Prudent Plea Bargaining

Bryan C. McCannon[1]
West Virginia University

Mark Wilson
Saint Bonaventure University

01 March 2012

Abstract

An overwhelming proportion of convictions in the U.S. criminal justice system come from negotiated guilty pleas where defendants receive a reduction in the sanction that could arise if convicted at trial. This reduction is commonly known as the *plea discount*. Given the empirically observed disparities in outcomes of the criminal justice system, understanding how institutional features and differences in individual-level characteristics affect the plea bargaining process is important. While theoretical research in law and economics focuses on the determinants of bargaining failure, the multiplicity of equilibria (with successful plea bargaining) frustrates the study of the drivers of the plea discount. The objective here is to use experimental economics to investigate the determinants of the plea discount. The focus is on the prudence of an individual, which is the willingness to absorb an uncertainty in a better state (e.g. precautionary savings). An asymmetric, alternating-offers bargaining game is constructed. Treatments differ based on two important dimensions of criminal justice institution: bargaining power, thought of as differing costs to prolonged conflict in bargaining, and stakes. We document that prudence is correlated with the plea discount and bargaining failure. Specifically, prudent individuals obtain less favorable plea discounts when the stakes are high or experience asymmetric bargaining power.

Keywords: experiment, plea bargaining, plea discount, prudence, risk preference

[1] Corresponding author: Department of Economics, West Virginia University, P.O. Box 6025, Morgantown, WV 26506, bryan.c.mccannon@gmail.com. Wilson: School of Business, Saint Bonaventure University, 3261 W. State Road, Saint Bonaventure, NY 14760, mwilson@sbu.edu.
We would like to thank Shawn Bushway, Greg DeAngelo, Brad Humphreys, Allison Redlich, Colleen Tokar Asaad and participants at the seminar at West Virginia University for helpful comments and discussions.

1. INTRODUCTION

Plea bargaining dominates the criminal justice system in the United States In fact, more than 95% of felony convictions come from guilty pleas. Therefore, it is not an understatement to claim that sentencing occurs at the bargaining table. It is crucial, then, to understand the determinants of bargaining outcomes and, specifically, individual differences in plea negotiations.

An important outcome of the guilty plea is the size of the reduction in sanction achieved, commonly known as the *plea discount*. Plea bargaining takes numerous forms in practice. The prosecutor and defense attorney/defendant can negotiate directly over the sentence recommendation (sentence bargaining), the crime to be charged (charge bargaining), or facts of the case (fact bargaining). Ultimately, if successful they lead to a reduction in the sanction received relative to what can arise if convicted at trial. Bargaining not only saves the cost for both parties, but also avoids the uncertainty of the trial.

Therefore, one would expect the risk preferences to affect the plea discount. It is well documented that a defendant who is risk averse would be willing to accept a plea offer, even if it is not that generous, in order to avoid the uncertainty of trial and the potential for a severe sanction (Easterbrook, 1983). Such observations have lead scholars to point out the insurance feature of plea bargaining (Grossman and Katz, 1983) and use this reasoning to argue that the modern institution of plea bargaining is flawed as it disproportionately punishes individuals based on their risk preferences, rather than guilt (Bibas, 2004).

While simple risk aversion can be expected to influence plea bargaining, we argue that there is an overlooked feature of risk preferences that are especially important: *prudence*. Prudence is the decision on how to absorb a risk. Would the individual prefer to take on a risk in a better state of the world, or in a worse state of the world? A prudent individual prefers to absorb the consequences of a risk when his/her quality of life is better, rather than worse. In finance, prudence is the risk preference that encourages precautionary savings. An individual is prudent if she engages in precautionary savings when her income is high facing, for example, an uncertainty of whether she will keep or lose her job. If the adverse state arises (e.g. termination), the precautionary savings can be used to improve one's well-being. Just as a prudent individual will engage in precautionary savings, we hypothesize that a prudent individual will be driven to

accept a plea bargain in the positive state rather than allow for a compounding of losses in the negative state. For illustration, indeterminate sentencing leaves the actual time served to the discretion of a parole board. The uncertainty this creates will affect the individual at the end of a relative shorter sentence achieved via plea bargaining or in the unfortunate state of a lengthy sentence resulting from a jury trial conviction. A prudent individual would prefer this uncertainty with a plea bargain, rather than at the end of a long prison sentence.

A prudent negotiator would, therefore, have a higher willingness to take a plea discount, *holding fixed the degree of her risk aversion*. One would expect, then, for a prudent negotiator to not be able to command as favorable of a plea discount as an imprudent defendant.

We test this hypothesis using a laboratory experiment intended to replicate the important features of plea bargaining. We design an alternating-offers bargaining game with asymmetric information. Subjects either have conflicting preferences (i.e., guilt) or common preferences (i.e., innocence), but only one side knows the state. A subject makes an offer to divide a fixed endowment and the other either accepts or rejects by making a counteroffer. If a counteroffer is made, then the other party chooses either to accept it or reject and counter the counteroffer. Rejection of offers is costly though. Bargaining goes back and forth until an agreement is reached or until the surplus is exhausted. Treatments where both sides have symmetric costs to prolonged bargaining conflict and when one party has escalated costs allow us to differentiate the effects of varying bargaining power. Treatments of bargaining over a smaller endowment (low stakes) and over a larger endowment (high stakes) allow us to assess how the plea bargaining discount is affected by the magnitude of the crime and, specifically, the interaction of institutional features and prudence.

Institutional features can affect the size of the plea discount. One would expect the bargaining outcome to depend on the outside options (i.e., default positions) of the parties (Nash, 1950). Amongst the institutional features of importance that may affect the default positions of the parties include the ability to be released from jail prior to conviction (e.g. bail) and the severity of the potential punishment (e.g. mandatory minimums and sentencing guidelines). For example, the accused differ in the availability of resources needed to make bail. Bargaining while incarcerated may lead to different outcomes (Bibas, 2004). For the prosecution, bargaining delay failure may put stresses on the case backlog. A second institutional feature of significant interest is the magnitude of the stakes involved. Individuals accused of the same crime can face

different potential sanctions due to widespread use of prior convictions in sentencing. High profile cases can benefit prosecutors in their re-election campaigns. Hence, behavior in high stakes cases need not be the same.

Along with decision making in the game, we administer an assessment to quantify the degree of subject's prudence. In this higher-order risk assessment, developed by Noussair, Trautmann, and van de Kuilen (2015), along with standard (lower-order) risk decision intended to measure risk aversion, subjects make decisions when racing risk as to which outcome a additional lottery would like to be added. In this way, the frequency at which a subject makes the precautionary savings decision of accepting the second risk to be added to the better outcome becomes a measure of her prudence.

We document that prudence is an important determinant of the plea discount in the experiments. Prudent, uninformed individuals do worse in the negotiations relative to less-prudent individuals. The effect is magnified in high stakes negotiations and when there is asymmetric bargaining power. Thus, prudence is an important behavioral driver in plea bargaining.

