Delegation at the U.S. federal appellate courts: the power to remand as a double-edged sword*

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Abstract

Delegation in U.S. federal courts, in the form of remands, can ameliorate the moral hazard problem of lower court judges who deviate from higher court policy. However, the deterrent effect of remands as a source of additional effort costs might be partially circumvented by delegation powers endowed to mid-level judges. Our empirical assessment suggests that cases remanded by the Supreme Court to appellate courts have a higher likelihood of being subsequently remanded to district courts, implying that appellate courts circumvent the deterrent effect of Supreme Court remands by transferring the effort costs to district courts. We then analyze whether this effect originates from legitimate case-relevant reasons or from moral hazard, by exploiting variations in ideological distances between court levels.
(JEL K).

1. Introduction

The U.S. court system is a complex one: cases begin in one court, but may end up in a different court. Intuitively, cases may go "up the chain" - where unsatisfied litigants decide to appeal their cases to higher courts. However, cases may also go "down the chain" - when higher level courts decide to remand back to a lower court. The two-way stream of cases

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involves many institutional challenges. One particularly troublesome challenge arises when different courts possess opposing views on the law, or otherwise have different preferences as to which rule should be applied. While the court system is designed as a hierarchy, in which the top-level institution determines the binding policy, disparate views among the court levels provide fertile ground for principal-agent problems. The principal – i.e. the Supreme Court (hereinafter: "SC") – must rely on decisions of lower level agents: the mid-level federal appellate court (hereinafter: "AC") and the low-level federal district court (hereinafter: "DC").[1] However, the SC cannot perfectly monitor all decisions, due to budget constraints and the overwhelming number of cases litigated in the federal courts. Hence, lower courts may have an incentive to deviate from SC policy, in order to promote an agenda which is more consistent with the view of the deviating agent.

While any such deviation is undesirable from the SC's perspective, deviations by the AC are especially detrimental, since AC decisions create binding precedents for all of its subordinate DC. Hence, any AC deviation may initiate a snowball of divergent policy. This problem is traditionally argued to be ameliorated by the threat of appellate review of AC decisions by the SC, since an appeal to the SC may result in two costly outcomes for the AC: a reversal and a remand. Reversals are costly in terms of reputation, which judges value due to intrinsic (e.g. prestige) or extrinsic utility (e.g. fear that reversals would hinder the prospect of promotion). Remands however are also costly, as they require judges to review the case for a second time, which entails additional effort and opportunity costs (Drahozal 1998). Lower level judges are thus argued to be restrained by the threat of remand (Haire et al. 2003, Boyd 2015*b*), such that they prefer to comply ex-ante with the principal's policy rather than risk a future remand.

The restraining effect of remands is not unique to the relationship between the SC and the AC, but is also relevant for the relationship between the AC and the DC. As the AC is also endowed with remand power, the DC is similarly deterred from deviation. The AC's remand power thus promotes compliance to the SC's policy, by restraining the DC from deviation. At the same time, the AC's remand power may be a double-edged sword, since the increase in deterrence of DC judges comes at the cost of decreasing the deterrence of AC judges. Namely, when the SC remands a case to the AC in order to induce the AC to exert costly effort, but the AC is free to instead remand the case further to the DC, the restraining effect of SC remands can be circumvented. In other words, the AC may abuse its delegation power to avoid the effort entailed in reconsidering cases on remand, by transferring the costs to the DC.

In this paper we attempt to empirically assess whether appellate courts indeed circum-

[1]The SC must also rely, to some extent, on decisions of state courts and other courts (e.g. tax courts).

vent the effort costs entailed in reevaluating cases on remand from the SC, by delegating (remanding again) to the DC. Using a sample of approximately 12,500 cases, derived from the Appellate Courts Multi-User Databases (see Songer 1997, Kuersten & Songer 2014) we find that cases that have been remanded from the SC to the AC are almost twice more likely to be further remanded to the DC (compared to other cases), which is in line with the conjecture of the AC transferring the effort costs to the DC.

While this effect is consistent with strategic behavior at the AC level, it is necessary to exclude alternative explanations, such as selection effects where remanded cases are either factually or legally complex, leading the AC to (1) take advantage of the DC specialization in fact finding or (2) avoid an unnecessary binding precedent, in accordance with the maxim that "hard cases make bad law" (Judge Holmes in *Northern Securities Co. v. United States* 1904). We therefore control for various case attributes and exploit variation in judicial ideology, which is presumably independent of case complexity, in order to explore how different views across court levels relate to delegation in general and "subsequent remands" (i.e. cases that have been received from the SC and subsequently remanded to the DC) in particular. We complement our empirical analysis using a text mining approach, which evaluates a random sub-sample of our data, in order to explore whether cases received from the SC differ in any relevant way from other cases.

Our results indicate that the AC is more likely to subsequently remand cases that have been received from the SC, but the magnitude of the effect depends on the ideological distances between the AC and its adjacent courts (the subordinate DC and superordinate SC). We further find that the AC's decision to remand is generally also driven by various ideological distances, not only between court levels but also between the judicial panel which reviews the case and the remaining judges of the court.

Since ideological distances not only reflect conflicting preferences but also affect the probability that the SC reviews, reverses or remands a case, we propose to view the effects of ideological distances under the prism of three channels of judicial concerns: effort costs, reputation and (ideological) preferences.

Our contribution is three-fold. First, we provide empirical evidence on the unexplored phenomenon of subsequent remands and propose a straightforward explanation, based on different channels of judicial concerns. We also discuss possible inefficiencies, where the benefits of multiple remands may be overshadowed by accumulating costs of litigation; court congestion; legal-coherence; and crime deterrence. Second, our findings challenge the existing literature which focuses only on the ideological distances between two adjacent court levels (SC and AC, or AC and DC) but ignores the complexity of different combinations of ideology. Among else, we find that the distance between the AC and the DC does not necessarily

discourage remands (as found in previous literature) but may have no effect or the opposite effect, depending on the exact combination. Third, we contribute to the emerging literature on textual analysis of court decisions, which usually focuses on the Supreme court and rarely on appellate courts.

The rest of the paper is organized as follows: section 2 briefly reviews related literature. In section 3 we develop our hypotheses. Section 4 presents summary statistics, variables and methodology. Section 5 presents our results. Section 6 presents the results of our textual analysis. Section 7 discusses the costs and benefits of subsequent remands and concludes.

2. Related Literature

Our paper is closely related to the empirical literature on the effects of attitudinal preferences on lower court compliance. This stream of literature generally finds that an ideological distance between lower and upper courts influences strategic interactions. For example, ideological distances have been found to affect the decision to dissent in AC (Hettinger et al. 2004), the speed of AC compliance to SC precedents (Masood & Kassow 2012), the probability of review (Lindquist et al. 2007, Cameron et al. 2000) and reversal (Smith 2014) by the SC, the tendency to suppress the lower court judge's ideology in heterogenic panels (Kastellec 2011) and the probability of affirmance by the AC (Haire et al. 2003).

Empirical evidence relating specifically to remands are, however, scarce in general and for subsequent remands in particular. In fact, we are aware of only two papers looking at remands in U.S. courts. The first paper, by Boyd (2015*b*), analyzes remands from AC to DC in approximately 1000 civil cases during 2000-2004. Boyd finds that the DC is more responsive to (1) specific instructions that accompany a remand, (2) published opinions, (3) cases where no panel judge dissents from the remanding opinion and (4) cases where the AC-DC ideological distance is small. The second paper by Borochoff (2008) analyzes remands from the SC to AC. Borochoff finds several factors that are correlated with the decision to remand, such as unanimity of the previous decision, usage of "negative instructions"[2] and an ideological distance between remanding and receiving courts. Borochoff considers briefly also remands from the AC to the DC, but explicitly excludes all subsequent remands (Borochoff 2008, pp. 884).

Our paper differs from these two papers in several aspects. First, we include a much larger sample of more than 12,500 cases from different courts and legal fields whereas the aforementioned papers utilize a relatively small and specific sample. Second, our paper fills

[2]Negative instructions are defined by Borochoff (2008) as instructions that tell the lower court to decide based of facts or only issues undetermined by the Supreme Court.

the unexplored gap of subsequent remands, which is not included in either paper. Third, we simultaneously control for ideological distances in all three court levels, thus providing a full picture of the influence of ideology on the decision to remand.

Our paper is also related to the literature on judicial concerns in an appellate system, including theoretical (e.g. Posner 1993, Shavell 1995, Drahozal 1998, Shavell 2006, Levy 2005, Sarel 2017), empirical (e.g. Scott 2006, Randazzo 2008, Berlemann & Christmann 2016) and experimental papers (e.g. Feess & Sarel 2017, Lewisch et al. 2015), which together provide a basis for the three different channels of effort cost, reputation and ideological preferences.

3. Hypotheses development

3.1. Three channels of judicial concerns

Our hypotheses rely on the insights of the different papers on rational judges and their incentives (see section 2 above), which roughly identify three categories of judicial concerns:

1. *Effort and opportunity costs* - judges want to minimize the amount of effort required to decide a given case, such as time spent on court hearings and the effort entailed in reviewing petitions and drafting court decisions. Judges similarly prefer to decide cases as quickly as possible, in order to gain either more leisure time or more time for deciding the (relatively) scarce interesting cases.

2. *Reputation* - judges have career concerns and value their reputation, which is damaged when their decisions are reversed and declared as erroneous.

3. *Ideology* - judges have ideological preferences, which they insert into their rulings. Thus, judges want their decision to reflect their own ideology, especially for decisions that create a binding precedent for lower courts.

Sometimes these concerns go hand-in-hand. For example, judges may want to avoid an appellate review of their decision, since it can simultaneously lead to an infringement of reputation (when a reversal occurs) and to more future effort (when a remand occurs). In other instances, these concerns provide countervailing incentives. For example, a judge may want to rule in accordance with his own ideology but doing so is likely to lead to appellate review, since the higher court holds different preferences.

A rational judge will thus take these concerns and their respective comparative importance into account and then choose the option which maximizes his utility. In the context of appellate judges' decision on whether to delegate, this decision boils down to the question of

whether the utility from remanding is higher than the utility from not remanding. In other words, a rational AC judge will remand if and only if:

$$E[U|D = remanding] > E[U|D \neq remand] \tag{1}$$

where U is the appellate judge's utility function and D is her binary decision of whether to remand. Note that the LHS of inequality (1) represents the benefit from remanding while the RHS reflects the opportunity cost of remand, i.e. the benefit from keeping discretion.

Building on inequality 1, we proceed by deriving predictions for the probability that an appellate judge remands to the district court, as a function of the three channels.

