Reversing induced discrimination:  
Theory and experiment

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September 21, 2004

Research has shown that the higher penalties for discrimination under the Civil Rights Act of 1991 appear to have induced hiring discrimination. This occurs because employers use the proxy of protected group membership to identify high litigation risk employees in the absence of reliable indicators of true risk. This paper develops and tests a mechanism to reverse the induced discrimination. The mechanism creates a reliable signal of litigation risk to replace the imperfect proxy of protected group membership. This allows employers to reduce litigation risk without discriminating against protected groups. Experimental results indicate that the mechanism behaves as theory predicts. Accordingly, use of the mechanism could restore race/gender-blind hiring.

C9, D8, J7

Key Words: discrimination, CRA91, litigiousness, mechanism, experiment,

I wish to thank George Baker, Rachel Croson, Howard Kunreuther, Steve Postrel, Mike Ryall, Keith Weigelt, Julie Wulf and participants in the Jones Center seminar, the Wharton Applied Economics seminar as well as the 1999 AEA meetings for helpful comments. I thank the Sol C. Snider Center for financial support.
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“Dear Inc.:
I’ve just survived the horrendous experience of being falsely accused of sexually
harassing a woman who reports to me. Though I was cleared of any wrongdoing, my
name and reputation have been dragged through the mud for months. As a result, I’m
determined never to consider a woman for employment with me again. It’s just too risky.
I know there are a lot of legitimate charges brought, but certainly I can’t be alone in my
experience.”

-Wall Street Executive²

1. Introduction

The higher penalties for discrimination under the Civil Rights Act of 1991 appear ironically to
have induced hiring discrimination (Oyer and Schaeffer 2002, Knott 2004). This unintended consequence
occurs because employers try to minimize litigations costs by screening out employees who they believe
pose high litigation risk. Currently, because there is no reliable signal of an individual’s litigation risk,
they use protected group membership as a proxy. Thus litigious employees (the real risk group) have
imposed an externality on protected group employees by raising the perceived cost of hiring from
protected groups.

I develop and test a mechanism to restore race/gender-blind hiring that reduces total litigation,
and therefore employer incentives to discriminate, while retaining penalties for employer misconduct.
This is achieved through a self-selection mechanism in the spirit of Spence (1973) and Rothschild and
Stiglitz (1976) through which prospective employees reveal whether they are litigious. The mechanism
has two features that jointly reduce employer litigation costs, and thus the need to discriminate—an
adverse selection feature that identifies litigious employees ex ante, and a moral hazard feature that
inhibits litigation ex post. I evaluate the mechanism analytically, and then test it’s assumptions and
expectations via controlled experiment. The experimental “testbed” is an important step in a progression
from theory to real-world implementation and test.

Experimental results indicate that the principles on which the mechanism rests are valid and that
the mechanism behaves as the model predicts. First, it appears that a litigious personality trait does exist.
Second, the mechanism is effective in separating employees with the trait from those without it ex ante. Third, because the trait is uncorrelated with protected group membership, use of the mechanism has the potential to restore race-gender blind hiring. Fourth, the moral hazard feature of the mechanism is effective in further deterring suits ex post.

The outline of the paper is as follows. Section 2 reviews the problem of induced discrimination. Section 3 develops the reversal mechanism, and evaluates it analytically. Section 4 describes the experiment that tests the mechanism. Section 5 presents results from the experiment. Section 6 summarizes conclusions. Section 7 discusses implications for implementation as well as future research.

2. Induced discrimination

The term “employment discrimination” refers to the set of five laws administered by the EEOC. These include the Equal Pay Act of 1963 prohibiting gender-based wage discrimination, Title VII of the Civil Rights Act of 1964 prohibiting employment discrimination based on race, color, religion, sex and national origin, the Age Discrimination in Employment Act of 1967 (ADEA) prohibiting employment discrimination against persons 40 years of age or older, the Americans with Disabilities Act of 1990 (ADA), prohibiting employment discrimination against qualified individuals with disabilities, and the Civil Rights Act of 1991 modifying the prior laws to allow compensatory and punitive damages in cases of employer “malice or reckless indifference to the rights of aggrieved individuals.”

Past empirical work has tended to show that the Civil Rights laws and EEOC enforcement have improved economic conditions for protected groups (see for example Freeman 1981, Heckman & Payner 1989, Leonard 1996). However recent work has expressed concerns that the laws have actually induced discrimination (Posner 1987, Donohue & Siegelman 1991, Abram 1993, Becker 1999, Acemoglu and Angrist 2001, Oyer and Schaeffer 2000, 2002, Knott 2004). Acemoglu and Angrist find that the Americans with Disabilities Act (ADA) has induced discrimination of the disabled because employers incur physical costs of accommodating the disabled, thus making disabled employees more expensive than non-disabled employees. Similarly, Oyer and Schaeffer (2002) find that employers sort away from
blacks and women in their hiring in order to avoid later employment litigation, while Knott (2004) finds that a trend of increasing employment for protected groups reversed course at the implementation of CRA-91. This paper focuses on the latter effect of hiring discrimination arising from litigation risk.

Two factors facilitate induced discrimination of protected group employees. The first of these is the higher cost of terminating employees brought about by CRA-91. The provision allowing compensatory and punitive damages has a primary effect on the implicit wage of protected groups through the increased cost of a suit. Additionally, the higher allowed damages produces a secondary effect of stimulating additional EEOC charges. This secondary effect is demonstrated in Figure 1 which traces the employer hazard rate (total number of charges per year as a percentage of protected group employment). The combination of increased cost per charge (higher damages) and increased likelihood of charges has substantially increased the cost of terminating employees from protected groups. In fact a new line of insurance, Employment Practices Liability Insurance (EPLI), emerged in 1990 in anticipation of increased employer exposure from CRA-91.

Since the implicit wage for employees is money wages plus employment litigation costs, litigious employees are more costly than non-litigious employees. Thus all else equal, employers rationally prefer non-litigious employees to avoid litigation costs, just as they prefer to hire non-disabled employees to avoid accommodation costs. There is no illegal discrimination in avoiding litigious employees. The problem of induced discrimination arises because there is no reliable signal of litigiousness, and thus employers use protected group membership as a proxy index for litigiousness. The underlying logic for use of the index is that protected group employees have more grounds on which to sue employers. The net result is that litigious employees impose an externality on protected group employees in the form of induced hiring discrimination. This externality is dissipative—the low risk employees incur losses from
reduced employment opportunity, while the offsetting gains to high-risk employees are trivial (the expected value of a plaintiff award in employment cases is less than $1000)\(^3\).

