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# THE FUGITIVE: EVIDENCE ON PUBLIC VERSUS PRIVATE LAW ENFORCEMENT FROM BAIL JUMPING*

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ABSTRACT

On the day of their trial, a substantial number of felony defendants fail to appear. Public police have the primary responsibility for pursuing and rearresting defendants who were released on their own recognizance or on cash or government bail. Defendants who made bail by borrowing from a bond dealer, however, must worry about an entirely different pursuer. When a defendant who has borrowed money skips trial, the bond dealer forfeits the bond unless the fugitive is soon returned. As a result, bond dealers have an incentive to monitor their charges and ensure that they do not skip. When a defendant does skip, bond dealers hire bounty hunters to return the defendants to custody. We compare the effectiveness of these two different systems by examining failure-to-appear rates, fugitive rates, and capture rates of felony defendants who fall under the various systems. We apply propensity score and matching techniques.

## I. INTRODUCTION

APPROXIMATELY one-quarter of all released felony defendants fail to appear at trial. Some of these failures to appear are due to sickness or forgetfulness and are quickly corrected, but many represent planned abscondments. After 1 year, some 30 percent of the felony defendants who initially fail to appear remain fugitives from the law. In absolute numbers, some 200,000 felony defendants fail to appear every year, and of these, approximately 60,000 will remain fugitives for at least 1 year.[1]

* The authors' names are in alphabetical order. We wish to thank Jonathan Guryan, Steve Levitt, Lance Lochner, Bruce Meyer, Jeff Milyo, Christopher Taber, Sam Peltzman, and seminar participants at Claremont McKenna College, the American Economic Association annual meetings (2002), George Mason University, Northwestern University, and the University of Chicago.

[1] These figures are from the State Court Processing Statistics (SCPS) program of the Bureau of Justice Statistics and can be found in U.S. Department of Justice, Bureau of Justice Statistics, Felony Defendants in Large Urban Counties (various years). We describe the data at greater length below. The SCPS program creates a sample representative of 1 month of cases from the 75 most populous counties (which account for about half of all reported crimes). In 1996, the sample represented 55,000 cases, which in turn represent some 660,000 filings in a year and 1,320,000 filings in the nation. The absolute figures are calculated using this total, and

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Defendants who fail to appear impose significant costs on others. Direct costs include the costs of rearranging and rescheduling court dates, the wasted time of judges, lawyers, and other court personnel, and the costs necessary to find and apprehend or rearrest fugitives. Other costs include the additional crimes that are committed by fugitives. In 1996, for example, 16 percent of released defendants were rearrested before their initial case came to trial.[2] We can be sure that the percentage of felony defendants who commit additional crimes is considerably higher than their rearrest rate. We might also expect that the felony defendants who fail to appear are the ones most likely to commit additional crimes. Indirect costs include the increased crime that results when high failure-to-appear (FTA) and fugitive rates reduce expected punishments.[3]

The dominant forms of release are by surety bond, that is, release on bail that is lent to the accused by a bond dealer, and nonfinancial release. Just over one-quarter of all released defendants are released on surety bond, and a very small percentage pay cash bail or put up their own property with the court (less than 5 percent combined); most of the rest are released on their own recognizance or on some form of public bail (called deposit bond) in which the defendant posts a small fraction, typically 10 percent or less, of the bail amount with the court.

Estimating the effectiveness of the pretrial release system in the United States can be characterized as a problem of treatment evaluation. Treatment evaluation problems can be difficult because treatment is rarely assigned randomly. Release assignment, for example, is based on a judge's assessment of the likelihood that a defendant will appear in court as well as on considerations of public safety. Correctly measuring treatment effects requires that we control for treatment assignment. In this paper, we control for selection by matching on the propensity score.[4]

We estimate the treatment effect for three outcomes—the probability that

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the release, failure-to-appear (FTA), and fugitive (defined as FTA for 1 year or more) rates from the random sample. See note 2 *infra*.

[2] U.S. Department of Justice, Bureau of Justice Statistics, Felony Defendants in Large Urban Counties, 1996 (1999) (http://www.ojp.usdoj.gov/bjs/pub/pdf/fdluc96.pdf).

[3] Justice delayed can mean justice denied in practice as well as in theory. Thousands of cases are dismissed on constitutional grounds every year because police fail to serve warrants in a timely manner. See Kenneth Howe & Erin Hallissy, When Justice Goes Unserved: Thousands Wanted on Outstanding Warrants—but Law Enforcement Largely Ignores Them, S.F. Chron., June 22, 1999, at A1.

[4] For the matching method, see Donald B. Rubin, Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies, 66 J. Educ. Psychol. 688, 701 (1974); Donald B. Rubin, Assignment to Treatment Group on the Basis of a Covariate, 2 J. Educ. Stat. 1, 26 (1977); Paul R. Rosenbaum & Donald B. Rubin, Reducing Bias in Observation Studies Using Subclassification on the Propensity Score, 79 J. Am. Stat. Assoc. 516, 524 (1984); Rajeev H. Dehejia & Sadek Wahba, Causal Effects in Non-experimental Studies: Re-evaluating the Evaluation of Training Programs (Working Paper No. 6586, Nat'l Bur. Econ. Res. 1998); James J. Heckman, Hidehiko Ichimura, & Petra Todd, Matching As an Econometric Evaluation Estimator, 65 Rev. Econ. Stud. 261, 294 (1998).

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a defendant fails to appear at least once, the probability that a defendant remains at large for 1 year or more conditional on having failed to appear (what we call the fugitive rate), and the probability that a defendant who failed to appear is recaptured as a function of time.

The earlier economic studies of the bail system examine the role of the bail amount in the decision to fail to appear, generally finding that higher bail reduces FTA rates.[5] These studies did not focus on the central issue of this paper—the different incentive effects of the various release types.[6]

## II. History of Pretrial Release and Incentive Effects of Release Systems

Although money bail is still the most common form of release, money bail and especially the commercial surety industry have come under increasing and often virulent attack since the 1960s.[7] Bail began as a progressive measure to help defendants get out of jail when the default option was that all defendants would be held until trial. In the twentieth century, however, the default option was more often thought of as release, and thus money bail was reconceived as a factor that kept people in jail. In addition, the greater burden of money bail on the poor elicited growing concern.[8] As a result,

[5] William M. Landes, The Bail System: An Economic Approach, 2 J. Legal Stud. 79, 105 (1973); William M. Landes, Legality and Reality: Some Evidence on Criminal Procedure, 3 J. Legal Stud. 287 (1974); Stevens H. Clark, Jean L. Freeman, & Gary G. Koch, Bail Risk: A Multivariate Analysis, 5 J. Legal Stud. 341, 385 (1976); Samuel L. Myers, Jr., The Economics of Bail Jumping, 10 J. Legal Stud. 381, 396 (1981).

[6] Ian Ayres & Joel Waldfogel, A Market Test for Discrimination in Bail Setting, 46 Stan. L. Rev. 987, 1047 (1994), demonstrates the subtlety of the distinctions made by bond dealers in setting bail bond rates. Although the courts (in New Haven, Connecticut, in 1990) set higher bail amounts for minority defendants than for whites, Ayres and Waldfogel find that bond dealers acted in precisely the opposite manner. What this pattern suggests is that judges set higher bail for minority defendants than for white defendants with the same probability of flight. Bond dealers are then induced by competition to charge minorities relatively lower bail bond rates.

[7] Floyd Feeney, Foreword, in Bail Reform in America, at ix (Wayne H. Thomas, Jr., ed. 1976), for example, writes that "the present system of commercial surety bail should be simply and totally abolished. . . . It is not so much that bondsmen are evil—although they sometimes are—but rather that they serve no useful purpose." American Bar Association, Criminal Justice Standards, ch. 10, Pretrial Release, Standard 10–5.5, Compensated Sureties, 114–15 (1985), refers to the commercial bond business as "tawdry" and discusses "the central evil of the compensated surety system." When Oregon considered reintroducing commercial bail, Judge William Snouffer testified, "Bail bondsmen are a cancer on the body of criminal justice" (quoted in Spurgeon Kennedy & D. Alan Henry, Commercial Surety Bail: Assessing Its Role in the Pretrial Release and Detention Decision (1997)). Supreme Court Justice Harry Blackmun called the commercial bail system "offensive" and "odorous." See Schilb v. Kuebel, 404 U.S. 357 (1971).

