



**COLLEGIUM OF ECONOMIC ANALYSIS  
WORKING PAPER SERIES**

Synergy or competition? Case heterogeneity  
and court performance in Polish first-  
instance civil and commercial courts

Jarosław Bełdowski and Łukasz Dąbroś and  
Wiktor Wojciechowski

# Synergy or competition? Case heterogeneity and court performance in Polish first-instance civil and commercial courts

Jarosław Beldowski<sup>1</sup>, Łukasz Dąbroś<sup>2</sup>, Wiktor Wojciechowski<sup>3</sup>

## ABSTRACT

In this study, we use data on Polish civil and commercial courts of first instance to examine the determinants of the court output measured by the number of cases they adjudicate. Besides taking into account a caseload, number of serving judges and auxiliary court staff members, the novelty of the research is that it pays particular attention to the problem of the heterogeneity of cases on the docket which both types of courts are dealing with. Using a set of fixed effects panel data models and addressing potential endogeneity, we test whether this variation promotes court performance or, on the contrary, reduces it. The results confirm that judges play a significant role in resolving cases albeit it considerably varies between distinguished type of adjudications. The auxiliary court staff members also turned out to affect court output in a different way, depending mainly on the type of cases under examination. The results indicate that there can be both synergy and competition in resolving certain types of cases. This synergy can be explained by either judicial backlash or an increase in experience in judges and support staff that makes the judicial process more time-efficient. The competition between certain types of cases may be indicative of opportunistic behaviour in some courts.

**Keywords:** judicial efficiency, court performance, panel models, case heterogeneity

**JEL Codes:** C23, K41, K15

---

<sup>1</sup> Warsaw School of Economics: [jbeldo@sgh.waw.pl](mailto:jbeldo@sgh.waw.pl)

<sup>2</sup> Warsaw School of Economics, [ld50376@doktorant.sgh.waw.pl](mailto:ld50376@doktorant.sgh.waw.pl)

<sup>3</sup> Warsaw School of Economics, [wiktor.wojciechowski@sgh.waw.pl](mailto:wiktor.wojciechowski@sgh.waw.pl)

## 1. Introduction

The judge has been always the centre of attention. The judge is blamed by parties who are unsatisfied with a judgment and are often subject to criticism by media and politicians. Having no purse or sword the judge is a vulnerable species. However, judges are not left alone in their 'ivory towers'. They are supported by a variety of staff and technology. The former has evolved into general or specialized clerks who seek to support judges in resolving cases. The role of technology in judicial processes can be associated with the procedures, software and hardware. Together they form a factory of justice. In other words, the court.

It is no surprise that various studies point to the fact that the court system has a positive impact on many aspects of society, including economic activity. For instance, they show a strong link between a well-performing judiciary and economic and social variables such as GDP growth (Kapopoulos & Rizos, 2024; Melcarne & Ramello, 2016), credit availability (Jappelli et al., 2005; Mora-Sanguinetti et al., 2017), entrepreneurship (Chemin, 2009b; García-Posada & Mora-Sanguinetti, 2015b), average firm size (García-Posada & Mora-Sanguinetti, 2015a; Giacomelli & Menon, 2017), their investments (Mora-Sanguinetti, 2021), market performance (Chakraborty, 2016) as well as market efficiency and economic development in general (Chemin, 2009a). Numerous studies point to factors that affect the performance of the courts – including their staffing, organization, management, the characteristics of the cases as well as other external factors including even weather which we will shortly deliver in the next section. However, it shall be noted that performance is only one of many aspects of the assessment of the judicial system. As Staats (2005) notes, the overall assessment may also include issues such as accessibility and independence – the topics which are not covered in this paper.

The main goal of our study is to investigate determinants of the court performance measured by the number of resolved cases in Poland. To this end, we employ unique database provided by the Ministry of Justice in Poland on several types of cases brought before commercial and civil district courts in Poland in years 2013-2020. The dataset allows us to carry out a detailed analysis on what factors determine the number of resolved cases including number of judges, number of new and pending cases of the considered type, a caseload of other cases that are being adjudicated in a court and number of auxiliary staff members. Although our research is limited to Poland, the results contribute to a discussion in the literature, indicating that judges do indeed contribute to the increase in the number of cases decided, and that the diversity of cases decided by the courts affects the outcome in different ways depending on the type of case. The results are robust to potential endogeneity, addressed by applying panel two-way fixed effects regression as well as instrumental variables.

Our results obtained with panel models and GMMs show the differential nature of the relationship between caseload structure in civil and commercial courts. In civil courts, we show that while a higher number of simplified writ-of-payment cases on the docket is negatively related to the number of full-trial cases, the relationship in the other direction is the opposite, i.e., more full-trial cases on the docket causes courts to hear more writ-of-payment cases. This may suggest opportunistic behaviour on the part of judges who, under pressure from the number of cases, focus on dealing with simpler cases to signal their productivity. The competition for court resources manifested by the fact that the presence of writ-of-payment and other cases reduces the number of full-trial judgements is also borne out for the commercial courts. In their

case, however, we did not observe a stimulating effect of writ-of-payment disputes on full-trial rulings, which may reflect the different working styles and complexity of cases in the two types of courts.

Our research makes multiple contributions to the existing literature on the determinants of court output. Firstly, we provide a comprehensive study of the civil and commercial courts in Poland which complements the scarce number of similar analyses conducted for the European transition economies. Secondly, we investigate the role played by judges and judicial staffing in resolving civil and commercial cases in Poland. On top of that, we analyse whether a caseload of other cases that are being adjudicated in a court affect its performance. To the best of our knowledge, the latter factors have been so far highly under-researched in the empirical literature. Lastly, the analysis was conducted separately for various types of civil and commercial cases that differ substantially in terms of the adjudication procedures and consequently in terms of the necessary involvement of judges and other court staff members.

The paper is organized as follows. Section 2 provides a brief overview of literature devoted to factors affecting court output. In Section 3 we present in detail the institutional setup and data. Section 4 covers estimation strategy we have applied to verify determinants of court output. Section 5 discusses the empirical results and section 6 concludes.

## **2. Literature review**

The factors affecting court performance have attracted substantial attention in the literature. On the one hand, adjudication can be perceived as a dual-nature good by having characteristics of both private and public goods (Landes & Posner, 1979). On the one hand, it provides benefits to the parties of a legal dispute, but it does the same for the general public, as it reduces legal uncertainty and improves the regulatory environment for human action.

As pointed out by Marciano et al. (2019), studies on court performance tend to obscure the differences between effectiveness and efficacy. The first concept determines how well the court performs in using its resources (staff, cases on the docket) to maximise the product (number of cases disposed of). The second one defines how well the court system responds to the 'demand for justice' coming from citizens. In order to avoid the limitations of both concepts we focus on the court output which measures how well the courts perform in adjudication by treating the data on as external and using instrumental variables if necessary. Having explained the differences between various concepts their determinants can be analysed from the literature to deliver its main observations.

The determinants of court performance can be divided into two major categories: internal and external (Pappalardo & Tortorici, 2023).

