PLEA BARGAINS ONLY FOR THE GUILTY*

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ABSTRACT

A major concern with plea bargains is that innocent defendants might plead guilty. The law can address this concern. By restricting the permissible sentence reduction in a plea bargain, the law can preclude plea bargains in cases with a low probability of conviction (L cases). This will force the prosecutor to (1) select fewer L cases and proceed to trial with these cases or (2) select more cases with a higher probability of conviction (H cases) that can be concluded via a less costly plea bargain. As long as the probability of conviction is positively correlated with the probability of guilt, this selection-of-cases effect implies a reduced number of innocent defendants. We argue that the Federal Sentencing Guidelines achieve this socially desirable selection effect and that the recent Supreme Court holding in United States v. Booker dilutes this effect by reducing the guidelines’ legal status from binding to advisory.

I. INTRODUCTION

About 95 percent of all convictions in the United States are secured with a guilty plea, most of them through plea bargaining (U.S. Department of Justice 2003a, 2003c). Yet despite their prevalence, or perhaps owing to it, plea bargains remain one of the most controversial practices in the criminal justice system (Church 1979; Brunk 1979; Kipnis 1979; Easterbrook 1983; Schulhofer 1988, 1992; Scott and Stuntz 1992a, 1992b; Wright and Miller 2002; Alschuler 2003). The fear that innocent defendants would plead guilty animates the often heated debate over plea bargains (Alschuler 1981; Fin-

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353
And imposing sanctions on the innocent is not only morally wrong but also inefficient (Kaplow and Shavell 1994).

The breadth of the prosecutor’s discretion in negotiating plea bargains directly affects the magnitude of the “innocence problem.” Unfettered discretion translates into more plea bargains, including more plea bargains accepted by innocent defendants. Specifically, an unconstrained prosecutor will often be able to extract a guilty plea even from an innocent defendant who is likely to be acquitted by offering a sufficiently light plea sentence. But prosecutorial discretion is not unconstrained. Prosecutors, and especially federal prosecutors, generally cannot offer plea bargains with unlimited sentence discounts.

It is well recognized that such a restriction on prosecutorial discretion reduces the number of plea bargains accepted by innocent defendants (Note 1972; Alschuler 1976; Guidorizzi 1998). The explicit or implicit assumption in this literature is that the innocent defendants who do not plea bargain will stand trial (Note 1972; Alschuler 1976; Vorenberg 1981). We question the veracity of this assumption. Imagine a prosecutor facing an innocent defendant (of course, the prosecutor may not know that the defendant is innocent, at least not for sure). The prosecutor cannot plea-bargain this case, because this defendant, facing a low probability of conviction, would accept only a plea sentence below the minimum sanction the prosecutor is authorized to offer (we assume a positive correlation between the probability of conviction and actual guilt). The prosecutor can try the case. But often the prospect of a costly trial with unfavorable odds is not very attractive. Alternatively, the prosecutor can drop the case and in its stead select a case with a guilty defendant and a higher probability of conviction—a case that can be quickly resolved via plea bargain within the bounds of the prosecutor’s discretion. We argue that in many cases, prosecutors will follow this alternative route: substitute weaker cases against innocent defendants with stronger cases against guilty defendants. Constrained prosecutorial discretion thus serves the interest of innocent defendants.

It may seem counterintuitive that innocent defendants can benefit from a restriction on the range of permissible plea bargains. After all, most of the responsibility for the wrongful-convictions problem lies not on the plea bargain institution but rather on the inherent inaccuracy of the adjudication process. In an ideal, error-free adjudication system, no innocent defendant would ever plead guilty. In fact, given the imperfections of the system, it

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1 The legal restrictions on the prosecutor’s ability to offer light plea sentences are detailed below. In addition, to the extent that plea bargains trigger extralegal sanctions, these sanctions further increase the minimum sanction available via plea bargain.

