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Publication Date

2009-03-19

Supplemental Material

<https://escholarship.org/uc/item/14g9r53b#supplemental>

Does Private Selection Improve the Accuracy of Arbitrators' Decisions?

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March 18, 2009

Preliminary and Incomplete – Comments are Welcome

1. Introduction

Arbitration is a private dispute resolution mechanism. This distinguishes it from adjudication, which is public. An important implication of the distinction between private and public dispute resolution mechanisms is the different way they select the decision maker - adjudicator or arbitrator. Whereas litigants have little influence over the assignment of a judge to their lawsuit, in arbitration their approval of the arbitrator is necessary. This paper examines the effect of private selection over the expected quality and bias of arbitrators, and over their incentives in deciding the cases before them.

Allowing both litigants to veto arbitrators they deem unfavorable would seem to guarantee that those who are selected would not be biased in favor of one of the litigants, and would be highly qualified. Market forces would then drive arbitrators to perform better because they would want to maintain a favorable reputation and increase their prospects of being chosen to arbitrate future disputes. Thus, both the selection effect and the incentive effect should improve the quality of arbitrators, as compared to public alternatives that leave the parties no influence over the choice of adjudicator.¹

This paper challenges these assumptions. First, it demonstrates that if arbitrators are selected at the time of dispute then the ones who are privately chosen might be more biased and less qualified on average than randomly selected arbitrators. Unlike random selection, private choice is the outcome of bargaining, and it is determined by the relative bargaining power of the parties. Since at least one of the parties would prefer a more biased arbitrator, the outcome of bargaining might tilt in its favor and against unbiased arbitrators. Moreover, when one of the parties believes his probability of success is low he would prefer an unqualified

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¹Clearly, this is not true if the arbitrator is chosen by one of the parties.

arbitrator. In such cases private selection might also result in a lower quality of arbitration than expected under random selection.

The problem of biased and unqualified post-dispute arbitrator selection may be addressed either by using random selection mechanisms after the dispute, or by making the selection of arbitrator at the time of contracting, before the dispute. However, a second problem of private selection of arbitrators is its effect over arbitrators' decisions. Arbitrators want to establish reputation for being unprejudiced. Yet, when there is no way to verify the accuracy of their prior decisions, the only way to establish such reputation is to avoid a series of decisions that might seem biased in favor of one party. As a consequence, arbitrators might want to make an incorrect decision when a correct decision would carry the inference that they are biased. For example, an arbitrator in employment disputes would not want to make too many decisions in favor of employers, because then he would be perceived prejudiced against employee litigants and would be vetoed by them. He would therefore have an incentive to decide some cases against employers, even if he knows these decisions are wrong.

Solving the problem of biased selection does not address the strategic incentive problem. On the contrary, arbitrators who expect contracting parties or litigants to prefer unbiased arbitrators, would be inclined to strategically bias some of their decisions. Interestingly, arbitrators would strategically bias their decisions even if they are only interested in deciding more disputes correctly, so their interest would seem to be aligned with those of contractors. Their interest in deciding more disputes correctly would motivate them to knowingly bias some decisions, in order to guarantee the opportunity to make future accurate decisions.

The paper proceeds as follows: Section 2 reviews the current literature on arbitration selection and incentives. Section 3 provides the basic framework for analyzing the accuracy of arbitrator decisions. Section 4 review current selections procedures practiced by major dispute resolution providers. Section 5 presents a simple model of arbitrator selection, assuming arbitrators do not behave strategically. Section 6 models the behavior of arbitrators who want to establish reputation for not being biased. Section 7 discusses possible extensions of our analysis, to divergence in arbitrator quality and for the possibility of appeal over arbitrators' decisions. Section 8 concludes and draws some possible policy implications from our analysis.

2. Literature Survey

A first informal discussion of the relationship between selection of arbitrators and their motivation is found in Tullock (1980). He asserts that private selection would motivate arbitrators to “choose a decision which is most likely to lead to his being selected for arbitration in the future”.² He conjectures that this may lead arbitrators to bias their decisions in contexts such as consumer arbitration, where one of the parties (the retailer) uses arbitration more

²Tullock (1980), at p. 127.

often and has better information about potential arbitrators. However, in ordinary commercial settings the arbitrator would be motivated to be unbiased and deliver accurate decisions. Another informal discussion is Posner (2005). He speculates that arbitrators would tend to “split the difference” and award each party a partial victory “for this will make it difficult for the parties on either side of the class of suits in question to infer a pattern of favoritism”.³

More formally, Cooter (1983) uses a bargaining model to show that private judges who compete in the market would split any surplus between the litigants in a way that would reflect their relative bargaining power. He does not discuss, however, the question how private judges would establish their reputation in the market. Few studies, for example Farber (1980, 1981) and Gibbons (1988), have examined the relationship between litigants’ offers in final offer arbitration and the arbitrator’s decision. However, neither of these models addresses the strategic reputation concern of arbitrators.