In the first category, as proposed by Christensen and Szmer (2012), it is possible to enumerate three sub-categories: judges, courts and cases. It is not surprising that much of the literature focuses on the role of the judge, who is undoubtedly a key figure in the functioning of the courts. Unexpectedly, studies conducted for developed countries such as Israel (Beenstock & Haitovsky, 2004) and advanced transition countries like Slovenia (Dimitrova-Grajzl, Grajzl, Sustersic, et al., 2012) show that the number of judges is not significantly linked to the number

of cases resolved. In more detail these studies point out that judges adjust their efforts to the number of cases they face in a given period of time (*judicial slack*). In contrast, the existence of a positive link between the number of judges and court output has been confirmed for some developing countries – e.g., Brazil (Sousa & Guimaraes, 2018), Nepal (Grajzl & Silwal, 2020), Bulgaria (Dimitrova-Grajzl et al., 2016) or Poland (Bełdowski et al., 2020). This disparity appears to be important for judicial reform plans as the positive relationship might mean that increasing the number of judges will solve the problem of case delays.

The studies also examined how the number of cases decided is influenced by the individual characteristics of the judges. For instance, research points to the role of factors such as judges' salaries (Deyneli, 2012) as higher salaries are associated with more efficient courts in Europe. As shown by Schneider (2005), the educational level of the judges is also important as judges holding PhD degrees are shown to be more productive in Germany. Moreover, Dimitrova-Grajzl, Grajzl, Zajc, et al. (2012) show that the performance of Slovenian judges is positively associated with promotion prospects (judges seek to demonstrate a track record to increase chances of promotion) and the dependence of productivity on age is U-shaped (youngest and oldest judges being more productive). Moreover, judges' performance may be affected by their colleagues as Martín-Román et al. (2023) showed a productivity decrease in Spanish labour courts where non-career/lay judges are employed.

The literature also examines other internal elements of the court that may affect its performance. For example, a positive relationship has been shown for the provision of IT tools to the court (Castelliano et al., 2023; Sousa & Guimaraes, 2018) as well as the presence of auxiliary staff (Deyneli & Mascini, 2020; Mishra, 2022) which relieves judges of administrative duties and allows them to concentrate on work. Particular attention is given to digital caseload management tools. Their implementation makes it possible to monitor the progress of proceedings and their deadlines, and to identify more quickly cases that require more work for judges and court staff. The use of such screening tools is associated with increased productivity of judges and shorter case processing times (Palumbo et al., 2013a, 2013b).

The third group of internal factors affecting court performance can be attributed to the cases themselves constituting the material from which judges and support staff 'manufacture' justice. Surprisingly, the scope of research concentrated on this area is scarce which opens up an interesting research gap. So far, the case heterogeneity was only addressed e.g., in the study of Polish commercial courts by Bełdowski et al. (2020) and Brazilian labour courts by Castelliano, Grajzl, Guimaraes, et al. (2021) In the latter study, the authors examined the relationship between the different types of cases and the court's performance in resolving them.

External factors also affect the operation of the courts, resulting from political decisions or even random events. In the first available studies both analyse the effects of previous reforms concerning the geographic distribution of courts (Achenchabe and Akaaboune (2021) for Morocco; Agrell et al. (2020) for Sweden) and make calls for changes that should be implemented (Falavigna and Ippoliti (2021) for Italy). In contrast, an important random event that also affected the functioning of the judiciary was the Covid-19 pandemic, which led to operational difficulties and sudden implementation of new technological tools. Castelliano, Grajzl, and Watanabe (2021) indicate that it had a negative impact on the number of judgements in Brazilian labour courts but did not affect the enforcement of these judgements. In turn,

Baumet al. (2023) showed that the pandemic and a subsequent switch to e-courts in Poland did not affect the performance of the country's commercial courts. It is also worth pointing out the less obvious factors influencing jurisprudence – e.g., weather. As shown by Heyes and Saberian (2019) an increase in temperature is associated with an increase in the severity of judges.

The current study focuses primarily on the internal determinants of court performance. Like Castelliano, Grajzl, Guimaraes et al. (2021), we examine whether and how the composition of the caseload (different types of cases) affects the number of judgements. However, our study is distinguished by its detail, as it includes both civil and commercial courts, and by the set of control variables we accounted for (i.e., demographic and economic data on the areas where the courts studied have jurisdiction).

### 3. Institutional setup and data

The Polish justice system has been affected by several 'reforms' in recent years. Though they have not changed its fundamental distinction between civil and commercial disputes and as a consequence 'their' courts<sup>4</sup>. The former ones exist in every district court (*sąd rejonowy*) whereas the latter ones are established by the Minister of Justice who is competent to draw their geographical borders. The district court is the entry point for significant number of disputes as it is the lowest level of a common court system in Poland, and it comprises of the civil court by default and the commercial one if it has been established. These courts, or in fact departments of common courts, resolve cases of a value not exceeding PLN 75.000 (for civil cases, approx. EUR 17.000) or PLN 100.000 (for commercial cases, approx. EUR 22.700). If the threshold is exceeded the case must be lodged at the regional court (*sąd okręgowy*). The main distinction between commercial and civil courts concerns the parties involved in such cases. Commercial courts deal exclusively with ones involving entrepreneurs and disputes among them. On the contrary, cases involving other persons, e.g., consumers as well as disputes in which at least one of the parties is not an entrepreneur, are dealt within the civil courts.

In the same vein, a selection process to appoint a judge is the same for civil and commercial district courts, although the candidate for a commercial vacancy is required to have some economic knowledge. However, this condition is obscure and leaves a lot of ambiguity in the selection process.

The role of auxiliary staff in the court depends on its features. The court clerk (*urzędnik sądowy*) may be allocated with general or specialised tasks whereas the judges assistants' (*asystent sędziego*) focus is on preparing written justifications of court judgments and lastly legal clerks (*referendarz*) are allowed to perform some judicial activities, in particular within non-contentious disputes (see in more detail Bełdowski et al. (2020)).

It is also important to mention how the cases may be lodged to the civil and commercial courts. In general, they may be lodged before the court in whose district the defendant resides (civil courts) and in case of an action against a legal person or other entity that is not a natural person

---

<sup>4</sup> The Polish justice system separates the common courts from administrative ones. The latter's' focus is on the relation of the State vis-à-vis other parties, e.g., citizens, entrepreneurs. To give a further example, tax disputes will be resolved by the administrative courts. Such courts are distinct from common ones, and they are organized in a different way than common ones.

it shall be brought in accordance with the place of their registered office. The parties may agree on the selection of a different court, but it is not common practice to do so and the allocation of cases to different courts by the decision of a superior court are seldom and they were omitted from this study. However, some specialization may be observed in the multi-departmental courts or specialized courts established by the Ministry of Justice. But taking into account the latest developments the latter have not sped up Polish justice and the former is only observed in few big cities and hence both have negligible impact on our study if any. In the same vein, the case management system is not developed throughout the country and particular approach which tackle the problem cannot be observed either.

