

# Master in Law and Economics of the Arab Region

Thesis submitted by  
Ahmed Essam

in

Judicial Reform and Efficiency:  
Which Reform Element Yields Higher Judicial  
Efficiency?

Supervised by  
Dr. Sarah Mansour  
Prof. Stefan Voigt

رسالة مقدمة للحصول على درجة الماجستير في القانون من

الطالب/ احمد عصام

في موضوع

الإصلاح القضائي والكفاءة:

ما هو عنصر الإصلاح الذي يؤدي إلى كفاءة قضائية أعلى؟

تحت إشراف

الدكتور/ ساره منصور

الاستاذ الدكتور/ ستيفان فويت

## **AUTHORSHIP DECLARATION**

I declare that I have authored this thesis independently, that I have not used other than the declared sources/resources, and that I have explicitly marked all material which has been quoted either literally or by content from the used sources. I acknowledge the supervision and guidance I have received from Prof Sarah Mansour and Prof Stefan Voigt. This thesis is not used as part of any other examination and has not yet been published. The submitted written version corresponds to the version submitted via email and on an electronic storage medium.

**Ahmed Essam**

*May 2022*

**Abstract:**

This paper examines the effect of judicial reforms, introduced in 2018 by 23 European countries, on judicial efficiency. Specifically, it seeks to examine which judicial reform is more conducive to judicial efficiency. It uses a quantitative analysis; an OLS regression with a cross-sectional sample of 23 countries, with judicial efficiency being measured by the clearance rate. The following are the main findings of the paper. The reform element most conducive to judicial efficiency is “case management system”; has a positive and statistically significant impact on clearance rate. Case management system can be defined as technologies used for court management and administration, namely a software for registering and managing judicial proceedings. Moreover, two other reform elements were also found to have a positive and statistically significant (at a 5% significance level) impact on judicial efficiency, namely “increasing the ratio of judges to incoming cases” and “the annual budget approved for the entire justice system, prosecution, and legal aid”. Reform in the form of the court “size”, however, was found to have a negative effect on our clearance rate.

## Table of Contents

<b>1. Introduction.....</b>	<b>2</b>
<b>2. Literature review .....</b>	<b>4</b>
<b>2.1 Judicial Reforms.....</b>	<b>4</b>
<b>2.1.1 The 2018 Planned judicial reforms for European countries.....</b>	<b>6</b>
<b>2.2 Court efficiency and transaction costs.....</b>	<b>7</b>
<b>2.3 Factors that relate to supply factor.....</b>	<b>8</b>
<b>2.4 Measures aiming at the individual behavior.....</b>	<b>8</b>
<b>2.4.1 Training for judges.....</b>	<b>8</b>
<b>2.4.2 Increasing salaries for judges.....</b>	<b>9</b>
<b>2.5 Measures aiming at the organization of the courts .....</b>	<b>9</b>
<b>2.5.1 Number of judges .....</b>	<b>9</b>
<b>2.5.2 The availability of technology .....</b>	<b>10</b>
<b>2.5.3 Case management systems .....</b>	<b>11</b>
<b>2.5.4 Introduction of judicial councils .....</b>	<b>12</b>
<b>2.5.5 Alternative dispute resolutions .....</b>	<b>12</b>
<b>2.5.6 Increasing judicial resources and efficiency .....</b>	<b>12</b>
<b>2.6 Measures aiming at procedural law .....</b>	<b>13</b>
<b>2.7 Measure aiming at substantive law .....</b>	<b>13</b>
<b>3. Theoretical framework and derivation of hypotheses .....</b>	<b>14</b>
<b>4. Methodology and Data .....</b>	<b>18</b>
<b>5. Estimation and Findings .....</b>	<b>22</b>
<b>6. Conclusion.....</b>	<b>24</b>
<b>References.....</b>	<b>26</b>

## **1. Introduction**

“Justice delayed is justice denied” as stated by William E. Gladstone. This is an established principle in law which means that the parties have the right to settle their dispute in a speedy manner otherwise it could lead to great injustice ending people losing faith in the justice system as a whole.

One of the main factors behind the success of any development initiatives by any country is the efficiency of its judicial system, being the institution in charge of the protection of many rights. An efficient judiciary settles matters in a fair amount of time and is open to the public. This paper focuses on analyzing the impact of judicial reforms on judicial efficiency, using the European Commission's data for "The Efficiency of Justice in the Council of Europe (CEPEJ)".

Judicial efficiency means that the judicial system should be affordable and accessible while rendering judgments fairly and speedily. Affordability and accessibility go hand in hand because in order to have an accessible judicial system it has to be affordable for people to afford its cost. On the other hand, adjudication must be done in a speedy manner to ensure the public's interest in the speedy resolution of cases, as well as making the best use of available resources.

A successful, accessible justice system should offer litigants with justice and fairness at a reasonable cost and time, as well as much certainty as possible (Dakolias, 1999). The legal system's output is difficult to measure, comparative comparison across nations is a useful tool for evaluating the effectiveness of judicial reform and examining the impact of various reforms on judicial efficiency. That's why we used the clearance rate to measure courts' performance as our objective indicator to test judicial efficiency. However, addressing the quality of the judiciary could be left for further studies.

Efficient court systems are critical to market economies, contracts that can be implemented with a high level of predictability will incentivize stakeholders to invest resources (Voigt & El-Bialy, 2016). When courts are overburdened and unable to deliver a judgment in a timely fashion this makes litigants lose faith in the judicial system. Accordingly, people will be less incentivized to invest in a commercial relationship to avoid disputes. Accordingly, when citizens find it difficult to have an efficient judgmental rule on their issue in a speedy, easier, less

time-consuming, and convenient manner this could, in turn, affect their life in many aspects related to income, unemployment, etc. Besides citizens, it also had a huge negative impact on the economy as it may lead to diminishing GDP because unresolved disputes could lead to social and legal costs. Foreign direct investment will not be attracted enough to invest in a country that did not have a reliable, and efficient judicial system able to protect their rights and investment in the country. The inability of judicial system to resolve cases efficiently (fast judgments, easier procedural to initiate and settle a case) could harm the economy and trap a country into poverty.

When courts are congested with a high number of cases and cannot decide in a timely fashion manner this will increase the transaction costs burden on the litigants and makes them lose faith in the judicial system as a whole, as well as decrease the predictability and the economic welfare for a country on similar conditions. Hence judicial efficiency is crucial for economic development.