[8] In order to provide appropriate incentives, money bail is typically higher for the rich than the poor. Thus, it is not a priori necessary that money bail should discriminate against the poor, although in practice this does occur owing to nonlinearities and fixed costs in the bail process. Assume that money bail is set so as to create equal FTA rates across income classes. In such a case, there is no discrimination against the poor in the setting of bail. But if the bail

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significant efforts were made, beginning in the 1960s, to develop alternatives to money bail, and four states—Illinois, Kentucky, Oregon, and Wisconsin—have outlawed commercial bail altogether.

In place of commercial bail, Illinois introduced the Illinois Ten Percent Cash Bail or "deposit bond" system. In a deposit bond system, the defendant is required to post with the court an amount up to 10 percent of the face value of the bond. If the defendant fails to appear, the deposit may be lost and the defendant held liable for the full value of the bond. If the defendant appears for trial, the deposit is returned to the defendant, less a small service fee in some cases.[9] Some counties will also release defendants on unsecured bonds. Unsecured bonds are equivalent to zero-percent deposit bonds. That is, defendants released on an unsecured bond are liable for the full bail amount if they fail to appear, but they need not post anything to be released.

The pretrial release system is designed to ensure that defendants appear in court. It is often asserted that the commercial bail system discourages appearance. In a key Supreme Court case, for example, Justice Douglas argued that "the commercial bail system failed to provide an incentive to the defendant to comply with the terms of the bond. Whether or not he appeared at trial, the defendant was unable to recover the fee he had paid to the bondsman. No refund is or was made by the professional surety to a defendant for his routine compliance with the conditions of his bond."[10]

Similarly, Jonathan Drimmer said, "Hiring a commercial bondsman removes the incentive for the defendant to appear at trial."[11] John S. Goldkamp and Michael R. Gottfredson suggest that the "use of the bondsman defeated the rationale that defendants released on cash bail would have an incentive to return,"[12] and in their influential set of performance standards for pretrial release, the National Association of Pretrial Service Agencies[13] said that under commercial bail, "the defendant has no financial incentive to return to court."[14]

In light of the persistent criticism that surety bail encourages failure to appear, it is perhaps surprising that the data consistently indicate that defendants released via surety bond have lower FTA rates than defendants released under other methods. Part of this might be explained by selection—FTA

amounts necessary to ensure equal FTA rates are not linear in wealth, then such rates can generate unequal rates of release across income classes.

[9] National Association of Pretrial Service Agencies, Performance Standards and Goals for Pretrial Release (2d ed. 1998).

[10] Schilb v. Kuebel, 404 U.S. at 373.

[11] Jonathan Drimmer, When Man Hunts Man: The Rights and Duties of Bounty Hunters in the American Criminal Justice System, 33 Hous. L. Rev. 731, 742 (1996).

[12] John S. Goldkamp & Michael R. Gottfredson, Policy Guidelines for Bail: An Experiment in Court Reform 19 (1985).

[13] See note 9 *supra*.

[14] See also Thomas, ed., *supra* note 7, at 13. Because of this issue, Thomas calls the surety system "irrational."

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rates, for example, may be higher for those defendants charged with minor crimes—perhaps these defendants reason that police will not pursue a failure to appear when the underlying crime is minor—and defendants charged with minor crimes are more likely to be released on their own recognizance than on surety release. A second reason, however, is that bond dealers, just like other lenders, have numerous ways of creating appropriate incentives for borrowers.

Most obviously, a defendant who skips town will owe the bond dealer the entire amount of the bond. Defendants are often judgment proof, however, so bond dealers ask defendants for collateral and family cosigners to the bond (which is not done under the deposit bond system). If hardened criminals do not fear the law, they may yet fear their mother's wrath should the bond dealer take possession of their mother's home because they fail to show up for trial. In order to make flight less likely, bond dealers will also sometimes monitor their charges and require them to check in periodically. In addition, bond dealers often remind defendants of their court dates and, perhaps more important, remind the defendant's mother of the son's court date when the mother is a cosigner on the bond.[15]

If a defendant does fail to appear, the bond dealer is granted some time, typically 90–180 days, to recapture him before the bond dealer's bond is forfeited. Thus, bond dealers have a credible threat to pursue and rearrest any defendant who flees. Bond dealers report that just to break even, 95 percent of their clients must show up in court.[16] Thus, significant incentives exist to pursue and return skips to justice.

Bond dealers and their agents have powerful legal rights over any defendant who fails to appear, rights that exceed those of the public police. Bail enforcement agents, for example, have the right to break into a defendant's home without a warrant, make arrests using all necessary force including deadly force if needed, temporarily imprison defendants, and pursue and return a defendant across state lines without the necessity of entering into an extradition process.[17]

At the time they write the bond, bond dealers prepare for the possibility of flight by collecting information that may later prove useful. A typical application for bond, for example, will contain information on the defendant's residence, employer, former employer, spouse, children (names and schools), spouse's employer, mother, father, automobile (description, tags, financing),

[15] See Mary A. Toborg, Bail Bondsmen and Criminal Courts, 8 Just. Sys. J. 141, 156 (1983). Bail jumping is itself a crime that may result in additional penalties.

[16] Drimmer, *supra* note 11, at 793 (1996); Morgan Reynolds, Privatizing Probation and Parole, in Entrepreneurial Economics: Bright Ideas from the Dismal Science 117, 128 (Alexander Tabarrok ed. 2002).

[17] Drimmer, *supra* note 11. See also Taylor v. Taintor, 83 U.S. (16 Wall.) 366 (1873).

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union membership, previous arrests, and so on.[18] In addition, bond dealers have access to all kinds of public and private databases. Bob Burton,[19] a bounty hunter of some fame, for example, says that a major asset of any bounty hunter is a list of friends who work at the telephone, gas, or electric utility, the post office, or welfare agencies or in law enforcement.[20]

Bond dealers, however, recognize that what makes their pursuit of skips most effective is the time they devote to the task. In contrast, public police are often strained for resources, and the rearrest of defendants who fail to show up at trial is usually given low precedence.

The flow of arrest warrants for FTA has overwhelmed many police departments, so today many counties are faced with a massive stock of unserved arrest warrants. Baltimore alone had 54,000 unserved arrest warrants as of 1999.[21] In recent years, Cincinnati has had over 100,000 outstanding arrest warrants stemming from failures to appear in court. One Cincinnati defendant had 33 pending arrest warrants against him.[22] In response to the overwhelming number of arrest warrants, most of which will never be served because of lack of manpower, some counties have turned to extreme measures such as offering amnesty periods. Santa Clara County in California, for example, has a backlog of 45,000 unserved criminal arrest warrants and in response has advertised a hotline that defendants can use to schedule their own arrests.[23]

Although national figures are not available, it is clear that the problem of outstanding arrest warrants is widespread. Texas, for example, is relatively well off with only 132,000 outstanding felony and serious misdemeanor warrants, but Florida has 323,000, and Massachusetts, as of 1997, had around 275,000.[24] California has the largest backlog of arrest warrants in the nation. The California Department of Corrections estimated that as of December 1998, there were more than 2.5 million unserved arrest warrants.[25] Many of these arrest warrants are for minor offenses, but tens of thousands are for

[18] We thank Bryan Frank of Lexington National Insurance Corporation for discussion and for sending us a typical application form.

[19] Bob Burton, Bail Enforcer: The Advanced Bounty Hunter (1990).

[20] Good bond dealers master the tricks of their trade. One bond dealer pointed out to us, for example, that the first three digits in a social security number indicate in what state the number was issued. This information can suggest that an applicant might be lying if he claims to have been born in another state (many social security numbers are issued at birth or shortly thereafter), and it may provide a lead for where a skipped defendant may have family or friends.

[21] Francis X. Clines, Baltimore Gladly Breaks 10-Year Homicide Streak, N.Y. Times, January 3, 2001, at A11.

[22] George Lecky, Police Name "200 Most Wanted," Cincinnati Post, September 5, 1997, at 1A.

[23] See Jane Prendergast, Warrant Amnesty Offered for 1 Day, Cincinnati Enquirer, November 19, 1999, for description of a similar program in Kenton County, Kentucky. See also Henry K. Lee & Kenneth Howe, Plan to Clear Backlog of Warrants: Santa Clara County Offering Amnesty to Some, S.F. Chron., January 12, 2000, at A15.

[24] Howe and Hallissy, *supra* note 3.