A dataset employed in this study was provided by the Ministry of Justice of Poland concerning civil and commercial courts of first instance. It contains annual data on the number of all types of cases received and handled by the commercial and civil courts in Poland in years 2013-2020 as well as data on their staffing (judges and three types of supporting staff, namely court clerks, judges' assistants and legal clerk. The dataset covers 55 commercial courts in the years 2013-2014 and 54 commercial courts in the years 2015-2020. For civil courts dataset includes data on 242 courts in the years 2013-2014, 315 courts in 2015 and 318 courts in the years 2016-2020. The changes in the number of courts result from judiciary reforms implemented in the considered period: a merger of two commercial courts into one larger one and the restoration of so-called small civil courts in smaller towns. In order to ensure that our results are not distorted by organisational changes resulting from the reforms introduced, all estimates have been carried out using data for courts whose jurisdictions have not changed throughout the period under study.<sup>5</sup>

The dataset allows us to distinguish the following types of cases:

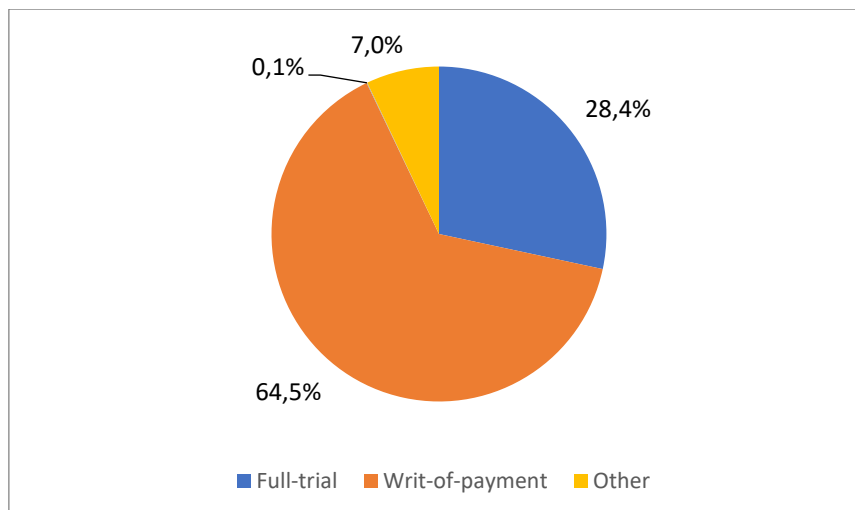
- **Full-trial cases:** Cases requiring a full trial between the disputing parties in which the judge (supported by the auxiliary staff) must resolve a contentious dispute.
- **Writ-of-payment cases:** Cases primarily involving arrears or payment arrears dealt with in a non-contentious procedure on the basis of bear application (writ of payment) e.g., copies of invoices not paid on time, or original documents (order for payment) submitted by the parties e.g. bill of exchange. As the dataset do not differentiate between both types of non-contentious procedure it is under a general headline of writ-of-payment cases.
- **Non-full-trial cases:** Cases where there is no dispute between the parties, but where there must be, for example, a determination of some fact by the court (e.g., successions or guardianships).
- **“Other” cases:** Cases that cannot be classified in the previously enumerated groups.

For commercial courts, we use data for only three categories. Commercial non-full-trial cases have been excluded from the database due to their marginal share of adjudication.

---

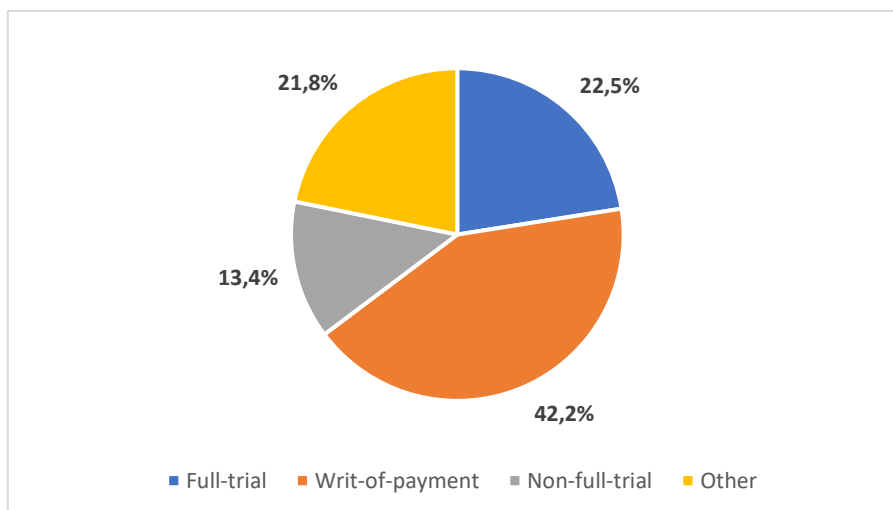
<sup>5</sup> The estimation results obtained using all available data (i.e. unbalanced dataset) are in most cases qualitatively consistent the ones presented here and are available upon request.

**Figure 1. Structure of cases adjudicated by commercial courts of first instance in Poland in 2013-2020.**



Source: own elaboration using data provided by the Ministry of Justice in Poland.

**Figure 2. Structure of cases adjudicated by civil courts of first instance in Poland in 2013-2020.**



Source: own elaboration using data provided by the Ministry of Justice in Poland.

#### **4. Estimation strategy**

The primary goal of the research is to establish factors determining court output measured by the number of resolved cases brought before district, first-instance courts in Poland. The empirical verification includes the estimation of a set of panel fixed-effects models separately for all the distinguished types of civil and commercial cases. Specifically, 4 types of civil cases (i.e., full trial, writ-of-payment, non-litigation, other) and 3 types of commercial cases (i.e., full trial, writ-of-payment, other) were examined. We employ a rich set of explanatory variables. Firstly, all specifications include the number of judges serving, new cases coming to a court during each year and the number of pending cases (i.e., cases that were received in previous years but have not yet been heard). Secondly, they incorporate number of other types of cases that are filed into a court. These variables are of crucial importance for the study as its primary goal is to examine how other cases affect court output. They allow us to verify whether there is a synergy or competition between cases adjudicated within a court. Specifically, we investigate



whether a larger number of certain type of cases boost or hamper court output. In turn, we directly investigate an impact of caseload heterogeneity on court performance. If the estimated coefficients are positive, the presence of cases of a different type than the one examined makes the court better at adjudicating them. In such circumstances, synergies between resolved cases can be postulated. On the other hand, negative coefficients indicate there is a competition between cases since the considered types of cases decrease court output. The model regressions control for number of auxiliary staff members (i.e., court servants, judges' assistants and court clerks) as well as a set of regional variables characterising court jurisdiction. In particular, they include income per capita, the share of private enterprises, the number of companies per 10,000 residents and the population size to control for differences in economic development and the size of the regions under the jurisdiction of the first instance courts. The model specifications also include court fixed effects to control for unobserved court characteristics that potentially might affect their output, like e.g., a diversified complexity of cases filed into courts stemming from regional economic structure not captured by the included control variables or different quality of court management. Time fixed effects are included to account for unobserved country-wide features that have impact on court performance, e.g., business cycle or judicial reforms. The model specification is of the following form:

$$resolved_{nit} = \beta_0 + \beta_1 caseload_{nit} + \beta_2 judge_{nit} + \beta_3 control_{nit} + \mu_{it} + u_{ni} + \varepsilon_{nit} \quad \text{Eg.1}$$

where *resolved* denotes the number of resolved cases of the considered type, *caseload* is a vector of the number of new and pending cases of the considered type and *judge* represents the number of serving judges. The subscript *n* denotes a court, *i* – a case type and *t* – a year. A vector *control* includes a set of discussed control variables potentially affecting court output. All variables are transformed into natural logarithms<sup>6</sup> and hence the estimated coefficients can be interpreted as respective elasticities. The exceptions are regional characteristics (income per capita, number of companies and a share of privately owned companies) that were standardized within each year to limit their heterogeneity across regions. Lastly,  $\mu$  indicates time fixed effects,  $u$  court fixed effects and  $\varepsilon$  denotes random residuals. The model coefficients are estimated by ordinary least squares. Standard errors are clustered at the court level.

