

Stare Decisis and Judicial Log-Rolls: A Gains-from-Trade Model

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Abstract

We study horizontal stare decisis as an endogenous practice of a court that, in each period, draws a deciding judge from a larger bench of judges. We show that the logical structure of legal doctrine creates opportunities for gains from trade among judges who have ideologically distinct conceptions of the correct disposition of cases. In a Coasian world, the best compromise legal standard always affords the judges gains over simply implementing their most-preferred standards when in power (autarky). However, the inability to commit to the best compromise policy creates a short-term temptation to defect from a stare decisis equilibrium. We identify the set of compromise standards and discount factors that, for given parameters, can sustain a practice of *stare decisis*. We show how this set of sustainable standards and discount factors changes as two parameters change: the extent of ideological polarization on the court and the degree of ideological heterogeneity on the bench.

I. Introduction

Every legal system has a body of previously decided case law, "precedent." Legal systems differ, however, in the role that precedent plays in future decisions. In common law jurisdictions, though not in civil law jurisdictions, precedent constitutes a source of law. Common law systems have thus developed a set of practices that facilitates the development of law from precedent. Among the most important of these, or at least among the most discussed, is *stare decisis*. Under *stare decisis*., today's court, when confronted by a case similar to an earlier case, follows the principles or rules of decision laid down in the prior case.¹ *Stare decisis* may thus require a court to adhere to a decision that it believes incorrectly decided. Put differently, *stare decisis* may require a court to decide a case wrongly. An obvious question is, why would courts adopt such a practice?

In this paper we investigate the political logic of *stare decisis*. In the model, the court consists of a bench of judges that divide into two factions (called "*L*" and "*R*" in the model); each case is decided by a judge drawn randomly from the bench.² Judges receive utility from the disposition of cases but judges from different factions disagree about the correct rule to apply to cases. Critically, the judges in the majority faction have no formal device for committing the minority faction to the majority's most-preferred rule. Nor does such a device oblige it to obey the other faction's most-preferred rule. We explore the circumstances under which the entire bench nonetheless can maintain a practice of *stare decisis* in which all of the judges adhere to precedent and employ a common rule for disposing cases, one different from the most-preferred rule of either faction.

Two features of the model are important. First, we assume that each ruling by a judge of the incumbent faction affects the utility of *all* judges on the bench, regardless of faction, because the non-ruling judges view those decisions as jurisprudentially, socially, economically, ideologically, or morally right or wrong. Thus, a judge (or the faction to which she belongs) is not a stationary bandit who benefits only when she renders decision (Olson 1993). Nor are the judges non-consequentialists who strive only to "do the right thing" for its own sake

while in office irrespective of what others have done before or will do after. Rather, they care about the actions of the judiciary whether they decide or not. As a result, they are concerned about the response of other judges to their rulings.

Second, the model is set in *case space* rather than a generic policy space (see Kornhauser 1992b, Lax 2011). The judges are obliged to dispose of concrete cases by applying rules to the cases. Hence, the actors are indeed judges on a Court rather than legislators in a parliament. This aspect of the model is important for more than mere verisimilitude: in case space, the logical structure of legal rules creates the possibility of *gains from trade* across factions of jurists. These gains from trade arise if judicial utility for dispositions exhibits what we call "increasing differences in dispositions" – the utility differential between a correctly and incorrectly decided case increases the "easier" the judge thinks the case. When judges have preferences with increasing differences in dispositions, each faction can do better by adhering to a compromise rule. In essence the compromise rule allows each faction to trade relatively low value incorrectly decided cases in exchange for receiving relatively high value correctly decided cases from the other faction. We identify the conditions under which such a compromise rule is sustainable absent a commitment device. We then examine the impact of changes in the probability a faction holds power and the impact of increased polarization in the preferences of the factions.

In a companion paper, we analyze a model in which the cases that the court hears depend on the prevailing rule of law. Most models of adjudication assume the flow of cases to the court is exogenously given. In fact, though, one would expect the prevailing rule of law to influence the activities that parties undertake, the disputes which these activities generate, and the litigated disputes confronting the judges. We show that the sustainability of *stare decisis* depends on the responsiveness of the docket to the prevailing legal rule.

The main points of the analysis are the following. The structures of doctrine and dispositional preferences creates the opportunity for intra-court gains from trade, a kind of ideological logroll. But, the requirements to support strict *stare decisis* are demanding.

Specifically, a practice of *stare decisis* is both more valuable and more easily sustained the more polarized the court is. In the model analyzed in this paper, the degree of heterogeneity of the bench increases potential gains from trade but this result is not robust as it varies with responsiveness of the docket to changes in the prevailing legal rule.

A. Literature Review

Our analysis touches upon the literatures on *stare decisis* and political compromise.

Stare Decisis.—A vast literature on *stare decisis* exists but virtually all of it addresses issues distinct from the one we consider.³ We consider the two papers that consider mechanisms closest to the one we analyze.

O'Hara 1993 offers an informal argument that includes many elements of our formal model. She considers a pair of ideologically motivated judges who engage in what she calls "non-productive competition" over the resolution of a set of cases that should be governed by a single rule.⁴ The judges hear cases alternately. She recognizes that they might each might do better by adhering to a compromise rule. She characterizes their interaction as a prisoner's dilemma and then relies on the folk theorem to argue for the existence of a mutually preferred equilibrium. Because her argument is informal, the nature of the exchange between the two judges is unclear. Similarly, she cannot provide comparative statics for the degree of polarization or the relative sizes of the factions (i.e., the relative probability that each judge will hear a case).⁵

Rasmusen 1994 also puts a formal structure on O'Hara's argument. He develops an overlapping generations model in which each judge in a sequence of judges hears $n + 1$ cases. He identifies conditions under which each judge adheres to the decisions of the n previous judges and each of the n judges who succeed him adheres to his decision in the $n + 1$ st case. One might understand this structure as exhibiting the gains from trade that drives our model but the trade here differs in two respects from the trade that underlies our model. In Rasmusen's model, trade occurs across generations of judges; in our model, the trade

occurs among judges who decide cases contemporaneously or sequentially. In addition, in Rasmusen the trade is across rules rather than across cases governed by a single rule. In addition, the utility function in the model is not fully consequential: a judge receives no disutility from subsequent judges continuing to adhere to the decisions of prior judges that she considers wrongly decided, but the judge does receive utility from their adhering to her decision.⁶ Moreover, the model has no measure of ideological polarization.

Political Compromise.—The practice of *stare decisis* is a kind of political compromise between the two factions of judges. One might expect, therefore, that general analyses of political compromise might apply in this judicial setting (see for example Kacherlakota 1996, Dixit et al 2000, and Acemoglu et al 2011). However, those analyses typically rely on the risk aversion of the actors, who perceive a certain compromise policy as more attractive than a lottery over non-compromise policies. In the model here, the mechanism is not risk aversion but gains from trade, induced by the logical structure of legal rules. Hence our model of judicial compromise is quite different from standard analyses of political compromise and appears distinctive to the judicial setting.

B. Plan of the Paper

In the next section, we present the model and provide a simple example that illustrates how *stare decisis* allows an ideologically diverse bench to realize gains from trade. We then proceed in three steps. First, we determine the conditions under which a practice of *stare decisis* yields higher joint judicial welfare than autarky. (We define the concept of "joint judicial welfare" in the next section.) Under these circumstances, the judges would like to commit to a practice of *stare decisis*; indeed they would like, perhaps after some transfers, to commit to a rule maximizing joint judicial welfare. One may regard this as a Coasian analysis of *stare decisis*. Of course, the bench has no such commitment device so the Coasian ideal may not be attainable. Consequently, we investigate the conditions under which a practice of *stare decisis* is sustainable absent commitment but with infinitely repeated play. Third, we

consider the comparative statics of sustainable *stare decisis*. The impact of three variables are particularly interesting: (1) the degree of *ideological heterogeneity* on the bench; (2) the degree of *ideological polarization* of the bench; and, with respect to sustainability of the commitment equilibria, (3) the *time preferences* of the judges. A final section contains some concluding remarks.