2 Bibas (2004, p. 2536) recently observed that fixed discounts may “deter prosecutions of the possibly innocent.”
has been argued that plea bargains can only help the risk-averse defendant, guilty or innocent (Landes 1971; Scott and Stuntz 1992a, 1992b).

Facing a credible threat by the prosecutor to proceed to trial, an innocent defendant may indeed benefit from a plea bargain. But the prosecutor cannot credibly threaten to take every case to trial. Her budget constraint will generally allow for only a very small number of trials. The prosecutor’s ex ante decision of which cases to pursue is, therefore, of central importance. And since the prosecutor’s goals will generally diverge from the social objective, there is a real danger that the prosecutor will choose the wrong cases.³ Specifically, society’s preference for wrongful acquittals over wrongful convictions might not be reflected in the prosecutor’s choice of cases.⁴ And since plea bargains increase the number of cases the prosecutor can pursue within a given budget constraint, the plea bargain institution exacerbates the consequences of this divergence between social objectives and the prosecutor’s private goals.

Can the law cure this divergence, or at least minimize it? This paper argues that it can, and in fact it already does, albeit inadvertently. The Federal Sentencing Guidelines allow a maximal sentence reduction of approximately 25 percent from the benchmark sentence for the offense (including relevant circumstances surrounding the offense) in return for a guilty plea. Under the guidelines, a defendant can receive a two-level reduction in the offense level, which translates into a sentence reduction of about 20–25 percent, if he “clearly demonstrate[s] acceptance of responsibility” (U.S. Sentencing Commission 2002, sec. 3E1.1).⁵ While acceptance of responsibility is not equivalent to pleading guilty (United States v. Bennett, 161 F.3d 171 [3rd Cir. 1998]), in practice only (or almost only) defendants who plead guilty are considered eligible for these sentence reductions. By restricting the prosecutor’s ability to offer a significantly reduced sentence as part of a plea bargain, the guidelines induce the selection of stronger cases in which the defendant is more likely to be guilty.

To see how the Sentencing Guidelines reduce the number of innocent defendants who are pursued by the prosecutor, divide the universe of cases into two subgroups: cases with a high ($\geq \frac{1}{2}$) probability of conviction (H

³ Compare Grossman and Katz (1983) and Reinganum (1988), who adopt the assumption that the prosecutor maximizes social welfare.

⁴ This will be true under many different assumptions regarding the structure of the prosecutor’s objective function. In the formal model developed in Section II, we assume, as is common in the law and economics literature, that the prosecutor maximizes the overall expected sanction across all chosen cases. Similar results would obtain if we assume that the prosecutor is driven mainly by a desire to win cases (that is, to convict or to secure a guilty plea). See Alschuler (1968).

⁵ In some cases, the defendant can receive an additional one-level reduction. The Sentencing Guidelines, and specifically the restrictions they impose on sentence reductions, are enforced by the courts when they are asked to approve plea bargains. See U.S. Sentencing Commission (2002, sec. 6B1.2[b],[c]).
cases) and cases with a low ($<\frac{1}{2}$) probability of conviction (L cases). The plea bargain sanction would have to be lower in the L cases, often lower than three-quarters of the sentence that the defendant would have received at trial, if convicted. Under the guidelines, however, such a plea bargain would be unenforceable. Accordingly, the prosecutor would have to choose between trying L cases and substituting L cases with H cases (the guidelines, in effect, create a societal precommitment to try L cases). As demonstrated below, the rule adopted by the Sentencing Guidelines leads to the selection of fewer L cases and to a smaller overall number of cases. As long as the probability of conviction is positively correlated with the probability of guilt, this implies a reduced number of innocent defendants.6

We show that the selection-of-cases effect that reduces the number of innocent defendants pursued by the prosecutor is most powerful when the benchmark sentence is well defined. Our analysis thus supports the limited sentencing discretion that was permitted under the Federal Sentencing Guidelines before the recent Supreme Court holding in United States v. Booker (125 S. Ct. 738 [2005]), which reduced the guidelines’ legal status from binding to advisory. The broader discretion permitted under state-level sentencing guidelines as well as in the federal system post Booker, while not eliminating the selection-of-cases effect, does dilute the force of this effect. Discretion in sentencing clearly serves an important social purpose. The cost of greater discretion, however, cannot be ignored. Our analysis thus provides another reason, in addition to those detailed in the Booker dissent, for Congress to restore the binding status of the guidelines.

