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Abstract:

There have been a sizeable number of studies trying to identify the determinants of judicial performance on the country level. Such a design is appropriate to identify underperforming individual judges or underperforming courts or court districts. However, it is not appropriate to identify institutions conducive to judicial performance. A dataset produced by the European Commission for the Efficiency of Justice (CEPEJ) contains very detailed information on the judicial systems of the 47 member countries of the Council of Europe. Drawing on an objective variable, we find that (i) resolution rates are not a function of per capita income. In other words: poor countries can also afford them. (ii) Resolution rates are not a function of the court budget. As such, a higher budget will not “buy” more court decisions. (iii) Resolution rates are negatively – and very robustly – correlated with the presence of judicial councils. (iv) Mandatory training for judges is correlated with higher resolution rates. Drawing on the subjectively perceived efficiency of the judiciary as the dependent variable we find that (v) countries belonging to both the French and the socialist legal tradition are less efficient and that (vi) judicial councils are also negatively correlated with our measure of judicial efficiency, in other words: countries that do not have them should not introduce them.

Key Terms: Judicial Efficiency, Judicial Performance, judicial productivity, number of resolved cases, judicial councils.

JEL classification: H11, K40, O40, P51.

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Identifying the Determinants of Judicial Performance: Taxpayers' Money Well Spent?

1. Introduction

Thriving market economies crucially depend on well-functioning court systems. Only if contracts can be enforced with a high degree of predictability will actors be prepared to commit scarce resources, i.e., to incur sunk costs and make long-term investments. On the other hand, court delays or imperfect enforcement of court decisions can be strategically abused by contracting parties who have a weak case. This will, in turn, reduce the number of contracts being entered into.

The performance of judicial systems comprises various dimensions such as judicial independence, judicial accountability, and judicial effectiveness.³ In this paper, we address yet another dimension, namely judicial efficiency. Problems of court delay and judicial efficiency have been on the agenda of both lawyers and economists for a number of years. Various empirical studies have aimed at assessing court performance and identifying its determinants in various countries (analyzing, e.g., Brazil, Egypt, Germany, Israel, Norway, Romania, Singapore, Slovenia, Spain, and the U.S.). These studies usually build on regularly published court data (number of filed and resolved cases, number of cases per judge per court per year, etc.). However, most studies tackle court efficiency or try to identify the determinants of court output within a single country.

Analyzing judicial performance within countries has a number of advantages. As the institutions and the organizational structure under which courts operate are identical for all courts in a country, they need not be explicitly controlled for. Omitted variable bias should thus not be a problem. But if there are good reasons to believe that institutions and the organizational structure have an important causal effect on the performance of judicial systems, within country studies come at a high cost. We assume that differences in the organizational structure of court systems are one important influence on the productivity of

³ Staats et al. (2005) propose to distinguish five dimensions, namely (1) independence, (2) efficiency - explicitly referring to "unreasonable delays and case backlogs" (ibid., 82), (3) accessibility, (4) accountability which they see not in conflict with judicial independence and (5) effectiveness which refers to the degree to which both legislation and judicial decisions are actually enforced. Efficiency is thus concerned with the speed of judicial decision-making and the ability of a judicial system to avoid unreasonable delays and backlogs. However, court decisions will not be effective unless legal decisions are actually enforced. Hence, whereas efficiency is concerned with the duration of the judicial decision making process, effectiveness is concerned with the ability of a legal system to enforce court decisions after being spelled out.

court systems. The effects of these differences can, however, only be analyzed explicitly in a cross-country setting. This is exactly what we propose to do in this paper.

Until recently, such a study would have been impossible due to the unavailability of cross-country data. The European Commission for the Efficiency of Justice (CEPEJ), which was initiated by the Council of Europe, has changed this: CEPEJ has so far published four waves of data reflecting the situation in up to 47 countries between 2004 and 2010. The CEPEJ data offer a unique opportunity to identify the determinants of judicial (in-)efficiency on a cross-country basis. The data reflect the situation in a number of fairly homogenous countries in terms of income and development, which may constitute a further advantage of the dataset.⁴

To the best of our knowledge, so far only two published studies are explicitly based on the dataset generated within CEPEJ. Cross and Donelson (2010) analyze the impact of different judicial resources (number of courts, number of judges, judicial starting salary and court budget) on various aspects of judicial quality (independence, impartiality, the rule of law and impartiality of courts) in 29 countries. Based on the results of a quintile regression, the authors conclude that the best way to improve judicial quality is to increase judicial pay, whereas increasing the overall court budget and expanding the number of courts would be less promising. Deyneli (2011) uses the nonparametric technique of Data Envelopment Analysis (DEA) to generate efficiency scores that are used in a Tobit model to identify the determinants of judicial efficiency across 22 countries. The main finding is that increasing judicial salaries significantly improves the efficiency of courts, but it certainly is not the sole solution for the efficiency of justice services.

Our most important findings are that (1) resolution rates are not a function of per capita income, which is both good news and a burden for poorer countries as they can also achieve high levels of judicial efficiency. (2) Resolution rates are not a function of the court budget. A high court budget is certainly not sufficient to “buy” a higher degree of efficiency. As a matter of fact we find a negative correlation between court budgets and resolution rates. (3) Resolution rates are negatively correlated with the existence of judicial councils. (4) This also holds for other measures of judicial performance such as subjectively perceived judicial efficiency. Therefore, countries considering the introduction of a judicial council might be well advised not to do so.

The rest of this study is structured as follows: Section 2 very briefly describes the theoretical conjectures underlying the empirical part. Section 3 presents the data, much of which is taken from CEPEJ. To get a first impression of possibly relevant determinants of judicial

⁴ A possible downside being that the validity of the findings beyond the countries comprising the Council of Europe is uncertain.

efficiency, a number of bivariate correlations are discussed in Section 4. Section 5 is the core of the paper: it is here that the multivariate estimates are presented and discussed. Section 6 concludes.

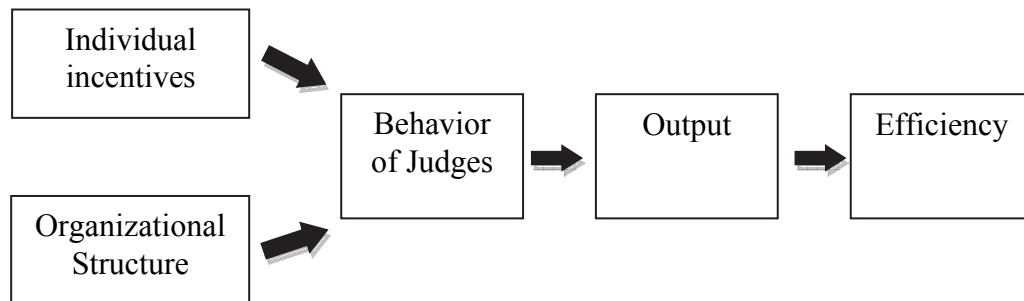
2. Theoretical conjectures

Output is produced efficiently when a given level is realized with minimum input, or when a maximum of output is produced with a given amount of inputs. A distinction is often made between technical and allocative efficiency. While technical efficiency refers to the best possible use of given resources, allocative efficiency refers to the idea that resources should be used where they are of the highest value to society as a whole.

Measuring judicial efficiency is no mean feat. Output – namely court decisions – is not homogenous, the quality of court decisions can – and does - vary widely. Since there are no market prices for court decisions, ascertaining allocative efficiency seems almost impossible. In this paper, we deal with the non-availability of an established measure for judicial efficiency by referring to one subjective as well as one objective proxy. The subjective one is a response to a survey question regarding judicial efficiency, the objective one is a measure of the resolution rate of courts. Both variables are described in more detail below.

Our theoretical priors are simple and straightforward. We assume that judges are the principal actors contributing to the output of the judiciary. Traditionally, the efficiency with which outputs are produced has been ascertained in comparison to some theoretical ideal. In our case, one could talk of something like “relative” or “comparative” efficiency as we compare actually achieved output – and the inputs needed to achieve that output – across countries. The behavior of judges is, as such, not given. Instead, we assume that the behavior of judges can be explained as a consequence of two important determinants: first, the incentives that judges are exposed to and second, the organizational structure that they are part of. At times, this distinction might not be razor sharp. Needless to say, both determinants are the consequences of the prevalent institutions.

Figure 1: From Incentives to Efficiency



Much of the discussion of the last decade concerning legal determinants of economic growth focused on a very broad approach, namely on legal origins. The proponents of the legal origins hypothesis conjecture that numerous policy results, from infant mortality via the quality of local public goods to corruption rates, can be explained by dividing the world's legal systems in common law on the one hand and civil law on the other. Within civil law countries, a distinction is often made between French, German and Scandinavian legal origins (a very broad and relatively early contribution to the debate is La Porta et al. 1999). In a piece wrapping up much of the debate, La Porta et al. (2008) conclude that the entire debate can also be interpreted as reflecting some long-term cultural differences.

Among the contributions to the legal origins debate, the work by Djankov et al. (2003) is of particular relevance here. The authors are interested in the determinants of court performance and test three theories, which they christen (1) the development theory, which argues that costly institutions pay off only beyond a certain development threshold of a country; (2) the incentive theory, whose proponents argue that the behavior of judges can largely be explained by drawing on incentives such as rewards and sanctions; and (3) their own theory, which holds that the degree to which judges are subject to detailed procedural regulation determines court performance. They find that high degrees of procedural formalism are detrimental to a number of court performance criteria such as time needed to verdict, consistency of decisions, fairness of decisions, honesty of decisions and degree of corruption. This contribution belongs to the legal origin approach because Djankov et al. (2003) find that procedural formalism is significantly higher in civil law countries than in common law countries. In terms of Figure 1, procedural formalism is one trait of the organizational structure.