C. *Judicial Logrolling: An Illustration*

A simple example provides a great deal of intuition about how doctrine structures judicial logrolls. In this example, the two factions, L and R , decide four cases: $x_1 = \frac{1}{4}$, $x_2 = \frac{1}{4}$, $x_3 = \frac{3}{4}$, and $x_4 = \frac{3}{4}$. The two factions alternate in deciding cases beginning with a judge from the L faction, so the L faction decides cases x_1 and x_3 while R faction decides cases x_2 and x_4 . We denote a disposition of a case (e.g., liable, not liable) as $d_t(x_t)$. Critically, each faction has a conception of the *correct* disposition of a case given its location, and receives a payoff from a correct disposition and a smaller payoff from an incorrect disposition. More specifically the dispositional utility functions are:

$$u_t^L(d_t; x_t) = \begin{cases} 0 & \text{if } x_t \geq 0 \text{ and } d_t = 1 \text{ [correct dispositions]} \\ 0 & \text{if } x_t < 0 \text{ and } d_t = 0 \text{ [correct dispositions]} \\ -|x_t| & \text{if } x_t \geq 0 \text{ and } d_t = 0 \text{ [incorrect dispositions]} \\ -|x_t| & \text{if } x_t < 0 \text{ and } d_t = 1 \text{ [incorrect dispositions]} \end{cases}$$

$$u_t^R(d_t; x_t) = \begin{cases} 0 & \text{if } x_t < 1 \text{ and } d_t = 0 \text{ [correct dispositions]} \\ 0 & \text{if } x_t \geq 1 \text{ and } d_t = 1 \text{ [correct dispositions]} \\ -|1 - x_t| & \text{if } x_t < 1 \text{ and } d_t = 1 \text{ [incorrect dispositions]} \\ -|1 - x_t| & \text{if } x_t \geq 1 \text{ and } d_t = 0 \text{ [incorrect dispositions]} \end{cases}$$

These dispositional utility functions are shown in Figure 1. In the figure, the utilities from "incorrect" dispositions are shown with dashed lines; the utility from "correct" dispositions

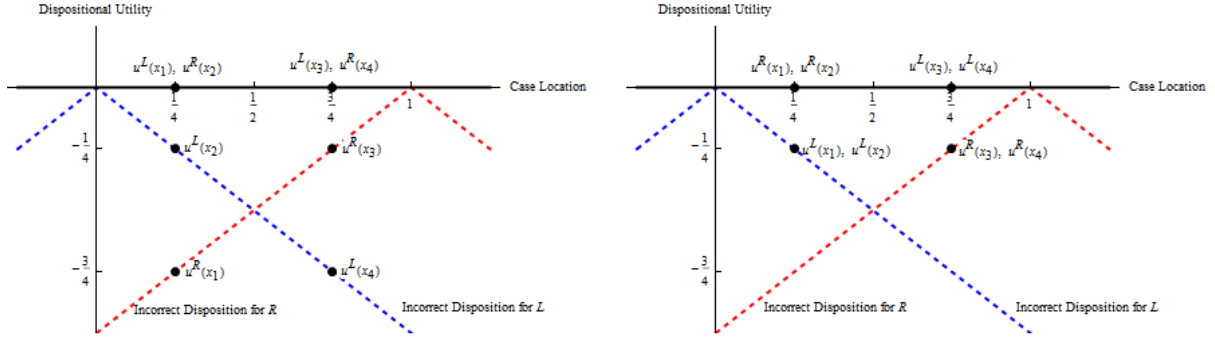


Figure 1: Dispositional Utility in the Example. The dashed lines in the panel show the dispositional utility a faction receives from an incorrect disposition. Correct dispositions yield a utility of zero to both factions. In the left-hand panel each faction decides its cases according to its own lights ("autarky"). In the right-hand panel, both factions decide cases using a compromise rule (stare decisis) which sometimes forces a faction to decide a case incorrectly, according to its most-preferred doctrine. The utility to the factions of each disposition of each case in the example are labeled, e.g., $u^L(x_1)$.

is shown by the dark horizontal line at zero.

First consider the "autarkic" situation in which each judge holding power disposes of the instant case using her most-preferred legal rule, so each judge decides her assigned case "correctly" according to her own dispositional utility function. This situation is shown in the left-hand panel of Figure 1. Because L decides x_1 and x_3 she receives the dispositional value of a correctly decided case (zero) for these cases; these values are labeled $u^L(x_1)$ and $u^L(x_3)$ in the left-hand panel of Figure 1. These values are also shown in Table 1. For R , however, L 's disposition of these cases results in wrongly decided cases, which afford much less utility. These utility values are labeled $u^R(x_1)$ and $u^R(x_3)$ in the left-hand panel of Figure 1. Particularly bad for R is L 's disposition of the distant case x_1 . Again these values are shown in Table 1. In a similar fashion, because R decides cases x_2 and x_4 , R receives the value of a correctly decided case for these cases (labeled $u^R(x_2)$ and $u^R(x_4)$ in the left-hand panel of the figure) while L receives the value of incorrectly decided cases ($u^L(x_2)$ and $u^L(x_4)$ in the figure). Using Table 1 it will be seen that the sum of L 's utilities across the cases is -1 as is that of R .

Period	1	2	3	4
Case	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Ruling Judge	L	R	L	R
Disposition	1	0	1	0
L-utility	0	$-\frac{1}{4}$	0	$-\frac{3}{4}$
R-utility	$-\frac{3}{4}$	0	$-\frac{1}{4}$	0

Table 1: Stage Payoffs Under Autarky. Note that the sum of L's payoffs is -1, as is the sum of R's payoffs.

Period	1	2	3	4
Case	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Judge	L	R	L	R
Disposition	0	0	1	1
L-utility	$-\frac{1}{4}$	$-\frac{1}{4}$	0	0
R-utility	0	0	$-\frac{1}{4}$	$-\frac{1}{4}$

Table 2: Stage Payoffs Under Stare Decisis. The controlling precedent sets the standard in $[0,1]$, e.g., $1/2$. Note that the sum of L's payoffs is $-1/2$, as is the sum of R's payoffs.

Now consider payoffs when both judges obey a controlling precedent, one in which the legal standard lies in the interval $(0, 1)$, for example, $\frac{1}{2}$. This means that L can decide $x_3 = \frac{3}{4}$ correctly by her lights, but must decide $x_1 = \frac{1}{4}$ incorrectly. The resulting utility values for the two factions are shown in the right-hand panel of Figure 1 and compiled in Table 2. Using the table, it will be seen that each judge's sum of the (undiscounted) stage utilities is now $-\frac{1}{2}$ – the *payoffs under stare decisis are much better*.

What is the explanation? First, note in Figure 1 that the utility functions display risk neutrality on either side of the most-preferred standard, so the explanation does *not* lie in utility smoothing for risk-averse agents. The explanation lies in the IDID property and the structure of doctrine. To understand the result, first define the utility differential between a correctly decided and an incorrectly decided case for Judge i , $\Delta^i(x)$. (In Figure 1, the utility differential is simply the distance between the x -axis and the appropriate dashed line.) For Judge L for cases in $[0, 1]$, $\Delta^L(x) = 0 - (-x) = x$. For Judge R for cases in $[0, 1]$, $\Delta^R(x) = 0 - (1 - x) = (1 - x)$. L 's utility differential increases as x increases from 0, so disposing distant cases correctly is more important than disposing close cases correctly.

Similarly, R 's utility differential falls as x increase from 0 toward 1 – in other words, it is more important for R to get distant cases correct than nearby ones. This feature of the utility functions is the *increasing differences property* of adjudication.

Now again consider Tables 1 and 2. Under either autarky or stare decisis, Judge L views two cases as being decided correctly and two cases as decided incorrectly. However, the cases differ. Under autarky, the two cases decided correctly are $x_1 = \frac{1}{4}$ and $x_3 = \frac{3}{4}$, one close case and one far case. (The two incorrectly decided cases are of course $x_2 = \frac{1}{4}$ and $x_4 = \frac{3}{4}$, again a close case and a far case). Under stare decisis, the two cases decided correctly are $x_3 = \frac{3}{4}$ and $x_4 = \frac{3}{4}$, two *far* cases. (The two cases decided "incorrectly" are $x_1 = \frac{1}{4}$ and $x_2 = \frac{1}{4}$, two close cases). In other words, in moving from autarky to stare decisis, Judge L trades a nearby correctly case (located at $\frac{1}{4}$) for an distant incorrectly decided case (located at $\frac{3}{4}$), which is then decided correctly. Because of the increasing differences property, this trade leaves Judge L much better off. By symmetry, the trade also leaves Judge R much better off – she trades a correctly decided near case for an incorrectly decided far case, that then is decided correctly. Finally, note how the compromise stare decisis doctrine structures and allows this beneficial trade or log roll to take place.

In this example, we have not constructed an equilibrium; we have just demonstrated how the stage payoffs work and how a compromise standard coupled with a practice of *stare decisis* creates an opportunity for a favorable, implicit logroll between factions of judges. We now turn to the analysis of the model. We proceed in two stages. First we consider judicial welfare under autarky and compare that benchmark with judicial welfare under the "best" compromise *stare decisis* rule (we make precise what we mean by "best" compromise rule). We show that judicial welfare is greater under the "best" compromise rule than under autarky. We then identify conditions under which a practice of *stare decisis* is sustainable as an equilibrium absent commitment mechanisms.

