



**Instituto Superior de Economia e Gestão**

UNIVERSIDADE TÉCNICA DE LISBOA

DESDE 1911

**MASTER**  
**MONETARY AND FINANCIAL ECONOMICS**

**MASTER DISSERTATION**

**The Portuguese Judicial System: Descriptive enquiry on  
problems faced and a model for productivity**

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**ORIENTATION:**

MANUEL COUTINHO PEREIRA, BANCO DE PORTUGAL  
ANTÓNIO AFONSO, INSTITUTO SUPERIOR DE ECONOMIA E GESTÃO

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**The Portuguese Judicial System: Descriptive enquiry on problems faced  
and a model for productivity**

**By Diogo Lima<sup>1</sup>**

**Instituto Superior de Economia e Gestão,  
Universidade Técnica de Lisboa  
Department of Economics,  
Indiana University**

**Supervisor:  
Manuel Coutinho Pereira  
Banco de Portugal**

**António Afonso  
Instituto Superior de Economia e Gestão**

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### **Abstract**

There seems to be a wide agreement in Portuguese society that the legal system is one of the main structural problems and one reason for the anemic economic growth experienced in recent years. The objective of this paper is twofold. First, it offers a view on the state of the Portuguese judicial system over the past two decades and contributes with a perspective on the reasons Portuguese justice can be perceived as a roadblock on economic development. Second, it goes further and tries to explore potential answers by constructing an econometric model that connects judge's productivity with its potential determinants. Furthermore, this econometric model also deals with endogeneity issues not dealt with in similar studies.

JEL Codes: K40, P37

Keywords: Portuguese Judicial system, judicial productivity, efficiency, endogeneity

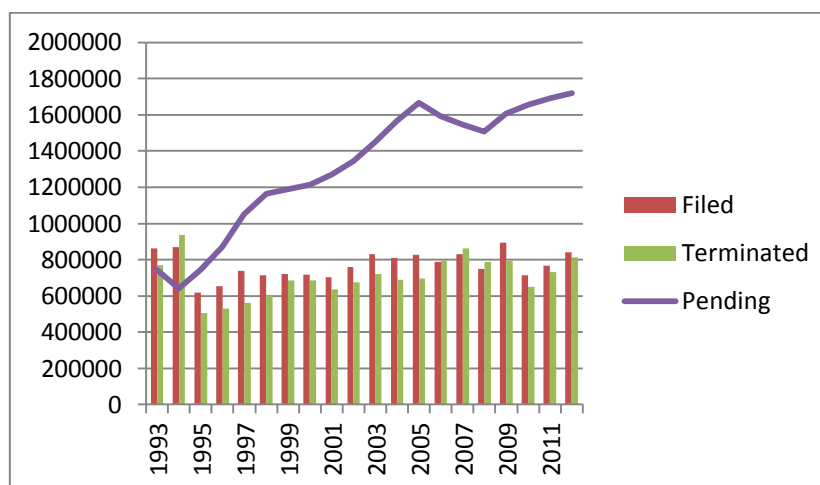
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## 1. Introduction

Portugal is seen as having a legal system below European standards (Tavares (2004)). It would take more than two years of court work to deal with the amount of work unfinished in past years, and this is due to a deficit in the ability to supply an amount of justice enough to meet the demand (that is, the number of filed files have almost always surpassed the number of finished files).

Figure 1: Portuguese judicial system



Source: DGPJ and author's calculations

The negative impact of the number of pending files in judicial courts can be very troublesome. For instance, in Portuguese courts, it takes almost two times as many days to collect a check returned for nonpayment than the average court in Djankov et al. (2003) study (441 against 234 days). Moreover, there is a wide agreement in Portuguese society that the legal system is one of the main structural problems and one likely reason for the anemic potential economic growth. Justice is perceived by economic participants as being slow and uncertain. Companies with less contact with

the judicial system define it has been a huge hurdle for business activities (Fundação Francisco Manuel dos Santos (2013))<sup>2</sup>.

A proper working judicial system can be of the highest degree of significance to an economy's performance. First, only a sound judicial system can ensure the enforcement of property rights, and this fact has enormous consequences on the investment decisions both domestic and international. Second, not only investment is affected, every exchange of goods and services relies on an environment where contracts are properly protected by law. If the judicial system is an obstacle to the free exchange between economic agents, it is imposing an unnecessary friction to the economy.

Already Adam Smith recognized the link between justice and economic growth: "Little else is requisite to carry a state to the highest degree of opulence [...], but peace, easy taxes, and a tolerable administration of justice..." (Smith (1755)). Recent works have also established a connection between the legal system and economic development (see Glaeser *et al* (2004)). Moreover, Tavares (2004) finds evidence supporting the need to reform the Portuguese legal system in order to create growth stimulus.

The objective of this paper is twofold. First, it offers a view on the state of the Portuguese judicial system over the past 20 years and documents the reasons Portuguese justice can be perceived as a roadblock on economic development. Second, it goes further and tries to explore potential answers by constructing an

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<sup>2</sup> Even though, a recent survey by *Fundação Francisco Manuel dos Santos* shows an interesting fact: businessmen who deal, on a daily basis, with the judicial system do not perceive it as been too slow.

econometric model that connects judge's productivity with its potential determinants. The innovative feature is the use of a richer and flexible database and the ability to tackle endogeneity issues not dealt with in previous papers.

The link between judicial productivity and the workload faced by courts is not a novel insight. Works such as Dimitrova-Grajzl *et al* (2012) offer evidence supporting this view. Their main findings are a statistically significant impact of courts caseload on productivity, while the number of judges in each court is not significant for an increase in productivity. There is also evidence for Portugal - Martins (2010) - of a causal effect of the caseload on productivity in Portuguese first instance courts.

This work is structured as follows. In Chapter 2 I give a brief recap about the structure of the Portuguese judicial system and a short chronological journey through it. Chapter 3 presents some facts and tries to explain the behavior of the Portuguese Judicial system. This work puts forward the conclusion that the Portuguese judicial system has, in fact, several problems, and the main difficulty is the demand for executive litigation not matched by enough productivity. Moreover, the solutions put forward were not, by all means, sufficient. To further understand productivity in the Portuguese Judicial system, section 3 presents a model for judge's Productivity with three key ingredients: average caseload per judge, number of judges and the average number of judicial workers per judge. I conclude by showing that the amount of workload positively impacts on judge's productivity. In contrast, the appointment of judges has a negative causal effect on judicial productivity.



## **2. Sketch and evolution of the Portuguese judicial system**

This chapter introduces the structure of the Portuguese judicial system and makes a brief recap of the main reforms in recent decades. Section 2.1 gives a brief summary about the way Portuguese judicial courts are structured and was partially based on the work by *Fundação Francisco Manuel dos Santos – Justiça Económica em Portugal, Volume I*. Section 2.2 presents a brief journey through the main judicial reforms implemented in the last three decades. This last section was partly based on *Sousa Santos* (2006).

### ***2.1. The Portuguese Judicial system***

The Portuguese legal system comprises different types of courts. This work will deal with a specific type of court – the judicial courts. Judicial courts are ruled by different types of jurisdiction (*competência*): i) territory, ii) substance (*matéria*), iii) hierarchy, and iv) value of the claim (*valor da causa*).

- i) The Portuguese judicial territory is divided into judicial districts. There are four judicial districts: *Lisboa, Porto, Coimbra, and Évora*. Each judicial district is divided into judicial circles. Finally, each judicial circle is divided into *comarcas*.
- ii) Regarding hierarchy, judicial courts have a vertical hierarchy: First instance judicial courts, second instance judicial courts, and the supreme court of justice. The first instance courts deal with, fundamentally, the newly entered cases. First instance courts are the majority of courts in the judicial

system and deal with the most part of filed litigations. The second instance courts are generally appeal courts. The supreme court of justice is the highest court of the hierarchy and deals with litigation that has been dealt by a first instance court and a second instance court. The supreme court rules over the entire territory while the second instance courts, which are distributed by each judicial district, have jurisdiction over a specific area.

