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## Does the Type of Legal Representation Affect Sentencing Outcomes?

### Abstract

This paper examines the potential differences in sentencing outcomes for public defenders compared with private attorneys. I explore the economic literature for explanations, implications, and results. There is a need for extensive research within the field of economics to provide empirical results to offset the mostly game-theoretically dominated discussion of the criminal justice system. The results are inconclusive due to a lack of statistical significance and potential selection bias in the data. Future research relating to this study is also discussed.

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## 1 Introduction

Criminal defense expenditures have come under much criticism recently because differential expenditures are equated with unequal justice. The public criticisms also believe that the system is biased toward the rich who can afford better legal representation (Goodman & Porter, 2002). In light of public concern, it is important to provide a discussion to begin the process of confirming or dispelling these arguments. This paper is the start of such a discussion.

The defense attorney's role in the criminal justice system has not been discussed in much theoretical or empirical detail, particularly within the field of economics. The original goal of this paper was to measure the difference in sentencing outcomes, holding all else constant, that is attributable to the type of representation (public defender vs. private lawyer). I do estimate a reduced form equation, but due to complications with the data, I cannot make any conclusions regarding the question. My hope is that economists and my own future research will eventually be able to answer this question without cautions regarding selection bias.

The paper follows a standard structure. For the theoretical framework, I discuss statistical discrimination and also the economic approach to the court system as applied to the question of interest. This provides a "structural model" which leads into the ultimate reduced form equation which I estimate. The paper concludes with suggestions for future research.

## 2 Literature Review

There is a large literature on the discrepancies in sentencing outcomes. Some have attributed this variation to judicial discretion, which often stems from sentence departures, and prosecutorial discretion, which has more relevance due to the increased role of plea-bargaining. Due to the discretion that these court actors have, many researchers have found that legally irrelevant factors do still play a significant role in sentencing outcomes. Many researchers have been interested in the Federal Sentencing Guidelines to address the possible unwarranted disparity and how the characteristics of the defendant can affect

the sentence outcome.

Bushway and Piehl (2001) are two such researchers, who desire to answer the question, is there racial discrimination due to judicial discretion? They use data from Maryland, which was collected by the Maryland Administration Office of the Courts. They found evidence for racial discrimination after taking into account the variation that is inherent in the sentencing itself. Albonetti (1997) looks specifically at the defendant characteristics and how they affect the sentence outcomes for drug offenses in 1991-1992. Albonetti addresses the following three things: the direct effect on the length of imprisonment of defendant characteristics, the direct affects on sentence outcomes of guilty pleas and of sentence departures, and the “conditioning effect” of a defendant’s ethnicity on the relationship between guideline offense level, criminal history points, guilty pleas, departures, and sentence outcomes. Her data set is called “Monitoring of Federal Criminal Sentences 1991-1992.” Albonetti’s findings include that the variables deemed legally relevant are statistically significant (criminal history, crime severity, etc.); that the defendant’s gender, ethnicity, education, and citizenship status exert significant direct effects on sentence outcomes when guideline-defined legally relevant variables and processing variables are controlled for. Something that was surprising for her was that the effect of pleading guilty was weak compared with judicial discretion to depart from the guidelines and circumvent the guidelines. Most importantly, her findings reveal that a “defendant’s ethnicity conditions the effect of guideline offense level, criminal history points, and type of drug offense on sentence outcomes” (Albonetti, 1997). These two studies address defendant’s ethnicity and how it affects the sentencing outcome. This is not my focus, but provides some guidance as to how sentence disparity is addressed.

Marian Williams (2002) is the only one, that I am aware of, who has asked the question of whether the type of representation has an extensive role on the sentence outcome. She examined data from the Florida Justice System, which included only convictions that had been obtained through plea agreements. Williams found the type of attorney to be insignificant for the three regressions performed and that the legal variables had the largest impact.

As was described in the above section, there are quite a few researchers who have

dealt with the question of sentence disparity caused by defendant characteristics, judicial departures, and the type of representation, with different data sets. After reading this literature, I realized a need for an economic analysis of the effect of the type of representation on sentencing outcomes.