Induced hiring discrimination can be avoided if the costs of hiring non-protected employees are increased to match those of protected group employees. Currently this is accomplished through anti-discriminatory hiring provisions in the EEOC regulations. In principle, hiring non-protected employees generates legal costs from lawsuits by rejected protected group candidates. However, such lawsuits are rare. Hiring charges account for less than 10% of all EEOC charges (Figure 2). The lower incidence of hiring charges may be due to greater difficulty in demonstrating hiring discrimination (since the applicant is unlikely to know anything about competing applicants), or from the fact that economic damages from hiring discrimination are likely lower, since the applicant has no specific investment in the prospective employer. Thus while greater hiring costs of non-protected employees may in principle offset the higher termination costs of protected groups, this appears not to be happening in practice.

3. Reversal Mechanism

While one means to reverse hiring discrimination is to repeal the civil rights acts, this would be a mistake. As mentioned previously, these acts have improved economic conditions for protected groups. We wish to maintain their penalties for employer misconduct, but we want to avoid the unintended consequence of hiring discrimination. Accordingly I propose a mechanism that works in conjunction with the existing civil rights acts to reverse the problem of induced discrimination while retaining progress on other forms of discrimination. The goals for the mechanism are to 1) restore the relative employment opportunities of protected groups to pre-CRA-91 levels, 2) retain penalties for employer misconduct, and 3) do so without introducing net new costs to employers and employees.

The proposed mechanism is a bond that is offered to all employees (protected groups as well as young white males) prior to the employment contract. The bond charges employees annual premia that
are accumulated in individual accounts and are redeemable at termination or retirement if the employee has not filed suit against the employer. If however, the employee does file suit, the accumulated principal from the premium payments are forfeited.\textsuperscript{4,5}

This bond has two features that potentially restore race/gender-blind hiring. The principal feature treats adverse selection by identifying litigious employees ex ante (independent of their protected group). A secondary feature treats moral hazard by reducing employee incentives to litigate ex post. I examine these features separately.

\textit{Adverse Selection}

The adverse selection problem is treated through a self-selection mechanism similar to that in Spence (1973) and Rothschild and Stiglitz (1976). I assume a population with two types of workers, litigious, \( l=1 \) and non-litigious, \( l=0 \). Litigious workers exist in proportion \( \lambda \) of the population; non-litigious workers exist in proportion \( (1-\lambda) \) of the population. The feature distinguishing litigious workers from non-litigious workers is their litigation propensities. Thus there are some incidents that workers of type \( l=1 \) would litigate, while the same incidents would be tolerated by workers of type \( l=0 \).

I model this distinction as a difference in the probability of a suit for a representative employment episode. Non-litigious workers \( (l=0) \) sue for the episode with probability, \( \rho \); litigious workers \( (l=1) \) sue for the same episode with probability \( \rho + \delta \). The probability of encountering an episode is unknown, but the expected value of an award \( (A) \) is assumed known.

A number of factors enter into an individual’s litigation propensity, \( \rho \). These include durable personality traits which condition an individual’s costs and benefits from litigation (belief system, sense that world is fair, concern for reputation, attachment to others), as well as time-varying characteristics (knowledge, wealth, income, reputation, affiliations) (Brodsky, Brodsky and Horn 2000). In essence \( \rho_l = \rho_o + \rho_i(t) \). For simplicity, we consider the observed litigation propensity of individuals at a given point in time, \( \rho_o \), irrespective of whether that propensity stems chiefly from endowments or accruals. We distinguish these individual characteristics from the characteristics of the episode (legal cost, likely
personal outcomes, possible social outcomes). We bundle all characteristics of the episode into a single net expected value, $A$. In practice $A$ is a continuous variable with highly uncertain value\textsuperscript{7}. However for model simplicity, we treat a representative episode with value, $A$.

Employers offer the bond to each job candidate prior to employment. At that time they lay out the schedule and terms of the bond. The schedule consists of an annual premium, $c$, paid by the employee. The terms of the bond are such that the employee receives principal, $P(c,t)$, upon termination as long as she has not filed suit against the employer (and agrees not to file suit in the future). If the employee does file suit, she forfeits the accumulated principal, but enters a legal process with expected value, $A$, of an award.

The candidate observes the employment terms (wage plus bond terms), and chooses whether to purchase the bond given the knowledge she has regarding her own likelihood of litigating. Workers maximize the present value of the wage stream, $W(t)$, litigation award, $A$, and accumulated principal from the bond, $P(c,t)$, less the stream of premiums, $ct$, taking into account their likelihood of litigating, $\rho$. We assume that employers offer higher wages to employees who purchase the bond $(1+\varepsilon)W(t)$. This occurs for demand reasons (to attract such workers) as well as supply reasons (lower litigation costs and therefore lower implicit wages). These higher wages can come in the form of wages themselves or in contributions to the bond premium. The higher wages have the effect of easing budget constraints that might otherwise affect bond purchase.

The employer observes the signal provided by a candidate’s decision, and then chooses whether or not to employ her.

If hired, then in each period the candidate:

- Pays premium, $c$,
- Observes principal, $P(c,t)$ accumulating in an individual account
- Terminates with some positive probability, in which case she collects $P(c,t)$
• Confronts an actionable episode with some positive probability, in which case she decides whether or not to sue.
  • If she sues, she forfeits all premia and the principal, but enters a legal process that has an expected value, \( A \), of an award\(^8\).
  • If she chooses not to sue (and agrees not to sue in the future), she receives principal, \( P(c,t) \)

There are two possible expected payoffs to the candidate under each purchase decision: the payoff from litigating, assuming that an actionable episode occurs, and the payoff from not litigating (Table 1).\(^9\) Employees take these payoffs and their own litigation propensities into account when they make the decision to purchase the bond.

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Insert Table 1 about here
--------------------------------------------

The employer’s objective function is to minimize total costs of successful separation by choice of \( c, e \) and \( P(c,t) \):

\[
\text{Min} \ (1-\rho) \left( (1+\epsilon)W(t) + P(c,t) - ct \right) + \rho \left( (1+\epsilon)W(t) + A - ct \right)
\]

To achieve successful separation where non-litigious employees purchase insurance and litigious employees do not, the wage and bond schedule needs to satisfy employee incentive compatibility constraints. Note that participation constraints are imbedded in the incentive compatibility constraints, since we are seeking participation by non-litigious employees and are seeking to prevent participation by litigious employees.

* Non-litigious employees prefer to purchase the bond:

\[
(1-\rho) \left( \epsilon W(t) + P(c,t) - ct \right) + \rho (\epsilon W(t) + A - ct) \geq (1-\rho)(0) + \rho A
\]

\[
(\epsilon W(t) + P(c,t) - ct) / A > \rho
\]

* Litigious employees prefer to forego the bond:

\[
(1-(\rho + \delta)) \left( \epsilon W(t) + P(c,t) - ct \right) + (\rho + \delta) (\epsilon W(t) + A - ct) \leq (1-(\rho + \delta))(0) + (\rho + \delta) A
\]
\[
\frac{(\varepsilon W(t) + P(c,t) - ct)}{A} < \rho + \delta
\]

These constraints are jointly satisfied under the following conditions:

\[
\rho < \frac{(\varepsilon W(t) + P(c,t) - ct)}{A} < \rho + \delta \tag{4}
\]

Thus there exists a wage and bond schedule \((c, \varepsilon W(t), P(c,t))\) that separates litigious employees from non-litigious employees. In particular the ratio of bonding gains, \(\varepsilon W(t) + P(c,t) - ct\), to expected award, \(A\), must fall between the litigation propensities of litigious and non-litigious employees.