The selection of arbitrators was empirically studied in Bloom and Cavanagh (1986). Examining the preferences of employers and unions in pay dispute arbitration the paper shows that both sides had similarly preferred more experienced arbitrators, yet each had a preference for arbitrators whose win-loss tallies under final offer arbitration tended in his favor.

As far as arbitrator behavior is concerned, Ashenfelter and Bloom (1984) and Ashenfelter (1987) report that arbitrator decisions are statistically exchangeable – that is, arbitrator decisions contain an unpredictable component that may be characterized by a probability density function. They explain that arbitrators tend to avoid extreme decisions and decide disputes based on their prediction of how other arbitrators would have decided the case. Ashenfelter (1987) explains these findings as follows:⁴ “The parties to an arbitration decision are always allowed to express their preferences in the selection of the arbitrator who will handle their case. Each party will naturally rule out arbitrators whose historical decisions are unfavorable to their position. Arbitrators who have taken extreme positions relative to their colleagues are thus excluded from future selection by either one party or the other. Knowing this, the strategy of a successful (i.e., enduring) arbitrator is to provide decisions that are forecasts of the decisions other arbitrators will make in similar situations. This is the only systematic strategy that keeps an arbitrator’s decisions from looking aberrant. Arbitrators who follow this strategy thus make decisions that have the appearance of forecast errors; indeed, they are forecast errors.”

Finally, some empirical studies have examined win-loss rates in various categories of disputes. Sherwyn, Estreicher and Heise (2005) review the empirical literature on employment arbitration and conclude that employer win-loss rates were not significantly different between arbitration and courts (federal or state). Recently, Choi, Fisch and Pritchard (2008) have examined securities brokerage dispute arbitration, managed by the National Association of Securities Dealers. They find that attorney arbitrators who represent brokers in other arbitrations are more likely to decide in favor of brokers, whereas attorney arbitrators

³Posner (2005), at p. 1261.

⁴Ashenfelter (1987) at 383.

who represent investor feature no such bias. They further find that party control over the selection of arbitrators increases arbitrators' incentives to cater to the interests of brokers, who are repeat players in these arbitrations. Finally, they find that investors are less able to screen among arbitrators' bias when it is less visible (ideological bias, as compared to conflict of interests, which is visible).

Two other theoretical papers have examined the issues presented in this paper in a more abstract setting. Morris (2001) considered a model of 'political correctness' and argued that an expert may be led to distort its recommendation so as to maintain its reputation of being loyal to certain group values; Ely and Välimäki (2003) have extended Morris' two-period model to a model with an infinite horizon, and have shown that as the expert becomes more patient, a strategic unbiased expert is driven to bias its decisions in the opposite direction from that of the biased expert, which makes it behave in a way that is as bad as that of a biased expert only in the opposite direction. Consequently, in equilibrium, experts cannot but acquire a 'bad reputation' and stop being called upon.

3. The Accuracy of Arbitration Decisions

Arbitrators vary on two distinct dimensions. One is their quality and the other is their bias.⁵ An arbitrator's quality is measured by his ability to identify the accurate outcome of a dispute. A more qualified arbitrator would be more likely to know whether the defendant is liable or not. In case the defendant is liable, the higher quality arbitrator's evaluation of damages that should be paid to the plaintiff would be more accurate.

The second dimension is the arbitrator's bias. An arbitrator may be biased in favor of one of the parties, especially when deciding disputes in which parties belong to two distinguished and identifiable groups. This may be the case in employment, franchise, or consumer disputes, to name but few. In each of these types of disputes litigants belong to identified groups: Employers and employees, Franchisors and Franchisees, Producers and consumers. An arbitrator may be inclined to favor one group over the other, and this may affect his decisions. Although the arbitrator's quality may be very high, so he could deliver an accurate decision, he might nevertheless decide differently, due to his bias.