[25] *Id.*

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people wanted for violent crimes, including more than 2,600 outstanding homicide warrants.[26] Kenneth Howe and Erin Hallissy report that "local, state and federal law enforcement agencies have largely abandoned their job of serving warrants in all but the most serious cases." Explaining how this situation came about, they write, "As arrests increased, jails became overcrowded. To cope, judges, instead of locking up suspects, often released them without bail with a promise to return for their next court date. For their part, police, rather than arrest minor offenders, issued citations and then released the suspects with the same expectation. When suspects failed to appear for their court dates, judges issued bench warrants instructing police to take the suspects into custody. But this caused the number of warrants to balloon, and the police did not have the time or staff to serve them all."[27]

## III. The Matching Model with Multiple Treatments

Ideally, in a treatment evaluation we would like to identify two outcomes: one if the individual is treated, $Y_T$, and one if no treatment is administered, $Y_{NT}$. The effect of the treatment is then $Y_T - Y_{NT}$. But we cannot observe an individual in both states of the world, making a direct computation of $Y_T - Y_{NT}$ impossible.[28] All methods of evaluation, therefore, must make some assumptions about "comparable" individuals. An intuitive method is to match each treated individual with a statistically similar untreated individual and compare differences in outcomes across a series of matches. Thus, two statistical doppelgangers would function as the same individual in different treatments.

An important advantage of matching methods is that they do not require assumptions about functional form. When the research question is about a mean treatment effect, as it is here, matching methods also allow for an economy of presentation because they focus attention on the question of interest rather than on a long series of variables that are used only for control purposes. Unfortunately, matching methods typically founder between a rock and a hard place. The technique works best when individuals are matched across many variables, but as the number of variables increases, the number of distinct "types" increases exponentially, so the ability to find an exact match falls dramatically.

In an important paper, Paul Rosenbaum and Donald Rubin go a long way to surmounting this problem.[29] They show that if matching on $X$ is valid, then so is matching on the probability of selection into a treatment conditional on $X$. The multidimensional problem of matching on $X$ is thus trans-

[26] *Id.*

[27] *Id.*

[28] Rubin, Estimating Causal Effects of Treatments, *supra* note 4.

[29] Paul R. Rosenbaum & Donald B. Rubin, The Central Role of the Propensity Score in Observational Studies for Causal Effects, 70 Biometrika 41, 55 (1983).

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formed into a single-dimension problem of matching on $\Pr(T = 1|X)$, where $T = 1$ denotes treatment.[30] The probability $\Pr(T = 1|X)$ is often called the propensity score, or $p$-score.

The matching technique extends naturally to applications with multiple treatments through the use of a multivalued propensity score with matching on conditional probabilities.[31] Assume that there are $M$ mutually exclusive treatments, and let the outcome in each state be denoted $Y_1$, $Y_2$, and so forth. As before, we observe only a specific outcome but are interested in the counterfactual: what would the outcome have been if this person had been assigned to a different treatment? Rather than a single comparison, we are now interested in a series of pairwise comparisons between treatments $m$ and $l$. The treatment effect on the treated is written

$$\theta_0^{m,l} = E(Y^m - Y^l|T = m) = E(Y^m|T = m) - E(Y^l|T = m), \qquad (1)$$

where $\theta_0^{m,l}$ denotes the effect of treatment $m$ rather than $l$.

Identification of (1) can occur under appropriate conditions, the most important being that treatment outcomes are independent of treatment selection after conditioning on a vector of attributes, $X$ (the conditional independence assumption). Formally,

$$Y^1 \ldots Y^M \perp T|X = x. \qquad (2)$$

If this assumption is valid, we can use the conditional propensity score to identify the treatment effect,[32]

$$\theta^{m,l} = E(Y^m|T = m) - E_{p^{m|ml}}[E(Y^l|p^{m|ml}(X),\ T = l)|T = m]. \qquad (3)$$

In practice, the conditional propensity score, $p^{m|ml}(x)$, is computed indirectly

[30] Matching methods are common among applied statisticians and natural scientists but have only recently been analyzed and applied by econometricians and economists. Papers on the econometric theory of matching include Heckman, Ichimura, & Todd, *supra* note 4; and Guido W. Imbens, The Role of the Propensity Score in Estimating Dose-Response Functions (Technical Working Paper No. 237, Nat'l Bur. Econ. Res. 1999). More applied work includes James J. Heckman, Hidehiko Ichimura, & Petra E. Todd, Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Program, 64 Rev. Econ. Stud. 605, 654 (1997); Dehejia & Wahba, *supra* note 4; Michael Lechner, Programme Heterogeneity and Propensity Score Matching: An Application to the Evaluation of Active Labour Market Policies (Contributed Paper No. 647, Econ. Soc'y World Congress 2000). Our multitreatment application is closest to that of Michael Lechner, Identification and Estimation of Causal Effects of Multiple Treatments under the Conditional Independence Assumption (Discussion Paper No. 91, IZA 1999).

[31] Lechner, Identification and Estimation of Causal Effects, *supra* note 30; Imbens, *supra* note 30.

[32] Lechner, Identification and Estimation of Causal Effects, *supra* note 30.

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from the marginal probabilities $p^l(x)$ and $p^m(x)$ estimated from a discrete-choice model. In this case,

$$E[p^{m|ml}(x)|p^l(x),\ p^m(x)] = E\left[\frac{p^m(x)}{p^l(x) + p^m(x)}\,|p^l(x),\ p^m(x)\right] = p^{m|ml}(x). \tag{4}$$

We use an ordered probit model (see further below) to generate propensity scores.

It is important to emphasize that the propensity scores are not of direct interest but rather are the metric by which members of the treated group are matched to members of the "untreated" group ("differently" treated in our context). After matching, and given the conditional independence assumption, the treated and untreated groups can be analyzed as if treatment had been assigned randomly. Thus, differences in mean FTA rates across matched samples are estimates of the effect of treatment.

Less formally, matching on propensity scores can be understood as a pragmatic method for balancing the covariates of the sample across the different treatments.[33] Note that the covariates that we care most about balancing are those that affect the treatment outcome. Assume, for example, that $X$ influences treatment selection but does not independently influence treatment outcome. If the goal of the selection model were to consistently estimate the causes of treatment selection, we would want to include $X$ in the model, but it is not necessarily desirable to include it when the purpose is to create a metric for use in matching.[34] A simple example occurs when $X$ predicts treatment exactly. Inclusion of $X$ would defeat the goal of matching because all propensity scores would be either zero or one. Similarly, we will include model variables in the propensity score that may affect the treatment outcome even if they do not casually affect treatment selection.

## IV. Data and Descriptive Statistics

We use a data set compiled by the U.S. Department of Justice's Bureau of Justice Statistics called State Court Processing Statistics, for 1990, 1992, 1994, and 1996 (Inter-university Consortium for Political and Social Research [ICPSR] study 2038). We supplement these data with an earlier version of the same collection, the National Pretrial Reporting Program, for 1988–89 (ICPSR study 9508). The data are a random sample of 1 month of felony filings from approximately 40 jurisdictions, where the sample was designed to represent the 75 most populous U.S. counties. The data contain detailed information on arrest charges, criminal background of the defendant (for

[33] Dehejia & Wahba, *supra* note 4.

[34] Boris Augurzky & Christoph M. Schmidt, The Propensity Score: A Means to an End (Discussion Paper No. 271, IZA 2001).

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example, number of prior arrests), sex and age of the defendant,[35] release type (surety, cash bond, own recognizance, and so on), rearrest charges for those rearrested, whether the defendant failed to appear, and whether the defendant was still at large after 1 year, among other categories.

In addition to the main release types, there are minor variations. Some counties, for example, release on an unsecured bond for which the defendant pays no money to the court but is liable for the bail amount should he fail to appear. Because the incentive effects are very similar, we include unsecured bonds in the deposit bond category.[36] Instead of a pure cash bond, it is sometimes possible to put up property as collateral. Since property bonds are rare (588 observations in our data, less than 2 percent of all releases), we drop them from the analysis.[37] Finally, some counties may occasionally use some form of supervised release. In the first year of our data set, supervised release is included in the own-recognizance category. Supervised release often means something as simple as a weekly telephone check-in, so including these with own recognizance is reasonable. Supervised release is not a standard term, however, and other forms, such as mandatory daily attendance of a drug treatment program, are likely to be more binding. To maintain comparability across years, we follow the practice established in the first year of the data set by classifying supervised release with own recognizance. Because supervised release is more binding than pure own recognizance, this can only lower FTA rates and other results in the own-recognizance sample, thus biasing our results away from finding significant differences among treatments.[38]

In Table 1, the mean FTA rates for release categories are along the main diagonal, with the number of observations in square brackets. The preliminary analysis suggests that FTA rates are lower under surety bond release than under most other types of release. Off-diagonal elements are the difference between the FTA rate for the row category and the FTA rate for the column category. The FTA rate for those released under surety bond is 17 percent. Compared with surety release, the FTA rate is 3 percentage points higher under cash bonds, 4 percentage points higher under deposit bonds, and 9 percentage points higher under own recognizance (all these differences are

[35] The State Court Processing Statistics data are more complete and better organized than the National Pretrial Reporting Program data. The former, for example, include information on the race of the defendant that the latter do not.