## 2.1 Statistical Discrimination

For an economic explanation of how different types of defense attorneys might affect sentencing outcomes, I turn to statistical discrimination. Statistical discrimination is often used to explain group inequality. Essentially, the idea is that race or gender could be a useful signal of productivity, given that productivity is imperfectly observable and correlated with group identity (Norman, 2003). This is the theoretical perspective that I consider most applicable to the concern of how defendant characteristics affect sentencing outcomes. In addition to statistical discrimination applying to different sentences for reasons of gender and race, this theory can also be applied to the effect of the type of representation when it is seen as a proxy for socioeconomic class. Socioeconomic class is a defendant characteristic that can potentially affect sentencing outcomes, if the judge identifies the poor as a group that are less productive and more likely to commit crime.

Applying the theory of statistical discrimination, judges attempt to manage uncertainty and the asymmetric information inherent in the judicial system by developing “patterned responses” based upon group characteristics. It is not uncommon for judges (or everyday citizens) to use stereotypes that link race, gender, and outcomes from earlier stages to the likelihood of future criminal activity. The real challenge for judges is that there is no clear-cut way to accurately predict future criminal behavior, which creates uncertainty surrounding the sentencing decision. If we focus on class instead of race and gender, given that the income of the defendant is unknown to the judge, jury or prosecutor, but the type of attorney can be an indicator of this unknown variable.

Judges and prosecutors are trying to minimize the social loss of crime, as will be discussed in more detail in the next section. According to the literature, wealthy defendants have higher opportunity costs, and therefore, face harsher relative penalties than a less wealthy individual (Kobayashi & Lott, 1996). The legal system can adjust to variations in

a defendant's opportunity costs in a few ways. The way that Kobayashi and Lott (1996) prefer is to have the prosecutors' behavior vary with the defendants' opportunity costs. Another response is to impose longer prison terms on the poor to offset their lower opportunity costs. This provides one explanation for why judges might identify those defendants with public defenders as poor individuals and would give them longer sentences to offset opportunity cost differences.

Judges and prosecutors are not only concerned with penalties that offset opportunity cost differences, but are also concerned with recidivism. The question arises, why are the poor more likely to commit crime? Lott (1990) provides a transaction-costs explanation to answer this question. He argues that, in principle, it should be possible for people to use their human capital to secure loans. When applied in practice, these loans are very rare due to bankruptcy and antislavery laws, which make it impossible for the lender to realize this so-called collateral in the event of a default. Lott (1990) argues that these laws therefore "raise the transaction costs of legal purchases relative to illegal ones." From this, we can view the criminal justice system as allowing people to borrow against their future human capital: a criminal uses the item now and only pays for it later if he is caught and imprisoned. Essentially, differential transaction costs for using capital markets can account for differential crime rates, instead of arguments regarding differential time preference or different utility functions (Lott, 1990). When a judge understands this difference and is concerned with reducing recidivism, he might give poor people harsher sentences to discourage them from borrowing against their future through the criminal justice system. With this theoretical framework, it makes sense that a judge would attribute low income or recidivism with a defendant who is being represented with a public defender.

From the above discussion, I would hypothesize that defendants with public defenders, on average, would receive harsher penalties. In the following sections, I will provide alternative discussions which may question this hypothesis.

### 3 Economic Theory of the Court System

#### 3.1 Gary S. Becker's Theory of Crime and Punishment (1968)

The model that Becker puts forth regards the analysis of crime as just a general analysis of external harm or diseconomies. His model is concerned less with the detailed incentives of the individual players, but instead focuses on the “macro” concerns of society as a whole with respect to crime. Becker produces a model that address damages to society, costs of apprehension and conviction, supply of offenses, and punishments. He uses these components to create a Social Welfare Function which is the total loss of income to society due to crime and punishment.

Becker begins with a discussion of the damages of a crime to society. First, he states that the harm to society of a crime committed would tend to increase with the activity level, as defined here:

$$H_i = H_i(O_i) \quad (1a)$$

$$H'_i = dH_i/dO_i > 0 \quad (1b)$$

where  $H_i$  is the harm from the  $i$ th activity and  $O_i$  is the activity level. Second, he defines the gain that offenders receive from committing the crime similarly, with increasing social value with the number of offenses:

$$G = G(O) \quad (2a)$$

$$G' = dG/dO > 0 \quad (2b)$$

From this, Becker produces the net cost or damage to society of the offenses:  $D(O) = H(O) - G(O)$ . Becker explains that the punishment an offender receives is related to the loss of resources used up in the crimes. This is not identical to the net damages to society, as is evident when discussing crimes that involve the lives of people.