Formally, arbitrators may be thought of as though they get a signal about the true state of the world, which is the defendant's true liability or the plaintiff's true losses. When the dispute is only about the defendant's liability there are two possible states of the world,

⁵All three largest arbitration providers – American Arbitration Association (AAA), Judicial Arbitration and Mediation Services (JAMS), and the National Arbitration Forum (NAF) provide in their Due Process protocols for these two dimensions of selected arbitrators. Thus, the AAA requires that the arbitrator be independent, neutral and impartial, and JAMA and NAF require that the arbitrator would be neutral. As far as his quality is concerned, the AAA requires arbitrators to be skilled, competent and qualified, and NAF requires them to be skilled. See Appendix 3, Preliminary Report: Consumer Arbitrations Before the American Arbitration Association, Searle Civil Justice Institute (2009), available at http://www.searlearbitration.org/p/full_report.pdf.

defendant liable or defendant not liable. The arbitrator's quality would be measured by that probability of mistake. The least qualified arbitrator would be one whose signal is wholly uninformative whereas the most qualified arbitrator would always know the true state of the world.⁶ The arbitrator's bias would be measured by the difference between the two conditional probabilities of mistake. The higher is his bias against one of the litigants, the higher is the difference between the conditional probability of mistake when that litigant is right, and the conditional probability of mistake when the other litigant is right.⁷

At the time of contracting parties want to guarantee adequate performance of the contract.⁸ If they could write a complete contract, they would specify the preferred outcome for each future state of the world, and would like an arbitrator to implement this outcome. If a complete contract is not feasible, they would like the arbitrator to implement the outcome they would have preferred, had they been able to write it in advance. In both cases, contracting parties would share the same interests in the accuracy of the arbitrator. Moreover, none of them would want the arbitrator to be biased, even if such bias is in her favor, because this would imply different performance incentives than the ones both intend to implement. If the parties want the outcome to be biased in favor of one of them, or less accurate, they would specify the substantive terms of the contract accordingly, but want those terms to be applied with the highest accuracy.

There are cases where contracting parties would prefer arbitrators' decisions to be less accurate. Generally, this would be the case whenever the performance incentives generated by a more accurate decision would not justify the costs of such higher accuracy. For example, if the parties cannot determine at the time of contracting nor at the time of performance the exact harm from a breach, then accurately determining this harm after the dispute would not change the incentives to breach. It would therefore be wasteful, and the parties would prefer a less accurate arbitrator, if his costs would be lower.⁹

For the purposes of our analysis we can assume that at the time of contracting parties would want to guarantee adequate performance of the contract, and that this would imply a choice of unbiased and high quality arbitrators. In cases where this is not true the parties can either change the substantive conditions of their contract, or the procedural and evidentiary rules of arbitration, to facilitate a less accurate (or even biased) outcome. Given such changes, the parties would still share the same interest in selecting the most qualified and unbiased arbitrator.¹⁰

⁶Thus, the highest conditional probability of getting the wrong signal is assumed to be 0.5. For higher probabilities the arbitrator could always simply make the opposite decision from his signal, which therefore implies an upper bound of 0.5 over the probability of mistake.

⁷If the dispute is about the value of damages then the arbitrator's quality would be measured by the correlation between his signal and the true damages, and his bias would be measured by the difference between the mean value of his signal and mean value of the true damages.

⁸The discussion here follows Tullock (1980), at 127-129.

⁹The value of accuracy of dispute resolution has been extensively analyzed by Kaplow (1994), Kaplow and Shavell (1994, 1996).

¹⁰In fact, our analysis generally applies to any pre-dispute preferences of the parties. The question is how

The same is not true after the dispute breaks. At that time the parties' interests are not aligned, since each would like to prevail in the dispute. The problem ceases to be one of creating efficient incentives to perform the contract, and becomes a purely distributive problem.¹¹ If arbitrators may be biased in favor of one party or the other then each party would like the arbitrator to be as biased in his favor, since this would increase his chances of prevailing. If arbitrators can only be biased in favor of one of the parties, then that party would want an arbitrator who is most biased in his favor, whereas his counterparty would want to choose the least biased arbitrator. Either way, the parties' interests with respect to the arbitrator's bias would conflict.

Maybe counter intuitively, a similar conflict of interests may arise also with respect to the arbitrator's quality, when the only disagreement is whether the defendant is liable or not. A litigant's preferences would then depend on his estimation of the probability that he is right. If this estimation is lower than 0.5 then he would prefer the arbitrator to make as many mistakes as possible. If the other litigant's estimation that she is right is higher than 0.5, they would have conflicting interests about the quality of the arbitrator.¹²

4. How Are Arbitrators Selected?

Providers of dispute resolution services vary in their rules for selecting the arbitrator. Not only may the procedures practiced by each institution be different from the ones used by others, but some of the providers also allow the parties to choose from a list of different selection procedures, or assign different procedures to different types of disputes.¹³

Nevertheless, selection procedures can be divided between two categories: Random selection procedures and Bargaining selection procedures. In a purely random selection procedure the arbitrator is randomly selected by the dispute resolution provider from a roster of arbitrators. The roster consists of arbitrators that satisfy the provider's requirements and have registered with it. At the other end are purely bargaining selection procedures, in which the parties must agree on the arbitrator, who may either be chosen from the provider's roster or not.

