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Lamar Pierce · Jason A. Snyder

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Abstract This paper argues that consumer demand for unethical behavior such as fraud can impact employee turnover through market and psychological forces. Widespread conditions of unethical demand can improve career prospects for employees of unethical firms through higher income and stability associated with firm financial health. Similarly, unethical employees enjoy increased tenure from the financial and psychological rewards of prosocial behavior toward customers demanding corrupt or unethical behavior. We specifically examine the well-documented unethical demand for fraud in the vehicle emissions testing industry, and its impact on employee tenure. We use data from tests conducted by several thousand licensed inspectors to demonstrate that fraudulent employees and employees of fraudulent firms enjoy longer tenure. These results suggest further work to separate the multiple psychological and economic mechanisms likely driving our findings.

Keywords Unethical behavior · Fraud · Corruption · Prosocial behavior · Ethics · Deviance · Person–organization fit

Unethical behavior is typically presented as having a negative impact on employee careers. Scholars argue that

companies with superior social performance tend to perform better financially by attracting socially responsible consumers (Bagnoli and Watts 2003), alleviating the threat of regulation (Lev et al. 2008), improving their reputation with consumers (Orlitzky et al. 2003), or addressing the concerns of activists and non-governmental organizations (Baron 2001). The employees of such ethical organizations thereby enjoy longer tenure due to the greater economic success of their employer, which yields higher compensation, greater job security, and improved career prospects as the firms expand. Existing research also argues that the alternative of an unethical climate within an organization will reduce job satisfaction and increase frustration among its employees, ultimately increasing turnover (Levy and Dubinsky 1983; Pettijohn et al. 2008; Valentine et al. 2010).

Yet ethical behavior and legal compliance may not always be beneficial to employee careers. In many industries, customers may demand behavior that breaks existing laws and proves harmful to the broader society, a condition we refer to as *unethical demand*. Unethical demand for fraud, one of the most pervasive classes of misconduct where firms and individuals deceive or misrepresent information, includes examples such as auditing by Arthur Andersen, bars serving underage clients with fake identification, and home appraisers and mortgage brokers fraudulently inflating home values or income on loan applications.¹ In the absence of detection and sanctions by authorities, ethical firms that fail to respond to unethical

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¹ It is important to note that we do not argue that all fraud is necessarily unethical. Snyder (2010) for example, finds that doctors' fraudulent use of intensive care units to procure transplant livers was likely motivated by concern for the patient, was used to protect the patient from other doctors' misrepresentation, and had no observable social welfare cost in driving patient mortality.

demand may lose many customers, and thus shed employees either through workforce reduction or voluntary attrition due to uncompetitive compensation.

Similarly, unethical behavior may yield benefits to employees independent of or in violation of organizational norms or objectives. Restaurant servers, for example, may give free food or drinks to customers to increase tips (without reporting to the manager), retail employees may choose not to monitor or prosecute shoplifters for bribes or social gain, or doctors may misrepresent patient health to improve access to health care (Snyder 2010). While such organizational deviance may have disciplinary consequences, deviating from customer demand may produce even worse outcomes. The employee may lose legitimate tips, illegitimate bribes, or may suffer decreased job satisfaction from customer conflict, all increasing the likelihood of leaving the organization. The motivation to engage in such behavior may be exacerbated by the employee's moral disengagement (Bandura 1991; Moore 2008) or their inability to recognize the unethical nature of their actions (Murphy and Dacin 2011).

In this paper, we argue that under strong conditions of unethical demand, unethical behavior can increase employee tenure in two ways. First, it can provide financial rewards to both the worker and her employer, increasing the financial rewards from employment and encouraging retention. Second, unethical behavior under unethical demand becomes an inherently prosocial behavior. Such conditions produce what Morrison (2006) refers to as prosocial rule breaking, where employees violate rules for the benefit of the organization, coworkers, or customers (Chung and Schneider 2002; Schultz 2003; Dahling et al. 2010; Umphress et al. 2010; Umphress and Bingham 2011). As Grant and Sonnentag (2010) explain, the act of helping others can provide substantial benefit to the psychological state of employees through increasing positive affect (Batson 1990; Lyubomirsky et al. 2005; Williamson and Clark 1989) and reducing negative feelings (Schaller and Cialdini 1988). Economists and sociologists have found similar benefits from volunteerism, sharing, and giving (Greenfield and Marks 2004; Musick and Wilson 2003; Penner et al. 2005; Brooks 2008). Recent work further argues that the perception of the prosocial impact of helping can protect employees against exhaustion and burnout (Grant and Campbell 2007) and spur career choice (Grant 2007).

While our primary argument centers on the direct impact of unethical demand on employee tenure, we also acknowledge the potential moderating role of ethical fit. Business ethics scholars have argued that incongruence between the personal values of employer and employee, or person–organization (P–O) fit (Kristof 1996), can have detrimental effects on both parties, leading to greater

voluntary or forced attrition (Hunt et al. 1989; Laufer and Robertson 1997; Valentine et al. 2002). Consistent with Schneider (1987) attraction–selection–attrition model, individuals are attracted to firms with similar ethics, who are in turn more likely to select well-fitted candidates in the hiring process (Cable and Judge 1997). In markets with unethical demand, unethical employees therefore may sort into unethical firms, while ethical employees match with firms with ethical norms or climates. When unethical workers mismatch with ethical firms, however, they are likely to have shorter tenure, just as ethical employees will quickly leave unethical employers.

We generate a simple 2×2 model to illustrate our theory and provide empirical predictions for the impact of unethical demand and person–organization ethical fit on employee tenure. While our model cannot perfectly identify the exact magnitude of each effect, we can identify which influences are dominant in predicting employee tenure. We clearly demonstrate the connection between our theoretical predictions and our empirical results.

We focus our analysis on the unethical demand for fraud, a specific class of illicit and (usually) unethical behavior with widespread economic and social costs (Murphy and Dacin 2011). We empirically study the effects of our model in the vehicle emissions testing market, where widespread anecdotal evidence and state enforcement records demonstrate how unethical demand drives fraudulent testing behavior in private firms (Hubbard 1998, 2002; Pierce and Snyder 2008; Gino and Pierce 2010; Oliva 2013; Pierce and Snyder 2011). Using separate samples from different states and time periods in the United States, both Hubbard (1998) and Pierce and Snyder (2011) estimate fraud levels of over 50 % of at-risk vehicles.² Oliva (2013) estimates that 79 % of Mexican inspection facilities engage in fraud, with at least 9.6 % of car owners paying direct bribes to motivate this.

We use a database of over 6 million emissions tests from a U.S. metropolitan area in 2001–2004, and find evidence that unethical demand for fraudulent testing leniency increases employee tenure and reduces attrition. More specifically, we find that both fraudulent employees and employees of fraudulent firms have higher tenure and lower risk of attrition. While we cannot directly identify the economic or psychological mechanisms driving our results, these results are consistent with the financial benefits of leniency in this market for both inspectors and facilities (Hubbard 1998, 2002; Bennett et al. 2013) as well as the psychological benefits from prosocial behavior (Brief and Motowidlo 1986; Grant and Campbell 2007). In controlling for this unethical demand, we find no impact of ethical fit on employee tenure or attrition.

² Pierce and Snyder (2012) use the same data as this paper.