3.2. Subsequent remands

Suppose that a case has been remanded from the SC to the AC. The AC now faces the dilemma of whether to exert effort and issue a ruling, or to remand further to the district court instead. As deciding the case requires effort, the utility from remanding is always, ceteris paribus, larger than the utility from keeping discretion. This effect is then reinforced if the SC's goal was to 'punish' the AC for disobedient behavior, as a subsequent remand completely circumvents the punishment.[3] Moreover, the SC may specifically choose high-effort cases to remand, as these (1) serve as a more severe punishment and (2) would require the SC to exert the (high) effort otherwise. These additional effort costs are absent in other cases, that did not arrive at the AC through a remand from the SC (e.g. cases that were appealed from the DC but never reached the SC). Hence, keeping everything constant, the AC should be more likely to remand cases that have been received from the SC, compared to other cases. Thus we hypothesize that:

Hypothesis 1 *Subsequent remand effect: The AC is more likely to remand cases that have been remanded from the SC in comparison to other cases, ceteris paribus.*

Note that while this prediction seems independent of ideology and reputation - as it is based on effort costs only - the magnitude of the effect may be impacted by these additional concerns. In order to analyze how the effect size should vary, it is helpful to first consider how ideology and reputation impact the decision to remand in general (i.e. not only in subsequent remands).

[3]Theoretically, the AC could try to hide its circumvention by remanding other cases to reduce its overall workload. However, litigants in these cases may realize directly that a remand in their case is out of place and will appeal the decision, leading the SC to reverse.

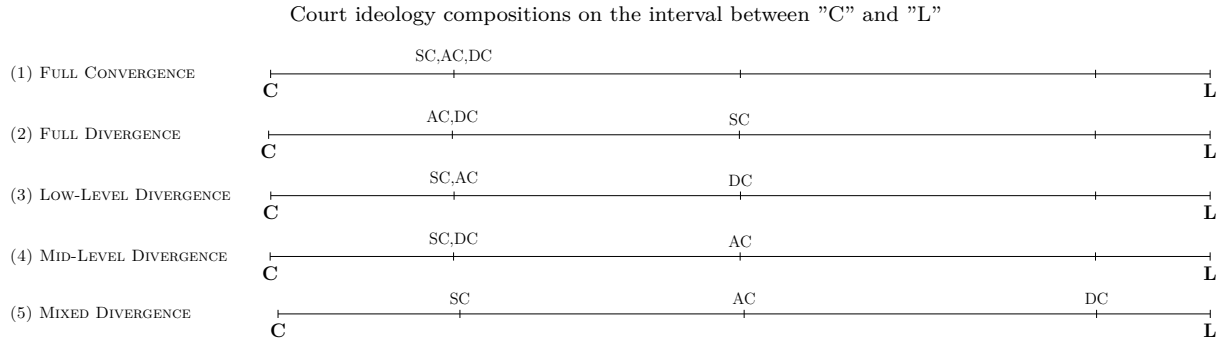
3.3. The impact of ideology and reputation on the decision to remand

Albeit ideology and reputation are conceptually different, the dominance of ideology in judicial utility functions (as is usually assumed in the literature on the federal courts) makes the probability of reversal by an upper court highly intertwined with ideological distances. Namely, when ideology largely determines the outcome of cases, lower level judges will anticipate that a higher court with different views will tend to reverse (and possibly remand) decisions which display a deviant ideology. Thus, an ideological distance is highly correlated with reversals and subsequent reputation losses.

However, the AC must consider two different ideological distances in his 'two hats': one as a lower court, whose decisions are reviewed by the SC, and one as a higher court, which reviews the decisions of the DC. Under the first 'hat', having a different ideology than the SC implies a risk of reversal, i.e. of reputation loss, and of remand, i.e. of additional effort. Under the second 'hat', having a different ideology than the DC implies a risk of deviation, i.e. of an ideology loss when the DC deviates.

These two different distances are then reflected in the two sides of inequality (1), i.e. in the opportunity cost of (not) remanding (the RHS) and the payoff from remanding (the LHS). To illustrate the effects of ideological distances, we consider several benchmark scenarios, as depicted in Figure 1:

Figure 1: Scenarios



The figure follows the traditional assumption in the literature, where ideology lies on a linear interval between "Conservative" (or republican) and "Liberal" (or democrat); denoted by "C" and "L" respectively. The three court levels are then located along the interval. For example, in the first scenario, titled "full convergence", all courts share the exact same ideology. Respectively, in the fifth scenario, titled "mixed divergence", each court has a different view on the scale.

3.3.1. The SC-AC distance

We first consider the effect of the SC-AC distance. Suppose first that this distance is zero, as in scenarios (1) and (3). Since the SC and the AC share the same ideology in these scenarios, the opportunity cost of remand is high, since the AC can safely assume that deciding the case in line with its own ideology will not lead the ideologically-friendly SC to (review and) reverse. Then, the AC could make a decision which creates a binding precedent for its subordinate DC and ensure that the AC's ideology is implemented. Note that this latter motivation is weaker in scenario (1), as the DC anyway should not deviate (such that a binding precedent is somewhat unnecessary), but as ideology shifts with the composition of the court - but precedents remain valid - a long term policy is still preferable for the AC.

Now consider, conversely, that the SC-AC distance increases, as in scenarios (4) and (5). This makes the opportunity cost of remand low, since the AC must essentially choose between two 'evils': either comply with the SC's different ideology or deviate and risk a reversal. However, the AC has another alternative - to remand and allow the DC to decide. The latter option then not only saves the AC from having to choose between two bad options, but may (somewhat paradoxically) allow the AC to actually reach its preferred outcome. This happens when the DC prefers to comply with the (deviant) AC, since AC review is frequent while SC review is rare. Hence, the SC-AC distance encourages the AC to opt for remanding to the DC. Thus, we hypothesize that:

Hypothesis 2 *The AC is more likely to remand when the SC-AC ideological distance increases, ceteris paribus.*

3.3.2. The AC-DC distance

Next, we consider the AC-DC distance. When this distance is zero, as in scenarios (1) and (2), the AC can safely delegate, as the DC is unlikely to deviate from the AC's views.[4] When the AC-DC distance increases, the straightforward consequence is a stronger fear of deviation by the DC, which discourages the AC from remanding. Thus, we hypothesize that:

Hypothesis 3 *The AC is less likely to remand when the AC-DC ideological distance increases, ceteris paribus.*

Note, however, that as this effect depends on the AC's *expected* benefit from remanding, two sub-components must be considered: the probability that the DC deviates and the

[4] As mentioned, even if the SC holds a different view, as in scenario (2), the probability of SC review may be too low for the DC to care.

consequence of a deviation. A larger AC-DC distance increases the probability of deviation, but the consequence of deviation may vary with other variables, namely with the SC-AC distance. Specifically, if the AC can reasonably expect that its decisions would set a long-term binding policy, then deviation from that policy is problematic. However, if an attempt to set such a policy is anyway unlikely to breed long-term profit, then a deviation by the DC is *less detrimental*. This intuition then carries over to the different constellations of ideologies between courts: compare, for example, scenarios (3) and (4). In scenario (3), the AC can reasonably expect its policy to last, as the SC agrees with the outcome and will neither reverse nor set a different policy in other cases, arising in other judicial districts. Conversely, in scenario (4), the SC will not accept the AC's view and is likely to set a different policy. Hence, a deviation by the DC does not matter much anyway. As a result, the effect of the AC-DC distance is *moderated* by the SC-AC distance.

A moderation effect may occur for an additional reason as well: the AC's desire to please the SC. As the SC presumably cares about the ideological outcome even when the case is decided by the DC (and not only when it is decided by the AC), a rational AC will incorporate the SC's responses in his decision making process. Specifically, the SC may either react positively or negatively to the AC's decision to remand (or not to remand), depending on the ideological differences between the SC and the DC. If the SC and DC share similar ideologies (scenario (4)), the SC will approve of the AC's decision to remand and vice versa. The approval of the SC may be important for the AC for two reasons. First, the AC may fear that disapproval will lead to retribution in the form of future reversals. Second, AC judges may wish to be promoted to SC judges in the future, and do not want to upset their future colleagues and hurt the chance of promotion. Thus, whenever the SC-AC distance and AC-DC distance are such that the SC approves of remanding, a moderation effect is likely to be even stronger. Thus, we hypothesize that:

Hypothesis 4 *The negative effect of the AC-DC ideological distance on the likelihood of AC remands will be moderated by the SC-AC distance.*

3.4. The impact of ideological distances on subsequent remands

The effects of ideological distances on the AC's decision to remand in general, as outlined above, naturally also impact the utility of appellate judges when deciding whether to subsequently remand cases received from the SC. Thus, the line of argumentation regarding the effects of the SC-AC and AC-DC distances and their interaction, generally carries over from any remand to subsequent remands.

However, subsequent remands are arguably a special case in which some concerns are

stronger than others. Specifically, while reputation concerns at the AC may be negligent for most cases – as the probability of a review by the SC review is very low – such concerns become substantial when a case arrives at the AC via a remand from the SC. In these cases, the SC has already demonstrated willingness to review the case - implying that a second review might take place as well. Furthermore, the SC's attention may still be given to that particular case post-remand, such that the desire to please and impress the SC might be higher for such cases.

The latter has three implications for the effects of ideological distances. First, the AC's expected payoff from issuing a decision which deviates from the SC's policy decreases in the SC-AC distance (as in hypothesis 2), where the effect is presumably stronger than in "regular" cases given the increased fear of reversal. Thus, the relative payoff from remanding becomes larger. Second, the AC's expected benefit from remanding to the DC may increase if the SC and DC hold similar views, in order to please the SC. Whenever an increase in the SC-AC distance corresponds to a lower SC-DC distance (i.e. the SC and DC hold similar views, but the AC holds different views - as in scenario (4) above), then the relative payoff from remanding is again larger. Third, the *DC* may begin to fear an eventual reversal by the *SC*, as SC-review is no longer so rare. Thus, the AC's attempts to engage in a strategic delegation, hoping that the DC complies with the views of the AC instead of the SC, may fail.

Note that the DC's fear of reversal may be driven by the intervention of litigants: since litigants plausibly know the ideological structure, they will anticipate the higher probability of SC-reversal and act by filing an appropriate appeal whenever any lower court deviates. In this sense, losing litigants serve as implicit agents of the SC. Recall that any subsequent remand originates from a previous litigation round at the SC. If the SC has remanded the case in order to 'educate' the AC, but the AC attempts to circumvent the cost by subsequently remanding, the losing litigant will have an incentive to 'report' the AC's 'misconduct', by filing a petition for certiorari. Hence, it is not required that the SC always observes the actions of the AC, as long as litigants play the role of implicit agents.[5]

The first two effects imply that an SC-AC distance is likely to have a large positive effect on the AC's probability of remanding while the latter mostly relates to the AC-DC distance but in some combinations can reinforce the positive effect. Namely, if the ideological

[5]When the AC abstains from delegation and decides the case, there is a counter risk: the losing litigant may be more likely to directly seek review by the SC, in comparison to a scenario where the latest decision was made by the DC. This occurs since usually litigants can only appeal decisions of the DC to the AC (28 U.S. Code 1291), and cannot take a short-cut by directly appealing to the SC. Delegation in the form of subsequent remands can therefore delay the process - forcing unsatisfied litigants to appeal back to the AC. However, this would only matter if the AC has strong time preferences.

combination is similar to scenario (5) above, the DC's fear of reversal by the SC would reduce its tendency to deviate - as deviation from the AC's views implies an even stronger deviation from the SC's policy. Hence, the SC-AC distance would again moderate the effect of the AC-DC distance, and encourage a remand. Hence, it seems plausible to assume that the AC's benefit from subsequently remanding (LHS of equation 1) is *higher* when the SC-AC distance is *high*.