In a contribution focusing on the ability of law to dynamically adapt to a changing environment, Hadfield (2008) argues that the legal origins debate has used much too broad a brush. She argues that instead more attention should be paid to institutional detail and proposes seven relevant dimensions. Among them, she names (1) the degree to which courts

are specialized, (2) whether the judiciary is a career judiciary, (3) whether court cases are conducted drawing on the adversarial or the inquisitional system, and (4) whether judgments are enforced publicly or privately.

We believe that Hadfield's contribution is a step in the right direction. She is, however, not interested in identifying the determinants of judicial efficiency but rather in the dynamic efficiency of the law in its entirety. Nevertheless, we draw on some of her arguments to develop our own conjectures. We propose to distinguish three groups of potential determinants of judicial efficiency.

The first group of variables consists of the historically determined traits of the judicial system that are difficult to change in the short run. Many of the variables discussed here could be subsumed under the legal origin debate. A second group of variables focuses on judicial organization. Its components are neither determined in the very long run – such as legal families –, nor are they easily changed within a few years. The number of courts and their average size are examples of this category. A third group of variables can be substantially changed in a relatively short period of time. We include the judicial budget but also measures aimed at incentivizing individual judges here, e.g. incentive pay or time limits that judges must comply with. It goes without saying that the assignment of individual variables to a specific group contains a heavy dose of arbitrariness. We now move on to briefly discuss all variables that potentially determine judicial efficiency.

Historically influenced structural traits

Although we find it hard to appreciate on theoretical grounds the causal chain between legal origins and judicial efficiency presented in the aforementioned literature, we nevertheless include legal families to empirically verify or falsify that chain.

Djankov et al. (2003) show that procedural formalism is significantly correlated with legal origins; common law countries display a lower degree of formalism than civil law countries. The authors further argue that procedural formalism has a number of negative effects that outweigh any positive ones. Through a number of instruments, formalism gives state representatives the chance of an undue influence on the outcome of cases.⁵ We expect that a higher number of procedural necessities requires more resources and will, hence, reduce technical judicial efficiency. Djankov et al. (2003) describe two paradigmatic cases in which private persons could need courts: one in which they try to cash in a check which turns out bad and the other where a tenant does not pay her rent and the landlord wants to evict her. The authors' formalism indicator reflects the number of steps that need to be followed to get

⁵ In explicit contrast to Djankov et al., Hayo and Voigt (2013) conjecture that some features of formalism can improve judicial accountability.

a court decision. Formalism can also be measured in the number of days needed to get the desired result.

Judicial organization

France was the first country in the world to create a judicial council in 1946. More than 100 countries have since followed suit, most of them institutionalizing the judicial council in the constitution (Garoupa and Ginsburg 2009). Judicial councils usually serve to keep the administration of courts and the entire judicial system within the judiciary. This includes the administration of the budget. In addition, many judicial councils are responsible for the appointment and promotion of judges. Shifting a considerable degree of power from the ministry of justice to judicial councils may very well have effects on judicial efficiency. Allowing judges to administer at least parts of their own affairs might, on the one hand, improve efficiency because more of the concrete knowledge at the disposal of the judges can be used to organize daily routines. Yet, judges are not necessarily experts in administrative affairs. This could, hence, imply that increased levels of judicial autonomy will be connected with lower levels of efficiency. Our dummy variable, which is coded one if a country has had a JUDICIAL COUNCIL since 2000 and 0 otherwise, is taken from Elkins et al. (2012).

Loosely speaking, one can distinguish a career from a non-career judiciary. In the former, law graduates are made judges at a fairly young age, whereas in the latter, a judgeship comes as the crowning of a long and successful career in the law profession. It has been argued that judges in the latter type of system are more efficient (see, e.g., Merryman and Pérez-Perdomo 2007)⁶. One central argument is that being a judge in a career judiciary is boring and of limited reputation which would imply that only bureaucratic types enter it. In addition, it has been argued that judges in non-career judiciaries have more experience in putting themselves into somebody else's shoes (namely their clients') but also in evaluating other people. Both aspects would help them in resolving court cases. CEPEJ contains two variables that allow us to test at least part of this conjecture. Q110 asks how judges are recruited and distinguishes between exam and legal career. Q111 asks who is responsible for recruiting judges. We construct a variable RECRUIT on the basis of the answers to that question. If the judiciary is exclusively responsible for recruitment, we code it 1, if responsibility is shared between the judiciary and the executive, we code it 0.5, and if the executive is exclusively responsible, we code it 0.

⁶ Merryman and Pérez-Perdomo (2007, 38) have a very sober view of the judiciary in civil law countries writing: "Judicial service is a bureaucratic career; the judge is a functionary, a civil servant; the judicial function is narrow, mechanical, and uncreative."

Moving on to aspects of judicial organization proper, court size might influence the efficiency of the judiciary. In small courts, indivisibility might be a serious problem, reducing efficiency. Theoretically at least there is no maximum court size, but it does appear plausible that – absent additional monitoring techniques – larger court size might increase the common pool problem. The larger the court, the easier it is for individual judges to hide behind their colleagues and shirk. In other words, we expect an “optimal” court size that is not a corner solution. This implies that the quadratic term of court size should also be estimated. Question 46 of the CEPEJ study represents the number of professional judges who serve at first instance courts (full-time equivalent). We divide this number by the sum of general jurisdiction and specialized courts of first instance in each country (questions 42.1 and 42.2 of the questionnaire), calling the resulting variable SIZE. It reflects the average size of first instance courts.

Closely related is the degree of specialization: In theory, one could expect judges who deal only with one area of law such as family law or administrative law to be more productive than their colleagues in other countries who rule on all areas of law.⁷ Based on the answers provided to questions 42.1 and 42.2 just described, we construct the variable SPECIAL, which is the number of specialized first instance courts divided by all first instance courts in a country.

Court decisions must be enforced. We propose to distinguish between public and private enforcement. Under public enforcement, a state servant is the enforcing agent whereas under private enforcement, bailiffs employed by profit seeking companies enforce court decisions. Profit seeking companies might have an incentive to be more efficient which would, in turn, make the entire judiciary more efficient. CEPEJ contains a question inquiring into the status of enforcement agents (Q154). The report distinguishes seven different ways in which the behaviour of bailiffs can be regulated. We propose to reduce this to two categories, namely public and non-public, coded 0 and 1 respectively. We call this variable ENFORCE.

Finally, many court systems have duties far beyond simply deciding contentious cases. These duties can include acting as a business registry, land registry and so forth. To the extent that judges are occupied with these activities and assuming that the budget is kept constant, this is conjectured to decrease judicial efficiency in the sense of producing court decisions. The scope of duties thus needs to be controlled for explicitly. We do so by taking into account whether courts also serve as land and (or) business registries and call the

⁷ Here, we are only interested in judicial efficiency in a technical sense. Voigt (2012) discusses potential pitfalls of having too many specialized courts. Among them, the danger of the law to become compartmentalized and evolve into a number of inconsistent partial law systems seems to be the most relevant one.

resulting variable DUTIES. If they serve none of the two additional purposes, the variable is coded 0, if they serve either, it is coded .5 and if they serve both, it is coded 1.

Incentives malleable in the short run

It has been asserted time and again (e.g. Buscaglia and Ulen 1997, 282) that a higher judicial budget is not directly correlated with higher efficiency scores. To test this empirically, we include data on the budget of all European court systems. The exact delineation of the BUDGET data contained in CEPEJ reads: The “annual approved public budget allocated to the functioning of all courts without the budget of the public prosecution services and the budget of legal aid.” (CEPEJ, 2012: Q.6.)

Economists believe in incentives. One conventional and straightforward way to incentivize judges is to make their salaries at least partially dependent on their output. Although some reports (Bagues and Esteve-Volart 2010) nicely document the many possible pitfalls that can occur if insufficient attention is being paid to the details, it is definitely worth testing whether monetary incentive schemes can make judges work harder. CEPEJ contains two variables that proxy for some aspect of this conjecture. The first deals with bonus payments, the second one with benefits that are accorded to judges. The two latest versions of CEPEJ ask whether judges “receive bonuses based on the fulfilment of quantitative objectives in relation to the delivery of judgments (e.g. number of judgments delivered over a given period of time)?” (Q126 in 2010, Q139 in 2012). We call this variable BONUS.

In some member states of the Council of Europe, judges receive benefits independent of their specific performance. Such benefits are unlikely to affect behavior. Nevertheless, they may improve the quality of human capital that the judiciary is able to attract as they increase the pay of the judiciary relative to a career as a lawyer or an academic. There is a large variety of benefits paid across the member states, including specific retirement, housing facilities, special systems of welfare insurance, cars provided by the government, reduced or free access to public transport to and from the court building, etc. Some countries mention other advantages like apartments, special holiday bonuses related to age and seniority, life and security insurance or even allowances for representation costs. The variable BENEFIT is coded from 0 to 4 where 0 implies no benefits and 4 the maximum amount of benefits. The mean value for 46 states is 0.935.⁸

Incentives need not be all positive; they can also be constructed such that particularly slow behavior is penalized. Individual calendars containing a variety of deadlines that judges need to comply with to prevent sanctions could be such a device. We include two variables

⁸ The amount of BONUS payments is supposedly more relevant than the number of different kinds of payments. However, CEPEJ does not provide data on that.

proxying for this aspect in our estimates, one from CEPEJ, the other one from the Djankov et al. (2003) dataset. The variable SANCTION simply counts the number of sanctions that are pronounced against judges on a full time equivalent basis. The variable includes sanctions against misdemeanors such as breach of professional ethics (e.g. rude behavior vis-à-vis a lawyer or another judge), professional inadequacy (e.g. systematic delays in delivering decisions), criminal offence (offence committed in the private or professional framework and open to sanction). This variable is not ideal. It does not account for the effect of threatened sanctions on observed behavior by judges. Nevertheless, if inadequate behavior is sanctioned regularly, then this should have a dissuasive effect on all judges (CEPEJ, 2012: Q129).