This paper makes important theoretical, empirical, and methodological contributions to the literatures on business ethics, turnover, and fit. This paper contributes theoretically by introducing the concept of unethical demand, arguing that unethical market demand may be as powerful as person–organization fit in determining length of tenure, and that these factors often confound one another in empirical identification. Furthermore, they may explain inconsistent empirical results in the fit literature, as well as evidence that the direction of misfit can have differential effects on worker stress and satisfaction (Edwards and Rothbard 1999; Jansen and Kristof-Brown 2005).

Empirically and methodologically, this paper contributes to the literature on fit by robustly estimating employee and employer unethical behavior and ethical misfit through large-scale behavioral data. Despite hundreds of studies on fit, little evidence exists supporting the more general fit–attrition relationship (Kristof-Brown et al. 2005), and the results are inconsistent, which may be a result of subjectivity bias common in self-report data (Schwarz 1999; Bertrand and Mullainathan 2001). We believe this paper shows the potential for using improved computational power on large-scale behavioral data sets to identify unethical behavior, deviance, and fit within organizations more generally. The true potential of this methodology lies in the pairing of behavioral data with richer survey, observational, and descriptive data-gathering techniques.

Theory Development and Hypotheses

Influences on Unethical Behavior: Organizational Context and Individual Disposition

The ethics of employee behavior is the product of two very different influences: organizational context and the individual’s disposition. Several scholars in ethics suggest that unethical behavior results from a complex interaction of both factors (e.g., Trevino 1986; Hunt and Vitelli 1986), with Jones (1991) proposing an “issue-contingent” model in which features of moral issues interact with both individual and organizational elements to influence ethical decision making. Separating the influence of these factors is critical toward understanding when it is the norms and policies of the organization that drive employee outcomes, and when it is the disposition and behavior of the individual.

The first of these factors, organizational context, can influence the ethics of employee behavior through the incentives, rules, and culture of the workplace. Considerable evidence and theory highlights the role of organizational and societal variables in unethical behavior, referring to this influence as the effect of “bad barrels” on employee

behavior (Trevino and Youngblood 1990). These bad barrels may be corrupt organizations, where the organization benefits from unethical behavior, or organizations of corrupt individuals, where individuals act self-interestedly for personal gain (Pinto et al. 2008). Studies have identified a number of contextual factors that appear to promote or inhibit intentional unethical behavior, such as the use of incentives (Flannery and May 2000; Schweitzer and Croson 1999; Watts and Zimmerman 1983; Bertrand et al. 2006; Snyder 2010), conflicts of interest (Cain et al. 2005), and codes of ethics (Weaver et al. 1999; Duggan and Levitt 2002). Individual behavior may converge toward organizational norms, with individual ethics drifting over time due to cultural or economic influences (Gino et al. 2008; Gino and Bazerman 2009) and moral disengagement (Moore 2008). Pierce and Snyder (2008) refer to this organizational influence on unethical behavior as “ethical spillovers,” while Ashford and Anand (2003) refer to this process as “the normalization of corruption,” where corruption can be embedded in the organization’s structure and may disseminate to employees across time.

Yet the ethics of individual behavior is not wholly determined by the organization. A second factor, individual disposition, reflects the employee’s persistent ethical tendencies based in the inherent characteristics either born into the worker or developed through a lifetime of education and training. These dispositional factors are resilient through changes in employment and represent a predisposition toward future ethical (or unethical) acts (Bandura 1991, 1999; Murphy 2010). The historical view in the ethics and economics literature considers individual wrongdoing as intentional, often affecting just “a few bad apples” (Simpson 1987). According to this view, ethical misconduct is the product of intentions and deliberate choices based in the disposition and preferences of the individual worker, although more recent work demonstrates that most people will engage in at least low-level unethical behavior under many conditions (e.g., Mazar et al. 2008). Indeed, research has shown that both innate individual factors (e.g., gender, age, and nationality) and malleable personal characteristics (e.g., ethical framework, stage of moral development, religion, employment, and concern for self-presentation) influence ethical behavior (Fisman and Miguel 2007; Loe et al. 2000; Ford and Richardson 1994; Mazar and Aggarwal 2011), although the results from this body of work at times have been contradictory. For example, while some studies have found that females are likely to act more ethically than males (Ruegger and King 1992), other work has found no impact of gender on ethical behavior (Serwinek 1992). Additional research on implicit biases suggests dispositional factors may be based not only in conscious action, but also in unconscious biases in ethically relevant domains (Banaji et al. 2003; Bazerman and Banaji 2004).

Unethical Demand and Employee Tenure

While both dispositional and organizational factors influence unethical behavior by employees, the market environment itself may play a large role in dictating how ethics might impact employee careers. If trust or an individual's reputation for fair business practices is critical for attracting customers in the industry, then employees may be more successful when they are ethical. If customers value interacting with highly ethical employees, then these types of workers are likely to be successful in their vocation. This "tendency or predisposition to meet customer needs" (Brown et al. 2002), or *customer orientation*, can produce benefits for both the firm and the individual worker. Such workers are likely to generate more business for their firms, higher commissions, and greater customer loyalty. Similarly, they are less likely to have acrimonious contact with customers, and therefore will enjoy greater satisfaction in the workplace through customer orientation and pro-social behavior (Donavan et al. 2004; Grant and Campbell 2007). Examples of markets with the demand for employee ethics abound, and may include physicians, investment managers, researchers, childcare workers, and security guards. Consumer demand for employee ethics may therefore be independent of where that employee works. Consequently, ethical employees may outperform their unethical counterparts.

Alternatively, employees may work in a market with *unethical demand*, where consumers may demand employees who are willing to break social or legal rules and show leniency. Markets with unethical demand are characterized by possessing one of two defining traits. The first is where the primary product or service in the market is in itself unethical. In such markets, enough consumers attribute benefits from the good or service, despite its unethical nature, and are therefore willing to pay for it. The resulting market demand can provide firms or organizations the profit motive to produce the good, so long as production costs are less than willingness to pay. While many of these markets involve explicitly illegal goods or services (e.g., prostitution, illicit drugs, counterfeit merchandise), others may operate within the law in what are considered "moral gray zones" (Anteby 2008). Examples include designer drugs such as "bath salts" (Ross et al. 2011), so-called cop-killer bullets capable of piercing police armor, and the market for cadavers (Anteby 2010).

The second condition under which unethical demand occurs is when illegal or unethical acts by firms increase the perceived quality of the product or service to the customer, thereby increasing consumer willingness to pay (Griliches 1971). Examples of such increased "quality" include higher evaluations from bond-rating agencies (Becker and Milburn 2011), fraudulently reducing the wait time for a liver transplant (Snyder 2010), or more lenient inspections (Bennett et al. 2013; Becker et al. 2013) or financial audits

(Davidson et al. 2006). Firms that do not act unethically therefore risk providing lower quality to customers, thereby losing their business to less-ethical firms.