A substantial literature has identified wide disparities in outcomes of the criminal justice system. Most notably disparities based on race, ethnicity, and gender (Gazal-Ayal and Sulitzeanu-Kenan, 2010; Starr, 2015; Starr and Rehavi, 2015) arise. If one values consistency and equal protection/equal application of the law, then disparity is suboptimal. Legislative interventions, such as sentencing guidelines, that act to reduce discretion are mitigated if pre-trial bargaining reintroduces variations. Internal office organization can facilitate (or at least fail to mitigate) the problem (Bibas, 2009).

Bibas (2004) has, for one example, argued that differences between individuals lead to disparate outcomes. He highlights numerous factors, including defendant risk preferences, as important features of the process. These features can vary amongst individuals and are argued to drive disparities. Therefore, one would like to understand how individual characteristics interact with the institutional features to generate disparities in the plea bargaining outcomes. The focus here is on risk preferences and, specifically, prudence.

Theoretical investigations into the value of plea bargaining are limited. Absent divergent beliefs (e.g. optimism bias) and asymmetric information, economic theory predicts all cases will have successful negotiations without any trials. The intuition for the lack of use of the courtroom

is the existence of costs associated with trial. If both parties have access to the same information, as imperfect as it may be, then they should be able to form similar expectations regarding the outcome of the trial. This can then be agreed to prior to beginning the jury trial, saving the costs. The range of mutually-agreeable outcomes depends on the size of the costs to each party. If the costs to trial are great, then there is a wide bargaining zone of potential outcomes. Investigations into plea bargaining failure, then, rely on either divergent beliefs of the parties or asymmetric information. With these imperfections, the bargaining zone shrinks and trials occur when the set is empty.

One limitation of this framework is that, so long as asymmetric information or divergent beliefs are not too great (so that plea bargaining is successful), there is not a single outcome that theory predicts could arise. Rather, a set of outcomes can be rationalized. This multiplicity of equilibria problem, then, does not allow for forecasting the outcome of the plea negotiations and, even more problematic, does not allow us to explain disparities between individuals. Therefore, an experimental investigation is in order to provide data that can be used to assess the determinants of plea discount obtained.

Section 2 presents the experimental methods employed. Section 3 presents an analysis of the game, while Section 4 presents the econometric results. Section 5 concludes.

2. EXPERIMENTAL DESIGN

The presentation of the design of the experiment is broken into subjects, design, procedure, assessments, and the connection between the experimental design and plea bargaining.

2.1 Subjects

We conducted experiments with undergraduate students at a small, private university in upstate New York. Subjects were recruited from classes within the business school, targeting students in both classes taken by underclassmen and those taken by upperclassmen. An online reservation manager was used to recruit and schedule the sessions. A total of 117 subjects participated in the six sessions. Each experimental session lasted approximately 1 to 1.5 hours

and was conducted in evenings in February and March of 2015. Within each session subjects completed three tasks. After providing informed, signed consent subjects engaged in the experiment. Second, four assessments were completed. Finally, subjects completed a background information questionnaire.

2.2 Game Design

Subjects participated in an asymmetric information, alternating-offers bargaining game. In this game, one subject takes on the role of "Player A", while a second is "Player B." Player A must decide how to divide an endowment, W. Player A makes an offer, X_1, to Player B. Player B has the option to accept the offer, ending the game, or to reject and make a counteroffer, X_2. In this scenario, Player A has the option to accept the request, ending the game, or reject X_2 and counter the counteroffer, X_3. The game continues until one of the players accepts a proposal or Z rejections occur.

Regarding payoffs to the game, each rejection costs Player i, C_i. With probability p the players have conflicting preferences in that the utility to Player A to agreeing to X with R rejections in total ($R < Z$) is $u_A(X, R) = W - X - C_A R$. In contrast, Player B receives $u_B(X, R) = X - C_B R$. In other words, with probability p the bargaining game is one of dividing a pie.[2] If $R = Z$, then $u_A(X, Z) = - C_A Z$ and $u_B(X, Z) = - C_B Z$. Alternatively, with probability $1 - p$ the players have common preferences in that the utility to Player A is $u_A(X, R) = X - C_A R$ and the utility to Player B is, again, $u_B(X, R) = X - C_B R$ (so long as $R < Z$). As a result, $Eu_A(X, Z) = pW + (1 - 2p)X - C_A R$. Assume $p > ½$. Only Player B is informed of whether the game is one of conflicting or common preferences, but the informed Player B's utility does not depend on this information. Thus, there is no possibility of signaling this information.

In the experiment conducted, two of the parameters are manipulated. In a high stakes game $W = 120$, while in a low stakes game $W = 60$. Also, a symmetric costs treatment of $C_A = C_B = 5$, and an asymmetric costs treatment $C_A = 5$ and $C_B = 10$ are done. In the experiment $p = 1/5$.

[2] If $p = 1$, then the game is the classic Rubinstein (1982) alternating-offers bargaining game with the common experimental adjustments of a flat penalty for delay/conflict rather than a proportional penalty (see, for example, Zwick and Chen (1999), Sterbenz and Phillips (2001), and McCannon and Stevens (2015) for examples in experimental economics and management). Furthermore, with $p = 1$ and $z = 1$, then the game decomposes into the classic Ultimatum Bargaining Game.

Thus, four treatments are considered: low stakes –symmetric costs, low stakes – asymmetric costs, high stakes – symmetric costs, and high stakes – asymmetric costs.[3]

2.3 Procedure

In all six sessions the subjects completed two rounds of each of the four treatments resulting in a total of eight rounds of play. Subjects assigned to the role of Player A in one round took the role of Player B in the next. In sessions 1, 3, and 5 the subjects played the treatments in the order of low stakes – symmetric costs, low stakes – asymmetric costs, high stakes – symmetric costs, and high stakes – asymmetric costs, while in sessions 2, 4, and 6 the subjects played high stakes – symmetric costs, high stakes – asymmetric costs, low stakes – symmetric costs, and low stakes – asymmetric costs, in order.

The sessions were conducted in two rooms. Subjects were randomly assigned to a room. In each round of the game a subject in one room was paired with a subject in the other so that at no time did the subjects know who they were playing with. In sessions with an odd number of subjects, one was randomly selected to sit out of each round. Numerical IDs were used to preserve confidentiality and promote anonymity. In each round of play subjects were randomly paired so that history and reputation cannot affect play. In sessions with an odd number of subjects, one was selected at random to sit out each round. No player sat out more than one round.

Each session began, after introductions and informed consent, with a description of the game. Printed instructions were distributed and PowerPoint slides were presented providing the rules. The script used is provided in the appendix. After explanation of the game, subjects were given the opportunity and encouraged to ask questions.