We also include a variable measuring the intensity of compulsory training for judges during their career. Q127 in CEPEJ (2012) asks each country about five specific types of judicial training (one initial training and four types of in-service training: general, specialized judicial functions, management functions and a last one for computer services), and whether they are compulsory. The variable TRAINING takes values ranging from 0 if there is no compulsory training at all to 5 if all five types of training are compulsory. Most countries oblige their judges to participate in initial training courses (value of 1), whereas the number of compulsory courses on top of that varies widely (from 2 to 5; the mean value being 2.27).

3. Data

We have already described the variables that potentially determine judicial efficiency. In this section, we therefore first discuss a number of proxies for judicial efficiency and then move on to present a number of bivariate correlations to get a better feel for the data.

Dependent variable

We are interested in identifying the determinants of judicial efficiency – a concept that is not easily measurable. This is why we need to rely on proxies, two types of which can be distinguished: subjective and objective variables. The subjective ones rely on a subjective evaluation of judicial efficiency usually elicited by way of a poll. Objective ones rely on data that is generally accessible, which makes objective indicators intersubjectively testable.

Let us begin with a number of subjective variables. The Global Competitiveness Report published by the World Economic Forum assigns scores to countries according to the EFFICIENCY of their legal environment. The score is based on the answers of business people who are given the following statement to evaluate: “The legal framework in your country for private businesses to settle disputes and challenge the legality of government actions and/or regulations is (1 = inefficient and subject to manipulation, 7 = efficient and follows a clear, neutral process).” The World Economic Forum has been publishing its

report – albeit in a different format – since 1979, which gives us the opportunity to analyze not only levels but also changes in the levels.

The Global Competitiveness Report also contains a variable constructed from the answers to the following statement: “To what extent is the judiciary in your country independent from influences of members of government, citizens, or firms? (1 = heavily influenced; 7 = entirely independent).” (INDEPENDENCE)

These measures are subjective in the sense that they reflect the perceptions of the respondents, mostly business people. Subjective measures have a number of drawbacks: the respondents’ perceptions are influenced by a myriad of aspects that are more or less unrelated to the issue under consideration. Furthermore, the survey is unlikely to cover all potential users because the courts will also be used by people other than business people. Therefore, having at least one variable proxying for judicial efficiency in a more objective way is highly desirable. Yet, subjective indicators also have their advantages: The users can weigh various aspects that they believe determine judicial efficiency (or independence) which might not be covered if one were to rely on a one-dimensional proxy for judicial efficiency.

In the literature on the determinants of court efficiency within countries, a number of objective indicators has been used, including pending cases per judge, the caseload per judge, the congestion rate (defined as the caseload divided by the number of resolved cases), the time needed to resolve a case and the cost per case. We rely on two simple measures, namely RESOLUTION and CLEARANCE, though we consider the first to be a more accurate measure than the latter for representing court efficiency. RESOLUTION is defined as the number of resolved cases divided by the entire caseload. The caseload is composed of the (stock of) pending cases from previous periods plus the (flow of) newly filed cases from the current year. RESOLUTION is hence the percentage of cases resolved in a given year, while accounting for the overall caseload. CEPEJ itself uses the so-called CLEARANCE rate as its preferred measure of court performance. It is defined as the number of resolved cases divided by the number of newly filed cases. Hence, whereas the numerator includes solved cases that were filed one or more years ago, the denominator only includes the cases filed within the last year. This measure might be misleading sometimes, especially when backlog significantly exceeds the number of newly filed cases. CEPEJ uses this measure specifically for identifying those countries that have a resolution rate of more than 100% and that are, hence, reducing their backlog (CEPEJ 2012:169). The main difference between the resolution rate and the clearance rate is, thus, whether the backlog of files is taken into consideration. The two are not only logically connected but might also correlate empirically: If potential litigants observe a low clearance rate, their incentives to file a new case might be reduced; if they are interested in a quick solution they might refrain from filing a case. On

the other hand, if they prefer the case to drag on for years, they might have more incentives to file under such conditions. CEPEJ also uses another objective measure, which is called disposition time. It is supposed to estimate the time needed to terminate a case.⁹ These measures are objective but share a common drawback: they do not account for the quality of decisions. A speedy trial might be achieved only at the expense of a low quality. A possible way to overcome this drawback in empirical research is to control for the number of successful appeals: the fewer they are, the better the implied quality of judicial decision-making. Unfortunately, the data provided by CEPEJ do not allow us to add this control variable as it is only available for 15 countries (Q102, CEPEJ 2012).¹⁰

To get a feeling for how these measures are correlated, here is the correlation matrix for all four variables:

Table 1: Partial correlations between dependent variables

	Efficiency	Independence	Clearance	Resolution
Efficiency	1.00*** (43)			
Independence	0.92*** (43)	1.00*** (43)		
Clearance	-0.09 (37)	-0.09 (37)	1.00*** (40)	
Resolution	-0.26 (36)	-0.27 (36)	0.83*** (39)	1.00*** (39)

The number of observations on the basis of which the partial correlations are calculated are in parentheses. ***, **, and * indicate statistically significant difference from zero at the 1, 5, or 10 percent level, respectively.

The strongest impression is that the two subjective indicators and the two objective indicators are most highly correlated amongst each other. Besides the similarity in the kind of variable (subjective vs. objective), this might also be due to the (dis-) similarity of the underlying concepts.

⁹ Another possible objective measure would be court productivity, which is the number of resolved cases per judge. This is, however, impossible to calculate as the number of resolved cases presented by CEPEJ corresponds to specific case types, e.g. civil litigious and/or non-litigious cases, administrative cases, criminal, employment dismissal cases, etc. However the number of judges is reported in 3 main groups: first instance, second instance, and Supreme Court judges. Hence we cannot exactly calculate the share of judges responsible for solving each type of case, nor can we aggregate all types of resolved cases and divide them by the number of judges, as heterogeneous cases (cases with different natures) require different amounts of time and resources to be solved. Based on the CEPEJ performance indicators, on average the judicial system performs better in criminal than in civil matters.

¹⁰ On top, this control variable is not without problems in a cross-country setting. Procedural requisites for appealing a case might substantially differ across countries. If courts are perceived as differing regarding judicial independence, then incentives for appealing a case might also substantially differ across countries.

Displaying a number of bivariate correlations between potential determinants of judicial efficiency and the resolution rate (as our preferred measure of judicial efficiency) is revealing. The scatterplot depicting the correlation between BUDGET (the percentage of the court budget as part of the overall government budget) and RESOLUTION demonstrates that there is no simple linear relationship between the two.

