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# DO JUDGES REACT TO THE PROBABILITY OF APPELLATE REVIEW?

EMPIRICAL EVIDENCE FROM TRIAL COURT PROCEDURES

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# **Do Judges React to the Probability of Appellate Review?**

## **Empirical Evidence from Trial Court Procedures**

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### **Zusammenfassung / Abstract**

The appellate review system is intended to serve as an efficient remedy for imperfect judicial decision making. However, it can fulfill this task only when appeals are filed solely due to bad verdicts and are ex-ante unpredictable based on factors that are exogenous to the judge. Using data from case records of a German trial court, we show that the probability of appeal can be predicted based on easily observable exogenous factors. Controlling for the complexity of a legal case, we find that judges also tend to increase their effort when the ex-ante probability of appeal is high. Thus, our empirical evidence indicates an inefficiency in the appellate review system.

**JEL-Klassifikation / JEL-Classification:** K10, K41, D82

**Schlagworte / Keywords:** litigation, judicial behavior, appellate review, civil procedure

## **1. Introduction**

In most adjudication systems, appellate review is intended as an efficient institutional remedy for imperfect judicial decision making. Existing literature typically assumes that adjudicators aim to avoid decision reversal and, therefore, anticipate how their decisions mitigate reversal risk (see, e.g., Choi, Gulati and Posner 2012). However, because judges might have different motives, they might be interested in deviating from the socially optimal decision. In his model-based approach to self-interested adjudicators, Shavell (2006) assumes that judges expect their decisions to be appealed only if the decision deviates from the socially optimal decision to an extent that outweighs the (expected) appeal costs. Thus, appellate review is an imperfect constraint to strategic behavior by adjudicators.

The extent to which appellate review is factually restrictive depends on the litigants' decisions to file appeals. Thus, in principle, adjudicator control is endogenous (Levy 2005; Christmann 2013). Songer, Segal, and Cameron (1994) concede that appellate review will lead to inefficient solutions when the probability of appeal does not exclusively depend on the judicial verdict but also depends on the nature of the case (and, thus, exogenous factors, such as the field of law or value of the disputed matter). In this case, self-interested adjudicators would shift their work effort from cases that they do not expect to be appealed to cases with a high probability of appellate review even though both cases are equally complex in legal terms. Thus, the social optimum is disregarded.

Empirical research in this field (see, e.g., Ginn, Sarver and Songer 2003; Randazzo 2008) has almost exclusively focused on adjudicators' reactions to the anticipated outcome from an appeal. Whether judges adapt their behavior to the ex-ante probability of appeal, however, has not yet been explored empirically. In this paper, we aim to fill this gap in the literature. Using case records from a German trial court, we find that the probability of appeal can be

well predicted based on exogenous factors that are part of the information set of the judge. We also find that the (exogenous) probability of appeal is strongly related to variables that measure the adjudicator's effort in handling a case although we control for the complexity of the case explicitly. Thus, we find indications of inefficient judicial behavior.

The remainder of the paper is organized as follows. In the second section, we introduce the dataset. The third section presents the empirical study. Section 4 concludes.

## 2. Data

Our empirical analysis is based on the civil jurisdiction of an intermediate German trial court (*Amtsgericht*) in Hamburg and consists of a sample of 2,360 case records, which were completed in 2009.<sup>1</sup> In 580 of these cases, the legal disputes resulted in a first-instance court decision by a single judge. In 377 of these cases, the court decision was appealable. However, an appeal was filed in only 139 cases. The higher instance court later dismissed 58 % of the appeals (*Landgericht*), thereby confirming the initial decision. Less than one out of ten appeals were successful and led to a reversal of the trial court's decision. Occasionally, the litigants reached a settlement in the appeals process (22 %) or the appeal was withdrawn (11 %).

Our estimates are based on the 377 observations of appealable verdicts. We know which verdicts were later appealed. Moreover, we have two groups of control variables. The first group consists of case variables that are exogenous to the adjudicator. The second group

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<sup>1</sup> Because file records are transferred to the higher instance courts throughout the appeal but return to the initial court after a final decision, we used the sample year for which the court's file records are most complete.

of variables describes the effort variables for the deciding judge. Table 1 summarizes these variables and provides basic descriptive statistics.