- iii) Substance (*matéria*). Judicial courts can be divided by its substance into three types of courts. Generic substance courts, specific substance courts, and specialized substance courts. Generic substance courts are assigned with the responsibility to settle all kinds of dispute, dealing with all disputes not dealt by the remaining two types of courts. Each *Comarca* usually has a *Tribunal de comarca* and they are, as a rule, generic substance courts. However, *Tribunais de Comarca* can be decomposed into generic substance courts and specific substance courts, they can be *Juízos cíveis* and *Juízos criminais*, *varas cíveis*, *varas criminais*, *juízos de pequena instância cível*, *juízos de pequena instância criminal*, or *juízos de execução*. Specific substance courts deal with certain types of litigation defined by law. *Tribunais de comarca* and specific substance courts usually have jurisdiction over the *comarca* they are located. Lastly, specialized substance courts are assigned exclusive jurisdiction to resolve certain types of disputes according to their subject in one or more jurisdictions. Specialized substance courts can have jurisdiction over one or more *comarcas*. Specialized substance courts can be divided in *Instrução criminal*, Family, Menores, Labor courts,

Comerce, Intellectual property, sea, *execução de penas, cível, criminal and concorrência, supervisão e regulação* courts. As a general rule, litigations should be resolved in the court which has jurisdiction in the “*domicílio do demandado*”.

- iv) Value of the claim (*valor da causa*). First instance courts can also be divided according to the value of the claim. *Varas cíveis* have jurisdiction on lawsuits where the value of the claim is higher than lawsuits judge by second instance courts. *Juízos de pequena instância* deal with *processos sumaríssimos*. *Juízos cíveis* judge lawsuits not dealt by *Varas cíveis* or *Juízos de pequena instância*.

The two most representative types of *espécies processuais* (i.e. the purpose of the lawsuit) are declarative actions (i.e. actions in which a court judges the existence of certain rights where lenders do not have a document that proves his rights) and executive actions (i.e. a court judges an action in which a right has been recognized by a different court or the litigant has a document proving his claim).

## ***2.2. Evolution of the Portuguese judicial system***

Portugal, as a democratic country, has witnessed more than 35 years of laws trying to reform the judicial system. Back in 1978 the excessive number of courts, or the lack of demand in some courts, was already documented (*decreto lei nº 269/78*), however, in spite of that, more courts were created. The year 1988 also witnessed the need to reform the geographic distribution of courts and to raise expenditure in physical

capital (IT equipment and buildings) (*Decreto-lei* nº 214/88). The same law saw the ending of *Julgados de Paz*. The novel idea was the introduction of *Tribunais de Círculo* (to deal with higher amount litigations and more serious crimes) which was seen as a path breaking reform in the judicial system and a way to solve some of the problems faced by judicial courts. The increase in the number of courts followed in 1988 (*Decreto-lei* nº 214/88, 17 june). The same *Decreto-Lei* also introduced another innovation: specialized courts, as a way to improve the efficiency of the judicial system. Courts such as *Varas cíveis* and *juízos criminais* in Porto and Lisboa, or *Tribunais do Trabalho* and *Tribunais de pequenas causas* were created at that time.

In 1993 a new type of parajudicial instrument is created, called injunction, an attempt to lift the burden of pending files and to soften the demand for justice. However, this type of procedure – to deal with low pecuniary value execution files – was far from successful as *Decreto-Lei* nº 269/98 states. Only after some improvements – in 1998 – the Injunction procedure made an impact. The creation of new courts and the demand asymmetry between courts, where addressed in *Decreto-lei* nº 222/94 and *decreto-lei* nº 152/95 by updating, once more, the number of judges.

1996 saw the end of *Tribunal de círculo* and that reform was even described as a “*experiência maléfica*”. The increase in the number of courts and judges followed in 1996 (*Decreto-lei* nº 173/96) and 1998 (*Decreto-lei* nº 119/98, 24 de abril). Law nº 3/99 introduced the *assessor* role as a way to help judges with their work, carrying simpler tasks and lifting the burden from judges. A further specialization of courts was defined as a way to increase courts’ efficiency and effectiveness. *Decreto-lei* nº 178/2000 still

identified problems faced in previous years: insufficient number of judges, and *assessores*. So, an appointment of new judges was made and more *assessores* were hired.

*Decreto-lei* nº 148/2004 tried to solve the problem of execution files by creating *Juízos de Execução*. In this way, there was a migration of pending files from *Juízos* and *Varas* to *Juízos de execução*, a specialized type of court to handle execution files. In perspective, *Juízos de Execução* was seen as a “disaster”. (Sousa Santos 2006)

Moreover, the large boost in demand, in the last decade, was tackled by creating new solutions and instruments to deal with the problem of overburdened courts. *Registo civil* began to deal with mutual consent divorces, *Solicitadores de execução* started handling some of the work (execution files related) previously executed by judges. In criminal justice, low-amount bounced checks and the consumption of some type of drugs stopped being criminalized. Moreover, in order to decrease the number of pending files and the number of filed files, the state gave up some fines related to litigation that were pending in courts and introduced other innovations like converted *transgressões* into *contra-ordenações* (1995). It also tried to do a reform on *processo civil* with the intent of simplifying some procedures.

The last 35 years saw a myriad of reforms of the judicial system, however the end result is doubtful. Reforms that altered the geographic division of courts were not based on clear measures and empirical studies (Sousa Santos, 2006). The only large reform made to alter the judicial geography failed – the *Tribunais de Círculo* reform. A lot has been made to deal with the ever ending increase in demand: increase in courts,

creation of several specialized courts, hiring of judges and *assessores*, increase in IT and other physical capital, and many other measures, such as the conversion of *transgressões* into *contra-ordenações*. However, some of those measures did not seem to have worked properly. The introduction of *Injunções* has taken 5 years and some improvements in order to be fully accepted, *Juízos de Execução* have been largely criticized, and some of the remaining solutions described above seem to have lacked proper and well based foundations.

### **3. The Portuguese Judicial System for 1993 to 2012: Key indicators**

Chapter 1 showed a broad picture on the state of the Portuguese judicial system. The goal of this section is to introduce some key indicators that are used to gather a number of stylized facts about the Portuguese judicial system in the period from 1993 to 2012. In doing so, it also tries to unveil some co-movements between important variables.

This section is structured as follows: First, it motivates the problem by using a couple of indicators that allow us to get a better grasp of the difficulties that Portuguese judicial courts have been facing over the last 19 years. Second, having spotted the main problem, it tries to further study those difficulties by introducing a measure of productivity and demand. Both first and second steps are going to look into the Portuguese judicial system using different perspectives: by area of litigation, types of courts, and economic areas. Finally, the third part of this section is going to look at some correlations between variables important to our work.

As stated in Chapter 2, the Portuguese Judicial system obeys a certain hierarchy: it can be divided into first instance courts, second instance courts and the Supreme Court. First instance courts account for 96.2% of total filed files in the period from 1993 to 2012. Having the largest share of filed lawsuits, it is not surprising that first instance courts have the majority of pending files in Portuguese courts. The interesting fact is the path of pending files in each court. The number of pending files

in second instance courts and in the Supreme Court has been declining over the years, however in first instance courts the number of pending files has been steadily growing, with only a small decrease from 2005 to 2008. (Appendix I, Figures 1, 2 and 3)

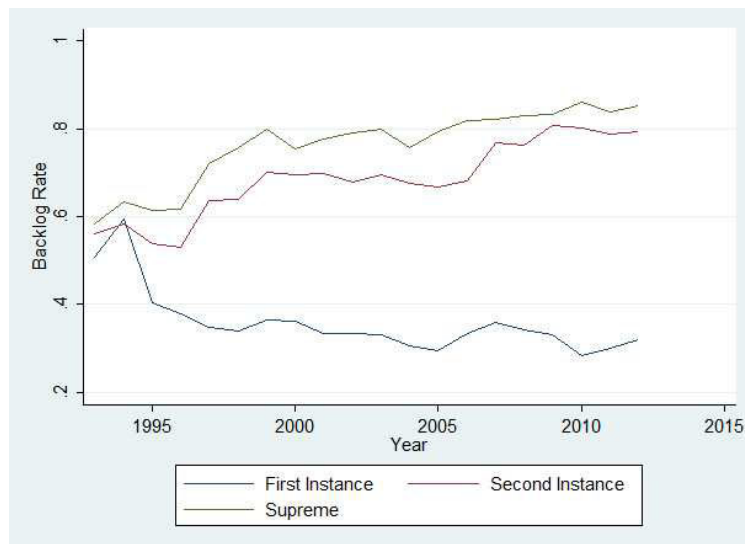
The number of pending files gives us a first glance on the state of justice, however it would be more informative to consider, also, the ability of a court to finish its pending and filed files over a given year. For that reason, below we assemble a first indicator that will help us understand the state of the Portuguese Judicial system.

