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The Role of Precedents on Court Delay

Evidence from a Civil Law Country

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Zusammenfassung / Abstract:

Court delay frustrates economic behavior. Surprisingly, the impact of a coherent jurisdiction for the timely resolution of legal disputes has so far received little attention in civil law countries. Consequently, this paper examines the nexus between court delay and the availability of legal precedents. We model litigation as a two-stage rent seeking game, and find that precedents curb strategic behavior. Thus, the excessive use of party resources in litigation, such as time, is reduced if a precedent is applicable. Using judge-level data of a German trial court, we provide first empirical evidence on the role of precedents for case disposition time and the probability of reversal in a civil law country. Our results show that the availability of precedents significantly contributes to a reduction in delay, and also decreases the probability of reversal. Interestingly, we find no such influence for the citation of legal literature in verdicts.

Fachrichtung / Field of Study: Economics

Klassifikation / Classification: K15, K40, K41

Schlagworte / Keywords: judicial precedent, legal citation, jurisprudence constante, case resolution

1. Introduction

Court delay frustrates economic behavior. Individuals and firms may not perform otherwise favorable market transactions if friction leads to lengthy legal disputes. Societies without an effective enforcement mechanism will lack mutual trust and, eventually, economic prosperity. The causes and repercussions of delay in courtroom are, however, complex and difficult to explore. In the case of Germany, civil litigation numbers at trial courts have steadily fallen over the past 15 years, yet the average case disposition time has increased to just below 200 days (CEPEJ 2016).[1]

It is widely agreed that the design of institutions is crucial to understanding court performance (see, e.g., KESSLER 1996, DI VITA 2010; VOIGT 2016), and that institutional variation explains regional and cross-country differences (see, among others, DJANKOV et al. 2003, BIELEN et al. 2015a). One particular institutional feature of continental Europe has yet received little attention in this regard: the legal doctrine of jurisprudence constante (*'ständige Rechtsprechung'*). In contrast to the common law tradition, judicial decisions in civil law systems, like in Germany, have no binding authority. Under jurisprudence constante, the emergence of repeated and uniform court verdicts in analogous cases over time creates a persuasive impact on future judicial decisions. Consequently, court decisions may generate a legal certainty "that codifications have failed to achieve" (FON/PARISI 2006, p. 522). Nevertheless, adjudication evolves on demand, not gradually, and while such judicial law-making may have consolidated some subfields of law, other kinds of disputes lack previous jurisdiction and hang in the balance. Supposably, the mechanisms of court delay are thus interrelated with judicial decision-making and the development of legal precedents.

This paper analyzes the nexus between the existence of legal precedents and case disposition time. We thus contribute to the growing literature on court delay and performance, and provide an empirical perspective to dispute resolution at the judge level for the case of Germany. As a theoretical reference, we specify a two-stage rent seeking game between the

[1] For further details, see also STATISTISCHES BUNDESAMT (2016b) and BUNDESAMT FÜR JUSTIZ (2016).

litigants and the judge in the tradition of TULLOCK (1975). Judges are motivated to decide correctly, and parties may use the resource time to improve their chances of winning the trial. Given this setting, we derive some implications for the use of resources by the parties with and without legal precedents. Using micro level data from a German trial court, we then provide empirical evidence for the hypothesized impact of precedent citation on case disposition time. We also explore the use of multiple and older precedents in judicial verdicts. An additional focus is the effect of cited precedents in a trial court decision on the probability of reversal by the higher instance court. Assuming that appeal courts are socially beneficial and interested in the correction of errors, we can derive some implications for trial court accuracy as well.

The paper is organized as follows: in chapter 2, we provide a brief review of the literature on court delay. The theoretical framework is then presented in chapter 3. Chapter 4 describes the available dataset and gives some descriptive statistics. In chapter 5, we present the regression model and discuss the basic results. Chapter 6 concludes.

2. Related Literature

The evaluation of court performance and thus the efficiency of the installed enforcement mechanisms have always been major topics in the law and economics literature. Several researchers have proposed different approaches to further categorize the broad term of court performance (see, among others, TULLOCK 1980, DAKOLIAS 1999, STAATS et. al. 2005, VOIGT 2016).[2] In this context, we follow the growing literature on *court delay*. Researchers in this regard either analyze aggregate data on the output per court (or per judge), or study impact factors for the disposition time of individual cases at the micro-level.

The first strand of empirical research concentrates on the output of courts. Output is often measured by clearance rates, congestion rates and average disposition time, and then applied to cross-court or cross-country analyses (e.g., BUSCAGLIA/ULEN 1997, DJANKOW et

[2] STAATS et al. (2005), followed by VOIGT (2016) suggest to distinguish between five categories: judicial independence, court delay, accessibility, accountability, and court effectiveness.

al. 2003, BEENSTOCK/HAITOVSKY 2004, MITSOPOULOS/PELAGIDIS 2007, CHEMIN 2009, FALAVIGNA 2015, IPPOLITI et al. 2015). For instance, ROSALES-LOPÉZ (2008) applies an ANOVA approach on yearly case resolutions, workload and reversal rates of Spanish courts. She finds that an increase in case resolution per period did not necessarily lead to an increase in reversals. DIMITROVA-GRAJZL et al. (2016) study determinants of case disposition in Bulgarian courts and identify a major demand side influence on court output. The authors conclude that a legal policy that simply increases the size of the judiciary may not reduce case disposition time.