Variable	Description	Mean	Median	Min	Max
<i>Dependent Variable</i>					
APPEAL (dummy)	Court decision was appealed	0.37			
<i>Exogenous Variables</i>					
FEMALE_JUDGE (dummy)	Gender of the judge	0.61			
PHD_JUDGE (dummy)	Ph.D. degree of the judge	0.21			
CONTRACT (dummy)	Case in the field of contract law	0.42			
TORTS (dummy)	Case in the field of tort law	0.05			
TENANCY (dummy)	Case in the field of tenancy law	0.28			
TRAFFIC (dummy)	Case in the field of traffic law	0.21			
OTHER_CATEGORY (dummy)	Case in another field of law	0.05			
ADVOCATE_PLAINTIFF (dummy)	Plaintiff-hired advocate	0.95			
ADVOCATE_DEFENDANT (dummy)	Defendant-hired advocate	0.87			
CORRESPONDENCE	Party correspondence (pages)	86.76	62	1	414
VALUE	Value in dispute (EUR)	2644.09	1950	12	40000
<i>Effort Variables</i>					
PROVISION	Operative prov. of judgm. (words)	79.83	65	19	492
FACTS	Facts of the case (words)	516.97	420	36	2621
GROUND	Legal grounds (words)	819.00	686	49	4968
PRECEDENTS	Number of precedents cited	1.59	0	0	20
LITERATURE	Number of literature sources cited	0.67	0	0	14
NORMS	Number of legal norms cited	9.20	8	1	40
DURATION	Duration of proceedings (months)	7.27	6	1	42

*Table 1. Descriptive Statistics for the Dataset.*

The group of exogenous factors primarily consists of dummy variables. We know the judges' gender and whether he or she holds a Ph.D. Furthermore, we can distinguish between cases from the following legal fields: contracts, torts, tenancy, traffic accidents and other legal fields. We also know whether the plaintiff and/or defendant hired an advocate for the court proceedings. The two remaining exogenous variables are continuous. We know the

number of pages of the correspondence between the parties involved and the judge, which might serve as a proxy for the level of aggressiveness the litigants used to pursue their legal claims. Our dataset also includes the value in dispute for the related case.

We use seven variables to measure the adjudicators' effort: the length of the operative provisions of a judgment; the facts presented; the discussion of the legal grounds for the decision; the total length of the proceedings; and the number of cited (i) precedents, (ii) scientific literature and (iii) legal norms.

### **3. Empirical Results and Discussion**

In the first step of our empirical analysis, we explain the decision to file an appeal using the earlier described set of exogenous control variables. Therefore, we employ a logit estimation approach. The estimates are displayed in Table 2. We use the complete set of exogenous control variables for the first regression model. Four exogenous variables have a significant impact on the probability of appeal. Female judge decisions are less likely to be appealed. The same holds true for decisions in traffic law (compared with the reference category contract law), perhaps because traffic accident cases often contain expert assessments and, thus, are less disputable. Decisions are more often appealed when a defendant is supported by an advocate. This result is highly plausible because advocates recognize judicial errors with a higher probability and, furthermore, have a financial interest in prolonging the legal dispute. Appeals are also more likely where the parties' correspondence is more substantial. Clearly,

parties that invest effort in more correspondence indicate a willingness to prevail in the court proceedings, thereby using an appeal as a last resort.<sup>2</sup>

In order to generate ex-ante predictions of appeals, we reestimate the model (Model 2) and include only those explanatory variables with significant coefficients (on at least the 90%-confidence-level).<sup>3</sup> We also report marginal effects for this model.<sup>4</sup> Clearly, the significant exogenous factors have sizeable effects on the probability of appeal.

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<sup>2</sup> When including FACTS as an additional explanatory variable to control for the case complexity, the estimated coefficient becomes insignificant. However, the remaining results remain qualitatively unaffected.

<sup>3</sup> The results remain robust when we exclude the appealed cases that were withdrawn or settled prior to the appellate court's decision.

<sup>4</sup> We report marginal effects for a case decided by a male judge in contract law where the defendant was not supported by an advocate. Furthermore, we assumed 86.8 pages of correspondence, which is the average number of pages.

	Model 1		Model 2		
<b>Variable</b>	<b>Estimate</b>	<b>z Value</b>	<b>Estimate</b>	<b>z Value</b>	<b>Marginal Effect</b>
Intercept	-3.042***	-3.892	-2.085***	-4.507	
FEMALE_JUDGE	-0.465*	-1.924	-0.501*	-2.128	-0.076
PHD_JUDGE	-0.360	-1.233			
TORTS	0.026	0.048			
TENANCY	0.423	1.401			
TRAFFIC	-0.840**	-2.573	-0.887**	-2.994	-0.134
OTHER_CATEGORY	0.215	0.377			
ADVOCATE_PLAINTIFF	0.986	1.563			
ADVOCATE_DEFENDANT	1.535***	3.213	1.552***	3.300	0.234
CORRESPONDENCE	0.007***	3.956	0.007***	3.928	0.071
VALUE	-0.000	-0.802			
<b>Regression statistics</b>					
Nagelkerke R^2	0.19		0.17		
AIC	462		456		
Observations	377		377		

Significance levels: '\*\*\*'<0.01, '\*\*'<0.05, '\*'<0.10, ML estimation technique.

*Table 2. Logit Estimation Results for the Exogenous Determinants of Appeal*

We employ Model 2 to generate predictions of the ex-ante probability of appeal (PREDICT) for all cases in our sample. In the second step of our analysis, we regress the aforementioned adjudicator effort variables on the predicted probability of appeal. Because our effort variables are continuous, we employ the linear regression approach.