In light of the above, we can derive predictions for how the "subsequent remand effect" (hypothesis 1) varies with ideological distances, using the following equation:

$$\alpha = \underbrace{Pr(D = Remand|SCremanded = 1)}_{P^1} - \underbrace{Pr(D = Remand|SCremanded = 0)}_{P^0}$$

where α is the size of the subsequent remand effect, $SCremanded \in \{0, 1\}$ captures whether the case was remanded from the SC (1) or not (0), the first term P^1 is the probability of subsequent remands (for cases received from the SC) and P^0 is the probability of remand in other cases. Denoting the ideological distances as $Dist_{scac}$ and $Dist_{acdc}$ for the SC-AC and AC-DC respectively, our hypotheses imply that:

- $\frac{\partial P^1}{\partial Dist_{scac}} > \frac{\partial P^1}{\partial Dist_{scac}} > 0$ (i.e. the SC-AC distance has a positive marginal effect on both P^0 and P^1, and a stronger marginal effect on P^1 than on P^0)
- $\frac{\partial P^1}{\partial Dist_{acdc}} > 0$ and $\frac{\partial P^0}{\partial Dist_{acdc}}$ (i.e. both P^1 and P^0 decrease in the AC-DC distance)

Assuming the effect size is positive (as in Hypothesis 1), α would be largest when P^1 is high and P^0 is low, which occurs when the SC-AC distance is high and the AC-DC distance is low. Hence, we hypothesize that:

Hypothesis 5 *The subsequent remand effect size would be largest when the SC-AC distance is high and the AC-DC distance is low.*

We remain agnostic about the tendency of the AC to subsequently remand in the mid-ranges of ideological distances (i.e. when the SC-AC and AC-DC distances are moderate) since the countervailing incentives make prediction very difficult.

4. Data description

4.1. Data collection process

The analysis is based on a broad merged dataset that covers different publicly available datasets. Our data collection begins with the Courts of Appeals database (hereinafter: "Songer Database") (Songer 1997) which consists of 18,195 published decisions of the Courts of Appeals from 1925 – 1996. This sample is comprised of 15 cases per circuit in the years 1925 – 1960 and 30 cases per circuit in 1961 – 1996 (see Hurtwitz & Kuersten 2012, for a detailed description). In a second step, we merged the update of the Songer Database (Kuersten & Haire 2007), that covers 2,160 appeal court decisions in the years 1997 – 2002. Additionally, we then merged the database with the "Phase II Courts of Appeals Database", comprised of 2,920 appeal court cases between 1952 – 1996 that subsequently have been reviewed by the U.S. Supreme Court. Finally, we merged the database with the "Shepardized" court of appeals database compiled by Prof. Rorie S. Solberg, which contains additional information for cases within the sample.

The Songer database and its complements have been widely used in previous papers (most papers cited in section 2 above. See also, for example, Moyer & Tankersley (2012), Moyer (2013)). However, its current downloadable version unfortunately contains some conspicuous coding errors. For example, some observations were coded as belonging to a court which does not exist. We therefore conducted a thorough cleaning of the data, where we looked up each case containing an obvious mistake and recoded the correct value. While these corrections are somewhat arbitrary, in the sense that (1) we may have not have captured all errors and (2) we use data which now slightly diverges from the data used in previous papers, we felt that the correction is preferable to conducting an erroneous analysis knowingly.

Additionally, we checked each and every case in the sample that was classified as a case which was remanded from the SC to the AC (as this is the main variable of interest), to ensure that the classification was correct. We subsequently made a few additional corrections for these cases, whenever (1) the case was clearly incorrectly classified or (2) the case was not directly remanded from the SC to the AC. The latter involves a very small number of cases, where the SC remanded a case directly to the DC rather than the AC, but the case ended up at the AC later on. Since such cases do not reflect a delegation decision where the SC explicitly demanded the AC to decide the case, we excluded these cases from the definition of "SC-remands".

To account for the ideology of the DC, AC and SC we broaden our database by integrating "Judicial Common Space" scores ("JCS") (Epstein et al. 2007) . These scores provide judges

with ideal points on a range between -1 (very liberal) to +1 (very conservative) and are traditionally used in the empirical literature on federal courts. Sources of the JCS scores are listed in **Appendix A**. Finally, we downloaded a quasi-random sub-sample of cases from Google Scholar's database, which includes all 157 cases classified as "SC-remands" from within the sample[6] and 200 randomly-chosen additional cases.

4.2. Variables and model

4.2.1. Main variables of interest

Our dependent variable - *Remand* - is a dummy variable assigning 1 if the case was remanded and 0 otherwise.[7] Our main independent variable of interest is a dummy variable - *SCremanded* - assigning 1 if the case has been remanded by the SC directly prior to the current decision of the AC.[8]

Additional variables of interest are the ideological distances. We follow Boyd (2015*b*) and define each distance as the absolute value of the difference in (median) JCS scores. We then include the following distances as variables:

1. *Dist_scfullac* - the ideological distance between the Supreme Court and the "full" Appeals Court, i.e. the whole AC, rather than the judicial panel deciding the case.

2. *Dist_panelmajac* - the ideological distance between the panel majority (i.e. the judges in the majority of the panel deciding the case) and the (full) AC.

3. *Dist_panelmajdc* - the ideological distance between the panel majority and the DC judge who decided the case prior to the AC's decision.

4. *Dist_dcdistjudg* - the ideological distance between the DC judge who decided the case prior to the AC's decision and the full DC (i.e. the whole District court).

Note that our empirical approach takes into account a more intricate structure then described in our hypotheses, where we allow for the possibility of a disparity between the

[6]Overall, after cleaning the data, 160 cases where classified as "SC remands". However, 3 cases are out of the sample range for which JCS scores were available.

[7]Classification of case outcome is derived from the Songer database variable $Treat$, by pooling all categories which indicate that a remand took place. We use the following three categories of the $Treat$ variable: (1) reversed and remanded (or just remanded), (2) vacated and remanded (also set aside & remanded; modified and remanded), (3) affirmed in part, reversed in part, and remanded; affirmed in part, vacated in part, and remanded.

[8]The Songer database includes two different variables indicating the same thing - the source of the case (*Source*), i.e. which court has directly reviewed the case before, and the type of decision ($Method$), which includes inter alia remands by the SC. Whenever these two classification departed, we checked the case itself to see which classification is correct.

judge deciding the case in each court and the full court in which he is serving. Since the assignment of judges in the appeals court is typically random, the difference between the panel (majority) and the whole AC should be small in theory. Yet, when such a difference exists, a confounding factor may influence the results - as the judicial panel cares not only about its superordinate SC, but also about their fellow judges. This may occur either due to collegiality concerns (e.g. a desire to be liked by one's colleagues) or the fear of an en-banc rehearing, in which the decision is reversed (causing a reputation loss).[9] The single DC judge is not exposed to a risk of rehearing, but may still be reluctant to deviate from the view of his colleagues due to similar collegiality concerns.

4.2.2. Control variables

We include a long list of control variables, capturing different aspects which may influence the AC's decision to remand while being possibly correlated with unobservables determining whether the case was remanded by the SC. Namely, we include the following variables:[10]

- Case-type dummies (criminal, civil rights, first amendment, due process, privacy, labor relations, economic activity and regulation and miscellaneous).
- Appealed-decision-type dummies (trial, interlocutory appeal, petition dismissal, guilty plea, post trial decision, post-settlement decision, interlocutory appeal, mandamus appeal, unclassified).
- Appeal-initiator dummies (whether the appeal was initiated by the original plaintiff, original defendant, federal agency on behalf of either of these, or an intervener).
- Generated index variables, capturing whether threshold issues were found (i.e. that the case has no basis) either for the original proceeding at the district court ($threshold\_index\_dc$) or for the appeal filing ($threshold\_index\_ac$).[11]

[9] An appellate court may decide to rehear a case 'en-banc' where all judges of the court can vote on the outcome. A different result than the original decision may be taken, constituting a type of reversal.

[10] Adding court and year dummies to the list, did not qualitatively change the results. Thus, we opted for a more parsimonious model and excluded these additions.

[11] The original database includes a long series of variables on threshold issues with three categories: identified, not identified, mixed. Including dummies separately for each issue and category makes the model unnecessarily convoluted and does not qualitatively affect the results. We therefore simplified the model by replacing the many dummies by one index. The index is constructed as follows: each issue is given one dummy, indicating only whether the issue was identified or not (i.e. we pool mixed and unidentified together). Then, we calculate the average of issues found, such that a higher value means that more threshold issues were identified. The list of threshold issues for the DC index are: The original case was frivolous (FRIVOL); there was no appellate jurisdiction (JURIS); the plaintiff failed to state a claim (STATECL); a moot issue was raised (MOOTNESS); administrative remedies had not been exhausted or the issue was not

- The number of filed amicus curiae briefs (AMICUS) and the length of the opinion (LENGTH) as measured by the number of pages, which serve a proxy for the case complexity.
- Race and gender attributes of the AC judicial panel (shares of judges who are male, black, Hispanic, Asian and Native-American).
- Race and gender dummies of the DC judge.
- Dummies for each residing SC president, given that the SC may be impacted also by leadership policy rather than pure ideology.

4.3. Summary statistics

Table 1
Descriptive statistics - main variables

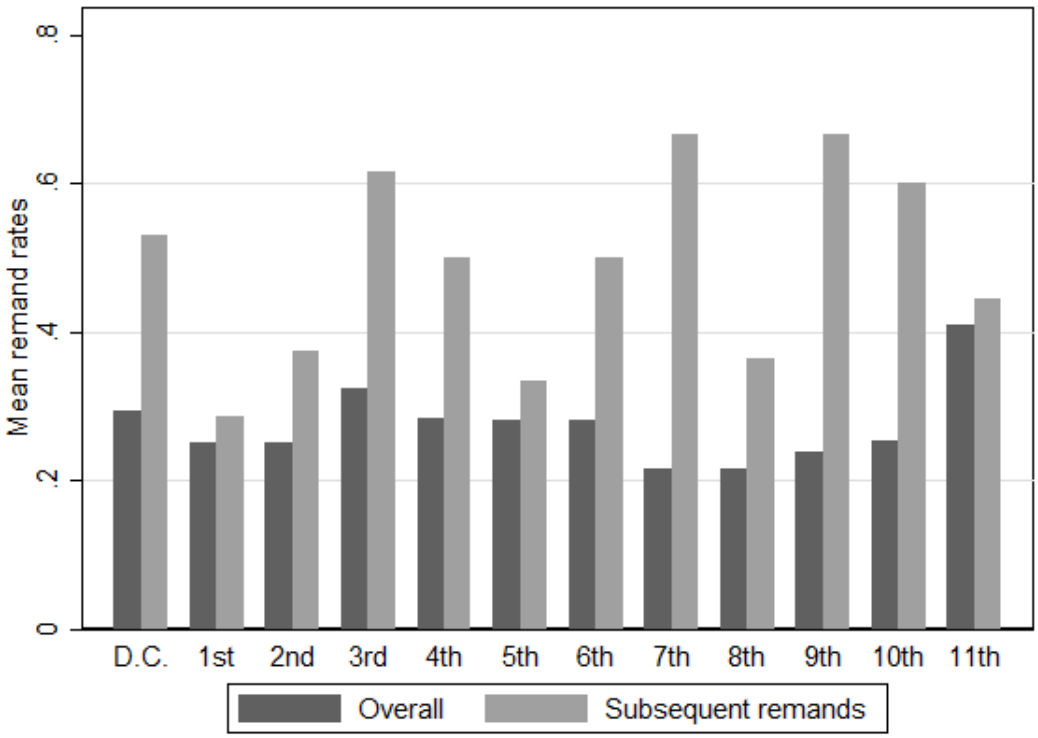
	mean	sd	min	max
Remand	0.29	0.45	0.00	1.00
SC remanded	0.01	0.07	0.00	1.00
Ideo. Distance: SC - full AC	0.16	0.12	0.00	0.73
Ideo. Distance: Panel maj. - AC	0.17	0.16	0.00	0.99
Ideo. Distance: Panel maj. - DC judge	0.28	0.23	0.00	1.13
Ideo. Distance: DC judge - full DC	0.20	0.22	0.00	1.08
Observations	12545			