**Moral Hazard**

An interesting feature of the ex ante separating mechanism is that it also functions as a moral hazard mechanism ex post. Employee bond choice in the first round modifies litigation propensities, \(\rho'\), in the second round. Once employees are enrolled in the bond program and have begun accumulating principal, they consider the net award \(A - P(c,t)\), rather than \(A\) itself, when deciding whether to sue. Since \(P\) is convex in \(t\), while \(A\) is assumed fixed, \(\rho' (A - P(c,t))\) approaches 0 over time. Accordingly, even if the bond is ineffective as an adverse selection mechanism, it should function as a moral hazard mechanism in reducing litigation.

**Endogenous Litigation Propensities**

The separating equilibrium in Equation 4 examines first-order effects, taking into account only the ex ante propensities to litigate, \(\rho\) or \((\rho + \delta)\). The moral hazard feature of the bond raises the issue of endogeneity in the initial purchase decision—that purchasing the bond modifies litigation propensities. In particular, ex post litigation propensity, \(\rho'\), will be decreasing in \(P(c,t)\).

It is not clear whether the litigation propensity that candidates consider in the bond purchase decision is the first order estimate, \(\rho\), ignoring the dynamics, or the second order estimate, \(\rho'\), taking into account those dynamics. The basic result, that a separating equilibrium exists, is preserved when endogenous propensities are introduced. Note, however that the width of the separating range varies with the conjectural assumptions that drive \(\rho'\).10

**Summary**
It appears that a separating wage and bond schedule exists such that non-litigious employees buy the bond, while litigious employees do not. This conclusion rests on two assumptions: first, that there are two types of employees (litigious and non-litigious), and second, that the probability of suit differs between the two types. Empirical test is necessary to determine whether these assumptions are valid.

Additional rational for empirical test arises from the fact that $\rho$ and $\delta$ are theoretical constructs that cannot be characterized with existing data. This is true because the constructs rely upon a personality trait that has not been characterized, on a “representative” episode, and upon knowing the hazard rate for the representative episode. The only data that currently exists is an aggregate hazard rate over all personality types and episodes. Since the separating range relies upon $\rho$ and $\delta$, I need to characterize $\rho$ and $\delta$ to demonstrate that a separating price exists.

Thus to test the theory I either need to implement it fully (which is difficult without knowing the separating price), or I need to conduct a controlled experiment that tests the theory’s assumptions and predictions. I adopt a test-bed approach similar to that in Cox and Isaac (1987) and Plott and Porter (1994). This test bed represents the second stage in a three-stage process of theory, controlled experiment, and field test.

4. Controlled Experiment

The primary goals of the experiment are to verify the theoretical foundations and to test the predicted outcomes of the mechanism design. Doing so requires that four things be demonstrated:

a) The existence of two types of employees (litigious and non-litigious)

b) That litigiousness is uncorrelated with protected group

c) Existence of a price that separates the two types ex ante (adverse selection)

d) Existence of a level of principal that inhibits litigation ex post (moral hazard)

In addition I would like to estimate the real world values of $\rho$ and $\delta$ upon which the theory is based.
Subjects

Subjects in this experiment were recruited from students in the school’s Evening Program. The Evening Program is an outreach program for local-area adults working full-time while pursuing a degree at night. I recruited from this pool because of the saliency of employment. The subjects were all currently employed and averaged 11.4 years of full-time work experience. Thus employment issues for these subjects were current rather than prospective or retrospective. Moreover, qualitative comments indicate that the subjects understood the employment issues and took them seriously. For example:

“I have chosen not to sue based primarily on personal views about employment. From actual experience I know I would confront my employer directly, seek a satisfactory remedy/compensation within the firm, or leave.”

The sample included individuals from both protected groups and non-protected groups. This is important for two reasons. First, I need to show that the mechanism and the litigiousness trait are uncorrelated with protected group membership, else the mechanism merely replaces one means for discriminating against protected groups with another. Second, in practice the mechanism would need to be offered to all employees, since the mere act of administering the mechanism only to protected groups is itself discriminatory.

Most studies suggest that two or three subjects in identical situations are sufficient for attaining competitive results in laboratory markets (Friedman and Sunder 1994). Such logic suggests that eight subjects are sufficient for this experiment: two each in four cells of status (protected/not protected) versus type (litigious/non-litigious). Because we couldn’t reliably identify status and type a priori (precisely the motivation behind the bond), we recruited a larger number, and were successful in securing thirty-nine who satisfied our requirements.

The subjects had no prior experience with the experiment.

Procedures

The experiment was conducted online over a five-day period. Subjects could logon and complete the experiment at any time that was convenient for them over the five-day window. While online
administration is unusual for experiments, it was necessary in order to achieve high participation from individuals with substantial time commitments (working full-time while attending school in the evenings). The primary concern with this approach was that subjects would communicate with one another between experiments. I minimized the value in doing this, by not telling subjects the outcomes or the payoffs for any given experimental round. Furthermore, I checked whether there was any evidence of communication by testing for a trend in responses across subjects. There was no evidence of a trend. Subjects were paid electronically after completing the experiment in a lump sum for all rounds, so there was no learning across rounds.

Each online session consisted of three calibration rounds and nine experimental rounds, followed by a series of demographic/psychographic questions. The collection of personal data was important here for three reasons: first to validate and characterize the litigiousness trait, second, to demonstrate that litigiousness was uncorrelated with protected group, and third, to examine non-experimental factors affecting behavior in the employment context.

The entire online session lasted approximately forty minutes. Subjects used an experimental currency, G (gammas) throughout the game. Gamma denominations were intended to look like typical salary denominations, but the exchange rate (to determine subjects’ earnings) was G10,000 to $1.00. Subjects were compensated according to their choices, but on average they earned about $20.00 for the forty-minute session.

There were twelve rounds in the experiment. The first three rounds were calibration rounds. These rounds provide a clear basis of comparison for the experimental treatment. The calibration rounds were framed as lottery decisions. The last nine rounds were experimental rounds. They were framed as employment decisions.

In each round of the experiment, subjects had to make two decisions. The first decision was the bond purchase decision (in the calibration rounds, the equivalent of bond purchase was paying an ante). The bond price (ante amount) varied over the rounds. While subjects were told that the bond/ante always appreciated (multiplied by some amount, strictly greater than one), they were not told the appreciation
rate. This was done to preserve uncertainty about the principal that would be accumulated in the second stage. I used the same approach in both the calibration rounds and the contextual rounds.