In this paper, we seek to examine the effect of judicial reforms on judicial efficiency. Examples of the judicial reforms we seek to examine are the following: the case management system, allocation of budget to the judicial system, etc. we measured judicial efficiency by the clearance rate( it is defined as the number of cases settled in a period (year) divided by the number of new cases filed in that time (year), we use this indicator to construct our dependent variable to account for judicial efficiency and thus check whether these reforms have any positive or negative impact on this variable.

Based on the above, this paper hypothesizes that an efficient judicial system, which ensures accountability, speediness, transparency, etc., would incentivize people to abide by their commitment and not to default on their obligations. On the other hand, if we have an inefficient judicial system, this will induce parties to refrain to perform their obligation which will affect the market economy in a severely negative way as it will bring distortion to the market and will induce people to refrain from entering into a private commercial relationship, as a result, it will negatively affect the economy and could trap it into a state of recession which will damage the welfare of the citizens.

In order to be able to examine the above hypothesis, this paper employs a quantitative analysis. Specifically, an OLS regression with a cross-sectional sample

of 23 countries, to test the effect of the judicial reforms, that were introduced in 2018 by 23 Countries of the European Union, on judicial efficiency.

This paper is structured as follows. Section two represents the literature review. Section three presents theoretical framework and derives the hypothesis of the paper. Section four presents the data description, model, and methodology. Section five presents the results and estimation of the model. Section six concludes.

## **2. Literature review**

The court is extremely important institution. Its primary function is to reassure members of society that an independent party exists that will resolve their dispute in a predictable manner based on well-known principles and standards. As defined by Landes & Posner, (1979), “the court's Judgment resolves the parties' dispute, turning it into a private good for the plaintiff and defendant”. Notwithstanding, the judgment upholds a precedent by issuing judgments that may be valuable to the member of the society who is confronted with a case similar to the one resolved by the court, creating a public good. As a result, efficient courts are beneficial for the entire community.

In this section, we will be discussing the following dimensions of the judicial system: judicial reforms, factors that relate to the supply factor, measures aiming at the individual behavior, measures aiming at the organization of the courts, measures aiming at procedural law, and measures aiming at substantive law.

### **2.1 Judicial Reforms**

There are several views about judicial reform. Some scholars attribute the problem of judicial inefficiency to funding and devoting more resources to the judicial system (Cross & Donelson, 2010) and (Botero et al., 2003). Others may find that efficiency is increased by devoting more training to judges and introducing technology to the judicial system (Voigt & El-Bialy,2016), and (Palumbo et al. 2013). A third strand believes that the problem of judicial inefficiency lies in complicated procedures (Djankov et al. 2003), and (Voigt, 2016). However, relying on incentives only will not increase judicial efficiency but an accountability system and flexible procedures may do decrease the judicial stagnation. Efficiency means a

judicial decision is taken within a reasonable time and in a predictable manner.

Improving the judicial efficiency will have a positive impact on the economy. This is due to the fact that it will attract more foreign direct investment to a country and will incentivize people to enter into more transactions which will support the economic growth. Foreign direct investment is positively correlated with higher judicial efficiency (Bénassy- Quéré et al., 2007).

One aspect that had been proclaimed is related to technical efficiency by optimizing the use of scarce resources hence, judicial efficiency will be increased and court delay will be reduced (Voigt, 2016). Technical efficiency means to produce maximum output with minimum inputs, this can be illustrated by the use of case management systems and technology as a means to increase output and minimize input while saving time.

Ardagna & Lusardi, (2008) find a positive correlation between judicial efficiency and entrepreneurship. This is expressed by the idea that when judiciary became efficient and settle cases in a timely fashion manner entrepreneurs became more attractive to enter in the industry as they know that judiciary will handle their dispute in case of any conflict in an efficient manner. When judicial efficiency improved, the rate of new firm entry increased by half (Chemin, M. 2009).

Chemin, M. (2020) has proven that only comprehensive reforms that entail the three pillars of reforms (speed, quality, access) are a matter of judicial efficiency while caring for one aspect had no significant effect on the judicial system's efficiency, i.e. caring for one aspect of reform like access while neglecting the other pillars of quality and speed could have no effect on judicial efficiency because improving access to a slow and inefficient judiciary is no panacea.

Therefore, judicial efficiency must be done comprehensively by dealing with all efficiency aspects of speed and quality, and access to have the desired effect of these reforms. At the international level for the sake of economic integration across countries, countries should change laws to conform to international standards. It is also well noted that for an international organization to grant aid to any country they require them have to fulfill some requirements regarding adopting new laws and regulations or changing the current ones.



Introduction of mediation as a way to reduce demand on the judiciary has been proposed to increase efficiency in the judicial system. Improvement of electronic justice and management of court has been on agenda for many states to increase efficiency.

It is important to take into consideration the country's local values, traditions, and needs of the developing country when transplanting a complex legal system from a developed country, because a developed country may have the resources to run this complex system while a developing country just copying that complex legal system may lack the adequate tools and resources able to run this system in a good manner (Botero et al, 2003). Posner (1998) wealthy countries guarantee an atmosphere where legal rights are protected and enforced.

Also, the likelihood of being captured and convicted, would determine the level of crime in a community. Accordingly, a rational criminal weighs the benefits and costs of the criminal act. Since the expected penalty is proportional to the likelihood of being caught and punished, an effective judiciary should deter crime, lower crime levels, and promote social welfare (Becker, 1968).

### **2.1.1 The 2018 planned judicial reforms for European Countries**

The 2018 reform can be divided into those that affect quality, speed, or access. A total of 23 European countries have tackled reforms regarding extensive full reforms, resources, court and public prosecutorial systems, access to the courts and legal support, judicial councils, civil, criminal, and administrative law reforms, court decision enforcement, mediation, and other ADR, and so on.

While some countries implemented most of these reforms others have implemented fewer reforms. On the other hand, some states have not implemented any reform at all. Moreover, some countries initiated reforms tackled a comprehensive reform plan concerning a bundle of reforms for example; IT improvements like electronic judicial filing, quality management for judicial offices, implementation of the new judicial office, and good function of the judicial system. Other states have tackled reforms regarding the supply side, for example, increasing the judicial budget or improving courts and prosecutorial services. So far other states tackled the substantive law by doing improvements to civil, criminal, and administrative legislation by reducing

formal requirements to enhance speed of the procedures. As much as other reforms have been devoted to the demand side for example, they introduce mediation, alternative dispute resolution mechanisms, and technological systems to file a case electronically. While some countries managed to perform most of these reforms others have performed only part of them. Time will be saved and transaction costs will be reduced if we manage to exploit our resources efficiently.