The selection-of-cases effect is the result of a restriction imposed on the set of tools available to the prosecutor when dealing with weaker cases. By restricting the prosecutor’s ability to use sentence reduction as a means to secure conviction in weaker cases, the guidelines induce the prosecutor to select fewer weak cases. This intuition can be generalized. There are other weapons in the prosecutor’s arsenal for dealing with weaker cases. Restricting use of any such weapons will produce a similar selection-of-cases effect. For example, faced with a weak case, the prosecutor can increase the probability of conviction by investing more resources into this case. Accordingly, tightening the prosecutor’s budget constraint will generate a selection-of-cases effect. Moreover, the tighter-budget example interestingly interacts with the guidelines’ rule: one way to effectively increase the relative cost of weak cases is to raise the cost of trials. Combined with the guidelines’ rule, such a measure will significantly enhance the selection-of-cases effect.

6 This result must be qualified if we believe that innocent individuals are systematically more risk averse than guilty individuals (see, for example, Scott and Stuntz 1992b). Such heterogeneity in the degree of risk aversion implies that innocent individuals would be willing to accept plea bargains with higher, not lower, sentences. This qualification notwithstanding, it seems that the direct effect of innocence on the expected sanction will generally outweigh the effect of heterogeneous risk preferences.
The remainder of the paper is organized as follows. Section II formally
derives the selection-of-cases result. Section III offers concluding remarks,
focusing on possible implementation problems and on the normative impli-
cations of the selection effect.

II. Model

Let $p$ denote the probability of conviction and $s$ denote the expected
sentence following a conviction—the benchmark sentence. Let $\Omega$ denote the
universe of cases, where each case is characterized by its $(p, s)$ pair. The
universe of cases, $\Omega$, can be divided into two mutually exclusive subgroups:
cases with a high probability of conviction, that is, with $p \geq \alpha \in (0, 1)$ (H
cases), $\Omega_H = \{(p, s) | (p, s) \in \Omega, p \geq \alpha\}$, and cases with a low probability of
conviction, that is, with $p < \alpha$ (L cases), $\Omega_L = \{(p, s) | (p, s) \in \Omega, p < \alpha\}$. Let
$q = ps$ denote the expected sanction, and let $f_H(q)$ and $f_L(q)$ represent the
distribution of cases, according to expected sanction, in $\Omega_H$ and $\Omega_L$,
respectively.

As is conventional in the law and economics literature on plea bargaining,
we assume that the prosecutor’s private goal is to maximize the sum of
expected sanctions subject to a budget constraint, $B$ (see, for example, Landes
1971; see also note 9). A plea bargain costs the prosecutor $c$, while a trial
costs $c + x$.

For simplicity, assume that the prosecutor makes a take-it-or-leave-it offer
to a risk-neutral defendant. Accordingly, when a plea bargain is reached, the
sentence equals $ps$ (this assumption is relaxed in Section III). Assume also
that without the restriction imposed by the Sentencing Guidelines, all cases
end in a plea bargain. Finally, to make things interesting, assume that without
the guidelines’ restrictions, some of the selected cases are in $\Omega_H$ and some
are in $\Omega_L$. The following lemma summarizes the effect of the Sentencing
Guidelines on the prosecutor’s selection of cases.

**Lemma.** A legal rule that renders a plea bargain unenforceable unless
it specifies a sentence exceeding $\alpha$ times the benchmark sentence for the
offense, that is, a rule restricting the permissible sentence reduction to

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7 In our formal model, we assume that all trials are equally costly and all plea bargains are
equally costly. This clearly unrealistic assumption is made for expositional purposes only. Our
main results continue to hold under more realistic differential costs assumptions.