Selection procedures within each category present numerous variations over these two prototypes. Instead of a purely random selection procedure the provider may offer the

they can implement their pre-dispute preferences by choosing the arbitrator selection mechanism. Moreover, since we assume that after the dispute the parties' preferences diverge, the same analysis can be applied to the pre-dispute stage. Thus, even the assumption of identical preferences at the time of contracting can be relaxed in a way that is evident from our discussion below.

¹¹The parties may have non-distributive concerns in minimizing their litigation costs. This is the reason why they would prefer to settle their dispute than litigate it. We discuss settlement in section ****below.

¹²Tullock (1980), proposes a two step selection process, in which each party would first decide how much he is willing to contribute to hire an arbitrator, and then a government official chooses among arbitrators who are willing to arbitrate the dispute for the sum of the parties' offers. He conjectures that parties who are more likely to win would be willing to pay more to hire a more accurate arbitrator.

¹³See Appendix 1 for a table summarizing selection procedures of major arbitration providers.

parties a short list of arbitrators and allow each of them to veto a number of arbitrators on that list. The number of allowed vetoes may either be restricted, or not. If the number of arbitrators that survive veto by both parties is larger than one then the arbitrator is either selected randomly or according to combined rankings provided by the parties for the arbitrators they do not veto. If the procedure does not limit the number of vetoes allowed to each party and all arbitrators on the list are vetoed then the provider may either propose another list, or make a random choice from its roster (excluding the vetoed arbitrators). Finally, the parties may be allowed only to rank the arbitrator on the short list, and the selected arbitrator would be the one whose combined rank is highest.

Bargaining procedures may also vary. Instead of bargaining over arbitrators from the full roster, parties may be presented with a short list, from which they must choose. In cases where the arbitration panel consists of three (instead of one) arbitrators, each party may choose one arbitrator at its own discretion, and the two selected arbitrators must then choose the third arbitrator to complete the panel.

In fact, a selection procedure may hold characteristics from both types of procedures, random and bargaining. Therefore, categorization to one type or the other is not necessarily exclusive. Moreover, most dispute resolution service providers substitute a random selection mechanism for bargaining whenever the parties cannot reach an agreement. Thus, one of the parties can always force a random selection mechanism over his counterpart objection. In cases where the parties' preferences conflict one of them is certain to prefer the random selection procedure. Bargaining procedures are therefore of more significant interest when parties have not opted for an institutional provider of arbitration services, and they must therefore select the arbitrator on their own. Notice, also, that most dispute resolution providers allow the parties to structure their own selection procedures, which would then substitute for the proposed defaults. In structuring their selection procedures the parties are not constrained to currently practiced procedures.

For the purpose of our formal analysis it is only important to recognize the two prototypical procedures. This allow us to examine their effects over the expected bias and quality of the chosen arbitrator and her incentives. We discuss the implication from this analysis for more complicated selection procedures in the conclusion.

5. A Model of Arbitrator Selection

Consider the following situation. Two parties have a prior agreement that they will arbitrate any future dispute they may have rather than go to court. At the time of contracting neither of them knows whether he will be the plaintiff or the defendant in any future dispute. Yet, once a dispute arises identification as a plaintiff (P) and a defendant (D) is evident. For simplicity, we assume that the dispute can be decided in one of two ways – either the defendant is found liable, in which case he must pay the plaintiff 1, or he is found not liable, and then he pays the plaintiff nothing. Furthermore, at the time of dispute there are two

possible states of the world, $\theta \in \{\theta_P, \theta_D\}$ indicating, respectively, whether the plaintiff or defendant are right. The parties believe that in any dispute that is not their own the states θ_P and θ_D are equally likely. However, the parties believe that the plaintiff is right in the dispute in which they are personally involved with probabilities $q^D < 1/2 < q^P$, respectively, where q^D denotes the belief of the defendant and q^P denotes the belief of the plaintiff.

An arbitrator that is selected to arbitrate a dispute observes the true state of the world. Conditional on its private information, it then chooses whether the plaintiff or defendant should win the case. That is, the arbitrator is not allowed to decide on a compromise between the two parties. It has to pronounce one party right, and the other wrong.¹⁴ We represent the arbitrator's strategy by the pair of probabilities (σ_P, σ_D) where for each party $i \in \{P, D\}$, σ_i is the probability that the arbitrator decides in favor of party i in state θ_i .

An arbitrator can be either biased in favor of the defendant, in favor of the plaintiff, or unbiased. We assume, initially, that a pro-defendant arbitrator always decides for the defendant, a pro-plaintiff arbitrator always decides for the plaintiff, and an unbiased arbitrator decides the case correctly, according to the state of the world.