Table 1 presents summary statistics for the main variables of interest (a full table can be found in Table 6 in **Appendix B**). 29% of all cases in the sample are remanded, indicating the importance of the question at hand, as it relates to a large portion of the AC's workload. Notably, SC remands constitute only a small share of all cases (approximately 1%).[12] Yet, as can be seen in Figure 2, the share of remands (to the DC) among SC-remands ("subsequent remands") is larger in all of the AC and substantially so in most.

ripe for judicial action (EXHAUST); litigants failed to comply with a procedural rule or that the statute of limitation has expired (TIMELY); the defendant had immunity (IMMUNITY); the case was a non-justifiable political action (POLQUEST); other threshold issue, e.g. estoppel (OTHTHRES). The list of threshold issue for the AC index are: the appeal was frivolous (FRIVAPP); the appeal was filed too late (LATE) and other issues (OTHAPPTH).

[12]Before we made our correction to the data, remands from the SC included about 1.5%. However, some cases were clearly incorrectly misclassified.

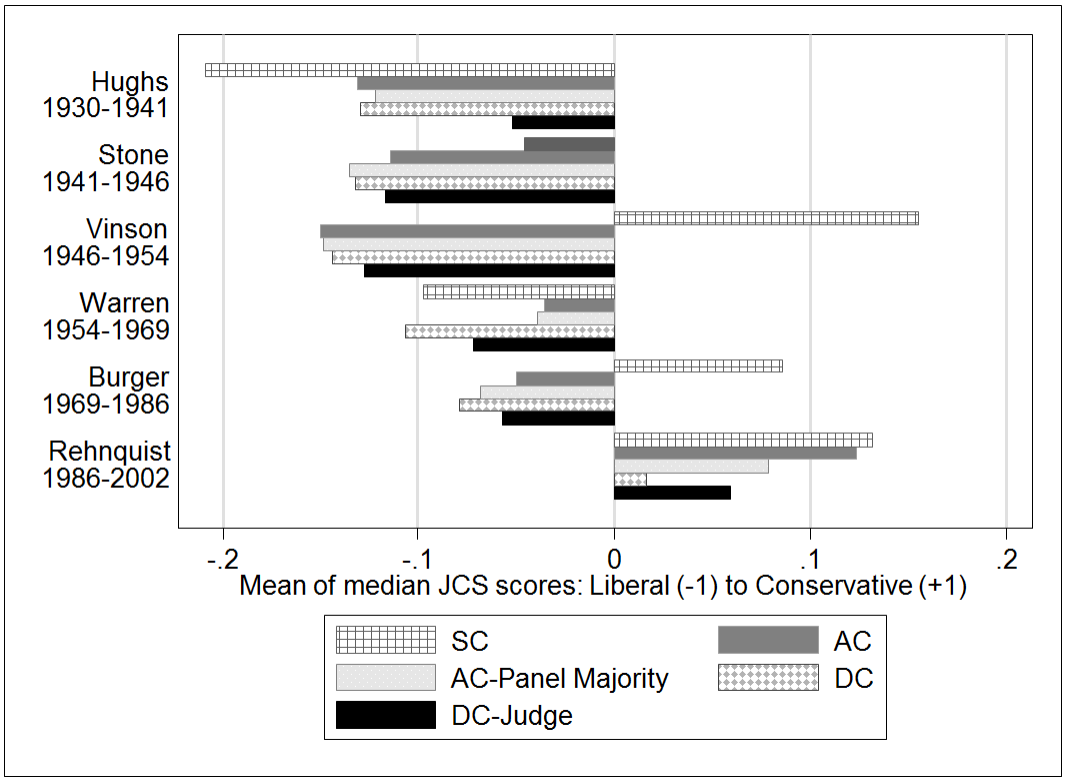
Figure 2: Mean remand rates



Note the relatively high rates of subsequent remands: approximately 33%-66% of cases remanded by the SC are subsequently remanded again (compared to about 25%-40% of overall cases). This provides a first indication on the abnormal frequency of subsequent remands. The rate of subsequent remands is, however, heterogeneous, where the 7th and 9th and circuits are the most inclined to subsequently remand cases whereas the 1st circuit is least inclined to do so. Heterogeneity may be driven by various factors, including ideological distances. Ideological distances range from 0.16-0.28 on average, where the variation is larger for the distances between the panel majority and the DC judge, as well as for the distance between the DC judge and the full DC. In order to illustrate how these distances are distributed over time, Figure 3 provides the (pooled) median JCS scores of the different courts/judges, over different periods (represented by the identity of the SC president). The (absolute value) difference between two bars then corresponds to the ideological distance of those two scores.

Each period can roughly be paralleled to the scenario examples, where the Hughs court correspond to "mixed divergence", the Vinson, Burger, and Stone courts to "full divergence", the Warren court to "mid-level divergence" and the Rehnquist court to "low-level divergence".

Figure 3: JCS scores over time



4.4. Methodology

4.4.1. Estimated model

We test our hypotheses using the following recursive model:

$$Pr(Remand) = SCremanded + Distances' + X' + \varepsilon_1 \tag{2}$$

$$SCremanded = Distances' + X' + \varepsilon_2 \tag{3}$$

where: X' is a vector of control variables and $Distances'$ is a vector of ideological distances and interaction terms, as follows:

$$\begin{aligned} Distances' = & Dist\_scfullac + Dist\_panelmajac + Dist\_panelmajdc + Dist\_dcdistjudg + \\ & Dist\_scfullac \times Dist\_panelmajac + Dist\_scfullac \times Dist\_panelmajdc + \\ & Dist\_panelmajac \times Dist\_panelmajdc + \\ & Dist\_scfullac \times Dist\_panelmajac \times Dist\_panelmajdc \end{aligned}$$

The interaction terms are necessary in order to reflect the difference-in-difference in the

probability of remand due to the combination of two (or three) distances.[13] For example, as discussed in detail in the hypothesis section above, the incentive to remand depends not only on the AC-DC distance and the SC-AC distance separately, but potentially on their interaction, where a moderating effect is hypothesized. A similar logic can be drawn for the effect of the Panel-AC distance (i.e. the distance between the panel and the full AC). Hence, a three-way-interaction seems in order, since the simultaneous combination of distances may have an effect.[14]

We test our hypotheses using a 'seemingly unrelated' bivariate probit model, where equations (2) and (3) are estimated simultaneously as to achieve a recursive model. The motivation for estimating both equations rather than relying on equation (2) alone involves the fear of selection bias. Namely, the SC presumably does not randomly decide whether to remand cases to the AC, such that the treatment effect of *SCremanded* is not randomly assigned. While many factors which we cannot measure due to data limitations can determine whether the SC remands, a known and obvious variable is the ideological distance between the SC and the AC (see Boyd 2015*b*). Since ideology and possibly other observables (e.g. case type) and unobservables (e.g. the facts of the case) simultaneously determine whether cases are remanded by the SC to the AC and by the AC to the DC, the error terms $\varepsilon_1, \varepsilon_2$ are presumably correlated. A bivariate approach can overcome this issue and account for potential selection bias.

5. Results

5.1. Basic results

Table 2 presents average marginal effects ("AME") of the probit regressions. In Column (1), we first include only the treatment variable *SCremanded* as an independent variable and run a simple (univariate) probit, without any additional variables. Columns (2) and (3) present AME for the bivariate recursive model, with ideological distances but without any other controls. Columns (4) and (5) then present AME for a full-scale model, including controls. Our basic findings are as follows:

[13] We excluded observations where 2 or more of the AC's judges in the panel had missing values for ideology.

[14] Note that we refrain from using a four-way-interaction (using the distance between the DC judge and the full DC), in order to make the (already complex) model reasonably interpretable. A four-way interaction would also be less relevant, since a differential effect would only appear in the extreme scenarios in which the AC judges seem to believe that the distance between the DC judge and the full DC is so large, such that the DC judge would deviate from his own ideology.

Table 2
Basic Results

	No distances	No controls		full model	
	(1)	(2)	(3)	(4)	(5)
	Pr(Remand)	Pr(Remand)	Pr(SCremanded)	Pr(Remand)	Pr(SCremanded)
SCremanded	0.235*** (0.044)	0.706*** (0.004)		0.190*** (0.059)	
dist_scfullac_med		-0.044 (0.034)	-0.009 (0.006)	0.035 (0.035)	-0.008 (0.009)
dist_panelmajac_med		0.017 (0.027)	-0.006 (0.005)	-0.058** (0.027)	-0.011 (0.007)
dist_panelmajdc_med		0.013 (0.019)	-0.006** (0.003)	-0.016 (0.019)	-0.006 (0.005)
dist_dcdistjudg_med		0.028 (0.019)	0.003 (0.003)	-0.004 (0.019)	0.001 (0.004)
Control variables	no	no	no	yes	yes
Number of observations	23114	12283	12283	12110	12110

note.– This table present the marginal effect of the seemingly unrelated bivariate probit regressions. Column (1) presents the coefficients for the effects on the probability that the AC remands (REMAND) in a simple-univariate probity. Columns (2) and (3) presents the results of the bivariate probit, with coefficients for the effects on the probability that the AC remands (REMAND) and that the SC remanded (SCremanded). Columns (4) and (5) add controls. Standard errors are clustered at the appellate court level. Control variables are: Case type dummies, Threshhold indexes, Amicus, Dissent share, District judge dummies for gender and race, Gender and race shares among panel, Opinion length. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

The Subsequent remand effect: the coefficient of the SCremanded dummy variable is significantly positive ($p < 0.01$) in all specifications, supporting Hypothesis 1. The AC is thus found to have a higher probability to remand cases that have been received from the SC.

The effects of ideological distances on remand probabilities: Next, the AME of the ideological distances in Table 2 are mostly insignificant - which is however not surprising, as AME only capture a discrete change (e.g. from 0 to 1) and may be problematic for testing interactions of continuous variables. Instead, the estimation of marginal effects of continuous variables in non-linear models is better conducted by looking at *representative values* (see the analysis below).