Second, Becker addresses the cost of apprehension and conviction. One can think there exists a production function which relates the output of police and the courts with various inputs of manpower, materials and capital, as in  $A = f(m, r, c)$ . Increased “output” would



be more costly as in the relation:

$$C = C(A) \quad (3a)$$

$$C' = dC/dA > 0 \quad (3b)$$

Becker then creates a more “realistic” or general relation of activity:  $A = h(p, O, a)$  where  $p$  is the probability of conviction,  $O$  is the offense and  $a$  is arrests and other determinants of “activity.”

Becker’s third component is the supply of offenses. The supply function of offenses for an individual is given by the following relation:

$$O_i = O_i(p_i, f_i, u_i) \quad (4)$$

where  $O_i$  is the number of offenses he would commit during a given period,  $p_i$  is his probability of conviction,  $f_i$  is his punishment if convicted, and  $u_i$  is a vector representing his other influences. These other influences are any of the following: income, willingness to commit a crime, family and peer influences, subjective concept of the probability of conviction he faces, and the expected punishment, etc. The total number of offenses can be defined as the “market offense function” which is the sum of all the  $O_i$  or  $O = O(p, f, u)$ . This function is negatively related to  $p$  and  $f$ .

The final component of Becker’s model is punishment. He explains that punishments do not just affect the offenders who receive them, but also other members of society through the various costs that punishments might produce. The total social cost of punishments is the cost to the offenders plus the cost or minus the gain to other members of society. Social costs are then defined in terms of offender costs:

$$f' = bf \quad (5)$$

where  $f'$  is the social cost and  $b$  transforms the offender cost into social cost; therefore, the size of  $b$  varies with different punishments.

With the above four components, Becker derived optimality conditions for social policy. Using the social welfare function of welfare economics, he presents the following social loss from offenses:

$$L = L(D, C, bf, O) \quad (6)$$

The idea is to select values of  $f$ ,  $C$ , and perhaps  $b$  that minimize  $L$ , where  $L$  presumably has the following first-order conditions:

$$\partial L / \partial D > 0 \quad (7a)$$

$$\partial L / \partial C > 0 \quad (7b)$$

$$\partial L / \partial bf > 0 \quad (7c)$$

Becker defines all the different components in income and therefore the “optimal” decisions are those which minimize the loss in income from crime. Many are concerned with vengeance, deterrence, safety, rehabilitation, and compensation when dealing with crime. Becker shows that minimizing the social loss in income results in all these important policies. The most important contribution of this model is that it shows that optimal policies to combat illegal behavior are part of an optimal allocation of resources (Becker, 1968).

In the following discussion, keep Becker’s model in mind. The discussion becomes more specific about the individual decisions that play a role in this optimal allocation of resources.

### 3.2 The Legal Process: A General Framework

To begin a discussion of the legal process, we have a defendant accused of crime X. The assumption is that both the prosecutor and the defendant behave rationally, meaning both act to maximize an appropriately defined utility function (Grossman & Katz, 1983).  $\theta_I$  = probability of conviction where  $I$  equals  $i$  for innocent and  $g$  for guilty. It is assumed that those who are innocent are less likely to be convicted ( $\theta_i < \theta_g$ ) (Grossman & Katz, 1983). This is based upon the assumption that guilty defendants have weak cases relative to innocent defendants ( $a_i > a_g$ , where  $a_I$  is the strength of their case). There is also asymmetric information, in that the defendant’s guilt or innocence is private information, which the prosecutor is not aware of. In addition, it is assumed that the innocent are more risk averse relative to those who are guilty (Landes, 1971).

The prosecutors are assumed to act as “social planner” and therefore, act entirely in the states’ interest (Grossman & Katz, 1983). From Becker’s discussion, we know that the states’ interest is to minimize the loss in income from the crime. The appropriately defined

utility function can be thought of in a few ways. Some have argued that they maximize the expected penalty net of their offices expenditures (Kobayashi & Lott, 1996). Others have argued that the prosecutors maximize the number of guilty defendants they put in jail (Landes, 1971), while minimizing the number of innocent defendants they put in jail (Baker & Mezzetti, 2001; Grossman & Katz, 1983). In addition, as a social planner, they may minimize the total amount of crime (Baker & Mezzetti, 2001). The utility function for the prosecutor is the expected number of convictions:

$$E(C) = \sum_{i=1}^n \theta_i * S_i + \lambda(B - \sum_{i=1}^n R_i) \quad (8)$$

where  $S_i$  is the prosecutor's preference of the sentence length,  $B$  is the prosecutor's budget available, and  $R_i$  is the resources the prosecutor uses in the litigation process (Landes, 1971). The prosecutor maximizes this utility function through choices in plea bargains, trials and the amount of resources devoted to the litigation process.