[36] We drop observations missing data on the bail amount.

[37] Another reason to drop property bonds is that it is difficult to compare the bail for these releases to other release types. A defendant, for example, may put up a $250,000 house as collateral for $25,000 in bail. Although we know the bail amount, we do not know the value of the collateral property other than that it must, by law in many cases, be higher than the value of the bail amount. A cash or surety bond, therefore, is not equivalent to a property bond for the same bail amount.

[38] We find similar results by restricting the data set to the years in which supervised release is given a distinct category.

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TABLE 1

MEAN FAILURE-TO-APPEAR RATES BY RELEASE CATEGORY, 1988–96

| | Own Recognizance | Deposit Bond | Cash Bond | Surety Bond | Emergency Release |
|---|---|---|---|---|---|
| Own recognizance | 26 [20,944] | 5** | 6** | 9** | −19** |
| Deposit bond | | 21 [3,605] | 1 | 4** | −23** |
| Cash bond | | | 20 [2,482] | 3** | −25** |
| Surety bond | | | | 17 [9,198] | −28** |
| Emergency release | | | | | 45 [584] |

NOTE.—Mean failure-to-appear (FTA) rates (in %) for release categories, rounded to the nearest integer, are along the main diagonal, with the number of observations in square brackets. Off-diagonal elements are the difference between the mean FTA rate for the row category and the mean FTA rate for the column category.

** Statistically significant at the greater than 1% level.

statistically significant at greater than the 1 percent level). Put slightly differently, compared with surety release, the FTA rate is approximately 18 percent higher under cash bond, 33 percent higher under deposit bond, and more than 50 percent higher under own recognizance.

Table 1 also presents some information on emergency release. Emergency releasees are defendants who are released solely because of a court order to relieve prison overcrowding. Emergency release is not a treatment—the treatment is own recognizance—but rather an indication of what happens when neither judges nor bond dealers play their usual role in selecting defendants to be released.[39] One would expect that relative to those released under other categories, these defendants are likely to be accused of the most serious crimes, have the highest probability of being found guilty, and have the fewest community ties. In addition, these defendants have neither monetary incentive nor the threat of being recaptured by a bounty hunter to induce them to return to court. As a result, a whopping 45 percent of the defendants who are given emergency release fail to appear for trial. The large differences between the FTA rates of those released on emergency release and every other category indicate that substantial and successful selection occurs in the decision to release. Emergency release is thus of some special interest, although not directly related to the focus of this paper.

Although the preliminary data analysis is suggestive, the difference-in-means analysis could confound effects due to treatment with effects due to selection on, for example, defendant characteristics such as the alleged crime.

[39] Even under emergency release, some selection can occur. Judges and jailers, for example, could order that more inmates be paroled to make room for the most potentially dangerous accused defendants, inmates could be shipped out of state, or the court order could be (temporarily) ignored. The costs of selection, however, clearly rise substantially when jail space is tightly constrained.

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## V. Results

### A. *Propensity Scores from Ordered Probit*

We generate propensity scores for matching using an ordered probit model. By law, judges must release defendants on the least restrictive conditions they believe are compatible with ensuring appearance at trial. Own recognizance, the least restrictive form of release, is our first category, followed by release on deposit bond. Although defendants released on deposit bond must put up some cash, which they will forfeit if they fail to appear, the amount is typically less than $500.[40] Few people are ever held because of a failure to raise cash for a deposit bond. Defendants who were offered financial release (but not a deposit bond) and who paid their bonds in cash are the third category of release. Cash bond is more expensive than a deposit bond but does not involve the monitoring of sureties. Defendants released via surety bond are the fourth category. Although the Constitution guarantees that excessive bail shall not be required, it does not require that bail should always be set low enough for a defendant to be able to afford release. Indeed, judges sometimes set bail in the expectation (and hope) that the defendant will not be able to raise bail. Thus, we include defendants held on bail or detained without bail as the final, most restrictive category, not released. Emergency releases are also included in the final category because, had it not been for the emergency, these individuals would have not have been released. From the ordered probit, we generate conditional propensity scores for each possible pairwise comparison.[41]

Variables in the ordered probit specification include individual-specific indicators that denote whether the defendant has been accused of murder, rape, robbery, assault, other violent crime, burglary, theft, other property offense, drug trafficking, other drug-related offense, or driving-related offense (with misdemeanors and other crimes in the constant). We also include variables for past experience with the criminal justice system. Three binary variables are set equal to one if the defendant had some active criminal justice status at the time of the arrest (for example, was on parole or probation), had prior felony arrests, or failed appear at trial in the past. The defendant's sex and age are also included. Note that these variables are exactly the sorts of variables that judges use to make treatment selection

[40] The median deposit bond amount is $5,000, and releasees typically must deposit 10 percent or less of the bond amount.

[41] We have also estimated the results using a multivariate logit model. The results are substantively similar (on the ordered probit model, see, for example, William H. Greene, Econometric Analysis (4th ed. 2000)).

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decisions.[42] Other, nonindividual variables include the police clearance rate, defined as the number of arrests divided by the number of crimes per county. The clearance rate provides a crude measure of police availability that may affect FTA rates. County and year effects are included in the selection equation (county 29 and 1988 are excluded to prevent multicollinearity).[43] The results of the ordered probit estimation are presented in Appendix Table A1.

### *B. Matching Quality*

A match is defined as the pair of observations with the smallest difference in propensity scores so long as the difference is less than a predefined caliper. If a match cannot be made within the caliper distance, the observations are dropped. We use matching with replacement, so the order of matching is irrelevant, and every untreated observation is compared against every treated observation.[44]

The match quality is good, as we match large proportions of the sample despite using a caliper of only .0001.[45] Figure 1*A* presents a box-and-whiskers plot of the propensity scores for each treatment category (including the "treatment" of not released) conditional on the actual treatment. The leftmost part of the graph, for example, gives the box-and-whiskers plot for the propensity of being in the own-recognizance, deposit, cash, surety, and not-released treatments for all defendants in the own-recognizance treatment.[46]

[42] Ayres & Waldfogel, *supra* note 6, identifies eight characteristics that judges may consider in setting bail: (1) the nature and circumstances of the offense (if relevant), (2) the evidence against the defendant, (3) the defendant's prior criminal record, (4) the defendant's prior FTA record, (5) the defendant's family ties, (6) the defendant's employment record, (7) the defendant's financial resources, and (8) the defendant's community ties. Although Ayers and Waldfogel's study deals only with Connecticut, the criteria are similar in other states.

[43] The use of county effects in the selection equation is noteworthy because it implies that matching will occur with "quasi"-fixed effects. A true fixed-effects estimator would require that comparable observations come from within the same county. The matching estimator takes into account county effects when seeking a match but does not insist that every match must be within county. In particular, some counties do not release on deposit bond, and others do not release on surety bond. A fixed-effects estimator would not use information from these counties in estimating the effect of the deposit and surety treatments. The matching estimator will use information from these counties if matching is strong on other variables. A pure fixed-effects estimator may also be important, however, and in the working version of this paper, Eric Helland & Alexander Tabarrok, Public versus Private Law Enforcement: Evidence from Bail Jumping (Working paper, George Mason Univ. 2003), we pursue this alternative approach. Results are consistent with those discussed here.

[44] Dehejia & Wahba, *supra* note 4, finds that matching with replacement is considerably superior to matching with nonreplacement.

[45] When matching on variables with fewer observations, such as fugitive rates conditional on failure to appear as we do below, we match using a caliper of .001. The caliper size makes little difference to the results.