The second decision was the litigation (lottery) decision. The odds of winning an award (either lawsuit or lottery) were the same for all twelve rounds and matched the actual award distribution for civil rights-related employment suits, and subjects were told the odds:

- 1 in 400 chance of winning an amount less than G50,000
- 1 in 1000 chance of an amount between G50,000 and G200,000
- 1 in 2000 chance of an amount between G200,000 and G1,000,000
- 1 in 4000 chance of an amount larger than G1,000,000.

If subjects did not purchase the bond (or ante) in the first stage of an experimental round, then it cost them nothing to sue (enter the lottery) in the second stage of that round. If they did purchase the bond (ante), then they forfeited the appreciated value of the bond (ante) in order to sue (enter the lottery) in the second stage. If subjects chose not to sue (enter the lottery), they kept the accumulated principal from the bond (ante).

In each of the twelve rounds, the amount subjects earned from the lawsuit (lottery) was determined by random draw from the distribution specified above. Subjects were paid electronically following the session. Their total payment was the sum of the initial endowment plus the earnings from each round.

**Experimental Design**

Four things varied across the twelve rounds: In Stage 1: the bond premium (ante amount) and employer matching (50% of the premium, or no matching), in Stage 2: the accumulated principal (forfeit amount) and the legally actionable episode.

The ante amounts were expressed in experimental currency (Gammas). In the experimental rounds, they were also expressed in percentages of salary, where the base salary was given to be G50,000. G50,000 matched in dollar denominations the average salary of the population (Evening Program) from
which subjects were drawn. The contributed percentages corresponded to typical payroll deduction amounts for various forms of insurance: 2% (G1,000), 3% (G1,500) and 5% (G2,500).

The forfeit amounts (accumulated principal) were also expressed in experimental currency. These amounts were intended to represent salary denominations, since employee buyouts are often expressed as “weeks of salary”. The four forfeit amounts were: G0, G12,500 (25% annual salary), G25,000 (50% salary), and G50,000 (100% annual salary).

Employer matching was introduced as a means to increase rates of return above typical risk-free values. This allowed a wider range of potential separating schedules \((c,P)\). This was important because the separating equilibrium depends upon the values of \(\rho\) and \(\delta\), but data that would allow us to estimate these values doesn’t exist.

I constructed three employment episodes, each of which was legally actionable. All episodes were purposefully ambiguous. They involved some culpability on the part of the employee, and some on the part of the employer--there was no egregious employer behavior. The episodes were intended to represent ones that might occur even in well-meaning employers. Thus litigating these events had little social value.

The first episode was *constructive termination*—the subject’s job was given to someone else, but the subject continued to be employed by the firm. The second episode was *sexual harassment* following a romantic relationship between the subject and a supervisor. The third episode was *discrimination*—employees who shared a given religion appeared to have more opportunity than other employees. All episodes were written such that they would apply to all employees (protected or otherwise). For example the sexual harassment case does not refer to gender, and the discrimination case pertains to a religious outgroup without specifying the ingroup religion—thus it would apply to employees of any religion (or no religion).

Table 2 summarizes the structural features of the experiment. All subjects saw the same order of experimental rounds. I tested whether there were order effects across the rounds through a trend regression of experimental results. There was no significant trend.
Demonstrating Litigiousness

To investigate the existence of a litigiousness trait, I created two structurally equivalent experiments, a calibration round framed as a lottery and an experimental round framed as an opportunity to sue an employer. The calibration rounds characterize individual traits with respect to uncertain payoffs, such as money utility and risk aversion. The experimental rounds characterize how this behavior changes when those same payoff structures are associated with a lawsuit. If there is a litigiousness type, then some individuals should respond differently to the experimental rounds than they do to the calibration rounds with identical payment/payoff structures. In particular, litigious individuals should be more likely to enter a lawsuit than an equivalent lottery. If there is no litigiousness trait, then context shouldn’t matter—each subject should respond in the same manner to the lawsuit as she does to the equivalent lottery.

To determine if there is a litigiousness type, I pair all lawsuit decisions for an individual with their lottery equivalent, based on the amount that is being forfeited. This comprises six paired observations for each subject. The forfeiture amount is the same within a pair, but varies across the pairs. For each paired observation, I construct a variable, $\Delta_{ijk}$, which is the lawsuit decision (sue=1, don’t sue=0) minus the lottery decision (enter=1, don’t enter=0). This variable represents the incremental value of a lawsuit. It captures how much more (less) willing a person is to pursue a particular lawsuit than they are to pursue a lottery with identical costs and payoffs. If there is no litigiousness trait, then each subject should reach the same decision for the lawsuit that she does for the equivalent lottery, and $\Delta_{ijk}$ should always be zero. If $\Delta_{ijk}$ is ever non-zero, I then pool observations for the six paired decisions for all thirty-nine subjects. I characterize litigiousness as each individual’s propensity to treat the employment cases differently from lotteries, controlling for forfeiture amounts, and legal episode:

$$\Delta_{ijk} = \beta_1 + \sum \beta_{2j} (Forfeit j) + \beta_{3k} (Episode k) + \sum \Delta_{i} (individual i)$$

(5)
The set of individual fixed effect, \( \Delta_i \), are the primary measures of individual litigiousness. They form a continuous variable bounded at –1 and +1.

Per Se Discrimination

The goal of the bond is to reverse induced discrimination. However, in order for the bond to be effective in that regard, two things must be true. First, the bond must distinguish between litigious individuals and non-litigious individuals. Second, litigiousness must be uncorrelated with protected group. If the second element fails to hold, then I am merely replacing discrimination on the basis of observable attributes for discrimination of the same group using unobservables. If so, the bond is per se discriminatory, and therefore illegal. To verify that litigiousness is uncorrelated with protected group, I conduct an ANOVA test of litigiousness, \( \Delta_i \) for protected employees versus unprotected employees.

Adverse Selection

Once I characterize litigiousness and determine it is uncorrelated with protected group, I test the adverse selection feature of the bond. Does willingness to purchase the bond separate litigious employees from non-litigious employees? In conjunction, I test the existence of a price (or range of prices) at which the bond separates the two groups. To do so, I examine the purchase decision as a function of bond price, level of employer matching, and individual litigiousness. I expect to find a price at which the likelihood of bond purchase is positive and significant for non-litigious individuals, yet near zero for litigious individuals.

Moral Hazard

The test for the moral hazard feature of the bond, the ability to suppress suits ex post, is very similar to the test for litigiousness. Here however, I examine the absolute probability of suit, rather than the likelihood of suing relative to entering an equivalent lottery. This reintroduces the risk aversion and money utility I extracted from the litigiousness metric by subtracting the equivalent lottery decision from each lawsuit decision. This combined measure (litigiousness plus risk aversion and money utility) governs overall suit hazard.
I examine the probability of suit as a function of forfeiture amount, employment episode, and individual litigiousness. This allows me to characterize experimental values for the theoretical constructs \( \rho \) (the probability of suit for non-litigious individuals in the absence of forfeiture) and \( \delta \) (the increased probability of suit for litigious individuals).