Under these conditions of unethical demand, employees willing to act unethically will tend to fare better than those with strict ethical standards, both for economic (e.g., financial) and psychological reasons. Customers may therefore reward employees who show leniency either through financial side payments such as bribes or gifts (Bolton et al. 2012), or through better treatment. In many cases, unethical employees may directly benefit from this demand for leniency through increased remuneration. If they are paid on commission, such as real estate agents, brokers, or salespeople, increased leniency or flexibility with rules may generate growth in business and therefore larger commissions (Larkin 2013). Even when employees are paid through standard wages or salaries, they may receive side payments from customers for their willingness to break organizational or legal rules or promotions or higher wages from the firm for increasing business. The literature on corruption has demonstrated that side payments are often necessary for the subsistence living of government officials in developing countries (Drugov 2010; Shleifer 2004).

Unethical demand may also yield greater job satisfaction for unethical employees than for those who strictly obey legal rules. If the rules or laws are unpopular, the employee will constantly be in conflict with customers unhappy with the regulation. An employee willing to break or skirt the unpopular rule may avoid some of this conflict, thereby improving their satisfaction in their position. Gratitude expressed by customers may also motivate this (unethical) pro-social behavior (Grant and Gino 2010), while employee perception of helping others may protect them from decreased job satisfaction, burnout, and poor self-evaluation that may lead to attrition (Grant and Campbell 2007; Grant and Sonnentag 2010). Furthermore, the benefits to others may help employees justify their actions (Wiltermuth 2011), and may also provide utility to those that fundamentally care about the impact to others (Gino and Pierce 2009, 2010; Erat and Gneezy 2012; Gino et al. 2013; Wiltermuth et al. 2013). This benefit to customers is likely to be more salient to employees than potential costs to distant and anonymous victims such as shareholders or taxpayers (Small and Loewenstein 2003; Gino et al. 2010). As employee-customer relationships develop over time, psychological closeness may further facilitate the unethical behavior by reducing social shame or judgment (Gino and Galinsky 2012).

Whether the market contains unethical demand or the demand for ethicality, the disposition of the employee is likely to impact their performance and ultimately attrition. When customers demand strict adherence to laws and rules, unethical employees will suffer-reduced compensation and career success, and also decreased job satisfaction from

conflicts with customers. Similarly, when customers demand leniency with laws and rules, strict employees will lose business and suffer conflict with customers.

Hypothesis 1 In markets where there is unethical demand, corrupt employees will have longer tenure than ethical employees.

Firm Corruption and Employee Tenure

Similar to individual disposition, organizational ethics may impact employee tenure, independent of the ethical disposition of the employee. This will typically occur because the ethical culture of the firm in following laws or regulations can have a considerable impact on its financial health, which will directly influence compensation and employment. Where regulation and government monitoring is intense, firms that skirt rules are likely to be punished through severe fines or prosecution. These punishments will financially injure the firm, leading to likely reductions in workforce. Therefore, independent of any individual employee's actions, unethical firms may be more likely to reduce their workforces.

Alternatively, under conditions of weak regulation, ineffective monitoring and enforcement, or outright government corruption, unethical firms may prosper in a market with unethical demand. While this situation is particularly common in developing countries with weak institutions, it can also occur in highly developed nations. Market competition may give clear financial incentives to firms to engage in unethical behavior (Becker and Milburn 2011; Shleifer 2004; Snyder 2010; Bennett et al. 2013). Firms that can cut costs through weak adherence to safety or environmental regulation can benefit from better profit margins. The use of illegal immigrant labor at prices below minimum wages is only one example of such actions. Similarly, companies that mislead customers into poor contracts or deals can profit considerably from malfeasance not provable in a court of law. Independent of any individual employee's actions, a lenient firm may therefore be less likely to reduce its workforce.

Hypothesis 2 In markets with unethical demand, corrupt firms will have longer average employee tenure than ethical firms.

Ethical Misfit and Attrition

While unethical demand may increase employee tenure both for workers with unethical disposition and those working in unethical organizations, the interaction of these characteristics may also impact attrition. Fit between an organization and its individual members can be a critical determinant of job satisfaction, tenure, and performance.

Schneider (1987) attraction–selection–attrition framework, further developed by Chatman (1989, 1991), O'Reilly et al. (1991) and others, formalized how this fit can affect how individuals decide which organizations to pursue, which organizations hire them, and how long that relationship ultimately endures.

Considerable research has established the importance of person–organization fit in the hiring of employees (Chatman 1991; Cable and Judge 1997). Similarly, literature from multiple fields highlights the impact of fit on employee tenure (Kristof-Brown et al. 2005; Castilla 2005; Fernandez et al. 2000; Jovanovic 1979; Sicilian 1995).³ These literatures argue that employees naturally sort into organizations with similar values or characteristics, but when the fit is poor, they voluntarily leave due to decreased job satisfaction (Boxx et al. 1991; Bretz and Judge 1994; Chatman 1991; Vancouver and Schmitt 1991) or may be terminated due to the detrimental consequences to the organization of decreased performance or deviant behavior (Robinson and Bennett 1995; Warren 2003). Ethical values and behavior can be an important dimension of employee fit.

In markets with unethical demand, ethical fit between the employee and organization can influence attrition in two distinct ways. First, ethical misfit may reduce the value of the employee to the firm and thereby increase the likelihood of termination. Firms with strict norms of legal compliance may exist even in markets with unethical demand, whether due to strategic positioning, government oversight, or culture. While many consumers may demand unethical behavior, others may desire strict legality, and the ethical firms that serve them will suffer when employing individuals who engage in unethical and illegal behavior. Similarly, the owners of privately-held firms may value their own ethical standards over profitability, and therefore may not tolerate unethical employees, regardless of the financial implications of such actions. The impact of ethical misfit on attrition may occur through formal rules and socialization processes as well as more informal norms (Grojean et al. 2004). Where these processes are unable to change employee behavior, they will make salient the ethical misfit and motivate attrition.

The second mechanism through which ethical misfit might influence the impact of unethical demand is by decreasing the value of the job to the employee, thereby leading to voluntary resignation. Highly ethical employees may voluntarily leave unethical organizations due to low organizational commitment (Hunt et al. 1989; Laufer and Robertson 1997; Valentine et al. 2002). While such misfit employees may decide to stay and voice dissent, act as

³ The economics and sociology literatures typically refer to fit as “match”.

whistle-blowers (Near and Miceli 1988; Miceli and Near 1992, or engage in functional disobedience (Warren 2003), they are more likely to leave the firm for a better ethical fit, particularly in a market with unethical demand. Similarly, employees who abhor strict legal compliance or whose competitive advantage lies in illegal or unethical activities will be less likely to stay in firms with strict norms of legal compliance. Finally, ethically misfit workers may leave due to worse prospects for promotion, as their superiors may prefer to promote those with similar disposition (Ponemon 1992).

Hypothesis 3 In markets with unethical demand, ethical misfit between an individual and the organization will reduce employee tenure.

It is critically important to note that our hypothesized effects are not mutually exclusive of each other. Both the direct impact of unethical demand in Hypotheses 1 and 2 and ethical fit (Hypothesis 3) can impact employee tenure simultaneously. Yet if either the unethical demand hypotheses or fit hypotheses are much larger in magnitude, it may be difficult to observe the weaker effects. Consequently, we can empirically identify dominant factors in predicting employee tenure, but cannot definitely rule out all other hypotheses. We illustrate this in a simple model presented below.