II. The Model

There are two factions of judges, L and R that form a bench; in each period, a single judge or a panel of judges is drawn to decide the case. There is an infinite number of periods $t = 1, \dots$. In each period t , Nature draws a single case, $x_t \in X \subset \mathbb{R}$, using common knowledge distributions $F(x; Ey)$ with densities $f(x; Ey)$, where Ey connotes the rule that private agents expect to be enforced by the Court. Hence, in a stylized fashion the distribution of cases is sensitive to the rule or rules the judges enforce. Note that the expected legal rules under autarky and under a practice of *stare decisis* are apt to differ so that the distribution of cases will differ. When the case arrives before the court, Nature also selects a judge to decide the case; Nature chooses a judge from the L faction to decide the case with probability p , and the a judge from the R faction with probability $1 - p$.⁷

In each period, the chosen judge j hears and disposes of the case x_t , using a legal rule. Under a practice of *stare decisis* this legal rule is the same for both factions. This rule incorporates y^C (a "compromise" cutpoint). Under autarky, the enforced legal rule varies depending on the faction to which the judge assigned the case belongs: a judge from the L faction enforces a rule incorporating its most-preferred cutpoint $\bar{y}^L$ and a judge from the R faction enforces a rule incorporating its most-preferred cutpoint $\bar{y}^R$. The application of the enforced legal rule to the case x_t yields a case disposition, $d_t \in D = \{0, 1\}$, indicating which litigant prevails in the dispute before the Court. The governing judge's disposition of the case affords utility to judges who belong both to the L and the R factions, reflecting their conceptions of the "correct" disposition of the case. The period then ends, Nature again draws a case and determines which judge on the Court decides the case in that period, and so on.

A history of the game h_t indicates all the prior cases and the dispositions afforded them by the ruling judges. The set of possible histories at the beginning of time t is thus $H_t = D^{t-1} \times X^{t-1}$. A behavioral strategy σ_t^j for ruling judge j at time t is a mapping from the set of possible histories of the game and the set of possible current cases into the set

of dispositions $\sigma_t^j : H_t \times X \rightarrow D$. A strategy $\sigma^j(t, g)$ is j 's strategy for the subgame that begins at t . When the context is clear, we will sometimes abuse notation and write σ^j for $\sigma^j(t, g)$. We seek conditions under which a regime of *stare decisis* is an equilibrium of the indefinitely repeated stage game.

The variable p indicates the probability the L faction holds power, but it can also be seen as a measure of the *heterogeneity* of the bench. More precisely the bench is most heterogeneous when $p = \frac{1}{2}$ and less heterogeneous (more homogeneous) when p approaches 0 or 1. In addition, it often proves convenient to consider the *polarization* of the court; we define the variable $\rho = \bar{y}^R - \bar{y}^L$, the distance between the most-preferred cutpoints of the L and R factions.

A. Cases, Dispositions, Rules, and Cutpoints

In the model, a *case* x_t connotes an event that has occurred, e.g., the level of care exercised by a manufacturer. A judicial *disposition* of the case determines which party prevails in the dispute between the litigants; we denote the set of dispositions as $D = \{0, 1\}$. A disposition at time t is thus d_t . A judicial rule maps the set of possible cases into dispositions, $r : X \rightarrow D$. We focus on an important variety of legal rules, a *cutpoint*-based doctrine, which takes the form

$$r(x; y) = \begin{cases} 1 & \text{if } x \geq y \\ 0 & \text{otherwise} \end{cases}$$

where y denotes a cutpoint. For example, Defendant is not liable if Defendant exercised at least as much care as the cutpoint y . Other examples include allowable state restrictions on the provision of abortion services by medical providers; state due process requirements for death sentences in capital crimes; the degree of procedural irregularities allowable during elections; the required degree of compactness in state electoral districts; and the allowable degree of intrusiveness of police searches. Many other examples of cutpoint rules may suggest

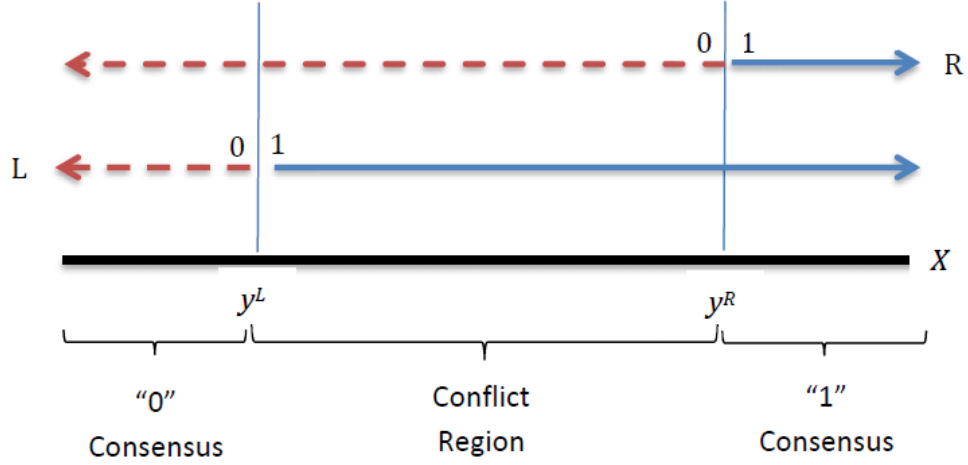


Figure 2: The structure of doctrine creates conflict and consensus regions when two judges disagree over the proper cutpoint to enforce.

themselves to the reader.

The logical structure of cutpoint rules implies both consensus and conflict between two judges who enforce, or wish to enforce, two different cutpoints. We are particularly interested in the *conflict region* – the $[\bar{y}^L, \bar{y}^R]$ interval where they disagree about the correct disposition. The two cutpoints and the conflict region and regions of agreement are shown in Figure 2.

As Figure 1 indicates, for a case $x < y^L$, both judges agree that the appropriate resolution of the case is "0" ($x < y^L$ implies $x < y^R$). Similarly, when $x > y^R$, the two judges agree that the appropriate resolution of the case is "1". Only when $x \in [y^L, y^R]$ do the judges disagree: $y^L < x < y^R$ implies that the L judge believes the appropriate resolution of x is "1" while the R judge believes the appropriate resolution is "0".

B. The Practice of *Stare Decisis*

In a practice of *stare decisis*, each judge in both the L faction and the R faction decides the instant case not according to its most-preferred rule $r(x; \bar{y}^L)$ or $r(x; \bar{y}^R)$ (respectively) but according to a distinct alternative compromise rule $r(x; y^C)$. We assume $\bar{y}^L < y^C < \bar{y}^R$.⁸ More specifically, the compromise rule is:

$$(1) \quad r(x; y^C) = \begin{cases} 1 & \text{if } x > y^C \\ 0 & \text{if } x < y^C \\ I & \text{if } x = y^C \end{cases}$$

$$\text{where } I = \begin{cases} 1 & \text{if the } L\text{-faction holds power} \\ 0 & \text{if the } R\text{-faction holds power} \end{cases} .^9$$

Under such a compromise rule, the L faction judges are required to return the "incorrect" disposition for cases in $[\bar{y}^L, y^C]$ but are able to return the "correct" disposition for cases $x > y^C$ (and of course for cases $x < \bar{y}^L$). Conversely, the R faction is able to return the "correct" disposition for cases $x < y^C$ (and $x \geq \bar{y}^R$) but is forced to return a disposition it sees as incorrect for cases in $[y^C, \bar{y}^R]$.

In an actual practice of (horizontal) *stare decisis*, judges adhere to the decisions rendered by prior courts. The legal literature disagrees about what in the prior decision "binds" the judge: the disposition, the announced rule, or the articulated reasons.¹⁰ Our formalism seems consistent with judges respecting either a previously announced rule y^C or respecting the dispositions of prior decisions that give rise to a coherent rule as in the model in Baker and Mazzetti 2010 .

C. *Dispositional Utility*

Stage utility for Judge i in each period t is determined by the dispositional utility function

$$u_t^i(d_t, x_t; \bar{y}^i) = \begin{cases} h(x_t; \bar{y}^i) & \text{if } d_t = r(x_t; \bar{y}^i) \\ g(x_t; \bar{y}^i) & \text{if } d_t \neq r(x_t; \bar{y}^i) \end{cases}$$

where $\bar{y}^i$ connotes Judge i 's most-preferred standard. In words, Judge i receives $h(x_t; \bar{y}^i)$ if the judge in power disposes of the case "correctly," that is, if the ruling judge reaches the *same disposition as if she employed a rule incorporating Judge i 's most-preferred cutpoint $\bar{y}^i$.*

Conversely, Judge i receives $g(x_t; y^i)$ if the judge in power disposes of the case "incorrectly," that is, the ruling judge reaches a different disposition from the one indicated by a rule incorporating Judge i 's preferred cutpoint. Both the ruling judge and the non-ruling judge receive utility each period.¹¹

We assume the following about the dispositional utility functions:

1. $h(x_t; \bar{y}^i) \geq g(x_t; \bar{y}^i)$ for all x_t (the correct disposition of a case is (weakly) better than the incorrect disposition of the same case);
2. $h(x_t; \bar{y}^i)$ is (weakly) increasing in the distance $|x_t - \bar{y}^i|$ (a correctly disposed case far from the preferred cutpoint yields (weakly) greater utility than a correctly disposed case closer to the preferred standard);
3. $g(x_t; \bar{y}^i)$ is (weakly) decreasing in the distance $|x_t - \bar{y}^i|$ (an incorrectly disposed case far from the preferred cutpoint yields (weakly) less utility than an incorrectly disposed case closer to the preferred cutpoint); and,
4. $h(x_t; \bar{y}^i) - g(x_t; \bar{y}^i)$ is strictly increasing in $|x_t - \bar{y}^i|$. This is the *increasing differences in dispositions* (IDID) property, which requires that the utility differential between correctly vs. incorrectly disposing the same case increases in the distance of the case from the preferred cutpoint (the egregiousness of the violation or the "cushion" of proper behavior).