Each arbitrator that appears before the parties is characterized the parties' prior belief about the likelihood of its bias, which is denoted $\beta \in [-1, 1]$. A $\beta > 0$ is interpreted as the prior probability that the arbitrator is pro-defendant and a $\beta < 0$ is interpreted as implying that the prior probability that the arbitrator is pro-plaintiff is $-\beta$. So, when we write "arbitrator β " below, we mean an arbitrator who is believed to be biased with probability β . We assume that β is distributed according to some distribution function F on the interval $[-1, 1]$.

If the arbitrator is randomly selected then the expected bias of the arbitrator is $E(\beta)$.

Suppose however that the two disputing parties select an arbitrator using the following procedure: a sequence $\{A_1, A_2, \dots\}$ of arbitrators appears before the parties, one in each period. The parties' prior belief about each arbitrator in this sequence is independently drawn from the distribution F .

When facing an arbitrator, the parties can each either veto the arbitrator at cost $c_i > 0$, $i \in \{P, D\}$, or not. If neither party vetoes the arbitrator, then the arbitrator is selected to decide the dispute. But if one (or both) party vetoes the arbitrator, then the parties move on to consider the next arbitrator in the sequence, and so on. The parties have the same discount factor of δ .

The rules according to which an arbitrator is selected induce a game between the parties. We denote the plaintiffs' and defendants' stationary strategies by the functions $\nu^P, \nu^D : [0, 1] \rightarrow \{\text{'veto'}, \text{'not'}\}$ that map arbitrators' posteriors into whether to veto them or not. We focus our attention on symmetric stationary equilibria of the arbitrator selection game.

The expected payoff to the plaintiff and defendant from hiring an arbitrator who is

¹⁴Such is the case, for example, under what is known as 'final-offer-arbitration.' In any case, this assumption as well as the assumption that the parties cannot both be partially right is made for simplicity. The results are qualitatively similar also without these two assumptions.

believed to be biased with probability β is

$$u^P(\beta) = \begin{cases} q^P(1 - \beta) & \text{if } \beta \geq 0 \\ q^P(1 + \beta) - \beta & \text{if } \beta < 0 \end{cases}$$

and

$$u^D(\beta) = \begin{cases} -q^D(1 - \beta) & \text{if } \beta \geq 0 \\ -q^D(1 + \beta) + \beta & \text{if } \beta < 0 \end{cases}$$

respectively. Notice that $u^P(\beta)$ is monotonically decreasing in β and $u^D(\beta)$ is monotonically increasing in β . That is, the plaintiff prefers the arbitrator to be as biased as possible in its favor (β negative and large in absolute value), while the defendant prefers that the arbitrator be as biased as possible in its favor (β positive and large). We denote the threshold values of β above and below which the plaintiff and defendant would veto an arbitrator who is believed to be biased with probability β by $\bar{\beta}$ and $\underline{\beta}$, respectively. The threshold $\bar{\beta}$ may be equal to 1, which means that the plaintiff does not veto anyone, and the threshold $\underline{\beta}$ may be equal to -1 , which means that the defendant does not veto anyone.

The expected payoff to the plaintiff from vetoing the current arbitrator and considering a new one is denoted u_V^P . It is defined by the following equation:

$$u_V^P = -c_P + \delta (\Pr(\beta \text{ is not vetoed}) E[u^P(\beta) | \beta \text{ is not vetoed}] + \Pr(\beta \text{ is vetoed}) u_V^P)$$

or

$$u_V^P = \frac{\delta \Pr(\beta \text{ is not vetoed}) E[u^P(\beta) | \beta \text{ is not vetoed}] - c_P}{1 - \delta + \delta \Pr(\beta \text{ is not vetoed})}$$

Similarly, the expected payoff to the defendant from vetoing the current arbitrator and considering a new one is denoted u_V^D . It is defined by the following equation:

$$u_V^D = -c_D + \delta (\Pr(\beta \text{ is not vetoed}) E[u^D(\beta) | \beta \text{ is not vetoed}] + \Pr(\beta \text{ is vetoed}) u_V^D)$$

or

$$u_V^D = \frac{\delta \Pr(\beta \text{ is not vetoed}) E[u^D(\beta) | \beta \text{ is not vetoed}] - c_D}{1 - \delta + \delta \Pr(\beta \text{ is not vetoed})}$$

In equilibrium, the thresholds $\bar{\beta}$ and $\underline{\beta}$ have to satisfy the following two equations:

$$\begin{aligned} u^P(\bar{\beta}) &= u_V^P \\ u^D(\underline{\beta}) &= u_V^D \end{aligned}$$

for the plaintiff and defendant, respectively. Geometric analysis reveals that that for every $\underline{\beta}$ there is a unique $\bar{\beta}$ that satisfies the first equation above, and for every $\bar{\beta}$ there is a unique $\underline{\beta}$ that satisfies the second equation above. Furthermore, it can be shown that $\bar{\beta}$ is increasing in $\underline{\beta}$, and $\underline{\beta}$ is increasing in $\bar{\beta}$. Without making additional assumptions, we cannot rule out the possibility that there exist multiple $\langle \underline{\beta}, \bar{\beta} \rangle$ equilibria.