As pointed out in the literature (e.g. Bełdowski et al., 2020; Dimitrova-Grajzl et al., 2016; Dimitrova-Grajzl, Grajzl, Sustersic, et al., 2012), the empirical verification of determinants of court output should address an issue of potential endogeneity of independent variables. It can arise from two sources: firstly, the appointing body may decide to increase number of judges or auxiliary staff to courts facing difficulty in handling a caseload. Secondly, parties considering resolving a dispute may select courts where proceedings are particularly fast - they may refer their cases to other courts (in Poland, this is legal if the parties stipulate it in a contract) or resort to other methods of conflict resolution (e.g., mediation or arbitration). We address the potential issue of endogeneity and reverse causality by augmenting the model specification by a first lag

---

<sup>6</sup> Variables are incremented by 1 before taking a logarithm to avoid problems arising from the non-existence of the logarithm of zero.

of the dependent variable and then by employing Arellano-Bover (1995) GMM-system estimator. It uses moment conditions in which lagged differences are used as instruments for the level equation in addition to the moment conditions of lagged levels as instruments for the difference equation. This estimator is designed for datasets with many panels and few periods which is the case in our data. The GMM-system method requires that there is no autocorrelation in the idiosyncratic errors. We verified whether this condition is met by applying Arellano-Bond (1991) test for lack of autocorrelation of order two in first-differenced errors. Additionally, we perform the Sargan test for overidentifying restrictions. Its null hypothesis assumes the restrictions are valid. In turn, rejecting the null implies the GMM instruments need to be reconsidered.

## **5. Estimation results**

### **5.1. Civil courts**

The results for the full trial civil cases show that a number of resolved cases of this type is primarily driven by a case inflow as well as a number of pending cases that were not resolved in previous years (Table 1). The estimates indicate judges play a significant role for the court output, albeit the estimate of judge coefficients turned out to be very unstable: in the GMM model (col. 4) it was more than twice as lower as for specifications estimated using ordinary least squares (col. 1-3). The coefficients reflecting caseload of other civil cases resolved within a court provide mixed results. The results of the baseline fixed-effects models (col. 1-3) indicate that non-full trial civil cases significantly hamper courts' ability to resolve full trial cases, and these findings are confirmed in the GMM approach. The latter shows that writ-of payment civil cases also have an adverse impact on the number of adjudicated full trial cases albeit the relevant coefficients were not statistically significant in the fixed-effect specifications. Consistent with the GMM results, other civil cases increase the number of adjudicated cases with a full trial, but again these results were not significant in the fixed effect models. This suggests that there is competition for court resources between full-trial cases on the one hand, and adjudication cases and cases without a full trial on the other. At the same time, the results indicate synergies for other civil cases. As far as serving staff is considered, the court clerks significantly increase the number of resolved full trial cases irrespective of the applied estimation method. Surprisingly, the remaining staff members turned out to hamper courts' output. Extending the model specification to include control variables accounting for regional characteristics does not affect the results, although the coefficients turned out to be very unstable. The estimates obtained from the GMM approach indicate that the higher share of privately owned firms, the higher the total number of firms per 10,000 inhabitants, and the higher the income per capita, the lower the number of settled cases. These results suggest that civil cases requiring a full trial that are being filed into courts in more economically developed regions may be more complex and therefore they are not as quickly resolved as cases filed into courts located in less developed areas. The results also show that the number of adjudicated cases is lower in more populated areas.

**Table 1. Civil courts: full trial cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved full-trial cases (lagged)				0.14*** (0.00)
Judges	0.21*** (0.03)	0.18*** (0.04)	0.17*** (0.04)	0.094*** (0.01)
New full-trial cases	0.66*** (0.02)	0.66*** (0.02)	0.66*** (0.02)	0.63*** (0.00)
Pending full-trial cases	0.37*** (0.01)	0.37*** (0.01)	0.37*** (0.01)	0.33*** (0.00)
Writ-of-payment cases (caseload)	-0.011 (0.01)	-0.015 (0.01)	-0.017 (0.01)	-0.056*** (0.00)
Non-full trial cases (caseload)	-0.021 (0.02)	-0.033* (0.02)	-0.035** (0.02)	-0.032*** (0.00)
Other cases (caseload)	0.022 (0.02)	0.010 (0.02)	0.012 (0.02)	0.085*** (0.00)
Legal clerks		-0.014 (0.01)	-0.018 (0.01)	-0.019*** (0.00)
Court clerks		0.087*** (0.03)	0.095*** (0.03)	0.019*** (0.01)
Assistants		-0.0036 (0.02)	-0.0049 (0.02)	-0.015*** (0.00)
Income per capita			-0.0028 (0.02)	-0.013*** (0.00)
Share of private enterprises			0.016** (0.01)	-0.0053*** (0.00)
Firms per 10k inhabitants			-0.034** (0.02)	-0.034*** (0.00)
Population			-0.031 (0.05)	-0.081*** (0.00)
R2	0.85	0.85	0.85	
N	1936	1936	1936	1694
Arellano–Bond test (p-value)				0.66
Sargan test (p-value)				0.49

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The results for writ-of-payment cases adjudicated in the civil courts show that number of resolved cases of this type is primarily driven by an inflow of new cases (Table 2). However, contrary to the full trial cases discussed above, the coefficient of judges in fixed effects specifications turned out to be insignificant. It turned out to be significant in the GMM approach, although about twice as low as for the full trial cases. It can be interpreted that although judges are necessary for carrying out formal court procedures, the number of serving judges is materially less important for courts' ability to resolve writ-of-payment cases. The number of full trial and non-full trial (only in the GMM approach) caseload appeared to be statistically associated with a higher number of resolved writ-of-payment cases. It was a surprise since the writ-of-payment caseload hampers resolution of full trial cases (Table 1) and the reverse relationship does not hold. The study does allow to formulate an explanation of this phenomenon, but one can stipulate that judges' involvement in resolution of usually demanding full trial cases makes them more productive and hence leads to an increase in the number of resolved writ-of-payment cases. This might result from judges' willingness to focus on full trial cases and resolve other, more simple cases as quickly as possible. If this is the case, our estimates might support a view that judges' behavior and productivity are highly determined by their achievements in resolution of primarily full trial cases. This hypothesis seems to be

plausible especially if the latter affects their carrier and promotion outlook. The caseload of the other civil cases turned out to decrease the number of resolved writ-of-payment cases, but only in the GMM specification. The results from the latter approach also indicate that the legal and court clerks significantly contribute to court performance. Surprisingly, the GMM estimates show that the court output is higher in more economically developed regions. On the contrary, the larger population size is associated with lower court performance.