The defendant and defense attorney are seen as similar entities in the literature. The defense minimizes the expected penalty from a plea bargain or a trial. Another description would be that the defendant is facing two future states: acquittal ( $A$ ) and conviction ( $C$ ). The defendant consumes goods in the future ( $G$ ) and also has to devote resources to his defense ( $D$ ).  $W$  is the given wealth endowment and is defined as  $W = G + D$ . The defendant wants to maximize his expected utility given these two possible states and his probability of conviction ( $\theta_i$ ). This expected utility function is defined by:

$$EU = \theta_i * U(G : C) + (1 - \theta_i) * U(G : A) \quad (9)$$

where the defendant maximizes  $EU$  subject to  $W$  (Goodman & Porter, 2002; Landes, 1971). The trial penalty the defense attorney faces is defined by :  $T(a_i) = \theta_i * F_i + D_i$ , where  $F_i$  is the sentence. There is also a penalty from a plea that the defendant faces,  $B(a_i)$ , if he chooses to accept the plea bargain (Kobayashi & Lott, 1996).

Criminal litigation in this model has two stages. The first stage the prosecutor offers a plea bargain. In this stage, the prosecutor only knows the distribution of  $a_i$  for the population of indicted defendants. At this stage, only the defendant knows the strength of his case and his innocence or guilt. The defendant weighs the penalty from the plea and

the penalty from trial to decide which one will maximize his expected utility. The innocent defendants will reject the plea if  $B(a_i) \geq T(a_i) + \delta(a_i)$  where  $\delta(a_i)$  is the risk penalty. Likewise, the guilty defendants will reject the plea if  $B(a_g) \geq T(a_g) + \delta(a_g)$  (Kobayashi & Lott, 1996). This serves as a “self-selection” mechanism, as a screening device, and as an insurance device against innocent defendants being punished wrongly (Grossman & Katz, 1983). If the plea is accepted, the game ends, and he receives the penalty  $B(a_I)$ . If the plea is rejected, the case goes to trial (if the prosecutor decides the case is strong enough) (Baker & Mezzetti, 2001). In this second stage, the litigants expend resources to try and affect the probability of conviction ( $\theta_i$ ). Due to the prosecutor learning the strength of the defendant’s case through pretrial discovery, the problem with asymmetric information is minimal at the trial stage (Kobayashi & Lott, 1996).

### 3.3 Implications for Model

It is ideal to take a theory and produce an empirical model that will estimate the relationships and outcomes described. We now ask: what determines sentencing outcomes? Answering this question will allow a framework from which to develop a “reduced form” equation to eventually estimate.

The theory above described the legal process and focused mostly on the process of conviction. The discussion of the sentence was not related to how the sentence was decided, but rather that the sentence affected the choices made by the players in the game. If we think of the sentencing outcome as being affected by the conviction and the factors that affect it, we can use the above theory to develop the components which might affect the sentencing outcome.

The theory treats the sentencing outcome as a conclusion of a game between the defendant, prosecutor and the judge (potentially). This game is affected by the preferences (or reaction/utility functions) of the the players. The prosecution wants to maximize the sentencing outcome and the defendant wants to minimize it. This can, therefore, play a role in determining the sentence outcome. The game has many factors which affect its conclusion, such as the probability of conviction. This probability is affected by the litigation expenditures of both the prosecutor and the defendant or defense attorney.

It is also affected by the strength of the case. In addition to this, the probability of conviction is likely to be a function of the mode of conviction. The higher the probability of conviction in a trial, the more likely a defendant will accept a plea bargain. The expenditure of resources is also dependant upon the mode of conviction in that litigation costs are likely to be higher if convicted in a trial. Implicitly speaking, the above theory assumes that conviction is dependant upon the level of defendant's risk aversion and whether the defendant is innocent or guilty (both are private information). Sentence outcomes are also directly affected by the penalty that would potentially result from the mode of conviction. This penalty is in turn affected by the criminal history of the defendant and whether the defendant had obtained pretrial release or not.