A Simple Model of the Impact of Unethical Demand and Fit on Tenure

Existing theory and the arguments presented here suggest several hypotheses about how the combination of individual and organizational ethics can impact employee tenure in a market with unethical demand. For studying the potential impact from unethical demand and ethical fit, how might we independently identify these potential hypotheses? The traditional use of difference scores is fraught with major difficulties in the statistical testing and interpretation of the parameters of interest (Edwards 1994). Instead of creating a continuous variable to measure fit, where it would be extremely difficult to interpret the parameter meaning, we create dichotomous variables from continuous ones. While psychologists typically frown on such discretization because it reduces statistical power (Irwin and McClelland 2003), economists frequently employ this technique because it aids in the interpretation of interaction coefficients (e.g., Bertrand et al. 2000 or Kolstad 2012).

We present a simple 2×2 model to define the impact of unethical demand and ethical fit on employee outcomes. Consistent with our setting, we define this model in terms of the specific unethical behavior of fraud, although the

Table 1 A model of the impact of attributes and fit on performance

	Worker attribute = 0	Worker attribute = 1
Firm attribute = 0	(A) Outcome	(B) Outcome
Firm attribute = 1	(C) Outcome	(D) Outcome

model could easily be redefined on other unethical behaviors such as theft, other types of dishonesty, or discrimination. Since many of the hypothesized effects are not mutually exclusive, this model clearly delineates which effects dominate. This model could apply to any outcome variable, such as performance, job satisfaction, or tenure.

To model the impact of unethical demand on employee tenure, we start with the simple two-type approach in Table 1. We do this not because we feel it is more accurate than a continuous approach, but rather because the simplicity of this environment greatly aids in presenting the theory and in interpreting regression results. Each time a worker joins a firm, we characterize both worker and firm as either fraudulent or not. For example, in our setting we might define a worker as fraudulent or honest by splitting the sample at the top 50 % of all workers by fraudulent leniency. We might define a fraudulent firm in similar manner.⁴

If unethical demand is indeed driving employee tenure, our hypotheses suggest that both fraudulent employees and employees in fraudulent firms will have longer tenure than other workers. In our simple model, Hypotheses 1 suggests that the fraudulent employee will outlast the strict employee, independent of the ethics of the firm. Hypothesis 2 suggests that employees at fraudulent firms will outlast employees at strict firms, independent of individual ethics. These hypotheses can be represented in our simple model as follows:

Fraudulent Employees Have Higher Tenure (H1):

$$B > A; D > C$$

Employees of Fraudulent Firms Have Higher Tenure (H2):

$$C > A; D > B$$

In our empirical setting, this condition states that the impact of hiring a fraudulent versus an honest inspector on job tenure is not dependent on whether the firm is honest or fraudulent.⁵ Likewise, the impact of a facility being honest or fraudulent on the employee's job tenure is not influenced by the type of employee. The previous definitions indicate scenarios where only one of either the firm or the

⁴ One can choose any cutpoint to define the categories that is theoretically justified, although it is important to adjust the cutpoint to assure that empirical findings are robust to this choice. While we will use 50 % as our cutpoint, we will also show that our results hold for other choices.

⁵ We will interchangeably use the fraudulent/strict dichotomy with the lenient/strict dichotomy throughout the paper.

individual impacts the outcome variable. If both employee and firm misconduct positively influence the outcome, then we should observe the following condition, where quadrant D has the greatest value, while quadrant C has the lowest.

Tenure Increased by Both Employee and Firm Fraud

(H1 and H2): $D > B > A$ and $D > C > A$

In our setting, this would imply that tenure is the greatest where both facilities and inspectors are fraudulently lenient, and lowest where both are strict.

Ethical fit between employee and firm would be those in cells (A) and (D) where both parties are either fraudulent or honest. In this simple model, the fit hypothesis, Hypothesis 3, would suggest that the mean values of tenure in cells (A) and (D) would be greater than those in cells (B) and (C). With ethical fit, the individual attributes of the firm and individual no longer act independently on the outcome variable, but rather interact with one another. We first present the impact of fit as symmetrical, where the impact of fit at high attribute levels is equivalent to fit at low attribute levels.

Symmetric Impact of Fit (H3): $A > B$ and $C; D > B$ and C

The impact of fit in our empirical context simply means that the closeness of leniency or strictness is the dominant positive determinant of job tenure. It is important to note that Edwards and Rothbard (1999) and Jansen and Kristof-Brown (2005) show potential asymmetries in the impact of fit, such that A and D need not be equal. Past work on over-qualification (Johnson and Johnson 1999) relative deprivation and underemployment (Feldman et al. 2002) also addresses the importance of direction, with French et al. (1982) discussing this asymmetry in terms of “excess” and “deficiency,” where conditions of excess occur when environmental values exceed individual values. It is therefore possible that the impact of ethical misfit on attrition may be stronger in cases of ethical excess than in ethical deficiency, or vice versa.

We define asymmetric fit, in its extreme form where only one type of fit (in this case quadrant D) impacts outcomes, as:

Asymmetric Impact of Fit (H3): $D > B$ and

$D > C$ and $D > A$

In our context, this would be equivalent to fraudulently lenient inspectors working for lenient facilities having longer tenures than another employment relationship.

Regression Models

The comparison of outcomes across the 2×2 matrix has several linear regression analogues. One model, from,

Edwards (1994) is to separately estimate the impact of employee and facility attributes on outcomes.

$$\text{Outcome} = \beta_1 + \beta_2 * \text{Employee} + \beta_3 * \text{Firm} + \varepsilon. \quad (1)$$

While specification (1) is good at identifying the impact of individual and firm characteristics, it is weak in its ability to measure fit. This is because specification (1) does not compare misfit employees to those with good fit, but rather measures the impact of the firm’s and employee’s attributes conditional on each other.⁶ To incorporate fit as a potential moderator for attrition, we implement a fully-interacted model that can simultaneously examine the impact of the attribute and fit on tenure. In our setting, this specification can be rewritten as:

$$\text{Outcome} = \beta_1 + \beta_2 * \text{Employee} + \beta_3 * \text{Firm} + \beta_4 * \text{Employee} * \text{Firm} + \varepsilon. \quad (2)$$

This specification fully characterizes the 2×2 model. The outcome in cell (A) is given by β_1 and the outcomes in other cells are given by simply adding the parameters together: cell (B) is given by $\beta_1 + \beta_2$; cell (C) is given by $\beta_1 + \beta_3$; and cell (D) is given by $\beta_1 + \beta_2 + \beta_3 + \beta_4$. In our setting, this specification can be rewritten as:

$$\text{Tenure} = \beta_1 + \beta_2 * \text{Lenient inspector} + \beta_3 * \text{Lenient facility} + \beta_4 * \text{Lenient facility} * \text{Lenient firm} + \varepsilon. \quad (3)$$

Empirical Setting

We study the impact of unethical demand on employee tenure in the market context of vehicle emissions testing. The vehicle emissions testing market has tremendous potential and demand for unethical behavior—the fraudulent helping of customers. While inspectors are legally required to follow strict testing procedures, they have numerous opportunities to diverge from this course for financial gain or personal preference. Skilled mechanics can make nearly all vehicles pass through a number of temporary mechanical adjustments that do not address the underlying causes of the excess pollution.⁷ Even the worst cars can be certified clean though substituting other cars

⁶ It is important to note that Edwards (1994) introduces a number of specifications targeted toward specific hypotheses.