The majority of the problem appears to be caused by a lack of incentives and complicated procedures, However, although incentive-based reforms can be beneficial, they will not be sufficient to end chronic judicial inefficiency. Procedures must be flexible and more simplified in most cases of judicial stagnation (Botero et al, 2003). Posner, (1998) argued that a developing country may not be able to incur the costs of a perfect legal system, but without such a perfect system, it may never be able to incur the cost of such a system.

## **2.2 Court efficiency and transaction costs**

The inefficient judiciary will raise the transaction costs for entering into contracts which will be detrimental to investment climate and the labor market. Moreover, weak enforcement of contracts leads to abusive behavior of the contracting parties and strategic behavior which could trigger people not to enter into transactions from the beginning. Thus, an inefficient judicial system increases transaction and risk costs, despite the rationale behind any legal or judicial system is to reduce uncertainty and this cost as much as possible conducive to economic development. As stated by Coase, R. H. (1960), Transaction costs are a major hindrance to an efficient market. One of them is the cost of enforcement; contract efficiency depends on contract enforcement. This activity, however, is not free. Forcing a contractor to abide by his agreement entailed the interference of the judiciary. As a result, the higher the cost of a lawsuit the higher the transaction costs. If contracts are costly to enforce because cases can take years or decades to settle, stakeholders may refrain from making investments or engaging in potentially profitable transactions (Williamson, 1979).

**Reforms can be mainly divided into two that affected the supply and that affected the demand:**

In broad analyses of court performance, courts are typically viewed as

production units that use available inputs to produce a specific output. Efforts have been made to explicitly specify possible input and output variables in order to quantitatively quantify court output or efficiency. In economics, the production function expresses the relationship between the number of productive inputs (such as labor and capital) used and the amount of output obtained. It can also be used to determine the most cost-effective combination of productive components for a given output. First of all, we need to indicate the variables that affect the judicial efficiency some of them related to the supply factor and others related to the demand factor:

### **2.3 Factors that relate to supply factor**

We believe that the behavior of judges is influenced by two major factors: the incentives that influence judges' behavior, as well as the organizational structure in which they operate (Voigt & El-Bialy,2016). Courts can be viewed as a production function, as they simply express the relationship between output and input. In order to have judicial decisions (output), a number of inputs are required to have these decisions, like the employment of judges, courts, and technological systems. (Rosales-López, 2008).

### **2.4 Measures aiming at the individual behavior**

The judges are one of the most significant components of the justice system. They have a positive or negative impact on economic activities based on the decisions they make. As a result, judge performance is critical since it has a direct impact on court efficiency (Deyneli, 2012).

#### **2.4.1 Training for judges**

Chemin, M. (2009) analyzed judicial reforms implemented in Pakistan and he found that providing training and education to judges positively increased their efficiency and had a positive impact on entrepreneurship also. Voigt and N. El-Bialy (2016) found that while high court budgets and judicial councils are negatively correlated with judicial efficiency, mandatory training for judges is positively correlated with judicial efficiency.

## **2.4.2 Increasing salaries for judges**

One could think of the theory of incentive to work here as providing a bonus for judges for a standout performance could be a motivation for judges to perform better. However, gaming behavior could lead to increasing the output, but ultimately with a low-quality decision. Judges may have given easy cases priority to increase the number of cases settled, leaving the more challenging cases for future judges to decide.

Botero et al., (2003) discovered that judicial inefficiency can be attributed to insufficient incentives. However, incentives alone will not address long-term judicial inefficiencies. Appropriate pay may help qualified candidates gain access to the legal system. Relatively high salary levels may also serve as a deterrent to corruption (Dakolias, 1999). Fauvrelle & Almeida, (2018) has observed that highly compensated judges are more efficient. It also indicates that the higher the wage, the better the employees.

On the other hand, Voigt and El.bialy (2016) have demonstrated that positive incentives such as the introduction of benefits and bonuses would have no effect on court delay.

## **2.5 Measures aiming at the organization of the courts**

Since judicial resolution rates are not linked to the high average income of a country, poorer countries can reduce their backlog and improve their judicial performance, which is both good news and responsibility for the poorer country to reduce backlogs and improve their judicial performance (Voigt & El-Bialy, 2016).

According to the data, effective managers' ability to manage the internal structure of courts, including the distribution of material resources and staff motivation, appears to be critical (Yeung & Azevedo, 2011).

### **2.5.1 Number of judges**

Voigt (2016) has shown that an increasing number of judges would not affect reducing cases delay. Dimitrova-Grajzl et al. (2012, 2015) demonstrate that the number of judges has no effect on judicial efficiency.

The fact that there are fewer judges per capita is evident. This is happening as the number of cases filed is increasing, which may lead to an increase in congestion and case backlog as more demands are placed on judges. It is worth noting, however, that a well-organized court will not be affected by either increasing the quantity of cases or decreasing the number of judges.

According to Priest, the number of cases resolved should be used to assess the success of reforms. As he claims that the number of judges is proportional to delay, the equilibrium level could shift if the number of judges is increased (Priest, 1989).

### **2.5.2 The availability of technology**

Palumbo et al. (2013) have demonstrated that courts allocated a bigger percentage of their budget to information and communication technology have a shorter trial length. The introduction of computer and organizing systems to the judiciary may help in reducing cases backlog, but most importantly it increases efficiency because it has the advantage of increasing accountability for judges as it makes transparency in the whole process as much as reducing corruption so judges have an incentive to save their reputation by delivering high-quality output.

Computerized case systems are more precise and user-friendly than manual and bureaucratic procedures since they are more difficult to manipulate as they raise judges' responsibility (Hendrix, 2000). However, there are several ways to govern judges, but not all of them promote efficiency. Individual calendars and case management appear to be the most effective (Botero et al., 2003). One clear solution for enhancing the judicial system is the introduction of digitalization on the judicial system.

Investments in court digitalization or electronic justice leads to higher productivity of judges, for example, allowing lawyers to follow-up their cases online, and introducing a case management system facilitating cases review. Improvements in case management, as well as the increase availability of computer technology for use in the judicial system, are all highly and positively related to the times-to-disposition found in commercial litigation in Argentina and Venezuela (Buscaglia & Ulen, 1997).