**Table 2. Civil courts: writ of payment cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved writ-of-payment cases (lagged)				0.066*** (0.00)
Judges	0.026 (0.02)	0.016 (0.02)	0.012 (0.02)	0.043*** (0.00)
New writ-of-payment cases	0.89*** (0.02)	0.89*** (0.02)	0.89*** (0.02)	0.85*** (0.00)
Pending writ-of-payment cases	0.071*** (0.00)	0.071*** (0.00)	0.071*** (0.00)	0.057*** (0.00)
Full-trial cases (caseload)	0.023** (0.01)	0.022** (0.01)	0.022** (0.01)	0.030*** (0.00)
Non-full trial cases (caseload)	0.0066 (0.01)	0.0040 (0.01)	0.0039 (0.01)	0.0046** (0.00)
Other cases (caseload)	-0.013 (0.01)	-0.016 (0.01)	-0.016 (0.01)	-0.019*** (0.00)
Legal clerks		0.0050 (0.01)	0.0040 (0.01)	0.029*** (0.00)
Court clerks		0.017 (0.02)	0.017 (0.02)	0.017*** (0.00)
Assistants		0.0071 (0.01)	0.0065 (0.01)	-0.0035 (0.00)
Income per capita			0.0062 (0.01)	0.020*** (0.00)
Share of private enterprises			0.0034 (0.00)	0.0017*** (0.00)
Firms per 10k inhabitants			-0.0070 (0.01)	0.0092*** (0.00)
Population			-0.046 (0.04)	-0.059*** (0.00)
R2	0.96	0.96	0.96	
N	1936	1936	1936	1694
Arellano–Bond test (p-value)				0.57
Sargan test (p-value)				0.42

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The results for resolved non-trial civil cases show that their number is determined primarily by an inflow of new cases, partly by pending ones, but also by a number of serving judges (Table 3). The coefficients for the caseload appeared to be here very mixed and thus inconclusive. The estimates from the GMM estimator (col. 4) indicate that the ability of court to resolve non-trial cases is enhanced by other civil cases filed into a court, but at the same time it is hampered by the number of writ-of-payment cases. The latter supports the argument that there is some competition for court resources, and, in turn, the burden of other cases decided in courts contributes to their lower output. However, due to instability of the coefficients these conclusions should be treated with caution. The results provide evidence that court clerks

significantly contribute to a larger number of non-trial cases resolved in civil courts. However, the above findings should be again interpreted with caution since they were statistically significant only when the GMM approach was applied.

**Table 3. Civil courts: non-trial cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved non-full trial cases (lagged)				0.040*** (0.00)
Judges	0.058*** (0.02)	0.067*** (0.02)	0.067*** (0.02)	0.082*** (0.00)
New non-full trial cases	0.94*** (0.01)	0.94*** (0.01)	0.94*** (0.01)	0.92*** (0.00)
Pending non-full trial cases	0.16*** (0.02)	0.16*** (0.03)	0.16*** (0.03)	0.092*** (0.00)
Full-trial cases (caseload)	-0.032*** (0.01)	-0.030*** (0.01)	-0.029*** (0.01)	-0.0039 (0.00)
Writ-of-payment cases (caseload)	0.0068 (0.01)	0.0081 (0.01)	0.0082 (0.01)	-0.012*** (0.00)
Other cases (caseload)	-0.022** (0.01)	-0.019** (0.01)	-0.018** (0.01)	0.016*** (0.00)
Legal clerks		0.001 (0.01)	-0.001 (0.01)	0.00023 (0.00)
Court clerks		-0.021 (0.02)	-0.013 (0.02)	0.039*** (0.00)
Assistants		0.001 (0.01)	-0.001 (0.01)	-0.001 (0.00)
Income per capita			0.004 (0.01)	-0.007*** (0.00)
Share of private enterprises			0.006 (0.00)	0.003*** (0.00)
Firms per 10k inhabitants			0.0013 (0.01)	0.006*** (0.00)
Population			0.0031 (0.03)	-0.097*** (0.00)
R2	0.98	0.98	0.98	
N	1936	1936	1936	1694
Arellano–Bond test (p-value)				0.63
Sargan test (p-value)				0.55

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Analogous to civil non-full trial cases, the resolution of cases of other type filed into civil courts appeared to be determined primarily by its inflow, but also by a number of serving judges (Table 4). The results obtained from the GMM approach illustrate that all previously discussed civil cases significantly reduce the number of adjudicated civil cases of other type, albeit they were not significant in any considered fixed effect specifications. The estimates provide a robust conclusion regarding court clerks: they appeared to significantly increase the number of resolved other civil cases irrespective of the applied estimation method. It suggests that this type of court auxiliary staff is crucial for smooth adjudication of the considered cases. The GMM results show that also the remaining staff members enhance court output. The estimates of the regional control variables indicate that a higher economic development reflected in larger number of firms and bigger share of privately owned enterprises decrease number of resolved other civil cases. It is also lower on more populated areas. It suggests that courts located in more developed regions might deal with more complex cases which in turn has an adverse impact of

their output.

**Table 4. Civil courts: other cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved other cases (lagged)				0.031*** (0.00)
Judges	0.052*** (0.02)	0.034* (0.02)	0.034* (0.02)	0.009** (0.00)
New other cases	0.85*** (0.02)	0.85*** (0.02)	0.85*** (0.02)	0.84*** (0.00)
Pending other cases	0.17*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.13*** (0.00)
Full-trial cases (caseload)	0.004 (0.01)	-0.001 (0.01)	-0.002 (0.01)	-0.011*** (0.00)
Writ-of-payment cases (caseload)	0.003 (0.01)	-0.005 (0.01)	-0.001 (0.01)	-0.028*** (0.00)
Non-full trial cases (caseload)	0.010 (0.01)	0.004 (0.01)	0.0025 (0.01)	-0.006*** (0.00)
Legal clerks		0.012 (0.01)	0.012 (0.01)	0.024*** (0.00)
Court clerks		0.041** (0.02)	0.033* (0.02)	0.092*** (0.00)
Assistants		0.002 (0.01)	0.003 (0.01)	0.014*** (0.00)
Income per capita			-0.005 (0.01)	0.018*** (0.00)
Share of private enterprises			-0.006 (0.01)	-0.006*** (0.00)
Firms per 10k inhabitants			-0.014* (0.01)	-0.019*** (0.00)
Population			0.032 (0.05)	-0.042*** (0.00)
R2	0.98	0.98	0.98	
N	1936	1936	1936	1694
Arellano–Bond test (p-value)				0.21
Sargan test (p-value)				0.59

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 5.2. Commercial courts

The estimates for commercial courts indicate that judges and caseload are crucial for the number of resolved full trial cases (Table 5). The results show the court output in resolution of commercial full trial cases is dampened by writ-of payment caseload and hence there is a competition for court resources. On the contrary, a caseload of the remaining commercial cases does not turn out to significantly affect court output. As far as the auxiliary court staff members are considered, the estimates indicate that only judges' assistants significantly enhance courts' ability to adjudicate full trial commercial cases.