From the theory of statistical discrimination, we can infer various determinants of sentencing outcomes. Of interest are characteristics that are related to possible recidivism such as race, gender, age and socioeconomic class.

In light of the private and unobservable nature of some of the factors described, I will use this information to develop a "reduced form" model from what is observable and available in the data set. These factors are described in detail in the next section which develops an empirical model.

## 4 Empirical Model: Reduced Form

I use two versions of the same model, one where the dependent variable is the sentence length in months and one where the dependent variable is the natural log of the sentence in months. The natural log takes care of potential outliers and is provided for comparison. I chose to divide up both models into two groups: one with first time offenders and one with everyone. The idea behind this is that the criminal history score already includes immeasurable affects of previous legal representation: the criminal history of an offender is a function of past representation. By focusing on brand new offenders, that problem is removed such that we can look at the affect of public defenders.

The following two equations are the major regressions that were performed:

$$\text{sentence length}_i = \alpha + \beta X_i + \epsilon_i \quad (10a)$$

$$\ln(\text{sentence length}_i) = \phi + \gamma X_i + \omega_i \quad (10b)$$

The variable  $X_i$  in the above equations is a vector of independent variables that includes the following: *female*, *black*, *Hispanic*, *other-races*, *age*, *age*<sup>2</sup>, *guilty plea*, *bail \* jury*, *Priors*, *Priors*<sup>2</sup>, *crack*, *assigned*, and *expected sentence*. The dependent variable, *sentence length*<sub>*i*</sub>, is measured in months of incarceration.

#### 4.1 Description of Variables

As follows from the above explanation of the model, the dependent variable (*sentence*) in this study is a continuous variable of the actual sentence outcome in months of incarceration<sup>1</sup>. I combined the drug charges into six categories (binary variables): Heroin, (Meth)amphetamine, crack cocaine (in guidelines called cocaine base), powder cocaine, marijuana, and other drugs. These variables were not used directly in the analysis, except for *crack* in the OLS regression, and *crack* and *Meth* in the probit regression for representation choice. For race, there are three dichotomous variables representing *black*, *Hispanic* and an “other” (*other race*) category that included Asian and Native Americans. White defendants make up the omitted group and are the reference category to be used for comparative interpretation of the coefficients. Gender is represented by a single dichotomous variable where male is the referent group (*female*). The offender’s *age* is measured in years indicating the age at the time of the survey in 1997. I also include a variable that is *age*<sup>2</sup>, which serves to take into account the changes in sentences as age increases.

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<sup>1</sup>My data had 36 people who were sentenced to *life*. These people were coded as 10,000 which is a completely arbitrary number for life imprisonment. Instead of using this code, I chose to alter my data such that the “life” number was recoded by the following:

$$\text{Life} = (\text{LifeExpectancy} - \text{Age}) * 12 \quad (11)$$

(the sentence length is measured in months). This alteration made it possible for me to deal with the large right-hand “tail”. Due to the somewhat significant pile-up at the top, I considered using Tobit to deal with the upper-range pile-up, but decided that this calculation is legitimate.

The model also includes two binary variables indicating disposition of the case: *jury trial* indicates that the individual was found guilty by a jury and *guilty plea* indicates that the offender plead guilty prior to trial. In addition there is a dichotomous variable that describes whether the offender made bail (*bail status*) or not, which is used in interaction with jury trial. To take into account the effect of the representation, there is a binary variable (*Assigned Attorney*) for whether the individual was assigned his attorney (coded 1) or whether the attorney was hired (coded 0).

To address the effect of an individual's criminal history on the sentence outcome, I have included a prior incarceration variable ranges from zero to nineteen incarcerations (*priors*). To try and capture the effect of increases in sentences, as criminal history becomes more extensive, I have included a *priors*<sup>2</sup> variable. This is helpful because my measure for "expected sentence" is created using only the individuals drug type and activity type, while in the grid, criminal history would also be included. I, also, include previously described *crack* that accounts for the extra affect of crack on the sentence outcome. I added all the drug types into the model, but crack was the only one that was still significant despite the specification of *expected sentence* and also significantly affected the fit of the model. One reason for crack remaining significant could be explained by the possible low entry costs to producing crack, and therefore receives harsher punishments for deterrence purposes. My final variable is the *expected sentence* which attempts to address the variation within the sentencing guidelines themselves and is a proxy for "presumptive sentence."<sup>2</sup>

## 4.2 Predictions from Theory

The above discussions of the theory not only provide explanations and implications for my model and its specification, but also have applications to provide hypothesized signs for the coefficients once estimated. Expected signs are helpful for comparison to the actual results. We can then evaluate the data and whether the results should be taken seriously.

