Re-Election Concerns and the Failure of Plea Bargaining

Siddhartha Bandyopadhyay
Bryan C McCannon
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Siddhartha Bandyopadhyay\textsuperscript{1}       Bryan C. McCannon\textsuperscript{2}

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\textsuperscript{1}Department of Economics, University of Birmingham, Birmingham, B152TT, U.K., email: s.bandyopadhyay@bham.ac.uk

\textsuperscript{2}Department of Economics, Wake Forest University, Winston-Salem, NC 27109, U.S.A., email: mccannbc@wfu.edu
Abstract

A new explanation for the failure of plea bargaining is provided. It is shown that a retention agent (i.e. median voter) can use convictions at trial as a signal of the quality of a prosecutor. This encourages a public prosecutor to take cases to trial even when both social welfare and her utility (absent the retention motivation) from plea bargaining is higher.

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**Keywords:** plea bargaining, prosecutor evaluation, signaling
1 Introduction

Trials in the United States, whether they be criminal cases or civil disputes, are expensive and time consuming for both parties. It has been estimated that on an average the cost of a trial is $10,000 per day.\(^1\) However, pre-trial bargaining is an available option to save on such costs. Consequently, one may believe that successful negotiations could eliminate trials. Not all disputes, though, are settled by plea bargaining. While there are various explanations for that (see the concluding paragraph of this section), we ask whether cases can be taken to trial even when both prosecutor and defendant know that plea bargaining is efficient.

To address this question we analyze plea bargaining in criminal cases. In the U.S. 95\% of all criminal cases are handled by local prosecutors (Simmons, 2004). In forty-seven of the fifty states the chief public prosecutor is elected to the office by the citizens (Perry, 2006). We argue that a possible explanation for having trials when plea bargaining is efficient is asymmetric information regarding the quality of the public prosecutor involved in the case. Specifically, it is her desire to be retained in office that leads her to signal her quality by using courtroom trials. We show in a simple theoretical model that even in an environment where plea bargaining is always preferable to both the prosecutor (absent her retention motivation) and social welfare there exist separating equilibria where trials occur. Convictions in trials act as a signal to the voting public in these equilibria since high-quality prosecutors are better able to obtain convictions. Furthermore, we show that there exist environments where total welfare, even after incorporating future benefits of effectively identifying highly capable public prosecutors, is

\(^1\)http://the7thpwr.wordpress.com/category/plea-bargain/
This note provides a new explanation for the failure of plea bargaining. A variety of theoretical explanations have been provided for its effectiveness. Landes (1971) originally argued that plea bargaining is beneficial since it conserves resources and allows the “budget” constrained prosecutor to reallocate them towards more worthy cases. In their seminal contribution Grossman and Katz (1983) introduce two arguments supporting plea bargaining. First, it acts as an insurance for a risk-averse public. This has been explored further by Bjerk (2008). Second, plea bargaining may act as a screening mechanism as it acts to sort the guilty from the innocent defendants. The effectiveness of plea bargaining as a screening mechanism has received much attention (Baker and Mezzetti, 2001; Bjerk, 2007; Franzoni, 1999; Kobayashi and Lott, 1992; Reinganum, 1988; 2000).

There are two explanations for its failure provided in the literature. First, individuals may make errors in their assessment of the expected outcome. This could arise from random errors (Priest and Klein, 1984), excessive optimism (Shavell, 1982), or prosecutorial “passion” (Burke, 2007). Second, asymmetric information related to the trial can create a barrier to successful plea bargaining. There may be asymmetric information on the likelihood of success (Bebchuk, 1984), costs and damages (Bebchuk, 1988), or risk preferences (Farmer and Pecorino, 1994). An empirical investigation of divorce disputes (Farmer and Tiefenthaler, 2001), experimental evidence (Stanley and Coursey, 1990), and a study of the Italian system of formal bargaining (Boari and Fiorentini, 2001) are all attempts to empirically analyze the limitations to plea bargaining. Additionally, Ancelot and Delacote (2009) consider the size of the plea bargaining outcome when prosecutors choose how much effort to exert and the defense attorney is altruistic.
The objective of this note in contrast is to contribute to the explanations for the failure of plea bargaining based not on errors or asymmetric information about the case, but retention motivations of publicly-elected prosecutors. There is empirical evidence that elected district attorneys prosecute more cases (Rasmusen, Raghav and Ramseyer, 2009) and that prosecutors facing contested elections do increase their use of jury trials (see Bandyopadhyay and McCannon, 2010), which is consistent with our theory.