Figure 2: Lowess Scatterplot BUDGET and RESOLUTION

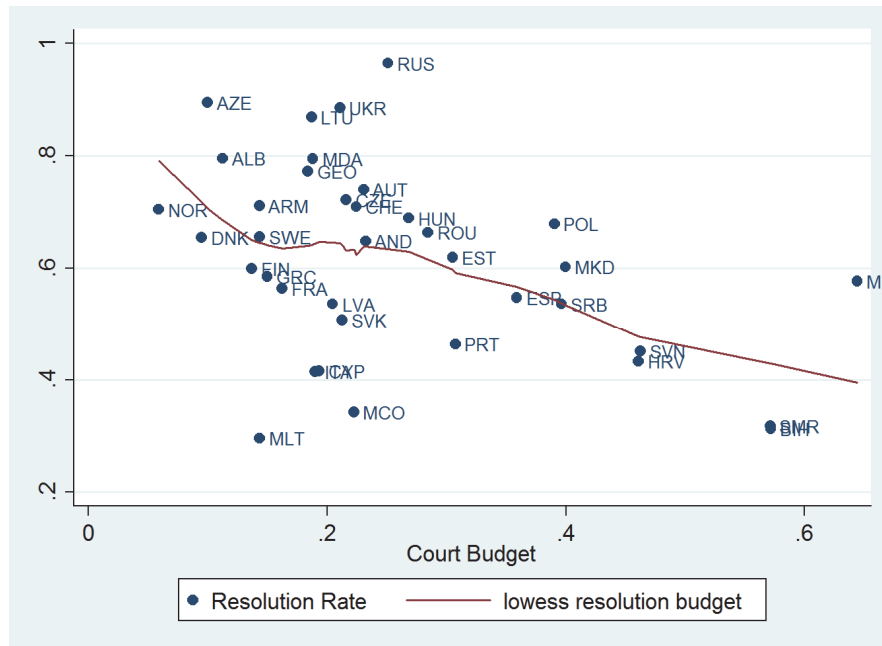


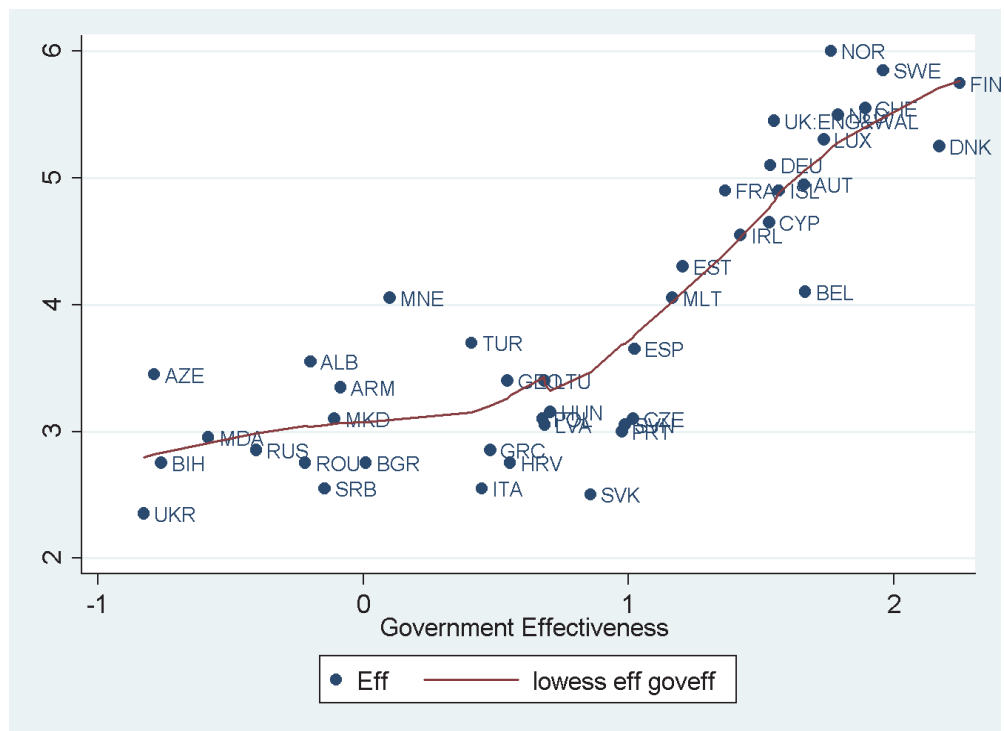
Figure 2 is produced on the basis of the data described above and draws on “lowess”, which is a nonparametric tool to depict the relationship between two variables. For want of a more precise theory, we often simply assume a linear relationship between two variables. Lowess – an acronym for *locally weighted regression* – does away with this limitation. It does not require prior specification of any functional form but simply lets the data speak and produces a smooth curve, making any non-linearities quite evident (Jacoby 2000 is an easily accessible description of the technique).

Figure 2 depicts the court budget in percent of total government budget and the resolution rate as described above. The figure reveals a negative relationship between court budget and the resolution rate. Up to a value of around 0.15% of government budget, the resolution rate decreases sharply as court budget increases, and then starts falling more steadily. It seems that increasing court budgets does not buy a higher resolution rate. Rather, the opposite appears to be the case.

Judicial services are only one kind of good provided by the state. Since the state provides a host of other goods, it is, at least in principle, very well conceivable that other areas of public service provision are provided with an entirely different degree of efficiency. This

could for example be the case if the judiciary is administered by a judicial council that is largely separate from the rest of state administration. As a measure for administrative efficiency we rely on the variable “government effectiveness” provided within the frame of the Worldwide Governance Indicators. It measures “the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. The index values range from -2.5 (very poor performance) to +2.5 (excellent performance)”

Figure 3: Scatterplot JUDICIAL EFFICIENCY and GVMT EFFECTIVENESS



Relying on the lowess technique again, it is evident that the relationship between government effectiveness and judicial efficiency is not linear. In the lower half of government effectiveness depicted here, improvements in effectiveness are associated with rather small improvements in judicial efficiency. Only past a certain threshold are improvements in effectiveness correlated with faster improvements in judicial efficiency. One way to interpret this scatterplot is to assume that judicial efficiency is a “luxury good” that is only provided if the country has managed to implement a high general level of government efficiency. Then again, these are only bivariate correlations and no other variables are being controlled for.

It is well known that trust in institutions can substantially facilitate development (Banfield 1958, Bjørnskov 2012). A high degree of judicial efficiency, be it measured subjectively or objectively, is not per se related to a high amount of trust in the judiciary. To see how these two correlate, we draw on the Gallup World Poll 2011, which includes the following

question: “In this country, do you have confidence in each of the following, or not: How about the judiciary and courts?”

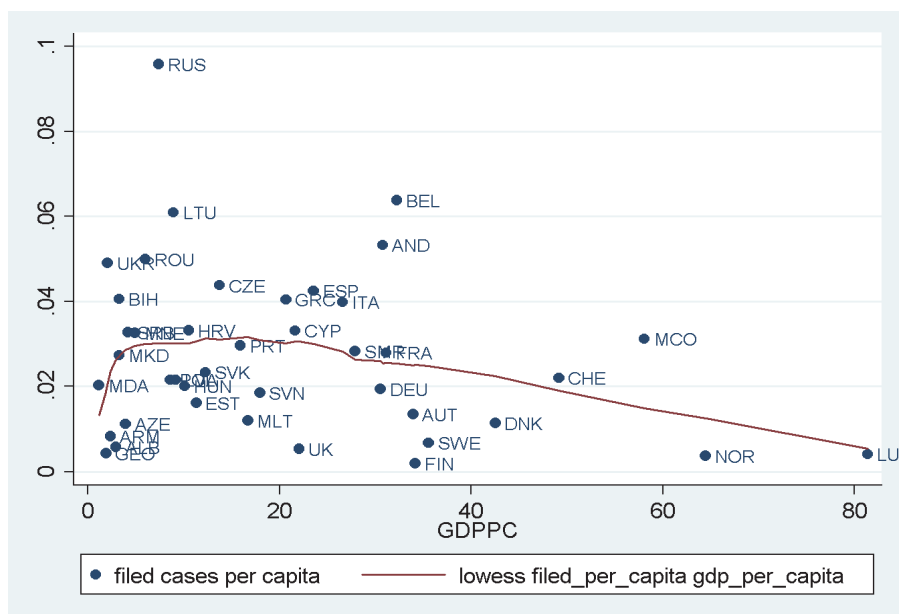
Table 2: Partial correlations between proxies for judicial effectiveness and trust in justice

	Efficiency	Independence	Resolution	Clearance
Trust in Judiciary	0.86*** (42)	0.83*** (42)	-0.20 (35)	-0.03 (36)

As before, the correlations with the subjective indicators (efficiency and independence) are extremely high whereas the correlations with the objective ones (the resolution and clearance rates) are very low. One possible implication of this result is that there are really different dimensions of judicial performance. Another one is that trust in the judiciary is driven a lot more by judicial efficiency and independence than by resolution or clearance rates. Subjective perceptions of the judiciary are important. After all, it is them that drive demand for court action. This is why we draw on one objective variable (resolution rate) and one subjective one (efficiency) as dependent variables in the following sections.

Finally, it has been observed that the number of court cases increases with income per capita (Eisenberg et al. 2012). It has often been asserted that the United States, one of the richest countries in the world, has a high propensity to litigate. But if there is a more general correlation between income and the number of cases, this would suggest that there might be another mechanism at work, namely that higher per capita income is correlated with more complex exchange relations which end up in court more frequently.

Figure 3: Scatterplot FILED CASES/population and INCOME



On the basis of the data, we cannot confirm the conjecture put forward by Eisenberg et al. (2012): the number of cases only increases up to a level of some 19.000 Euro per capita and falls steadily ever

after. This finding might be due to some European countries with extremely high income levels such as Luxembourg.¹¹

4. Estimation Approach

Choice of the estimation approach needs to take into consideration the severely limited number of observations. The Council of Europe has 47 members which constitutes, hence, the maximum number of observations. Some of the members are very small which at times implies that some other variables referring to them are not readily available. On a more conceptual plane: very small countries might face severe problems regarding set up costs of the court systems. Further, since their overall number of cases is very small, marginal changes in the number of newly filed cases can translate into huge swings regarding RESOLUTION and CLEARANCE. Therefore, the results regarding countries such as Andorra, San Marino, Monaco or Liechtenstein need to be interpreted with a grain of salt.

We mentioned before that CEPEJ has already published four surveys with information on the efficiency of judicial systems in Europe referring to 2004, 2006, 2008 and 2010. Since we are primarily interested in the institutional determinants of judicial efficiency, these four waves do not give us the possibility to multiply the number of observations by four since there is, by definition, little variation in the institutional determinants over such a short period of time.

This is why we refrain from any panel or pooled estimates here, but begin by relying on simple cross country estimates on the basis of the OLS estimator. Obviously, this estimation strategy does not yield causal inference. However, we believe that calibrating the landscape of judicial efficiency in Europe does have its own merits. Since the degrees of freedom are severely limited, we need to deal with them economically. We propose to focus on RESOLUTION as our main explanandum and separate three groups of explanatory variables in line with our theory section. The first group focuses on long-run variables such as legal origin, the second on the structure of court organization and the third one on more individual factors such as bonuses, sanctions and the like. In addition, we estimate the same models with a different dependent variable, namely EFFICIENCY.¹² Above, we argued that subjective perceptions are important but that they correlate with the objective measures only very imperfectly. To keep the text readable, the tables containing the results with EFFICIENCY as the dependent variable can be found in the Appendix. At times, however, we also refer to these results in the text.

¹¹ Exclusion of Luxembourg, Monaco and Norway does not change the basic shape of the curve.

¹² In the text, we only document the estimated models with RESOLUTION as dependent variable. The tables with EFFICIENCY are documented in the appendix.

5. Multivariate Estimations

Membership in the Council of Europe rapidly expanded during the 1990s. It is therefore less homogeneous in terms of income now than it was before that time. This also holds true in terms of legal origins. Of the 47 member states, 19 are coded as having a socialist legal origin, 12 as French and only 3 (Cyprus, Ireland and the United Kingdom) as common law. The remaining countries either have a Scandinavian or a German legal origin. The single most relevant legal origin is, hence, socialist.