The game was described without reference to crime, prosecution, or plea bargaining. The amount offered was referred to as the number of "points" Player B would receive. The cost to rejection was referred to as the "penalty." To determine whether the game was one of conflicting or common preferences, the playing cars 10, Jack, Queen, King, and Ace were used. Each

[3] In all but the low stakes – asymmetric costs $Z = 6$ (where the endowment would be exhausted in the low stakes – symmetric cost treatment ($Z(C_A + C_B) = W$) In the low stakes – asymmetric cost treatment $Z = 4$ (again, exhausting the endowment).

individual taking the role of Player B selected a card (with replacement). Players in both rooms were informed that if the Ace was drawn by Player B in the pairing, then they both receive the amount agreed to, X, minus any penalties from rejections. If another card is drawn by Player B, then B receives X and Player A receives the residual, $W - X$, minus any penalties from rejection.

The offer made by Player A was written down, collected by the researchers, and posted on a Google Docs spreadsheet, which is updated in real time in the other room. Player B observes the offer made by his partner and writes down which card he drew along with his decision, either to accept the offer or to reject and counteroffer. The decision was posted on the spreadsheet so the partner in the other room immediately learned the outcome. The decisions bounced back and forth between the two players until an agreement was reached or there were six rejections. After all groups reached an outcome, Player A was informed whether or not Player B had an Ace before proceeding to the next round. As stated, new pairings were made in each round and the players rotated between the role of A and B.

From this procedure a number of measureable variables arise. For a pairing with individual i in the role of Player A and individual j in the role of B, $Discount_{ij}$ measures the agreed to amount of the endowment received by Player B. $Discount_{ij}$ measured as the proportion of the endowment. The opening offer made by A, again normalized by the size of the endowment, is $Open_i$. An indicator variable $Reject_j$ is set equal to one if Player B rejects A's opening offer.

Finally, before the first round of play, subjects were informed that they would be financially compensated. Specifically, they were informed that a minimum payment of $10 would be earned, as a guaranteed profit for participating. They were also told that they could earn more as they played the games, but how much they earned depended on their decisions, choices made by others, and luck. One round of the game was selected at random and the subjects were informed that the number of points earned in that round would be converted into real dollars at the exchange rate of 2 points = $1.

2.4 Assessment

The second component of each experimental session was the completion of an assessment. A higher-order risk assessment was administered. Specifically, the tool developed by

Noussair, Trautmann, van de Kuilen (2015) was implemented. In the higher-order risk assessment subjects made choices between two options. The assessment has three types of questions. The first five choices allow the subject to select either a lottery with two equally likely outcomes (65 or 5) or a certain amount. In the next five choices, the subject selects between two compound lotteries. Each option gives either a high payoff or low payoff with equal probability. A second lottery either adds or subtracts an amount. The brackets designate a second gamble where the first is selected if the number 1 is drawn at random, while the second term in brackets is selected if the number 2 is drawn. The two options differ in whether the second lottery makes the payoff adjustment to the higher value or the lower value of the initial lottery. For example, consider Choice 6 in Table 1. The initial lottery generates either 90 or 60. The second lottery either adds or subtracts 20 points. Thus, in Choice 6 the subject selects either to allow this 20 point adjustment to the higher payoff of 90 or the lower payoff of 60. In the next five choices, two adjustments are made to the initial lottery. The options differ in whether the adjustments are distributed across the two outcomes or whether they are compounded together.

[Insert Table 1 here.]

A random number generator was used to make the selections resulting in either the number 1 or the number 2 with equal likelihood. The higher-order risk assessment is able to evaluate additional risk parameters. The first five options allow for the study of a preference for certainty in the choices. The second set of lotteries allows us to assess the prudence of the subject, while the third set assesses temperance. As defined by Kimball (1990), prudence is a convex first derivative of a utility function, while temperance is a concave second derivative (Kimball, 1993). As argued by Noussair, Trautmann, van de Kuilen (2014), a prudent individual is more likely to prefer to make the adjustment to the higher payoff. A temperate individual would rather separate the gambles than compound them.

The number of times an individual selects option (a) in the first five choices makes up the variable $Risk_i$. Correspondingly, the number of times an individual selects option (a) in the next five and the five after that make up the variable $Prud_i$ and $Temp_i$, respectively.

Along with a full explanation of the assessment, subjects were informed that they would be financially compensated for their selects. One of the choices in the assessment was selected at

random and the subject would be compensated based on the outcome of that choice.[4] Specifically, they were informed that a random number generator would be used to determine which choice would receive financial compensation. The total monetary gains of a subject in the experiment is comprised of the amount earned in a randomly selected round from the game and the choice between the lotteries made in the randomly-selected decision problem. As stated, a minimum wage was imposed for each subject in each session where we guaranteed that $10 would be earned. Thus, subjects earned between $10 and $34 in the experiment, with a mean payout of $21.54.

At the end of each session, subjects completed a background questionnaire. Basic information was collected. Specifically, their gender, year in school, major, and state of residence was collected. Also, a survey question evaluating their comfort with bargaining was administered. Subjects were asked, on a -2 to +2 scale, to "[r]ate the extent to which you dread versus look forward to negotiating, bargaining, and haggling." The number selected becomes the variable $Dread_i$. Table 4 provides variable definitions and descriptive statistics for the background and assessed characteristics of the subjects used in the analysis.

[Insert Table 2 here.]

The sample is disproportionately men from New York majoring in business, which is due primarily to the recruitment strategy used. Subjects report a slight preference for bargaining.

The sample average registers risk aversion since a risk neutral individual selects option (a) no less than three times. Prudence amongst our subjects replicates closely the pool studied by Noussair, Trautmann, van de Kuilen (2014). Their mean value for *Prud* of 3.60 for their laboratory subjects is quite close to our 3.84.

2.5 Risk Preference and Plea Bargaining

[4] The subjects were informed that the higher-order risk assessment had an exchange rate of 10 points = $1, while the risk assessment and ambiguity assessment maintained the 2 points = $1 rate used in the bargaining game. The adjustment was made to make the expected dollar value of the higher-order risk assessment comparable to all other assessments. The payoffs in the table were not changed so that the results can be compared to Noussair, Trautmann, van de Kuilen (2014).

We refer to simple risk preferences as the concavity or convexity of the utility function. An individual who maximizes expected utility prefers the expected value of a lottery to the gamble if he is risk averse, while would prefer the lottery if he is risk loving. This is clearly potentially important in plea bargaining as the negotiations reduce the uncertainty of the outcome. A risk averse individual, then, would be willing to take a certain punishment less than the expected value of the sentences that could arise at trial, rather than proceed to court. The more risk averse he is, the more willing he would be to take any given offer by the prosecutor (see Klick and Mungan (2014) for an example of a theoretical model of screening based on risk preferences). Plea discounts do not need to be as great and for any given plea offer agreement rates are higher for risk averse defendants (see Farmer and Pecorino (2010) for a model of bargaining with asymmetric information over risk preferences).