2 Model

This is a two-period model. In the first period there is a single incumbent prosecutor of unknown quality who has to decide how to handle cases brought before her. To keep the analysis simple, suppose the prosecutor takes one of two types \( q \in \{H, L\} \) which we call high and low respectively. She is high quality with probability \( \gamma \in (0, 1) \). Let the parameter \( \theta \) denote the quantity and quality of evidence she has against the defendant in any given case. It may also capture information about the skills of the defendant’s lawyer. Assume \( \theta \in [0, \bar{\theta}] \) where \( \bar{\theta} < \infty \) and is exogenously given. Observing \( \theta \) for a particular case the prosecutor has two options in which to choose from. She may either try the case by taking it to trial or she may engage in plea bargaining.\(^2\) Assume that a large number of cases come up in the first period, which are either tried or plea bargained. One may think of the first time period as a term in office.

Denote \( s(\theta) > 0 \) as the sanction received if successful in the courtroom. For example, the sanction may represent the length of time the criminal is incarcerated. The sanction is known and exogenously set. Alternatively, with

\(^2\)Assume that the choice of whether to file charges has already been made.
judicial discretion, parole, and appeals this may be best thought of as the
expected sanction conditional on conviction. Additionally, the probability
the prosecutor is successful at trial depends on the quality of the prosecutor
and the quality of the evidence. A high-quality prosecutor wins at trial with
probability $p_H(\theta)$, while if she is low quality she wins with probability $p_L(\theta)$.
Assume $1 > p_H(\theta) > p_L(\theta) > 0 \forall \theta$ and $\frac{dp_q}{d\theta} \geq 0 \forall q$. Finally, if she takes the
case to trial, a cost $c > 0$ is experienced.$^3$

With regards to the plea bargaining option, denote $b(\theta)$ as the agreement
that arises. As the prosecutor type is private information, the outcome under
plea bargaining cannot be conditioned on type.

2.1 Welfare

Denote $w(z)$ as the welfare generated from a case that results in $z$, either
a plea bargain, $z = b(\theta)$, a sanction resulting from a trial, $z = s(\theta)$, or an
acquittal, $z = 0$. Thus, the expected welfare from a case if it goes to trial is
$Ew(\theta) = p_qw(s(\theta)) + (1 - p_q)w(0) - c$. Because we are interested in the
failure of plea bargaining we consider an environment where

$$w(b(\theta)) > p_qw(s(\theta)) + (1 - p_q)w(0) - c \forall \theta \forall q.$$ 

Rather, plea bargaining is better for society for every level of evidence in
a case, even for a high-quality prosecutor who is able to win the case with
a higher probability. Also, assume $w(b(\theta)) - p_qw(s(\theta)) - (1 - p_q)w(0) >
w(b(\theta')) - p_qw(s(\theta')) - (1 - p_q)w(0)$ for $\theta' > \theta \forall q$ along with $w(s(\theta)) >$

$^3$We choose to allow only the possibility of conviction as being type dependent. This,
we believe, is realistic and the results do not change if one assumes $s_H(\theta) > s_L(\theta)$ and/or $c_H < c_L$.

$^4$One may incorporate wrongful convictions and acquittals by presuming that $w(z)$
encapsulates all of these possibilities.
w (0). The gap between the value of plea bargaining and the expected welfare from taking a case to trial diminishes with better evidence against the defendant.

