "The psychology of rivalry: A relationally dependent analysis of competition," *Academy of Management Journal* 53: 943–969.
- Kouchaki, M. and Desai, S. 2015. "Anxious, threatened, and also unethical: How anxiety makes individuals feel threatened and commit unethical acts," *Journal of Applied Psychology* 100(2): 360.

- Kwon, I. and Milgrom, E. 2007. "Status, relative pay, and wage growth: Evidence from M&A," Discussion Papers 07–026, Stanford Institute for Economic Policy Research.
- Lado, A. A. and Wilson, M. C. 1994. "Human resource systems and sustained competitive advantage: A competency-based perspective," *Academy of Management Review* 19(4): 699–727.
- Larkin, I. 2011. "Paying \$30,000 for a gold star: An empirical investigation into the value of peer recognition to software salespeople," Working paper, Harvard Business School.
- Larkin, I. 2014. "The cost of high-powered incentives: Employee gaming in enterprise software sales," *Journal of Labor Economics* 32(2): 199–227.
- Larkin, I. and Leider, S. 2012. "Incentive schemes, sorting and behavioral biases of employees: Experimental evidence," *American Economic Journal: Microeconomics* 4(2): 184–214.
- Larkin, I., Pierce, L., and Gino, F. 2012. "The psychological costs of pay-for-performance: Implications for the strategic compensation of employees," *Strategic Management Journal* 33: 1194–1214.
- Lazear, E. 1979. "Why is there mandatory retirement?," *The Journal of Political Economy* 87(6): 1261–1284.
- Lazear, E. P. 1989. "Pay equality and industrial politics," *Journal of Political Economy* 97(3): 561–580.
- Lazear, E. 2000. "Performance pay and productivity," *American Economic Review* 90(5): 1346–1361.
- Lazear, E. and Oyer, P. 2012. "Personnel economics," in Robert Gibbons and John Roberts (eds.), *The Handbook of Organizational Economics*. Princeton: Princeton University Press.
- Lazear, E. and Rosen, S. 1981. "Rank-order tournaments as optimum labor contracts," *Journal of Political Economy* 89(5): 841–864.
- Lemieux, T., MacLeod, W., and Parent, D. 2007. "Performance pay and wage inequality," *The Quarterly Journal of Economics* 124(1):1–49.
- Liu, D., Li, X., and Santhanam, R. 2013. "Digital Games and Beyond: What Happens When Players Compete," *Mis Quarterly* 37(1): 111–124.
- Mas, A. and Moretti, E. 2009. "Peers at work," *American Economic Review* 99: 112–145.
- Mazar, N. and Ariely, D. 2006. "Dishonesty in everyday life and its policy implications," *Journal of Public Policy and Marketing* 25(1): 117–126.
- McGraw, P., Mellers, B. A., and Tetlock, P. E. 2005. "Expectations and emotions of Olympic athletes," *Journal of Experimental Social Psychology* 41(4): 438–446.

- Mian, A. and Sufi, A. 2009. The consequences of mortgage credit expansion: Evidence from the US mortgage default crisis. *The Quarterly Journal of Economics* 124(4): 1449–1496.
- Moore, C. and Gino, F. 2015. “Approach, ability, aftermath: A psychological process framework of unethical behavior at work,” *The Academy of Management Annals* 9(1): 235–289.
- Nalebuff, B. and Stiglitz, J. 1983. “Prizes and incentives: Towards a general theory of compensation and competition,” *The Bell Journal of Economics* 14(1): 21–43.
- Nickerson, J. and Zenger, T. 2008. “Envy, comparison costs, and the economic theory of the firm,” *Strategic Management Journal* 29: 1429–1449.
- Niederle, M. and Vesterlund, L. 2007. “Do women shy away from competition? Do men compete too much?,” *The Quarterly Journal of Economics* 122(3): 1067–1101.
- Obloj, T. and Sengul, M. 2012. Incentive life-cycles learning and the division of value in firms. *Administrative Science Quarterly* 57(2): 305–347.
- Ordóñez, L., Schweitzer, M., Galinsky, A., and Bazerman, M. 2009. “Goals gone wild: The systematic side effects of overprescribing goal setting,” *The Academy of Management Perspectives* 23(1): 6–16.
- Oyer, P. 1998. “Fiscal year ends and nonlinear incentive contracts: The effect on business seasonality,” *Quarterly Journal of Economics* 113(1): 149–185.
- Paarsch, H. J. and Shearer, B. 2000. “Piece rates, fixed wages, and incentive effects: Statistical evidence from payroll records,” *International Economic Review* 41(1): 59–62.
- Palmer, D. 2012. *Normal Organizational Wrongdoing: A Critical Analysis of Theories of Misconduct in and by Organizations*. Oxford: Oxford University Press.
- Palmer, D. and Yenkey, C. B. 2015. “Drugs, sweat, and gears: An organizational analysis of performance-enhancing drug use in the 2010 Tour de France,” *Social Forces* 94(2): 891–922.
- Pierce, L., Snow, D., and McAfee, A. 2015. “Cleaning house: The impact of information technology on employee corruption and productivity,” *Management Science* 61(10): 2299–2319.
- Pierce, L. and Snyder, J. 2008. “Ethical spillovers in firms: Evidence from vehicle emissions testing,” *Management Science* 54(11): 1891–1903.
- Pierce, L. and Snyder, J. 2015. “Unethical demand and employee turnover,” *Journal of Business Ethics* 131(4): 853–869.
- Prendergast, C. 1999. “The provision of incentives in firms,” *Journal of Economic Literature* 37: 7–63.