Higher order risk preferences have been argued to be important in decision making in financial economics. The concept of *prudence* (Kimball, 1990) was introduced to motivate precautionary demand for savings. Individuals may be averse to increases in downside risk (Menezes, Geiss, and Tressler, 1980) where the downside of a gamble can be worsened without changing the mean or variance of a risky prospect. Prudence is an aversion to negative skewness of a lottery. A prudent individual is averse to the chance of additional losses when suboptimal outcomes have already arisen.

A defendant can think of the sentencing as adding negative skewness to the uncertainty of the trial, for example. A prudent individual, then, experiences less satisfaction from trial and, therefore, can be expected to be more receptive to a plea offer reducing bargaining conflict. In her theoretical investigation, White (2008) provides the counterintuitive result that prudent individuals should do better in a bargaining environment because when the outcome is risky an extra month off of the sentence becomes more valuable, so the bargainer will be more willing to hold out in negotiation. As a result, a prudent individual will capture more of the surplus, as if bargaining power has increased. Thus, a prudent defendant should receive a better plea discount, holding all other factors constant. As described by Kimball (1990) prudence is, “the propensity to prepare and forearm oneself in the face of uncertainty” (p.54), which can apply to financial decisions, such as precautionary savings, or bargaining, such as limiting the downside risk by pleading.

Explanations of the higher order risk preferences and assessments of their prevalence in the laboratory can be found in Deck and Schlesinger (2010) and Noussair, Trautmann, and van de Kuilen (2014). White (2008) theoretically models simple risk preferences and prudence in the Rubinstein (1980) alternating-offers bargaining game studied here. Assessments to elicit prudence in the lab are also proposed by Ebert and Wiesen (2014) and Ebert (2015). Heinrich and Mayrhofer (2014) conduct experiments where risk decisions affect others and correlate choices with assessments of risk preferences. While simple risk aversion matters, they do not find evidence of the importance of prudence and temperance.

2.6 Relationship between the Experimental Design and Plea Bargaining

While the experiment was designed to be devoid of context to the research subjects, it is set up to replicate important issues in the study of plea bargaining. Plea bargaining occurs under asymmetric information. The most common source of information asymmetry is that the defendant knows whether or not he or she actually violated the law. Prosecutors do not want to incarcerate innocent individuals, for example, but are not perfectly able to screen the accused. An alternative example is that prosecutors have private information regarding the quality of the evidence they have for trial. While rules of evidence require the sharing of exculpatory evidence (*Brady v Maryland*) and prosecutors can be argued to have the incentive to share any evidence that would facilitate a plea bargain (to, for example, save the costs of trial), there can be unverifiable information known by the prosecutor. For example, the prosecutor may know the extent of investigatory investments made or the quality of the assistant prosecutor who is going to be trying the case at trial. Therefore, the experiment captures the lop-sided nature of the information availability.

The information asymmetry affects the payoffs by creating either conflicting preferences or common preferences. With conflicting preferences the prosecutor and defendant disagree. One can think of this being the situation where the defendant would like to, of course, minimize the punishment. The prosecutor would prefer to have the sentence be as close to the sentencing guidelines as possible. Conflicting preferences can also be thought of as the situation where the defendant is actually guilty of the crime. Common preferences can be thought of as the situation where both the prosecutor and defendant have the same goal. For example, if the defendant is not

actually guilty of the crime, then a prosecutor, who is interested in justice, does not want the defendant in prison. Thus, both sides want as small of a punishment as possible. The prosecutor does not known which state they are in. Furthermore, conflicting preferences are more likely to be the state of affairs than common preferences if, for example, police effectively but imperfectly make arrest decisions. This is captured in the experimental design by the $1/5^{th}$ probability of an Ace.

The experimental design also includes costs to conflict. From the perspective of the prosecutor, costs from delay include the use of the staff's time devoted to a case and the opportunity cost of not being able to allocate the office's resources towards clearing other cases on the office's caseload. Costs can escalate when, for example, there is a larger backlog of cases or if prosecutorial resources are restricted, so that time spent on a case creates a larger opportunity cost. See Landes (1974) for an early theoretical inquiry into the value of plea bargaining for resource-constrained prosecutors and Rasmusen, Raghav, and Ramseyer (2009) and Detotto and McCannon (2015a; 2015b) for empirical investigations into financial constraints and prosecutorial decision making. From the defendant's perspective, cost can be thought of as the time in jail awaiting a decision and forgone wages and freedom. An increase in the cost can be thought of as, for an application, a recognition that a defendant who is unable to make bail has a lower quality of life while bargaining than an individual who is released. Bargaining while locked in a cell is less comfortable than negotiating while being able to sleep in one's own bed.

The asymmetric costs can also capture differing stigma and reputational costs of being accused. For example, a first-time defendant with a family and a career might experience substantial costs when accused of a crime (Lott, 1992), which may take the form of lost social capital and esteem. Defendants with prior criminal records may not experience the same level of disutility. In other words, by comparing outcomes with symmetric costs to outcomes with asymmetric costs we can analyze the effects of asymmetric power at the bargaining table.

Finally, varying the size of the endowment is intended to capture differences in the stakes of the negotiation. An obvious application is the length of a prison term. For example, one can think of the endowment of 60 as five years in prison, while the endowment of 120 as ten years. Plea bargaining occurs in the shadow of the trial (Cooter, Marks, and Mnookin, 1982) and, therefore, the size of the shadow can be expected to affect the outcome. It is not clear, though, how the stakes affect the relative distribution of it.

Alternatively, one can think of the stakes, as previously discussed, varying based on individuals with differing economic and social consequences to imprisonment. Two defendants accused of the same crime with similar levels of evidence facing the same expected sentence may bargain differently based on the reputational and social consequences they feel. This allows for a comparison of whether individuals adopt different bargaining tactics or are willing to accept less favorable outcomes when the stakes are higher.

Thus, the experiment is designed to replicate essential features of plea bargaining: asymmetric information, conflicting vs. common preferences, differing stakes, and differing bargaining positions.

Therefore, the experimental design is able to capture how institutional features affect bargaining and also how individual differences create disparities in outcomes. Furthermore, the main objective of the analysis is to gain an appreciation of the interaction effect of institutional features and individual characteristics that potentially drive disparity in the criminal justice system.

3. ANALYSIS OF THE GAME

First, the game played can be summarized by the rate at which the bargaining failed[5], the agreement reached, and the amount of conflict in the bargaining (as measured by the number of rejected offers).[6] Table 3 presents subsample means.

[Insert Table 3 here.]