8 If without the guidelines’ rule all the cases selected by the prosecutor are in $\Omega_L$, the rule
will have no effect on the selection of cases. Following the literature, we assume that the
probability of conviction is exogenous, and accordingly the division of the universe of cases
between the L set and the H set is exogenous. In reality, however, the probability of conviction
is endogenous, and specifically it depends on the resources that the prosecutor invests in the
case. In borderline cases, the prosecutor can—through greater investment—transform an L
case into an H case. The extent to which prosecutors can transform L cases to H cases is
limited by the prosecutor’s resource constraint.
(1 − α) · s, will lead the prosecutor to select fewer L cases, a higher, lower, or unchanged number of H cases, and a lower overall number of cases.

**Remark.** The intuition for this result, which is proved in the Appendix, is as follows. Since pursuing L cases under the Sentencing Guidelines requires costly trials, the prosecutor will select fewer L cases. The effect on the number of H cases is ambiguous. There are two possible scenarios. Under the first scenario, the guidelines lead to the selection of more H cases. Since the prosecutor can pursue an L case only through a costly trial, she may well prefer more H plea bargains with a lower per-case sanction over fewer L trials with a higher per-case expected sanction. Under the second scenario, the guidelines lead not only to the selection of fewer L cases but also to the selection of fewer H cases. If the prosecutor still chooses a significant number of L cases, the added trial costs might force her to take on fewer H cases. The overall number of cases clearly declines under the second scenario. It also declines under the first scenario, since the prosecutor at most substitutes one L case for one H case.9

On the basis of the preceding lemma, the following proposition establishes the desirability of the restrictions imposed by the Sentencing Guidelines.

**Proposition.** As long as the probability of conviction is positively correlated with the probability of guilt, the Sentencing Guidelines, by rendering unenforceable plea bargains with sentence reductions exceeding $1 − α$ times the benchmark sentence for the offense, will reduce the number of innocent defendants who are pursued by the prosecutor.

**Remark.** The intuition for this result, whose formal proof is omitted, is as follows. The Sentencing Guidelines affect the prosecutor’s selection of cases in two ways. First, they induce substitution from L cases to H cases. Second, they reduce the overall number of cases that the prosecutor can pursue. As long as the probability of conviction is positively correlated with the probability of guilt, both effects result in a reduced number of innocent defendants who are pursued by the prosecutor.

**III. Concluding Remarks**

We conclude by discussing several issues pertaining to the implementability, the scope, and the normative implications of the sentencing principles analyzed in this paper.

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9 We assume that the prosecutor is interested only in maximizing the sum of imposed sanctions subject to a budget constraint. We recognize, however, that there are instances in which the prosecutor would be reluctant to drop a case regardless of the extra cost involved in taking it to trial. For example, the prosecutor might be reluctant to dismiss a weak murder case, even if taking this case to trial means that many other cases, including stronger cases, would have to be dropped. This factor reduces the rate of substitution between L and H cases. The importance of this factor, however, should not be overstated. While the prosecutor may well be reluctant to drop a high-profile murder case, she may also be wary of taking the case to trial and getting an acquittal.
Forcing Innocent Defendants to Stand Trial

We have shown that the Sentencing Guidelines’ rule will lead the prosecutor to drop many cases against innocent defendants. But what about those cases that are not dropped? Innocent defendant in such cases will be forced to stand trial. Under the assumptions of the basic model, defendants are indifferent between the plea bargain option and the trial alternative. In reality, however, forcing innocent defendants to stand trial might impose a cost on these defendants, reducing the normative appeal of the guidelines’ rule. Nevertheless, for a broad range of parameter values, the guidelines’ rule unambiguously benefits innocent defendants.

Specifically, innocent defendants will be better off on average under the guidelines in the following instances.