However, two exceptions are already significant. First, the AC-DC distance (captured by the Panel Majority - DC Judge distance, *dist_panelmajdc*) is negatively associated with the probability that the *SC* remands (but the effect is only statistically significant with $p < 0.05$ when controls are excluded; see column (3)).[15] Second, the Panel-AC distance is negatively associated with the probability that the *AC* remands (significant with $p < 0.05$; see column (4)). The latter effect has a straightforward explanation: much like the general dilemma of the AC when the SC holds different views (i.e. a high SC-AC distance), an appellate panel

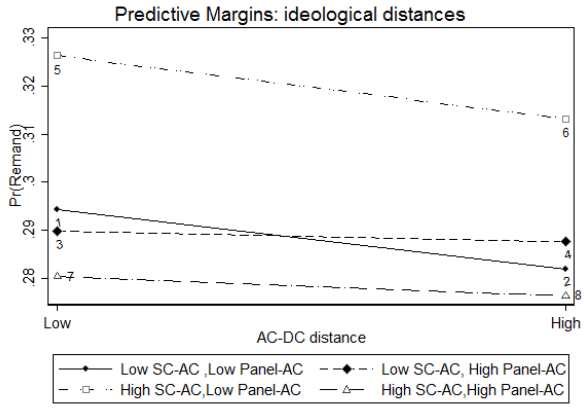
[15]The effects on SC-remands are not the main interest of this paper - as we are focusing on the AC - but a negative effect of the AC-DC distance may occur, for example, when the SC fears that a remand to the AC will lead the AC to subsequently remand to a DC that then deviates.

that holds different views than its full AC court must choose between two bad options - deviate and risk reversal (through an en-banc rehearing) or delegate in the hope that the DC complies with the panel rather than the AC. However, a strategic DC is unlikely to comply with the panel, because the AC reviews all cases and not just a select few (like the SC) such that the DC risks reversal. Hence, delegation is not a profitable option for the panel, leading to a lower probability of remanding.

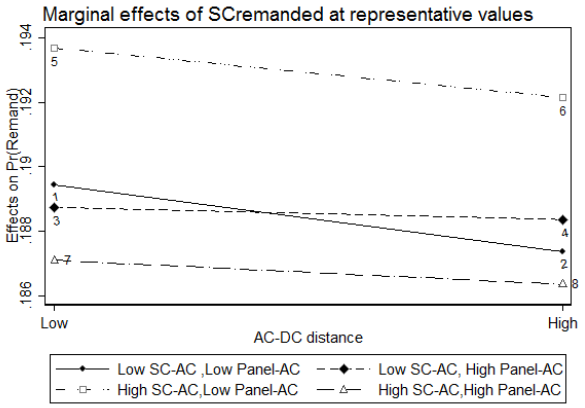
To overcome the aforementioned limitations of AME, we calculate additionally predictive margins at representative values (derived from the full specification with controls), by letting each distance take on two possible values: High (mean plus one standard deviation) and Low (mean minus one standard deviation). Figure 4a presents the predictive margins.

Figure 4: Marginal effects

(a) Predictive margins - ideological distances



(b) MER of SCremanded



The four lines correspond to four combinations of the SC-AC and Panel-AC distances (Low,Low; Low,High; High,Low; High,High). The X-axis corresponds to the AC-DC distance, which is again either low (left edge) or high (right edge). The Y-axis is the predicted probability that the AC remands.. Each point is marked with a digit (1,2..8) for convenience. We focus our analysis mainly on the lines between points 1 and 2 (”line 1-2”) and between points 5 and 6 (”line 5-6”), where the distance between the Panel-AC distance is *low* (i.e. the judicial panel is representative of the full AC court) in order to exclude confounding effects of opportunistic panels.

Both lines (1-2, 5-6) are downward-sloping, yet the slopes are both statistically insignificant ($p > 0.1$ for both). Thus, this first check does not provide much support for hypothesis 3. We proceed by looking at the impact of the SC-AC distance, by comparing points 5 vs. 1 and 6 vs. 2. As can be seen, points on the 5-6 line are higher than the 1-2 line, (difference between points 5 vs. 1 and 6 vs. 2 is significant with $p < 0.1$), which implies that the

probability of remand increases in the SC-AC distance - supporting hypothesis 2. A full pairwise comparison of the points of figure 4a is provided in Table 7 in **Appendix B**.

The effects of ideological distances on the Subsequent remand effect: In order to test hypothesis 5, we recalculate marginal effects at representative values ("MER") for the variable *SCremanded* using the same variation of ideological distances. Calculating MER is a standard approach for checking how the marginal effect of one variable varies with an additional variable (Williams et al. 2012). The MER are then plotted in figure 4b, where the Y-axis shows the coefficient size of the SCremanded variable, i.e. how the subsequent remand effect varys with ideological distances. Note first, that point 5 is again the highest point and significantly higher than points 1 ($p < 0.1$), 3 ($p < 0.05$) and 7 ($p < 0.01$). As point 5 reflects a high SC-AC, low AC-DC distance without a confounding distance between the panel and the AC (low Panel-AC distance) - this supports hypothesis 5. A full pairwise comparison of the points of figure 4a is provided in Table 8 in **Appendix B**.

Summing up, our first check finds clear evidence in favor of a subsequent remand effect (Hypothesis 1) and its dependency on ideological distances (Hypothesis 5). We also find clear evidence for a positive effect of the SC-AC distance on the probability of remand (Hypothesis 2) but only weak evidence for effects of the AC-DC distance (hypotheses 3 and 4).

5.2. Ideological scores v. ideological outcomes

Our analysis thus far relied on the assumption that remanding courts anticipate that their subordinates may deviate, based on their ideological ideal point (the JCS scores). However, the fear of deviation may be, in some respects, a first order effect which is successfully crowded out. For example, suppose that the AC indeed fears appellate review by the SC and therefore refrains from conspicuous deviations. Instead, the AC adjusts its ideological outcome in a way which is less deviant than dictated by its ideal point. Since the SC will anticipate such behavior on the part of the AC, it will no longer have to be concerned with the theoretical large deviation but rather focus on the expected outcomes that are subject to the AC's adjustments. In other words, the SC will be less concerned with the ideal points of AC judges per se and will instead respond to the actual expected deviation. Empirically, this would require looking at the ideological outcome of the AC's decisions rather than the ideology of its judges.

Therefore, our second check uses a slightly different measure for ideological distance: instead of JCS scores of the panel judges, we use the "directionality" of the decision, as measured in the Songer database. This variable assigns each case the outcome of either "liberal", "conservative" or "mixed". We recode these outcomes as -1, 0 and 1 respectively

and calculate the (absolute value) distance w.r.t the JCS scores of the SC and DC as before. The advantage of this approach is clear: if the SC correctly anticipates the outcome at the AC, the relevant ideological distance will indeed reflect that outcome. However, there are two disadvantages as well. First, moving from a continuous interval (JCS scores) to a discrete outcome (directionality) involves a loss of accuracy. Second, the category of "mixed" will not necessarily reflect the mid-point of the scale, as we implicitly assume.

Table 3
RESULTS: DIRECTIONALITY

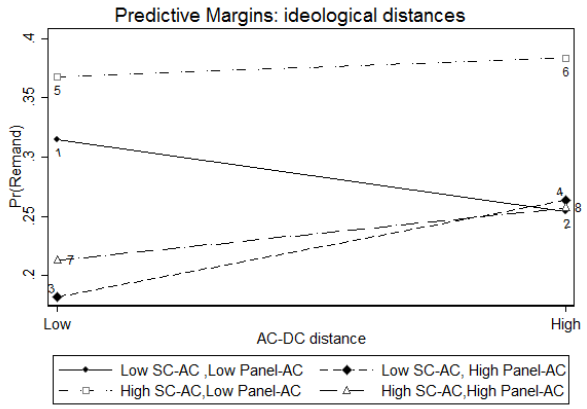
	NO DISTANCES	NO CONTROLS		FULL MODEL	
	(1)	(2)	(3)	(4)	(5)
	Pr(Remand)	Pr(Remand)	Pr(SCremanded)	Pr(Remand)	Pr(SCremanded)
SC remanded=1	0.235*** (0.044)	0.664*** (0.096)		0.160*** (0.059)	
dist_scfullac_direct		0.075 (0.057)	-0.019 (0.012)	0.203*** (0.059)	-0.004 (0.017)
dist_panelmajac_direct		-0.230*** (0.033)	-0.001 (0.005)	-0.178*** (0.033)	0.002 (0.008)
dist_panelmajdc_direct		0.029* (0.015)	-0.002 (0.003)	0.026* (0.015)	-0.002 (0.004)
dist_dcdistjudg_direct		0.083*** (0.027)	0.003 (0.005)	0.001 (0.028)	-0.000 (0.007)
Control variables	no	no	no	yes	yes
Number of observations	23114	11327	11327	11215	11215

NOTE.– This table present the marginal effect of the seemingly unrelated bivariate probit regressions, using the alternative measure of "directionality". Column (1) presents the coefficients for the effects on the probability that the AC remands (REMAND) in a simple-univariate probity. Columns (2) and (3) presents the results of the bivariate probit, with coefficients for the effects on the probability that the AC remands (REMAND) and that the SC remanded (SCremanded). Columns (4) and (5) add controls. Standard errors are clustered at the appellate court level. Control variables are: Case type dummies, Threshhold indexes, Amicus, Dissent share, District judge dummies for gender and race, Gender and race shares among panel, Opinion length. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

Table 3 presents average marginal effects using the adjusted measure for ideological distances where the directionality variable is used. Column (1) again replicates the simple probit, columns (2) and (3) presents the AME for the bivariate probit with no controls and columns (4) and (5) present AME for the full model. The outcome of this check supports our findings regarding a a subsequent remand effect, where the coefficient of SCremanded is significant at the 1% level. The AME of the SC-AC distance is also positive, and significant at the 1% level once controls are included (column (4)). Again, we find a negative effect of the Panel-AC distance. However, interestingly, the AME of the AC-DC distance is positive (with $p < 0.1$)- which goes against hypothesis 3.

Figure 5: Marginal effects - using the directionality variable

(a) Predictive margins - ideological distances



(b) MER of SCremanded

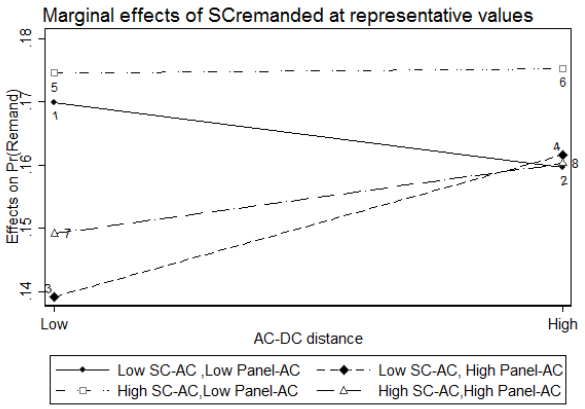


Figure 5 presents the recalculated predictive margins of ideological distances and MER of SCremanded, using the adjusted measure with the directionality variable. The full comparison of the pairwise comparisons are provided in tables 9 and 10 in **Appendix B.**

Notably, the only line with a negative slope is the 1-2 line - where the SC-AC distance and Panel-AC distances are low. However, unlike the basic results, this slope is highly significant ($p = 0.004$). Hence, we find some evidence for a negative effect of the AC-DC distance (hypothesis 2.). However, the other lines (3-4, 5-6, 7-8) all have positive slopes (significant for the 3-4 and 7-8 lines), indicating that under some combinations, the AC-DC distance may have a positive - rather than negative - effect on the probability of remand.[16]

As in the basic results, the SC-AC distance has a positive effect (compare the points with a high SC-AC and their respective low SC-AC distance counterpart). Moving on to figure 5b, point 5 is again significantly higher than points 1, 3 and 7 and is only slightly lower than point 6 (where the difference between these points is insignificant). Hence, we again find clear evidence that the effect size of the subsequent remand effects depends on ideology (hypothesis 5).