**Table 5. Commercial courts: full trial cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved full-trial cases (lagged)				0.082*** (0.03)
Judges	0.20*** (0.05)	0.19*** (0.05)	0.19*** (0.04)	0.19*** (0.04)

New full-trial cases	0.69*** (0.04)	0.69*** (0.04)	0.69*** (0.04)	0.49*** (0.02)
Pending full-trial cases	0.12*** (0.04)	0.11*** (0.04)	0.11*** (0.04)	0.25*** (0.02)
Writ-of-payment cases (caseload)	-0.11*** (0.03)	-0.11*** (0.03)	-0.11*** (0.03)	-0.12*** (0.04)
Other cases (caseload)	-0.0091 (0.02)	-0.010 (0.02)	-0.0094 (0.02)	-0.014 (0.01)
Legal clerks		0.035 (0.02)	0.035 (0.02)	0.015 (0.01)
Court clerks		-0.021 (0.05)	-0.043 (0.06)	0.036 (0.05)
Assistants		0.068*** (0.02)	0.067*** (0.02)	0.089*** (0.01)
Income per capita			0.024 (0.03)	-0.034 (0.03)
Share of private enterprises			-0.003 (0.01)	-0.002 (0.01)
Firms per 10k inhabitants			0.031 (0.02)	-0.011 (0.01)
Population			-0.14 (0.08)	0.051 (0.04)
R2	0.94	0.94	0.94	
N	669	669	669	605
Arellano–Bond serial correlation test (AR2) (p-value)				0.39
Sargan over-identification test (p-value)				1.00

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The analysis of determinants of a number of writ-of payment cases resolved in the commercial courts appeared to be analogous to the same type of cases resolved in civil courts (Table 6). Namely, it was determined almost entirely by its caseload. A number of serving judges turned out to be only weakly significant in the OLS specifications, and it loses its significance when the GMM estimator was applied. The latter specification provides some evidence of an adverse impact of full trial caseload for the number of writ-of-payment resolved cases and positive effects of judges' assistants.

**Table 6. Commercial courts: writ-of-payment cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved writ-of-payment cases (lagged)				-0.028*** (0.01)
Judges	0.031 (0.02)	0.038* (0.02)	0.039* (0.02)	0.030 (0.02)
New writ-of-payment cases	0.91*** (0.03)	0.91*** (0.03)	0.91*** (0.03)	0.88*** (0.01)
Pending writ-of-payment cases	0.050*** (0.01)	0.050*** (0.01)	0.050*** (0.01)	0.086*** (0.00)
Full-trial cases (caseload)	0.028* (0.02)	0.027 (0.02)	0.027 (0.02)	-0.022** (0.01)
Other cases (caseload)	-0.023** (0.01)	-0.022** (0.01)	-0.022** (0.01)	0.006 (0.00)
Legal clerks		0.025* (0.01)	0.025* (0.01)	0.027*** (0.01)
Court clerks		-0.003 (0.03)	-0.006 (0.03)	-0.034 (0.02)

Assistants		-0.008 (0.01)	-0.009 (0.01)	0.045*** (0.01)
Income per capita			0.006 (0.01)	0.0042 (0.01)
Share of private enterprises			-0.001 (0.00)	-0.002 (0.00)
Firms per 10k inhabitants			0.001 (0.01)	0.002 (0.00)
Population			-0.015 (0.04)	-0.006 (0.01)
R2	0.95	0.95	0.95	
N	669	669	669	605
Arellano–Bond test (p-value)				0.16
Sargan test (p-value)				1.00

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Lastly, the results for commercial cases of other types show that their number is significantly decreased by caseload of the remaining commercial cases (i.e., writ-of-payment and full trial) filed into the same court (Table 7). These results support the argument there is a competition for court resources and, as a result, the load of other cases has a negative impact on court output. The estimates obtained from the GMM estimator provide some evidence that number of commercial cases of other type is associated with a larger number of serving judges' assistants.

**Table 7. Commercial courts: other cases**

	(1) OLS-FE	(2) OLS-FE	(3) OLS-FE	(4) GMM-IV
Resolved other cases (lagged)				0.011* (0.01)
Judges	0.034* (0.02)	0.037* (0.02)	0.046** (0.02)	0.079*** (0.02)
New other cases	0.92*** (0.01)	0.92*** (0.01)	0.92*** (0.01)	0.90*** (0.01)
Pending other cases	0.084*** (0.02)	0.083*** (0.02)	0.083*** (0.02)	0.11*** (0.01)
Full-trial cases (caseload)	-0.016 (0.01)	-0.018 (0.01)	-0.017 (0.01)	-0.045*** (0.01)
Writ-of-payment cases (caseload)	-0.045*** (0.02)	-0.044*** (0.01)	-0.043*** (0.01)	-0.060*** (0.02)
Legal clerks		0.0018 (0.01)	0.00038 (0.01)	0.013 (0.01)
Court clerks		-0.014 (0.02)	-0.034 (0.03)	-0.041 (0.04)
Assistants		0.013 (0.01)	0.013 (0.01)	0.015** (0.01)
Income per capita			0.021 (0.02)	0.018 (0.01)
Share of private enterprises			-0.007* (0.00)	0.001 (0.00)
Firms per 10k inhabitants			0.008 (0.01)	-0.004 (0.00)
Population			-0.057 (0.05)	0.010 (0.01)
R2	0.98	0.98	0.98	
N	669	669	669	605
Arellano–Bond test (p-value)				0.39
Sargan test (p-value)				1.00

Note: For GMM model the table presents the results of Arellano-Bond serial correlation test and Sargan over-identification test. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



## 6. Conclusions

On the basis of the results, some general conclusions regarding the adjudication by civil courts of first instance in Poland can be formulated.

Firstly, the role played by judges depend on the type of cases: it is significant for full-trial and non-full-trial cases, but there is no significant or much lower impact on the number of adjudicated writ-of-payment and other cases. It can be attributed to the fact that the latter are more repetitive in nature, whereas full-trial and non-full-trial cases are more individualised and require more judges' involvement.

Secondly, certain type of auxiliary court staff members support court output. However, only court clerks increase the number of resolved full-trial cases and the number of resolved other civil cases. It appears that they can either support judges or may even 'replace' them in some routine court operations.

Thirdly, there is a synergy in resolution of certain type of civil cases. Namely, the number of other cases on the docket is associated with higher number of adjudicated full-trial and non-full trial cases. Similarly, a positive relationship was also identified for full trial and non-full trial cases that enhance the number of resolved writ-of-payment civil cases. This synergy can be explained by court specialization in dealing with certain types of cases. The latter can result from learning-by-doing process, i.e., growing judges' and court staff members' experiences and skills in resolving certain types of cases that make the judicial process more time efficient. But all other analysed civil cases are negatively associated with the number of cases being resolved in civil courts. It supports the argument that there is competition for court resources, and, in turn, the burden of other cases decided in courts contributes to their lower output. Moreover, there is also competition in resolution of some type of cases. For example, the bigger number of writ-of-payment cases on the docket decreases number of resolved full-trial cases. This may be indicative of opportunistic behaviour in some courts. If the docket is overloaded with complex full-trial or other civil cases, the court and serving judges first try to deal with relatively simple writ-of-payment cases to reach the appropriate or expected number of finalized adjudications which are visible in their performance statistics. A high number of writ-of-payment cases is, thus, negatively related to the number of full-trial judgements and other cases.

It is interesting to note that comparing the results obtained for civil and commercial courts, there are several similarities. Firstly, judges and court clerks play the most significant role in full-trial cases. This is logical given that full-trial cases require by far the most attention from the court. Secondly, the court output in resolution of commercial full trial cases is also dampened by writ-of payment caseload, hence there is a competition for court resources. In fact, we provide some evidence of an adverse impact of full trial caseload for the number of commercial writ-of-payment resolved cases and positive effects of judges' assistants. But there is also another competition for court resources as the load of other cases has a negative impact on court output either.