Let the Backlog Clear rate be defined as

$$\text{Backlog Clear Rate}_{i,t} = \frac{\text{number of terminated files}_{i,t}}{\text{number of filed files}_{i,t} + \text{number of pending files}_{i,t}},$$

$$\forall i \in \text{set of courts}, t = 1993, \dots, 2011 \quad (3.1)$$

Figure 1: Backlog Clear rate by type of judicial court



Source: DGPJ and author's calculations

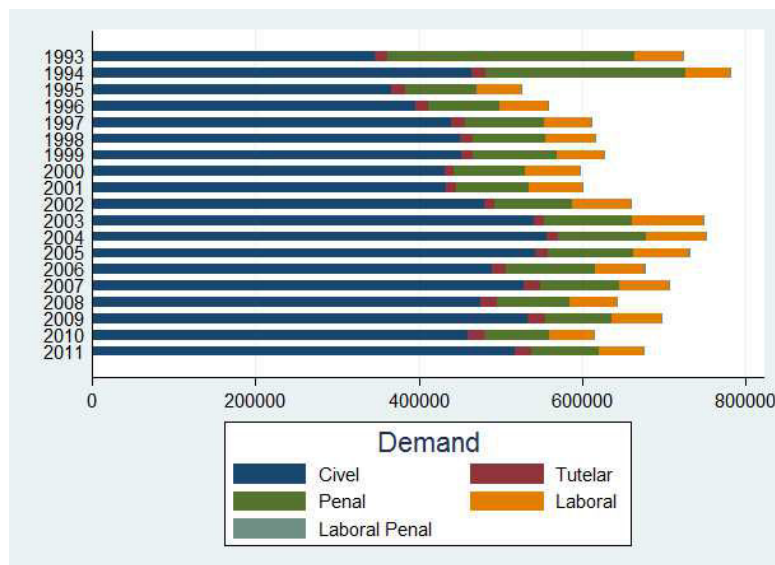


The Backlog Clear rate gives us a measure of the ability of a given court to terminate all its caseload over a given year. Figure 1 delivers the same message as given above: second instance courts and the Supreme Court have raised their ability to produce justice relative to their caseload, whereas first instance courts have worsened their capability to produce justice relative to their caseload.

Given all of the above, if we want to understand the difficulties faced by Portuguese courts to produce justice, we must look more closely into first instance courts.

First instance courts deal with a broad array of filed files. Those files can be divided into five areas of litigation: *cível*, *penal*, *tutelar*, *tutelar penal*, and *laboral* files.<sup>3</sup>

Figure 2: Number of filed files by area of litigation

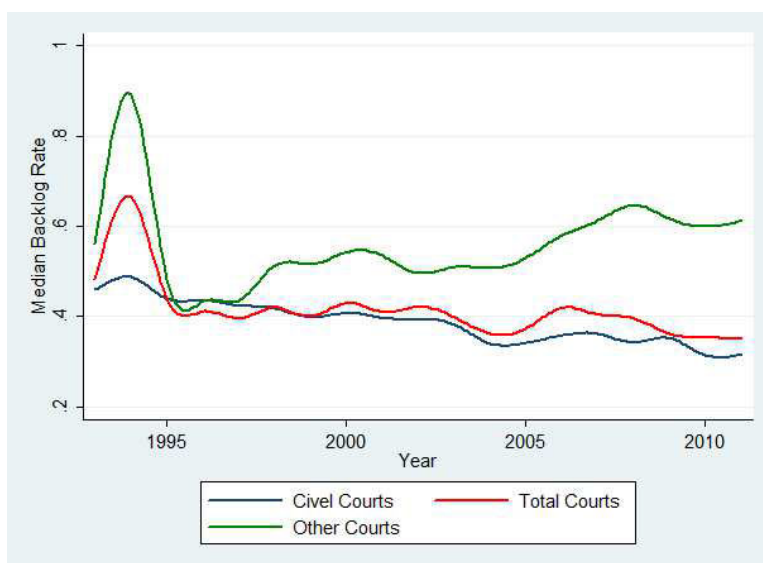


Source: DGPJ and author’s calculations

<sup>3</sup> These five areas of litigation for Portuguese judicial courts can have the following translation: Civil, criminal, family, criminal family, and labor, respectively.

Figure 2 gives us the number of files filed in first instance courts from 1993 to 2011. It is clear that the number of *cível* files entered in courts has been rising in absolute terms as well as in relative terms. Particularly, in 2011, the number of *cível* files was the vast majority of files entered in courts, they account for 76.5% of all filed files.

Figure 3: Backlog Clear rate by Area of litigation

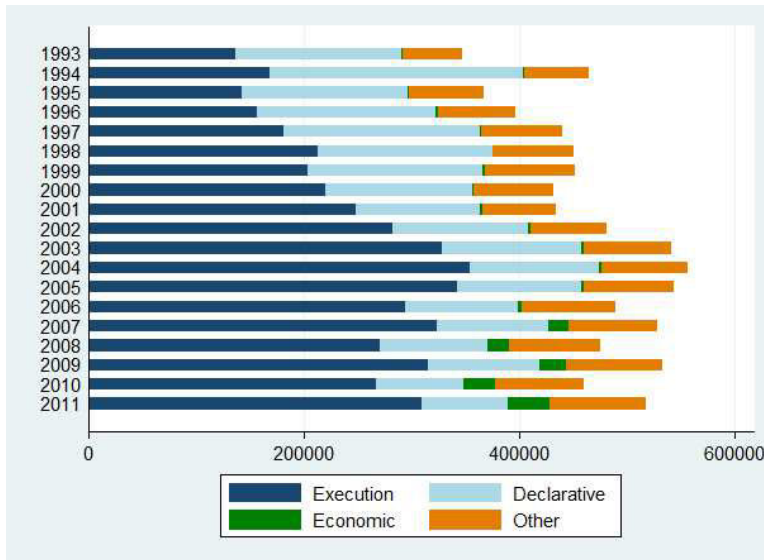


Source: DGPJ and author's calculations

As shown in Figure 3, from all five areas of litigation represented in first instance courts, the Backlog Clear rate on *cível* files is the only one that has been declining steadily over the years. That fact, and the weight of *cível* files on the total number of filed files, has pulled the total Backlog Clear rate into a declining trend.

*Cível* files can also be divided into different types of files. Namely, executive proceedings (*acções executivas*), economic files, declarative proceedings (*acções declarativas*) and other files.

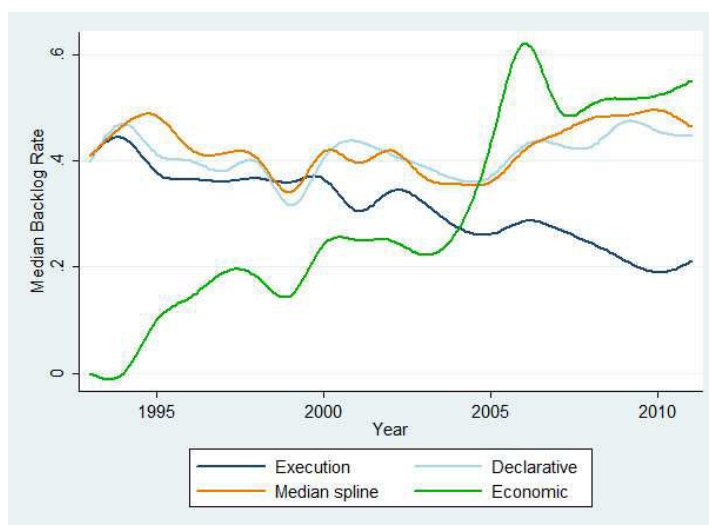
Figure 3: Filed by type of Civel files



Source: DGPJ and author’s calculations

Note, in Figure 3, the large increase, over the years, in the number of execution files filed in first instance courts. In 1993 execution files accounted for 39.5% of all files entered in first instance courts, and by the year 2011 59.7% of all the filed files were execution files.

Figure 4: Backlog Clear rate by type of *Civel* file



Source: DGPJ and author’s calculations

Figure 4 shows that execution files are the only type of *cível* file with a declining Backlog Clear rate.

This last couple on graphs give us important insight: the reason the Backlog Clear rate on *cível* files has been steadily declining is twofold: i) the Backlog Clear rate on execution files has been declining, in fact this is the only type of *cível* file that has a clear declining trend; ii) the large – relative and absolute – weight of execution files on *cível* files. This allows us to conclude that the main reason the judicial system is facing difficulties can be assigned to execution files filed in first instance courts.