In Europe, information and communication technologies are employed for a variety of objectives. Judges and office personnel use computers to conduct their business. Information and communication technology have begun to directly help judges, in addition to conventional office routines. The written law is accessible to judges via the internet. Electronic mail is used in almost every country. Technologies can be utilized to efficiently register and manage cases. One of the most important components in minimizing the time required to adjudicate a case is the use of information technology (Deyneli, 2012).

Computer systems appear to be beneficial because they promote responsibility. As a result, judges will have a lower chance of "losing" case files and extracting bribes from litigants (Botero et al., 2003).

### **2.5.3 Case management systems**

Case management software is widely used in trial courts throughout the United States. An essential element of a court's overall performance in terms of public service is effective case flow management. One of the criteria used to assess an individual trial judge's success is his or her ability to render just decisions in a timely and fair manner (Steelman, D. C. 1997).

Standard administrative procedures, improvements in case management, and widespread availability of computer technology for case management are all variables that are highly and significantly associated with the times-to-disposition observed in commercial litigation in Argentina and Venezuela (Buscaglia & Ulen, 1997).

The government of Spain developed a unit called Common Procedural Services (CPS) that serves many courts with registering, delivering, and enforcing judicial orders. Remarkably, it saves resources by preventing work duplication. The introduction of the CPS unit is regarded as one of the most significant improvements in the country's judicial system (Rosales-López, 2008).

The introduction of individual calendars could also lead to an increase in individual productivity without any formal sanctions.

#### **2.5.4 Introduction of judicial councils**

Judicial council is the institution that is in charge of the judicial affairs of the judiciary, its main functions are appointment, termination, payment, promotions, and discipline of judges. It is established by states to create a balance between independence and accountability. While some states run judicial councils solely by judges, other countries' judicial councils are made up of executives and judges, while others are solely managed by the executive.

Garoupa & Ginsburg, (2009) does not support that councils foster overall quality or independence. They emphasize the complex nature of judicial council work. As a consequence, they reject international organizations' position that judges therefore should constitute the majority of council members. Moreover, Voigt & El-Bialy, (2016) acknowledged that the presence of judicial councils is inversely correlated with the resolution rate. As a result, governments should be discouraged from creating judicial councils.

#### **2.5.5 Alternative dispute resolutions**

Providing an alternative to traditional dispute settlement may help in decreasing demand on the courts. Alternative conflict resolution is generally beneficial, especially because it promotes competition and choice. Arbitration and conciliation are important components of many successful small claims and specialty courts. It also could reduce the demand for the formal judiciary positively impacting judicial efficiency.

#### **2.5.6 Increasing judicial resources and efficiency**

Increasing resources in the judicial system, Gillespie, (1976) has shown that the effect of court size on-court efficiency is not inclusive concerning increasing and decreasing return to scales. Yeung & Azevedo, (2011) found that low levels of efficiency in Brazilian courts cannot be entirely attributed to a lack of material resources. Moreover, he contemplates reducing the use of different inputs. Voigt & El-Bialy, (2016) concluded that a large budget for the court will negatively affect judicial efficiency.

Others have the view that the most acclaimed judicial reform is the establishment or expansion of small claims courts, as it minimizes the time of case adjudication and increases access to the judiciary (Botero et al., 2003).

Higher judicial pay and increasing the number of judges tend to have a positive effect on judicial efficiency, but larger courts appear to have a negative effect on judicial efficiency (Cross & Donelson, 2010).

## **2.6 Measures aiming at procedural law**

Incentives affect economic agents, and procedural law is considered to be one of the incentives elements as it could affect people's decisions to submit their disputes to the judiciary if procedures are simplified and predictable. Djankov et al. (2003) concluded that, compared to common law countries, procedural formality in civil law countries is greater and has a negative impact on judicial efficiency.

Inadequate enforcement due to court delays and excess formalism was cited as one of the major causes of judicial inefficiency in India; therefore, in order to increase the judicial process's efficiency, legislation that leads to rapid enforcement and lowers the cost of legal services must be supported (Rathinam, 2011).

The Lex Mundi study revealed that procedural formality is highly associated with judicial inefficiency. Using a sample of 109 nations; thus in places where judicial stagnation is a persistent issue, simplifying procedural requirements appear to have a positive effect on judicial efficiency, thereby boosting justice (Botero et al, 2003).

Complicated procedures reduce transparency and accountability, providing corrupt officials with more opportunities to extort money in exchange for case advancement (Buscaglia, 1999).

Moreover, Voigt & El-Bialy, (2016) concluded that complicated and higher procedural formalities are associated with lengthier court delays and lower resolution rates. Palumbo et al. (2013) showed that complex procedures are associated with a delay in case disposition as it increases transaction costs.

It is worth noting that minimizing procedural requirements should be dealt with in a cautious way because minimizing these procedures could risk people's basic rights. Accordingly, it should be weighted with the cost-benefit analysis assumption.

## **2.7 Measures aiming at substantive law**

Voigt & El-Bialy, (2016) Countries with a French legal tradition have lower resolution rates and higher procedural formalism, which is a strong determinant of

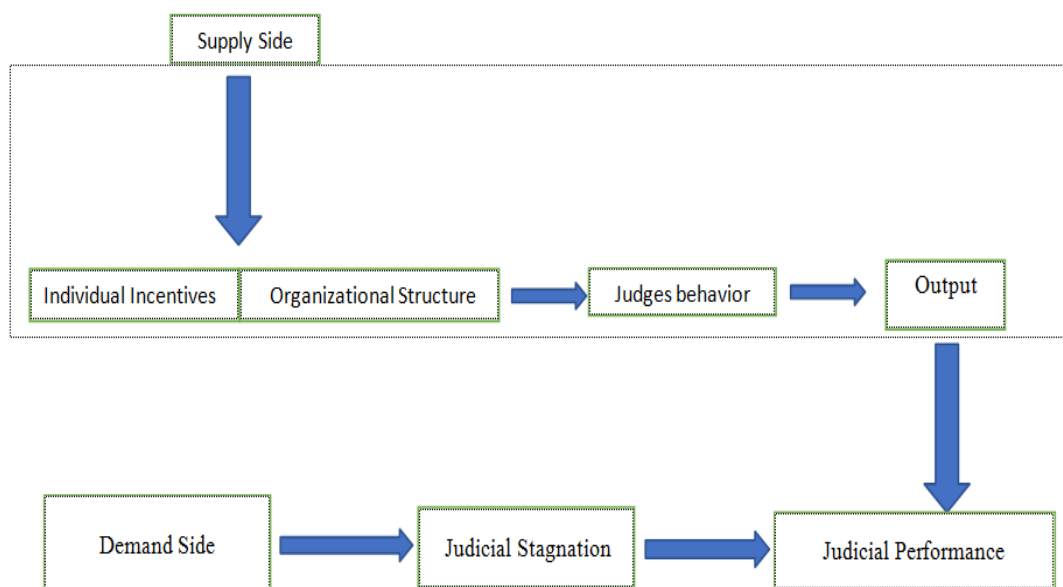


longer conflict resolution time.