Controlling for income, countries of French legal origin have a significantly lower resolution rate than the omitted category (i.e., countries belonging to the German, Scandinavian and English law families). Djankov et al. (2003) show that procedural formalism is highly correlated with legal origin. When either of their two formalism variables is added to the model, it does not turn out to be significant. In other words: this is more evidence that a high degree of procedural

Table 3a: Long-term determinants of resolution rates

	1	1b	2	3	4
Income per capita (in 1000)	0.002 (0.78)	0.002 (0.93)	0.003 (1.06)	0.003 (1.07)	0.003 (1.06)
Socialist Legal Origin	0.100 (0.97)	0.131 (1.39)	0.129 (1.33)	0.131 (1.37)	0.129 (1.32)
French Legal Origin	-0.144* (-1.76)	-0.140* (-1.83)	-0.154* (-1.95)	-0.140* (-1.84)	-0.147* (-1.79)
Formalism_tenant			0.057 (0.98)		0.022 (0.25)
Formalism_check				0.053 (1.11)	0.040 (0.54)
Constant	0.57***	0.564** *	0.344	0.365*	0.331
Adjusted R ²	0.18	0.28	0.23	0.24	0.21
Observations	37	28	28	28	28
The regression is run using robust standard errors. The numbers in parentheses are t-values estimated on the basis of White heteroscedasticity-consistent standard errors. ***, **, and * indicate that the estimated parameter is significantly different from zero at the 1, 5, or 10 percent level, respectively. Reducing the number of observations in Model 1 to 28, the same results are observed while the R ² is 0.28.					

formalism is, as such, no barrier to an efficient judiciary.¹³ Using EFFICIENCY as the dependent variable implies somewhat different results (see Table 3b in the Appendix for details): now, income per capita is very significantly correlated with the dependent variable. Countries belonging to both the French as well as the socialist legal origin are correlated negatively with EFFICIENCY in a highly significant way. The formalism variable with regard to a bounced check remains far away from conventional significance levels in all four groups of model specifications. However, the formalism variable proxying for the difficulty to throw out a non-paying tenant is significantly correlated with INDEPENDENCE.

¹³ Hayo and Voigt (2013) deal at lengths with the effects of procedural formalism. Their results are more nuanced than Djankov et al. (2003): Employing a standard growth model, they find in a cross-section of 67 countries that timeliness, written—as opposed to oral—procedures, and the right to counsel have a positive effect on growth, whereas the number of independent procedural actions as well as the presumption of innocence have negative effects.

Table 4a: Court Organization and Resolution Rates

	1	2	3	4	5	6
Income per capita	-0.003* (-1.97)	-0.003* (-1.76)	-0.003 (-1.65)	-0.002 (-1.26)	-0.002 (-1.43)	-0.002 (-1.23)
Judicial council	-0.147** (-2.40)	-0.137** (-2.18)	-0.134** (-2.05)	-0.109* (-1.83)	-0.137** (-2.21)	-0.123* (-1.92)
Duties		-0.091 (-1.32)	-0.095 (-1.30)	-0.068 (-1.06)	-0.052 (-0.82)	-0.059 (-0.87)
Size			0.001 (0.17)	-0.001 (-0.27)	-0.003 (-0.70)	-0.003 (-0.60)
Special				-0.349** (-2.50)	-0.355*** (-2.69)	- 0.342* * (-2.48)
Enforcement					0.030 (0.54)	0.029 (0.49)
Recruitment						-0.065 (-0.64)
Constant	0.792***	0.803***	0.792***	0.834***	0.870***	0.879* **
Adjusted R ²	0.12	0.11	0.07	0.25	0.26	0.20
Observations	36	36	36	36	36	36
For notes see Table 3 above.						

Turning to court organization and controlling for per capita income, the following results (presented in Table 4) appear noteworthy: First, per capita income is not significantly correlated with the resolution rate. This is good news for poorer countries but can also be interpreted as a duty: governments of poorer countries cannot use their low income as an excuse for low resolution rates.

Second, the higher the percentage of specialized courts in a country, the lower the overall resolution rate. Somehow, the potential benefits of specialization are not reflected in a higher productivity of judges. One possible reason for this finding is that expert judges want to be more precise regarding the area of their expertise and therefore need more time rather than less. It could also be that specialized judges are subject to boredom – because cases

always seem to be the same – so that their motivation suffers.¹⁴ Conclusive answers are impossible to give on the basis of the available data. Average court size, on the other hand, is never anywhere near conventional significance levels, supporting the findings of previous studies. Mitsopoulos and Pelagidis (2007) concludes that the ratio of total employees to total number of filed cases only matters in higher instance courts but not in first instance courts, whereas Dimitrova-Grajzl et al. (2010) shows that the significant impact of the number of judges disappears after controlling for reverse causality. Similar results are obtained when substituting the SIZE variable with a variable measuring the number of judges per capita, indicating that increasing the number judges to reduce backlog might not yield satisfactory results (see Appendix).

Third, the existence of a judicial council is correlated with the resolution rate but the coefficient has an unexpected negative sign: countries that rely on judicial councils manage to resolve fewer cases and are perceived as having a less efficient judicial system. The significance level varies depending on the estimated model but the overall effect is definitely negative.¹⁵

Since the dependent variable is defined as a percentage, a coefficient of .12 implies that countries with a judicial council resolve some 12% fewer court cases than countries without such a council. This must come as a blow to the many supporters of judicial councils. If judicial councils are interpreted as organizations created to enable the judiciary to administer its own affairs, then this result would seem to indicate that the administration better be delegated to people outside the judiciary proper, e.g. to a ministry of justice. One potential explanation for the unexpected effect of Judicial Councils could be that under them, judges need to spend some time on administrative matters which leaves them with less time preparing decisions.¹⁶ The significantly negative effect of judicial councils is also observed in most model specifications relying on subjective measures such as judicial independence or judicial efficiency.¹⁷

¹⁴ Scholars in organization science have long proposed measures such as job enrichment or job rotation to ease such effects.

¹⁵ Using judicial council data for 1990 instead of 2000 to circumvent the possibility of reverse causality yields similar results (see appendix). However, the number of observations drops to 26 (from 36), indicating a rise in the number of countries having a judicial system by almost 30% within 10 years.

¹⁶ Based on the data used here, we cannot exclude reversed causation either. It is at least a possibility that Judicial Councils were introduced exactly in those countries with inefficient judiciaries.

¹⁷ Assuming a coefficient of -.55 implies that the existence of a judicial council is correlated with one half of a standard deviation less in terms of EFFICIENCY.

Fourth, DUTIES has a negative coefficient, which is in line with our expectations. Fifth, none of the other variables are significant. This is unsatisfactory for those who are interested in “the” single most efficient judicial system. We interpret our results as meaning that there is no single silver bullet to judicial efficiency. All in all, the few significant variables might also indicate an omitted variable bias. Entirely different court sizes can be both efficient and inefficient.¹⁸ To see whether we can identify an “optimal” court size we reran the model including the square of SIZE but the results remain insignificant. Substituting SIZE by a variable depicting the number of judges per inhabitant does not affect any of the results if RESOLUTION is the dependent variable.

Interestingly, once we draw on judicial independence as the dependent variable, some of the right hand side variables turn out to be significant in some of the model specifications (see appendix). These are income per capita, SPECIAL, SIZE and DUTIES.¹⁹

Table 5a: Incentives and Resolution Rates

Specification	1	2	3	4	5	6
Income per capita	-0.004*** (-2.74)	-0.004** (-2.20)	-0.003** (-2.11)	-0.002 (-1.46)	-0.002 (-1.22)	-0.002 (-0.89)
Court BUDGET	-0.741*** (-4.11)	-0.715*** (-3.92)	- 0.706*** (-3.85)	- 0.648*** (-3.40)	- 0.588*** (-3.01)	- 0.524*** (-2.23)
TRAINING		0.033* (1.72)	0.034* (1.79)	0.036* (1.87)	0.031 (1.56)	0.027 (1.22)
BONUS			0.015 (0.24)	0.024 (-0.35)	0.005 (0.07)	0.011 (0.16)
SANCTION				2.70 (1.21)	1.917 (0.86)	1.628 (0.68)
BENEFITS					0.034 (1.08)	0.048 (0.19)
LEGAL_AID						0.233 (0.93)
Constant	0.891***	0.785***	0.751***	0.712***	0.681***	0.681***
Adjusted R ²	0.33	0.32	0.31	0.29	0.32	0.23

¹⁸ In our sample, court size ranges from 0.75 to 98.1.

¹⁹ If the SIZE variable is squared to see whether an “optimal” court size could result, it is insignificant.

Observations	37	37	37	37	37	37
For notes see Table 3 above.						

We now move to our last group of potential determinants. These are the individual incentives under which members of the judiciary operate. They also appear to be quite malleable in the short run, in other words: they might be suitable means for policy reform should we uncover very strong correlations. BUDGET has a negative sign and is highly significantly correlated with the resolution rate throughout. This implies that we confirm results of previous studies according to which more money does not necessarily buy a better – or more efficient – judiciary.