*The Defendant Gains Little from Plea Bargaining.* Given the prosecutor’s privileged position vis-à-vis defendants, in most cases the prosecutor will in fact be able to obtain most of the bargaining surplus in the plea negotiations. Accordingly, forcing defendants to stand trial often will not impose a significant cost on defendants.

*The Added Cost of Trial Is Large.* The evidence suggests that trials are indeed much more costly than plea bargains (Stuntz 2001; Schulhofer 1988). When the cost of trial is high, the guidelines’ rule will force the prosecutor to drop most type L cases. The advantage of the rule—cases dropped—would thus increase, while the disadvantage—substitution of plea bargains for trials—would decrease.

*The Difference between the Plea Sanctions in L Cases and H Cases Is Small over the Relevant Range.* The guidelines’ rule prevents the prosecutor from securing a cost-effective plea bargain in L cases. If a plea bargain opportunity that is lost in an L case can be replaced by an almost equally attractive plea bargain in an H case, then the prosecutor will substitute from L cases to H cases, rather than try L cases. As a result, the advantage of the guidelines’ rule would increase, while the disadvantage would decrease.

Uncertainty with Respect to the Benchmark Sentence

A key feature of the pre-Booker Federal Sentencing Guidelines is the narrow range within which a defendant’s sentence must be set (based on the offense level, the defendant’s criminal history, and a few additional factors). This strictness allowed for an accurate determination of the benchmark sentence for the offense (s in our model). A common estimate of the benchmark sentence, shared by the prosecutor, the defendant, and the court, is critical for a regime that restricts plea bargain sentences relative to the benchmark sentence for the offense. Therefore, the limited pre-Booker discretion allowed under the federal guidelines facilitated the socially desirable impact of the guidelines on the prosecutor’s selection of cases.

Post Booker, the magnitude of the selection-of-cases effect will be deter-
mined by the degree to which courts voluntarily adhere to the guidelines. As long as judges follow the guidelines in most cases—both at trial and when reviewing plea agreements—the selection-of-cases effect will not be significantly diluted. Even under less strict guidelines, such as some of the state-level sentencing guidelines, a selection-of-cases effect, albeit a weaker one, exists. If the relevant sentencing guidelines leave considerable discretion, such that the benchmark sentence may fall anywhere within a $[\delta, s]$ range, plea bargain sentences below $\alpha \cdot \delta$ would still be avoided. Accordingly, sufficiently weak L cases in which the likelihood of guilt is especially low would not be selected.

Charge Bargaining and Fact Bargaining

Even absent uncertainty regarding the benchmark sentence, the selection-of-cases effect would disappear if the sentence could be manipulated through charge bargaining or fact bargaining.\(^{10}\) While such circumvention should not be underestimated,\(^{11}\) the problem is not unique to the selection-of-cases result. Rather, the prevention of charge and fact bargaining is crucial to the efficacy of any sentencing guidelines (Schulhofer and Nagel 1997; Stuntz 2004).\(^{12}\) And, accordingly, the Federal Rules of Criminal Procedure and the federal guidelines themselves explicitly restrict the enforceability of such agreements.\(^{13}\)

\(^{10}\) Unlike charge bargaining, a unilateral decision by the prosecutor cannot undermine the selection-of-cases effect. Consider a defendant charged with possession of drugs with intent to distribute and assume that the prosecutor has a weak case. Since charge bargaining is impermissible, the prosecutor cannot dismiss the charge of intent to distribute in return for a guilty plea on a reduced possession charge. Of course, the prosecutor can reduce the charge unilaterally. If the prosecutor has a strong case on the reduced possession charge, the prosecutor may in fact choose to bring only the reduced charge. This selection-of-charges effect is analogous to our selection-of-cases effect.

