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Plea bargaining with multiple defendants and its deterrence effect☆

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ABSTRACT

This article analyzes a model of plea bargaining with multiple co-defendants. We characterize equilibrium as separating or pooling, depending on the relative importance of type-I and type-II errors. Effects of plea bargaining on criminal incentives are examined in an extended model. Contrary to the widespread perception of being "soft" on crime by weakening deterrence, we show that plea bargaining unambiguously reduces crime. The benefit of improved informational efficiency more than offsets the crime-incentivizing effect of offering discounted sentences to defendants who plea bargain. Plea bargaining is therefore socially efficient whenever the risk of wrongfully convicting innocent defendants is sufficiently small.

1. Introduction

In the United States, roughly 97% of federal cases and 94% of state cases are settled by plea bargaining (Goode, 2012). In contrast, France's negotiated guilty-plea procedure introduced in 2004, is used in only 4% of decisions by the correctional courts (French Ministry of Justice, 2006). Another dimension along which plea bargaining institutions vary widely across countries is restrictions on their use. Differences across countries in frequencies of use and restrictions on plea bargaining, to a large extent, reflect conflicting prescriptive views about whether plea bargaining is socially desirable.

Although many accept the claim that plea bargaining can (at least in theory) achieve substantial improvements in informational efficiency, criticism of plea bargaining is widespread. Some argue that plea bargaining is unfair because it leads to inconsistent punishment for the same crime. Closely related is the complaint that criminals who accept plea bargain offers may not receive punishment commensurate with the crime they committed. These arguments are incomplete, however, because they consider only the effect of plea bargaining on one of two different types of judicial errors, ignoring its socially desirable effect of reducing the likelihood of convicting an innocent suspect (type-I error). We refer to social losses from under-punishment of guilty defendants as type-II error and social losses from excessive punishment of innocent defendants as type-I error. Another common criticism of plea bargaining is that it may weaken the deterrent effect of punishment by reducing expected sentences, thereby incentivizing criminal activity (Guidorizzi, 1998). Defendants who reject plea bargain offers tend to receive more severe punishments at trial than what was offered by the prosecution under plea bargaining, sometimes referred to as the "trial penalty" which, once again, attracts vehement criticism.

Notwithstanding these arguments against plea bargaining, its constitutionality was established by Brady vs. United States (1970). Since that precedent, attitudes toward plea bargaining shifted. The views of legal scholars and practitioners who, at first, regarded plea bargaining as a transient anomaly that was expected to eventually fade away later evolved into a heterogeneous majority that, despite the criticisms, accepted (perhaps begrudgingly) plea bargaining as firmly ensconced within criminal law.

Economic rationales contribute in important ways to debates over plea bargaining. Presumably, the first economic analysis of

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plea bargaining is Landes (1971), arguing that plea bargaining can save time and other variable costs associated with going to trial. In Landes's model, the prosecutor's problem is specified as maximization of the number of convictions subject to a budget constraint. Landes' analysis shows that plea bargaining can improve efficiency, especially when trial convictions are costly. Informational issues and strategic thinking inherent in criminal cases are not addressed in Landes' analysis, however.

Grossman and Katz's (1983) pioneering work provides what is likely the first game-theoretic model of plea bargaining, addressing one important informational issue by providing conditions under which guilty defendants reveal their types (guilty or innocent). Grossman and Katz identify two benefits of plea bargaining—an insurance effect and a screening effect. They assert that a risk-averse defendant and a prosecutor prefer the sure conviction of a guilty defendant under plea bargaining over the risk of litigating in court. They also show that plea bargaining serves as a screening mechanism, which confers the potential advantage of improved accuracy of sentencing. Grossman and Katz characterize both a pooling equilibrium and a separating equilibrium. In the pooling equilibrium, the prosecutor makes a plea offer that is rationally accepted by both guilty and innocent defendants. In a separating equilibrium, however, the prosecutor makes an offer that is accepted by a guilty defendant but rejected by an innocent one. Thus, the typical "adverse selection" (or "lemons" problem) occurs in which defendants who accept plea offers have higher average culpability or are more likely to be guilty.