The aggregate measures of court output have also been related to the individual judge (see, e.g. BAGUES/ESTEVE-VOLART 2010, CHOI et al. 2013, MELCARNE/RAMELLO 2015, COVIELLO et al. 2015). SCHNEIDER (2005) implemented a remarkably different approach to judicial performance, measuring the output of judges by case resolution and the extent of lawmaking. The author intents to account for the production of precedents, which "change the content of the law as applied in practice" (SCHNEIDER 2005, 130), by including the number of published decisions in the legal electronic database JURIS. SCHNEIDER (2005) finds that judges with a Ph.D. are more productive, but are also reversed more often. The authors suggests that Ph.D. judge more frequently dissent from precedents, and thus the reversal rate increases. Interestingly, his results also show that judges with a higher promotion probability are less productive and more often reversed. Due to the aggregate measures of judicial productivity, the effect of precedents on judicial behavior cannot be determined. Nevertheless, the use of the mentioned indirect proxies of court performance and court delay offers valuable insights on regional and country level. The use of aggregate data, however, always implies that the studies cannot draw further inference from peculiarities of the individual lawsuit.[3]

[3] Furthermore, it may be difficult to draw inference from a change in an aggregate variable, and different output measures often relate to the same underlying micro variable. For instance, an increase in the clearance rate may be caused by more productive judges, or by less claims filed per period.

The second strand of research focuses on case-level determinants of court delay (see, among others, HEISE 2000, DI VITA 2012, ECONOMIDES et al. 2013, FENN/RICKMANN 2013). Several studies have revealed that legal representation by advocates, multiple parties on defendant or plaintiff side, the number of witnesses, oral hearings and the use of expert opinions significantly increase case disposition time (PRIEST 1989, BIELEN et al. 2015b, GRAJZL/ZAJC 2016). Furthermore, the identity of the judge may play a role for trial length. RAMSEYER (2012) provides evidences for a strong impact of elite education on judicial productivity and speed in handling cases. He also suggests that experience does matter less for the individual judge, but more on the institutional level (the court). BIELEN et al. 2016 analyze data from a Belgian trial court and observe a positive effect of the judge´s age and a negative effect of job experience on case disposition time. Examining a twenty-five year sample from US appeal courts, CHRISTENSEN/SZMER (2012) determines both factors to prolong trials, though only experience (tenure) is significant. Other studies have identified a relevant impact of court organization and procedure. DALTON (2009) reveals an interaction between court size and number of attorneys, with larger courts working in a more efficient way with few advocates and, surprisingly, vice versa. FENN/RICKMANN (1999) study medical malpractice claims and find an increased duration of lawsuits if legal aid was provided to one party.

Micro-level analysis provides fruitful insights into case-specific and procedural impact factors for court delay, but is often driven by data availability. Another, more subtle peculiarity of a tried case is difficult to identify for researchers: the existence of previous jurisdiction to the legal conflict at hand. Nevertheless, a precedent is likely to affect the judge handling the case, and the behavior of the litigants (if they are aware of the precedent). It is reasonable to assume that the impact of precedents on court delay should thus manifest on the case-level. However, we are not aware of any empirical study that determines the effect of precedents on the handling of cases and court delay.[4]

[4] Several studies examine the effect of published decisions on the reputation of the judge and his influence among the judiciary (e.g. MCCORMICK/PRASKACH 1996, SOLIMINE et al. 1998, KLEIN/MORRISROE 1999, SMYTH/BHATTACHARYA 2003, CHOI et al. 2011), but do not focus on court performance. Similarly, the study of

3. A Model of Court Delay and Precedents

3.1 Setup

Rent-seeking games (e.g., TULLOCK 1975) provide a basic framework for the analysis of court proceedings when litigants behave strategically. In these models, parties seek to obtain a common rent, the disputed value, and can influence the probability of winning with private effort. It is the well-known contribution of this literature to show that total resources spent in such games may consume a major part of the rent while the probability of success remains unchanged in equilibrium. Rent-seeking games primarily capture the adversary nature of a legal dispute, and resemble a "*trial by battle*" (TULLOCK 1975, p.746).

In order to analyze effects on court delay, the effort of each litigant is interpreted as the time spent on the case, such as to write statements of claims, rebut allegations of the opposing party, assemble favorable evidence, prepare witnesses and attend court hearings. Thus, time spent on a legal dispute produces an inefficiency (delay) when court accuracy, that is the probability of a correct verdict, remains unaffected. We will now apply an adaptation of the TULLOCK (1975) model to study litigation and delay under a civil law regime.