\(^{11}\) The extent to which the prosecutor can circumvent the guidelines through charge bargaining and fact bargaining is debatable. See United States v. Booker, 125 S. Ct. 738, 762 (2005), where Justice Breyer noted that “Congress, understanding the realities of plea bargaining, authorized the Commission to promulgate policy statements that would assist sentencing judges in determining whether to reject a plea agreement after reading about the defendant’s real conduct in a presentence report (and giving the offender an opportunity to challenge the report). See 28 U.S.C. § 994(a)(2)(E); U.S. Sentencing Commission (2002, sec. 6B1.2(a)). This system has not worked perfectly; judges have often simply accepted an agreed-upon account of the conduct at issue. But compared to pre-existing law, the statutes try to move the system in the right direction, i.e., toward greater sentencing uniformity.” The dissent argued that “the premise on which the Court’s argument is based—that the Guidelines as currently written prevent fact bargaining and therefore diminish prosecutorial power—is probably not correct” (Stevans J., dissenting in part, 125 S. Ct. 782).

\(^{12}\) A more fundamental objection to our selection-of-cases argument questions the link between the expected trial outcome and the plea bargain sentence, even absent charge and fact bargaining. See Bibas (2004).

\(^{13}\) See Fed. R. Crim. P. 11(c)(5), where the court was allowed to review charge bargains and fact bargains and accept or reject the agreement; U.S. Sentencing Commission (2002, sec. 6B1.2[a]) (Standards for Acceptance of Plea Agreements—Policy Statement): “The court may accept the agreement if the court determines, for reasons stated on the record, that the remaining charges adequately reflect the seriousness of the actual offense behavior and that
Nolo Contendere Pleas and Alford Pleas

We have argued that the law, by restricting the prosecutor’s ability to offer light plea sentences, can reduce the magnitude of the innocence problem. But legal sanctions are not the only sanctions facing a defendant who considers a guilty plea. Potentially significant extralegal sanctions bolster the formal legal sanction. And prosecutors often have at least some control over these informal sanctions, specifically, by accepting nolo contendere pleas, where the defendant accepts a sanction without pleading guilty, or even Alford pleas,14 in which the defendant affirmatively asserts innocence and the prosecutor reduces the magnitude of the stigma associated with a criminal conviction. The desirability of nolo contendere and Alford pleas is fiercely debated in the literature (see, for example, Bibas 2003; Alschuler 2003). Our analysis provides another argument against such pleas. By curtailing the prosecutor’s ability to motivate a plea bargain by offering a reduced extralegal sanction, the law can strengthen the selection-of-cases effect.

Asymmetric Information

In most cases, key evidence, including the defendant’s statement to the police and the identity of the main witnesses, is common knowledge. In many jurisdictions, law or prosecutorial practice guarantees that defendants receive the most significant information collected by the prosecution, thus minimizing private information on the prosecution side.15 The defendant, on the other hand, usually has private information. In many cases, only the defendant knows for sure whether he is guilty. Gene Grossman and Michael Katz have accepting the agreement will not undermine the statutory purposes of sentencing or the sentencing guidelines. However, a plea agreement that includes the dismissal of a charge or a plea agreement not to pursue a potential charge shall not preclude the conduct underlying such charge from being considered under the provisions of § 1B1.3 (Relevant Conduct) in connection with the count(s) of which the defendant is convicted.” See also the recent policy guidelines issued by the Attorney General John Ashcroft (U.S. Department of Justice 2003b,) which instructed prosecutors to pursue the most serious readily provable offenses and prohibited fact bargaining or any other “plea agreement that results in the sentencing court having less than a full understanding of all readily provable facts relevant to sentencing.” For other ways of limiting prosecutors’ power to charge bargain, see Stuntz (2001, pp. 594–95), who proposes constitutional limits on the sentencing implications of the charges listed in the indictment as well as restrictions on mandatory minimum sentences as a way to limit the benefits to prosecutors from overcharging and from charge bargaining. Since charge and fact bargaining can be viewed as prosecutorial tools for tackling weak cases, any restrictions on the prosecutor’s ability to effectively employ these tools would reinforce the selection-of-cases effect.