⁷ If a driver has a registered vehicle weighing less than 8500 lbs., they must get it tested for hydrocarbons (HC), carbon monoxide (CO), and nitrogen oxide (NOx). If their car is newer than 1981, they must choose a testing station at which to conduct the test. These testing facilities will be private companies, but will be licensed by the state. Vehicles will receive one of two tests: dynamometer and idle. In the idle test, the probe is inserted into the tailpipe while the car engine idles. This test is much easier to pass, as it doesn’t measure NO_x levels. The dynamometer test measures exhaust at different engine RPM’s.

during the testing procedure (Oliva 2013). Not only do inspectors have opportunities to cheat, they will often have strong incentives. As Hubbard (1998, 2002) and Pierce and Toffel (2013) address, reputation, repeat business, and cross-selling repairs all provide incentives in certain facilities. Outright bribes and shopping around by customers can furthermore motivate inspectors to help customers pass even grossly polluting vehicles. Firms in this market tend to profit from unethical behavior, since fraudulently passing their customers' older cars ensures they will remain on the road and in need of other mechanical repairs. Customers who fail emissions tests buy new cars, which need little if any repair work.

The state can do little to enforce that the testing is being carried out legally, short of engaging in covert investigations.⁸ Only when facilities or inspectors are passing nearly every vehicle do regulatory agencies carefully investigate. The cost to society of this unethical behavior is broadly distributed through pollution, such that the impact is rarely salient to consumers or voters. Consequently, since unethical demand gives facilities strong incentives to fraudulently pass older cars, many are likely to encourage this action in their employees. Ethical employees may reduce profits, and therefore may be either forced out or pressured to leave. Only extremely unethical inspectors fundamentally put the firms at risk for regulatory punishment.

Data

Our data set comes from the department of motor vehicles (DMV) of a large northern state. It contains all vehicle inspections conducted between 2001 and 2004 for gasoline-powered vehicles under 8,500 lbs, and includes vehicles owned by individuals, corporations, fleets, and government agencies. Only those vehicles in dense urban areas are included, as these are the only vehicles that required our specific testing procedure during this time period. The data at the inspection level includes inspection date, the inspection time, VIN number, facility identifiers, inspector identifiers, and inspection results. These data allow us to uniquely identify vehicles, including all characteristics such as make, model, model-year, and odometer reading. In addition, we know the name and address of the inspection station, as well as the date on which the test occurred. Finally, we can observe which inspector conducted the test through unique inspector ID's, although we do not know their names. Since we know exactly when and

where the inspection took place, this allows us to follow the careers of inspectors as they change employment from one facility to another.

We begin by creating a sample of inspectors that switch facilities during our 4-year period. We construct this sample in a conservative manner. For an inspector to be included in this sample they must not be working at multiple facilities simultaneously. Even if an inspector moves from facility A to facility B, they are excluded from our sample if they worked at another facility during this period. Furthermore they are eliminated from our sample if they return to their original facility. They also must remain at the new facility at least 7 days, a restriction used to exclude temporary workers from our sample. This sampling is necessary from an identification standpoint, because it is impossible to identify pre-hire behavior in individuals for whom we never observe behavior prior to joining a facility. We further restrict our sample to inspectors and facilities whose pre-hire observations are of sufficient size to adequately measure pre-hire behavior. For our baseline model, this minimum size is 500.⁹

Table 2 presents the descriptive statistics for our sample, which requires a minimum of 500 pre-hire tests to measure pre-hire leniency. This leaves us with a sample of 241 inspector/facility pairs. For each pair we can observe the history and characteristics of the inspector and the facility prior to the inspector joining the new firm. For both inspectors and facilities we calculate the unadjusted pre-hire pass rates, which average 94 % for inspectors and 93 % for facilities. We designate those inspectors and facilities above the median pass rate as *Lenient*, while those below are designated as *Strict*.¹⁰ Given estimates from the existing literature (Hubbard 1998; Oliva 2013; Pierce and Snyder 2011), *Lenient* inspectors and facilities are almost certainly engaging in fraud.

In the data we can observe the length of tenure for inspectors at their new facilities, which averages 260 days. One major limitation of our data is that they do not identify the nature of the attrition. Inspectors who are involuntarily terminated by a facility appear identical to those who voluntarily leave. Another limitation is that we rely on observed tests to indicate continued employment. While our data represent the entire population of tests in 2001–2004, it is possible that some inspectors remain as

⁹ Choosing a sample smaller is problematic for the reason that one cannot precisely estimate the true pass rate of a firm or individual inspector. For example, suppose that a particular inspector passes 90 % of the vehicles they see. If the sample size of inspections were 100, then over 40 % of the time we would observe a pass rate greater than 92 % or less than 88 %. With a sample size of 500 this percentage drops to less than 3 %. Nevertheless, our results are robust to changes in the sample size as documented in Appendix Table 6.

¹⁰ Because we are using the 2×2 construct, we have to use seemingly arbitrary cutoffs. In unreported analysis—we verify that the choice of the cutoff threshold is not driving the results.

⁸ While such investigations are effective in some contexts (e.g., Levine et al. 2012), discussions with the state agency suggest that covert audits are very rare, due to the unwillingness of state workers to participate in them.

Table 2 Summary statistics

Variables	Obs.	Mean	SD	Min	Max
Inspector tenure at new facility	241	260	238	1	1139
Percentage inspectors that left the new facility	241	0.58	0.49	0	1
Facility pass rate prior to hiring the inspector	241	0.94	0.03	0.84	0.99
Inspector pass rate prior to joining the new facility	241	0.93	0.04	0.72	1
Mean vehicle make year at the facility prior hiring the inspector	241	1993.9	1.4	1989.5	1998.6
Mean vehicle make year seen by the inspector prior to joining the new facility	241	1994.6	1.7	1990.4	1998.7
Mean vehicle odometer reading at the facility prior to hiring the inspector	241	80,676	18,279	41,458	173,000
Mean vehicle odometer reading seen by the inspector prior to joining the new facility	241	73,229	19,136	38,376	164,591
Number of inspections performed by the facility prior to hiring the inspector	241	2,153	1,632	514	10,769
Number of inspections performed by the inspector prior to joining the new facility	241	1,013	742	501	5,770

Note For an inspector/facility pair to be included, in the sample, both must have performed at least 500 inspections prior to the inspector being hired

employees while ceasing to perform inspections. The small size of these firms, however, makes this possibility unlikely, as employees must serve multiple roles. Censoring on both the left and right side are additional problems. Our analysis is consequently limited to those inspectors who switch stations during our time period, which means we must refrain from drawing inferences about workers with extremely long tenures.

Empirical Approach and Results

Measuring Employee and Organizational Leniency Prior to Hiring

Our empirical approach to identifying the impact of unethical demand on employee tenure proceeds in two steps. The first stage is to measure both the dispositional ethics of the employee and the behavioral norms or rules in the hiring firm through behavior *prior to the inspector joining the hiring firm*. These pre-hire measures are similar to employee surveys or interviews given at the time of hiring, except that they identify pre-existing traits based on observed behavior. The second step will then be to analyze the impact of these estimated levels of fraudulent leniency on subsequent employee tenure and attrition.