All in all, we observe that the civil courts located in more developed regions might deal with more complex cases which in turn has an adverse impact of their output. As the commercial courts are not present in every district court such an observation cannot be established towards them.

## Competing Interests

The authors have no financial or proprietary interests in any material discussed in this article.

## 7. References

- Achenchabe, Y., & Akaaboune, M. (2021). Determinants of Judicial Efficiency in Morocco. *Open Journal of Business and Management*, 9(5), Article 5.  
<https://doi.org/10.4236/ojbm.2021.95130>
- Agrell, P. J., Mattsson, P., & Månsson, J. (2020). Impacts on efficiency of merging the Swedish district courts. *Annals of Operations Research*, 288(2), 653–679.  
<https://doi.org/10.1007/s10479-019-03304-0>
- Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, 58(2), 277–297. <https://doi.org/10.2307/2297968>
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29–51. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D)
- Beenstock, M., & Haitovsky, Y. (2004). Does the appointment of judges increase the output of the judiciary? *International Review of Law and Economics*, 24(3), 351–369.  
<https://doi.org/10.1016/j.irl.2004.10.006>
- Bełdowski, J., Dąbroś, Ł., & Wojciechowski, W. (2020). Judges and court performance: A case study of district commercial courts in Poland. *European Journal of Law and Economics*, 50(1), 171–201. <https://doi.org/10.1007/s10657-020-09656-4>
- Castelliano, C., Grajzl, P., Guimaraes, T. A., & Alves, A. (2021). Judicial enforcement and caseload: Theory and evidence from Brazil. *European Journal of Law and Economics*, 52(1), 137–168.  
<https://doi.org/10.1007/s10657-021-09705-6>
- Castelliano, C., Grajzl, P., & Watanabe, E. (2021). How has the Covid19 pandemic impacted the courts of law? Evidence from Brazil. *International Review of Law and Economics*, 66, 105989. <https://doi.org/10.1016/j.irl.2021.105989>

- Castelliano, C., Grajzl, P., & Watanabe, E. (2023). Does electronic case-processing enhance court efficacy? New quantitative evidence. *Government Information Quarterly*, 40(4), 101861. <https://doi.org/10.1016/j.giq.2023.101861>
- Chakraborty, P. (2016). Judicial quality and regional firm performance: The case of Indian states. *Journal of Comparative Economics*, 44(4), 902–918. <https://doi.org/10.1016/j.jce.2016.07.001>
- Chemin, M. (2009a). Do judiciaries matter for development? Evidence from India. *Journal of Comparative Economics*, 37(2), 230–250. <https://doi.org/10.1016/j.jce.2009.02.001>
- Chemin, M. (2009b). The impact of the judiciary on entrepreneurship: Evaluation of Pakistan’s “Access to Justice Programme”. *Journal of Public Economics*, 93(1), 114–125. <https://doi.org/10.1016/j.jpubeco.2008.05.005>
- Christensen, R. K., & Szmer, J. (2012). Examining the efficiency of the U.S. courts of appeals: Pathologies and prescriptions. *International Review of Law and Economics*, 32(1), 30–37. <https://doi.org/10.1016/j.irle.2011.12.004>
- Deyneli, F. (2012). Analysis of relationship between efficiency of justice services and salaries of judges with two-stage DEA method. *European Journal of Law and Economics*, 34(3), 477–493. <https://doi.org/10.1007/s10657-011-9258-3>
- Deyneli, F., & Mascini, P. (2020). Utility Maximizing Judges and Judicial Assistants: Testing Rational Choice Theory in 22 EU Countries. *International Journal for Court Administration*, 11(2), 16. <https://doi.org/10.36745/ijca.361>
- Dimitrova-Grajzl, V., Grajzl, P., Slavov, A., & Zajc, K. (2016). Courts in a transition economy: Case disposition and the quantity–quality tradeoff in Bulgaria. *Economic Systems*, 40(1), 18–38. <https://doi.org/10.1016/j.ecosys.2015.09.002>
- Dimitrova-Grajzl, V., Grajzl, P., Sustersic, J., & Zajc, K. (2012). Court output, judicial staffing, and the demand for court services: Evidence from Slovenian courts of first instance. *International Review of Law and Economics*, 32(1), 19–29. <https://doi.org/10.1016/j.irle.2011.12.006>
- Dimitrova-Grajzl, V., Grajzl, P., Zajc, K., & Sustersic, J. (2012). Judicial Incentives and Performance at Lower Courts: Evidence from Slovenian Judge-Level Data. *Review of Law & Economics*, 8(1). <https://doi.org/10.1515/1555-5879.1610>

- Falavigna, G., & Ippoliti, R. (2021). Reform policy to increase the judicial efficiency in Italy: The opportunity offered by EU post-Covid funds. *Journal of Policy Modeling*, 43(5), 923–943. <https://doi.org/10.1016/j.jpolmod.2021.06.001>
- García-Posada, M., & Mora-Sanguinetti, J. S. (2015a). Does (average) size matter? Court enforcement, business demography and firm growth. *Small Business Economics*, 44(3), 639–669. <https://doi.org/10.1007/s11187-014-9615-z>
- García-Posada, M., & Mora-Sanguinetti, J. S. (2015b). Entrepreneurship and enforcement institutions: Disaggregated evidence for Spain. *European Journal of Law and Economics*, 40(1), 49–74. <https://doi.org/10.1007/s10657-014-9470-z>
- Giacomelli, S., & Menon, C. (2017). Does weak contract enforcement affect firm size? Evidence from the neighbour's court. *Journal of Economic Geography*, 17(6), 1251–1282.
- Grajzl, P., & Silwal, S. (2020). The functioning of courts in a developing economy: Evidence from Nepal. *European Journal of Law and Economics*, 49(1), 101–129. <https://doi.org/10.1007/s10657-017-9570-7>
- Heyes, A., & Saberian, S. (2019). Temperature and Decisions: Evidence from 207,000 Court Cases. *American Economic Journal: Applied Economics*, 11(2), 238–265. <https://doi.org/10.1257/app.20170223>
- Jappelli, T., Pagano, M., & Bianco, M. (2005). Courts and Banks: Effects of Judicial Enforcement on Credit Markets. *Journal of Money, Credit and Banking*, 37(2), 223–244.
- Kapopoulos, P., & Rizos, A. (2024). Judicial efficiency and economic growth: Evidence based on European Union data. *Scottish Journal of Political Economy*, 71(1), 101–131. <https://doi.org/10.1111/sjpe.12357>
- Landes, W. M., & Posner, R. A. (1979). Adjudication as a Private Good. *The Journal of Legal Studies*, 8(2), 235–284.
- Marciano, A., Melcarne, A., & Ramello, G. B. (2019). The economic importance of judicial institutions, their performance and the proper way to measure them. *Journal of Institutional Economics*, 15(1), 81–98. <https://doi.org/10.1017/S1744137418000292>
- Martín-Román, Á., Moral, A., & Rosales, V. (2023). *Judges and Court Productivity: Evidence from Spanish Labour Courts* [Preprint]. In Review. <https://doi.org/10.21203/rs.3.rs-3682947/v1>