Many in the literature view plea bargaining as a mode for reducing sentences. The

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<sup>2</sup>I do not have the luxury of determining the exact grid that each individual in my data set belong to, so to find an "expected sentence", I instead used the mean sentence for each drug type and activity type (severity of dealing and possession).

theory states that if the penalty from plea bargaining is higher than the penalty from trial then the defendant will go to trial. This suggests that plea bargains result in a reduction of sentencing outcomes and therefore would have a negative coefficient. Pre-trial detention should increase the sentencing outcome, or in the case of my model, making bail should have a negative coefficient.<sup>3</sup> From the sentencing guidelines themselves, a longer prior criminal history results in higher sentences. This means that the prior history variable should have a positive coefficient. In addition, the larger the expected sentence, the larger the sentence outcome; the coefficient on expected sentence should be positive.

For demographic characteristics as controls, my hypothesized values for the coefficients is taken from the literature and not the theory section. Most studies have reported a negative coefficient for women. For minorities, in general (there is some disagreement), the coefficient is positive. For age, the coefficient tends to be positive, but then negative for age squared because as offenders get older sentences increase at a decreasing rate.

The following provides an explanation for why the public defender would benefit the defendant. A public defender is a part of the “public system” and it is quite possible that he has an advantage being part of the court work group. If a public defender is assigned to a specific court, she may become accustomed to working with the same judge or prosecutor. Being “buddy-buddy” with the judge or prosecutor could allow her access to lesser sentences for her clients, or could help her to have the case resolved faster in a plea-bargain, again to a lesser charge. Walker, Spohn and Delone (1996) state that public defenders are more successful than private attorneys in negotiating favorable outcomes for their clients, as part of the court work group. Unfortunately, courtroom politics and attitudes cannot be measured by a single variable (or any variable at all!), such that this

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<sup>3</sup>Landes (1973) explains the effect of the bail system on sentencing outcomes. When a defendant is not released, either because bail was denied could not be met, the defendant is more likely to plea bargain. Pretrial detention lessens the defendant’s negotiating power and results in longer sentences if he pleads. In addition, the defendant has a higher probability of conviction in a trial than if he was released on bail. One of the explanations for this is that detention adversely affects the productivity of the defendant’s resources; it hampers consultation with lawyers and with the process of getting witnesses. Landes (1973) also states that “if making bail is a positive function of wealth, then the effects of pretrial imprisonment will fall most heavily on low-income defendants.”



is an implicit benefit. If a public defender can be proven to provide a favorable outcome, then a possibility of a relationship to the above argument exists.

The issue of differing defense expenditures on sentencing outcomes is not directly associated with the type of defense attorney in the literature, but I can imagine that the analysis can be applied. Economists do not disregard defense spending, but do not believe, as the general public might, that differential expenditure is unfair or has a “negative social outcome.” Goodman et al. (2002) accepts the premise that additional defense spending is productive in terms of reducing the probability of conviction and the potential sentence, but finds no indication that this would be “unfair.” Kobayashi et al. (1996) show that disparities in criminal defense expenditure actually insures that the guilty, and not the innocent, will be punished. This does not insure that when guilty, a poorer individual receives the same sentence, but when innocent, she will not be found guilty. Therefore, this suggests that the private attorney will be more productive through higher defense expenditures and therefore the coefficient on public defender will be positive.

My variable of interest, the type of representation, is more difficult to decipher. As recently discussed, I have some evidence that a public defender might benefit the defendant and from the discussion of statistical discrimination and productivity arguments, it would follow that the public defender might cost the defendant in terms of a higher sentencing outcome.