In order to measure the relative leniency of inspectors, we identify their average pass rates prior to the employee joining the firm while conditioning on vehicle characteristics. This method attempts to control for other factors that might also affect the likelihood of passing a vehicle, including test time and location as well as vehicle-specific factors. We then interpret the higher average pass rates associated with a facility type as an indication of fraudulent leniency, an empirical approach that is based on well-established measures of risk-adjusted performance in the

health-care productivity literature (e.g., Cutler et al. 2010; Huckman and Pisano 2006). For instance, if inspector A and inspector B both inspect 500 similar cars and A passes more vehicles than B, then we infer that the fixed differences between A and B are differences in their willingness to fraudulently assist vehicles in passing. To begin the process of estimating the adjusted pass rates for the inspector we use the following specification:

$$\text{PassRate}_i = \beta * X_i + \varepsilon_i \quad (4)$$

PassRate is the percentage of cars passed by the inspector or the facility prior to the hiring event. X_c is a set of controls. Included in these controls are dummy variables for the year of hiring and for the county where the inspector previously worked. Additionally we include controls for the average make-year and odometer of the vehicles tested prior to the inspector joining the new facility as well as the number of inspections previously performed. Although not reported, the regression results make intuitive sense. For example, inspectors that see vehicles with higher odometers have on average lower pass rates.

After regression (4) is applied to the hundreds of thousands of test observations from the 241 inspectors with at least 500 pre-hire tests, we compute the residual for each inspection. This inspector fixed effect is the difference between the inspector's true pass rate and the pass rate that would be predicted by Eq. (4)

$$\text{Inspector Fixed Effect}_f = \text{PassRate}_i - \text{Predicted PassRate}_i \quad (5)$$

For example, if an inspector passes 95 % of the vehicles he tests and is predicted to pass 90 %, the inspector fixed effect would equal .05. This is the leniency at the inspector level that cannot be explained by observable vehicle characteristics. We repeat this procedure to calculate the pre-hire levels of leniency for facilities as well. We assume

that these inspector and firm-specific levels of leniency are time-invariant.

Identifying the Impact of Unethical Demand and Ethical Misfit

Having developed a measure of pre-hire leniency in the first stage, we now test our hypotheses on how unethical demand and ethical misfit influence inspector tenure. Using our pre-hire pass rates, we split our sample into the top 50 % of inspectors in leniency (which we call “lenient”) and the bottom 50 % (which we call “strict”). We do the same for facilities. Existing evidence suggests these cutoffs accurately reflect divides between fraudulent and honest facilities and inspectors (Hubbard 1998; Oliva 2013; Pierce and Snyder 2011).¹¹ In Table 3, we demonstrate how this categorization of lenient inspectors/stations is distributed across all matches. The evidence weakly suggests that lenient inspectors are attracted to and selected by lenient facilities (and vice versa), leading to consistent ethical fit. However, this difference is not significant at conventional confidence levels for our sample of 241 inspectors. Larger inspector samples presented in Appendix Table 6, which include inspectors with fewer pre-hire inspections, produce statistically significant differences in the numbers of ethically fit and misfit hires.

To test our hypotheses on tenure (1–3), we first calculate mean tenures for each of the four quadrants presented in Tables 1 and 3. This allows us to apply simple t-tests of the inequalities in tenure proposed by our hypotheses. Using the adjusted pre-hire pass rates calculated in Eqs. (4) and (5), we again split our sample in the same way as in Table 3. We present these mean tenure values in Table 4.

We first find that there is significant evidence supporting the impact of unethical demand on tenure. For cells (A), (B), or (C), when either the worker or the firm becomes more lenient, tenure increases. Consider cell (B), where the hired inspector is lenient but the hiring firm is not. Moving towards a lenient firm on average increases the number of days the inspector stays with the facility by over 50 days. However, we do not find evidence that ethical fit is more important than unethical demand. If fit were the most important factor increasing tenure, we would expect that cells (A) and (D) would both be significantly greater than cells (B) and (C). Instead, we find that cell (A) is significantly *smaller* than any of the other cells. These results are consistent with Hypotheses 1 and 2, that unethical demand increases tenure for fraudulently lenient employees and those working in fraudulent facilities.

¹¹ Again, we note that the 50 % cutoff is consistent with evidence on actual fraud rates in this industry, but also that our results are robust to alternative cutoffs.

Table 3 Inspect/facility matches based on leniency

	Inspector pass rate prior to hiring the inspector below the median	Inspector pass rate prior to joining the new facility above the median
Facility pass rate prior to hiring the inspector below the median	Raw: 67 Adjusted: 63	Raw: 53 Adjusted: 57
Facility pass rate prior to joining the new facility above the median	Raw: 53 Adjusted: 57	Raw: 68 Adjusted: 64

Note Adjusted controls for the vehicle age, odometer, number of inspections performed prior to merger, and county fixed effects. For an inspector facility pair to be included in the sample they must have both performed at least 500 inspections prior to the inspector being hired

Table 4 Mean inspector tenure (days) at new facility

	Inspector pass rate prior to hiring the inspector below the median	Inspector pass rate prior to joining the new facility above the median
Facility pass rate prior to hiring the inspector below the median	207.81 (27.53)	252.17 (29.25)
Facility pass rate prior to joining the new facility above the median	238.62 (27.42)	334.31 (33.93)

Note Standard errors computed in parenthesis. For an inspector facility pair to be included in the sample they must have both performed at least 500 inspections prior to the inspector being hired

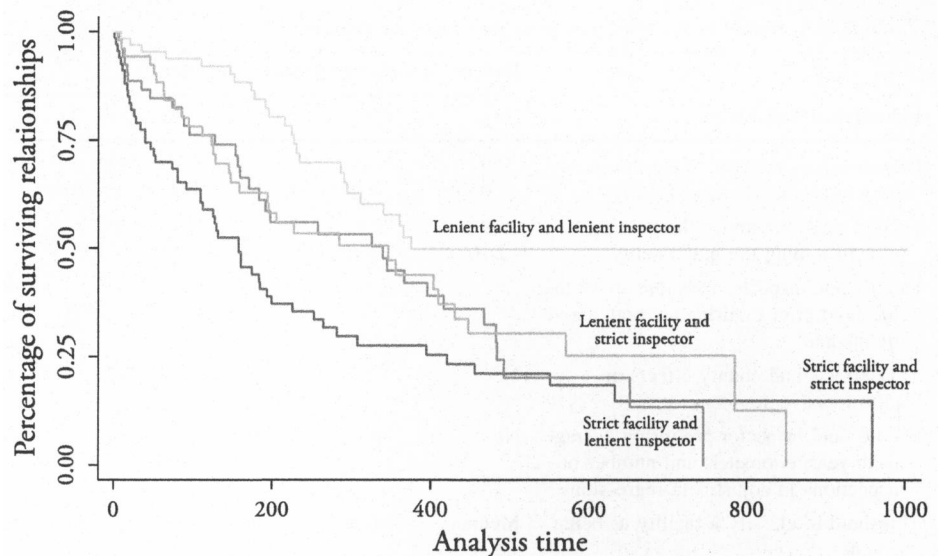
Next, we apply a Cox proportional hazard rate model to our specifications (2–3). We use a Cox model instead of an OLS regression because it allows us to deal with the significant right-hand censoring problem that we face in the data.¹² It is important to note that the Cox model identifies the hazard of attrition, not tenure, although OLS regression models of tenure produce nearly identical results. Our fully interacted Cox model is therefore:

$$h(t) = \lambda \exp[\beta_1 * \text{LenientInspector} + \beta_2 * \text{LenientFacility} + \beta_3 * \text{LenientInspector} * \text{LenientFacility}] \quad (6)$$

The Cox model estimates the hazard rate for matched pairs of inspectors and facilities, so it is estimating the risk

¹² We operate under the assumption that if the employee was with the facility during the last month of the sample that they stayed with the firm. If the employee is not with the firm during the last month of the sample the date of separation is the last inspection performed by the employee at the facility.