Also, notice also the behavior of economic files. In 1993 they had a Backlog Clear rate close to zero and in 2011 they are the type of *cível* file with the higher Backlog Clear rate.

Although Portugal is a small country, distinct geographical areas can be found. Particularly, economic development is not homogeneous throughout the country. Therefore, we have divided Portugal into three different areas regarding their economic development. To do so we used the number of companies in each *concelho* as a *proxy* for economic development. The overall Backlog Clear rate on first instance courts has been declining over the three types of regions considered (Appendix I, Figure 4), Does that behavior extends to all type of courts considered in our analysis? The overall picture is that there is a marked difference between courts regarding their ability to produce justice relative to their workload. Since year 2000 *Tribunal de Comarca's* median Backlog Clear rate has been declining. However, for instance,

*Tribunais do Comércio* and *Varas Mistas* have been increasing their median Backlog Clear rate. Note that the introduction of *Juízos de Execução* implied a change of trend in the median of the Backlog Clear rate for *Juízos Cíveis* and *Varas Cíveis*. (Figure 5, appendix I) The median Backlog Clear rate for *Juízos de execução* has been trending up, but it had a very low starting point. The change in trend in *Juízos Cíveis* and *Varas cíveis* when *Juízos de Execução* was created is not a coincidence. *Juízos de execução* were created precisely to deal with executive files, and that meant a migration of executive files from courts, such as *Juízos cíveis* and *Varas cíveis*, to *Juízos de execução*. The pertinent question is: Does that change made an impact? That is, are *Juízos de Execução* more productive handling execution files than *Juízos Cíveis* or *Varas cíveis*? At the moment we lack the necessary tools to provide an answer, but near the end of the Chapter we tackle this question.

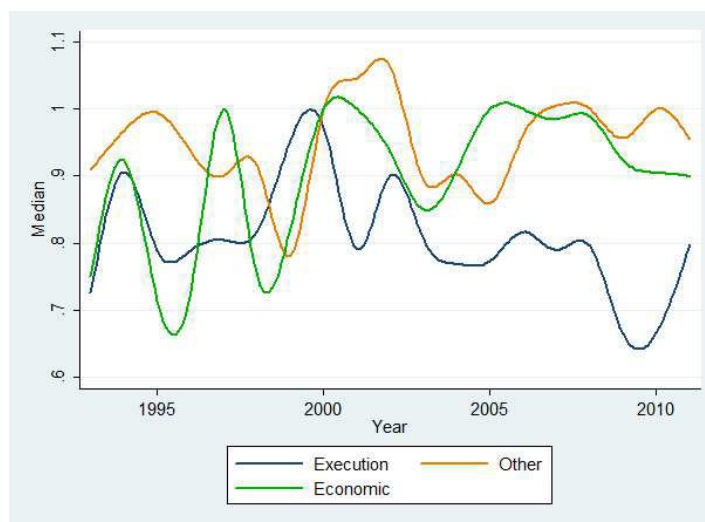
A Backlog Clear rate equal to one would indicate that a given court was able to finish all pending and entered files in a given year. This is perhaps a too demanding benchmark. A more realistic benchmark would be one file finished for each file entered. That would stop the number of pending files from growing year after year. So, if we define

$$\text{clearance rate}_{i,t} = \frac{\text{number of terminated files}_{i,t}}{\text{number of filed files}_{i,t}}, \quad \forall i = \text{set of courts}, t = 1993, \dots, 2011 \quad (3.2)$$

Looking at the average clearance rate for all courts and files, we find that the average clearance rate is slightly above one. However, the average hides large outliers. In fact if

instead we look at the median clearance rate, since the year 2000 the median clearance rate for all files and courts is below one (Table I and Figure 6, Appendix I). As we already spotted the root of the problem – execution files – let us see what information the clearance rate has to offer.

Figure 5: Clearance by type of *Cível* file



Source: DGPJ and author's calculations

As expected, the median clearance rate for execution files is particularly low. In fact, since 2000 the median clearance rate is below one and trending down (Figure 5).

The clearance rate captures the ability of a court, in a given year, to fulfill the demand for justice. However, a court can increase its clearance ratio only because fewer files are filed in a given year, maybe due to economic conditions. It is also possible that this same court increased its clearance ratio owing to a productivity rise.

In the justice sector, the courts can be seen as production units which combine certain inputs, such as judges, clerks, or buildings, and whose main output can be measured by the number of resolved cases in a given year.

Let us decompose the clearance ratio in to a measure of demand and a measure of productivity:

$$\text{Clearancerate}_{i,t} = \frac{\text{number of terminated files}_{i,t}}{\text{number of filed files}_{i,t}} = \frac{\frac{\text{number of terminated files}_{i,t}}{\text{resources}_{i,t}}}{\frac{\text{number of filed files}_{i,t}}{\text{resources}_{i,t}}} = \frac{\text{productivity}_{i,t}}{\text{demand}_{i,t}} \quad (3.3)$$

Where *resources* is defined as<sup>4</sup>

$$\text{resources}_{i,t} = 0.7 * \text{number of judges}_{i,t} + 0.1 * \text{total number of judicial servants}_{i,t} \quad (3.4)$$

The annual average productivity has been growing in line with the annual average demand. However, since 2001, the annual average demand has been above average productivity, which explains a declining clearance rate, if we consider the overall number of files in first instance courts (Figure 7, Appendix I).

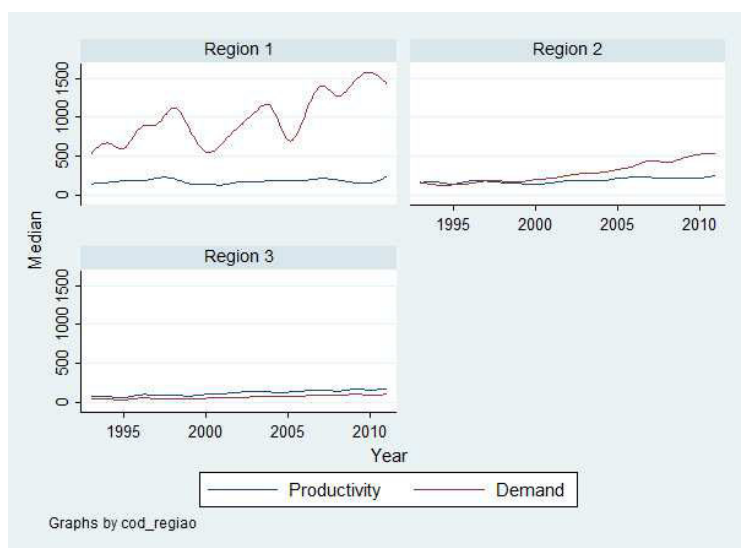
We have seen that execution files have the worst clearance rate and, at the same time, are the majority of files entered in courts. On the other hand, *Tribunal de Comarca* is the type of court most common in Portugal. Given that, over the last 21 years the average clearance ratio has been most of the time below one (Table II, Appendix I), it makes sense to further analyze execution files in *Tribunais de Comarca*.

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<sup>4</sup> The use of weights on the formula for *resources* was purely subjective. It is intended to give more weight to the contribution of judges to production and less weight to the contribution of judicial workers per judge.

The median clearance rate of execution files in *Tribunais de Comarca* has been lower than one in most years, however the median clearance rate is particularly low in *Tribunais de Comarca* courts in regions with many companies.

Figure 6: Productivity and demand by economic region in *T. Comarca*



Source: DGPJ and author's calculations

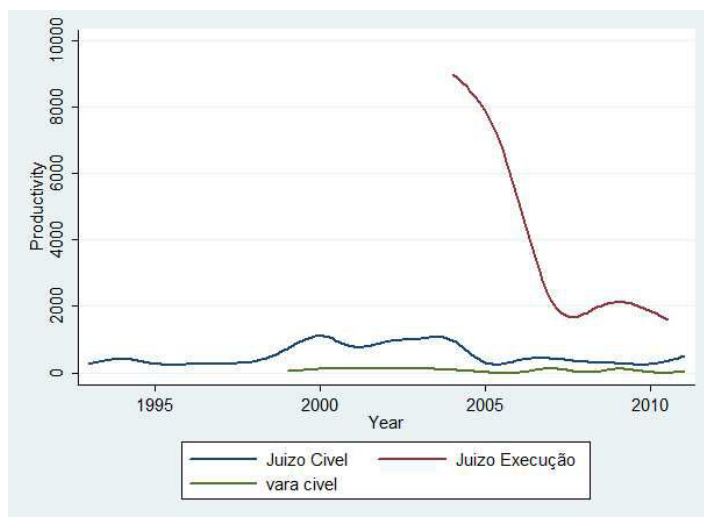
We find that the reason the median clearance rate is very low in courts belonging to regions with many companies is due to an increase in demand not closely followed by an increase in productivity. While to a lesser extent, the same has happened in less developed regions (Figure 6).