As an example, the functions $h(x_t; y^i) = 1$ and $g(x_t; y^i) = 0$ display properties 1-3 but violate the IDID property. The functions $h(x_t; y^i) = 0$ and $g(x_t; y^i) = -(x_t - y^i)^2$ display all four properties.¹²

We employ the following dispositional utility function in the remainder of the paper:

$$(2) \quad u_t^i(d_t; x_t, \bar{y}^i) = \begin{cases} 0 & \text{if } d_t = r(x_t, \bar{y}^i) \text{ [correct dispositions]} \\ -|\bar{y}^i - x_t| & \text{if } d_t \neq r(x_t, \bar{y}^i) \text{ [incorrect dispositions]} \end{cases}$$

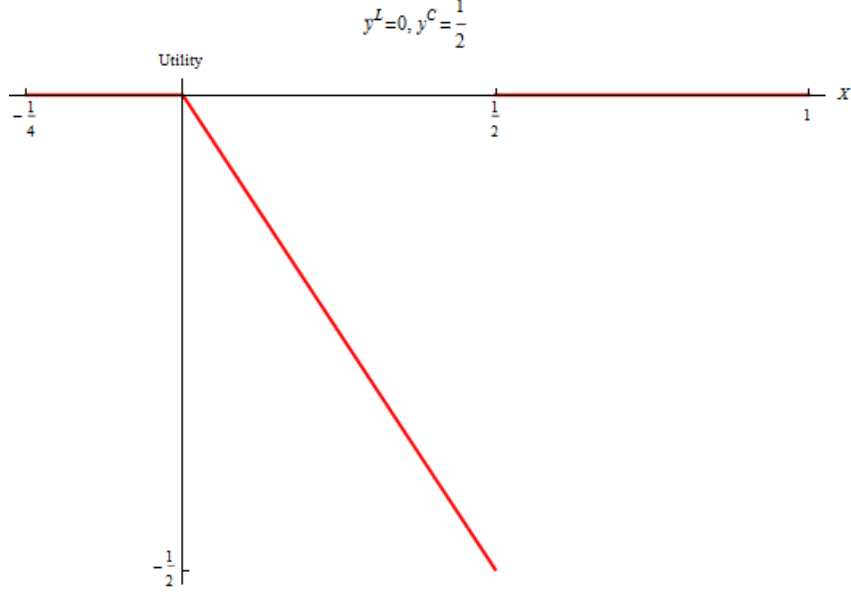


Figure 3: Stage utility function for Judge L when cutpoint y^C is enforced by the ruling judge. The case space is the horizontal axis, X ; a particular case x is a point on the line. Judge L 's ideal cutpoint is $\bar{y}^L = 0$. For cases to the left of this cutpoint, L would prefer disposition 0; for cases to the right, she would prefer disposition 1. Given the enforced cutpoint y^C , L sees the disposition of cases $x < 0$ and $x > \frac{1}{2}$ as correct, hence yielding utility of 0. But L sees cases falling in the conflict region $[0, \frac{1}{2}]$ as incorrectly decided and therefore yielding utility $-|x - \bar{y}^L|$.

This stage utility function displays all four properties and is linear in losses from incorrectly decided cases. This very tractable utility function has been deployed by others, see, e.g., Fischman 2011. In the next subsection, we note some attractive features of this utility function when the distribution of cases is sensitive to the enforced cutpoint. For the moment, simply note that judge i 's utility depends upon 1) the actual disposition d_t of the instant case at the hands of the ruling judge, which reflects the rule used by the ruling judge (i.e., upon enforced cutpoint y^j), and 2) the disposition judge i believes the instant case should have received, which reflects judge i 's preferred cutpoint $\bar{y}^i$.

Figure 3 illustrates the stage dispositional utility of a judge in faction L when $\bar{y}^L = 0$ and $y^C = \frac{1}{2}$. (A judge in faction R has a similar dispositional utility function but with ideal cutpoint $\bar{y}^R > \bar{y}^L$.) As shown, at the most-preferred cutpoint itself the judge is indifferent between the two dispositions. But farther from the most-preferred cutpoint, the

utility differential between a correct and incorrect disposition is large and increases in the distance between the case and the most-preferred cutpoint. Cases far from the cutpoint that are incorrectly decided create more disutility than incorrectly decided cases closer to the standard.

The stage utilities extend straightforwardly to expectations. In a single period, expected utility prior to the determination of which faction holds power and the draw of a case is

$$(3) \quad v_t^i(\sigma_t^L, \sigma_t^R) = p \int u_t^i(d_t(\sigma_t^L); x_t, \bar{y}^i) f(x_t; Ey) dx + (1-p) \int u_t^i(d_t(\sigma_t^R); x_t, \bar{y}^i) f(x_t; Ey) dx$$

where Ey connote the legal rule private agents expect to be enforced. It proves helpful to distinguish the stage utilities under autarky and stare decisis. Call the former $v_t^i(\sigma_t^L, \sigma_t^R; A)$ and the latter $v_t^i(\sigma_t^L, \sigma_t^R; SD)$.

Judge i 's utility in period t (given a ruling judge and instant case) is:

$$U_t^i = u_t^i(d_t(\sigma_t^j); x_t, \bar{y}^i) + \sum_{k=1}^{\infty} (\delta)^k v_{t+k}^i(\sigma_{t+k}^L, \sigma_{t+k}^R)$$

Alternatively, we may write current utility as utility in the current period (given the instant case x_t) plus the discounted continuation value of the game:

$$(4) \quad U_t^i = u_t^i(d_t(\sigma_t^i); x_t, \bar{y}^i) + \delta V_{t+1}^i(\sigma^L, \sigma^R, h_{t+1})$$

D. Case Distributions, Enforced Rules, and Policy Utility

A fundamental assumption underlying much of the social scientific analysis of law is that private agents alter their behavior in response to the legal rules being enforced (citations). This altered behavior provokes a new set of disputes; and from this set of disputes, the dynamics of enforcement, settlement, and litigation yield a distribution of cases appearing before the court. In sum, the distribution of cases brought before judges is apt to change when the enforced legal rule changes. This aspect of law is important in the model because

the expected utility to judges from enforcing a particular rule depends upon the distribution of cases $F(x; Ey)$ that arise when agents anticipate the enforcement of rule Ey on average.

We do not explicitly model the response of private agents to changes in legal rules, nor the operation of law enforcement and dynamics of litigation which together yield cases before magistrates. Instead, we assume that case distributions shift in sensible ways, reflecting the legal rule or rules that private agents anticipate the judges will enforce. Specifically we assume that in a regime of *stare decisis* the distribution $F(x; Ey^{SD})$ is centered at the enforced cutpoint y^C (so $Ey^{SD} = y^C$). Under autarky, we assume that the distribution $F(x; Ey^A)$ is centered at the *expected* standard $Ey^A = py^L + (1 - p)y^R$ where y^i is the standard to which judge i adheres. Thus, as y^C shifts downward, so does the distribution of cases; and similarly as p increases, the distribution of cases under autarky shifts to the left.

Additionally, we assume the distribution of cases is uniform around the expected enforced cutpoint Ey , implying support $[Ey - \varepsilon, Ey + \varepsilon]$. This distribution is extremely tractable and easy to interpret. When ε is small, most cases fall close to the cutpoint. Hence, the case-generation process is in the spirit of a Priest-Klein model of disputing. When ε is large, the case-generation process is insensitive to shifts in the legal rule. In what follows, we study each of three possible ranges of ε separately. First, in the "large ε " case, the *entire* region between the most-preferred cutpoints $[\bar{y}^L, \bar{y}^R]$ and some set of $x < \bar{y}^L$ and $x > \bar{y}^R$ lie within the support of the case distribution. Second, in the "small ε " case, the entire support lies strictly in the region $[\bar{y}^L, \bar{y}^R]$. Third, in the "intermediate ε " case, the support includes some of the region $[\bar{y}^L, \bar{y}^R]$ and some region either below $\bar{y}^L$ or above $\bar{y}^R$.