Countries obliging their judges to follow compulsory TRAINING courses observe a higher resolution rate. This finding is in line with Chemin (2009) who shows that as a consequence of the 2002 judicial reform in Pakistan, which involved more training courses without providing the judges with any additional financial benefits, increased the number of resolved cases by 25%. The variable is, however, not robust to the inclusion of BENEFITS (and LEGAL_AID). Both BONUS and BENEFITS are far away from any conventional significance level, indicating that developing incentive pay schemes based on the quantity of resolved cases and meeting deadlines may not affect resolution rates. Based on this result, we would, hence, not recommend the introduction of either BENEFITS or any kind of BONUS. Finally, negative incentives do not seem to have any effect on court output, since SANCTION is not significantly correlated with the resolution rate. However, SANCTION and LEGAL_AID are significantly correlated with EFFICIENCY, our subjective measure.²⁰ Hence, though providing legal aid is perceived as an important factor for creating an efficient legal environment by court users, it has no significant impact on the speediness of courts.

6. Conclusions and Outlook

This paper complements a growing literature that has tried to identify the determinants of judicial efficiency within countries (see Voigt 2012 for a survey). The cross-country setting chosen here allows us to take institutional variation across countries explicitly into account.

On the basis of the dataset offered by CEPEJ, even some of the insignificant results are highly interesting: income per capita, the court budget, the degree of procedural formalism and the size of courts are all insignificant for the resolution rate. This means that being poor

²⁰ The substantial effect of SANCTION is limited though: a one standard deviation increase in SANCTION leads to an improvement in efficiency of a little more than a quarter of a standard deviation in EFFICIENCY.

is not a valid excuse for judicial backlog, that increasing the court budget is definitely no panacea, that countries with a high degree of procedural formalism need not necessarily have a low resolution rate and that increasing court size to improve the resolution rate is probably a bad idea.

Furthermore, some of the negative results are also highly intriguing: special courts are significantly correlated with a lower resolution rate. Introducing more special courts is therefore unlikely to reduce backlog. Moreover, judicial councils are very significantly and robustly correlated with lower resolution rates. Again, the policy implication seems obvious: if a higher resolution rate is striven for, introduction of judicial councils is unlikely to get one there.

Finally, the variable positively correlated with the resolution rate is belonging to the socialist legal family. The last variable is definitely a reminder that resolution rates are only one dimension of legal systems and that others such as judicial independence are not necessarily closely aligned with it.

Interestingly, our objective measures and our subjective measures are not very highly correlated. It is, hence, not surprising that significant determinants are not identical independent from the concrete measure chosen. A number of explanations why this might be the case come immediately to mind: the objective measures focus exclusively on the quantity of resolved cases and not on the quality with which they have been resolved. Although there are ways to control for the quality of court output (think of the percentage of decisions appealed), variation between countries both in the procedural requisites to use them as well as the incentives to do so appears very large. This might be one reason to turn to subjective measures because people surveyed will implicitly always control for the quality of the judicial process.

A possible next step in this research program could consist of inquiring more systematically into the effects of judicial councils. It has been noted before that research on them is scarce and empirical insights basically nonexistent. Based on our data, it is impossible to establish causality. So, one next step could draw on the years of their introduction in various jurisdictions and see whether their introduction caused a structural break with regard to subjective and (or) objective indicators.

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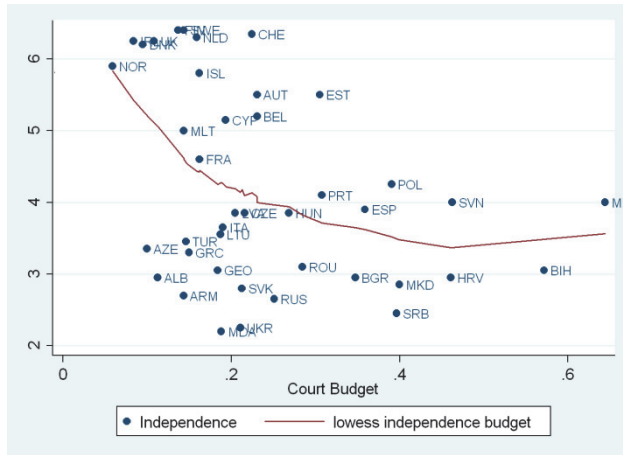
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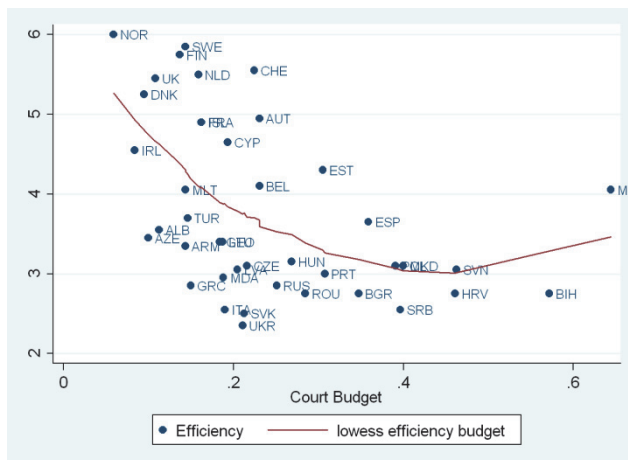
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Appendix 1:

Court Budget and Independence



Court Budget and Efficiency



Court Budget and Clearance Rate

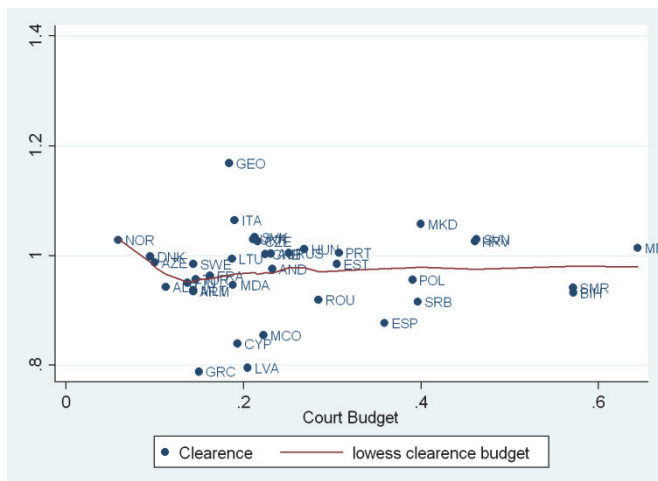


Table 3b: Long-term determinants of judicial efficiency (EFFICIENCY)

	1a	1b	2	3	4
Income per capita (in 1000)	0.024*** (3.30)	0.027*** (3.24)	0.026** * (3.44)	0.027** * (3.15)	0.026** * (3.18)
Socialist Legal Origin	- 1.545** *	- 1.495*** (-4.72)	- 1.383** * (-4.66)	- 1.469** * (-4.37)	- 1.413** * (-4.32)
French Legal Origin	- 1.150** *	- 1.305*** (-5.02)	- 1.192** * (-4.98)	- 1.292** * (-4.81)	- 1.150** * (-4.16)
Formalism_tenant			-0.281* (-1.73)		-0.341 (-1.19)
Formalism_check				-0.046 (-0.29)	0.130 (0.53)
Constant	4.431***	4.318***	4.909** *	4.471** *	5.044** *
Adjusted R ²	0.76	0.75	0.79	0.73	0.75
Observations	41	33	33	33	33
	<p>The regression is run using robust standard errors. The numbers in parentheses are t-values estimated on the basis of White heteroscedasticity-consistent standard errors. ***, **, and * indicate that the estimated parameter is significantly different from zero at the 1, 5, or 10 percent level, respectively.</p>				

Table 3c: Long-term determinants of judicial efficiency (INDEPENDENCE)

	1a	1b	2	3	4
Income per capita (in 1000)	0.029*** (-3.47)	0.054*** (-3.23)	0.052*** (-3.87)	0.054*** (-3.43)	0.053*** (-3.73)
Socialist Legal Origin	- 2.049*** (-6.065)	-1.432** (-2.85)	-1.235*** (-2.92)	-1.337** (-2.75)	- 1.224*** (-2.79)
French Legal Origin	- 1.436** * (-5.05)	- 1.473*** (-4.63)	- 1.142*** (-3.94)	- 1.343** * (-4.03)	- 1.075** * (-3.40)
Formalism_tenant			- 0.528*** (-3.01)		- 0.697** (-2.39)
Formalism_check				-0.03 (-1.17)	0.194 (0.77)
Constant	5.033***	4.181***	6.119***	4.983***	6.028***
Adjusted R ²	0.79	0.81	0.85	0.79	0.84
Observations	41	32	32	32	32
For notes see table 3b above					

Table 3d: Long-term determinants of judicial efficiency (CLEARANCE)

	2	1b	2	3	4
Income per capita (in 1000)	-0.002* (-1.94)	-0.002 (-1.10)	-0.002 (-1.14)	-0.002 (-1.03)	-0.002 (-0.99)
Socialist Legal Origin	-0.070* (-1.72)	-0.034 (-0.47)	-0.034 (-0.69)	-0.023 (-0.45)	-0.024 (-0.43)
French Legal Origin	-0.006 (-0.20)	-0.091* (-2.09)	-0.072* (-1.98)	-0.078* (-2.05)	-0.079* (-1.88)
Formalism_tenant			-0.012 (-0.49)		-0.004 (-0.10)
Formalism_check				-0.018 (-0.87)	0.021 (0.61)
Constant	0.905***	1.103***	1.096***	1.109***	1.101***
Adjusted R ²	0.06	0.14	0.10	0.13	0.07
Observations	37	28	28	28	28
For notes see table 3b above					

Table 4b: Court Organization and Judicial Efficiency (EFFICIENCY)

	1	2	3	4	5	6
Income per capita	0.042*** (5.90)	0.042*** (5.79)	0.042*** (5.82)	0.041*** (-5.52)	0.041*** (5.23)	0.039*** (5.13)
Judicial council	-0.540** (-2.11)	-0.540** (-2.07)	-0.493* (-1.84)	-0.525* (-1.90)	-0.436 (-1.47)	-0.438 (-1.51)
Duties		-0.012 (-0.04)	-0.017 (-0.06)	-0.031 (-0.02)	0.013 (0.04)	-0.027 (-0.09)
Size			0.007 (0.87)	0.007 (0.91)	0.011 (1.20)	0.012 (1.37)
Special				0.296 (0.55)	0.293 (0.53)	0.311 (0.57)
Enforcement					-0.267 (-0.95)	-0.293 (-1.07)
Recruitment						0.621 (1.31)
Constant	3.366***	3.361***	3.259***	3.170***	3.171***	2.898***
Adjusted R ²	0.62	0.61	0.61	0.59	0.57	0.58
Observations	40	40	40	40	40	40
For notes see Table 3 above.						