Above we questioned whether it was worth to create *Juízos de Execução* to deal with executive files. Figure 7 can shed some light on this matter. When it comes to productivity on executive files, *Varas cíveis* and *Juízos Cíveis* have historically low values. The introduction of *Juízos de Execução* seemed to bring a productivity boost to



*execution files however*, it soon started to drastically lose their ability to deal with execution files and their productivity has been on a declining trend. (see Figure 7).

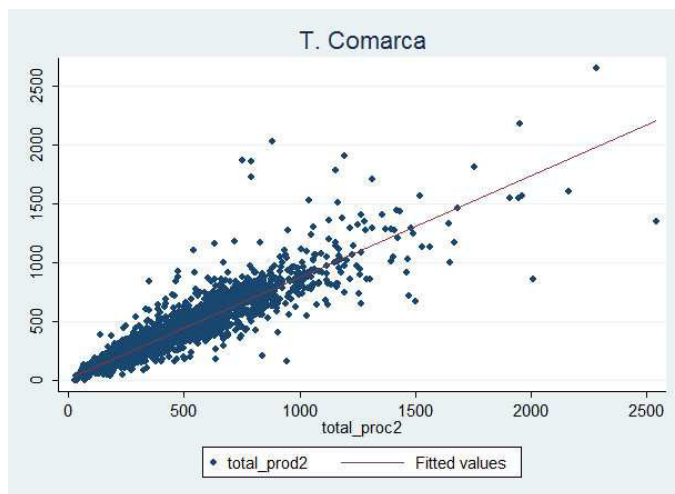
Figure 7: Productivity by Court



Source: DGPJ and author's calculations

Lastly, we report some findings on the correlation between productivity, the caseload and the number of judges. The correlation between productivity and demand, using all the courts in our sample, is strong – 0.58, and it increases to 0.83 if we only take into account *Tribunais de Comarca*. That behavior is graphically depicted in Figure 6. Moreover, that correlation is stronger in the regions with less companies than elsewhere.

Figure 8:



Source: DGPJ and author's calculations

There is also a strong correlation between the number of judges and productivity, and between demand and productivity in *Tribunais de Comarca*. Does that correlation results from a causality effect? We try to answer that and similar questions in the next Chapter.

#### 4. Panel estimation

With the increasingly high demand faced by Portuguese judicial courts, it is of paramount importance to foster productivity of first instance courts. This chapter tries to model total productivity of courts based on a set of determinants, both internal and external to court activity.

In this Chapter I describe the data used in the empirical analysis, present the models, discuss the choice of variables and comment on results.

#### 4.1 The Data

The panel I employ was built using annual data on first instance judicial courts covering a maximum time span from 1993 to 2011. The types of courts included in the sample are: *Tribunal de Comarca*, *Juízo cível*, *Vara Cível*, *Vara mista*, *Tribunal do Trabalho*, *Tribunal do Comércio*, and *Juízo de execução*. The panel includes variables internal to courts (such as the number of files, the number of judges or the number of judicial workers) and variables external to courts (for instance, the number of companies or a purchasing power index). Appendix II Table VI presents the list of variables, the corresponding description and source. It is a rich panel data that enables us to follow, in a specific type of court, the number of lawsuits, by each type of lawsuit, in a given year.

It is worth to comment on some particularities. First, the data on variables internal to courts are at the *comarca* level, whereas variables external to courts usually correspond, in the Portuguese geographic division, to *concelhos*. Therefore, we could be in presence of a potential mismatch between *comarca* and *concelho*. Most of the *comarcas* have a one-to-one match with *concelho*. A problem may arise when the same *concelho* is divided into different *comarcas*, and that same *comarca* might or might not cover different *concelhos*. Due to the lack of information at the *freguesia* level, I chose not to include information on those *concelhos* and link those same *comarcas* with the rest of the *concelhos* into which a *comarca* might be divided. Second, the purchasing power index series has some missing years. I have chosen to fill in missing values with averages computed using adjacent years. Third, in 1995 many *transgressões* lawsuits were converted into *contra-ordenações* (Sousa Santos (2006)),

which meant a drastic break in the database for some series. (see, for instance, Figure 7, appendix I). Thus I chose not to use the years 1993 and 1994 in the regressions performed in this Chapter. Fourth, even though the panel data comprises the abovementioned courts, I have chosen to use only *Tribunais de comarca* in the regressions plus *Varas cíveis* and *juízos cíveis* in Porto and Lisboa. The reason is threefold. First, there is a lot of heterogeneity between courts, so the use of *Tribunais de comarca* only offers a set of more homogeneous courts. I also use *Varas cíveis* and *Juízos cíveis* in Porto and Lisboa because there are no *Tribunais de Comarca* in Porto and Lisboa and so *varas cíveis* and *juízos cíveis* stand for *Tribunais de comarca* as they deal with roughly the same type of lawsuits. Second, *Tribunais de comarca* are the most common type of courts in the Portuguese judicial system. Third, the Direcção-Geral da Política de Justiça (DGPJ) does not offer data on the number of judicial workers for most of the remaining type of courts in our data set.

#### 4.2 OLS model

In order to study the potential determinants of the judicial productivity, my baseline model is the following:

$$\text{total\_prod}_{it} = \alpha + \beta_1 \text{total\_caseload}_{it} + \beta_2 \text{Judges}_{it} + \beta_3 \text{jw\_judge}_{it} + \beta_4 \text{PPI}_{it} + \beta_5 \sum_{i=1995}^{2011} \text{year}_i + u_{it} \quad (4.1)$$

Equation (4.1) regresses total productivity of first instance courts,  $\text{total\_prod}_{it}$ , on determinants internal to courts, a variable controlling for external factors,  $\text{PPI}_{it}$ ,

and a vector of dummy variables for the years. We will first study judicial courts productivity using an OLS methodology.

The dependent variable,  $total\_prod_{it}$ , was built as in equation (3.3).

$total\_caseload_{it}$  represents the average amount of court work per judge at a given court  $i$  at year  $t$ . It was constructed as follows,

$$total\_caseload_{it} = \frac{\text{total number of filed files}_{it} + \text{total number of pending files}_{it}}{\text{resources}_{it}},$$

$\forall i = \text{set of courts}, t = 1995, \dots, 2011$  (4.2)

It is plausible that a higher amount of pending and entered files puts pressure on judges and, thus, they work harder. This increase in productivity could happen, for example, because of an impact on judge's reputation or career incentives (see, for instance, Luskin & Luskin (1986)). It could also happen that a judge, working on a court with smaller caseload per judge, has no incentive to resolve more cases or else he could become useless to the court in the following years. On the other hand, the inverse could occur as well: There is such an amount unfinished files that overcrowd a certain court, leading to a congestion effect (Dimitrova-Grajzl *et al* (2012)). There is also empirical evidence of the latter case (e.g. Murrell (2001)). Therefore, the sign of the coefficient is ambiguous.

$judges_{it}$  corresponds to the total number of judicial judges in court  $i$  at year  $t$ . The effect on the average productivity per judge of an increase in the number of judges is also uncertain. On the one hand, the increase in the number of judges in a given court could have positive externalities on the remaining judges. One reason this

could happen stems from the dissemination of more efficient practices (Martins (2010)) or the share of expertise. On the other hand, an increase in the number of judges in a certain court could act as a production disincentive on other judges. We could think in the same manner as a decrease in caseload: more judges will lower each judge's caseload and decrease the incentives to work. We can find support for both hypotheses in the empirical literature. Martins (2010) finds evidence of a negative relationship between the number of judges and average judicial productivity for Portuguese courts, whereas Beenstock and Haitosvky (2004) fail to gather statistical proof of a causal effect of the number of judges on judicial output in Israeli courts.

$jw\_judges_{it}$  stands for the average number of judicial workers per judge in each court  $i$  at a given year  $t$ . This coefficient's sign is also ambiguous. The rationale is similar to the effect of the number of judges on average judicial productivity. Even though judges work almost as an independent unit inside each court, they need inputs to carry out their work. One of the inputs is the number of judicial workers in each court. We could expect that an increase in the number of judicial workers helps judges perform their work and, thus, raise productivity. On the other hand, an increase of judicial staffing could produce incentives to lower production on the remaining judicial workers.