Given dispositional utility and a distribution of cases, there is a natural way to construct utility over the "policy space" defined by the set of possible rules indexed by cutpoints. The utility of any policy (rule) $r(x; y)$ is simply the expected utility of adherence to that policy, given the distribution of cases induced by the rule. We demonstrate shortly that the "large ε " case gives rise to the standard quadratic policy loss function $-(y - \bar{y}^i)^2$, where $\bar{y}^i$ is the ideal cutpoint of faction i and y is the enforced cutpoint. We also demonstrate the "small

ε " case gives rise to the standard "city block" or "tent" policy utility function $-|y - \bar{y}^i|$. Thus, these widely used policy utility functions can be seen as induced by the dispositional preferences in Equation 2 and specific distributions of cases.

III. Judicial Welfare

Our explanation for *stare decisis* rests on the gains from trade available to the two factions that comprise the bench from which decision-makers are drawn. We treat each faction as a team with each member of the faction having the same preferences. The joint judicial welfare is thus the weighted average of the expected utility of a judge in each faction under a given rule. We wish to compare a practice of *stare decisis* to one of autarky.

We may formulate the general question as follows: Judicial welfare in a given period under autarky is simply the weighted sum of each faction's expected utility during that period when it decides according to its own rule. Recalling Equation 3, we define

$$(5) \quad \Theta^A = pv_t^L(\sigma_t^L, \sigma_t^R; A) + (1 - p)v_t^R(\sigma_t^L, \sigma_t^R; A)$$

Similarly, judicial welfare from a practice of *stare decisis* under a rule y^C is simply the weighted sum of each faction's period utility following the precedential rule y^C , hence

$$(6) \quad \Theta^{SD} = pv_t^L(\sigma_t^L, \sigma_t^R; SD) + (1 - p)v_t^R(\sigma_t^L, \sigma_t^R; SD)$$

There are gains from trade whenever $\Theta^{SD} > \Theta^A$.

In this paper, we consider a fixed distribution of cases with $\varepsilon > \bar{y}^R - \bar{y}^L$. Recall that the distribution of cases is centered on $Ey^{SD} = y^C$ under *stare decisis* and $Ey^A = py^L + (1 - p)y^R$ under autarky. Because $\bar{y}^L < y^C < \bar{y}^R$ and $\bar{y}^L < Ey^A < \bar{y}^R$, if $\varepsilon > \bar{y}^R - \bar{y}^L$ then the entire conflict zone lies in the support of the distribution. In addition, the assumption that each judge in each faction receives zero utility from correct dispositions implies that an analysis of the fixed distribution case will also apply to the shifting distribution case.

The following lemma indicates the expected utility of judges in each faction under autarky.

Lemma 1. (*Expected utilities under autarky, large ε*) $v_t^L(\sigma_t^L, \sigma_t^R; A) = -(1-p)\frac{(\bar{y}^R - \bar{y}^L)^2}{4\varepsilon}$ and $v_t^R(\sigma_t^L, \sigma_t^R; A) = -p\frac{(\bar{y}^R - \bar{y}^L)^2}{4\varepsilon}$.

Proof. Recall the definition of expected utility, Equation 2. One may calculate the expected utilities directly, to wit //Add the integrations. // The following argument is perhaps more intuitive. Consider a judge A in faction i . When judge A or another judge in her faction, has the authority to decide the case, she decides it correctly and receives utility 0. If a judge from another faction decides the case, that judge decides the case correctly if it falls outside the conflict zone; but decides it incorrectly given Judge A's preferences, imposing a utility loss on Judge A. A case falls within the conflict zone with probability $\frac{\bar{y}^R - \bar{y}^L}{2\varepsilon}$. Given the linearity of the utility loss, when a loss occurs it has average value $\frac{\bar{y}^R - \bar{y}^L}{2}$. Let q be the probability that a judge from the opposing faction decides the case.¹³ Judge A's expected utility is thus $q\frac{(\bar{y}^R - \bar{y}^L)^2}{4\varepsilon}$. Thus we have the indicated expected utilities. $\square$

Given expected utilities, expected judicial welfare under autarky is immediate.

Lemma 2. (*Judicial welfare under autarky, large ε*) $\Theta^A = -p(1-p)\frac{(\bar{y}^R - \bar{y}^L)^2}{2\varepsilon}$.

Proof. Substitute the expected utilities from Lemma 1 into Equation 5. $\square$

Notice that Θ^A is decreasing in the bench's ideological polarization $\rho = (\bar{y}^R - \bar{y}^L)$ and decreasing in the bench's heterogeneity; i.e., Θ^A decreases as p approaches $\frac{1}{2}$ from either 0 or 1.

The following lemma indicates expected utilities under stare decisis. Recall that the two factions agree to abide by a rule $y^C \in (\bar{y}^L, \bar{y}^R)$.

Lemma 3. (*Expected utilities under stare decisis, large ε*) $v_t^L(\sigma_t^L, \sigma_t^R; SD) = -\frac{(y^C - \bar{y}^L)^2}{4\varepsilon}$ and $v_t^R(\sigma_t^L, \sigma_t^R; SD) = -\frac{(\bar{y}^R - y^C)^2}{4\varepsilon}$.

Proof. Using Equation 2, the utilities may be calculated directly, to wit //Add the integrations.// However, the same intuitive construction indicated in the proof of Lemma 1 may be applied here, noting that for judges in the L faction, the stare decisis rule implies that cases in the interval $(\bar{y}^L, y^C]$ are incorrectly decided but these cases are correctly decided for judges in the R faction. Similarly, cases in the interval $[y^C, \bar{y}^R)$ are incorrectly decided for judges in the R faction but correctly decided for judges in the L faction. $\square$

Expected judicial welfare under stare decisis is immediate.

Lemma 4. (*Judicial welfare under stare decisis, large ε*) $\Theta^{SD} = -\frac{p(y^C - \bar{y}^L)^2 + (1-p)(\bar{y}^R - y^C)^2}{4e}$.

Proof. Substitute the expected utilities from Lemma 3 into Equation 5. $\square$

The rule y^{C*} that maximizes Θ^{SD} is simple: $y^{C*} = p\bar{y}^L + (1-p)\bar{y}^R$, the weighted average of the factional ideal points. Judicial welfare under *stare decisis* at this "best" compromise policy is $\Theta^{SD}(y^{C*}) = -(1-p)p\frac{(\bar{y}^R - \bar{y}^L)^2}{4e}$.

Define the judicial welfare differential at the best compromise policy as

$$(7) \quad \Delta^{JW}(y^{C*}) = \Theta^{SD}(y^{C*}) - \Theta^A$$

We now state the main result of this section, which concerns the judicial welfare differential at the best compromise policy.

Proposition 5. (*Judicial welfare differential, large ε*) In the "large ε " case, $\Delta^{JW}(y^{C*}) > 0$ for a non-homogeneous bench.

Proof. $\Theta^{SD}(y^{C*}) - \Theta^A = -(1-p)p\frac{(\bar{y}^R - \bar{y}^L)^2}{4e} - (-p(1-p)\frac{(\bar{y}^R - \bar{y}^L)^2}{2\varepsilon}) = (1-p)p\frac{(\bar{y}^R - \bar{y}^L)^2}{4e}$. This term is clearly positive except at $p = 0$ and $p = 1$. $\square$

In words, the Proposition states that gains from trade always exist on a non-homogeneous bench. This implies that in a Coasian world, the judges would commit to enforcing a practice of *stare decisis* employing the optimal compromise policy.

IV. Sustainability of *Stare Decisis*

The gains from trade offered by *stare decisis* make it an attractive regime for judges. But judges have no mechanism to commit themselves to such a regime. Confronted with a case she must decide incorrectly under *stare decisis*, a judge may be sorely tempted to defect and decide the case correctly according to her own lights. We thus seek to identify conditions that will sustain a practice of *stare decisis* as an equilibrium in an infinitely repeated game between the judges on the bench. We focus on strategies in which defection from *stare decisis* brings an infinite repetition of autarky. We first consider the baseline "large ε " case, then turn to the "small ε " case.

A. *Autarky*

The behavioral strategy pair (σ^L, σ^R) in an autarkic equilibrium is simple: Regardless of the history of the game, if one's faction is in power then dispose of the instant case according to one's preferred doctrine. This pair of behavioral strategies clearly constitutes a sub-game perfect Nash equilibrium, as any deviation by a ruling faction must afford it lower utility, given the other faction's strategy.

Proposition 6. (*Autarky*) *The following constitutes a perfect equilibrium in the stare decisis game: When in power, each faction j decides the case according to $d_t = r(x_t; \bar{y}^j)$, $j = \{L, R\}$.*

Proof. Obvious.

The autarkic equilibrium exists for the wide class of utility functions initially described, all probability distributions, and any values of the key parameters, such as the discount factor δ and all case locations.