The results indicate that outcomes respond to the stakes. There are more rejections of offers with more months in prison on the line. This results in more failed negotiations. The

[5] Here, we define failure as when a negotiation exhausts the number of counteroffers possible. In the alternating-offers game played, a pairing can reach the point where a final offer is made and no counteroffer is possible. In this situation, the game decomposes into the Ultimatum Game where a rejection generates a zero payoff to each player. Since we are not interested in studying the social preference of spite, we do not differentiate between the decision to reject this final offer versus accept it. For 52% of these failed negotiations the final offer was rejected.

[6] One could also consider the opening offer made. In the full sample, 48.4% of the endowment was offered. There is not a statistically significant difference in opening offers for high vs. low stakes or symmetric vs. asymmetric costs. Furthermore, since Player As do not know which card was drawn by Player B, the opening offer cannot be made conditional on the information.

difference in the sample means for both the number of rejections and rate of failure is statistically significant. Interestingly, the greater conflict does not lead to a statistically significant difference in the outcome.

Regarding the costs to conflict, there are not statistically significant differences in outcomes. Success with the negotiations, the amount of conflict, and the plea bargains reached do not depend on the relative bargaining power of the two sides.

Substantial differences arise when the parties have common preferences. If the defendant is actually innocent, the subject is unwilling to accept much of a sentence. Failure is over two and a half times as likely. The average number of rejections doubles. Consequently, the heightened conflict leads to a greater plea discount. All of these differences are highly significant. Behavior is quite different when the players have common preferences.

Thus, the data analysis provides evidence that institutional features matter for plea bargaining outcomes (guilt vs. innocence and the stakes). To understand disparities in the criminal justice system individual-level differences need to be investigated.

Table 4 considers differences in outcomes of the experiment based on differences amongst the subjects in their higher-order risk preferences. The data set is broken down into subsamples based on the risk preference measurements recorded.[7]

[Insert Table 4 here.]

Regarding A's simple risk preference, there is not a distinct, observable relationship between the number of selections of the certain option and the outcome of the game.

Clear patterns arise, though, with prudence. Subjects with higher levels of prudence obtain lower (and, hence, better) plea discounts by making less generous opening offers, but experience greater number of rejections and higher rates of bargaining failure. Similarly, subjects with higher levels of prudence obtain lower plea agreements, with a greater number of rejections and more prevalent failures at negotiations. This is consistent with White's (2008) intuition from her theoretical model of bargaining that prudent individuals are willing to hold out for a greater share of the surplus.

[7] Table A3 in the appendix provides additional correlation coefficients.

The frequency of prudence and temperance fits well with the results presented by Deck and Schlesinger (2010). In their experiment 61% of the decisions recorded by the subjects were prudent. Here 62% of our subjects have $PrudA \geq 3$. A multivariate regression analysis, though, is needed to isolate the effect of these preference parameters and investigate interaction effects between institutional features and individual-level characteristics.

4. ECONOMETRIC INVESTIGATION OF CONFLICTING PREFERENCES

Since the behavior is markedly different between negotiations under common preferences and those under conflicting preferences, we evaluate each separately. Thus, we first focus on the more common situation where the prosecutor wants to reach an agreement as close to the sentencing guidelines as possible, while the defendant wants to minimize the punishment. In the experiments, conflicting preferences (randomly) arose in 73.5%.

[Insert Table 5 here.]

The main results are presented in Table 5. While the first column shows that prudent defendants fare worse off (the coefficient on *Prud B* is negative), the statistical significance of this result is lacking.

The results in the second column are more revealing. Prudent defendants do worse in, specifically, high stakes negotiations. The more prudent a subject is the relatively worse that subject does in high stakes plea bargaining. Additionally, player A is the uninformed individual. The negative and statistically significant coefficient on the interaction term implies that prudent, uninformed individuals do well, or rather, prudent, uninformed individuals do relatively worse in low stakes negotiations.

In the third column, again, prudent defendants do relatively even worse when there is asymmetric bargaining power in that they experience higher costs to continued conflict. Thus, the results, combined, indicate that prudent defendants fare worse in plea bargaining environments. Their relative failure, though, is concentrated in environments where the stakes are high or when the defendant in is a weak position without bargaining power.

Along with investigating the plea discount, one can consider the likelihood that the negotiation failed. Table 6 presents the probit results with *Failure* as the dependent variable.

[Insert Table 6 here.]

There is a continued relationship between the prudence of the players and the failure of the negotiation. Prudent individuals contribute to bargaining failure (*Prud A*) with an escalation in the asymmetric costs treatment.

5. BARGAINING BY THE INNOCENT

The previous analysis focuses on the outcomes of the negotiations when the two parties have conflicting preferences. Imperfections in law enforcement open up the possibility that innocent individuals can be accused of a crime. While the prosecutor may believe with a high probability that the defendant is guilty and would like to get a sanction imposed, the innocent defendant may feel pressure to accept a plea bargain and avoid the potentially harsher outcome of trial. Therefore, the drivers of plea bargaining with common preferences are worth investigating.

The descriptive statistics reported in Table 4 are revealing. When Player B drew an Ace they attempted to "signal" this to Player A. When B rejects the opening offer, while it is on average 47.6% of the endowment, Player B counters with a request of a discount of 95.2%. While this leads to an escalation in the total number of rejections and bargaining failure, when successful the plea discount is substantially higher.

Table 7 investigates which preference characteristics aid in the mitigation of wrongful punishments.

[Insert Table 7 here.]

7. CONCLUSION

The purpose of the work is to understand how the risk preference of prudence affects the plea bargaining discount. This is necessary for two reasons. First, in the U.S. plea bargaining dominates the criminal justice system. To understand sentencing outcomes, one must understand the plea bargaining process. Second, due to a multiplicity of equilibria, economic theory is unable to forecast the outcome of the plea bargaining process and, therefore, comparative statics are unable to be done. Therefore, experimental research considering an environment that captures many of the important features of plea bargaining, along with assessments of participant preferences, is conducted. The outcomes of the experiments can be summarized:

- Prudent defendants perform relatively worse when negotiating in high stakes situations
- Prudent defendants perform relatively worse when negotiating with asymmetric bargaining pwer
- Prudent individuals are more likely to experience bargaining power

There are a number of limitations to recognize. First, the study does not consider the form of the plea bargaining. It is most natural to think of the experimental design as replicating sentence bargaining, but in practice other forms of bargaining, such as charge bargaining (Bjerk, 2005; Piehl and Bushway, 2007) and fact bargaining are important. Distinguishing between the forms of bargaining may provide further insight. Also, important characteristics of the criminal justice system are not incorporated. For example, the accused have legal representation which may differ in quality. Also, public defenders, prosecutors, and judges have repeated interaction with one another that is not present in the experimental design. Also, the experiment does not have a trial for the bargaining to be in the shadow of. The experiment was designed to be as simple as possible and to isolate asymmetric bargaining power and stakes.

REFERENCES

Bibas, Stephanos (2004), Plea Bargaining Outside the Shadow of Trial, *Harvard Law Review* 117(8), 2463-2545.