15 If prosecutors do have significant private information, they might be able to use this informational advantage to manipulate innocent defendants into accepting high-sanction plea bargains. The guidelines’ rule is powerless against such manipulation. Reinganum (1988) studies a model in which prosecutors have private information. She shows that such private information may lead prosecutors to dismiss some cases. She also shows that requiring prosecutors to offer identical sentences to all defendants who are charged with the same crime may be welfare enhancing.
shown that if juries or judges are better than prosecutors in ascertaining guilt or innocence from the evidence, innocent defendants are more likely to reject a plea offer and opt for trial. The result is a socially desirable separation between cases that are resolved by plea bargain and cases that proceed to trial (Grossman and Katz 1983). But before cases can be directed to either the plea bargain path or the trial path, they must first be selected by the prosecutor. Our analysis operates at the ex ante stage, showing that cases against innocent defendants often will not be selected by the prosecutor. The Grossman and Katz model operates at the ex post stage, showing that many of the innocent defendants whose cases are pursued by the prosecutor will reject a plea bargain and opt for trial.

Deterrence

The overall effect of the sentencing restrictions imposed by the Sentencing Guidelines on deterrence is indeterminate. If the probability of guilt and the probability of conviction are strongly correlated, these sentencing restrictions can lead prosecutors to pursue fewer innocent defendants and more guilty defendants, thus enhancing deterrence. However, the guidelines’ rule can also force the prosecutor to pursue fewer guilty defendants, thus compromising deterrence.

APPENDIX

Proof of the Lemma

Proof. We prove that the prosecutor will select fewer L cases. The reasoning supporting the remaining parts of the lemma is provided in the text.

Let \( q_n \) and \( q_L \) represent the threshold values of the expected sanction, such that the prosecutor selects cases with \( q \geq q_n \) in \( \Omega_n \) and cases with \( q \geq q_L \) in \( \Omega_L \). Without the restrictions imposed by the Sentencing Guidelines, the prosecutor solves

\[
\max_{q_n, q_L} \left( \int_{q_n}^{q_1} qf_1(q) dq + \int_{q_L}^{q_2} qf_2(q) dq \right)
\]

subject to

\[
\int_{q_n}^{q_1} cf_1(q) dq + \int_{q_L}^{q_2} cf_2(q) dq \leq B.
\]

\(16\) To take an extreme case, if a guilty defendant will always face \( p > q \) and only an innocent defendant can face \( p < q \), then setting free defendants with \( p < q \) enhances deterrence.
With the restrictions imposed by the guidelines, the prosecutor solves

$$\max_{q_1, \ldots, q_n} \left( \int_{q_l}^{q_u} q f_1(q) dq + \int_{q_l}^{q_u} q f_2(q) dq \right)$$

subject to

$$\int_{q_l}^{q_u} c f_1(q) dq + \int_{q_l}^{q_u} (c + x) f_2(q) dq \leq B.$$  \hfill (A2)

The Lagrangian is

$$L = \int_{q_l}^{q_u} q f_1(q) dq + \int_{q_l}^{q_u} q f_2(q) dq - \lambda \left[ \int_{q_l}^{q_u} c f_1(q) dq + \int_{q_l}^{q_u} (c + x) f_2(q) dq - B \right],$$

and the first-order conditions are $q_1 = \lambda c$ and $q_n = \lambda (c + x)$, which implies $\lambda > 0$. Since (A1) is identical to (A2) with $x = 0$, we have $q_1^{NG} = q_n^{NG} = q_0^{NG}$ (and $\lambda^{NG} = q_0^{NG}/c$), where NG represents the absence of the guidelines’ rule. When $x > 0$, we have $q_1 < q_1^{NG}$ (and $\lambda = q_0^{NG}/c = q_0^{NG}/(c + x)$), where G represents the guidelines’ rule. We can now prove that $q_1 > q_0^{NG}$ by contradiction. If $q_1 \leq q_0^{NG}$, then $q_1 < q_1^{NG}$, which violates the budget constraint. Q.E.D.

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