Summing up, our second check provides further support for hypothesis 1 and 5 (a positive subsequent remand effect, which is highest when the SC-AC distance is high and the AC-DC distance is low). This seems to indicate that the subsequent remand effect is at least partially driven by moral hazard, as case-relevant grounds are independent of the ideology of the judges. We again find clear evidence in favor of hypothesis 2 (a positive effect of the SC-AC distance). We also find some evidence of a negative effect of the AC-DC distance

[16]Disentangling the reasons for this reversal of the effect is beyond the scope of this paper (as we focus on subsequent remands) but one possible explanation may be that if the AC-DC increases such that the SC-DC distance decreases (i.e. the DC moved away from the AC and towards the SC), then the AC may have an incentive to delegate in order to please the SC.

(hypothesis 3) which weakens - and actually reverses - when other distances vary.

6. Textual analysis

Our main findings indicate that the AC is indeed more likely to remand cases received from the SC compared to other cases, which is consistent with strategic behavior at the AC. Yet, two potential alternative explanations must be addressed. First, if cases remanded by the SC are somehow inherently different from other cases, the comparison may be inappropriate. One particular concern is that SC-remands differ in the amount of factual questions that need to be resolved. Since a traditional justification for remands is the lower court's institutional superiority in collecting evidence (Hessick 2012), cases that raise more factual questions are naturally more likely to be remanded and make their way to the DC. Hence, if cases that are remanded by the SC for some reason include more factual questions - a higher remand rate would be observed for non-strategic reasons. Second, if cases remanded by the SC involve particularly complex legal questions, in which the SC would prefer that no binding precedent is generated, then a subsequent remand for a similar reason may in fact be a form of compliance (rather than deviation).

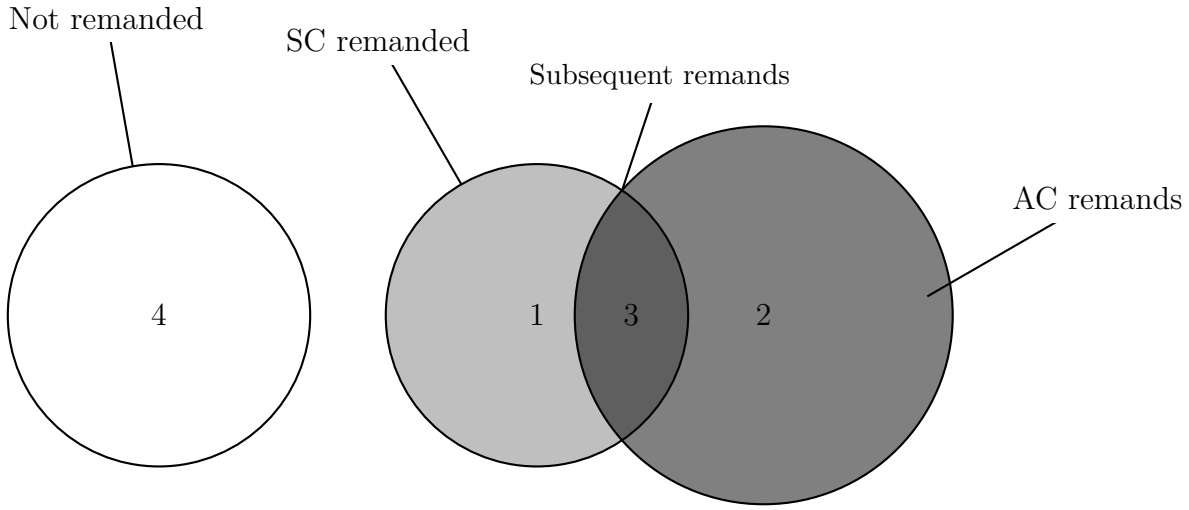
In our regression analysis above, we used proxies which may control for these issues. For example, difference in cases is proxied through the case-type and appeal-type dummies and complexity is proxied by the Amicus Cureia briefs, dissent shares and opinion length. However, fully disentangling these issues may require a more detailed approach, where the content of the AC's decision is directly analyzed. We therefore use textual analysis as a robustness test. Our text analysis approach consists of comparing four groups of cases, as depicted in Figure 6. We analyze a sub-sample of decisions - all 157 AC decisions classified as "SCremanded" (areas 1,3 in the figure) and additionally, 200 randomly drawn cases that where either remanded by the AC, but not previously remanded from the SC (area 2 in the figure, 42 cases) or not remanded by either court (area 4, 158 cases).[17] We then analyzed these cases using two different algorithms: Wordscore and Diction.

6.1. Wordscores: analyzing the 'legalness' of decisions

Our first part of the textual analysis uses the algorithm "Wordscores" (Laver et al. 2003), originally designed to analyze the views of politicians but recently adapted to many other contexts, including judicial decisions (see Dyevre 2015, and various papers mentioned therein).

[17]We choose to use 200 cases as a comparable sample size for the 157 cases. The choice of 42 and 158 cases from either categories were intended to keep the original sample ratio of remands to non-remands.

Figure 6: Universe of remanded cases



In a nutshell, the algorithm relies on two (or more) "virgin" master files, each corresponding to a different point (usually the edges) along the dimension of interest. The virgin files then serve as reference texts, which establish a scale. For example, if one was interested in establishing a scale of how prosaic texts are, one might feed the algorithm a Shakespeare play as one virgin text and a tabloid article as the other, thus creating the two edges of the scale. For the purpose of analyzing whether a case is more legal or factual, we use two dictionaries as virgin texts: a well-known legal dictionary ("Black's law dictionary") and a general dictionary ("The Oxford Thesaurus: An A-Z Dictionary of Synonyms").[18] Using two dictionaries allows to keep the degree of technicality fixed, leaving the variation to the degree of 'legalness'. The algorithm creates the edges of the scale by assigning the values 1 to the legal dictionary and -1 to the other dictionary. Frequency of words from each dictionary is then counted for each judicial decision and a score, using weighted averages, is generated. Wordscores then produces two variants of the score - a "raw" and "transformed" score, both of which we compare for robustness. We restrict attention to "bigrams", i.e. a sequence of two consecutive words, and measure the frequency of these bigrams.[19] Table 4 compares the scores. Panel A compares SC-remanded cases to all other cases (areas 1+3 vs. 2+4). We find no significant differences, suggesting that SC-remanded cases are not generally more "factual".

Panel B includes a similar comparison, restricted only to cases that are remanded by the AC (i.e. comparing areas 3 vs. 2). Subsequent remands are found to be significantly

[18]We make use not only of the words included in the dictionary, but also with the definitions themselves.

[19]We eliminate all bigrams that do not appear in any of the texts, as well as bigrams beginning with a digit or a symbol. This elimination does not qualitatively affect the results.

Table 4 Text analysis: comparison of Wordscores

Panel A: All analyzed cases

Factor	SC didn't remand	SC remanded	p-value
N	200	157	
Raw score (bigrams), mean (SD)	0.2100 (0.0696)	0.2101 (0.0708)	0.99
Transformed score (bigrams), mean (SD)	0.2035 (1.4093)	0.2050 (1.4348)	0.99

Panel B: Only Cases remanded by the AC

Factor	SC didn't remand	SC remanded	p-value
N	42	79	
Raw score (bigrams), mean (SD)	0.2000 (0.0577)	0.2269 (0.0728)	0.040
Transformed score (bigrams), mean (SD)	0.0015 (1.1686)	0.5472 (1.4747)	0.040

more legal than "regular" remands. The latter does not diminish from the lack of general difference (as Panel A suggests) but merely indicates that share of "legal" (as opposed to "factual") cases among the subsequent remands is larger. In other words, it would seem that while the pool of SC-remanded cases is not different than other cases, when a case that raises legal questions is remanded by the SC, it is more likely to be subsequently remanded. One straightforward explanation for this finding can be directly derived from our hypotheses: since it is legal questions that create precedents and entail policy implications - the tendency to subsequently remand such cases may be stronger, precisely due to ideological concerns.

6.2. Diction: analyzing various dimensions of the decisions

Our second part of the textual analysis uses the software "Diction", which assigns scores to each text for the following five main attributes: Activity, Optimism, Certainty, Realism

Table 5 Text analysis: comparison of Diction scores

Panel A: All analyzed cases

Factor	SC didn't remand	SC remanded	p-value (T-test)
N	200	157	
Activity (Diction score), mean (SD)	50.35 (2.23)	49.46 (2.88)	0.001
Optimism (Diction score), mean (SD)	49.18 (1.68)	49.89 (1.82)	<0.001
Certainty (Diction score), mean (SD)	45.79 (2.94)	45.07 (2.54)	0.016
Realism (Diction score), mean (SD)	51.39 (1.77)	51.25 (1.59)	0.43
Commonality (Diction score), mean (SD)	50.43 (1.32)	50.05 (1.47)	0.012
Legalness (Diction score), mean (SD)	268.51 (21.91)	267.34 (21.22)	0.61

Panel B: Only Cases remanded by the AC

Factor	SC didn't remand	SC remanded	p-value (T-test)
N	42	79	
Activity (Diction score), mean (SD)	50.82 (1.74)	49.39 (2.08)	<0.001
Optimism (Diction score), mean (SD)	49.23 (1.76)	49.67 (1.62)	0.16
Certainty (Diction score), mean (SD)	46.35 (1.71)	45.41 (1.93)	0.009
Realism (Diction score), mean (SD)	51.62 (1.74)	51.19 (1.65)	0.19
Commonality (Diction score), mean (SD)	50.62 (1.12)	49.89 (1.15)	<0.001
Legalness (Diction score), mean (SD)	271.11 (16.96)	267.96 (22.76)	0.43

and Commonality.[20] These attributes are measured according to a large built-in reference texts database.[21] We complemented these attributes by adding once more an attribute of "legalness", using an alternative legal dictionary ("Nolo's Free Dictionary Of Law Terms and Legal Definitions"). Table 5 compares the Diction scores of the different attributes.

[20]The help manual for DICTION 7.1 defines these as follows:

1. *Activity* - Language indicating resoluteness, inflexibility, and completeness and a tendency to speak ex cathedra.
2. *Optimism* - Language endorsing some person, group, concept or event or highlighting their positive entailments
3. *Certainty* - Language featuring movement, change, the implementation of ideas and the avoidance of inertia
4. *Realism* - Language describing tangible, immediate, recognizable matters that affect people's everyday lives.
5. *Commonality* - Language highlighting the agreed-upon values of a group and rejecting idiosyncratic modes of engagement.