B. *Sustainable Stare Decisis*

Equilibrium.—Equation 4 indicates a ruling judge's expected utility at any stage in the infinitely repeated game. *Stare decisis* will be sustainable if but only if this utility, given

adherence to *stare decisis*, is greater than the utility from deviating to autarky. A critical point to note is that the greatest temptation to defect from *stare decisis* occurs when the case confronting the ruling judge is located precisely at the compromise policy y^C , for such a case is the most-distant case the judge is obliged to decide incorrectly under *stare decisis*. Hence, if the ruling judge would adhere to *stare decisis* when $x_t = y^C$, she will adhere to *stare decisis* for any other case as well.

Employing Equation 4 and the expected utilities of autarky and *stare decisis* from Lemmata 1 and 3, a ruling judge L will adhere to *stare decisis* given $x_t = y^C$ if and only if:

$$-\alpha\rho + \frac{\delta}{1-\delta} \left(-\frac{(\alpha\rho)^2}{4\varepsilon} \right) \geq \frac{\delta}{1-\delta} \left(-\frac{(1-p)\rho^2}{4\varepsilon} \right)$$

which implies

$$(8) \quad \delta^L \geq \frac{4\alpha\varepsilon}{4\alpha\varepsilon + \rho(1-p-\alpha^2)}$$

Here we have employed a convenient change of variables in which $\rho = \bar{y}^R - \bar{y}^L$ and $\alpha = \frac{y^C - \bar{y}^L}{\bar{y}^R - \bar{y}^L}$, so that $y^C - \bar{y}^L = \alpha\rho$, $\bar{y}^R - y^C = (1-\alpha)\rho$, $y^C = \alpha\rho + \bar{y}^L$, and $y^C = \bar{y}^R - (1-\alpha)\rho$.

A similar calculation for Judge R leads to:

$$(9) \quad \delta^R \geq \frac{4(1-\alpha)\varepsilon}{4(1-\alpha)\varepsilon - \rho((1-\alpha)^2 - p)}$$

For a practice of *stare decisis* to be sustainable in equilibrium, then, the common discount factor $\delta > \max\{\delta^L, \delta^R\}$.

We consequently conclude

Proposition 7. (*Stare Decisis, "large ε "*) *If and only if $\max\{\delta^L, \delta^R\} \leq \delta \leq 1$, the following strategies constitute a perfect equilibrium: For faction i , at $t = 1$ dispose of cases using Equation 1 and continue doing so whenever possible if the other faction has always disposed of cases using Equation 1; otherwise, dispose of cases using $d_t = r(x_t; \bar{y}^i)$, $i = \{L, R\}$.*

Proof. The strategies are trigger strategies in which the punishment is perpetual autarky, which Proposition 11 demonstrated is sub-game perfect. Equations 8 and 9 were constructed to assure that deviation would not be profitable for L and R (respectively) even in the face of the least favorable possible case, given the punishment of perpetual autarky. Hence the condition $\max\{\delta^L, \delta^R\} \leq \delta \leq 1$ assures neither ever has an incentive to deviate from *stare decisis* irrespective of the drawn case. $\square$

In fact, given the parameters a range of compromise policies may be sustainable. A corollary to the Proposition indicates this range of sustainable compromise policies.

Corollary 8. *If $\max\{\delta^L, \delta^R\} \leq \delta \leq 1$ the range of sustainable compromise policies is $[\bar{y}^R - \rho\sqrt{p}, \bar{y}^L + \rho\sqrt{1-p}]$.*

Proof. Set equations 8 and 9 equal to 1 and solve for α , then solve for y^C , noting that $y^C = \alpha\rho + \bar{y}^L$ and $y^C = \bar{y}^R - (1 - \alpha)\rho$. $\square$

Figure 4 illustrates the Proposition and the Corollary. The horizontal dashed line at $\delta = 1$, shows the upper bound 1 on the discount factor δ . The rising blue curve shows the critical δ for the L judges. The falling red curve shows the critical δ for the R judges. The triangle-like shape bounded above by the line $\delta = 1$ is the parameter region in which a *stare decisis* equilibrium is sustainable. The values of y^c where both conditions can hold is defined (on the left) by the intersection of the red line and the dashed line indicating $\delta = 1$, and the intersection (on the right) of the blue line and the dashed line. Given the assumed parameters, this interval is $\left[1 - \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right]$ or approximately $[.3, .7]$. It will be seen that the lowest value of δ that can sustain *stare decisis* occurs at the intersection of the δ^L and δ^R curves and (some algebra shows) given the assumed parameters the associated value of y^C is $\frac{1}{2}$. At that value of the compromise policy, some algebra indicates $\delta = \frac{8}{9}$.

C. Polarization, Heterogeneity, and the Sustainability of Stare Decisis

// THIS SECTION IS STILL UNDER CONSTRUCTION //

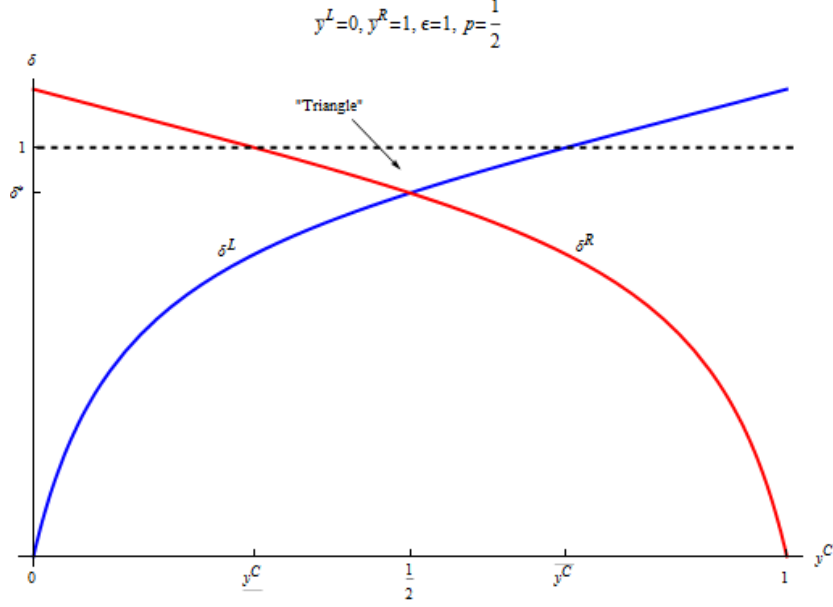


Figure 4: Sustainable *Stare Decisis*. The x -axis is compromise policies y^C , the y -axis is values of discount factor δ . The rising blue curve is δ^L , the critical discount factor for L judges. The falling red curve is δ^R , the critical discount factor for R judges. The dashed black curve is the maximum possible discount factors. Stare decisis is sustainable when the discount factor is larger than both critical values. The figure assumes $p = \frac{1}{2}$.

The set of parameter pairs (y^C, δ) that can sustain stare decisis is shown by the "triangle" in Figure 3. Call this set of parameters Υ . As exogenous parameters change, the set Υ changes as well, altering its shape and size. In this section, we investigate how Υ changes as parameters change. To be clear, we do not claim that marginal changes in a parameter result in marginal changes in a particular equilibrium or a shift from one equilibrium to another. Rather, in a loose sense if the "triangle" is larger relative to the area of the entire space of possible (y^C, δ) pairs, stare decisis is "easier" to sustain.

We examine the effect of two variables on Υ : the degree of polarization on the bench $\rho = (\bar{y}^R - \bar{y}^L)$, and the degree of heterogeneity on the bench $h = (1 - |p - \frac{1}{2}|)$. In order to characterize Υ , we employ four measures (reference to Figure 3 may be helpful): 1) the locations of the minimum possible compromise policy, $\underline{y}^C$, and the maximum possible compromise policy $\overline{y}^C$; the length μ of the interval between the minimum and maximum possible compromise policies; 3) the value of the minimum possible δ , δ^* , within Υ ; and

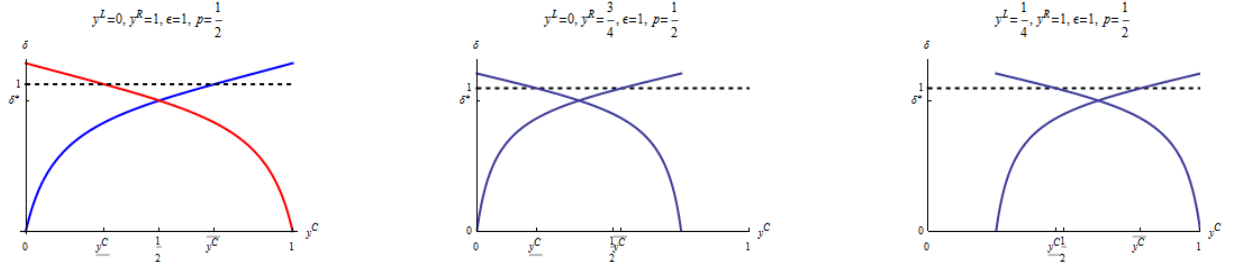


Figure 5: The Overall Effect of Polarization on the Sustainable Set of Policies. The left-hand panel repeats Figure 3. In the middle panel, the ideal policy of the R faction ($\bar{y}^R$) shifts left relative to its position in the left-hand panel. In the right-most panel, the ideal policy of the L faction ($\bar{y}^L$) shifts right relative to its position in the left-hand panel.