### 4.3 Data

As I searched for data that would allow me to estimate my reduced form described above, I discovered that data are very limited. I found some data sets that could have been ideal, but were missing my variable of interest, the type of representation. In the process, I also found that there is a discussion in the literature expressing frustrations with the lack of court-related data available. In one such study, King et al.(2001) examine issues centering on the collection of court-related data. Through in-depth interviews with twenty-seven researchers around the country who have experience collecting court data, the overwhelming majority reported encountering problems in collecting court data and admitted the use of several different strategies. These strategies include using a contact within or close to the

agency, as well as withholding the exact nature of the researcher's study. King et al.(2001) conclude that these strategies only alleviate the difficulties of the individual researcher and do nothing to help reduce the problems that future researchers will encounter.

As a "future researcher," I found many stumbling blocks in my path to data collection. I decided to "settle" for the best available data set titled "Survey of Inmates in State and Federal Correctional Facilities, 1997." This data set is a nationally representative self-report survey of federal and state inmates conducted by the Bureau of the Census for the Bureau of Justice Statistics. Through personal interviews from June through October, 1997, inmates in both State and Federal prisons provided information for the survey regarding their current offense and sentence, criminal history, socioeconomic status, incident characteristics, family background and personal characteristics, prior drug and alcohol use and treatment programs, gun possession and use, and prison activities, programs and services. The 1997 survey is the most recent one, in which the inmates were selected according to a two-stage stratified sampling plan, first selecting prisons and then inmates. I focus on the 4,787 offenders with a controlling drug offense; this sub-sample eliminates murderers, robbers, burglars, and others who had a secondary drug offense. I did so because those convicted of drug crimes had the most complete data regarding the nature of the crime, criminal history, age, gender, race, plea bargain, etc. I then separated the federal inmates as my primary focus due to the large variation in guidelines by state. This results in a final sample size of 1498 inmates.

Many problems arise with self-report surveys. One issue is that the accuracy is influenced by the respondents' honesty and memory and by interview bias. For this particular survey, because the estimates come from a sample, they may differ from figures from a complete census using the same questionnaire, instructions, and enumerators. The problems of non-response resulted from failing to obtain cooperation with sample prisons, considered first stage non-response or failing to obtain completed interviews with sampled inmates, which is second stage non-response.

In light of these concerns, I chose to move forward with using this data set due to the difficulty with getting more accurate data. Despite the fact that the interviewer checked the inmate's answers against their records in some cases, what the interviewer coded is

often inconsistent with what the inmate reported. Keeping this in mind, my results must be interpreted with caution. A more important reason to interpret my results with caution is the fact my data is post-conviction. To really answer the question regarding the effect of the type of attorney, I would want pre-trial and post-trial data so as to be able to capture the accused who were acquitted.

## 5 Empirical Results

Table 1 reports the results from regressions of both full sample and first-time offenders. One specification uses OLS to analyze the continuous dependant variable, *sentence length<sub>i</sub>*, measured in months of incarceration. This is column (a) for the full sample and column (d) for first-time offenders. The second specification is OLS of the  $\ln(\textit{sentence length}_i) * 100$ . This is column (b) for the full sample and column (e) for first-time offenders. The third column (column (c) for full sample and column (f) for the first-time offenders) included is a conversion of the percentages in the log-linear model to months for easy comparison between the two specifications. The average sentence length is 117.73 months for the first-time offenders and 126.38 months for the entire sample.

As can be seen from Table 1, the results are mostly consistent across linear and log-linear models, in terms of significance and sign. My variable of interest is the type of attorney that the individual had during his disposition. The most important thing to note is that this variable is sensitive to specification. It is not significant in the general OLS model, but is slightly (10% level) significant in the log-linear model. Additionally, the effect of the representation is relatively small, reducing the sentence by approximately 8.9 months. The sign of the coefficient is not as I hypothesized from statistical discrimination and productivity of increased defense expenditure standpoints. It is, however, consistent with the idea that the public defender is part of a “public system” and will benefit the outcome. Due to the fact that this is measuring the effect of the type of representation, given that the individual was convicted, it is virtually impossible to provide a confident interpretation of these results.

The coefficient for whether the defendant pled guilty is alarmingly large and significant.