Denote $W_q$ as the expected welfare generated over the entire term, or rather, the first-period welfare if the prosecutor is of quality $q$. To link the two concepts let $F : [0, \overline{\theta}] \rightarrow [0, 1]$ denote the distribution function in which the quality/quantity of evidence from each case is (independently) drawn. Assume a large number of cases arise in the term and the number of cases disposed of does not depend on the manner in which the prosecutor handles them so that the expected welfare from a case equals the average welfare generated from each case over the course of the term.\footnote{While interesting and important issues, case backlogs, resources, and incentives used to encourage actors to process more cases are not considered here.} Given this, assume first-period welfare equals the expected welfare from a randomly selected case. Thus, if a prosecutor chooses to take every case to trial where $\theta \geq \theta'$ and plea those with $\theta < \theta'$, then first-period welfare is

\begin{equation}
W_q = \int_0^{\theta'} w (b (\theta)) dF (\theta) + \int_{\theta'}^{\overline{\theta}} [p_q (\theta) w (s (\theta)) + (1 - p_q (\theta)) w (0) - c] dF (\theta).
\end{equation}

Finally, denote $EV$ as the second-period expected welfare. If her type is known, then she generates $V_q$ so that $EV = V_q$, but if it is not known then $EV = \gamma W_H + (1 - \gamma) W_L$. Assume $V_H > \gamma W_H + (1 - \gamma) W_L > V_L$ so that it is better for the public to have a known high-quality prosecutor in office. Consequently, total welfare is $W_q + EV$.

### 2.2 Asymmetric Information

Suppose voters do not know the type of the incumbent or the quality of the evidence in each case. While the first-period welfare is maximized if every
case is plea bargained, with private information a retention agent is unable to
distinguish between high-quality and low-quality incumbents. If some cases
are taken to trial, then it seems reasonable to believe that the success of the
prosecutor in the courtroom would be a metric to use to evaluate her since
the two types differ in their ability to obtain a conviction. We are interested
in establishing whether there exists environments in which, wastefully, cases
are taken to trial for the purpose of being retained. Thus, do there exist
outcomes where plea bargaining fails?

To evaluate this the preference of the prosecutor needs to be considered.
We propose the most favorable preferences for welfare. Specifically, assume
the utility she derives from each case is directly proportional to the welfare
generated, or rather, \( u(z) = \alpha w(z) \) for \( \alpha > 0 \). Thus, absent motivation to
be retained she is interested in “dispensing justice” in such a way as is best
for society. Additionally, though, she receives a bonus from being retained,
\( R \). For simplicity assume the bonus is independent of the quality of the
prosecutor. If a prosecutor does take cases to trial, then she will take those
she is more likely to win and those where there is less expected welfare loss.
Hence, if she takes a case to trial when and only when \( \theta \geq \theta' \), then her
expected utility if she is retained is \( E u_q = \)

\[
\int_0^{\theta'} u(b(\theta)) \, dF(\theta) + \int_{\theta'}^{\theta_{\text{M}}} [p_q(\theta) u(s(\theta)) + (1 - p_q(\theta)) u(0) - c] \, dF(\theta) + R.
\]

If she is not retained, then her utility is \( E u_q - R \). Hence, absent the retention
motivation the prosecutor is interested in plea bargaining every case. We will
solve for the separating equilibria that arise as Perfect Bayesian equilibria.\(^6\)

\(^6\)Pooling equilibria, where there is no differentiation between the types, is not considered
here since our objective is to establish the existence of equilibria where the high-quality
prosecutors behave wastefully to be distinguished and retained.
3 Separating Equilibria

Suppose that the retention agent (i.e. median voter) retains the incumbent if and only if the number of convictions from trial she achieves is higher than a predetermined threshold, \( \hat{n} \), or rather, if

\[
n_q = \int_{\theta_M}^{\vartheta} p_q(\theta)\,dF(\theta) \geq \hat{n}.
\]

There exists evidence that for state-level prosecutorial elections convictions is an important variable covered by media (Wright, 2009) and in a theoretical model retention incentives are shown to influence the investigation decision by prosecutors (Gordon and Huber, 2002) and, thus, making retention decisions based on convictions is recommended. The question becomes do there exist separating equilibria where an \( \hat{n} > 0 \) is used.