[46] In a box-and-whiskers plot, the box contains the interquartile range (IQR): the observations between the 75th percentile (the top of the box) and the 25th percentile (the bottom of the box). The horizontal line toward the center of each box is the median observation. The whiskers are the so-called adjacent values that extend from the largest observation less than or equal

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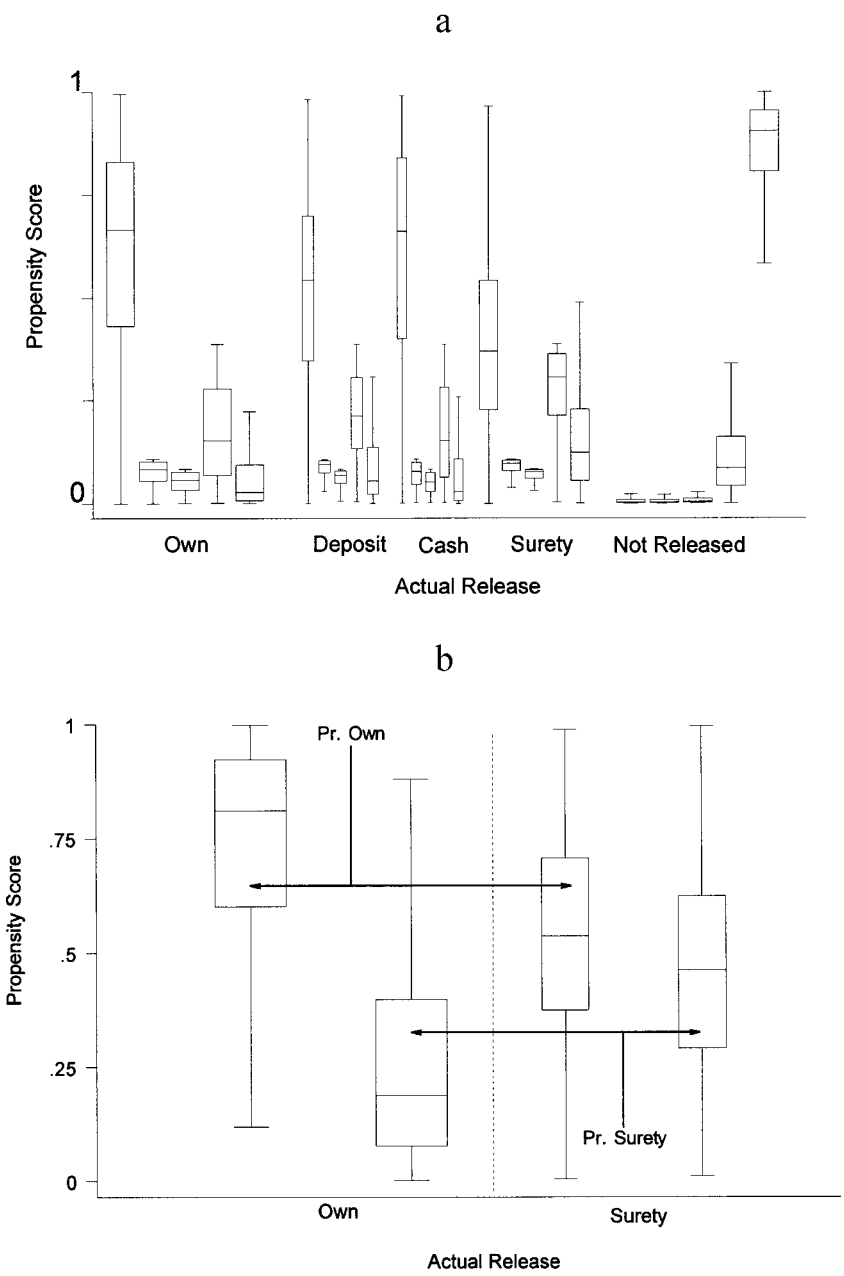


FIGURE 1.—*A*, *p*-score distribution for each release type conditional on actual release (the order within type is own recognizance, deposit, cash, surety, not released); *B*, pairwise *p*-score distributions for own recognizance versus surety.

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Figure 1*B* gives the box-and-whiskers plot for the pairwise (conditional) probabilities for the own versus surety comparison. The "Pr. Own" and "Pr. Surety" arrows indicate that we can find comparable observations, statistical doppelgangers, for individuals released under either treatment. Many of the defendants released on surety bond, for example, were as likely to have been released on their own recognizance (third box from the left) as those who actually were released on their own recognizance (first box from the left). Similarly, many of the defendants who were released on their own recognizance were as likely to have been released on surety bond (second box from the left) as those who actually were released on surety bond (fourth box from the left). Note that it is important that the boxes overlap across treatments, not that they overlap within treatments—that is, the fact that in Figure 1*A* the propensity to be in the deposit bond treatment is everywhere lower than the propensity to be in the own-recognizance treatment simply reflects the fact that the deposit bond treatment is a low-probability event. More important is that the deposit bond treatment is a low-probability event regardless of actual treatment—we can thus find comparable observations across the treatments. Alternatively stated, the overlap in the boxes across treatments indicates that random factors play a large role in treatment selection, thus aiding our effort to find true comparable observations.[47]

Although we can find comparable observations across the release treatments, we cannot find good comparable observations for those who were not released. Indeed, the Figure 1*A* box-and-whiskers plot of the propensity not to be released among those who in fact were not released does not overlap at all with the propensity not to be released for those who were released. Defendants who are not released differ greatly from released defendants.[48] (This is consistent with the very high FTA rates that we found for emergency releasees in Table 1.) The fact that the model is capable of finding large selection effects if they exist, as they apparently do for those not released, bolsters the finding that selection on observable characteristics is not overly strong among the release treatments.

---

to the 75th percentile plus 1.5 × IQR and the smallest observation greater than or equal to the 25th percentile minus 1.5 × IQR. Points outside the box and whiskers are called extreme values or outside points and for clarity are not plotted in this graph. In this plot, the width of the box is proportional to the square root of the number of observations in that category.

[47] Another interesting aspect of the box-and-whiskers plot is that it suggests that almost everyone can be released on their own recognizance, even those who might in another time and place be released only with high bail. Thirty percent of released defendants accused of murder, for example, were released on their own recognizance.

[48] It is possible to find defendants who were released who might not have been released—thus, the data are consistent with the adage that it is better to let 10 guilty men go free than jail one innocent man.

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TABLE 2

TREATMENT EFFECTS OF ROW VERSUS COLUMN RELEASE CATEGORY ON FAILURE-TO-APPEAR RATES USING MATCHED SAMPLES, 1988–96

| | Own Recognizance | Deposit Bond | Cash Bond | Surety Bond |
|---|---|---|---|---|
| Own recognizance | 26 | 3.2** (1.0; 1.1) | 4.8** (1.1; 1.2) | 6.5** (.78; .78) |
| Deposit bond | −3.1** (1.1; 1.2) | 21 | 4.1** (1.5; 1.6) | 3.1** (1.1; 1.3) |
| Cash bond | −5.8** (1.3; 1.6) | −1.5 (1.6; 2.0) | 20 | 1.8; 2.0 (1.4; 1.8) |
| Surety bond | −7.3** (.78; .89) | −3.9** (1.1; 1.2) | 1.7 (1.3; 1.4) | 17 |

NOTE.—Mean failure-to-appear rates (in %) for release categories for the full sample are along the main diagonal. Off-diagonal elements are the estimated treatment effects of the row category versus the column category. Standard errors are in parentheses—the first standard error assumes that the *p*-score is estimated with certainty; the second uses bootstrapping to estimate the standard error including uncertainty of the *p*-score. Matching caliper = .0001.

** Statistically significant at the greater than 1% level (two sided).

### C. *Estimated Treatment Effects: Failure to Appear*

In Table 2, the row variable denotes the treated variable and the column the untreated variable.[49] For reference, the main diagonal includes the mean FTA rate in that category from the full sample.[50] Reading across the surety bond row, for example, we see the estimated difference in FTA rates caused by the surety treatment relative to the column treatment—that is, the estimate of the effect of treatment on the treated. The matching estimator suggests that similar individuals are 7.3 percentage points, or 28 percent, less likely to fail to appear when released on surety bond than when released on their own recognizance. Similar individuals are also 3.9 percentage points, or 18 percent, less likely to fail to appear when released on surety bond than when released on deposit bond. The estimated treatment effect for those on surety bonds versus cash is small and not statistically significant.[51]

[49] Two standard errors are presented in Table 2. The first takes into account uncertainty in the matched samples but assumes that the propensity score is known with certainty. The second estimate is a bootstrapped standard error that takes into account uncertainty that propagates from the estimation of the propensity score. The "regular" and bootstrapped standard errors are close, with the bootstrapped errors being approximately 8–20 percent higher. All the statistically significant results are significant at greater than the 1 percent level using either standard error. Since the estimation of the propensity score adds very little uncertainty to the matching estimators and because calculating bootstrapped errors is very time and resource intensive, we present only the regular standard errors in future results and leave adjustments to the reader. The bootstrapped errors were calculated using 100 replications of the model. The procedure took over 48 hours on a reasonably fast Pentium computer.

[50] The mean FTA rate for the full sample is included as rough guide to absolute effects. Note, however, that the matched sample is usually smaller than the full sample, so the mean FTA rate for the matched and full samples can be slightly different.