Table 1: OLS Estimates for First-Time Offenders and Full Sample

Regressor	Full Sample			First-Time Offenders		
	(Months)	(%)	(Months)	(Months)	(%)	(Months)
	(a)	(b)	(c)	(d)	(e)	(f)
Intercept	25.73 (35.42)	320.90 (26.76)	404.42 (33.82)	50.71 (43.39)	322.31 (31.44)	379.49 (37.03)
Female	-35.35*** (4.45)	-35.66*** (4.52)	-45.06 (5.71)	-32.36*** (4.94)	-31.64*** (4.71)	-37.24 (5.54)
Black	6.51 (7.44)	11.42** (6.10)	14.44 (7.71)	6.03 (9.29)	8.71 (7.21)	10.26 (8.49)
Hispanic	0.36 (6.25)	2.61 (5.23)	3.30 (6.61)	-4.44 (7.35)	-0.33 (5.87)	-0.38 (6.91)
Other Race	15.64 (16.00)	10.05 (14.11)	12.70 (17.83)	1.08 (17.40)	-3.02 (15.99)	-3.55 (18.82)
Age (In Years)	5.07*** (1.39)	4.95*** (1.11)	6.25 (1.40)	4.56*** (1.62)	5.10*** (1.25)	6.01 (1.48)
Age Squared	-0.06*** (0.02)	-0.05*** (0.01)	-0.06 (0.02)	-0.05*** (0.02)	-0.05*** (0.01)	-0.06 (0.02)
Guilty Plea	-103.61*** (8.39)	-70.20*** (5.01)	-88.72 (6.33)	-103.52*** (10.34)	-71.03*** (6.36)	-83.62 (7.48)
<i>Bail * Jury</i>	-37.18*** (11.37)	-11.29 (7.09)	-14.27 (8.97)	-37.26*** (13.27)	-10.57 (8.46)	-10.57 (9.96)
Public Defender	-5.46 (4.86)	-7.01* (3.84)	-8.86 (4.86)	-5.93 (5.66)	-5.44 (4.49)	-6.40 (5.28)
Convicted of Crack	24.45*** (7.23)	19.36*** (5.40)	24.47 (6.82)	19.06** (8.85)	20.09*** (6.48)	23.65 (7.63)
Prior History	9.20*** (2.94)	6.23*** (2.42)	7.88 (3.06)	...	...	...
Priors Squared	-0.67*** (0.25)	-0.44* (0.24)	-0.55 (0.30)	...	...	...
Expected Sentence	0.57*** (0.10)	0.56*** (0.08)	0.71 (0.10)	0.48*** (0.11)	0.52*** (0.09)	0.61 (0.11)
$\bar{R}^2$	0.27	0.28	...	0.26	0.27	...
F-Statistic	33.37	38.43	...	24.25	37.33	...

This implies that, from my estimation, an offender is much better off pleading guilty compared with any other option. So regardless of representation, pleading guilty is the recommended strategy to reduce the sentencing outcome. This increases the concern I have for this estimation because pleading guilty accounts for such a large reduction in the outcome.

## 6 Conclusions

The effect of the type of representation on sentencing outcomes remains quite evasive to the researcher. A few explanations exist for why this paper has not been able to put forward a confident answer to this question. The first is that data that can assist in answering this question are virtually non-existent. Most criminal justice data are difficult to gain access to, and the data that is publicly available often leaves out the type of representation. Another issue with providing a general conclusion is that a set model for how to go about addressing the type of representation effect on sentencing is unavailable. Finally, my data faces a problem with selection bias. The conclusion can be phrased in the following way: we fail to reject the null-hypothesis that the effect of the type of representation is zero, given the defendant was convicted.

The contribution of this paper may be small, but it calls attention to the lack of scholarship from economists empirically. Economists could make large additions to the literature through modelling that provides a basis for empirical research and results. From this, a more specified reduced form, which also includes pre-trial information, could be estimated.

As criminologists have discussed, better data are needed to address these questions. Data that would allow the researcher to evaluate whether the judge is participating in statistical discrimination and using a public defender as a signal of recidivism would benefit the validity of this theory being included. Not discussed in detail, but also important to future research is that attorneys could be instrumental in the initial stages of the criminal justice system, which could not be measured here due to lack of data. This would be able to address the question: does the type of attorney have an effect on whether a defendant

pleads guilty, a case is dropped, or a defendant is convicted?

The question of representation produces policy implications. The Federal Government has attempted to reduce the sentence disparity through sentencing reforms and guidelines. If a basis for legitimate concern regarding representation exists, along with the desire of the society, then perhaps the Federal Government could use the sentencing guidelines to address the disparity related to the type of representation. If, instead, there is no reason for concern, this discussion could dispel the criticisms of the differential defense expenditures.

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