Bibas, Stephanos (2000), Prosecutorial Regulation versus Prosecutorial Accountability, *University of Pennsylvania Law Review* 157(4), 101-157.

Bibas, Stephanos (2004), Plea Bargaining Outside the Shadow of Trial, *Harvard Law Review* 117(8), 2463-2547.

Bjerk, David (2005), Making the Crime Fit the Penalty: The Role of Prosecutorial Discretion Under Mandatory Minimum Sentencing, *Journal of Law and Economics* 48(2), 591-625

Cooter Robert, Stephen Marks, and Robert Mnookin (1982), Bargaining in the Shadow of the Law: A Testable Model of Strategic Behavior, *Journal of Legal Studies* 11(1), 225-251

Deck, Cary, Jungmin Lee, Javier Reyes, and Chris Rosen (2012), Risk-Taking Behavior: An Experimental Analysis of Individuals and Dyads, *Southern Economic Journal* 79(2), 277-299

Deck, Cary and Harris Schlesinger (2010), Exploring Higher Order Risk Effects, *Review of Economic Studies* 77, 1403-1420

Detotto, Claudio and Bryan C. McCannon (2015a), Economic Freedom and Public, Non-Market Institutions: Evidence from Criminal Prosecution, Working Paper.

Detotto, Claudio and Bryan C. McCannon (2015b), Consolidation of Prosecutor Offices, Working Paper

Easterbrook, Frank H. (1983), Criminal Procedure as a Market System, Journal of Legal Studies 12(2), 289-332.

Easterbrook, Frank H. (2013), Plea Bargaining is a Shadow Market, Duquesne Law Review 51, 551-558.

Ebert, Sebastian (2015), On Skewed Risks in Economic Models and Experiments, *Journal of Economic Behavior & Organization* 112(1), 85-97

Ebert, Sebastian and Daniel Wiesen (2014), Joint Measurement of Risk Aversion, Prudence, and Temperance, *Journal of Risk and Uncertainty* 48(1), 231-252

Ellsberg, Daniel (1961), Risk, Ambiguity and the Savage Axioms, *Quarterly Journal of Economi*cs 75, 643-669

Farmer, Amy and Paul Pecorino (2010), Pretrial Bargaining with Asymmetric Information: Unilateral versus Bilateral Payoff Relevance, *Southern Economic Journal* 77(2), 361-384

Gazal-Ayal, Oren and Raanan Sulitzeanu-Kenan (2010), Let My People Go: Ethnic In-Group Bias in Judicial Decisions - Evidence fom a Randomized Natural Experiment, *Journal of Empirical Legal Studies* 7(3), 403-428

Halevy, Yoram (2007), Ellsberg Revisited: An Experimental Study, *Econometrica* 75(2), 503-536

Heinrich, Timo and Thomas Mayrhofer (2014), Higher-order Risk Preferences in Social Settings, RUHR Economic Papers #508.

Holt, Charles A. and Susan K. Laury (2002), Risk Aversion and Incentive Effects, *American Economic Review* 92(5), 1644-1655

Kimball, Miles S. (1990), Precautionary Savings in the Small and in the Large, *Econometrica* 58(1), 53-73

Kimball, Miles S. (1992), Precautionary Motives for Hiding Assets, in P Newman, M Milgate, and J Fallwell (eds) *The New Palgrave Dictionary of Money and Finance*, London, Macmillan

Landes, William (1974), An Economic Analysis of the Courts, *Journal of Law and Economics* 14(1), 61-107

Lott Jr., John R. (1992), Do We Punish High Income Criminals Too Heavily?, *Economic Inquiry* 30(4), 583-608

McCannon, Bryan C. and John B. Stevens (2015), The Role of Personality Style in Bargaining, Working Paper

McCannon, Bryan C., Colleen Tokar Asaad, and Mark Wilson (2015), Financial Competence, Overconfidence, and Trusting Investments: Results from an Experiment, *Journal of Economics and Finance* (forthcoming)

Menezes, Carmen F. and Henry X. Wang (2005), Increasing Outer Risk, *Journal of Mathematical Economics* 41, 875-886

Mungan, Murat C. and Jonathan Klick (2014), Reducing Guilty Pleas through Exoneree Compensation, University of Pennsylvania Institute for Law and Economics Research Paper 14-34

Nash, John F. (1950), The Bargaining Problem, *Econometrica* 18(2), 155-162

Noussair, Charles N., Stefan T. Trautmann, Gijs van de Kuilen (2014), Higher Order Risk Attitudes, Demographics, and Financial Decisions, *Review of Economic Studies* 81(1), 325-355

Piehl, Anne Morrison and Shawn D. Bushway (2007), Measuring and Explaining Charge Bargaining, *Journal of Quantitative Criminology* 23(1), 105-125

Rasmusen, Eric, Manu Raghav, and Mark Ramseyer (2009), Convictions Versus Conviction Rates. The Prosecutor's Choice, *American Law and Economics Review* 11(1), 47-78

Rubinstein, Ariel (1982), Perfect Equilibria in a Bargaining Model, *Econometrica* 50(1), 97-109

Starr, Sonja B. (2015), Estimating Gender Disparities in Federal Criminal Cases, *American Law and Economics Review* 17(1), 127-159

Starr, Sonja B. and Marit M. Rehavi (2015), Racial Disparity in Federal Criminal Sentences, *Journal of Political Economy* 122(6), 1320-1354

Sterbenz, Frederic P. and Owen R. Phillips (2001), Bargaining Experiments with Deadlines and Random Delays, *Economic Inquiry* 39(4), 616-626

White, Lucy (2008), Prudence in Bargaining: The Effect of Uncertainty on Bargaining Outcomes, *Games and Economic Behavior* 62(1), 211-231

Zwick, Rami and Xiao-Ping Chen (1999) What Price Fairness? A Bargaining Study, *Management Science* 45(6), 804-823

TABLE 1: Risk Assessment

	Option (a)		**Option (b)**	
Choice 1	20		65	if 1
			5	if 2
Choice 2	25		65	if 1
			5	if 2
Choice 3	30		65	if 1
			5	if 2
Choice 4	35		65	if 1
			5	if 2
Choice 5	40		65	if 1
			5	if 2
Choice 6	90 + [20, -20]	if 1	90	if 1
	60	if 2	60 + [20, -20]	if 2
Choice 7	90 + [10, -10]	if 1	90	if 1
	60	if 2	60 + [10, -10]	if 2
Choice 8	90 + [40, -40]	if 1	90	if 1
	60	if 2	60 + [40, -40]	if 2
Choice 9	135 + [30, -30]	if 1	135	if 1
	90	if 2	90 + [30, -30]	if 2
Choice 10	65 + [20, -20]	if 1	65	if 1
	35	if 2	35 + [20, -20]	if 2
Choice 11	90 + [30, -30]	if 1	90	if 1
	90 + [30, -30]	if 2	90 + [30, -30] + [30, -30]	if 2
Choice 12	90 + [30, -30]	if 1	90	if 1
	90 + [10, -10]	if 2	90 + [30, -30] + [10, -10]	if 2
Choice 13	90 + [30, -30]	if 1	90	if 1
	90 + [50, -50]	if 2	90 + [30, -30] + [50, -50]	if 2
Choice 14	30 + [10, -10]	if 1	30	if 1
	30 + [10, -10]	if 2	30 + [10, -10] + [10, -10]	if 2
Choice 15	70 + [30, -30]	if 1	70	if 1
	70 + [30, -30]	if 2	70 + [30, -10] + [30, -10]	if 2
Choice 16	40	if 1	50	if 1
	30	if 2	24	if 2
Choice 17	50 + [25, -25]	if 1	50	if 1
	30	if 2	30 + [15, -15]	if 2