[21]The algorithm works roughly as follows: each text is divided into sections of 500 words. Then, each section is given a score and the text receives an average score based on the section scores.

6.2.1. Legalness and Realism: no significant difference

The Diction scores analysis reaffirms the Wordscores finding of no significant difference in "legalness" between cases remanded by the SC and other cases in general, but also shows no significant difference when restricting the sample to AC-remanded cases only. We also find no significant difference in "Realism", which may roughly capture whether the judicial decision has tangible and immediate consequences. Since factual questions are perhaps more likely to have immediate impacts (e.g. an injunction preventing a specific activity) and legal questions have broader impacts, this result further support the conclusion of no difference in the legalness of cases.

6.2.2. Activity and Certainty

SC-remanded cases display lower levels of both Activity (which captures the resoluteness of the decision) and Certainty (which captures movement and change). Thus, when the AC is deciding a case that was received from the SC, the AC judges seem to be more hesitant and use a language which is more conservative. Such behavior may be consistent with the fear of reversal: since AC judges receive a signal that their previous decision was somehow incorrect, yielding a remand from the SC, they become less sure of their position. Alternatively, SC remanded cases may simply be more complex, hence the cautionary language used by the AC judges.

6.2.3. Commonality and Optimism

SC-remanded cases display higher levels of Commonality (which captures the tendency to highlight agreed-upon values) and Optimism (which captures the endorsement of a person, group or concept). Thus, when the AC is deciding a case that was received from the SC, the consensus and positivity are highlighted, which is again consistent with the fear of reversal: since AC judges do not want to appear deviant, they emphasize how the decision is congruent with the legal consensus. Alternatively, SC-remanded cases may be selected by the SC to include mainly cases with a lower risk of deviation.

6.3. Discussion and comparison to regression analysis

The results of our text analysis mitigate some of the concerns involving the content of the SC-remanded cases. We find that generally SC-remanded cases are not "more factual" (if at all, they are more legal). However, we do find differences in some other categories, which are in line with strategic behavior at the AC but also with an alternative explanation - where

the AC subsequently remands to avoid a binding precedent in complex cases. Nonetheless, overall the evidence for strategic behavior seems to be stronger, for two main reasons. First, if the AC was only driven by the complexity of the case, we would not observe any effect of ideological distance on the size of the marginal effects of SC-remanded. Second, the textual analysis suffers from one major limitation: the use of language may be an *outcome* of the decision to remand, rather than a representative attribute of the case. For example, AC judges may intentionally try to depict a case as complex, such that their desire to avoid additional effort has formal grounds. Similarly, the emphasis of commonality etc. may be an attempt to appease the SC, rather than reflect the actual merits of the case. Hence, our results seem to overall indicate that subsequent remands are a byproduct of moral hazard in the judicial system.

7. The costs and benefits of subsequent remands

Subsequent remands are conspicuously problematic for the principal SC, but may also be inefficient. Remands are costly not only due to the effort/opportunity cost of lower-court judges, but also due to litigation costs to the litigating parties; cost of conducting additional court sessions (manpower costs etc.); congestion costs from delaying reviews in other cases; legal-coherence costs when the top-level and mid-level courts reach opposite conclusions (Hessick 2012); and deterrence costs in criminal cases (Sarel 2017). While some of these costs emerge in any remand, others are aggravated by multiple remands. For example, the costs of additional sessions and congestion costs will necessarily increase with the number of remands. Similarly, deterrence costs will increase insofar as the multiple remands delay sanctions further.

If multiple remands were always costly and inefficient, one could simply abolish the authority to remand twice. However, multiple remands may bear some benefits that are not directly related to judicial restraints. First, remands allow to utilize the relative advantage of each court. For example, trial courts specialize in assessing evidence and deciding factual questions while the AC and SC specialize in deciding legal questions. Such "institutional superiority" (Hessick 2012) of trial courts can justify a subsequent remand. A second benefit of remands is the desire to avoid binding precedents in hard cases. Indeed, the SC may be reluctant to set a precedent for complex cases in accordance with the legal maxim that "hard cases make bad law" (Judge Holmes in *Northern Securities Co. v. United States* 1904). A similar logic may be applied by the AC, when preferring to remand further to the DC. *Prima facie,* the SC might have a similar interest and prefer that the AC avoids a binding decision.

However, since the SC can also remand directly to the lower-level DC, a decision to

remand to the AC instead would seem to imply that the SC specifically wanted the AC to decide the case. A subsequent remand may then express judicial *non-compliance*, where the AC attempts to avoid the effort cost by remanding further.

If the actions and intentions of the AC were perfectly observable, litigants who are disfavored by the remand could appeal the decision to remand to the SC, such that the SC reverses and 'punishes' the AC. However, the SC cannot always differentiate between 'beneficial' subsequent remands - where the AC wanted to avoid "bad law" or utilize the institutional superiority of the DC - and 'non-compliant' subsequent remands - where the AC simply wanted to avoid the effort cost. Furthermore, the SC reviews a very limited number of cases, and cannot credibly review all deviations.

The question is therefore, should one intervene and improve the monitoring processes as to prevent the AC from circumventing the restraining effects of remands. One possible solution would be to force the AC to report on all subsequent remands to the SC. While this may already exist in some form (e.g. electronic systems alerting the court secretaries on development), a more transparent and direct approach can be adopted, which would help the SC to distinguish between 'beneficial' and 'detrimental' subsequent remands. Alternatively, the DC could be endowed with the role of reporting. Since the DC should be averse to expendable remands, where the effort cost is rolled, the incentive to monitor its superior AC already exists. However, fear of 'revenge' by the AC could then discourage the DC from whistle-blowing.

A different approach could be taken by requiring the SC to specify in each remand whether the case should or should not be remanded further (or a list of conditions for a subsequent remand). Such a rule would seem to impose but a small effort cost on the SC, while constraining the AC – who will take caution when going against an explicit instruction.

Since we know little as to what truly drives the decision of the SC to remand (in light of the scarce empirical evidence on the issue), one cannot rule out the possibility that the SC is well aware of the dangers of a subsequent remand. One implication may be that the SC would then hand-pick those cases, such that if the AC remands, the damage is small. In such a scenario, there may also be second order effects, where the AC knows that any case received from the SC can be remanded further without too much damage, which may serve as an alternative explanation for our finding that cases remanded by the SC are more likely to be remanded than other cases. In order to isolate the effect, further evidence and analyses are necessary. Nonetheless, our analyses provide indication that subsequent remands are in fact partially driven by moral hazard, which can be of importance to the design of an effective judicial system.

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A. Appendix A: data sources

The source used to derive the JCS scores are as follows:

- Individual scores for AC judges and SC judges, downloaded from the website of Prof. Lee Epstein.[22]
- Individual scores for DC judges, downloaded from the website of Prof. Christina Boyd (Boyd 2015*a*).[23].
- Median JCS scores of the SC, AC and DC, by court and year. To derive these scores, we used different databases specifying the years of incumbency for each judge. Data

[22]http://epstein.wustl.edu/. Scores for SC judges are based on a transformation of Martin-Quinn scores (Martin & Quinn 2002).

[23]http://clboyd.net/ideology.html

for the SC was derived from Prof Epstein's database. Data for district and appellate judges was taken from the Federal Judicial Center's database on the biography of judges[24] and complemented by the Multi-User Databases on the Attributes of U.S. Federal Judges (Gryski & Zuk 2008, Gryski et al. 2008).

B. Appendix B: additional tables

[24]Biographical Directory of Article III Federal Judges: Export. URL: https://www.fjc.gov/history/judges/biographical-directory-article-iii-federal-judges-export.

Table 6
Descriptive statistics - all variables

	mean	sd	min	max
Remand	0.29	0.45	0.00	1.00
SC remanded	0.01	0.07	0.00	1.00
Ideo. Distance: SC - full AC	0.16	0.12	0.00	0.73
Ideo. Distance: Panel maj. - AC	0.17	0.16	0.00	0.99
Ideo. Distance: Panel maj. - DC judge	0.28	0.23	0.00	1.13
Ideo. Distance: DC judge - full DC	0.20	0.22	0.00	1.08
Case type: Criminal	0.34	0.47	0.00	1.00
Case type: Civil	0.11	0.32	0.00	1.00
Case type: 1st Amendment	0.03	0.16	0.00	1.00
Case type: Due process	0.02	0.12	0.00	1.00
Case type: Privacy	0.00	0.06	0.00	1.00
Case type: Labor	0.05	0.21	0.00	1.00
Case type: Economic activity	0.42	0.49	0.00	1.00
Case type: Misc.	0.00	0.00	0.00	0.00
Appeal from: Trial	0.00	0.02	0.00	1.00
Appeal from: Injunction	0.44	0.50	0.00	1.00
Appeal from: Summary judgement	0.04	0.19	0.00	1.00
Appeal from: Guilty plea	0.13	0.34	0.00	1.00
Appeal from: Dismissal	0.02	0.15	0.00	1.00
Appeal from: Post-judgement orders	0.19	0.39	0.00	1.00
Appeal from: Post-settelment orders	0.03	0.16	0.00	1.00
Appeal from: Interlocutory appealappeal	0.00	0.06	0.00	1.00
Appeal from: Mandamus	0.01	0.09	0.00	1.00
Initiate: Original plaintiff	0.00	0.02	0.00	1.00
Initiate: Original defendant	0.49	0.50	0.00	1.00
Initiate: Fed. Agency rep. plaintiff	0.48	0.50	0.00	1.00
Initiate: Fed. Agency rep. defendant	0.00	0.04	0.00	1.00
Initiate: intervener	0.00	0.00	0.00	0.00
Thershold index DC	0.01	0.04	0.00	0.30
Thershold index AC	0.01	0.06	0.00	1.00
Amicus Curiae briefs	0.12	0.77	0.00	26.00
Dissenting judges share	0.04	0.11	0.00	0.86
District judge gender: Male	0.95	0.22	0.00	1.00
District judge race: Black	0.04	0.20	0.00	1.00
District judge race: Hispanic	0.02	0.15	0.00	1.00
District judge race: Asian	0.00	0.04	0.00	1.00
District judge race: Native American	0.00	0.04	0.00	1.00
Panel majority: Male judges share	0.95	0.15	0.00	1.00
Panel majority: Black judges share	0.04	0.12	0.00	1.00
Panel majority: Hispanic judges share	0.02	0.09	0.00	1.00
Panel majority: Asian judges share	0.00	0.02	0.00	0.50
Observations	12545			