Consider a litigation game with three players, the litigants Mr. Right and Mr. Wrong, and the Judge. We assume a complete information setup, and all players are risk-neutral. Mr. Right and Mr. Wrong may exert costly effort to increase their probability of winning the case. While the decision of the judge implies uncertainty, the names of the litigants in this article indicate to the reader that Mr. Right should prevail in court if the judicial decision was perfectly accurate. Reflecting the inquisitorial nature of civil law countries, the judge can increase accuracy by taking more time to evaluate the presented evidence and

LANDES/POSNER (1976) offers resourceful insights into the formation and depreciation of precedents, but does not connect precedents to court performance.

assess the legal situation. In this non-cooperative game, all players maximize expected returns and choose optimal effort.

For reasons of simplicity, we assume that initially both litigants have the same probability of winning the case. Furthermore, Mr. Right and Mr. Wrong are equally able to increase their chance of success, given that the judges exerts no judicial effort to evaluate the presented claims. The probability of winning for Mr. Right can thus be written as $\frac{J \cdot R}{J \cdot R + W}$ with $R, W \geq 0$, $R \vee W > 0$ and $J \geq 1$. Mr. Wrong then wins with probability $\frac{W}{J \cdot R + W}$.The time spent on the case by Mr. Right (Mr. Wrong) is captured by the variable R (W) and is, trivially, nonnegative. Furthermore, at least one party should show positive effort, as litigation procedures always require one party to file the suit. The judicial effort (J) in evaluating the case obviously increases the probability that Mr. Right prevails, and makes his effort in persuading the judge also more effective. Symmetrically, the more the judge studies the legal case and the provided evidence, the less effective is the effort of Mr. Wrong in achieving a favorable verdict. Given this setup, the court is fully arbitrary if J = 1 and parties exert the same effort in equilibrium. Assuming that the court cannot perform worse than throwing dice, it follows that J ≥ 1.

The timing of the presented litigation game is divided into two stages, as displayed in Fig. 1: the legal battle of the litigants (stage 1), and the decision-making of the judge (stage 2). At stage 1, Mr. Right and Mr. Wrong enter the rent-seeking game and choose their effort R and W simultaneously. Both litigants have to form rational expectations about the behavior of the adversary, and the evaluation effort of the judge. At stage 2, the judge then assesses the presented evidence and chooses his judicial effort J in order to achieve an accurate verdict. The outcome of the chosen strategies is the profit Π_R and Π_W for Mr. Right and Mr. Wrong, and the utility U_J for the judge. Equilibrium strategies can be identified via backward induction.

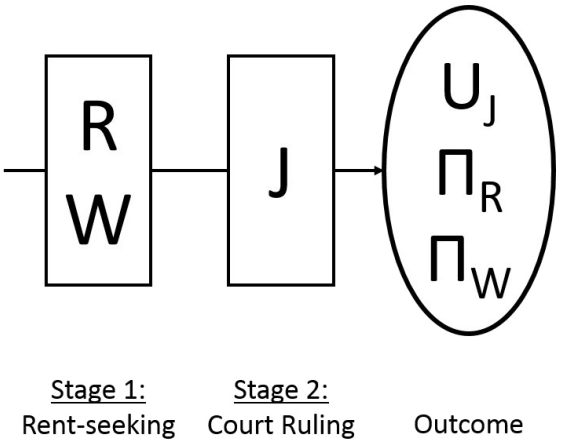

Figure 1: Setup of the Litigation Game.

3.2 Stage 2: the Judge

In a civil law regime, the judge plays are more active role in solving the case (inquisitorial system). He processes the factual evidence brought forward by the litigants, but also interrogates witnesses or inquires expert assessment on complicated technical or medical matters. In addition to the assessment of the facts to a case, the judge is also to interpret the applying legal rules. Given that abstract legal rules never perfectly fit a real world problem, the interpretation of the law is difficult and requires judicial effort. Eventually, the judge renders a professional opinion based on the provided evidence and the law.

We assume that the judge is motivated to solve a given case correctly, and receives a benefit B out of an accurate decision. Thus, he should plainly decide in favor of Mr. Right in our model. However, the judicial effort to evaluate the case correctly exhibits diminishing marginal returns, as it becomes more and more exhausting to further increase the probability of a correct decision. Furthermore, there are marginal costs *mc* of the judicial effort. The higher the marginal costs *mc*, the more time the judge requires for a given increase in accuracy. Marginal costs may be affected by case complexity, imprecision of legal rules or previous jurisdiction on a similar case. The maximization problem for the judge then is

$$U_J(J) = B \cdot \frac{J \cdot R}{J \cdot R + W} - J \cdot mc(\theta) \underset{J}{\Rightarrow} \max! \qquad (1)$$

Consider that the availability of precedents θ negatively affect marginal costs. If there is a previous court decision to a comparable case, this provides a line of legal argumentation and exemplified requirements on factual evidence for the judge. By following the precedent, the judge saves resources (thus costs) for a given level of effort, as he does not have to logically deduce the legal assessment himself, consider legal doctrines or a hypothetical intent of the lawmaker.