[51] As a test of matching quality, we also ran a linear regression on the matched samples that included surety bond and all the variables in Table 3. The results are similar, as they should be if the matched samples divide other covariates as if they were assigned randomly. The coefficient on surety bond in the surety versus own recognizance regression, for example, is

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Unlike Table 1, both the top and bottom halves of Table 2 are filled in; this is because the estimate of the treatment on the treated is conceptually different from the estimate of the treatment on the untreated (differently treated). For example, the effect of the surety treatment relative to own recognizance for those who were released on surety bond is not necessarily the exact opposite of the effect of own recognizance relative to surety bond on those who were released on their own recognizance. As it happens, however, our estimates of these effects are similar. The estimate of the effect of own recognizance relative to surety on those who were released on their own recognizance, for example, is 6.5 percentage points, similar in size but opposite in sign to the −7.3 surety effect relative to own recognizance of those who were released on surety bond. The similarities across diagonals suggest that either (or both) treatment selection or treatment effect does not interact strongly with defendant characteristics. One possible exception is that the deposit bond treatment relative to cash is estimated at 4.1 percentage points, while the cash bond treatment relative to deposit is estimated at −1.5 percentage points.

### *D. Estimated Treatment Effects: The Fugitive*

A surprisingly large number of felony defendants who fail to appear remain at large after 1 year, approximately 30 percent. Alternatively stated, some 7 percent of all released felony defendants skip town and are not brought back to justice within 1 year. Those who remain at large more than 1 year are called fugitives.

The surety treatment differs most from other treatments when a defendant purposively skips town, because this is when bounty hunters enter the picture.[52] If the surety treatment works, therefore, we should see it most clearly in the apprehension of fugitives. Given that a defendant fails to appear, we ask what the probability is that the defendant is not brought to justice within 1 year and how this varies with release type. It is important to note that once a defendant has decided to abscond, there is no reason why anything other than the different effectiveness of public police and bail enforcement agents should have a systematic effect on the probability of being recaptured.

Table 3 provides strong evidence that bounty hunters are highly effective at recapturing defendants who attempt to flee justice—considerably more so than the public police. The main diagonal of Table 3 contains the mean fugitive rate conditional on FTA along with the number of observations in

−6.5, which is within 1 standard deviation of the −7.3 matching estimate. We do a more detailed comparison of linear regression and matching results further below.

[52] We use the term "bounty hunter" or "bail enforcement agent" to refer to private pursuers of felony defendants. Bond dealers typically pursue their own skips. Literal bounty hunters are typically not called in unless the skip is thought to have crossed state or international lines. Services like Wanted Alert (http://www.wantedalert.com) regularly post ads in *USA Today* that list fugitives and their bounties.

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TABLE 3

TREATMENT EFFECT OF ROW VERSUS COLUMN RELEASE CATEGORY ON THE FUGITIVE RATE USING MATCHED SAMPLES, CONDITIONAL ON FAILURE TO APPEAR, 1988–96

| | Own Recognizance | Deposit Bond | Cash Bond | Surety Bond |
|---|---|---|---|---|
| Own recognizance | 32 [5,440] | −3** (2.6) | −4.9** (2.9) | 9.4** (2.1) |
| Deposit bond | −.2 (2.6) | 33 [766] | −6.2 (4.1) | 12.1** (2.7) |
| Cash bond | 11.9** (3.0) | −3.8 (4.4) | 40 [506] | 18.6** (3.7) |
| Surety bond | −17** (2.0) | −15.5** (2.9) | −25.6** (4.2) | 21 [1,537] |

NOTE.—Mean fugitive rates (in %), defined as failures to appear that last longer than a year, for release categories for the full sample are along the main diagonal, with the number of observations in that category conditional on a failure to appear in square brackets. Off-diagonal elements are the difference between the mean fugitive rate for the row category and the mean fugitive rate for the column category estimated using matching. Standard errors are in parentheses. Matching caliper = .001.

** Statistically significant at the greater than 1% level (two sided).

each category. The estimated treatment effects for the row versus column variables are shown in the off-diagonals with standard errors in parentheses. The probability of remaining at large for more than a year conditional on an initial FTA is much lower for those released on surety bond. The surety treatment results in a fugitive rate that is lower by 17, 15.5, and 25.6 percentage points compared with the own-recognizance, deposit bond, and cash bond treatments, respectively. In percentage terms, the fugitive rates under surety release are 53, 47, and 64 percent lower than the fugitive rates under own recognizance, deposit bond, and cash bond, respectively. Similarly, the own recognizance, deposit, and cash bond treatments result in fugitive rates that are 29, 47, and 47 percent higher than under the surety treatment.

There are also some interesting nonsurety effects in Table 3. Note that the fugitive rate conditional on an FTA is higher for cash bond than for release on own recognizance. Earlier (see Table 2) we had found that the FTA rate was lower for cash bond than for release on own recognizance. This suggests that defendants on cash bond are less likely to fail to appear than those released on their own recognizance, but if they do fail to appear, they are less likely to be recaptured. The result is pleasingly intuitive. A defendant released on his own recognizance has little to lose from failing to appear and thus may fail to appear for trivial reasons. But a defendant released on cash bond has much to lose if he fails to appear, and thus those who do fail to appear do so with the goal of not being recaptured.

The propensity score method can be very informative about the entire distribution of treatment effects. In Figure 2, we graph smoothed (running-mean) FTA and fugitive rates against surety *p*-scores for the own-recognizance and surety treatments (conditional on being in either the surety or own-recognizance treatment). (We omit graphs for the other treatment comparisons for brevity.) The two downward-sloping, thinner curves graph smoothed FTA rates against the *p*-scores for those defendants released on

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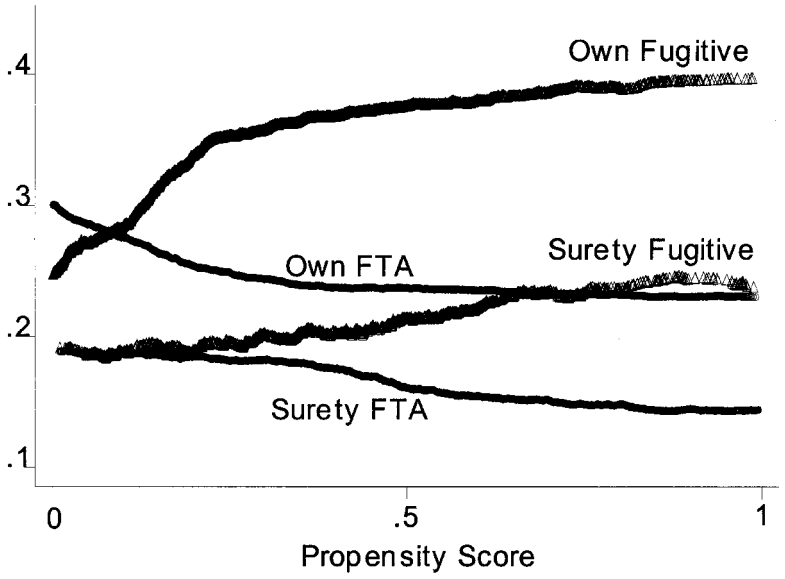


FIGURE 2.—Failure-to-appear and fugitive rates by own recognizance versus surety treatment plotted against *p*-scores.

their own recognizance or surety bond. The slope of each line indicates the direction and strength of the effect of observable characteristics on selection in that treatment. The difference between the own-recognizance and surety lines at any given propensity score is an estimate of the treatment effect, controlling for observable characteristics. The difference is roughly constant, which indicates that despite some mild selection, the treatment effect is roughly independent of observable characteristics.

For both the own-recognizance and surety treatments, FTA rates decrease as the propensity for being in the surety treatment increases. That is, FTA rates decrease as observable characteristics move in the direction of predicting surety release. The decline is gentle; moving from a near-zero propensity to a near-one propensity reduces the FTA rate by approximately 5 percentage points. The effect is sensible if we recall that many FTAs are short term—the defendant forgets the trial date or has another pressing engagement. These sorts of FTAs are likely to be more common for defendants with observable characteristics that predict low *p*-scores because judges release most defendants on their own recognizance and reserve surety release for defendants accused of more serious crimes. Few people will forget to show up for their murder trial, but some may do so if the trial involves a driving offense. At the same time, however, we expect that defendants accused of more serious crimes—who have more to lose from being found guilty—are more likely

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to purposively abscond. If this is correct, we ought to see a positive correlation between the surety propensity score and the fugitive rate conditional on having failed to appear.