5. Results

Demonstrating Litigiousness

To determine if there is a litigiousness type, I constructed the variable, \( \Delta_{ijk} \), which is the employment decision (sue=1, don’t sue=0) minus the lottery decision (enter=1, don’t enter=0) for each individual, \( i \), forfeit amount, \( j \), and employment scenario, \( k \).

The data indicate that there was heterogeneity in \( \Delta_{ijk} \). The mean value for \( \Delta_{ijk} \) is –0.25. This suggests that on average, subjects are litigation averse rather than litigious. However, to establish that finding more conclusively, I used equation 1 to estimate individual litigiousness (fixed effects), \( \Delta_i \), while controlling for employment episode and forfeiture amount. The results from that analysis are presented in Table 3. When I control for episode and forfeiture amount, mean litigiousness, \( \Delta_i \), is –0.14, with mean standard error of 0.21. The entire distribution for litigiousness of the subject pool is shown in Figure 3. Of the thirty-nine subjects, 16% are significantly litigious at the .95 level, while 21% are significantly litigation averse. Accordingly, 53% of subjects were litigation neutral. Thus I have some confidence that there is a “litigiousness” trait.

Given existence of the trait, a mechanism separating litigious employees from non-litigious employees seems feasible. This potentially solves the employer problem of minimizing litigation risk.
However, to solve the more important problem of reversing induced discrimination, I must also demonstrate that litigiousness is uncorrelated with protected group.

*Per Se Discrimination*

The next thing I examine is whether litigiousness is correlated with protected group membership. This is important because the bond’s ability to restore race/gender-blind hiring relies upon the use of litigiousness rather than protected group membership to identify high-risk employees. If litigiousness is correlated with protected group membership, then its use to screen employees won’t reverse induced discrimination. In addition, if bond purchase is correlated with protected group membership, then the bond is *per se discriminatory* (and thus illegal) even if the employer has no intent to discriminate against protected groups.

We test for possible per se discrimination by comparing mean litigiousness of protected employees versus unprotected employees. Results for ANOVA test of litigiousness for the two groups is given in Table 4. Table 4 indicates that the means for the two groups are statistically equivalent at the 98% level. Mean litigiousness for unprotected employees is -0.135; mean litigiousness for protected employees is -0.141. Thus the bond does not appear to be per se discriminatory.

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Up until now, I have demonstrated that a) there is a litigiousness trait and b) that it is uncorrelated with protected group membership in the subject pool. Thus if the bond is effective as an adverse selection mechanism, it has the potential to restore blind hiring. I next examine the bond as an adverse selection mechanism.

However before doing so I need to convert the continuous measure of litigiousness, the individual fixed effects, \( \Delta_i \), into a discrete measure. This is necessary to match the theory developed previously, where employees are classified into one of two types: litigious versus non-litigious. To do so, I define a threshold for the continuous measure, and classify all subjects with a litigiousness score above the threshold.
threshold as litigious, and all subjects with a score below the threshold as non-litigious. While I tested alternative thresholds, and achieved the same qualitative results\textsuperscript{13}, the most reliable threshold appears to be one standard deviation above mean litigiousness. Thus the threshold for classifying litigiousness is set at $+.08 (-0.14 (\mu) + 0.21(\sigma))$. With this threshold fourteen of thirty-nine subjects are classified as litigious.

*Adverse Selection*

Having established $A_i$ as a continuous measure of litigiousness, and having discretized that trait into two classes, I next test the ability of the bond to separate individuals into the two classes. Figure 4 summarizes the propensity to buy the bond as a function of the premium price for each of the two employee types. Figure 4a presents the results with no employer matching. Figure 4b presents results with 50% employer matching. The decomposition of results in this manner highlights the three employer decisions regarding the bond offer: the bond premium, $c$, the premium, $P(c,t)$, and whether or not to match, $eW(t)$.

![Insert Figure 4 about here]

Figure 4a indicates that without employer matching, non-litigious employees are 2.1 to 2.6 times more likely to purchase the bond than are litigious employees. Non-litigious employees are 63\% to 70\% likely to purchase the bond, while litigious subjects are only 25 to 30\% likely to purchase the bond. These differences are significant at the 95\% level. Experimental willingness to purchase the unmatched bond appears to be insensitive to the premium price. This occurs because there was no binding budget constraint in the experiment. In real world implementation budget constraints are likely to affect bond purchase at higher prices.

Figure 4b draws the same comparison for a bond where the employer matches 50\% of the employee’s premium. Here both groups are substantially more likely to purchase the bond than they were without matching. Non-litigious employees are now 89 to 96\% likely to purchase the bond, as compared...
to 63% to 70% without matching. Again for non-litigious employees, the purchase decision appears to be insensitive to price.

Results differ for litigious employees. While they too are far more likely to purchase the matching bond than the non-matching bond (58% to 83% for matching versus 25% to 33% for unmatching), their likelihood of purchase appears to be affected by the bond price. As the bond price increases from G1500 to G2500, the probability of purchase increases 60%, from 50-58% to 83%. Presumably this reflects a willingness to pay more to capture the additional income from employer matching. The reason there is no corresponding response to price for non-litigious employees is that their participation rate is already at 90% without matching.

Thus there appears to be a range of prices over which the bond purchase decision will separate litigious employees from non-litigious employees. This is most pronounced when there is no employer matching. Accordingly to achieve the adverse selection benefits of the bond, an employer might offer the bond without matching premia.

Interestingly, there appears to be a pooling equilibrium as well. I was able to find a bond price (G2500) with employer matching that attracts over 80% of subjects from both groups. ANOVA test indicates the purchase propensities of the two groups are statistically equivalent at this price for the matched bond. If the bond is effective as a moral hazard mechanism, then employers may want to implement a strategy of full participation, rather than using the bond as an adverse selection mechanism.

*Suit Propensities*

The test for the moral hazard feature of the bond is similar to the test for litigiousness. Both examine the decision to sue. However, to test moral hazard I examine the absolute probability of suit rather than the likelihood relative to an equivalent lottery. Thus the test for moral hazard restores individual risk aversion and money utility (factors extracted from the litigiousness metric by subtracting out equivalent lotteries). The reason this is important is that these traits, e.g., litigiousness and risk-seeking, may be correlated and may act together to increase the real incidences of litigation. Accordingly
I can use the adverse selection test to characterize the theoretical constructs, $\rho$ and $\delta$, where $\rho$ is the propensity to sue for non-litigious individuals, and $\delta$ is the incremental propensity of litigious individuals.