Most economic analyses of plea bargaining, however, focus on settings with only one defendant despite there being numerous examples of real-world criminal cases in which multiple co-defendants would appear to play an important role in determining sentencing outcomes. One such example is the case of price fixing and related collusive activities among multiple firms. Indeed, there are some exceptions such as Kobayashi (1992) and Kim (2009) that consider the situation of multiple co-defendants who are *known* to be connected with the same crime. However, neither of those papers addressed the dynamic effect of plea bargaining on crime deterrence in a multiple-defendant setting.[1] This lacuna in the extant literature is rather surprising given that one of the main criticisms against plea bargaining is that it weakens crime deterrence by offering defendants shorter sentences. Reinganum (1993) and Miceli (1996) analyze the dynamical issue in a model with a single defendant, examining how plea bargaining influences the incentive to commit crimes. In this paper, we consider a dynamic model of plea bargaining between a prosecutor and multiple co-defendants. In our model, defendants are not *ex ante* known to be guilty. The guilt or innocence of defendants is endogenously determined as the result of their criminal decisions. To investigate the effect of plea bargaining on the incentive to commit a crime, we first consider a model in which the prosecutor is *unsure* about whether the defendants are guilty or innocent. Because guilt is uncertain from the prosecutor's view, a socially benevolent prosecutor is assumed to pursue the objective of minimizing judicial errors, specified as a weighted sum of type-I and type-II errors (i.e., not simply maximizing penalties as in some previous models). Then, based on the analysis, we will examine the effect of plea bargaining on the incentive to commit crimes.

The objective that prosecutors in our model use—to minimize a weighted sum of losses from the two types of judicial errors—can be interpreted as consistent with guidelines codifying appropriate prosecutorial behavior across a broad range of real-world judicial systems. For example, prosecutors' duty in the US criminal justice system is to "seek justice" rather than merely convictions.[2] Similarly, Article 1 of Korea's Code for Prosecutors (as instructed by the Korean Ministry of Justice) guides prosecutors to represent the public interest to minimize judicial errors—as do other countries' judicial codes—contrary to the widespread perception that prosecutors are incentivized solely to pursue the objective of maximizing penalties.

It is well known in the case of a single defendant that the prosecutor offers the defendant's certainty equivalent (i.e., the offer that gives the defendant the same disutility he expects by going to trial). In the case of multiple defendants, however, calculating multiple certainty equivalent offers is less straightforward because they depend on whether the other defendant accepts his respective offer or not. Unlike models with a single defendant, our model with multiple co-defendants allows the prosecutor to make plea offers contingent on the defendant's promise to both plead guilty *and* testify against the other co-defendant. Therefore, a certainty equivalent offer to one defendant must be contingent on whether the other defendant accepts his offer or not. We characterize all possible separating-equilibrium offers that are accepted only by guilty defendants and all pooling offers that are accepted by both guilty and innocent defendants.[3]

In both types of equilibria, plea offers must be fair in the sense that the more culpable defendant (i.e., the one who deserves a longer sentence) receives a harsher penalty, unless both defendants are equally culpable. Our model's result that any plea bargaining equilibrium with multiple co-defendants must necessarily respect at least this rather weak notion of fairness stands in sharp contrast to Kobayashi's (1992) model in which unfair equilibria are possible (i.e. in which the more culpable defendant may receive a less severe penalty).[4] These contrasting predictions regarding the fairness of equilibrium plea bargaining in our model and Kobayashi's (1992) are the result of different equilibrium concepts. Unfair equilibria are impossible in our model as long as the spirit of Nash equilibrium is respected by implicitly requiring all agents' beliefs to be consistent with their equilibrium strategies.

In a separating equilibrium, the plea bargain offers are asymmetric in that only the less culpable defendants are offered a plea discount. In a pooling equilibrium, both defendants are offered plea discounts. Intuitively, longer (i.e., more severe) plea offers in the pooling equilibrium, as they approach the duration for a guilty defendant without plea bargaining, increase the loss from type-I errors when a defendant is actually innocent (excessively harsh sentencing for the innocent defendants) and decrease the loss from type-II errors (insufficiently harsh sentencing for the guilty defendants). The optimal pooling equilibrium in our model is determined by the plea offer that balances these two effects (i.e., equating the marginal benefit of reducing type-II error with the marginal cost of increasing type-I error for each defendant). The prosecutor's choice between the separating or pooling equilibrium depends on the relative importance of type-I and type-II errors. If type-I errors are sufficiently more important in the prosecutor's objective function,

[1] Moreover, these papers do not consider defendants' private information about guilt or innocence as we do in our model. In the context of civil litigation, Spier (1994) considers a model of multiple defendants with incomplete information, while Kornhauser and Revesz (1994a,b) provide a complete information model of multiple defendants. While circulating this paper, we found Silva (2017) which addressed a similar issue. His paper differs from ours in two ways. First, he uses the mechanism design approach. Second, more importantly, he does not touch the dynamic issue of examining the incentive to commit a crime, which is the main issue of our paper.

[2] http://www.americanbar.org/

[3] In a separating equilibrium, the plea bargain offers are asymmetric in that only less culpable defendants are offered plea discounts. In a pooling equilibrium, both defendants are offered plea discounts.

[4] Tor et al. (2010) show empirically that unfair plea offers are very likely to be rejected, which would seem to suggest that the fair plea outcome predicted by our model matches the available observational data.