The two upward-sloping, thicker lines plot smoothed fugitive rates against the surety propensity score. As before, the slope of the plots gives the direction and strength of effects caused by selection on observable characteristics, and the vertical difference is the treatment effect for any given propensity score. As observable characteristics move in the direction of a greater propensity to be selected for surety release, the fugitive rate increases. It is interesting to note that the effect of selection on defendants released on surety bond is less than that on defendants released on their own recognizance (that is, the "slope" of the plot is less). This suggests that the surety treatment works well even for those defendants whose observable characteristics would predict higher FTA rates.

We examine the issue of unobservable characteristics at length below, but since selection by observable characteristics has little influence on fugitive rates, Figure 2 already suggests that observables would have to be very different from observables in order to greatly affect the results.

### *E. Kaplan-Meier Estimation of Failure-to-Appear Duration*

The higher rate of recapture for those released on surety bond compared with other release types can be well illustrated with a survival function. For a subset of our data, just over 7,000 observations, we have information on the time from the failure to appear until recapture (return to the court). A survival function graphs the percentage of observations that survive at each time period. We estimate a survival function for each release type using the nonparametric Kaplan-Meier estimator. Typically, the Kaplan-Meier estimator is used only for preliminary analysis and is then followed by a parametric or semiparametric model. Although parametric and semiparametric models allow for covariates, they require sometimes tenuous assumptions about functional form. Instead, we follow our earlier approach of creating matched samples. Thus, using the same procedure, we create three matched samples: surety versus own recognizance, surety versus deposit, and surety versus cash. We then compare the survival function across each matched sample. The matching procedure ensures that covariates are balanced across the matched samples, so it is not necessary to include additional controls for covariates.

Figure 3 presents the survival functions. In each case, the survival function for those released on surety bond is markedly lower than that for those released on their own recognizance, deposit bond, or cash bond. The ability of bail enforcement agents relative to police to recapture defendants who

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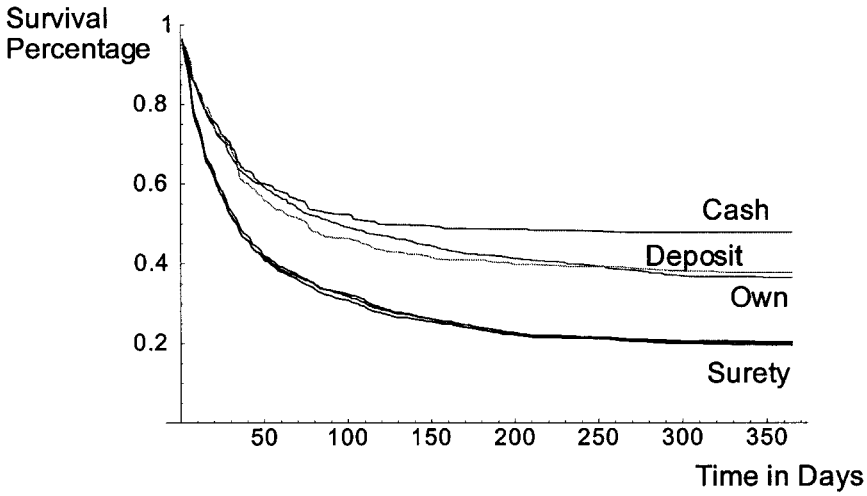


FIGURE 3.—Kaplan-Meier survival function for defendants on surety bond versus those released on cash bond or deposit bond or released on their own recognizance—using matched samples.

skip bail is evident within a week of the failure to appear.[53] By 200 days, the surety survival rate is some 20–30 percentage points, or 50 percent, lower than the survival rate for those out on cash bond, deposit bond, or their own recognizance; that is, the probability of being recaptured is some 50 percent higher for those released on surety bond relative to other releases. (Note that there are three surety bond survival functions, one for each comparison group, but these are nearly identical.)

A log-rank test confirms Figure 3; we can easily reject the null hypothesis of equality of the survivor functions—defendants released on surety bond are much more likely to be recaptured (that is, less likely to remain at large, or "survive") than those released on their own recognizance, deposit bond, or cash bond.[54]

[53] A number of estimates have been made that bounty hunters take into custody between 25,000 and 35,000 fugitives a year, depending on the year (see various sources in Drimmer, *supra* note 11; and also W. P. Barr, letter to Charles T. Canady on the Bounty Hunter Responsibility Act, NABIC Bull., March 2000). These figures are consistent with a recapture rate of over 95 percent and are consistent with the number of fugitives on surety bond. It appears, therefore, that almost all fugitives on surety bond are recaptured by bail enforcement agents and not by the police. Bounty hunters, however, will sometimes track down defendants and then tip police as to their whereabouts, so police will sometimes be involved in some aspects of recapture.

[54] The exact results of the log-rank test and similar results matching on propensity score and bail can be found in Helland & Tabarrok, *supra* note 43.

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TABLE 4

EFFECT OF ALTERNATIVE TREATMENT VERSUS SURETY BOND ON FAILURE-TO-APPEAR AND FUGITIVE RATES (Conditional on Failure to Appear), 1988–96

| | Own Recognizance versus Surety Bond | Deposit versus Surety Bond | Cash versus Surety Bond |
|---|---|---|---|
| Treatment effect on failure-to-appear rates | +7.8** (1.6) | +6.2** (1.8) | −1.6 (4.4) |
| Treatment effect on fugitive rates | +14.8** (2.3) | +19.8** (2.9) | +35.7** (8.0) |

NOTE.—Individuals from states that have banned surety bonds are matched with similar individuals released on surety bond. Standard errors are in parentheses. The matching caliper is .0001.
** Statistically significant at the greater than 1% level (two sided).

### *F. Comparison with Counties in States That Have Banned Commercial Bail*

Some states have banned commercial bail. It seems plausible that matching can find two individuals who are comparable but for the fact that one individual could not have been assigned surety bail while the other could and was assigned surety bail. Comparing these individuals gives us a measure of what would happen if a county lifted its ban on commercial bail.[55]

Table 4 demonstrates that states that ban commercial bail pay a high price. We estimate that FTA rates are 7–8 percentage points, or approximately 30 percent, higher for individuals released on deposit or own recognizance than if the same individuals were released on surety bond.[56] As before, we find that cash bond is about as effective as surety bond at controlling FTA rates. The fugitive rate conditional on FTA is much higher under own recognizance, deposit, or cash release than under surety—higher by some 15, 20, and 36 percentage points, or 78, 85, and 93 percent, respectively—figures even larger than we found earlier.

## VI. LOOKING FOR UNOBSERVABLE VARIABLES

Matching is a powerful and flexible tool, but it is not a research design that magically guarantees the identification of causal effects. In this section, we test for robustness and attempt to rule out the potentially confounding effects of unobservable characteristics. We focus on two identification strat-

[55] Since we are interested in the cross-county variation, the propensity scores for these tests were generated from an ordered probit that did not include county fixed effects but was otherwise identical to that used earlier.

[56] Note that in Table 4, we examine the treatment effect of own recognizance, deposit, and cash relative to surety because this is the relevant comparison when considering the experiment of lifting the ban on commercial bail. As noted earlier, the treatment effect on the treated and untreated groups are similar, so we could also have examined the surety treatment effect relative to the alternative release types.

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TABLE 5

MEAN REARREST RATES BY RELEASE CATEGORY, 1988–96

| | Rate (%) | *N* |
|---|---|---|
| Own recognizance | 14.9 | 20,945 |
| Deposit bond | 13.3 | 3,605 |
| Cash bond | 14 | 2,482 |
| Surety bond | 12 | 9,202 |

egies; a number of alternative strategies, described briefly below, are developed in the working paper.

Our first identification strategy takes advantage of the fact that some 14 percent of defendants out on pretrial release are arrested for another crime before they are sentenced for the first crime. It is plausible that the probability of being rearrested is positively correlated with the probability of becoming a fugitive. Assume, for example, that guilty defendants are less likely to show up for trial than innocent defendants and that innocent defendants are less likely to be rearrested than guilty defendants. There is good evidence for some such assumption because in the raw data, defendants who are never rearrested have an FTA rate of 11 percent, but defendants who are rearrested for another crime have an FTA rate of 43 percent.

If rearrest is positively correlated with the probability of becoming a fugitive and if treatment does not influence rearrest rates, then rearrest rates by treatment will track unobserved characteristics. Table 5 provides evidence for the second clause—in the raw data, there is very little variation in rearrest rates across treatment categories.[57] Thus, Table 6 (matching on propensity score and bail) presents faux "treatment effects" for the effect of various release types on rearrest rates. We emphasize that our hypothesis is that treatment does not influence rearrest—the faux treatment effects, therefore, are indications of the influence of unobserved variables.