The First-Order-Condition then yields the optimal judicial effort J* with

$$J^*(R,W) = \frac{\sqrt{\frac{BRW}{mc(\theta)}} - W}{R} \tag{2}$$

A maximizing judge would thus increase effort, if marginal costs *mc* diminish. We find it plausible to assume that precedents reduces marginal costs. The judge will then be able to compare the facts of the case at hand to the previous jurisdiction. The result is a higher accuracy (in accordance with the precedence[5]). Judicial effort also increases if the motivation of the judge for a correct decision B is higher. Function (2) also shows how the judge optimally reacts to an increase in effort by Mr. Right and Mr. Wrong. One would assume that a judge would gradually increase his effort in order to restore accuracy if Mr. Wrong spends more resources on the case. Similarly, it appears plausible that a judge could reduce his effort if Mr. Right spends more resources and thus "proves the case himself". While this is indeed largely the reaction of the judge described here, note however that this result is not general. If Mr. Right exerts very little effort, but Mr. Wrong further and further increases his use of resources, marginal costs exceed marginal benefit and it becomes optimal for the judge to invest less in the case.

[5] We assert that the precedent itself is efficient. Given *jurisprudence constante*, such a precedent will require that there is a certain degree of uniformity among courts in judging a particular case. Given that unbiased courts decide correctly more often than they err, such a uniformity should develop in favor of Mr. Right.

3.3 Stage 1: Rent-Seeking

The litigants will form rational expectations about the behavior of the judge. Given a disputed value D (the "rent"), Mr. Right and Mr. Wrong decide simultaneously how much effort they put into the case. Consider that both parties now can make an estimate of the amount of resources spent by the opposing party. Given this setup, the expected returns of Mr. Right, Π_R, and Mr. Wrong, Π_W, can be described as the following maximization problems:

$$\Pi_R(R) = D \cdot \frac{J^*(R,W) \cdot R}{J^*(R,W) \cdot R + W} - R \underset{R}{\Rightarrow} \max! \tag{3}$$

$$\Pi_W(W) = D \cdot \frac{W}{J^*(R,W) \cdot R + W} - W \underset{W}{\Rightarrow} \max! \tag{4}$$

Inserting the optimal judicial effort J*(R,W) into (3) and differentiating with respect to R yields the First-Order Condition, which gives the reaction function for Mr. Right, R*(W).

$$R^*(W) = \sqrt[3]{\frac{\frac{1}{4} D^2 \cdot W \cdot mc(\theta)}{B}} \tag{5}$$

The interpretation for Mr. Right is straightforward: he increases his litigation effort if the value in dispute D is higher or if his adversary, Mr. Wrong, invests more. The same applies for Mr. Right if the judge is less motivated to achieve accuracy and Mr. Right has to exert more effort to substantiate his claim. Also, higher marginal costs of the judge imply less judicial effort and require Mr. Right to invest more resources.

Inserting J*(R,W) into (4) and differentiating with respect to W delivers the First-Order Condition for Mr. Wrong and gives the reaction function, W*(R).

$$W^*(R) = \frac{D^2 \cdot mc(\theta)}{4 \cdot B \cdot R} \tag{6}$$

Mr. Wrong will also increase his litigation effort if the disputed value D is higher or if the judge is less dedicated to achieve accuracy. Again, higher marginal costs of the judge lead to higher effort. In contrast to traditional rent-seeking models, however, Mr. Wrong will

also spend *less* resources on litigation if Mr. Right increases his effort. The reason lies in the externality of the endogenous enforcement mechanism: if Mr. Wrong also increases his effort, this is costly to him and also provokes the judge to better evaluate the case, which is favorable to Mr. Right. If Mr. Wrong reduces his efforts, this saves costs and leads to less judicial dedication, which weakens the position of his adversary.

3.4 Outcome

The Nash-equilibrium of the litigation game is the mutual combination of best responses by Mr. Right and Mr. Wrong. Solving (6) for R and equating with (5) yields the equilibrium effort

$$W^* = R^* = \frac{D \cdot \sqrt{mc(\theta)}}{2\sqrt{B}} \tag{7}$$

If the litigants play the equilibrium strategies, the total amount of resources spent in litigation, W^*+R^*, positively depend on the marginal costs of the evaluating judge. If a precedent is available for the tried case, marginal costs for the judge decrease. Equation (7) shows that a precedent is thus beneficial because it leads to fewer resources spent in equilibrium. Fig. 2 illustrates this effect: due to the precedent, the reaction functions of Mr. Right and Mr. Wrong shift from RF_1 to RF_2, thereby decreasing equilibrium rent-seeking effort. Furthermore, a precedent also leads to an increase in accuracy of the court. Given the equilibrium strategies R^*, W^* and J^* of the three players, the probability of a correct verdict (in favor of Mr. Right) can be calculated as $1-\frac{\sqrt{mc(\theta)}}{\sqrt{B}}$. A decrease in marginal costs for the judge (or a higher motivation for a correct decision) increases the probability that Mr. Right wins.