Figure 5 presents results for the moral hazard test, which defines the mean suit propensities for the two types of employees across the four forfeiture amounts. To establish experimental values for the theoretical constructs, $\rho$ and $\delta$, I examine suit propensities when the forfeiture amount is zero. When no principal is forfeited, Figure 5 indicates that the probability of suit for non-litigious subjects was 33%. This corresponds to the suit probabilities in the absence of the bond, and thus establishes the experimental value for $\rho$. To establish the experimental value for $\delta$, I need to find the increase in suit probability for litigious types. Figure 5 indicates that for litigious subjects, the probability of suit in the absence of a forfeiture amount was 71%. Since the probability of suit for litigious individuals is $\rho + \delta$, the value of $\delta$ is $0.71 - 0.33 = 0.38$.

So far I have been able to verify the foundational assumptions of the theory: a) there are two types of employees (litigious and non-litigious), b) that litigiousness is uncorrelated with type, and c) there are different suit propensities for the two types. Moreover I have been able to characterize experimental values for individual litigiousness, $\Delta_i$, as well as the two measures of suit propensity, $\rho$ and $\delta$. Since the employment episodes used in the episode are deliberately benign, I expect that the experimental values for $\Delta_i$, $\rho$ and $\delta$ understate real-world values. Note that it is impossible to measure real world values for $\rho$ and $\delta$ because doing so requires data on both litigious and non-litigious individuals for all episodes. I only observe data of actual suits—thus I observe only litigious individuals and only for a subset of all episodes. This is additional rationale for using experiment methodology.

**Moral Hazard**

The results of the moral hazard test (Figure 5) indicate that the bond principal is effective in deterring suits among both litigious and non-litigious employees. The probability of suit falls
substantially (33 % to 7%) for non-litigious subjects when a forfeiture amount is introduced, and declines gradually with forfeiture amount thereafter. At the highest forfeiture level, the probability of suit is 3%. In contrast, for litigious employees, forfeiture amounts below some threshold (experimentally G12,500) do little to dissuade suits. However suit probabilities decrease significantly with forfeiture amount once that threshold is exceeded. In particular, the suit probability of 80% at a forfeiture amount of G12,500 falls to 38% at a forfeiture amount of G50,000. Thus, a strategy of using the bond exclusively as a moral hazard mechanism, using the pooling price discussed above, has some merit.

Economic Impact

Given the results obtained in the lab, there are alternative implementations of the bond that have the potential to reduce current litigation by 27.8% to 84.7%. Since induced hiring discrimination is based on the risk of litigation, then reducing litigation should also reduce induced discrimination (my primary interest). To translate these experimental reductions in litigation to real world reductions in litigation risk and induced discrimination, I first need to estimate the rate at which actionable incidents occur in the real world. By combining experimentally derived values for $\rho, \delta$, and $\lambda$ with the real world EEOC charge hazard rate of 0.72% (Figure 1), I estimate an underlying incident hazard of 0.158% per employee-year. Next I apply the experimental results for ex ante bond purchase and ex post litigation to estimate reduction in real world suits for alternative implementations of the bond. These are summarized in Table 5-column 2. The table indicates that the ability to exclude litigious employees (adverse selection feature) reduces suit hazard by approximately 27.8%. It is not reduced to zero because even non-litigious employees bring suit under some circumstances. The moral hazard feature is more powerful. It reduces litigation risk by 62.5% by itself. When the features are combined, it appears that litigation risk is reduced by 84.7%. Thus if experimental results hold in the real world, EEOC charges would drop from their current level of 0.00072 charges per employee per year to 0.00011 charges per employee per year.

<table>
<thead>
<tr>
<th>Insert Table 5 about here</th>
</tr>
</thead>
</table>
It is important to note that the experiment examines employee behavior rather than employer behavior. Accordingly, I cannot demonstrate directly that the mechanism reverses induced discrimination. I rely on the evidence that hiring discrimination increased in response to higher legal costs (Oyer and Shaeffer 2002, Knott 2004) to infer that it will fall in response to lower litigation costs. To assess the extent of this decrease, I estimated the change in protected group employment associated with changes in employment litigation hazard, using data from Knott 2004. That analysis indicates that each 0.01% increase in the hazard rate (risk of EEOC charge per employee per year) decreases protected group employment by 0.251 weeks\(^{14}\). I apply this decrease to the changes in charge hazard for the alternative implementations of the bond, and present results in column 4 of Table 5. Given a baseline employment rate for protected group employees of 46.47 weeks-worked\(^{15}\), the alternative implementations of the bond could increase protected group employment (decrease weeks of unemployment associated with hiring discrimination) 1.01% to 3.29% (Table 5-column 5).

6. Conclusion

The goal of this paper was to develop and test a means to reverse hiring discrimination induced by CRA-91. The problem of induced discrimination arises because employers use protected group membership as a proxy to identify and avoid employees with high litigation risk. The mechanism developed here creates a reliable signal of litigation risk to replace the imperfect proxy. Accordingly the mechanism has the potential to jointly solve the employer problem of minimizing litigation risk and thereby the protected group employee problem of induced discrimination.

I evaluated the mechanism analytically, and then tested it via controlled experiment. The experimental “testbed” was an important step in a progression from theory to real-world implementation and test. The experimental evidence supported the major assumptions of the theory. There does appear to be a litigious personality trait. Approximately 16% of the experimental subjects exhibited this trait. The operational distinction between the two types of employees is that they have different litigation propensities. Non-litigious employees sue their employer with probability 0.32 when confronted with a
questionable episode, when it is costless to do so. In contrast, litigious employees sue for the identical episode with probability 0.71.

The litigious personality trait appears to be uncorrelated with protected group. This means that the current employer practice of discriminating against protected groups is likely to be ineffective in reducing litigation (in addition to being illegal). The most significant implication however, is that a mechanism that separates litigious employees (the true risk group) from non-litigious employees does indeed have the potential to reverse induced discrimination.

While the presence of the litigious trait is important for the bond mechanism, the ability to evoke this trait in an experiment is also of interest. One of the critical challenges of this experiment was whether the litigation context would be internalized by subjects given that differences between the lottery and the lawsuit were based exclusively on verbal description. The fact that I was able to obtain different results for the lawsuit versus the lottery means I was successful in evoking context. Individuals were not simply treating the experiment as a game. This increases the external validity of the experimental results.

Perhaps the most important conclusion I draw is that the bond may be an effective mechanism for discriminating between litigious individuals and non-litigious individuals. There is a range of prices over which the probability of bond purchase by non-litigious subjects is two to three times that for litigious employees. Moreover, because litigiousness is uncorrelated with protected group membership, its use can restore race/gender-blind hiring. This is true because employers can avoid hiring the true risk group (litigious employees), rather than the proxy of employees they believe to be high risk (protected groups).