Table 7 Pairwise Comparison of Predictive Margins

			Contrast	Delta-method Std. Err.	z	Unadjusted $P > \|z\|$	Unadjusted [95% Conf.	Interval]
	_at							
2	vs	1	-0.01225	0.0189567	-0.65	0.518	-0.0494	0.024906
3	vs	1	-0.00437	0.0169022	-0.26	0.796	-0.0375	0.028753
4	vs	1	-0.00659	0.0165553	-0.4	0.691	-0.03904	0.025857
5	vs	1	0.031994	0.0166716	1.92	0.055	-0.00068	0.06467
6	vs	1	0.01892	0.0181623	1.04	0.298	-0.01668	0.054517
7	vs	1	-0.01381	0.017688	-0.78	0.435	-0.04848	0.020859
8	vs	1	-0.0178	0.0165221	-1.08	0.281	-0.05018	0.014586
3	vs	2	0.007874	0.0182897	0.43	0.667	-0.02797	0.043721
4	vs	2	0.005657	0.0136925	0.41	0.679	-0.02118	0.032494
5	vs	2	0.044242	0.0181384	2.44	0.015	0.008692	0.079793
6	vs	2	0.031168	0.0177269	1.76	0.079	-0.00358	0.065912
7	vs	2	-0.00156	0.0178665	-0.09	0.93	-0.03658	0.033457
8	vs	2	-0.00555	0.0166368	-0.33	0.739	-0.03816	0.027059
4	vs	3	-0.00222	0.012526	-0.18	0.86	-0.02677	0.022334
5	vs	3	0.036369	0.0167755	2.17	0.03	0.003489	0.069248
6	vs	3	0.023294	0.0169467	1.37	0.169	-0.00992	0.056509
7	vs	3	-0.00943	0.016764	-0.56	0.574	-0.04229	0.023423
8	vs	3	-0.01342	0.0153409	-0.87	0.382	-0.04349	0.016646
5	vs	4	0.038585	0.0151698	2.54	0.011	0.008853	0.068317
6	vs	4	0.025511	0.0156018	1.64	0.102	-0.00507	0.05609
7	vs	4	-0.00722	0.0151785	-0.48	0.634	-0.03697	0.022532
8	vs	4	-0.01121	0.0139632	-0.8	0.422	-0.03857	0.016162
6	vs	5	-0.01307	0.0163284	-0.8	0.423	-0.04508	0.018929
7	vs	5	-0.0458	0.0157961	-2.9	0.004	-0.07676	-0.01484
8	vs	5	-0.04979	0.0164609	-3.02	0.002	-0.08205	-0.01753
7	vs	6	-0.03273	0.0182629	-1.79	0.073	-0.06852	0.003066
8	vs	6	-0.03672	0.0133193	-2.76	0.006	-0.06282	-0.01061
8	vs	7	-0.00399	0.0133396	-0.3	0.765	-0.03013	0.022157

NOTE- This table presents a pairwise comparison of the predictive margins ($Pr(remand|x)$) at representative values ("MER"). Numbers correspond to the points plotted in figure 4a.

Table 8 Pairwise Comparison of SCremanded coefficient

			Contrast	Delta-method Std. Err.	z	Unadjusted $P > \|z\|$	Unadjusted [95% Conf.	Interval
SCremanded at								
2	vs	1	-0.00207	0.003216	-0.64	0.52	-0.00837	0.004235
3	vs	1	-0.00071	0.002735	-0.26	0.795	-0.00607	0.004651
4	vs	1	-0.00108	0.00269	-0.4	0.688	-0.00635	0.004191
5	vs	1	0.004233	0.00229	1.85	0.065	-0.00026	0.008721
6	vs	1	0.002702	0.002615	1.03	0.301	-0.00242	0.007826
7	vs	1	-0.00235	0.003012	-0.78	0.435	-0.00826	0.003553
8	vs	1	-0.00309	0.002835	-1.09	0.275	-0.00865	0.002465
3	vs	2	0.00136	0.003177	0.43	0.669	-0.00487	0.007587
4	vs	2	0.000988	0.002426	0.41	0.684	-0.00377	0.005743
5	vs	2	0.006302	0.002731	2.31	0.021	0.000949	0.011654
6	vs	2	0.004771	0.00279	1.71	0.087	-0.0007	0.010239
7	vs	2	-0.00028	0.00323	-0.09	0.93	-0.00661	0.006048
8	vs	2	-0.00102	0.00305	-0.34	0.737	-0.007	0.004954
4	vs	3	-0.00037	0.002094	-0.18	0.859	-0.00448	0.003733
5	vs	3	0.004942	0.00232	2.13	0.033	0.000396	0.009488
6	vs	3	0.003411	0.002479	1.38	0.169	-0.00145	0.008269
7	vs	3	-0.00164	0.002931	-0.56	0.575	-0.00739	0.004102
8	vs	3	-0.00238	0.002715	-0.88	0.38	-0.0077	0.002939
5	vs	4	0.005314	0.002021	2.63	0.009	0.001352	0.009276
6	vs	4	0.003783	0.002238	1.69	0.091	-0.0006	0.008169
7	vs	4	-0.00127	0.002701	-0.47	0.638	-0.00656	0.004024
8	vs	4	-0.00201	0.00253	-0.79	0.427	-0.00697	0.002949
6	vs	5	-0.00153	0.001934	-0.79	0.429	-0.00532	0.002259
7	vs	5	-0.00658	0.002395	-2.75	0.006	-0.01128	-0.00189
8	vs	5	-0.00732	0.002429	-3.02	0.003	-0.01209	-0.00256
7	vs	6	-0.00505	0.002854	-1.77	0.077	-0.01065	0.000541
8	vs	6	-0.00579	0.002081	-2.78	0.005	-0.00987	-0.00172
8	vs	7	-0.00074	0.002468	-0.3	0.764	-0.00558	0.004097

NOTE- This table presents a pairwise comparison of the marginal effects at representative values ("MER") of the coefficient of SCremanded. Numbers correspond to the points plotted in figure 4b.

Table 9 Pairwise Comparison of Predictive Margins: Directionality

			Contrast	Delta-method Std. Err.	z	Unadjusted $P > \|z\|$	Unadjusted [95% Conf.	Interval]
	at							
2	vs	1	-0.06049	0.021139	-2.86	0.004	-0.10192	-0.01906
3	vs	1	-0.13245	0.01476	-8.97	0	-0.16138	-0.10352
4	vs	1	-0.05087	0.023915	-2.13	0.033	-0.09774	-0.004
5	vs	1	0.053418	0.015606	3.42	0.001	0.022832	0.084005
6	vs	1	0.069294	0.025434	2.72	0.006	0.019444	0.119144
7	vs	1	-0.10157	0.020691	-4.91	0	-0.14212	-0.06101
8	vs	1	-0.05745	0.018184	-3.16	0.002	-0.09309	-0.02181
3	vs	2	-0.07195	0.032878	-2.19	0.029	-0.13639	-0.00751
4	vs	2	0.009623	0.038451	0.25	0.802	-0.06574	0.084985
5	vs	2	0.113912	0.027234	4.18	0	0.060534	0.16729
6	vs	2	0.129787	0.032949	3.94	0	0.06521	0.194365
7	vs	2	-0.04107	0.031736	-1.29	0.196	-0.10327	0.021128
8	vs	2	0.003044	0.032115	0.09	0.924	-0.0599	0.065989
4	vs	3	0.081576	0.016751	4.87	0	0.048745	0.114407
5	vs	3	0.185865	0.016666	11.15	0	0.153201	0.218528
6	vs	3	0.20174	0.027603	7.31	0	0.14764	0.25584
7	vs	3	0.03088	0.020798	1.48	0.138	-0.00988	0.071643
8	vs	3	0.074997	0.015095	4.97	0	0.04541	0.104583
5	vs	4	0.104289	0.020653	5.05	0	0.06381	0.144768
6	vs	4	0.120164	0.032543	3.69	0	0.056381	0.183947
7	vs	4	-0.0507	0.021555	-2.35	0.019	-0.09294	-0.00845
8	vs	4	-0.00658	0.015915	-0.41	0.679	-0.03777	0.024614
6	vs	5	0.015876	0.023665	0.67	0.502	-0.03051	0.062259
7	vs	5	-0.15498	0.015964	-9.71	0	-0.18627	-0.1237
8	vs	5	-0.11087	0.016885	-6.57	0	-0.14396	-0.07777
7	vs	6	-0.17086	0.034529	-4.95	0	-0.23854	-0.10319
8	vs	6	-0.12674	0.028395	-4.46	0	-0.1824	-0.07109
8	vs	7	0.044117	0.018406	2.4	0.017	0.008041	0.080193

NOTE- This table presents a pairwise comparison of the predictive margins ($Pr(remand|x)$) at representative values ("MER"). Numbers correspond to the points plotted in figure 5a.

Table 10 Pairwise Comparison of SCremanded coefficient: Directionality

			Contrast	Delta-method Std. Err.	z	Unadjusted $P > \|z\|$	Unadjusted [95% Conf.	Interval]
Scremanded at								
2	vs	1	-0.01024	0.005171	-1.98	0.048	-0.02037	-0.0001
3	vs	1	-0.03065	0.00753	-4.07	0	-0.04541	-0.01589
4	vs	1	-0.00822	0.004223	-1.95	0.051	-0.0165	5.27E-05
5	vs	1	0.004707	0.001556	3.02	0.002	0.001657	0.007756
6	vs	1	0.005402	0.001647	3.28	0.001	0.002174	0.00863
7	vs	1	-0.02065	0.006271	-3.29	0.001	-0.03294	-0.00836
8	vs	1	-0.00958	0.00334	-2.87	0.004	-0.01613	-0.00304
3	vs	2	-0.02041	0.009662	-2.11	0.035	-0.03935	-0.00148
4	vs	2	0.002012	0.008144	0.25	0.805	-0.01395	0.017974
5	vs	2	0.014942	0.005842	2.56	0.011	0.003492	0.026392
6	vs	2	0.015637	0.005762	2.71	0.007	0.004344	0.026931
7	vs	2	-0.01041	0.007971	-1.31	0.191	-0.02604	0.005208
8	vs	2	0.000653	0.006937	0.09	0.925	-0.01294	0.01425
4	vs	3	0.022426	0.006892	3.25	0.001	0.008918	0.035935
5	vs	3	0.035357	0.007373	4.8	0	0.020906	0.049807
6	vs	3	0.036052	0.007122	5.06	0	0.022093	0.050011
7	vs	3	0.010001	0.007067	1.42	0.157	-0.00385	0.023853
8	vs	3	0.021068	0.006748	3.12	0.002	0.007841	0.034294
5	vs	4	0.01293	0.00337	3.84	0	0.006326	0.019535
6	vs	4	0.013626	0.003465	3.93	0	0.006835	0.020416
7	vs	4	-0.01243	0.00607	-2.05	0.041	-0.02432	-0.00053
8	vs	4	-0.00136	0.003257	-0.42	0.677	-0.00774	0.005024
6	vs	5	0.000695	0.000919	0.76	0.449	-0.0011	0.002496
7	vs	5	-0.02536	0.0057	-4.45	0	-0.03653	-0.01418
8	vs	5	-0.01429	0.002701	-5.29	0	-0.01958	-0.00899
7	vs	6	-0.02605	0.005992	-4.35	0	-0.03779	-0.01431
8	vs	6	-0.01498	0.002669	-5.61	0	-0.02022	-0.00975
8	vs	7	0.011066	0.005556	1.99	0.046	0.000177	0.021956

NOTE- This table presents a pairwise comparison of the marginal effects at representative values ("MER") of the coefficient of SCremanded. Numbers correspond to the points plotted in figure 5b.