$year_t$  is a vector containing dummy variables for each year from 1996 to 2011 (the omitted year is 1995). In Chapter 3 I have argued that productivity in executive lawsuits did not follow demand as to prevent the enormous increase in the number of pending files. However, the productivity indicator used in Chapter 3 did not take into

account other variables that could potentially make an impact on productivity. These variables will allow studying the average productivity path throughout the years, *ceteris paribus*.

$PPI_{it}$  stands for the purchasing power index of the *concelho* where the court is located. This variable intends to control for court's external determinants of productivity. The database contains other series that potentially could be useful control variables. The reason for using only the *PPI* has to do with the strong correlation between those variables, namely: number of companies in the *concelho*, population density and secondary school years (see Table V, appendix III).

#### 4.1.1 OLS Results

Table I Appendix II presents the results for the OLS regression. Holding other variables fixed, the results suggest an increase in average judicial productivity following an increase in average caseload per judge. The same is true for the number of judicial workers per judge, whereas the number of judges does not seem to be relevant to explain judicial productivity (P-value higher than 10%). Regarding the year dummy variables, Table I implies that productivity has been lower in most years relative to 1995. Finally, *ceteris paribus*, the difference in judicial productivity in the more developed regions relative to the remaining ones does not seem to be statistically significant.

#### 4.2 Two-way Fixed effect model

Endogeneity is a problem that arises frequently in econometric modeling and one of the hardest issues one has to tackle in regressions. Broadly speaking,

endogeneity occurs when one or more independent variables are correlated with the error term. The literature defines three large classes of endogeneity: i) Reverse causality ii) Unobserved heterogeneity iii) Measurement errors. In the following I will argue that modeling judicial productivity in Portuguese first instance courts is only affected by unobserved heterogeneity. I then offer a solution for dealing with this issue?.

A judge's productivity might depend on the amount of work per judge, as discussed above. However, the inverse is also plausible, for example that a court with higher productivity leads to higher demand for its services. As it turns out, this source of endogeneity – reversed causality – is not present in our judicial system because a 2006 law states that lawsuits must be filled in a court based on the complaining party's *concelho* of residence. Another source of reversed causality presented by the empirical literature (Dimitrova-Grajzl *et al* (2012)) is the effect of judicial productivity on the appointment of judges. Intuitively, a decrease in productivity leads to an increase in the caseload per judge and, consequently, a need to appoint extra judges in the court that experiences lower average productivity. In the case of reverse causality between the appointment of new judges and judge's productivity, we already control for the effect of a change in the caseload on the number of judges. A common econometric solution to endogeneity problems is the use of instrumental variables (IV). Instrumental variables have to be chosen as to be highly correlated with the (potentially) endogenous variable and uncorrelated with the error term. Even though, in theory, this is a valid solution to endogeneity problems, in practice IV may produce deceptive results if uncorrelation with the error term (that is not possible to test) does



not hold. A third source of endogeneity is the impact of unobserved variables on one or more independent variables included in our model. This unobserved omitted variables are often court-specific and do not change over time, such as reputation or criminal activity in the area where the court is located. It's plausible that this type of endogeneity occurs (e.g. higher business activity could lead to higher demand for a specific court). This last source of endogeneity is easier to tackle and it is not dependent on a subjective selection of instrumental variables. We are going to do a robustness check by using a set of IV to account for the second case of endogeneity referred above.

We use a two-way fixed effects model (with cluster robust SE) as follows,

$$\text{total\_prod}_{it} = \delta_i + \gamma_t + \beta_1 \text{total\_caseload}_{it} + \beta_2 \text{Judges}_{it} + \beta_3 \text{jw\_judges}_{it} + \beta_4 \text{PPI}_{it} + u_{it} \quad (4.3)$$

$\delta_i$  represents courts characteristics that are time invariant and  $\gamma_t$  is a vector of year dummies similar to the OLS case.

#### 4.2.2 Two-way FE Results

Results for the two-way FE model are presented in Table II, in appendix II. There are important discrepancies between results in the OLS regression and the two-way FE model. The first thing to note is the change in sign for the coefficient of both judges and judicial workers per judge. Second, judicial staff per judge is no longer statistically significant and, on the other hand, judges became an important determinant of judge's average productivity. Our model shows that an increase in the number of judges or in the number of judicial staffing per judge would lead to a decrease in average judge's

productivity, *ceteris paribus*. This result is in line with the findings of Martins (2010) for the Portuguese case. Caseload keeps having a positive casual effect on judicial productivity. There is much empirical evidence for this type of results (see, for instance, Dimitrova-Grajzl *et al* (2012), Martins (2010) or (Haitovsky (2004)). Note the magnitude of the coefficients. It is intuitive that the impact of the variation in total caseload seems to be much lower than the appointment of a new judge in a given court, *ceteris paribus*.

As a robustness check, we also used a fixed-effects (within) IV regression model using lags of *total\_caseload*, *judges* and *jw\_judges* as IV variables. The results stay the same: a negative causality effect of judges on judicial productivity and a positive causality effect of the amount of court work per judge on average judicial productivity. These results are statistically significant at the 1 percent level. (See Table IV appendix II)

The descriptive statistics analysis done in Chapter 3 led us to believe that a major issue for the Portuguese judicial system is the inability to tackle the amount of demand for executive lawsuits. Table III, appendix II, shows the results for a model similar to equation (4.3) where the dependent variable is the ratio between the number of executive lawsuits per *resources* – variable defined in equation (3.4) – and the explanatory variable *total\_caseload* is replaced by *executive\_caseload*, defined as filed plus pending executive lawsuits over *resources*. Even though coefficients are lower, the conclusion remains the same: a positive impact of the amount of caseload per judge on average judicial productivity and a negative causality effect of the

number of judges on average judge's productivity. Furthermore, the magnitude on the coefficient for the number of judges is higher than the one found using the two-way FE model. Less economically developed regions are more productive – judgeship-wise – relative to the more developed region, even though this result is not statistically significant. In order to compare productivity in executive lawsuits with the remaining lawsuits, I use a similar model to analyze declarative lawsuits and economic lawsuits. Table V and VI represent the results for declarative and economic files, respectively. The appointment of new judges is no longer statistically significant to explain productivity. Note, however, that caseload remains having a positive impact on productivity. Also, note that the magnitude of the coefficient on total caseload is higher in the economic and declarative files compared to the execution files.

## 5. Conclusion

Fairly often one hears that one of the roots of anemic potential output growth in Portugal lays on the judicial system. The main propose of this work was to investigate some problems faced by the Portuguese Judicial system and provide a number of solutions. I present some descriptive statistics about the Portuguese judicial system and suggest a probable source of court's congestion: executive lawsuits in first instance courts. Having encountered a problem I continue showing what caused it and what the judicial system has done to tackle the problem. First instance judicial courts where faced with a very high increase in demand for executive lawsuits and productivity was not able to respond promptly. The solution – *Juízos de execução* –

was not better, either. The need to improve productivity in judicial courts led me to model its determinants through, mainly, the use of the average amount of court work per judge, the number of judges and the average number of judicial workers per judge. To achieve such a goal I primarily employed an OLS regression to find a positive causal effect of the average amount of caseload and number of court workers per judge on judge's productivity. Acknowledging possible endogeneity issues I followed with a two-way fixed effects model. I found evidence of a positive causal relationship of the average caseload per judge on judicial productivity. On the other hand, there was negative causal effect of the number of judges on judge's productivity. Using only data for executive files, similar results were found. As a robustness test I have made use of a Fixed-effects IV regression that confirmed earlier findings. These results are in line with the empirical literature (see, for instance, Dimitrova-Grajzl *et al* (2012)). In fact, Martins (2010) finds similar behaviors for the Portuguese case. However, some caveats must be discussed and tackle in future research. There is a need for more and better data, mainly on costs of the judicial system. Another issue is that the empirical literature has focused on the quantity aspects only and has largely ignored the quality of judicial decisions. The policy implications of the above results are not obvious. First, one cannot naively conclude that the complete answer to judge's productivity lays solo on the increase in judge's workload. As stated above, there are quality implications that are not handled in my model and can be of significance. Similarly, the increase in the number of judges seems to imply a fall in judicial productivity, but may bring about unobserved quality gains.