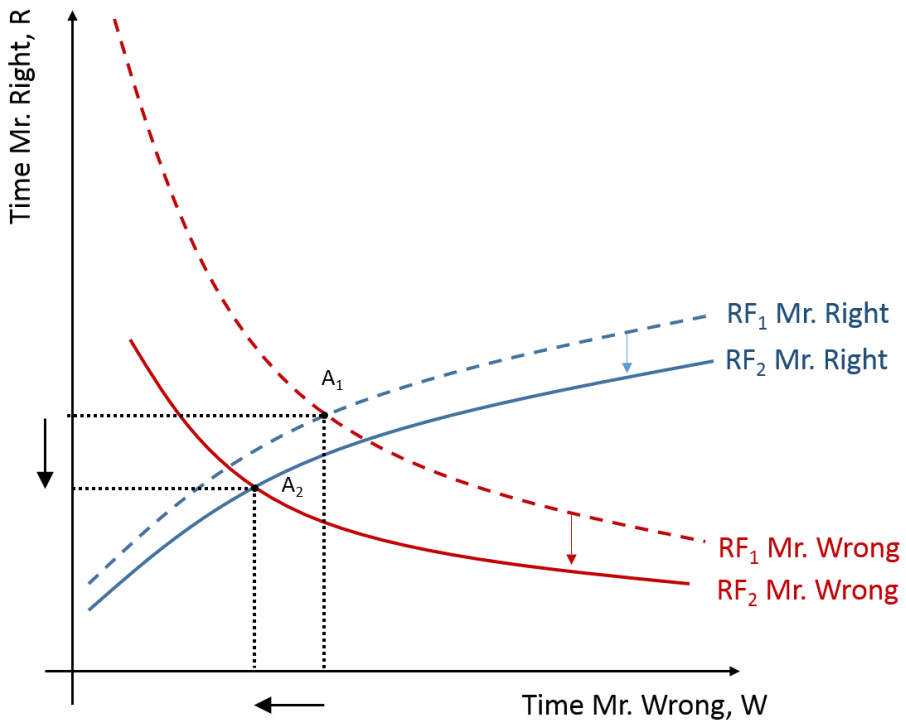

Figure 2. The Effect of a Precedent on Time Spent for Rent-Seeking.

As indicated above, we interpret all resources invested by the parties as time consuming. Consequently, a reduction in total effort means a reduction in time consumed by litigation. We find it reasonable to suspect that this effect (at least partially) transfers into a reduction of case disposition time. If strategic behavior of the litigants is a cause for slow court proceedings, precedents effectively restrict rent-seeking opportunities in courtroom and thus should lead to less delay.

4. Data

Trial courts typically bear the brunt in civil litigation. In 2014, there were 1,107,028 new court proceedings filed at the German civil courts of first instance (*Amtsgericht*).[6] While the total number of lawsuits has been declining recently, average disposition time increased to 192 days that year (see CEPEJ 2016). First instance courts primarily evaluate the facts of a case, and apply the law made by the legislator and specified by higher courts. Consequently, we suspect that first instance courts will benefit the most from available precedents with respect to shorter disposition time. In order to gain empirical evidence on such effects, we use a dataset of civil litigation from a medium-sized trial court in Hamburg. The data is a random draw out of all cases that were filed at the court in 2009, and consists of 2,360 full case records.[7] However, we had to drop cases that were resolved without a judicial verdict, e.g. via default judgment (37 percent), withdrawal (24 percent) or in-court settlement (12 percent).[8] The final sample thus consists of 576 first instance court rulings. In 140 cases, the decision was appealed. Litigants later withdrew 54 appeals without a final decision of the higher instance court. Eventually, the appeals court confirmed the first instance verdict in 77 cases, and overruled it in only nine cases.

Length of court proceedings is identified by the count variable DURATION (n_1=576 cases), which measures disposition time in months. Average disposition time in our sample is slightly above six months and thus very close to the above reported country average of the sample year. If an appeal to a verdict was admitted and filed, the outcome is captured by the binary variable REVERSAL (n_2=86), which equals one if the first instance verdict was overruled and zero otherwise.

[6] See STATISTISCHES BUNDESAMT (2016a) for some general details on court proceedings in Germany.

[7] The year 2009 was the most complete caseload in the court archive. Most procedures had been concluded, and the records were still stowed at the trial court.

[8] We cannot rule out that precedents had an effect on the litigants of dropped cases. However, without a court verdict, there is no credible information on the existence of a precedent.

As control variables, we employ certain characteristics of the tried case. The controls P_ADVOCATE and D_ADVOCATE reveal if an advocate represented the plaintiff and the defendent in front of the court. Furthermore, we identify whether the litigants are individuals or a corporate identity, which is captured by the dummy variable P_FIRM and D_FIRM. The specific subfield of law of a case, like contract law, tenancy law, traffic law or tort law, is also represented with dummy variables. We know the value in dispute (VALUE) and whether a case included an oral hearing (ORAL). The variable CORRESPONDENCE captures the intensity of party correspondence to the court, and may be a good proxy for the party´s aggressiveness. The dummy APPEALABILITY identifies if a first instance ruling could be appealed at the higher court level. Lastly, we control for the extent of the court´s legal grounds when documenting its decision.