For such an outcome to be a separating equilibrium a high-quality prosecutor must be interested in attaining this level of convictions, while a prosecutor of low quality is not. If the incumbent does not act to be retained, then since her preferences are proportional to welfare she chooses to plea bargain all cases. Thus, retention is preferable if

\[
\int_0^{\hat{\theta}_q} u(b(\theta))\,dF(\theta) + \int_{\hat{\theta}_q}^{\vartheta} [p_q(\theta)u(s(\theta)) + (1 - p_q(\theta))u(0) - c]\,dF(\theta) + R \\
g \geq \int_0^{\vartheta} u(b(\theta))\,dF(\theta),
\]

where \( \hat{\theta}_q \) is the value of \( \theta' \) which results in \( n_q = \hat{n} \). This expression reduces to

\[
R \geq \int_{\vartheta}^{\vartheta} [u(b(\theta)) - p_q(\theta)u(s(\theta)) - (1 - p_q(\theta))u(0) + c]\,dF(\theta). \tag{3}
\]

\footnote{We choose to define \( n_q \) on the expected number of convictions. With the assumption that there are a large number of cases in a term this does not impose any problems for the analysis.}
where \( \theta' = \hat{\theta}_q \). Denote \( \phi_q \) as the value of \( \theta' \) where (3) holds with equality. Define \( \nu_q \) as the value of \( n_q \) that arises if \( \theta' = \phi_q \).

Thus, as stated, for a separating equilibrium to exist it must be that only a high-quality prosecutor is willing to achieve the required threshold. Hence, if \( \hat{\theta}_H > \phi_H \) and \( \hat{\theta}_L < \phi_L \), then (3) holds for a high-quality, but not for a low-quality prosecutor. Thus, we are left only to verify that there exists a \( \hat{n} \) where both of these conditions hold.

First, recognize that since \( p_H(\theta) > p_L(\theta) \) \( \forall \theta \) a high-quality prosecutor wins more frequently if cases are taken to trial and, consequently, the expected welfare loss to proceeding to court is less. In other words, if both types use the same cutoff \( \theta' \), then the RHS of (3) is less for \( q = H \). Therefore, it must be that at \( \theta' = \phi_L \), a high-quality prosecutor is still willing to act to be retained. As a result, \( \phi_H < \phi_L \). Consequently, \( \nu_H > \nu_L \) so that the interval \( (\nu_L, \nu_H] \) is nonempty. The following proposition states the separating equilibria.

**Proposition 1** There exist separating equilibria where a high-quality prosecutor achieves \( \hat{n} \in (\nu_L, \nu_H] \) and is retained, while a low-quality prosecutor engages in plea bargaining in every case, \( n = 0 \), and is not retained. Furthermore, \( \nu_H > \nu_L \) so that the interval \( (\nu_L, \nu_H] \) exists.

It is interesting to note that in all separating equilibria it is the low-quality prosecutor who selects the first-best amount of prosecution, while it is the high-quality prosecutor who is engaging in an excessive number of trials. Furthermore, it is straightforward to verify that, while the theoretical model presented assumes that the total number of convictions via jury trial is the metric used to make the retention decision, it is mathematically equivalent for the median-voter to use the aggregate sentence lengths obtained since
convictions and sentences coincide.

The final issue to consider is whether the separating equilibria are, in fact, worse for total welfare than plea bargaining all cases. If the type is identified, then $V_H$ is the second-period welfare if $q = H$ and $\gamma W_H + (1 - \gamma) W_L$ if $q = L$. Using the separating equilibria derived it is straightforward to verify that total welfare is less in a separating equilibrium if

$$V_H - W_L \leq (1 - \gamma) \int_{\tilde{\theta}_H}^{\theta} [w(b(\theta)) - p_H(\theta) w(s(\theta)) - (1 - p_H(\theta)) w(0) + c] \, dF(\theta).$$

(4)

Thus, Proposition 2 states the conditions on the environment under which the lack of plea bargaining is inefficient.

**Proposition 2** If the cost of trial is substantial, the likelihood of the replacement being low quality is great, the probability of success in trial is small, or the gain to having an identified, high-quality prosecutor in office is small relative to the actions of a low-quality incumbent, i.e. equation 4 holds, then the separating equilibria generate a lower total welfare than the outcome of plea bargaining every case.

We have analyzed a stark environment viz. one where in each case welfare generated from plea bargaining is greater than going to trial. We show that asymmetric information on the skills of the incumbent prosecutor who wishes to be retained leads to some cases being taken to trial and thus provides an alternate explanation for why all cases are not plea bargained.

4 References

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