While we are primarily interested in the effect of the predicted probability of appeal on adjudicators' effort, one might argue that all effort variables should be generally related to the inherent complexity of the case. While the complexity of a case is an (almost) unobservable variable, we use a suitable variable to control for complexity: the German civil process order (§313 ZPO) requires that the judge summarizes each claim and statement by the litigants as well as third parties through a precise statement of the factual evidence in the verdict. Thus, we can approximate the complexity of a case based on the length of the facts as summarized by the adjudicator in the verdict. Thus, except where the variable FACTS is used as an effort variable, we estimate each regression using the FACTS variable as additional regressor.

		Model I	Model II	Model III	Model IV
<i>Effort Measure</i>		FACTS	PROVISION	GROUND	PRECEDENTS
Intercept	<i>Estimate</i>	326.858***	66.690***	-74.974	-0.372
	<i>t-Value</i>	8.98	11.78	-1.17	-1.43
FACTS	<i>Estimate</i>		0.031***	1.208***	0.002***
	<i>t-Value</i>		2.58	11.03	2.84
PREDICT	<i>Estimate</i>	515.636***	-7.178	731.206***	2.926***
	<i>t-Value</i>	4.41	-0.58	5.71	4.00
Regression Statistics	<i>Adj. R<sup>2</sup></i>	0.07	0.05	0.57	0.10
	<i>Obs.</i>	377	377	377	377
		Model V	Model VI	Model VII	
<i>Effort Measure</i>		LITERATURE	NORMS	DURATION	
Intercept	<i>Estimate</i>	0.324*	4.054***	3.015***	
	<i>t-Value</i>	1.41	4.67	5.55	
FACTS	<i>Estimate</i>	0.001***	0.006***	0.003***	
	<i>t-Value</i>	3.66	4.00	3.88	
PREDICT	<i>Estimate</i>	-0.407	5.487***	7.686***	
	<i>t-Value</i>	-0.88	3.59	5.69	
Regression Statistics	<i>Adj. R<sup>2</sup></i>	0.05	0.18	0.14	
	<i>Obs.</i>	377	377	377	

*Significance levels: '\*\*\*'<0.01, '\*\*'<0.05, '\*'<0.10; the reported t-values are based on White-corrected standard errors.*

*Table 3. Regression Results for the Determinants of Judicial Effort (OLS)*

Table 3 summarizes the main regression results for the estimated models. Model I indicates that judges tend to write longer statements of facts for cases that are more likely to be appealed. However, as explained earlier, this might be the consequence of the variable FACTS being a proxy of the complexity of a case. This suspicion is substantiated by the estimated coefficients of FACTS in the other six effort models, which are always positive and highly significant. In four out of the remaining six regression models, the probability of appeal is significantly related to the judicial effort. Adjudicators tend to explain the legal grounds more detailed (Model III), refer to more precedents (Model IV) and legal norms (Model VI) and spend more time (Model VII) on cases with a higher probability of appeal. The operative provision of the judgment did not yield a significant effect (Model II).

However, because this part of the verdict is standardized, there is little room for variations of effort. We also find that the number of scientific literature citations does not yield a significant effect (Model V).

The reported results are qualitatively similar when FACTS are excluded from the control variables or when the field of law is used as an additional control variable in the regression equation.

#### **4. Conclusions**

The empirical evidence herein suggests that judges can predict the probability of appeal of a certain case reasonably well based solely on easily observable, exogenous properties of the case. Moreover, robust empirical evidence supports the hypothesis that, on average, judges react with increasing effort to an increased expected ex-ante probability of appeal even after controlling for the legal complexity of the referring cases. Thus, judges tend to shift their work effort from cases that they do not expect to be appealed to cases with a high probability of appellate review. We conclude that the appellate review system is less efficient at ensuring efficient levels of judicial effort as it is often assumed in theoretical models.

#### **5. References**

- [1] Cameron, Charles, Segal, Jeffrey, and Donald Songer. 1994. The Hierarchy of Justice: Testing a Principal-Agent Model of Supreme Court-Circuit Court Interactions. *American Journal of Political Science* 38: 673-696.
- [2] Choi, Stephen, Gulati, Mitu, and Eric Posner. What Do Federal District Judges Want? *Journal of Law, Economics, and Organization* 28: 518-549
- [3] Christmann, Robin. 2013. Tipping the Scales – Conciliation, Appeal and the Relevance of Judicial Ambition. HSU-Working Paper 137.

- [4] Ginn, Martha, Saver, Tammy, and Donald Songer. 2003. Do Judges follow the law when there is no fear of Reversal? *The Justice Journal* 24: 137-162.
- [5] Levy, Gilat. 2005. Careerist Judges and the Appeals Process. *RAND Journal of Economics* 36: 275-297.
- [6] Randazzo, Kirk. Strategic Anticipation and the Hierarchy of Justice in U.S. District Courts. *American Politics Research* 36: 669-693.
- [7] Shavell, Steven. 2006. The Appeals Process and Adjudicator Incentives. *The Journal of Legal Studies* 35: 1-29.

## 2014

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## 2013

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