There is no objective measure of precedents to a legal dispute, thus we have to focus on judicial citation as a proxy that precedents existed.[9] Several variables indicate the use of citations in the legal grounds of the verdict. The dummy PRECEDENTS equals one if the judge cited a precedent in a given case. PRECEDENTS_No indicates the amount of precedents cited, and PRECEDENTS_Age how many years the latest precedent cited in the ruling had already existed. Likewise, we control for the citation of legal LITERATURE, like specialist books or textbooks. LEGALNORMS_No identifies the amount of references to legal norms in the grounds of the verdict.

[9] This is a natural caveat of legal research. However, we believe that judges will tend to cite precedents if they are available, as this lies in their own interests. As citation patterns may differ between judges, we will apply a fixed effect model.

Variable	Description	Mean	Median	Min	Max
response:					
DURATION	months between filing and first-instance verdict	6.19	5	0	42
REVERSAL (dummy)	Trial court verdict was overruled in appeal process	0.10			
controls:					
P_ADVOCATE (dummy)	Plaintiff is represented by an advocate	0.92			
P_FIRM (dummy)	Plaintiff is a firm or organization	0.44			
D_ADVOCATE (dummy)	Defendant is represented by an advocate	0.73			
D_FIRM (dummy)	Defendant is a firm or organization	0.33			
CORRESPONDENCE	Party correspondence to court (pages)	70.25	49	1	414
VALUE	Value in dispute (Euro)	1838	1046	12	40,000
CONTRACTS (dummy)	Case in the field of contract law	0.51			
TORTS (dummy)	Case in the field of tort law	0.04			
TENANCY (dummy)	Case in the field of tenancy law	0.22			
TRAFFIC (dummy)	Case in the field of traffic law	0.17			
OTHER (dummy)	Case in other field of law	0.05			
ORAL (dummy)	Oral hearing were held	0.76			
APPEALABILITY (dummy)	Verdict can be appealed	0.66			
GROUNDS	Legal grounds as presented in verdict (words)	700	576	0	4968
citations:					
PRECEDENTS (dummy)	Precedents were cited	0.42			
PRECEDENTS_No	Number of precedents cited	1.41	0	0	20
PRECEDENTS_Age	Age of latest precedent cited in years	6.53	4	0	56
LITERATURE (dummy)	Legal literature was cited	0.30			
LEGALNORMS_No	Number of legal norms cited	8.50	7	0	40

Table 1. Descriptive Statistics of Dataset.

5. Regression Results

5.1 Precedents and Disposition time

We apply a Poisson regression model to study the impact factors on case disposition time. As our response (DURATION) is a count variable, the Poisson distribution appears reasonable (see, e.g. CAMERON/TRIVEDI 2009, FAHRMEIR et al. 2013). As a Poisson regression on our data might suffer from overdispersion[10], we estimate model (I) with robust standard errors. The literature (see, e.g. KLEIBER/ZEILEIS 2008, CHRISTENSEN/SZMER 2012) also proposes an alternative way to account for overdispersion in the data, and then recommends a negative binomial regression model. In order to check for the robustness of our results, we report the results from this alternative regression in model (II). To control for judge-specific effects, we estimate all models with fixed effects.

Table 2 presents the regression results. Both models yield consistent results with only slight variation in the calculated coefficients and significance levels. As a further robustness check, we repeat both estimations with a reduced model that only contains the previously significant variables. The results remain qualitatively the same.

Seven variables of the controls show a significant effect on case disposition time. Any legal representation by advocates increases the duration of disputes. While this effect is even more pronounced for advocates on the plaintiff side, it turns insignificant in the negative binomial regression. It is not surprising that the use of legal representation in court is time consuming per se, as advocates have to be instructed by their clients. Furthermore, legal representation may create an agency problem, as advocates are usually less interested in short proceedings. Litigation is however significantly shorter if the plaintiff is a firm or corporate identity. For the defendant party, this effect is close to zero and insignificant. We

[10] A specific assumption of the Poisson distribution is equidispersion, meaning that the variance equals the mean. The factor by which variance exceeds the mean of a given distribution is the dispersion parameter. If we apply a quasi-Poisson model, we find a dispersion parameter of 1.63 (z-value: 3.09). It is thus beneficial to account for overdispersion by either applying robust standard errors or negative binomial regression.

find this plausible, as firms are both more rational in filing suits and typically well experienced in preparing court proceedings. Due to the advantage of the first move, this effect should be more pronounced for the plaintiff. Firms are also more able to control the potential agency problem, either by internal legal departments or by long-term contracts with a law firm. Furthermore, the extent of party correspondence has a highly significant impact and increases the length of proceedings. More correspondence to the court implies higher party effort, which is time consuming, and turns a legal matter also more complicated for the judge.

With respect to court procedures, oral hearings significantly increase disposition time. We deem this plausible as oral hearings have to be scheduled, and the available time and adequate courtrooms are typically scarce. In addition, cases that can be appealed lead to significantly longer disposition time. We presume that litigants exert more effort in such proceedings in order to gain a favorable position for a potential appeal. Appealable cases also generally imply a higher value in dispute. Moreover, it is reasonable to assume that appealability will have an effect on how the judge runs the proceedings.[11] The different subfields of law indicate a slightly positive but highly insignificant effect with respect to the reference category of contract law cases.[12] VALUE and GROUNDS show no sizable effect on the duration of lawsuits. The few other studies on court micro data have found similar determinants of disposition time, which supports the general fit of our model.[13]

[11] In BERLEMANN/CHRISTMANN (2016), we show that judges exert more effort in cases they expect to be appealed later.