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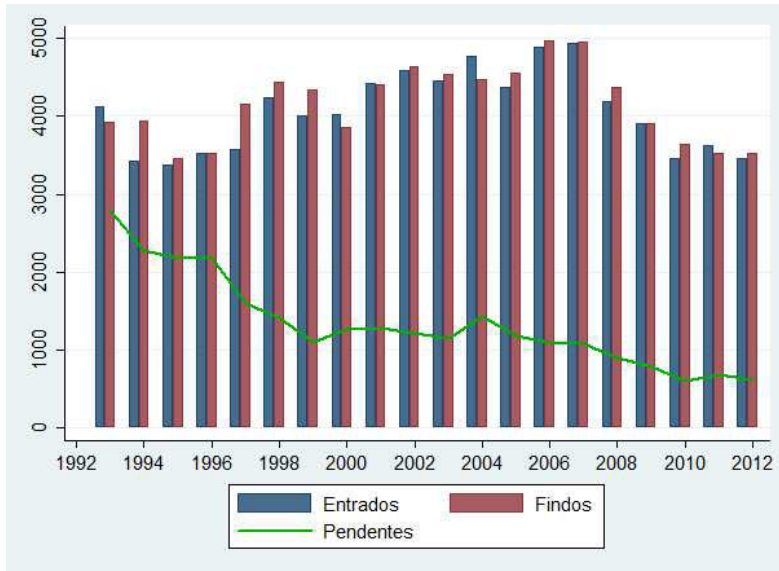
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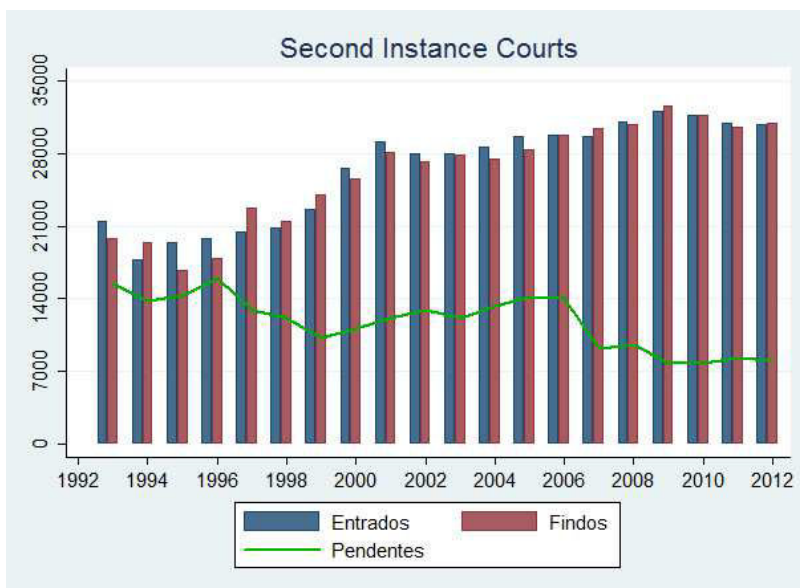
## Appendix I

Picture 1: Supreme court



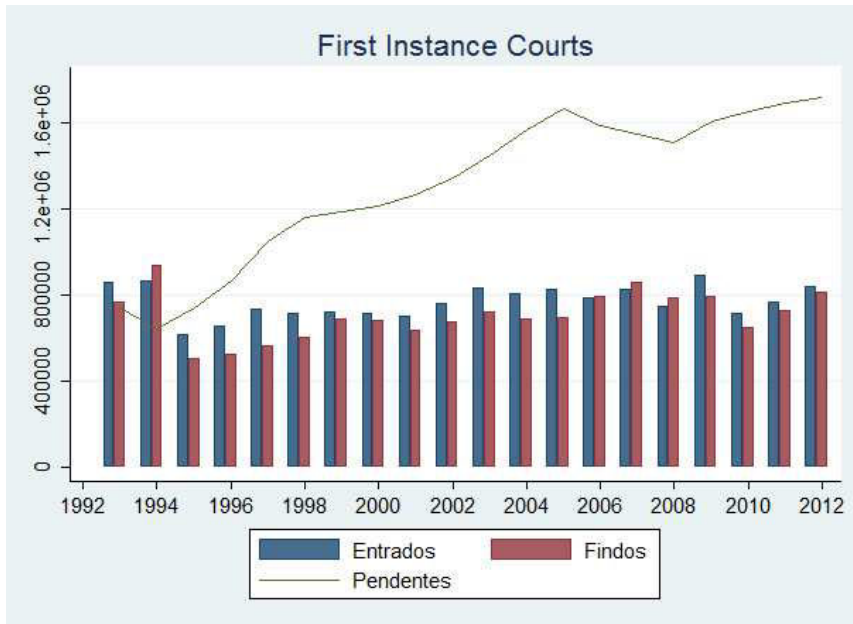
Source: DGPJ and author's calculations

Picture 2: Second instance Courts



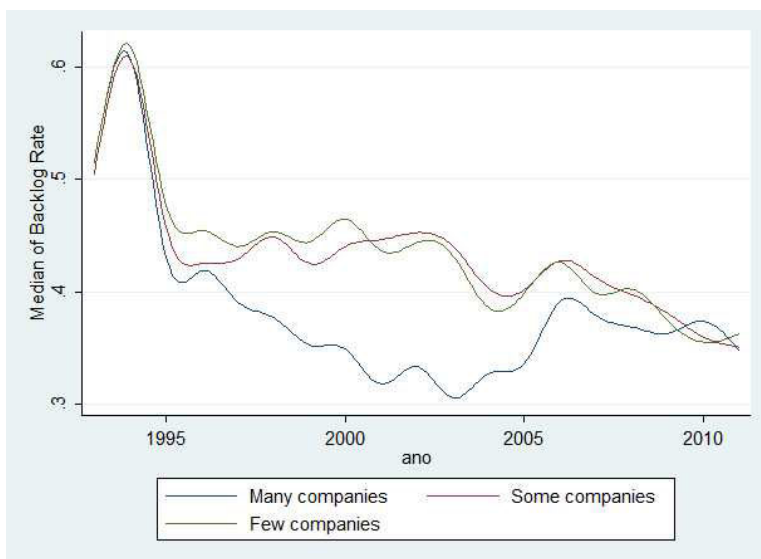
Source: DGPJ and author's calculations

Picture 3: First instance Courts



Source: DGPJ and author's calculations

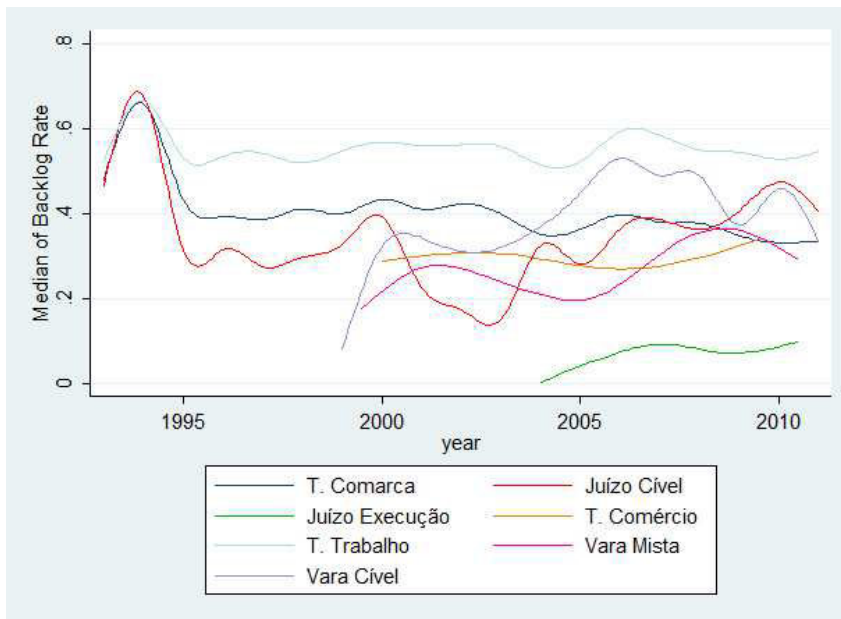
Picture 4: Backlog Clear rate by Economic Region