The final conclusion pertains to the effectiveness of the bond as a moral hazard mechanism. The moral hazard feature for non-litigious employees is largely superfluous--their probability of suit is less than 10% for almost any forfeiture amount. However, the bond’s moral hazard feature is substantially more important for litigious employees. For these employees the inherent probability of suit is quite high, but it is sensitive to forfeiture levels.
In summary, the experiment validated and characterized the theoretical constructs underlying the mechanism design. Moreover, the experiment demonstrated that in a lab setting, the bond behaves as predicted. The remaining discussion pertains to implementation issues and areas for future research.

7. Implementation Issues

Maximum benefit from the bond is achieved when it is used jointly as an adverse selection mechanism and a moral hazard mechanism. This occurs when the bond is offered at a separating price (avoiding litigious employees), and when the covered employees have accrued some principal. Since the separating price involves no employer matching, the most effective implementation (hazard rate of 0.001%) is also the least costly.

However, in many situations, full implementation of the bond is infeasible. This would be the case, for example, when the bond is introduced to an existing work force. In those instances, the bond’s function shifts towards minimizing moral hazard. Here employers prefer the pooling equilibrium to the separating equilibrium. To achieve the pooling equilibrium, it appears that a high level of employer matching is required (50% matching on the highest premium level). Currently the cost of this implementation exceeds the cost of self-insuring (bearing the higher hazard rate)

Both the separating and pooling strategies consider only first-order effects from implementing the bond. There are also general equilibrium effects in a repeated game. While I do not model these formally, we can anticipate their likely consequences. The first general equilibrium effect pertains to employers, the second pertains to litigious employees. Regarding employer effects, once some employers begin bonding employees, non-bonding employers become the only recourse for litigious employees. Thus the litigation hazard for non-bonding employers will rise as these employers capture the discards from the adverse selection process. Since the higher hazard rate increases implicit labor costs relative to bonding rivals, ultimately all employers should be driven toward adoption.

Relatedly, litigious employees should ultimately discover that bonding employers will not hire them. At that point, these employees are confronted with two choices: seeking employment from non-bonding employers, or feigning non-litigiousness with bonding employers. One thing to note about
feigning non-litigiousness, is that the bond mechanism makes it costly to do so (unlike feigning in a personality instrument). Feigning requires that employees actually purchase the bond. If the litigious employees feign non-litigiousness the moral hazard feature of the bond becomes effective, even though the adverse selection feature is rendered ineffective.

Examining the two effects together in a competitive labor market, it appears likely that all employers will be driven to implement the bond program, and litigious employees will be forced to feign non-litigiousness. At that point, the bond will cease to function as an adverse selection mechanism, and will function exclusively as a moral hazard mechanism. The advantage in this moral hazard equilibrium over the moral hazard strategy discussed earlier is employer cost. The moral hazard strategy involved a pooling equilibrium that required employer matching of a sizable premium. In contrast, the moral hazard default of a competitive labor market requires no such matching. Future research might examine these general equilibrium effects.

In summary, I have been able to show that the bond has the potential to reduce employer litigation risk, and accordingly the protected group problem of induced discrimination arising from those costs. Implementation of the bond as an adverse selection mechanism reduces suit hazard by 27.8% without imposing net new costs on employers or non-litigious employees. This reduction corresponds to a 1.01% increase in weeks worked by protected group employees. Thus the mechanism has the potential to substantially enhance welfare, while preserving employees right to sue for egregious behavior. This is not true of other mechanisms employers have implemented to reduce litigation risk. Alternative Dispute Resolution (ADR), for example, requires that all employment disputes be resolved through mandatory binding arbitration. Accordingly employees forgo their right to legal remedy. While these provisions are being challenged, so far the U.S. Supreme Court has upheld them.
References


Endnotes

1 Robert H. Smith School of Business, University of Maryland, 4515 Van Munching Hall, College Park, MD 20742
   Phone: (301) 405-9542, email: aknott@rhsmith.umd.edu

2 Inc. Magazine, March 2000: p38

3 This number is derived from all federal employment suits terminated in 1996. The data comes from the Integrated
   Data Base (IDB).

4 For purposes of the mechanism theory, it does not matter where the forfeited principal goes. It does appear to
   matter for implementation—practitioners feel that use of the forfeited funds to cover employer legal expenses
   rewards discriminatory behavior.

5 A frequently asked question is whether such a bond is legal. The main concern is whether individuals can enter
   contracts which alter their rights to legal remedy. The answer is yes. The Supreme Court in 2001 (Circuit City v.
   Adams, 121 S. Ct. 1302) ruled that mandatory arbitration clauses in employment contracts (which remove an
   individual’s right to sue) are enforceable. A second concern is whether the bond is itself discriminatory. The
   answer to this is “not as long as the bond decision is uncorrelated with protected group”. We examine this explicitly
   in the section “per se discrimination”.

6 Preliminary indication that there may be heterogeneity in litigation propensities appears in a discussion of cohort
   effects (difference in litigation thresholds over generations) (Donohue and Siegelman 1991).

7 See page 13 for the distribution of awards for all federal cases terminating in 1996

8 It is reasonable to assume that A varies over employers, e.g., some employers are more discriminatory than others.
   We do not present the formalism for employee choice across employers with different values of A. It is
   straightforward to show that in competitive markets employers with higher values of A can only attract employees
   by offering higher wages, W, higher matching, e, or a higher premium, P(c,t).

9 Note that the table and equation 1 treat the adverse selection problem in isolation, i.e., I ignore employee
   conjectures about the impact bond purchase will have on their litigation propensities. Later I discuss other
   conjectures.

10 Derivations of the separating equilibria under four different conjectural assumptions are available from the author.

11 The uncertainty I was trying to mimic was elapsed time before an episode occurs, rather than the interest rate
   associated with the bond (which would be disclosed in real world implementation). However there was no
   equivalent to duration uncertainty in the control experiment, so I relied on rate uncertainty.

12 These award frequencies match award amounts of all civil rights-related employment cases terminated in federal
   court in 1996. The frequencies were derived from the integrated data base (IDB) of civil cases.

13 I carried three classifications into the adverse selection test and used probit regression to predict who would buy
   the bond. The coefficients on control variables were comparable across the three models, but the best fit (log-
   likelihood) was achieved when litigiousness was defined by the 1σ threshold.

14 This coefficient is significant at the 0.01 level in a model which lags employment by three years (the best fitting
   model: R-squared of 0.863).

15 This is the mean for protected group employees in large firms in a model which controls for economy-wide
   phenomena through year effects.

16 Informal estimates of employer costs related to employee litigation set the value at roughly 1% of payroll. These
   costs include EPLI premia, investigations, allocated costs of in-house counsel and retained counsel, and deductibles
   from awards and settlements.