- Rabin, M. 1993. "Incorporating fairness into game theory and economics," *The American Economic Review* 83(5): 1281–1302.
- Roy, D. 1952. "Quota restriction and goldbricking in a machine shop," *American Journal of Sociology* 57: 427–442.
- Schwieren, C. and Weichselbaumer, D. 2010. "Does competition enhance performance or cheating? A laboratory experiment," *Journal of Economic Psychology* 31(3): 241–253.
- Smith-Crowe, K., Tenbrunsel, A. E., Chan-Serafin, S., Brief, A. P., Umphress, E. E., and Joseph, J. 2015. "The ethics 'fix': When formal systems make a difference," *Journal of Business Ethics* 131(4): 791–801.
- Snyder, J. 2010. "Gaming the liver transplant market," *Journal of Law, Economics, & Organization* 26(3): 546–568.
- Staw, B. M. 1974. "Attitudinal and behavioral consequences of changing a major organizational reward: A natural field experiment," *Journal of Personality and Social Psychology* 29(6): 742.
- Stowe, C. J. and Gilpatric, S. M. 2010. "Cheating and enforcement in asymmetric rank-order tournaments," *Southern Economic Journal* 77 (1): 1–14.
- Tang, T. L. P. and Chiu, R. K. 2003. "Income, money ethic, pay satisfaction, commitment, and unethical behavior: Is the love of money the root of evil for Hong Kong employees?," *Journal of Business Ethics* 46(1): 13–30.
- Tenbrunsel, A. E. and Smith-Crowe, K. 2008. "13 ethical decision making: Where we've been and where we're going," *The Academy of Management Annals* 2(1): 545–607.
- Van den Steen, E. 2005. "Organizational beliefs and managerial vision," *Journal of Law, Economics, and Organization* 21(1): 256–283.
- Vaughan-Whitehead, D. 2010. *Fair Wages – Strengthening Corporate Social Responsibility*. Cheltenham: Edward Elgar Publishing.
- Vohs, K. D., Mead, N. L., and Goode, M. R. 2006. "The psychological consequences of money," *Science* 314(5802): 1154–1156.
- Whittemore, I. C. 1924. "The influence of competition on performance: An experimental study," *The Journal of Abnormal Psychology and Social Psychology* 19(3): 236.
- Whittlesey, F. 2006. "The great overpaid CEO debate," *CNET News*, June 1.
- Willemuth, S. S. 2011. "Cheating more when the spoils are split," *Organizational Behavior and Human Decision Processes* 115(2): 157–168.
- Willemuth, S. S., Bennett, V., and Pierce, L. 2013. "Doing as they would do: How the perceived ethical preferences of third-party beneficiaries impact

- ethical decision-making,” *Organizational Behavior and Human Decision Processes* 122: 280–290.
- Yip, J. A. and Schweitzer, M. 2015. “Mad and misleading: Incidental anger promotes deception,” Available at SSRN 2478692.
- Zenger, T. 1992. “Why do employers only reward extreme performance? Examining the relationships among performance, pay, and turnover,” *Administrative Science Quarterly* 37(2): 198–219.
- Zenger, T. 1994. “Explaining organizational diseconomies of scale in R&D: Agency problems and the allocation of engineering talent, ideas, and effort by firm size,” *Management Science* 40(6): 708–729.