TABLE 2: Subject Information
($N = 117$)

Variable	Description	Mean
Background Information		
Male	= 1 if the subject is a woman	0.594
Foreign	= 1 if the subject is not from the U.S.	0.068
NY	= 1 if the subject is from New York state	0.641
Business	= 1 if the subject is a business major	0.761
Dread	dread -2, dislike -1, neutral 0, like +1, look forward to +2	0.46
Risk Assessment		
Risk	# of selections (out of 5) of the certain choice	2.88
Prud	# of selections (out of 5) of the prudent choice	3.84
Temp	# of selections (out of 5) of the temperate choice	2.63

TABLE 3: Outcomes of the Games

	Rate of Failure	Discount	# of Rejections
Full Sample	6.8%	61.7%	1.20
Low Stakes	4.8%	62.0%	0.98
High Stakes	8.9%	61.4%	1.42
(t-stat)	(1.71) *	(-0.25)	(2.77) ***
Symmetric Costs	6.2%	60.1%	1.16
Asymmetric Costs	7.5%	63.2%	1.24
(t-stat)	(0.54)	(1.30)	(0.46)
Conflicting Preferences	4.8%	56.6%	0.94
Common Preferences	12.5%	75.7%	1.93
(t-stat)	(2.88) ***	(7.57) ***	(5.69) ***

TABLE 4: Prudent Risk Preferences

	% of sample	Rate of Failure	Plea Discount	# of Rejections	Opening Offer
RiskA $\leq$ 2	37.9%	6.7%	54.9%	1.01	46.6%
RiskA = 3, 4	35.3%	2.7%	58.0%	0.88	48.1%
RiskA = 5	26.5%	3.6%	57.1%	0.87	47.5%
PrudA $\leq$ 2	16.7%	0%	58.9%	0.74	49.2%
PrudA = 3, 4	36.9%	5.2%	56.4%	0.92	47.3%
PrudA = 5	46.4%	5.4%	55.9%	1.00	46.7%

TABLE 5: Prudent Plea Bargaining
(dependent variable = *Discount*, N = 333)

	I	**II**	**III**
High	0.017	0.232 **	0.019
	(0.017)	(0.095)	(0.018)
Asym	-0.005	-0.002	0.205
	(0.027)	(0.027)	(0.107)
Risk A	0.008	0.008	0.008
	(0.009)	(0.009)	(0.009)
Risk B	0.012	0.011	0.015 **
	(0.008)	(0.007)	(0.007)
Prud A	-0.003	0.018	0.007
	(0.006)	(0.011)	(0.011)
Prud B	-0.001	0.006	0.019
	(0.011)	(0.009)	(0.018)
Prud A x *High*		-0.041 **	
		(0.020)	
Prud B x *High*		-0.015 **	
		(0.007)	
Prud A x *Asym*			-0.016
			(0.013)
Prud B x *Asym*			-0.038 **
			(0.019)
adj R^2	-0.004	0.009	0.005
AIC	-83.3	-85.7	-84.4

The standard errors presented in parentheses are clustered by round of play.
*** 1%; ** 5%; * 10% level of significance.
Controls included but not reported are a constant term, *Business*, *Male*, *Foreign*, *NY*, *Dread*, and *Dictator* (for both players in the first two).
McFadden R^2s are presented in the fourth, fifth, and sixth columns.
N = 312 in the first three columns and *N* = 328 in the final three.

TABLE 6: Bargaining Failure
(dependent variable = *Failure*, N = 333)

	I	II	III
High	0.348	-1.082	0.322
	(0.344)	(1.559)	(0.359)
Asym	0.216	0.190	-3.185 ***
	(0.218)	(0.235)	(1.191)
Risk A	-0.100	-0.100	-0.093
	(0.105)	(0.099)	(0.121)
Risk B	-0.041	-0.034	-0.069
	(0.107)	(0.106)	(0.114)
Prud A	0.178 ***	0.066	0.075
	(0.056)	(0.088)	(0.121)
Prud B	0.128	0.044	-0.089
	(0.116)	(0.166)	(0.124)
Prud A x *High*		0.197	
		(0.127)	
Prud B x *High*		0.149	
		(0.240)	
Prud A x *Asym*			0.155
			(0.132)
Prud B x *Asym*			0.647 ***
			(0.163)
McFadden R^2	0.082	0.090	0.12*
AIC	119.3	122.2	117.9
% correct	95.6%	95.6%	95.6%

The standard errors presented in parentheses are clustered by round of play.
*** 1%; ** 5%; * 10% level of significance.
Controls included but not reported are a constant term, *Business*, *Male*, *Foreign*, *NY*, *Dread*, and *Dictator* (for both players in the first two).
McFadden R^2s are presented in the fourth, fifth, and sixth columns.
$N = 312$ in the first three columns and $N = 328$ in the final three.

TABLE 13: Bargaining by the Innocent

	I	II	III	IV
High	-0.011 (0.072)	-0.018 (0.072)	-0.032 (0.063)	-0.019 (0.072)
Asym	0.085 (0.087)	0.080 (0.080)	0.088 (0.077)	0.094 (0.088)
E1A	0.015 (0.009) *	0.008 (0.009)	0.007 (0.009)	0.012 (0.007) *
E2A		0.010 (0.013)		
E3A			0.013 (0.013)	
E4A				0.005 (0.009)
E1B	-0.002 (0.005)	0.005 (0.007)	0.004 (0.006)	-0.005 (0.007)
E2B		-0.014 (0.011)		
E3B			-0.013 (0.008)	
E4B				0.004 (0.004)
adj R^2	-0.003	0.010	0.011	-0.017
AIC	49.3	49.5	49.4	52.5

	V	VI
High	-0.023 (0.072)	-0.032 (0.063)
Asym	0.074 (0.089)	0.088 (0.077)
CertA	0.017 (0.023)	
PrudA	0.023 (0.018)	
TempA	0.008 (0.017)	
CertB	-0.018 (0.006) ***	
PrudB	-0.010 (0.021)	
TempB	-0.014 (0.019)	
CompA		-0.018 (0.009) **
OverA		-0.008 (0.006)
CompB		0.024 (0.014) *
OverB		0.014 (0.012)
adj R^2	-0.022	0.024
AIC	57.9	50.9

The standard errors presented in parentheses are clustered by round of play.
*** 1%; ** 5%; * 10% level of significance.
Controls included but not reported are a constant term, *Business*, *Male*, *Foreign*, *NY*, *Dread*, and *Dictator (*for each player).
V includes an indicator variable for whether the subject exhibit "nonstandard" preferences for certainty (for each player).