In SIMEON DJANKOV, (2003) data, there is no evidence that formalism ensures fairness. Moreover, increased formalism is also associated with decreased contract enforceability, increased corruption, and decreased system honesty, consistency, and fairness. Procedural rigidity seems to be correlated with legal origins (La Porta et al.,2003), civil law countries seem to have more rigid procedures than common law countries.

### 3. Theoretical framework and derivation of hypotheses

Judicial performance has been theorized to be influenced by both supply and demand factors (see figure 1). The supply side is mainly influenced by judges' behavior. This behavior is in turn influenced by both individual incentives and organizational structures, such as remuneration, reputation, income, the use of technology in the judicial system, the number of courts, the existence of specialized courts, and so on. As for the demand side, it might affect judicial performance negatively, by causing a judicial backlog or stagnation, if the supply side is unable to meet the high demand. In this section, a thorough examination of both demand and supply considerations will be discussed. However, it should be noted that this paper focuses on the supply side as it is where reforms can be applied and tested.



**Figure 1: Illustration of the theoretical framework**

Palumbo et al., (2013) have shown that in order to have an efficient judiciary, priorities should be given to policies that meet the demand for justice, such as investing in computerization, technology, and case management systems. Low court fees have been deemed to be a source of inefficiency due to the increased inflow of cases and the appeal rate. In Italy, the topic of court expenses is currently being re-examined (Gianluca Esposito, Mr. Sergi Lanau, and Sebastiaan Pompe, 2014).

Another factor that affects the demand side is related to the speed of court resolutions. Voigt (2016) has shown that the higher the number of resolved cases, the higher the number of newly filed cases to courts. This could be related to the supply and demand function, as people tend to go to court when they realize the speed with which court resolutions can be obtained.

Restricting access to judicial services in order to reduce demand is not a successful reform to increase efficiency. It may have a number of negative social consequences because it may violate people's fundamental right to enjoy an accessible judiciary. Furthermore, when it comes to successful judicial reform, access and performance complement one another, because justice may become a privilege reserved only for the wealthy (Botero et al., 2003).

Moreover, demand may be driven by individuals with a higher level of education. Indeed, government should ensure individuals' economic and social rights in order to have a realistic opportunity to enforce rights through litigation. However, GDP growth alone will not ensure that all people have a realistic opportunity to assert their rights (Eisenberg et al., 2012).

Despite the increased efficiency of most courts in different legal systems, however, these increases have not been sufficient to meet the rising demand. As a result, the judicial system should take a proactive approach by forecasting the demand for court services (Buscaglia & Ulen, 1997). Court congestion has an equilibrium level, when delays are reduced, additional cases are filed in courts, causing backlogs to return to this equilibrium level back (Priest, 1989).

One could think of a possible trade-off between efficiency and quality. Economists, on one hand, think efficiency means that judges maximize output by

minimizing costs i.e to produce the maximum output with minimum resources. However, others think of efficiency to have a cost that is to jeopardize the quality of decisions made to dispose of the cases in a fairly speedy manner. This is however not true because efficiency and quality are coherent. A court cannot be deemed a high-quality service provider if it claims "quality" in its judgments but takes a long time to issue them (Landes and Posner,1979). Murrell (2001) concluded that commercial court congestion in transition countries could be a result of the recession that the country is experiencing, as regions with better economic performance have a lower need for court services.

Finocchiaro Castro & Guccio, (2014) As one of the demand-side factors, it was concluded that a high number of lawyers and lower costs of the judiciary services may have a negative effect on judicial efficiency. He contended that because lawyers are paid based on the number of hours they work, they are incentivized to delay case disposition, which has a negative impact on judicial efficiency.

It is worth mentioning that the effect of reforms on judicial efficiency might differ in the short versus long term. In the short term, judicial reforms that improve efficiency might have positive effects; judges who are similarly productive will conclude cases more rapidly if filings are reduced exogenously. However, as service quality rises, so does the demand for justice in the long run. As a result, if delay decreases, filing may increase, Also, similarly, if the delay in case disposition increases, the filling may decrease. This might be connected to the supply and demand mechanism, which indicates that increasing the supply side (the number of judges) while lowering the demand side (the number of incoming cases) could result in a surplus or equilibrium in terms of the clearing rate. Buscaglia and Ulen (1997) and Murell (2001) show that an increase in caseload curbs court output as it leads to a congestion effect.

**Based on the above, our first hypothesis reads as follows:**

*H1: An increase in the number of judges per incoming case will lead to higher judicial efficiency in the short term.*

There appears to be some evidence that court efficiency is also linked to court management performance. To put it another way, efficient courts are those

that are well-managed (Yeung & Azevedo, 2011). It appears that introducing a case management system into the judicial system may have a positive effect on judicial efficiency. This could be justified by the fact that it increases transparency and accountability throughout the system, it also makes it easier for judges to manage and review cases in a short period of time, saving time and effort for checking a particular case, and it also saves resources and inputs by reducing the need for labor forces.

**In view of the foregoing, our second hypothesis reads as follows:**

*H2: An introduction of a case management system in the judiciary will lead to higher judicial efficiency.*

The judicial budget, if managed effectively, can also improve independence and impartiality and trustworthiness in the judicial system (McEldowney, 2001). The services provided by the courts in Latin America are inadequate. According to the majority of analysts, the delays are due to a lack of resources. Indeed, many Latin American countries, for example, underfund the judiciary, making it unable to meet even the most basic needs in order to ensure public access to justice. Buscaglia & Ulen, (1997) and Fauvrelle & Almeida, (2018) concluded that salaries have a positive effect on judicial efficiency.

**Based on the above, our third hypothesis reads as follows:**

*H3: An increase in the budget will lead to higher judicial efficiency.*

Peyrache & Zago, (2015) have shown that the larger the size of a court the higher the inefficiency in the judicial system. It might be justified by the fact that a smaller court makes it simpler to supervise and monitor the work of the judges, increasing their accountability and productivity. Voigt & El-Bialy (2016) have reached the same conclusions on large court size inefficiencies.