Example. Suppose that F is uniform on the interval $[0, 1]$. In this case, it can be shown that the two equations that define the equilibrium can be simplified to

$$\bar{\beta} = \begin{cases} \underline{\beta} + \sqrt{\frac{2c_P}{q^P}} & \text{if } \underline{\beta} + \sqrt{\frac{2c_P}{q^P}} \leq 1 \\ 1 & \text{otherwise} \end{cases}$$

and

$$\underline{\beta} = \begin{cases} \bar{\beta} - \sqrt{\frac{2c_D}{q^D}} & \text{if } \bar{\beta} - \sqrt{\frac{2c_D}{q^D}} \geq 0 \\ 0 & \text{otherwise} \end{cases}$$

Thus, this arbitrator selection game has a generically unique equilibrium. If

$$\frac{c_D}{q^D} > \frac{c_P}{q^P}$$

then in the unique equilibrium

$$\bar{\beta} = \sqrt{\frac{2c_P}{q^P}}$$

and the defendant never vetoes any arbitrator; and if

$$\frac{c_D}{q^D} < \frac{c_P}{q^P}$$

then in the unique equilibrium

$$\underline{\beta} = 1 - \sqrt{\frac{2c_D}{q^D}}$$

and the plaintiff never vetoes any arbitrator. If however

$$\frac{c_D}{q^D} = \frac{c_P}{q^P}$$

then any pair of thresholds $\underline{\beta}, \bar{\beta} \in [0, 1]$ that is such that $\bar{\beta} - \underline{\beta} = \sqrt{\frac{2c_D}{q^D}}$ is an equilibrium.

Conclusion. In the simplified example a randomly selected arbitrator would be biased with probability 0.5 on average. The outcome of the bargaining procedure depends on the parties' relative costs of waiting and on their relative optimism with respect to their prospects on trial. As the defendant becomes more optimistic his value of a biased arbitrator declines. Also, as the defendant's costs of waiting become higher he would be more likely to settle for a less biased arbitrator. Notably, in this example one of the parties is not vetoing any arbitrator. This, however, does not hold more generally, especially if the parties' discount factor is sufficiently low.

Comparison of random selection with the bargaining selection procedure requires consideration of specific characteristics of the parties and the distribution of the expected bias of arbitrators. There is no reason to think that the expected bias of a randomly selected arbitrator would in general be higher or lower than an arbitrator that is selected through bargaining between the parties. Bargaining characteristics of the parties may explain, however, observed bias in arbitration decisions, when random selection is not available.

6. A Model of Arbitrator Incentives

Suppose now that the parties select the arbitrator at the time of contracting, that is before any dispute between them arises, and before they know which of them will be the plaintiff and which will be the defendant in any future dispute. If the parties do not include an arbitration clause in their contract then any future dispute would be decided through litigation in the court. We normalize the parties' contract payoffs without future arbitration to zero. The payoffs to the parties from employing the arbitrator depend on the arbitrator's future decision and on who will be right in the dispute. We assume that the payoffs to the parties are given by

who's right \ decision	P	D
P	1	-2
D	-2	1

That is, if the arbitrator makes the correct decision then the ex-ante payoff to both parties is 1, which implies that arbitration provides better incentives for contract performance.¹⁵ If the arbitrator makes an incorrect decision then the ex-ante payoff to both parties is -2, which is worse, from an ex-ante perspective, than litigation. More formally, these payoffs are based on the idea that the parties may realize the way in which the arbitrator will resolve any future dispute after the arbitrator is selected but before any dispute arises. So, if it becomes known that the arbitrator will adjudicate future disputes correctly, then this would align the parties' incentives and would make their relationship more valuable. If on the other hand it becomes known that the arbitrator will adjudicate future disputes incorrectly, then this would misalign the parties' incentives and would make their relationship less valuable.

We represent the arbitrator's (stationary) strategy by the pair of probabilities (σ_P, σ_D) where for each party $q \in \{P, D\}$, β_q is the probability that the arbitrator decides in favor of party q in state θ_q .