Fig. 1 Kaplan–Meier survival curves. *Note* for an inspector facility pair to be included in the sample they must have both performed at least 500 inspections prior to the inspector being hired. Results after 500 days have large standard errors. This is the raw data which does not correct for truncation. Low survival times may represent right hand censoring for relationships that began relatively late in the sample period. The hazard models correct for this deficiency



of attrition rather than the tenure in our earlier t tests. The leniency variables are estimated using unadjusted pass rates, adjusting only for the time of the hire and the county the inspector/facility performed the prior inspections in. The second set of adjustments controls for the average odometer reading of vehicles previously tested, the average make year, and the total number of prior inspections.

Figure 1 first presents Kaplan–Meier survival curves for the four groups defined in Tables 1, 3, and 4. These curves are supportive of Hypotheses 1 and 2 and the results in Table 4. Inspector-facilities pairs where both parties are strict have the highest hazard rate, while pairs where both are lenient have the lowest attrition. We see no evidence that ethical fit impacts the results. Furthermore, the curves are supportive of the proportionality assumption necessary for Cox hazard models. With the exception of the indistinguishable curves for lenient/strict pairs, the curves only cross near the end of our data, where truncation greatly reduces our sample set.

Hazard Model Results

We present the hazard model results from our sample in Table 5. Columns (1–3) show the uninteracted results and Columns (4–6) represent the fully interacted model capable of simultaneously testing our hypotheses. We include two models without controls (1 and 4), two models with year and county fixed effects (2 and 5), and two models with year-fixed effects, county-fixed effects, and pre-hire controls (3 and 6).

The models in columns (1–3) indicate statistically significant relationships between fraudulent leniency and attrition. Consistent with Hypothesis 1, lenient (fraudulent) employees enjoy a much lower hazard of attrition. Consistent with Hypothesis 2, employees of lenient

(fraudulent) facilities also enjoy a lower hazard of attrition. The fully interacted models in columns (4–6) continue to show the impact of firm leniency in reducing attrition (and thereby increasing tenure), although the results on employees of lenient firms become only marginally statistically significant. The inclusion of the interaction term again fails to find any impact of ethical misfit on attrition.¹³ Columns (7) and (8) alternatively define leniency or strictness at the top 33th percentile, rather than at the median inspector or facility, with nearly identical results.¹⁴

We alternatively divide all facilities and inspectors into thirds by their leniency measure, defining “extreme” pairs as those where both facility and inspector are in either the bottom or upper third. This allows us to test whether our results are stronger for extreme leniency values. The results are consistent with the main results in Table 5, although the reduced observations in the extreme quantiles makes them less precisely estimated. Consequently, we cannot conclude whether extreme levels of fraudulent leniency improve tenure more than more moderate ones.¹⁵

In short, we find no evidence that ethical fit impacts employee tenure or attrition. Rather, it is primarily the leniency of the firm and the employee, independent of one another, which predict employment length in a market with unethical demand. If evidence of fit were present, we would expect the parameter of interest to be greater than 1, indicating a hazard rate consistent with quicker attrition. In

¹³ Since the model is non-linear the interpretation of the interaction enters the equations non-linearly. Because the effect size is so small this is not substantively relevant in this case. We have run this as an OLS regression with both total tenure at the station and probability the inspector leaves the station as the dependent variable and found substantively similar results.

¹⁴ In unreported results we use a continuous leniency variable. We find substantively similar results to those in Table (5).

¹⁵ These results are available from the authors on request.

Table 5 Cox models of the impact of prior pass rates on attrition

Independent variables	Dependent variable: hazard of attrition							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inspector pass rate above the threshold prior to joining the new facility	.529 (.090)***	.545 (.093)***	.660 (.112)**	.623 (.140)**	.575 (.136)**	.687 (.156)*	.547 (.133)**	.642 (.150)*
Facility pass rate above the threshold prior to joining the new facility	.599 (.103)***	.728 (.123)*	.631 (.109)***	.703 (.155)	.763 (.166)	.657 (.150)*	.691 (.136)*	.775 (.159)
Facility and inspector pass rate above the threshold prior to hiring are both above the median				.676 (.232)	.891 (.300)	.914 (.307)	.920 (.386)	.727 (.320)
Year effects and county effects in adjustment regressions	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Facility and inspector pre-hiring average make year, odometer, and number of inspections in adjustment regressions	No	No	Yes	No	No	Yes	No	Yes
Threshold to classify a facility as being lenient	Median	Median	Median	Median	Median	Median	Top 3rd	Top 3rd
Observations	241	241	241	241	241	241	241	241
Failures	140	140	140	140	140	140	140	140

Note Robust standard errors clustered at the facility level are computed in parenthesis * significant at 10 % confidence level, ** significant at 5 % confidence level, *** significant at 1 % confidence level. All results account for right hand side censoring. For an inspector facility pair to be included in the sample they must have both performed at least 500 inspections prior to the inspector being hired

addition if fit were important in the interaction results, we would expect that the main effects to be greater than 1, not less than one. Overall the regressions suggest that the match of strict (honest) inspector and strict (honest) employees have the highest attrition rate. This is presumably driven by the economic and psychological processes discussed in our theory section, although we cannot separate these mechanisms in our analysis.

Discussion and Conclusion

In this paper, we explain the implications of consumer demand for unethical behavior for employee tenure. Unethical demand can increase attrition among ethical employees both through market forces, where the employee is less valuable to the firm, and through psychological forces, where the employee suffers decreased job satisfaction due to conflict with customers. Similarly, unethical demand can increase attrition among employees in ethical firms, as these firms are likely to suffer competitively in a market that demands and rewards unethical behavior. Furthermore, when employee disposition conflicts with organizational ethical norms, employees may be more likely to voluntarily leave or be terminated, although the frequency of such ethical misfit may be limited due to attraction and selection processes that precede it.

In order to disentangle the impact of employee and firm behavior from the interaction of these behaviors, we use a simple 2×2 model to characterize the main relationships.