**Accordingly, our fourth hypothesis reads as follows:**

*H4: An increase in the size of the court will lead to higher judicial inefficiency.*

As a result, a country that manages to perform these reforms is predicted to have higher judicial efficiency.

#### 4. Methodology and Data

This paper uses a quantitative analysis to examine the effect of judicial reforms on judicial efficiency. Specifically, the empirical approach used in this paper is based on an OLS regression model with robust standard errors for cross-sectional data for 23 countries of the European Union.<sup>1</sup>

We estimated an OLS regression with robust standard errors model<sup>2</sup> to carry out the analysis. However, due to our limited sample size, fewer independent variables were utilized.

The estimated equation is:

$$\Delta Y_i = \beta_0 + \beta_1 S_i + \beta_2 N_i + \beta_3 C_i + \beta_4 B_i + \varepsilon_i$$

Where each variable stands for the following:

$\Delta Y_i$ : Percentage Change of Clearance Rate, and represents our dependent variable

$S_i$ : Size of first-instance courts,

$N_i$ : Number of Judges/Number of Incoming cases,

$C_i$ : Case Management System,

$B_i$  : Annual Budget to the whole Justice System,

$\varepsilon_i$ : error term.

We now move to the definition and measurement of each of the above variables.

The dependent variable in our study is judicial efficiency. However, since judicial efficiency is a difficult notion to quantify, we rely on proxies to measure judicial performance. The proxy chosen in this model is court output. CEPEJ has used a number of indicators to account for the performance of courts, one of which is the clearance rate.

---

<sup>1</sup> The model used in this paper was supposed to be run on data from 52 countries. However, due to the limited amount and unavailability of data regarding our dependent variable; the percentage change of clearance rate provided by the European Commission For The Efficiency Of Justice (CEPEJ), we run our robust regression on 23 countries only.

<sup>2</sup> The software package used in the estimation of our model is STATA.

- **Clearance Rate (%) can be defined by the following ratio:**

$$= \frac{\text{Resolved cases over a period of time}}{\text{Incoming cases over a period of time}} \times 100$$

Clearance Rate is defined as the number of cases settled in a period (year) divided by the number of new cases filed in that time (year). We use this indicator to construct our dependent variable to account for judicial efficiency/performance for the 23 countries of the European Union. Since our main independent variable “Reforms” was introduced in the year 2018, we are interested in measuring the difference between the clearance rate before and after reforms. Accordingly, we construct a variable called “Percentage Change of Clearance Rate ( $\Delta Y_i$ )” as our dependent variable.

Our dependent variable “Percentage change of clearance rate ( $\Delta Y_i$ )” is calculated as follows:<sup>3</sup>

$$= \frac{\text{clearance rate of the year 2019} - \text{clearance rate of the year 2018}}{\text{clearance rate of the year 2018}} \times 100$$

Data for the clearance rate were collected from (CEPEJ) of the Council of Europe for all of the first instance “other than criminal” cases<sup>4</sup> in 2018 and 2019.

We now move to our main independent variable of interest “*Reforms*”, where we seek to test its significance on the dependent variable (percentage change of clearance rate). Judicial reforms were introduced by the 23 countries of the European Union in the year 2018, as provided by the data set offered by CEPEJ. These reforms cover the following different dimensions: comprehensive reform plans, budget, court and public prosecution services, legal professionals, reform regarding laws, access to justice and legal aid, enforcement of court decisions, mediation and other ADR, high judicial council, new information and communication technologies, child-friendly justice, etc. Since judicial reforms are

---

<sup>3</sup> We calculate the clearance rate as a percentage change between two values of 2019 and 2018 to calculate the difference between the two values in a time series, and divide the difference by the starting value and multiply by 100. to turn it to a percentage. The final result will be the percentage difference between the two numbers.

<sup>4</sup> “Other than criminal cases” refer to the CEPEJ’s following categories: civil and commercial litigious cases, civil and (commercial) non-litigious cases, non-litigious and land registry cases, non-litigious business registry cases, other non-litigious registry cases, other non-litigious cases, administrative law cases, and other cases.

difficult to quantify, we rely on proxies to measure them. The proxies used in this model, and which are considered our main independent variables are the following: the size of the first instance courts, the number of judges relative to the number of incoming cases, the availability of a case management system, and the amount of budget devoted to the judicial system. We construct these variables to measure the effects of the judicial reforms, introduced by 23 European Union countries, on judicial efficiency. Data on these proxies were collected from CEPEJ.

We now start with the “Size,  $S_i$ ”. We construct this variable to represent the size of first-instance courts on average, where the “i” subscribed to the Size variable, stands for countries since this is a cross-sectional regression. We divide the total number of professional judges by the number of the sum of general jurisdiction and specialized courts of first instance courts in 2019 similar to the one used in Voigt & El-Bialy (2016). Data were obtained from the latest study provided by CEPEJ of the Council of Europe.

We then move to “Number of Judges/Number of Incoming cases,  $N_i$ ”. We construct this variable to account for the ratio of judges relative to the number of cases, where the “i” subscribed to this variable, stands for countries. The number of judges, in the data offered by (CEPEJ), represents the total number of professional judges at first instance courts in 2019, while the number of incoming cases represents the total number of incoming cases for first instance courts for a number of other than criminal law cases in 2019. We divided the number of judges by the number of incoming cases to account for the percent of judges relative to the size of incoming cases. These data were obtained from the latest study of CEPEJ for the efficiency of judicial performance.

As for “Case Management System,  $C_i$ ”, a dummy variable is constructed. This variable is coded as one if a country has had a case management system and zero otherwise, for the 23 European Countries offered by the data set provided by CEPEJ. This variable is added to test the effect of case management system introduced for the justice system on judicial efficiency.

Regarding our variable “Annual Budget to the Justice System,  $B_i$ ”, this variable represents the total approved annual budget reserved to the whole justice system in 2019. We added this variable to test the effect of the approved annual

budget on judicial efficiency. This variable was also provided by the latest study of CEPEJ for 23 countries of the European Union included in this analysis.

Data for our dependent and independent variables were obtained from the latest observation in the EU member states on the functioning of judicial systems provided by CEPEJ (2021).