Table 4c: Court Organization and Judicial Efficiency (INDEPENDENCE)

	1	2	3	4	5	6
Income per capita	0.074*** (-8.21)	0.057*** (-6.56)	0.071*** (-8.99)	0.064*** (-7.92)	0.064*** (-7.73)	0.066*** (-8.91)
Judicial council	-0.503* (-1.82)	-0.626* (-2.01)	-0.424 (-1.46)	-0.521* (-1.77)	-0.513* (-1.74)	-0.413 (-1.48)
Duties		0.438 (-1.24)	0.31 (-0.97)	0.419 (-1.32)	0.425 (-1.31)	0.203 (-0.68)
Size			0.013 (-1.52)	0.015* (-1.82)	0.015 (-1.67)	0.052*** (-2.82)
Special				0.909 (-1.59)	0.916 (-1.57)	0.982* (-1.90)
Enforcement					-0.031 (-0.10)	-0.175 (-0.65)
Recruitment						-0.828* (-1.76)
Constant	3.169***	3.400***	2.912***	2.848***	2.850***	2.055***
Adjusted R ²	0.73	0.66	0.76	0.76	0.75	0.79
Observations	39	40	40	40	40	39
For notes see Table 3 above.						

Table 4d: Court Organization and Judicial Efficiency (CLEARANCE)

	1	2	3	4	5	6
Income per capita	0.000 (-0.32)	0.000 (-0.36)	0.000 (-0.23)	0.000 (-0.26)	0.000 (-0.33)	0.000 (-0.05)
Judicial council	-0.019 (-0.72)	-0.019 (-0.71)	-0.018 (-0.64)	-0.014 (-0.48)	-0.013 (-0.40)	-0.017 (-0.51)
Duties		0.02 (-0.67)	0.019 (-0.60)	0.022 (-0.68)	0.023 (-0.71)	0.034 (-0.99)
Size			0.001 (-0.69)	0.001 (-0.42)	0.001 (-0.51)	0.000 (-0.18)
Special				-0.071 (-1.03)	-0.069 (-0.96)	-0.057 (-0.78)
Enforcement					-0.014 (-0.48)	-0.007 (-0.21)
Recruitment						-0.068 (-1.26)
Constant	0.997***	0.990***	0.971***	0.986***	0.987***	1.014** *
Adjusted R ²	-0.04	-0.06	-0.07	-0.06	-0.09	-0.08
Observations	36	36	36	36	36	36
For notes see Table 3 above.						

Table 5b: Incentives and judicial efficiency (subjective measure)

	1	2	3	4	5	6
Income per capita	0.052*** (6.62)	0.050*** (6.30)	0.050*** (6.26)	0.057*** (7.41)	0.057*** (6.82)	-0.046*** (-6.06)
Court BUDGET	-1.989** (-2.23)	-2.130** (-2.41)	-2.137** (-2.36)	-0.901 (-1.09)	-0.872 (-0.97)	-2.417*** (-3.07)
TRAINING		-0.072 (-0.85)	-0.078 (-0.89)	-0.112 (-1.41)	-0.115 (-1.37)	-0.035 (-0.47)
BONUS			0.048 (0.17)	0.124 (0.45)	0.131 (0.45)	-0.224 (-0.86)
SANCTION				46.979** *	47.273** *	11.449 (1.40)
BENEFITS				(3.42)	(3.35)	-0.150 (-1.30)
LEGAL_AID					0.009 (0.07)	7.613** (2.42)
Constant	3.353***	3.593***	3.602***	2.956***	2.942***	3.580***
Adjusted R ²	0.64	0.65	0.63	0.68	0.67	0.77
Observations	41	41	41	40	40	39
For notes see Table 3b above.						

Table 5c: Incentives and judicial efficiency (INDEPENDENCE)

	1	2	3	4	5	6
Income per capita	0.076*** (-8.08)	0.069*** (-7.73)	0.070*** (-8.07)	0.074*** (-7.96)	0.074*** (-7.38)	0.058*** (-6.79)
Court BUDGET	-0.294 (-0.28)	-0.1 (-0.10)	-0.752 (-0.75)	-0.171 (-0.17)	-0.592 (-0.55)	0.162 (-0.18)
TRAINING		-0.246** (-2.59)	-0.217** (-2.36)	-0.192* (-2.02)	-0.173* (-1.77)	-0.253*** (-2.95)
BONUS			-0.553* (-1.81)	-0.656* (-1.96)	-0.715** (-2.06)	-0.512* (-1.74)
SANCTION				12.443 (-1.19)	12.657 (-1.18)	4.821 (-0.52)
BENEFIT					-0.07 (-0.45)	-0.028 (-0.21)
LEGAL_AID						14.762*** (-4.13)
Constant	2.916***	3.550***	3.665***	3.354***	3.491***	3.525***
Adjusted R ²	067	0.69	0.74	0.71	0.72	0.80
Observations	41	41	41	41	41	39
For notes see Table 3b above.						

Table 5d: Incentives and judicial efficiency (CLEARANCE)

	1	2	3	4	5	6
Income per capita	0.000 (-0.11)	0.000 (-0.09)	0.000 (-0.07)	0.000 (-0.35)	0.001 (-0.74)	0.001 (-0.61)
Court BUDGET	0.011 (-0.13)	0.011 (-0.12)	0.006 (-0.07)	0.029 (-0.32)	0.059 (-0.61)	0.102 (-0.91)
TRAINING		0.000 (-0.05)	0.000 (-0.01)	-0.001 (-0.09)	-0.006 (-0.56)	-0.010 (-0.93)
BONUS			0.029 (-0.91)	0.016 (-0.47)	0.026 (-0.75)	0.026 (-0.72)
SANCTION				2.284** (-2.13)	1.903* (-1.73)	1.732 (-1.51)
BENEFIT					0.022 (-1.39)	0.025 (-0.05)
LEGAL_AID						0.054 (-0.05)
Constant	0.974***	0.973***	0.971***	0.944***	0.923***	0.923***
Adjusted R ²	-0.06	-0.09	-0.09	0.04	0.05	0.02
Observations	38	38	38	38	38	34
For notes see Table 3b above.						

Table 4e: Replacing the SIZE variable in Table 4a by the number of first instance court judges

	1	2	3	4	5	6
Income per capita	-0.003* (-1.97)	-0.003* (-1.76)	-0.002 (-1.34)	-0.001 (-0.71)	-0.001 (-0.94)	-0.001 (-0.63)
Judicial council	-0.147** (-2.39)	-0.138** (-2.18)	-0.104 (-1.66)	-0.062 (-1.10)	-0.076 (-1.29)	-0.072 (-1.18)
Duties		-0.091 (-1.32)	-0.076 (-1.11)	-0.065 (-1.12)	-0.048 (-0.81)	-0.049 (-0.78)
N_JUD			-0.361 (-1.38)	-0.364 (-1.63)	-0.413 (-1.65)	-0.446 (-1.70)
SPECIAL				-0.387*** (-3.07)	-0.391*** (-3.05)	-0.372*** (-2.81)
Enforcement					0.021 (-0.39)	0.029 (-0.51)
Recruit						-0.062 (-0.69)
Constant	0.792***	0.804***	0.835***	0.847***	0.861***	0.877***
Adjusted R ²	0.12	0.10	0.11	0.33	0.33	0.27
Observations	36	36	35	35	35	35

Table 4f: Using Judicial Council Data of 1990 instead of 2000 to assure the absence of reverse causality:

	1	2	3	4	5	6
Income per capita	-0.001 (-0.83)	-0.001 (-0.74)	-0.002 (-1.04)	-0.001 (-0.50)	-0.001 (-1.03)	-0.001 (-0.94)
Judicial council_1990	-0.187*** (-2.88)	-0.194** (-2.81)	-0.242*** (-3.60)	-0.184** (-2.36)	-0.218*** (-3.49)	-0.216*** (-3.28)
Duties		-0.017 (-0.21)	-0.01 (-0.13)	-0.02 (-0.26)	-0.045 (-0.72)	-0.045 (-0.68)
Size			-0.004 (-1.047)	-0.003 (-0.85)	-0.007* (-1.94)	-0.006 (-1.67)
SPECIAL				-0.227 (-1.31)	-0.278* (-1.90)	-0.277* (-1.78)
Enforcement					0.118* (-1.96)	0.115* (-1.79)
Recruit						0.006 (-0.05)
Constant	0.792***	0.804***	0.835***	0.847***	0.861***	0.877***
Adjusted R ²	0.21	0.17	0.27	0.27	0.50	0.46
Observations	26	26	26	26	26	26

Descriptive Statistics:

	RESOLUTION	CLEARANCE	EFFICIENCY	INDEP	TRUST in JUD	GDP PC	APPEAL	SOCIALIST	FRENCH	FORMALIST TENANT	FORMALIST CHECK
Mean	0.61	0.98	3.85	4.27	0.42	20.6	0.30	0.45	0.29	3.68	3.53
Maximum	0.96	1.38	6.00	6.4	0.84	81.35	0.61	1.00	1.00	4.80	5.24
Minimum	0.29	0.78	2.35	2.2	0.2	1.19	0.02	0.00	0.00	2.22	2.43
Std. Dev.	0.16	0.09	1.10	1.38	0.17	18.11	0.19	0.50	0.46	0.58	0.69
Observations	39	40	43	43	42	46	15	44	44	35	35

	JUDGES	SPECIAL	ENFORCE	RECRUIT	COURT BUDGET	TRAINING	BONUS	SANCTION	BENEFIT	DUTIES	SIZE	JUDICIAL COUNCIL
Mean	0.18	0.20	0.32	0.46	0.24	2.27	0.15	0.01	0.93	0.25	12.7	0.57
Maximum	0.53	0.90	1.00	1.00	0.64	5.00	1.00	0.07	3.50	1.00	98.09	1.00
Minimum	0.02	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.75	0.00
Std. Dev.	0.11	0.21	0.47	0.24	0.13	1.24	0.36	0.01	0.90	0.39	14.71	0.50
Observations	45	46	46	46	44	46	46	46	46	46	46	42

Correlation Matrix:

	RESOL	EFF	GDP Per Capita	Legal AID	BENEFIT	BONUS	COURT BUDGET	FORMALISM CHECK	FORMALISM TENATE	ENFORCEMENT	Filed CASES	FRENCH	SOCIALIST	JUD COUNCIL	N_JUDGES	RECRUIT	DUTIES	SANCTION	SIZE	SPECIAL	TRAINING
RESOL	1																				
EFF	0.07	1																			
GDP Per capita	-0.13	0.75***	1																		
Legal Aid	0.18	0.48***	0.18	1																	
BENEFIT	0.43***	-0.18	-0.32**	-0.13	1																
BONUS	0.06	-0.15	-0.17	-0.15	-0.10	1															
Court Bud	0.43***	0.44***	-0.3**	-0.21	-0.17	0.07	1														
FORMALISM CHECK	0.30	-0.27	-0.31*	-0.23	0.06	0.07	0.14	1													
FORMALISM TENATE	0.20	-0.40**	-0.26	0.48***	0.19	0.10	0.15	0.77***	1												
ENFORCEMENT	0.00	-0.12	0.04	-0.17	0.10	-0.16	0.08	-0.06	0.07	1											
FILED CASES	0.10	0.50***	-0.24	-0.20	0.24	0.04	0.25	0.28	0.34*	0.05	1										
FRENCH	0.47***	0.03	0.36**	-0.07	-0.25*	0.17	0.03	-0.27	-0.04	0.05	0.21	1									
SOCIALIST	0.36**	0.71***	0.72***	-0.36**	0.3**	0.03	0.32**	0.37**	0.33**	0.30**	0.14	0.59***	1								
JUDICIAL COUNCIL	-0.21	0.56***	0.48***	0.55***	0.01	0.21	0.23	0.17	0.24	0.14	0.12	0.12	0.24	1							
N_JUDGES	-0.40**	-0.38**	0.08	-0.31**	-0.22	-0.17	0.67***	0.00	0.03	0.26*	0.22	0.19	0.14	0.08	1						
RECRUIT	-0.13	0.16	0.00	0.06	0.06	-0.06	-0.00	-0.08	-0.10	-0.00	-0.07	-0.21	-0.05	-0.02	-0.08	1					
DUTIES	-0.20	-0.01	-0.09	-0.17	-0.04	-0.11	0.46***	-0.18	-0.06	0.03	-0.12	-0.27**	0.14	0.06	0.19	0.14	1				
SANCTION	0.28*	-0.02	0.309**	0.13	0.23	0.35**	-0.05	-0.10	-0.15	-0.17	0.34**	-0.28*	0.27*	-0.18	-0.27*	0.00	-0.08	1			
SIZE	0.06	0.15	0.03	0.12	-0.15	-0.19	0.02	-0.08	-0.14	0.30**	-0.18	0.08	0.08	-0.17	0.01	-0.10	0.01	-0.12	1		
SPECIAL	0.48***	0.12	0.16	0.00	-0.16	-0.04	0.10	-0.10	-0.09	0.08	0.03	0.38***	-0.29*	0.07	0.02	0.04	-0.06	-0.23	0.14	1	
TRAINING	0.30*	0.43	-0.18	0.06	0.20	-0.00	0.10	0.27	0.34**	0.46	0.41	0.44	0.44	0.42	0.45	0.46	-0.18	0.08	0.04	0.46	1
	0.39	0.43	0.46	0.42	0.46	0.46	0.44	0.44	0.35	0.46	0.41	0.44	0.44	0.42	0.45	0.46	0.46	0.46	0.46	0.46	0.46

Appendix 2: List of Variables (definitions and sources)

The data used are mostly averages calculated on the basis of the last two CEPEJ waves (2010 and 2012). Some variables are missing in only one of the waves and averaging allows us to keep them in.

All court data used are confined to first instance courts only.

BONUS:

Dummy variable, equal to 1 if a productivity bonus exists (bonus based on the fulfilment of a quantitative objective in a given period of time) and 0 otherwise; source: CEPEJ (2010), (2012).

BENEFITS:

This variable measures the amount of different benefits provided to judges, e.g. tax reduction, special pension and housing, in addition to financial allowances. This variable can take values ranging from 0 if no benefits at all are provided to 4 if judges receive all types of benefits; source: CEPEJ (2010), (2012).

CLEARANCE:

Ratio of total resolved civil litigious cases to newly filed civil litigious cases in first instance courts; source: CEPEJ (2010), (2012).

Court BUDGET:

Ratio of annual approved public budget allocated to courts without prosecution and legal aid to total GDP; source: CEPEJ (2010), (2012).

DUTIES:

Accounts for additional court services, specifically land and/or business registry. It takes the value of 1 if courts serve both additional functions, it is coded 0.5 if they serve only one of the functions, and 0 if they offer neither service; source: CEPEJ (2010), (2012).

EFFICIENCY:

World Economic Forum score for judicial efficiency. It measures the efficiency of the legal framework in a country for private businesses to settle disputes and challenge the legality of government actions and/or regulations. It ranges from 1 = inefficient and subject to manipulation to 7 = efficient and following a clear, neutral process; source: WEF (2012).

ENFORCEMENT:

Dummy variable, taking the value of 0 in case court decisions are enforced via public organization and 1 otherwise; source: CEPEJ (2010), (2012).

ENGLISH LEGAL ORIGIN:

Dummy variable for English legal origin, equal to 1 if the country is English legal origin, 0 otherwise; source: La Porta et al. (1999).

FILED CASES:

The number of newly filed civil litigious cases in all first instance courts of a country during one year; source: CEPEJ (2010), (2012).

FORMALISM_CHECK:

Formalism indicator reflecting the number of steps that need to be followed to get a court decision in case of a bounced check. Higher scores are associated with higher degrees of formalism; source: Djankov et al. (2003).

FORMALISM_TENANT:

Formalism indicator reflecting the number of steps that need to be followed to get a court decision in case of a tenant. Higher scores are associated with higher degrees of formalism; source: Djankov et al (2003).

FRENCH LEGAL ORIGIN:

Dummy variable for French legal origin, equal to 1 if the country is French legal origin, 0 otherwise; source: La Porta et al. (1999).

GOV_EFFECT:

One of the World Bank Governance Indicators. It measures “the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. The index values range

from -2.5 (very poor performance) to +2.5 (excellent performance)” World Bank, Governance Indicators (2010).

INCOME PER CAPITA:

Per Capita GDP in Euro source: CEPEJ (2010), (2012).

INDEPENDENCE:

World Economic Forum score for judicial independence. It measures how independent the judiciary is from influences of members of the government or citizens. It ranges from 1 = heavily influenced to 7 = entirely independent; source: WEF (2012).

JUDICIAL COUNCIL:

Dummy variable, equal to 1 if the country has had a judicial council at least since 2000, 0 otherwise; source: Elkins et al (2012).

LEGAL AID:

Annual approved public budget allocated to legal aid in €; source: CEPEJ (2010), (2012).

RECRUIT:

Reflects the recruitment process of judges. Takes the value of 1 if the judiciary is exclusively responsible for the recruitment process; if responsibility is shared between the judiciary and the executive, it is coded 0.5, and 0 if it is exclusively the responsibility of the executives; source: CEPEJ (2010), (2012).

RESOLUTION:

The ratio of total resolved civil litigious cases to total caseload, where caseload includes the newly filed cases during a specific year in addition to the pending cases of previous years; source: CEPEJ (2010), (2012).

SANCTION:

Number of sanctions pronounced against judges divided by the total number of judges in a specific year; source: CEPEJ (2010), (2012).

SIZE:

The ratio of total first instance court full time equivalent judges to the total number of first instance courts; source: CEPEJ (2010), (2012).

SPECIAL:

The number of specialized first instance courts divided by all first instance courts; source: CEPEJ (2010), (2012).

SOCIALIST LEGAL ORIGIN:

Dummy variable for socialist legal origin, equal to 1 if the country is of Socialist legal origin, 0 otherwise; source: La Porta et al. (1999).

TRAINING:

Represents the number of compulsory training programs offered by each country to its judiciary. It takes values ranging from 0 if none of the training programs is compulsory, to 5 if all five types of training are compulsory; source: CEPEJ (2010), (2012).

TRUST in Judiciary:

Measures the percentage of people who have responded positively regarding their confidence in the judiciary and the courts; source: Gallup World Poll (2011).