Our empirical analysis of samples of 241 to over 3,000 emissions inspectors shows that in a market with unethical demand for fraudulent leniency, organizational fraud reduces attrition while ethical fit does not. We find mixed results on whether fraudulent employees enjoy longer tenure. While fraudulent employees enjoy longer tenure in our sample, this relationship is not consistently identified in our Cox hazard models studying attrition. While our empirical results strongly support the role of organizational fraud in reducing attrition in markets with unethical demand, there are several limitations to our analysis. First, we urge the reader to be cautious while interpreting our results, since like nearly every other large-scale study on employee behavior, we cannot control for the endogenous matching of employees to firms. And our results suggest that ethical fit plays some role in the attraction and selection of emissions inspectors. Furthermore, we do not know if the employee was terminated or voluntarily left the facility. While our theory predicts similar effects on both types of attrition, we cannot parse out the separate effects in this market setting. Future work that can separate these two types of attrition would improve our understanding of the theoretical underpinnings of how unethical demand can drive turnover. Regardless, since our theoretical predictions from both processes are very similar, we do not believe this unobserved mechanism biases our results in any way.

Finally, while we theorize that the mediating mechanisms for the relationship between prosocial corruption and employee attrition involve job satisfaction and financial

performance, we cannot directly observe these variables. Furthermore, we have abstracted away from the much more complex decision-making process of any employee who chooses to commit fraud (Murphy and Dacin 2011) or other unethical behaviors. In our setting, we have focused on those motivations and influences that we believe are most likely to influence employee attrition, yet we acknowledge the importance of other psychological pathways and economic incentives. This limitation highlights the importance of different studies using complementary methodologies and data (e.g., archival, experimental, survey), and calls for further work to measure the relative importance of these mechanisms in other market settings. We hope our identification of the relationship between fraud and attrition sparks more detailed micro-level analysis to address unanswered questions here.

We believe this paper contributes to the understanding of the complex interaction between the ethical preferences of consumers, the dispositional ethics of employees, and the culture and norms of the organizations that hire them. More specifically, we demonstrate how there are elements of individual ethics that are immutable, and that in markets with unethical demand, patterns of misconduct in firms can elongate employee tenure. While the impact of organizations on employee ethics may be of primary importance (Ashford and Anand 2003; Pierce and Snyder 2008), pre-existing behaviors or traits of each may persist.

In addition, we contribute to the literature on fit by using a new method for conceptualizing and testing ethical misfit. We employ pre-hire behavioral data, which we believe reduces two of the major problems with self-reported ethics: bias and misrepresentation. This represents a significant methodological contribution, one that can be used in conjunction with existing methods. The strength of this methodology is in its potential to link misfit with attrition, a link not consistently established in the empirical literature in psychology (Kristof-Brown et al. 2005), psychology, or sociology (Fernandez et al. 2000; Castilla 2005). While pre-hire behavioral data is often difficult to find, we still see significant potential for this methodology in multiple types of fit: ethics, productivity, and other types of performance. These applications will likely be strongest in markets where employee productivity or behavior is necessarily tracked by regulatory agencies or third-parties. Examples might include tax accounting, education, safety inspections (restaurants, plants, cranes, building), real estate, home mortgages, or transportation. Researchers might also find sufficient data for these studies when studying person–group fit when employees move within firms, as such organizations may track past employee performance, productivity, or behavioral problems. The potential for this methodology is also to apply it in work similar to that of Castilla 2005, linking behavior or misfit to

robust measures of post-hire or post-transfer productivity. This methodology has greater possibilities than we can demonstrate with our data set, which is limited by firm size and lack of information on cause of termination. Behavioral data from larger organizations can also better identify diversity as a possible moderator for the misfit–attrition relationship.

Furthermore, the context in which we study this problem is not a trivial one; vehicle emissions testing is widespread across the United States and Europe, and has serious implications for the economy, the environment, and public health. Fraud in emissions testing has been linked to customer loyalty (Hubbard 2002) and customer wealth (Gino and Pierce 2010a, b), and can be extrapolated to elevated air pollution and infant mortality (Chay and Greenstone 2003; Currie et al. 2009). We therefore believe that this paper not only contributes to our understanding of ethics and organizations, but also to the management of employees and the design of environmental policy.

These findings have considerable implications for both managers and policy-makers. When individuals join organizations, their personal ethics are not entirely immutable but are clearly persistent. These personal ethics may significantly impact employee retention, and it is therefore important to identify these pre-hire. How can managers accomplish this? In many non-profit or heavily regulated industries, pre-hire behavioral data may be available from third-parties or agencies. In education, past classroom scores are often publicly available. In medicine, surgeon and physician medical choices and performance are also reported. Attorney behavior in transcripts of past cases may also be observed. The accident and violation records for drivers of taxis and other livery services are available to managers as well. Furthermore, pre-hire behavior not directly related to the new position may be informative and predictive of likely misfit. Past arrests, credit defaults, and community service may provide behavioral evidence of likely individual attributes and potential ethical misfit. We would not argue that measuring attributes and fit based on pre-hire behavior is always feasible, but rather that it is a complement to traditional methods using interviews, references, self-reports, and more subjective evaluations of disposition.

Much of the strategy and policy implications of this paper stem from the financial and career benefits from unethical behavior. Firms in some industries may suffer financially from hiring employees that are too ethical. Our results show the effect on attrition to be greatest when employees are highly ethical. But this directional effect will not always be true across firms and industries. Where unethical and illegal behavior is sufficiently monitored and legal sanctions are sufficiently high, unethical employees may become liabilities for the firm. We would obviously

not propose hiring fraudulent employees as a recommended course of action, but we suggest that firms should care intimately about the unethical actions of their competitors. If unethical or illegal behavior lends a competitive advantage to a rival, then monitoring these dimensions in the marketplace becomes an important strategic action, as firms can then report such behavior to authorities (if illegal) or publicize this to customers if it is reputationally costly. We also would suggest that regulators and authorities must focus vigilantly on those industries with unethical demand. Penalties and enforcement activities, when feasible, must be brought to levels to change the profit calculus of

unethical behavior. Our evidence suggests that hiring highly ethical inspectors may hurt the firm. Given our knowledge about levels of cheating in this market, we can only believe that the optimal employee is not one who strictly follows a literal interpretation of the regulatory guidelines.

Appendix

See Table 6.

Table 6 Cox model robustness to sample specification

Independent variables	Dependent variable: hazard of attrition							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inspector pass rate above the median prior to joining the new facility	.888 (.040)***	.898 (.059)	.867 (.037)***	.848 (.052)***	.436 (.168)**	.413 (.237)	.517 (.216)	.464 (.277)
Facility pass rate above the median prior to joining the new facility	.776 (.038)***	.784 (.050)***	.897 (.042)**	.878 (.056)**	.739 (.286)	.706 (.377)	.697 (.307)	.633 (.363)
Facility and inspector pass rate above the median prior to hiring are both above the median		.979 (.088)		1.044 (.090)		1.116 (.881)		1.264 (1.045)
Year effects and county effects in adjustment regressions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Facility and inspector pre-hiring average make year, odometer, and number of inspections in adjustment regressions	No	No	Yes	Yes	No	No	Yes	Yes
Sample criterion based on pre-hire test count	5 or more tests	5 or more tests	5 or more tests	5 or more tests	1,000 or more tests	1,000 or more tests	1,000 or more tests	1,000 or more tests
Observations	3,056	3,056	3,056	3,056	59	59	59	59
Failures	2,178	2,178	2,178	2,178	28	28	28	28

Note Robust standard errors clustered at the facility level are computed in parenthesis. * Significant at 10 % confidence level, ** significant at 5 % confidence level, *** significant at 1 % confidence level. All results account for right hand side censoring

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