## 5. Estimation and Findings

Table (1): STATA Regression Output

Linear regression		Number of obs	=	23		
		F(3, 18)	=	.		
		Prob > F	=	.		
		R-squared	=	0.4829		
		Root MSE	=	.05293		
ClearanceRateDiff	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
NoOfJudgesIncomingCases	3.901764	1.570449	2.48	0.023	.6023717	7.201156
Casemanagementsystem	.1862268	.0131394	14.17	0.000	.1586219	.2138316
AnnualBudgetToJustice	6.81e-12	2.64e-12	2.58	0.019	1.26e-12	1.24e-11
SizeFirstinstance	-.0003204	.0001839	-1.74	0.099	-.0007067	.000066
_cons	-.2384132	.0089904	-26.52	0.000	-.2573012	-.2195252

Source: author’s calculations, using STATA statistical software package.

Table 1 displays the results of our OLS regression model with robust standard errors, run on 23 countries of the European Union. Our model explains 48% of the variation in our dependent variable, as shown by R-squared.

As can be seen, the variable that accounts for the number of judges over the number of incoming cases (No of judges/No of Incoming case) was found to be positive and significant at 5% significance level. This means that an increase by 1% in the ratio of the number of judges/number of incoming cases will lead to an increase in our judicial efficiency variable “the percentage change of clearance rate” by 3.901764%. This implies that an increase in the number of judges per incoming case will have a positive effect on judicial efficiency due to the extra time and effort devoted to each case.

Moving on to our second reform variable “case management systems”, we found that this variable is positive and statistically significant at 1% significance level. This means that when a country introduces a case management system in its judicial system, the percentage change of clearance rate, which proxies here the judicial efficiency, increases by 18.62268%. This could be a motive for countries to

invest more in information and communication technologies to have a better performance of the judiciary. It also confirms the claim by researchers that countries that introduce case management systems in their judicial system may exhibit efficiency in the performance of the courts Botero et al., (2003).

Regarding our third reform variable “The Annual Approved Budget allocated to the justice system, in million euros”, it was found to be positive and significant at a 5% significance level. This implies that investing an extra million Euros in the annual budget of the judicial system will lead to an increase in percentage change of the clearance rate, i.e judicial efficiency, by 0.000681%.

As for our fourth reform variable “size of courts”, it was found to be negative and significant only at 10% level. This means that an increase by 1% in the size of the court will lead to a decrease in the percentage change of clearance rate by 0.0003204%. One could think of economies versus diseconomies of scale as a possible justification behind positive versus negative effects, respectively, on judicial efficiency. However, our finding is closer to (Voigt & El-Bialy 2016) which acknowledges the common pool problem where individual judges can easily hide behind their colleagues and neglect their responsibilities as the court grows in size. In sum, this is a proof that investing in increasing the size of the courts is no panacea.

Estimation of the  $\beta_0$ , the constant term: It simply indicates if all the independent variables included in the model are zero then the value of the dependent variable will be equal to the constant term. Unfortunately, setting all variables to zero is frequently difficult since this combination can be an impossible or unreasonable arrangement.

To sum up, our findings suggest that a country that introduces reform measures like a case management system, a high annual budget allocated to the justice system, and a high number of judges per incoming case, is expected to perform more efficiently, with regard to judicial clearance rates, than a country that does not undertake these reforms. However, countries increasing the size of the courts are expected to perform less efficiently than a country that does not undertake this reform.

## 6. Conclusion

It is important to emphasize the efficient operation of the justice system because of the observed effect of judicial efficiency on a country, whether economically or socially. This is why it is critical to investigate which reforms could be implemented to improve the performance of the judiciary.

This paper investigates the impact of judicial reforms implemented by 23 European countries in 2018 on judicial efficiency. It specifically seeks to investigate which judicial reform is more conducive to judicial efficiency. It employs an OLS regression model with robust standard errors for cross-sectional data for 23 countries of the European Union in which the clearance rate is used to assess judicial efficiency. A number of independent variables were used to proxy the different reform dimensions undertaken by these 23 countries, namely:  $C_i$ : Case Management System,  $B_i$ : Annual Budget to the whole Justice System,  $N_i$ : Number of Judges/Number of Incoming cases, and  $S_i$ : Size of first-instance courts. It was found that implementing a case management system led to a positive and statistically significant effect on judicial efficiency. This means that countries that implement case management systems into their judicial systems are most probably going to exhibit efficiency in their judicial performance. It was also found that increasing the budget allocated to the justice system was positively associated with judicial efficiency, implying that allocating a large budget to the judiciary has a positive impact on judicial performance. Furthermore, our findings show that increasing the ratio of judges or decreasing the number of incoming cases is positive and statistically significant. This could be related to the supply and demand mechanism, which means that increasing the supply side or decreasing the demand side has a positive effect on judicial performance. Finally, a statistically significant, albeit negative, effect was found for the court size on judicial efficiency raising flags on whether countries should be encouraged to invest in bigger courts due to the potential of facing diseconomies of scale.

However, it should be noted that these findings are subject to two limitations. First, the sample size used is smaller than what it originally should

be due to data availability problems; 23 countries rather than 52 countries. Second, the analysis was conducted only one year following the enforcement of the reforms due to the recency of these reforms. A longer time series would have been the best option to examine the long-term effect of these reforms on judicial efficiency. Accordingly, it would be advised that future research examines the same question while correcting for the above-mentioned constraints.

**Acknowledgment:** I would like to thank my distinguished supervisor, Dr. Sarah Mansour, for her continuous efforts, support and guidance during my thesis. My gratitude also goes to Professor. Stefan Voigt, who taught us the fundamentals of economics of the judiciary, which paved the way for me to continue my studies in this important field, as well as to all faculty members who enlightened us with valuable knowledge during our studies.

## References

- Ardagna, S., & Lusardi, A. (2008). *Explaining International Differences in Entrepreneurship: The Role of Individual Characteristics and Regulatory Constraints* (No. w14012; p. w14012). *National Bureau of Economic Research*. <https://doi.org/10.3386/w14012>
- Becker, (1968) Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2):169–217., doi: 10.1086/259394.
- Botero, J. C., La Porta, R., López-de-Silanes, F., Shleifer, A., & Volokh, A. (2003). Judicial reform. *The World Bank Research Observer*, 18(1), 61–88.
- Buscaglia, E. (1999). ‘Judicial Corruption in Developing Countries: Its Causes and Economic Consequences’. *Berkeley Program in Law and Economic*.
- Buscaglia, E., & Ulen, T. (1997). A quantitative assessment of the efficiency of the judicial sector in Latin America. *International Review of Law and Economics*, 17(2), 275–291. [https://doi.org/10.1016/S0144-8188\(97\)00007-0](https://doi.org/10.1016/S0144-8188(97)00007-0)
- Bénassy- Quéré et al., (2007), Institutional Determinants of Foreign Direct Investment, *The World Economy*.
- Coase, R. H. (1960). The Problem of Social Cost. *The Journal of Law & Economics*, 3, 1–44.
- Cross, F. B., & Donelson, D. C. (2010). Creating Quality Courts. *Journal of Empirical Legal Studies*, 7(3), 490–510. <https://doi.org/10.1111/j.1740-1461.2010.01186.x>
- Chemin, M. (2009). *The impact of the judiciary on entrepreneurship: Evaluation of Pakistan’s “Access to Justice Programme”* *Journal of Public Economics*. <https://doi.org/10.1016/j.jpubeco.2008.05.005>
- Chemin, M. (2020). Judicial Efficiency and Firm Productivity: Evidence from a World Database of Judicial Reforms. *The Review of Economics and Statistics*, 102(1), 49–64. [https://doi.org/10.1162/rest\\_a\\_00799](https://doi.org/10.1162/rest_a_00799)