An arbitrator can be either biased in favor of the defendant, or unbiased. We assume that a biased or pro-defendant arbitrator employs the following strategy:

$$\begin{aligned}\sigma_D &= 1 \\ \sigma_P &= \lambda_b\end{aligned}$$

where the parameter λ_b describes the extent of the arbitrator's bias. A biased arbitrator always decides in favor of the defendant when the defendant is right, and distorts its decision in favor of the defendant with probability $1 - \lambda_b > 0$ when the plaintiff is right. Thus, even a biased arbitrator makes the correct decision with probability $\lambda_b > 0$. The rationale for this assumption is that sometimes the correct decision is so obvious that an arbitrator would risk a total loss of reputation and possibly a reversal of its decision by a court if it decides differently.¹⁶ We assume that λ_b is not so large so that if the parties were certain that the

¹⁵See Shavell (1995)

¹⁶Note that if we had assumed that $\lambda_b = 0$, then it would have been sufficient for an unbiased arbitrator to decide once in favor of the plaintiff to convince all future parties it is indeed unbiased.

arbitrator is biased, they would still want to employ it.¹⁷

While a biased arbitrator is constrained to make the correct decision with probability λ_b , an unbiased arbitrator is constrained to make the correct decision with probability $\lambda_u > \lambda_b$. This assumption captures the idea that while a biased arbitrator distorts its decision in favor of the defendant whenever it believes it is likely to get away with it, an unbiased arbitrator is more scrupulous and distorts its decision only in those cases where it is certain it can get away with it. We assume that λ_u is sufficiently large so that even if an unbiased expert biases its decisions as much as possible in favor of one party, the parties still want to employ it. It can be shown that if λ_u is smaller, then the arbitrator is never called upon in equilibrium.

Suppose that the payoff of the unbiased arbitrator is identical to that of the parties, that is it obtains a payoff of 1 whenever it renders a correct decision, and a payoff of -2 when it renders an incorrect decision. Suppose that the arbitrator discounts its future payoff at the rate $\delta < 1$. Notice that the fact that we have fixed the behavior of the biased arbitrator implies that there is no need to describe its preferences.

We denote the parties' prior beliefs about the likelihood that the arbitrator is biased by β .

We consider the following game. An arbitrator is approached by an infinite sequence of pairs of parties. Each pair observes the arbitrator's past decisions, and decides in turn whether or not to hire the arbitrator. If the arbitrator is hired, then a dispute arises with a certain exogenous probability q , and the arbitrator renders a decision. The arbitrator is then approached by another pair of parties who have observed all the arbitrator's past decisions, including the last one, and decide whether to employ the arbitrator, and so on.

We focus on symmetric stationary equilibria of this game where the parties all employ the same hiring strategy that specifies whether to hire the arbitrator as a function of the posterior belief about its bias, and the arbitrator always employs the same decision strategy as a function of the posterior belief about him and the state of the world. We denote the plaintiffs' and defendants' stationary strategies by the functions $\nu^P, \nu^D : [0, 1] \rightarrow \{\text{'veto'}, \text{'not'}\}$ that map arbitrators' posteriors into whether to veto them or not. We focus our attention on symmetric stationary equilibria that satisfy the following property: if arbitrator β is vetoed by the parties, then it must be that there is no strategy that this arbitrator can employ that is such that the parties would lose if they were to veto it. The reason for this restriction is to rule out less plausible equilibria where arbitrator β adopts a strategy that is bad for the parties because it is anyway vetoed.

Lemma. If the equilibrium satisfies the special property above, then in equilibrium, if the parties hire arbitrator β , then they also hire any arbitrator β' where $\beta' < \beta$.

Proof. Fix a stationary equilibrium that satisfies the special property above. Suppose that the plaintiff vetoes arbitrator β in equilibrium. Suppose that arbitrator $\beta' > \beta$ is not vetoed. The equilibrium payoff of arbitrator β' is positive whereas the payoff of arbitrator β

¹⁷If λ_b is larger, then the arbitrator is always called upon, regardless of the parties beliefs about it.

is zero. Suppose that arbitrator β deviates and adopts the equilibrium strategy of arbitrator β' . The expected payoff to the parties following this deviation is larger than the expected payoff they obtain from arbitrator β' because the probability that arbitrator β is biased is smaller. Moreover, the fact that the parties do not veto arbitrator β' implies that their expected payoff from hiring arbitrator β' is nonnegative, and so their expected payoff from hiring arbitrator β' would be positive. Hence, the parties should not veto arbitrator β' if it adopts the equilibrium strategy of arbitrator β' . Because the equilibrium is assumed to satisfy the special property above, it follows that the parties should not veto arbitrator β' in equilibrium. ■

Proposition. A symmetric stationary equilibrium that satisfies the special property above has the following structure. There exists a threshold posterior $\bar{\beta}$ such that the parties hire any arbitrator $\beta < \bar{\beta}$ and refuse to hire any arbitrator with posterior $\beta > \bar{\beta}$. There exists another threshold $\beta^\circ < \bar{\beta}$ such that unbiased arbitrators with posteriors $\beta < \beta^\circ$ decide correctly, and unbiased arbitrators with posteriors $\beta^\circ < \beta < \bar{\beta}$ distort their decision in favor of the plaintiff as much as possible. The more patient the arbitrator, the lower is β° , and as $\delta \nearrow 1$, β° tends to zero.