[12] The case category OTHER is a catch-all variable for cases that did not fit into the four previously defined categories. It primarily contains injunctions, which would well explain why these proceedings show a negative effect. However, we refrain from interpreting this result here.

[13] The positive effect of legal representation on trial duration was also identified by GRAJZL/ZAJC (2016) and DALTON (2009), but not significant in BIELEN et al. (2016). CHRISTENSEN/SZMER (2012) find a positive effect of oral procedures on disposition time. Bielen et al. (2015b) show that more pleadings of the parties lead to longer proceedings.

Both regression models indicate that the existence of precedents show a highly significant and negative effect on case disposition time. Thus, proceedings that were resolved with reference to previous jurisdiction were significantly shorter than legal disputes without available precedents. Interestingly, this effect does not exist for textbook literature, which is also frequently cited by judges. We also find a positive and significant effect for the citation of legal norms. We suppose that a longer, more intricate line of judicial argumentation may require additional references to the law. Consequently, one could assume that the use of legal norms is positively correlated to the (unobserved) legal complexity, and thus to the duration of the lawsuit. In this interpretation, precedents would reduce the (unobserved) legal complexity.

	Model (I)		Model (II)	
Variable	Coefficient	z-Value	Coefficient	z-Value
Response:	DURATION		DURATION	
controls:				
P_ADVOCATE	0.177**	2.21	0.155	1.58
P_FIRM	-0.142**	-2.26	-0.123**	-2.33
D_ADVOCATE	0.133*	1.89	0.138**	2.10
D_FIRM	0.001	0.02	0.005	0.09
CORRESPONDENCE	0.004***	7.95	0.005***	11.37
VALUE	0.000	-0.34	0.000	-0.24
TORTS	0.140	1.50	0.154	1.37
TENANCY	0.024	0.29	0.014	0.23
TRAFFIC	0.040	0.56	0.036	0.52
OTHER	-0.366***	-3.55	-0.351***	-2.75
ORAL	0.191**	2.14	0.198**	2.37
APPEALABILITY	0.292***	4.00	0.279***	3.86
GROUNDS	0.000	0.51	0.000	0.39
citations:				
PRECEDENTS	-0.172**	-2.56	-0.166***	-3.14
LITERATURE	0.045	0.77	0.051	0.94
LEGALNORMS_No	0.011*	1.66	0.012**	1.98
Regression	POISSON, ROBUST SE		NEGATIVE BINOMIAL	
Fixed Effects	YES		YES	
Oberservations	576		576	
Adj. R^2 (McFadden)	0.10		0.11	

Remarks:

Significance levels: '***'<0.01; '**'<0.05; '*'<0.1

Table 2. Regression Results.

5.2 The Use of Precedents

We find that the reference to previous court decisions significantly reduces case disposition time. In a civil law country, the doctrine of *jurisprudence constante* describes the emergence of repeated and uniform court verdicts over time, which create a persuasive impact on future judicial decisions. The impact of precedents should then be strongest if numerous identical court decisions exist and those decisions have been unchallenged for a long time. In the following, we will explore such a qualitative dimension of a precedent citation on court delay.

It appears reasonable to assume that the existence of several and identical court decisions provide more guidance to the judge. For the litigants, it also becomes more likely that the

party (or their advocates) are aware of the existing previous jurisdiction. We would thus speculate that the number of precedents should show a negative effect on the length of a trial. Furthermore, a precedent that has prevailed over many years and is still in place should form a stronger signal to the litigants and the judge than a recent decision of another court. More specifically, it becomes more likely that an old, yet unchallenged precedent will guide appellate courts, if the trial judges decides to depart from the precedent, and litigants file an appeal.

Given this intuition, we modify our Poisson regression model: In model (III), we include the variable PRECEDENTS_No in order to reveal the effect of the number of cited precedents on trial duration. In model (IV), we limit our analysis to cases with precedent citation, and include PRECEDENT_Age into the regression. Our findings are presented in table 3. The results are, again, qualitatively unchanged in a negative binomial regression.

While the coefficient of PRECEDENTS_No has the expected sign, the effect is far from significant in both models. As presumed, we find a negative effect of the age of a precedent on case disposition time (model IV), but, again, the result remains statistically insignificant. We conclude that it is neither the number nor the age of cited precedents, but mainly the sheer availability of previous court decisions that creates the impact on litigation time.

	Model (III)		Model (IV)	
Variable	Coefficient	z-Value	Coefficient	z-Value
Response:	DURATION		DURATION	
citations:				
PRECEDENTS	-0.144**	-2.13		
PRECEDENTS_No	-0.010	-0.91	-0.008	-0.75
PRECEDENTS_Age			-0.004	-1.05
LITERATURE	0.042	0.73	0.100	1.55
LEGALNORMS_No	0.012*	1.70	0.006	0.88
Regression	Poisson, robust SE		Poisson, robust SE	
Fixed Effects	YES		YES	
Controls	YES		YES	
Observations	576		241	
Adj. R^2 (McFadden)	0.11		0.12	

Remarks:
Significance levels: '***'<0.01; '**'<0.05; '*'<0.1

Table 3. Use of Precedents.