4) the area A of the "triangle." The first two measures are easy to characterize. However, because the curves δ^L and δ^R are non-linear, an exact characterization of δ^* is exceedingly cumbersome; as a result, so is an exact characterization of A , the area of Υ . However, a simple approximation of δ^* is available; this approximation then allows a simple approximation of A . Appendix A provides a formal analysis of the four measures, including exact characterizations and the approximations. Here we report analytic results using the approximations but the figures illustrating the results utilize the exact characterization when possible.

Polarization and Sustainability.—Polarization $\rho = (\bar{y}^R - \bar{y}^L)$ has a remarkable effect in the model: it increases the gains from trade and hence expands Υ , the set of parameters that can sustain stare decisis.

D. Heterogeneity and Sustainability

By heterogeneity, we mean the distribution of judges between the L and R factions. Heterogeneity is thus highest when the fraction of L judges, p , is one-half. Heterogeneity also has strong effects in the model: again, it increases the gains from trade between the factions and hence increases the sustainability of stare decisis.

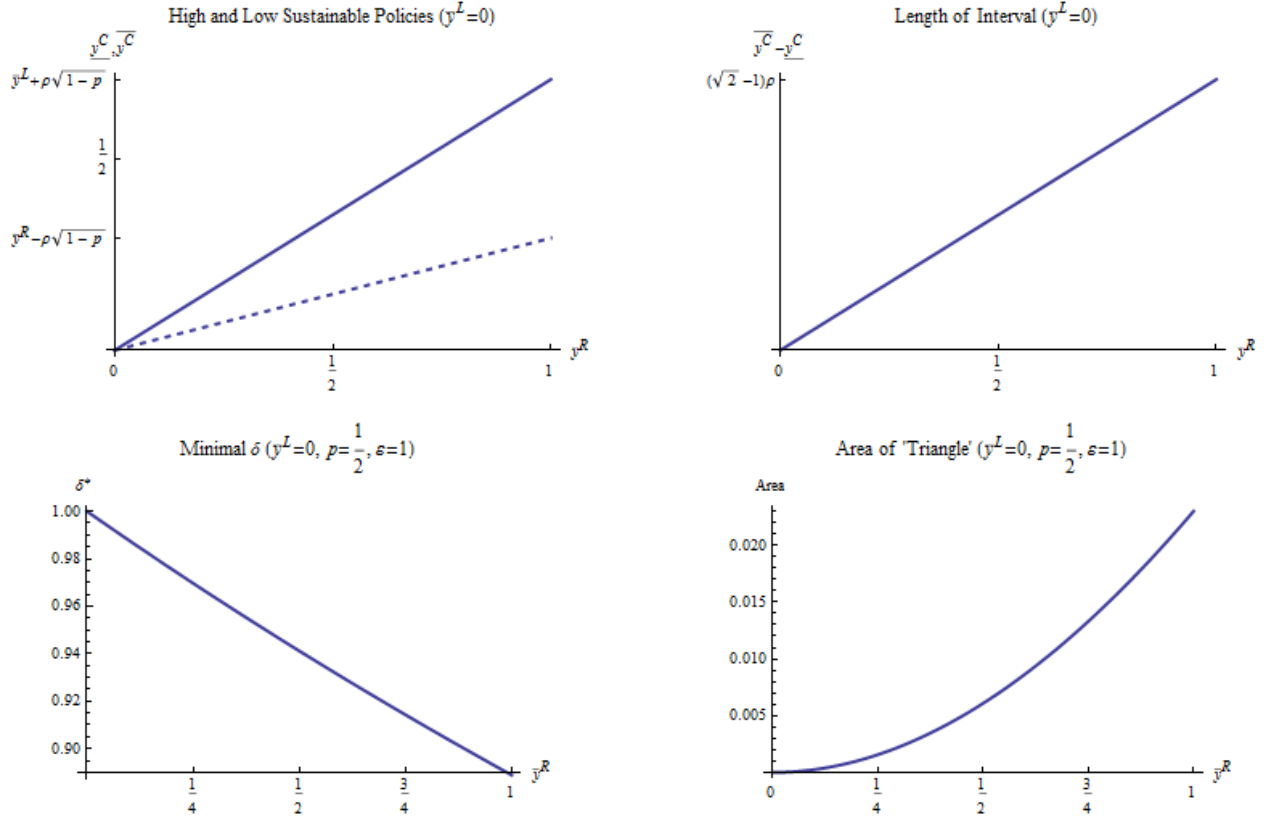


Figure 6: Effect of Polarization on Four Measures of the Set of Sustainable Policies. In all four panels, the ideal rule of the L faction is $\bar{y}^L = 0$. Then the ideal rule of the R faction, $\bar{y}^R$, increases from 0 to 1. Shown are the effects on the locations of the maximum and minimum sustainable policies (upper left panel); the range of sustainable policies (upper right); the minimum δ that can sustain stare decisis (lower left); and the area of the "triangle" (lower right).

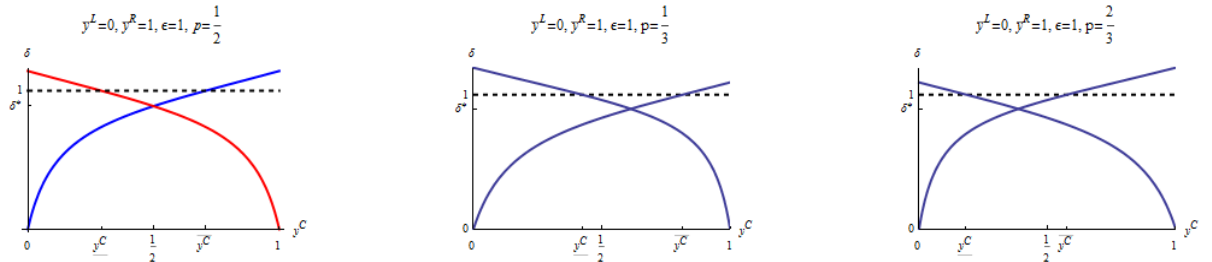


Figure 7: The Overall Effect of Heterogeneity on the Set of Sustainable Compromise Policies. The proportion of judges in the L faction is p . The left-hand panel in the figure repeats Figure 3, where $p = \frac{1}{2}$. In the middle panel, p falls to $\frac{1}{3}$. In the right-hand panel, p increases to $\frac{2}{3}$.

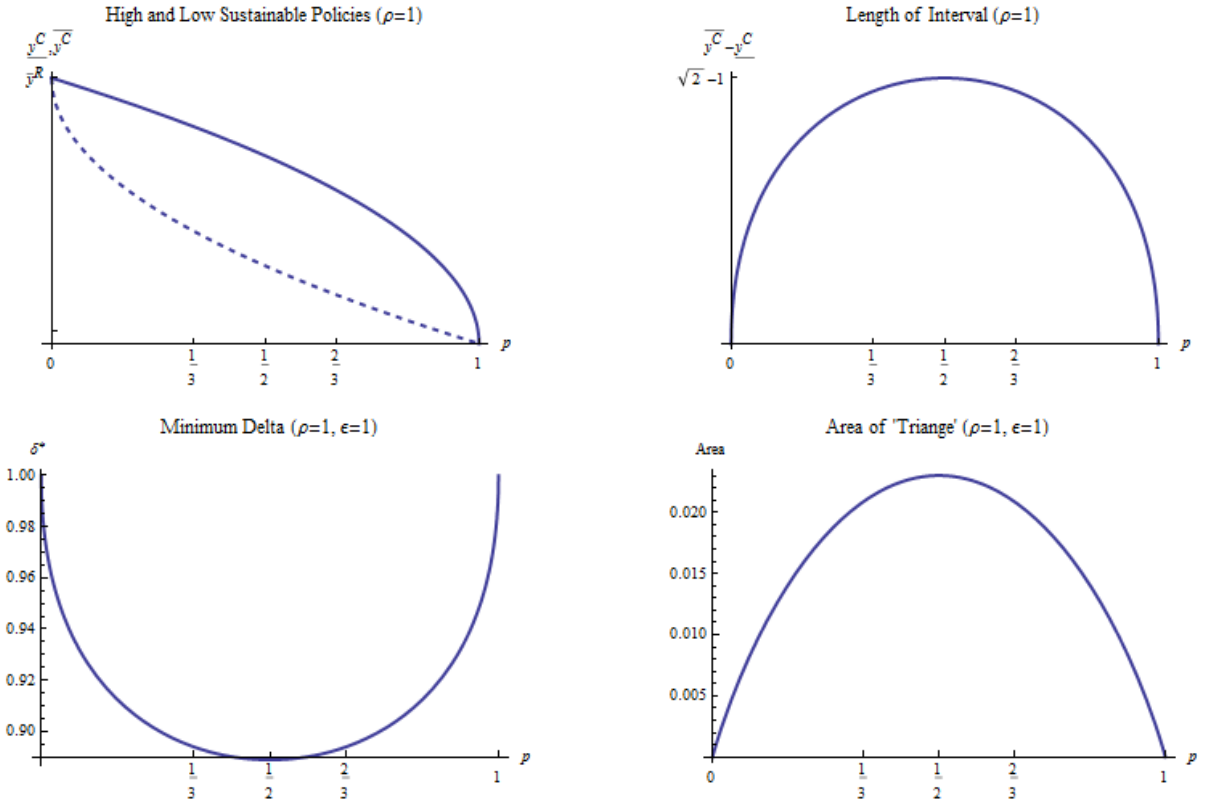


Figure 8: Effect of Heterogeneity on Four Measures of the Set of Sustainable Policies. In all four panels, the ideal rule of the L faction is $\bar{y}^L = 0$, and that of the R faction is $\bar{y}^R = 1$. In each panel, the proportion of judges in the L faction, p , increases from 0 to 1. Shown are the effects on the locations of the maximum and minimum sustainable policies (upper left panel); the range of sustainable policies (upper right); the minimum δ that can sustain stare decisis (lower left); and the area of the "triangle" (lower right).