APPENDIX

The script used in the experimental sessions is provided.

Welcome to the research session in economics. We greatly appreciate your willingness to participate and help us with our project. We first want to provide some information before we start playing the games.

We are going to be playing a game and completing a survey. The game, though, will be repeated and divided into four different versions of the game. Each version of the game will be played four times. Soon we will be explaining the rules of the game. The survey will be given after the game.

We expect this session to last approximately one hour. You will be paid for participating. How much you earn will depend on the choices you make, the choices made by other players in the game, and luck. We expect on average people will make $20, but we guarantee that no one will make less than $10. You could earn more as well.

First, though, we need to go over the consent form.

[Go over the consent form and collect signatures before continuing]

Thank you. Now let's turn to the game.

In each round of each version of the game you will earning "points." These points will be cashed in for actual dollars. At the end of our session tonight, one round of the game will be selected at random. The number of points you earn in that round will be converted into real dollars at the exchange rate of 2 points = $1.

In the first version of the game you will be paired with someone in the next room to play a two-person game. One of you will be assigned the label of "Player A" while the other will take the label of "Player B." We will play this version of the game four times so that twice you will be Player A in the game and twice you will be Player B. In every round of the game you will be paired with someone different in the other room. The pairings will be made at random. At no time will you know the name of the person you are paired with nor will they know your identity.

The slides on the overhead screen will explain the rules of the game.

[Go through the slide presentation.]

[Provide an opportunity for subjects to ask questions.]

[Play the game]

That concludes the first of two activities. Now, we turn to the survey. In the packet of paperwork given to you there are a number of assessments. The first asks you basic background information. Using a pencil, respond to these on the scantron sheet provided.

After you have completed that, there are three additional assessments. The first one asks you to make a choice between either option (a) in the first column or option (b) in the second column. For each of the numbered choices 6-15 you are to select either (a) or (b).

For each option you are going to receive one of the two numbers. For option (a) you will receive either 10 or 8 points. For option (b) you are going to receive either 19.25 or 0.5 points. To play each lottery, a number between one and ten will be selected at random. If you choose option (a), for example, you will receive 10 points if one of the numbers associated with it are drawn and 8 points if the other numbers are drawn.

[Select one as an illustration – use the slides.]

Regarding compensation, one of the questions on the survey will be selected at random. The lottery will be played and you will receive real money based on how much you receive.

Complete the survey by filling in the option you wish to select on the scantron for each of the 10 decision problems.

The second assessment is another lottery. Here either the number 1 or 2 will be drawn. You will receive the associated outcome. Again, you are to select either option (a) or option (b). Make your selection in pencil on the scantron sheet provided.

The difference with this assessment is that for some choices you will see two numbers in brackets. This means that another selection of either the number 1 or 2. If 1 is selected, then the first number in the bracket is realized, while if 2 is selected the second one is chosen.

[Select one as an illustration – use the slides.]

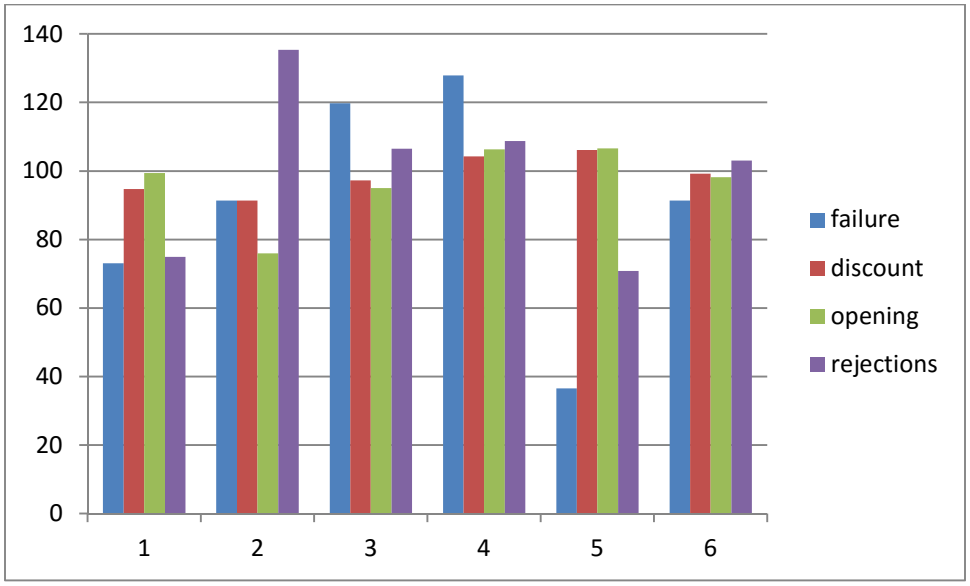
Again, one of the lottery choices on these two assessments will be selected and the outcome you receive will be converted into real dollars. If an outcome on the second assessment is chosen, the points are converted into dollars at the exchange rate of 10 points = $1

[Ask for questions and answer. Make sure people understand the assessments.}

Finally, the third assessment asks to you answer a series of questions. Provide your answers on the scantron. When you are done with all three assessments bring your results to the front podium and receive your money. Thank you again!

The following chart presents the variation in outcomes across the six experimental sessions. The sample mean for each session is divided by the full sample mean and multiplied by 100 to allow for comparisons across both outcomes and sessions.

FIGURE A1: Outcomes across Experimental Sessions



The rates of bargain failure fluctuate across the sessions. This is primarily due to the small number of bargaining failures observed. Similarly, there is variation in the number of rejections. The opening offers and size of the plea discount are quite stable across the sessions.

Tables A1 provides additional correlations not presented in the main text.

TABLE A1: Correlations

	Rate of Failure	**Plea Discount**	**# of Rejections**	**Opening Offer**	**Reject? (yes = 1)**
RiskA	-0.03	0.03	0.01	-0.00	
PrudA	0.04	0.01	0.05	0.07	
TempA	0.06	-0.06	0.09 *	0.05	
RiskB	-0.00	0.01	-0.02		-0.05
PrudB	0.04	-0.00	0.03		0.03
TempB	0.01	0.05	-0.06		-0.07

*** 1%; ** 5%; * 10% level of significance.