5.3 Precedents and the Probability of Error

Another outcome of our theoretical model was the positive effect of a precedent on court accuracy. In other words, if precedents exist, then judges will commit fewer errors when deciding a case. From an empirical perspective, however, it cannot be determined which cases were decided *correctly*. Following the literature (see, among others, LEVY 2005, SHAVELL 2010), we will regard the decision of the appeal court as a proxy for correctness. Consequently, a confirmation by the higher court implies that the trial judge decided correctly, and reversal indicates judicial error.

As our explanatory variable REVERSAL (n_2 = 86 cases) is binary, we apply a logistic regression with judge fixed effects in order to examine a potential impact of precedent citation on the probability of reversal.[14] The regression results (model V) are displayed in table 4.

[14] We apply the same set of controls except for APPEALABILITY. This variable is dropped, as all appealed cases were in fact appealable in our data.

We find indeed that precedent citation shows a negative effect on the probability of reversal. This effect is statistically significant at the 90 percent confidence level. This result fits into the conclusions from our theoretical model: precedents serve as a guidance to trial judges when evaluating a case, and this reduces error. Furthermore, the existence of precedents indicates how other courts have previously decided, and what to expect from the appeal court. Furthermore, the citation of literature in a court verdict has a positive and significant impact. The interpretation of this effect is less straightforward. We suppose that judges cite textbooks and comparable literature more often when the interpretation of law and facts is rather ambiguous, and precedents are unavailable. Higher courts may also intentionally decide to express dissent with the cited literature as they make law. Given the limited number of observations on appeals and the comparably low confidence level, these findings should be considered as 'tentative'.

	Model (V)	
Variable	Coefficient	z-Value
Response:	REVERSAL	
citations:		
PRECEDENTS	-6.202*	-1.84
LITERATURE	5.052*	1.91
LEGALNORMS_No	0.086	0.25
Regression	Logistic	
Fixed Effects	YES	
Controls	YES	
Observations	86	
Adj. R^2 (McFadden)	0.27	

Remarks:
Significance levels: '***'<0.01; '**'<0.05; '*'<0.1

Table 4. Precedents and Probability of Reversal.

6. Conclusions

The relevance of a coherent jurisdiction for the timely resolution of legal disputes has so far received surprisingly little attention by law and economics scholars. For civil law countries, the doctrine of jurisprudence constante describes the persuasive power of subsequent analogous court decisions on future judicial decision-making. Understanding this impact of legal precedents on the behavior of litigants and trial judges is thus a prerequisite for the

adequate assessment of court delay. This paper aims at closing this gap in the literature, and to our knowledge provides first empirical evidence on the role of legal precedents for case disposition time and the probability of reversal in a civil law country.

As a theoretical reference, we employ a two-stage rent seeking game between the litigants and the judge. At the first stage, the litigants choose their level of effort simultaneously. Higher effort implies a higher use of the resource time, and increases ceteris paribus the probability of winning the case. At the second stage, the judge exerts costly effort to render a correct decision contingent on the previous party behavior. We presume that under a precedent it becomes easier for the judge to evaluate an analogous case correctly. Rational litigants then react strategically to this increased judicial accuracy. We find that the extent of possible rent seeking in court is considerably reduced if precedents exist. This suggests that the availability of previous jurisdiction to a given case decreases case disposition time by curbing the socially wasteful strategic behavior in courtroom.

We then apply judge-level data from a German trial court to examine the hypothesized effects. Applying a poisson regression model on the duration of legal disputes, we find that legal precedents, which were cited in a judicial verdict, show a statistically significant impact and reduce the length of trial. Interestingly, this effect appears to rely on the mere existence of precedents, as we find no empirical evidence that the number of cited precedents or the age of a precedent make a difference. The data also allows us to draw some inference on the relevance of precedents for the outcome of appeals. Judges who cited precedents in the legal grounds to their verdict were significantly less likely to be reversed by the higher court. Assuming that appeal courts are interested in the reduction of judicial error and that they are at least equally competent as the lower courts, we suggest that the use of precedents also increases the accuracy of court decisions.

Our empirical results further substantiate the debate on the efficiency effects of judge-made law and the evolution of judicial precedents in civil law countries. While common theories compare the evolution of precedents to capital accumulation models (see, e.g., FON/PARISI 2006), we reveal sizable effects of precedents on the performance of trial courts. Our analysis also provides testable predictions for future research. Based on this study, we

suppose that the varying availability of precedents in the different subfields of law may cause a diverging intensity of delay. Dynamic legal fields with few precedents (and legislation) should thus be more prone to delay and congestion problems. Our findings also put into perspective a legal policy that promotes settlements. A higher settlement rate may reduce the caseload of courts, but possibly hampers the production of precedents, and thus could even produce a longer duration of tried cases.

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