V. Discussion and Conclusion

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A Changes in the Sustainable Set

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A. Location of Maximum and Minimum Sustainable Compromise Policies

Recall from Corollary 8 that when $\delta = 1$, the set of compromise points y^C that will sustain a practice of *stare decisis* is the interval $\left[\underline{y}^C = \bar{y}^R - \rho\sqrt{p}, \bar{y}^C = \bar{y}^L + \rho\sqrt{1-p}\right]$. Note that $\underline{y}^C$ is a function of $\bar{y}^R$ and ρ , and $\bar{y}^C$ is a function of $\bar{y}^L$ and ρ , while ρ is itself a function of $\bar{y}^L$ and $\bar{y}^R$. Accordingly we consider the effect of changes in $\bar{y}^L$ and $\bar{y}^R$ on the location of $\underline{y}^C$ and $\bar{y}^C$. Keeping $\bar{y}^R$ fixed and increasing $\bar{y}^L$ implies a decrease in polarization; keeping $\bar{y}^L$ fixed and increasing $\bar{y}^R$ implies an increase in polarization. Simultaneously decreasing $\bar{y}^L$ and increasing $\bar{y}^R$ increases polarization. The following lemma is immediate.

Proposition 9. *If $\bar{y}^L$ increases, both $\underline{y}^C$ and $\bar{y}^C$ increase; if $\bar{y}^R$ increases, both $\underline{y}^C$ and $\bar{y}^C$ increase; if $\bar{y}^L$ decreases and $\bar{y}^R$ increases, $\underline{y}^C$ decreases and $\bar{y}^C$ increases.*

Proof. Part 1. $\frac{\partial}{\partial \bar{y}^R} \underline{y}^C = 1 - \sqrt{p} > 0$ for $0 < p \leq 1$, $\frac{\partial}{\partial \bar{y}^R} \bar{y}^C = \sqrt{1-p} > 0$ for $0 \leq p < 1$. Part 2. $\frac{\partial}{\partial \bar{y}^L} \underline{y}^C = \sqrt{p} > 0$ for $0 < p \leq 1$, $\frac{\partial}{\partial \bar{y}^L} \bar{y}^C = 1 - \sqrt{1-p} > 0$ for $0 \leq p < 1$. Part 3. If $\bar{y}^L$ decreases and $\bar{y}^R$ increases, the marginal effect on $\underline{y}^C = \frac{\partial}{\partial \bar{y}^R} \underline{y}^C - \frac{\partial}{\partial \bar{y}^L} \underline{y}^C$ = Note that if $p = 0$ (so all members of the bench are in the R faction), $\underline{y}^C$ and $\bar{y}^C$ do not change as $\bar{y}^L$ changes, and if $p = 1$ (so all members of the bench are members of the L faction) then $\underline{y}^C$ and $\bar{y}^C$ do not change as $\bar{y}^R$ changes.

***B. Length of the Interval Between the Maximum and Minimum Sustainable
Compromise Policies***

Define the length of the interval as:

$$\mu = \bar{y}^L + \rho\sqrt{1-p} - (\bar{y}^R - \rho\sqrt{p}) = \rho \left(\sqrt{p} + \sqrt{(1-p)} - 1 \right)$$

We immediately have $\frac{\partial}{\partial p}\mu = \sqrt{p} + \sqrt{(1-p)} - 1 \geq 0$ for all $p \in [0, 1]$ (with equality occurring at $p = 1$ and $p = 0$). Similarly, we can see how this interval varies with p and, hence, with the degree of heterogeneity. Calculate

$$\frac{\partial L}{\partial p} = .5(\bar{y}^R - \bar{y}^L) \left[-\frac{1}{2\sqrt{p}} - \frac{1}{2\sqrt{(1-p)}} \right] > 0 \text{ if and only if } p < .5.$$

Thus, heterogeneity increases the length of the interval of sustainable y^C gets larger.

C. Value of δ^*

D. Area of the "Triangle"

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Notes

*We thank various people.

¹The term "*stare decisis*" derives from the latin phrase "Stare decisis et non quieta movere," an injunction "to stand by decisions and not to disturb the calm." Within a given jurisdiction, the practice of *vertical stare decisis* – how a lower court treats the previously decided cases of a higher court – differs from the practice of *horizontal stare decisis* – how a court treats its own previously decided cases. The practice may vary across constitutional, statutory, and common law areas of law.

We provide a model of horizontal *stare decisis*.

Stare decisis rests on another practice that indicates when the instant case is governed by some (and by which) prior case. This practice also underlies the related practice of "distinguishing."

For a brief discussion of *stare decisis* see Kornhauser [1998]. For more extended discussions see Cross [], Duxbury [2008] and Levi [].

²We thus offer a stylized model of intermediate courts of appeal in which a panel of judges is drawn from a wider bench. If the judges on the court divided into two factions, each panel (with an odd number of judges) would, absent panel effects, decide as the faction of the majority of its members would.

The practice of drawing a panel from a bench is common on intermediate courts of appeal in the United States as well as on appellate courts in other legal systems. Many international courts have a similar practice.

³Much of the literature there is normative. Relevant literature includes Goodhart 1930, Levi 2013, Llewellyn 1951, Cross and Harris 1991, McCormick and Summers 1997 and Duxbury 2008 as well as Postern 1989 and Schauer 1987 on the desirability of the practice.

A sizeable literature in Political Science searches for empirical evidence on the extent of *stare decisis* on the U.S. Supreme Court. See Spaeth and Segal 2001, Epstein and Knight

1996, Brisbin 1996, Brenner and Steir 1996, and Songer and Lindquist 1996.

Several authors investigate reasons why a court might adopt a practice of *stare decisis*. See for example Kornhauser 1989 Buena de Mesquita and Stephenson 2002 Blume and Rubinfeld 1982, Heiner 1986 and Gely 1998.

⁴She notes that, in other instances, the judges might specialize, each generating law in a different area of law and following the precedent of the other judge on other areas of law.

⁵Several formal models of courts simply assume a practice of *stare decisis*; these models treat horizontal *stare decisis* as an exogenous constraint on judges' behavior (Jovanovic 1988, Kornhauser 1992a). In other words, these models assume a commitment device whereby one generation of judges may bind the hands of its successors. Jovanovic presents a very abstract model in which he shows that ideologically diverse judges would do better in terms of both ex ante and ex post efficiency if they were constrained by a rule of *stare decisis*. Our model identifies conditions under which rational, self-interested judges might in fact successfully adopt such a rule.

⁶Her preferences are thus not consequential. But they don't seem to be expressive either. She has after all endorsed the decisions of the prior judges so future adherence to these wrongly decided cases should have some negative impact.

⁷Suppose the bench is composed of n judges, n^L of whom belong to the L faction and n^R of whom belong to the R faction. Then one can view $p = \frac{n^L}{n}$ and $1 - p = \frac{n^R}{n}$.

⁸For any rule $y^C < y^L$ or $y^C > y^R$ there exists a rule y^C with $y^L < y^C < y^R$ that would be pareto superior to the initial rule; hence, it seems natural to focus on rules in which $y^L < y^C < y^R$.

⁹The peculiar specification of the rule at the atom $x = y^C$ – requiring each faction to decide such a case incorrectly – is needed to avoid an open set problem.

¹⁰For some discussion see Kornhauser [1992a].

¹¹We might, that is, understand each judge as having a state-dependent utility function according to which she is always better off with a correct disposition than with an incorrect

disposition.

¹²A hallmark of the "case space approach" to modeling courts is the use of dispositional utility functions that can be characterized in terms of these four properties. For examples, see Cameron et al 2000, Beim et al, Clark, more.

¹³So $q = p$ when A belongs to faction L and $q = (1 - p)$ when A belongs to faction R .