- Dakolias, M. (1999). Court Performance Around the World: A Comparative Perspective. *World Bank Publications*.
- 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>
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2003). Courts: the lex mundi project. *Quarterly Journal of Economics*, 118, 453–517.
- 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.irl.2011.12.006>
- Dimitrova-Grajzl, V., Grajzl, P., Slavov, A., & Zajc, K. (2015). Courts in a Transition Economy: Case Disposition and the Quantity-Quality Tradeoff in Bulgaria *CESifo Working Paper no. 5283. 46*.
- Eisenberg, T., Kalanry, S., & Robinson, N. (2012). Litigation as a Measure of Well-Being Symposium: A Celebration of the Thought of Marc Galanter - 18th Annual Clifford Symposium on Tort Law and Social Policy. *DePaul Law Review*, 62(2), 247–292.
- Finocchiaro Castro, M., & Guccio, C. (2014). Searching for the source of technical inefficiency in Italian judicial districts: An empirical investigation. *European Journal of Law and Economics*, 38(3), 369–391. <https://doi.org/10.1007/s10657-012-9329-0>
- Fauvrelle, T. A., & Almeida, A. T. C. (2018). *Determinants of Judicial Efficiency Change: Evidence from Brazil*. the journal Review of Law & Economics.
- Gillespie, R. W. (1976). The Production of Court Services: An Analysis of Scale Effects and Other Factors. *The Journal of Legal Studies*, 5(2), 243–265. <https://doi.org/10.1086/467552>
- Garoupa, N., & Ginsburg, T. (2009). Guarding the Guardians: Judicial Councils and Judicial Independence. *American Journal of Comparative Law*, 57(1), 103–

134. <https://doi.org/10.5131/ajcl.2008.0004>

- Gianluca Esposito, Mr. Sergi Lanau, and Sebastiaan Pompe.(2014). Judicial System Reform in Italy- A Key to Growth. *International Monetary Fund*.
- Hendrix, Steven E. (2000). “Guatemalan ‘Justice Centers’: The Centerpiece for Advancing Transparency, Efficiency, Due Process, and Access to Justice.” *American University International Law Review* 15(4):813–67.
- Landes, W., & Posner, R. (1979). Adjudication as a private good. *Journal of Legal Studies*, 8, 235 284.
- McEldowney, P. J. (2001). *Developing the Judicial Budget: An Analysis*.
- Mitsopoulos, M., & Pelagidis, T. (2007). Does staffing affect the time to dispose cases in Greek courts? *International Review of Law and Economics*, 27(2), 219–244. <https://doi.org/10.1016/j.irle.2007.06.001>
- Murrell, P. (2001). Demand and Supply in Romanian Commercial Courts: Generating Information for Institutional Reform. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.280428>
- Posner, Richard A. 1998. “Creating a Legal Framework for Economic Development.” *World Bank Research Observer* 13(1):1–11.
- Priest, G. L. (1989), PRIVATE LITIGANTS AND THE COURT CONGESTION, *Boston University Law Review*.
- Palumbo et al. (2013), The Economics of civil justice , *OECD Economics Department Working Papers*.
- Peyrache, A., & Zago, A. (2015). Large courts, small justice! The inefficiency and the optimal structure of the Italian Justice sector. Centre for Efficiency and Productivity Analysis. *Omega*.
- Rathinam, F. X. (2011). Procedural Law, Judicial Efficiency and Debt Finance: Evidence from India.

- Rosales-López, V. (2008). Economics of court performance: An empirical analysis. *European Journal of Law and Economics*, 25(3), 231–251. <https://doi.org/10.1007/s10657-008-9047-9>
- Landes, W., & Posner, R. (1979). Adjudication as a private good. *Journal of Legal Studies*, 8, 235– 284.
- SIMEON DJANKOV. (2003). Courts. *The Quarterly Journal of Economics*, Volume 118, Issue 2, May 2003, Pages 453–51.
- Steelman, D. C. (1997), What Have We Learned About Court Delay, “Local Legal Culture,” and Case flow Management Since the Late 1970s?, *Justice System Journal*.
- Voigt, S., & El-Bialy, N. (2016). Identifying the determinants of aggregate judicial performance: Taxpayers’ money well spent? *European Journal of Law and Economics*, 41(2), 283–319. <https://doi.org/10.1007/s10657-014-9474-8>
- Voigt, S. (2016). Determinants of Judicial efficiency: A survey. *European Journal of Law and Economics* , pages 183–208.
- Williamson, O. E. (1979). Transaction-Cost Economics: The Governance of Contractual Relations. *Journal of Law & Economics*, 22(2), 233–262.
- Yeung, L. L., & Azevedo, P. F. (2011). Measuring efficiency of Brazilian courts with data envelopment analysis (DEA). *IMA Journal of Management Mathematics*, 22(4), 343–356. <https://doi.org/10.1093/imaman/dpr002>

### **Internet:**

- Dependent and independent variables data (2021)  
[https://ec.europa.eu/info/sites/default/files/part\\_1\\_-\\_eu\\_scoreboard\\_-\\_indicators\\_-\\_deliverable.pdf](https://ec.europa.eu/info/sites/default/files/part_1_-_eu_scoreboard_-_indicators_-_deliverable.pdf).
- Judicial reforms by CEPEJ countries (2018)  
[https://public.tableau.com/app/profile/cepej/viz/CEPEJ-Reformbycountryv2020\\_1\\_0EN/Plannedreforms](https://public.tableau.com/app/profile/cepej/viz/CEPEJ-Reformbycountryv2020_1_0EN/Plannedreforms).