In Table 6, the surety versus own recognizance and surety versus deposit comparisons show positive but very small and statistically insignificant effects, which suggests that unobserved variables have little influence on FTA and fugitive rates across these comparisons. The surety versus cash bond comparison suggests that the surety treatment increases rearrest rates by 4.5 percentage points, which implies that unobserved variables operate in a direction that offsets the true treatment effect of surety on FTA and fugitive

[57] In the raw data, there appears to be a slight decrease in rearrest rates for those released on commercial bail. Although the rearrest of a defendant is not usually grounds for the forfeiture of the bond dealer's bond, bond dealers do monitor their charges, and such monitoring might reduce rearrest rates. Bond dealers might be also be able to select defendants who are unlikely to flee and thus also unlikely to be rearrested. Once we control for observable characteristics, however, the slight decrease in arrest rates for those on commercial bail disappears and in some cases reverses (see Table 6).

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TABLE 6

EFFECT OF SURETY TREATMENT EFFECT VERSUS OTHER RELEASE TYPES ON REARREST RATES USING SAMPLES MATCHED ON *p*-SCORE AND BAIL, 1988–96

| | Surety versus Own Recognizance | Surety versus Deposit Bond | Surety versus Cash Bond |
|---|---|---|---|
| Surety bond | .7 (.6) | .58 (1.0) | 4.5** (1.3) |
| Matched observations | 14,925 | 9,740 | 7,064 |

NOTE.—The matching caliper is .001.
** Statistically significant at the greater than 1% level (two sided).

rates. Recall from Table 2 that we found that FTA rates were slightly higher under surety than under the cash bond treatment. The evidence from rearrest rates suggests that unobservable characteristics may be responsible for part of this and that the true treatment effect is somewhat lower. Similarly, although we found large negative effects on fugitive rates from the surety treatment (relative to cash treament), the evidence suggests that, if anything, the true treatment effects are even more negative.[58]

The rearrest data allow for another interesting comparison. For a small subset of our data, 1,331 observations from 1988 and 1990, we know the rerelease type for those individuals who are arrested and released on a second charge. We do not know whether the individual failed to appear on the second charge, which is why we do not have repeated observations. Nevertheless, the second arrest and release data may be revealing.

Suppose that the initial release is own recognizance and the second release is via surety bond. By monitoring and possibly recapturing the defendant if he skips on the second trial, bail bondsmen and their agents create a positive externality with respect to fugitive rates on the first trial. This potential externality means that we need not compare own-recognizance to surety releases to measure a surety treatment effect. Instead, we can compare defendants released on their own recognizance with other defendants released on their own recognizance in their first release and on surety bond in their second release. Similarly, we can compare fugitive rates on the first trial for defendants whose first and second releases were own recognizance and own recognizance with those whose first and second releases were own recognizance and surety bond. With this comparison, we control for selection effects on the first release.

The unconditional fugitive rate of defendants who are released on their

[58] Since we find that rearrest rates vary little by treatment category, we should also find that treatment effects measured in the rearrest sample, that is, using only those defendants who were subsequently arrested for a second crime, should be similar to those found in the one-arrest sample. We have run these matching tests on propensity score and bail and do find similar results, which we omit for brevity.

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TABLE 7

UNCONDITIONAL FUGITIVE RATES BY ARREST-REARREST CATEGORY, 1988, 1990

| Category | Rate |
|---|---|
| 1. Own and not rearrested | 8.48 [17,828] |
| 2. Own-own | 8.04 [191] |
| 3. Own-surety | 1.49 [134] |
| 4. *t*-test (row 1 − row 3) | 2.9; $p(1 > 3 = .0019)$ |
| 5. *t*-test (row 2 − row 3) | 2.6; $p(2 > 3 = .0047)$ |

NOTE.—Own-own indicates first release on own recognizance and second release on own recognizance. Own-surety indicates first release on own recognizance and second release on surety bond.

own recognizance and not rearrested is 8.48 percent.[59] The fugitive rate of defendants who are released on their own recognizance and who are rearrested and then released again on their own recognizance is almost identical, 8.04 percent. But the fugitive rate for those defendants initially released on their own recognizance but then rearrested and rereleased on surety bond is just 1.9 percent. The difference between the own-recognizance and the own-recognizance+surety fugitive rate is statistically significant at the greater than 1 percent level. The difference between the own-recognizance+own-recognizance and own-recognizance+surety rate, which controls for rearrest, is also statistically significant at the greater than 1 percent level. Table 7 summarizes.

In the working paper,[60] we supplement the above analysis in a variety of ways to control for county effects, individual effects observed by judges but unobserved by us, and pure unobserved effects of a very general nature. [61] Most generally, the cream that judges skim are released on their own recognizance and deposit bond, while the skim are released on cash or surety bond. Consistent with this, observable selection effects on fugitive rates are positive, and the evidence from a variety of independent tests suggests that unobservable characteristics are not biasing our results upward. Taken to-

[59] Earlier we focused on fugitive rates conditional on having FTA. We focus on unconditional fugitive rates here because we have fewer observations. We have data on rearrest and rerelease type for 1988 and 1990.

[60] Helland & Tabarrok, *supra* note 43.

[61] One of our supplementary tests is a completely independent test using instrumental variables. When jails become overcrowded, judges are pressured to release individuals on their own recognizance rather than run the risk of setting a bail amount that the defendant might not be able to secure. (We present evidence in the working paper that bond dealers understand that overcrowded jails mean less surety business.) We define Ratio as the county jail population divided by the official jail capacity. A value of Ratio greater than one indicates overcrowding. We suggest that jail overcrowding is not likely to be correlated with unobservables that affect FTA and fugitive rates. Using Ratio as an instrumental variable, we again find that surety bail significantly reduces fugitive rates. For details, see Helland & Tabarrok, *supra* note 43.

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gether, the evidence suggests that we have good estimates that surety release reduces FTA rates, survival times, and fugitive rates.

## VII. Conclusions

When the default was for every criminal defendant to be held until trial, it was easy to support the institution of surety bail. Surety bail increased the number of releases relative to the default and thereby spared the innocent some jail time. Surety release also provided good, albeit not perfect, assurance that the defendant would later appear to stand trial. When the default is that every defendant is released, or at least when many people believe that "innocent until proven guilty" establishes that release before trial is the ideal, support for the surety bail system becomes more complex. How should the probability of failing to appear and all the costs this implies, including higher crime rates, be traded off against the injustice of imprisoning the innocent or even the injustice of imprisoning the not-yet-proven guilty? We cannot provide an answer to this question, but we can provide a necessary input to this important debate.

Defendants released on surety bond are 28 percent less likely to fail to appear than similar defendants released on their own recognizance, and if they do fail to appear, they are 53 percent less likely to remain at large for extended periods of time. Deposit bonds perform only marginally better than release on own recognizance. Requiring defendants to pay their bonds in cash can reduce the FTA rate similar to that for those released on surety bond. Given that a defendant skips town, however, the probability of recapture is much higher for those defendants released on surety bond. As a result, the probability of being a fugitive is 64 percent lower for those released on surety bond compared with those released on cash bond. These finding indicate that bond dealers and bail enforcement agents (bounty hunters) are effective at discouraging flight and at recapturing defendants. Bounty hunters, not public police, appear to be the true long arms of the law.

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## APPENDIX

TABLE A1

ORDERED PROBIT ON STRINGENCY OF RELEASE

| Variable | Coefficient | |
|---|---|---|
| Local conditions: | | |
| Time, in days, to scheduled start of trial | −.5821 | (.0038) |
| Local clearance rate (total arrest/total crime) | .3957 | (.1799) |
| Defendant is charged with: | | |
| Murder | .35915** | (.051044) |
| Rape | .376661** | (.032135) |
| Robbery | .146899** | (.028193) |
| Assault | .208538** | (.039397) |
| Other violent crime | .048705+ | (.02932) |
| Burglary | −.10109** | (.027554) |
| Theft | −.16676** | (.029142) |
| Other property crime | .212824** | (.026824) |
| Drug trafficking | −.1147** | (.027033) |
| Other drug crime | −.01139 | (.041254) |
| Driving-related crime | −.18755** | (.016514) |
| Defendant characteristics: | | |
| Age | .000854 | (.000653) |
| Female (yes = 1) | .873055** | (.080055) |
| Active criminal justice status | .191588** | (.013974) |
| Previous felonies | .244761** | (.013558) |
| Previous failure to appear | .123918** | (.015137) |

NOTE.—The model includes county and year effects (not shown). Asymptotic standard errors are in parentheses. There are 58,585 observations.

+ Statistically significant at the greater than 10% level.

** Statistically significant at the greater than 1% level (two-sided test).

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