- Melcarne, A., & Ramello, G. B. (2016). *Justice delayed, growth denied: Evidence from a comparative perspective*.
- Mishra, S. (2022). 'Cyclic syndrome' of arrears and efficiency of Indian judiciary. *SN Business & Economics*, 3(1), 6. <https://doi.org/10.1007/s43546-022-00377-1>
- Mora-Sanguinetti, J. S. (2021). *The Impact of the Efficacy of Justice on Business Investment in Spain* (Banco de España Article 3/2021). <https://papers.ssrn.com/abstract=3878029>
- Mora-Sanguinetti, J. S., Martínez-Matute, M., & García-Posada, M. (2017). Credit, crisis and contract enforcement: Evidence from the Spanish loan market. *European Journal of Law and Economics*, 44(2), 361–383. <https://doi.org/10.1007/s10657-017-9557-4>
- Palumbo, G., Giupponi, G., Nunziata, L., & Mora-Sanguinetti, J. S. (2013a). *Judicial Performance and its Determinants: A Cross-Country Perspective*. OECD.  
<https://doi.org/10.1787/5k44x00md5g8-en>
- Palumbo, G., Giupponi, G., Nunziata, L., & Mora-Sanguinetti, J. S. (2013b). *The Economics of Civil Justice: New Cross-country Data and Empirics*. OECD.  
<https://doi.org/10.1787/5k41w04ds6kf-en>
- Pappalardo, M. R., & Tortorici, G. (2023). *Internal and External Determinants of Court Performance: A Bibliometric Analysis* (SSRN Scholarly Paper 4525694).  
<https://doi.org/10.2139/ssrn.4525694>
- Schneider, M. R. (2005). Judicial Career Incentives and Court Performance: An Empirical Study of the German Labour Courts of Appeal. *European Journal of Law and Economics*, 20(2), 127–144. <https://doi.org/10.1007/s10657-005-1733-2>
- Sousa, M. D. M., & Guimaraes, T. A. (2018). Resources, innovation and performance in labor courts in Brazil. *Revista de Administração Pública*, 52(3), 486–506. <https://doi.org/10.1590/0034-761220170045>
- Staats, J. L., Bowler, S., & Hiskey, J. T. (2005). Measuring Judicial Performance in Latin America. *Latin American Politics and Society*, 47(4), 77–106. <https://doi.org/10.1111/j.1548-2456.2005.tb00329.x>

## APPENDIX

**Table A1. Summary statistics – civil courts**

<b>VARIABLE</b>	<b>N</b>	<b>MEAN</b>	<b>S.D.</b>	<b>MIN</b>	<b>Q1</b>	<b>MEDIAN</b>	<b>Q3</b>	<b>MAX</b>
<b>New full-trial cases</b>	1936	7.53	0.76	5.17	6.98	7.45	8.06	9.80
<b>Pending full-trial cases</b>	1936	6.84	0.89	4.03	6.21	6.76	7.43	9.85
<b>Adjudicated full-trial cases</b>	1936	7.51	0.75	4.83	6.98	7.43	8.04	9.59
<b>New writ-of-payment cases</b>	1936	8.00	0.88	4.33	7.39	7.89	8.60	11.75
<b>Pending writ-of-payment cases</b>	1936	5.49	1.44	0.00	4.65	5.59	6.49	9.71
<b>Adjudicated writ-of-payment cases</b>	1936	8.01	0.88	4.56	7.40	7.91	8.61	11.62
<b>New non-full-trial cases</b>	1936	7.06	0.65	5.42	6.61	7.03	7.49	9.13
<b>Pending non-full-trial cases</b>	1936	5.49	1.44	0.00	4.65	5.59	6.49	9.71
<b>Adjudicated non-full-trial cases</b>	1936	7.04	0.66	5.38	6.59	7.00	7.47	9.12
<b>New "other" cases</b>	1936	7.44	0.81	4.80	6.91	7.39	8.01	9.56
<b>Pending "other" cases</b>	1936	6.16	0.89	0.69	5.59	6.20	6.80	8.62
<b>Adjudicated "other" cases</b>	1936	7.45	0.81	4.57	6.93	7.41	8.03	9.53
<b>Judges</b>	1936	2.03	0.56	0.85	1.61	1.88	2.35	3.89
<b>Legal clerks</b>	1936	0.84	0.64	0.00	0.38	0.70	1.18	3.16
<b>Assistants</b>	1936	1.18	0.57	0.00	0.73	1.09	1.47	3.13
<b>Court clerks</b>	1936	2.52	0.62	1.23	2.06	2.35	2.91	4.40
<b>Full-trial cases in the caseload</b>	1936	7.96	0.77	5.64	7.42	7.87	8.50	10.42
<b>Writ-of-payment cases in the caseload</b>	1936	8.11	0.90	4.60	7.49	7.99	8.73	11.75
<b>Non-full-trial cases in the caseload</b>	1936	7.45	0.61	5.89	7.00	7.38	7.89	9.27
<b>"Other" cases in the caseload</b>	1936	7.71	0.79	5.06	7.17	7.68	8.28	9.75

Note: Variables are expressed in logarithms. They have been incremented by 1 before logarithmisation to avoid any issues arising from the non-existence of the logarithm from zero.

**Table A2. Summary statistics – commercial courts**

<b>VARIABLE</b>	<b>N</b>	<b>MEAN</b>	<b>S.D.</b>	<b>MIN</b>	<b>Q1</b>	<b>MEDIAN</b>	<b>Q3</b>	<b>MAX</b>
<b>New full-trial cases</b>	426	7.45	0.81	5.67	6.88	7.37	7.97	10.28
<b>Pending full-trial cases</b>	426	6.85	1.03	4.72	6.17	6.74	7.52	10.33
<b>Adjudicated full-trial cases</b>	426	7.41	0.81	5.7	6.85	7.31	7.92	10.14
<b>New writ-of-payment cases</b>	426	8.19	0.83	6.53	7.53	8.19	8.69	11.09
<b>Pending writ-of-payment cases</b>	426	5.86	1.23	2.48	4.94	5.86	6.64	9.34
<b>Adjudicated writ-of-payment cases</b>	426	8.2	0.84	6.51	7.56	8.16	8.7	11.07
<b>New "other" cases</b>	426	5.83	1.05	0.69	5.26	5.75	6.46	9.2
<b>Pending "other" cases</b>	426	4.03	1.1	0	3.33	4.01	4.65	7.38
<b>Adjudicated "other" cases</b>	426	5.83	1.05	0.69	5.27	5.77	6.47	9.17
<b>Judges</b>	426	1.87	0.62	0.62	1.44	1.79	2.27	4.12
<b>Legal clerks</b>	426	0.75	0.61	0	0.34	0.64	1.05	3.1
<b>Assistants</b>	426	1.08	0.66	0	0.65	0.95	1.43	3.62
<b>Court clerks</b>	426	2.35	0.65	1.23	1.87	2.24	2.73	4.86
<b>Full-trial cases in the caseload</b>	426	7.91	0.87	6.06	7.3	7.81	8.43	10.93
<b>Writ-of-payment cases in the caseload</b>	426	8.3	0.86	6.62	7.64	8.28	8.79	11.23
<b>"Other" cases in the caseload</b>	426	5.99	1.05	0.69	5.4	5.92	6.63	9.25

Note: Variables are expressed in logarithms. They have been incremented by 1 before logarithmisation to avoid any issues arising from the non-existence of the logarithm from zero.