Sketch of Proof. Fix an equilibrium that satisfies the special property above. It can be shown that every decision in favor of the defendant leads to a higher posterior β , and every decision in favor of the plaintiff leads to a lower posterior β . There is a critical threshold posterior $\bar{\beta}$ such that even if an unbiased arbitrator β always made the correct decision, the parties would not want to hire the arbitrator if $\beta \geq \bar{\beta}$. An arbitrator with $\beta < \bar{\beta}$ that is sufficiently close to $\bar{\beta}$ so that a decision in favor of the defendant would push the posterior beyond $\bar{\beta}$ would bias its decision in favor of the plaintiff as much as possible so as to avoid getting a high posterior β that would imply that it would not be hired anymore. There is a critical threshold value $\beta^\circ < \bar{\beta}$ such that arbitrator β° is indifferent between making the correct decision and possibly getting a high posterior, and biasing its decision in favor of the plaintiff as much as possible, obtaining a lower payoff in the current period but a higher payoff in the future. Arbitrators with $\beta < \beta^\circ$ would decide correctly, and arbitrators with $\beta > \beta^\circ$ would bias their decision in favor of the plaintiff as much as possible. The more patient the arbitrator, the more important future payoffs are relative to current payoffs, and so the lower is β° . As $\delta \nearrow 1$ the present payoff becomes negligibly small compared to future payoffs so β° tends to zero. ■

Intuition. An unbiased arbitrator's incentives are a mix of the short-run desire to make the right decision for the current plaintiff-defendant pair, and the long-run strategic objective to maintain a reputation for being unbiased. Bayesian updating implies that if the arbitrator employs a strategy that is not more pro-defendant than the strategy employed by a biased arbitrator as assumed above then observation of a decision in favor of the plaintiff strengthens the belief that the arbitrator is unbiased, and observation of a decision in favor of the defendant strengthens the belief that the arbitrator is biased.

Thus, in every period an unbiased arbitrator has to balance the short term motivation to decide in favor of the right party with the long term motivation to improve its reputation for being unbiased by deciding against the party in favor of which he is suspected of being more biased. If the plaintiff is right, then the short and long term incentives of the arbitrator coincide and he decides in favor the plaintiff, but the defendant is right, then the arbitrator has the short term objective to decide in favor of the defendant but a long time objective of deciding in favor of the plaintiff in order to maintain a reputation for being unbiased. The more patient the arbitrator, the bigger the weight it would place on the long versus the short run consideration. In the limit, as $\delta \nearrow 1$, the arbitrator tends to ignore the short run consideration altogether and to decide based only on the long run consideration. The parties, who understand the arbitrator's dilemma, would avoid employing it in this case unless λ_u is sufficiently high. Therefore, when arbitrators are known to be patient (δ is close to 1) only arbitrators whose histories are close to being perfectly balanced would be employed by the parties.

Remark. As mentioned above, we assume that λ_u is sufficiently large so that even if an unbiased expert biases its decisions as much as possible in favor of one party, the parties still want to employ it. It can be shown that if λ_u is smaller, and in particular if $\lambda_u = \lambda_b$, then the arbitrator is never called upon in equilibrium. The argument follows the logic of Ely and Välimäki's (2003) result. Namely, in order to distinguish itself from a biased expert and so ensure it would be employed again, an unbiased expert distorts its decision as much as possible in favor of the plaintiff. But from the parties' perspective, this makes an unbiased expert as bad as a biased expert, and so they decline to employ it even if they believe that the expert is likely to be unbiased.

7. Extensions

To be completed

7.1. Differential Ability

Suppose that in addition to their possible bias, arbitrators can also be distinguished according to their skill. There are skilled unbiased arbitrators who can directly observe the state of the world, and unskilled unbiased arbitrators who do not observe the state of the world. For simplicity, we assume that biased arbitrators observe the state of the world. After an arbitrator renders its decision, the state of the world is observed with a certain probability so that it is possible to update the prior about the arbitrator's skill according to whether its decision was right or wrong.

7.2. Appeal

Suppose that the parties can appeal the arbitrator's decision in court, and that arbitrators don't like their decisions to be reversed. This implies that arbitrators would distort less.

Does there exist an equilibrium in which an arbitrator whose decision has been reversed by a court stops being called?

8. Conclusion

To be completed

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