17 See footnote 5
Table 1. Payoff matrix for litigation decision, given the bond decision

<table>
<thead>
<tr>
<th>Purchase Bond</th>
<th>No ((\lambda))</th>
<th>Yes (1-(\lambda))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litigate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>(W(t))</td>
<td>((1+\varepsilon)W(t) + P(c,t) - ct)</td>
</tr>
<tr>
<td>((1-\rho) or (1-(\rho + \delta)))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>(W(t) + A)</td>
<td>((1+\varepsilon)W(t) + A - ct)</td>
</tr>
<tr>
<td>(\rho or (\rho + \delta))</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Experiment Design

<table>
<thead>
<tr>
<th>Round</th>
<th>Scenario</th>
<th>Ante/Bond Amount (G)</th>
<th>Employer Matching</th>
<th>Forfeit Amount (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control</td>
<td>1500</td>
<td></td>
<td>25000</td>
</tr>
<tr>
<td>2</td>
<td>Control</td>
<td>1000</td>
<td></td>
<td>12500</td>
</tr>
<tr>
<td>3</td>
<td>Control</td>
<td>2500</td>
<td></td>
<td>50000</td>
</tr>
<tr>
<td>4</td>
<td>Constructive Termination</td>
<td>2500</td>
<td>50%</td>
<td>50000</td>
</tr>
<tr>
<td>5</td>
<td>Constructive Termination</td>
<td>1500</td>
<td>50%</td>
<td>25000</td>
</tr>
<tr>
<td>6</td>
<td>Constructive Termination</td>
<td>1000</td>
<td></td>
<td>12500</td>
</tr>
<tr>
<td>7</td>
<td>Sexual Harrassment</td>
<td>1500</td>
<td>50%</td>
<td>25000</td>
</tr>
<tr>
<td>8</td>
<td>Sexual Harrassment</td>
<td>1000</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Sexual Harrassment</td>
<td>2500</td>
<td></td>
<td>50000</td>
</tr>
<tr>
<td>10</td>
<td>Discrimination</td>
<td>0</td>
<td></td>
<td>12500</td>
</tr>
<tr>
<td>11</td>
<td>Discrimination</td>
<td>0</td>
<td></td>
<td>25000</td>
</tr>
<tr>
<td>12</td>
<td>Discrimination</td>
<td>0</td>
<td></td>
<td>50000</td>
</tr>
</tbody>
</table>
Table 3. Litigiousness metric construction

Dependent variable $\Delta = (P(\text{Sue}) - P(\text{Enter comparable lottery}))$
Number of observations = 228

| Forfeit 12,500 | 0.466 |
| Forfeit 12,500 | 0.113 |
| Forfeit 25,000 | 0.634 |
| Forfeit 25,000 | 0.092 |
| Forfeit 50,000 | 0.603 |
| Forfeit 50,000 | 0.092 |
| Sexual harassment | 0.166 |
| Sexual harassment | 0.076 |
| Religious discrimination | 0.151 |
| Religious discrimination | 0.059 |
| Individual fixed effects | Included |
| see Figure 3 |
| Constant | -0.671 |
| Constant | 0.154 |
| R-squared | 0.713 |
| R-squared | 0.645 |

*Values in italics are standard errors*

Omitted variables are forfeiture=0, constructive termination scenario
Table 4. Results for ANOVA means test of litigiousness coefficients*

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Sum</th>
<th>Mean</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>unprotected</td>
<td>7</td>
<td>-0.945</td>
<td>-0.135</td>
<td>0.185</td>
</tr>
<tr>
<td>protected</td>
<td>31</td>
<td>-4.370</td>
<td>-0.141</td>
<td>0.246</td>
</tr>
</tbody>
</table>

P-value = 0.977  
F criterion = 4.113

*coefficients are from regression with controls (Table 3)
Table 5. Forecasted Impact of Mechanism

<table>
<thead>
<tr>
<th>Level of Implementation</th>
<th>Forecasted Suit Rate (%)*</th>
<th>Relative To Base</th>
<th>Expected Protect Group Employment (weeks worked)**</th>
<th>Relative to Base***</th>
<th>Assumptions****</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Baseline</td>
<td>0.072</td>
<td></td>
<td>46.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse Selection Only</td>
<td>0.052</td>
<td>-27.8%</td>
<td>46.97</td>
<td>+1.01%</td>
<td>Hire only non-litigious types: $</td>
</tr><tr>
<td>ho * I$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moral Hazard Only</td>
<td>0.027</td>
<td>-62.5%</td>
<td>47.60</td>
<td>+2.43%</td>
<td>Accum principal= One-year salary $[(1-\lambda)\rho'] + \lambda(\rho' + \delta') * I$</td>
</tr>
<tr>
<td>Full Implementation</td>
<td>0.011</td>
<td>-84.7%</td>
<td>48.00</td>
<td>+3.29%</td>
<td>Hire only non-litigious types Accum principal= One-year salary $\rho' * I$</td>
</tr>
</tbody>
</table>

*Suit rate is expressed as expected number of suits per employee per year

**This is the mean number of weeks worked for protected group employees in large firms derived from a model which controls for economy-wide conditions through year effects.

***Each 0.01% absolute decrease in suit hazard increase weeks worked by 0.251

****$I$ is the real world incident rate (number of actionable incidents per year). This is derived from the observed EEOC hazard rate, and experimentally determined values for $\lambda$ (share litigious types), $\rho$ (probability of suit for non-litigious types), and $\delta$ (incremental increase in suit probability for litigious types):

\[
(1-\lambda)(\rho') + \lambda(\rho' + \delta') * I = \text{Suit Rate (from Figure 1)}
\]

\[
[(0.67)(0.32) + (0.33)(0.71)]*I = 0.072
\]

$I=0.158$

Experimental values for $\rho'$ and $\delta'$ represent the suit propensities when the accumulated principal that is forfeited equals a year’s salary. For non-litigious employees: $\rho' = 0.07$, for litigious employees: $\rho' + \delta' = 0.38$
Figure 1. Annual hazard rate of EEOC charges

Sources:
U.S. EEOC Charge Database
Labor force statistics from Current Population Survey
Figure 2. EEOC Charges by type over time

Source: U.S. EEOC database
Figure 3. Histogram of Individual Litigiousness Scores
Figure 4. Ability of bond to discriminate litigious versus non-litigious employees (defines litigiousness as binary variable with 1 sigma threshold)

ANOVA test of bond purchase without matching

<table>
<thead>
<tr>
<th>Bond price</th>
<th>1000</th>
<th>1500</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value</td>
<td>0.016</td>
<td>0.029</td>
<td>0.03</td>
</tr>
<tr>
<td>F</td>
<td>6.47</td>
<td>5.18</td>
<td>5.08</td>
</tr>
</tbody>
</table>

F criterion at .05 level is 4.105

ANOVA test of bond purchase with matching

<table>
<thead>
<tr>
<th>Bond price</th>
<th>1000</th>
<th>1500</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value</td>
<td>0.029</td>
<td>0.0002</td>
<td>0.642</td>
</tr>
<tr>
<td>F</td>
<td>5.14</td>
<td>16.62</td>
<td>0.22</td>
</tr>
</tbody>
</table>

F criterion at .05 level is 4.105
Figure 5. Effectiveness of bond as a moral hazard mechanism