Source: DGPJ and author's calculations



Figure 5: Backlog Clear rate by type of court



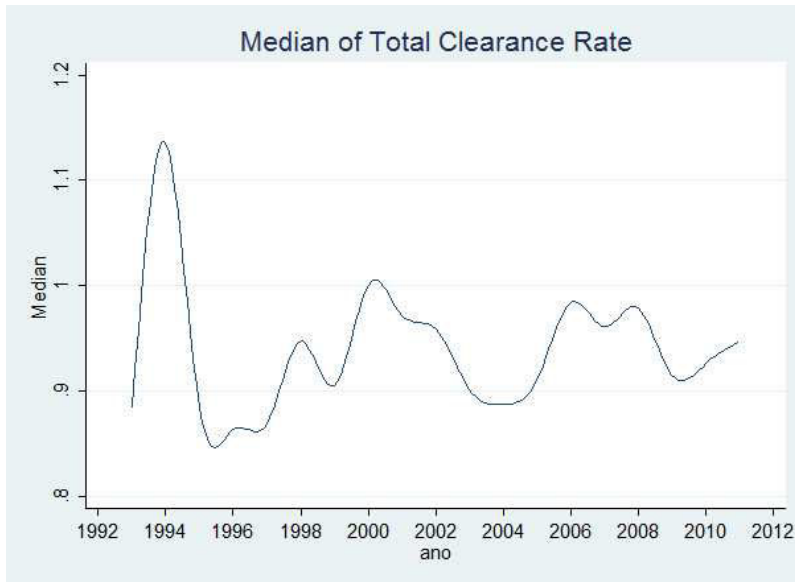
Source: DGPJ and author’s calculations

Table I:

ano	Summary of total_clearance		
	Mean	Std. Dev.	Freq.
1993	.88404543	.1999266	292
1994	1.165172	.30964703	293
1995	.91713027	.24793598	295
1996	.8725112	.20428998	296
1997	.86523269	.20602111	297
1998	.94460319	.22093398	299
1999	.96931189	.45235729	343
2000	1.1165561	.56149498	338
2001	1.0729646	.54810108	339
2002	1.0032977	.38896301	339
2003	.92839597	.36739153	339
2004	.95686698	.34659782	341
2005	1.0625209	.53703124	341
2006	1.1851356	.75663764	343
2007	1.3276304	1.5169912	348
2008	1.2998747	2.7854679	343
2009	1.3093792	1.4282223	341
2010	1.0986178	.64750457	324
2011	1.0460208	.66990117	321
Total	1.0592063	.93208532	6172

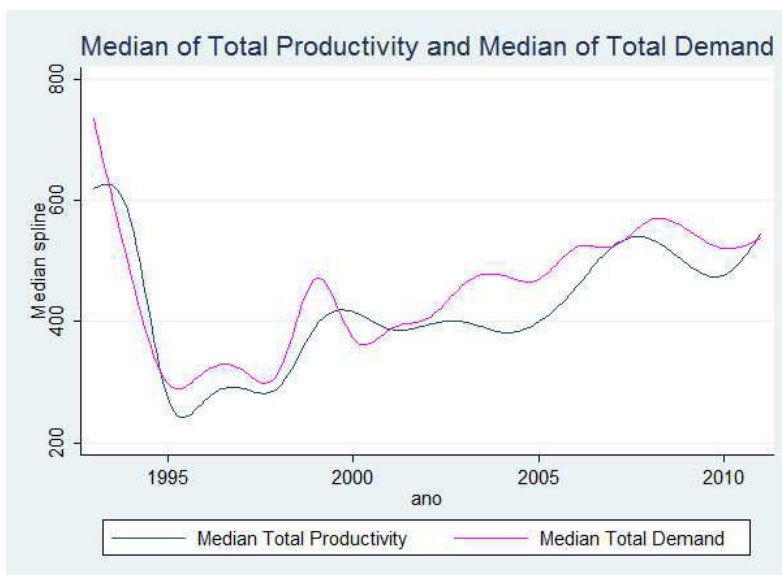
Source: DGPJ and author's calculations

Figure 6:



Source: DGPJ and author's calculations

Figure 7:

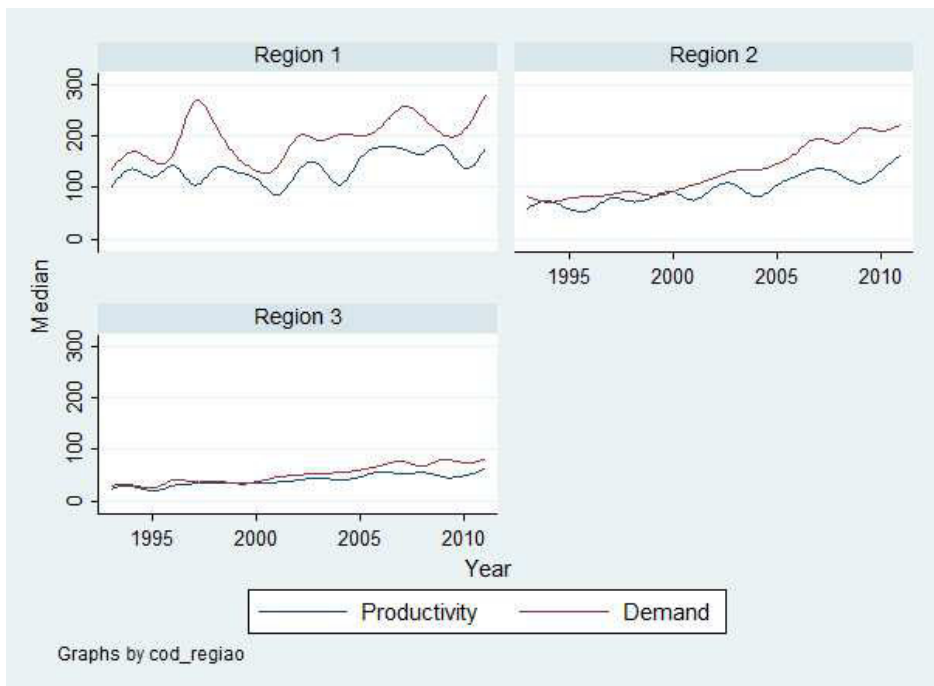


Source: DGPJ and author's calculations

Table II: Clearance Rate in T. Comarca

ano	Summary of total_clearance		Freq.
	Mean	Std. Dev.	
1993	.88032853	.19183185	218
1994	1.2022797	.32240105	218
1995	.94124438	.24901812	220
1996	.86775449	.16916037	221
1997	.85060457	.16975089	222
1998	.95073492	.17751099	222
1999	.87649528	.20375014	222
2000	1.0074646	.18990581	214
2001	.95170365	.20216016	220
2002	.94663523	.17566237	220
2003	.88169304	.15307959	220
2004	.85951319	.16710786	220
2005	.87017489	.16478769	220
2006	.93842247	.20957924	220
2007	.92572973	.1479077	221
2008	.94422196	.15668988	221
2009	1.2395011	1.3446844	221
2010	.92749237	.31454537	206
2011	.91991326	.13034724	206
Total	.9463581	.3797471	4152

Source: DGPJ and author’s calculations



## Appendix II

Table I – Judicial productivity using OLS

VARIABLES	total_prod
total_caseload	0.284*** (0.026)
Judges	18.914 (12.495)
jw_judges	10.743** (5.201)
PPI	1.740 (1.238)
year1996	-129.323*** (13.050)
year1997	-113.106*** (13.822)
year1998	-106.501*** (14.479)
year1999	-150.919*** (22.380)
year2000	-98.236*** (12.505)
year2001	-121.206*** (13.414)
year2002	-117.182*** (18.112)
year2003	-125.023*** (25.942)
year2004	-152.724*** (20.728)
year2005	-158.285*** (17.119)
year2006	-119.421*** (14.694)
year2007	-117.998*** (12.090)
year2008	-140.794*** (13.801)
year2009	-176.553*** (18.900)
year2010	-198.217*** (24.537)
year2011	-179.327*** (24.734)
region2	50.193 (70.939)
region3	99.628 (110.693)
Constant	-104.423 (193.899)
Observations	3,883
R-squared	0.538

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Tables II and III – judicial productivity using two-way FE

VARIABLES	(1) total_prod
total_caseload	0.199*** (0.014)
Judges	-17.527** (7.827)
jw_judges	-0.957 (6.211)
PPI	-2.434 (4.395)
year1996	-125.954*** (18.603)
year1997	-93.040*** (30.759)
year1998	-83.379*** (32.099)
year1999	-119.247*** (15.147)
year2000	-56.739* (31.096)
year2001	-68.225 (50.911)
year2002	-53.057 (66.352)
year2003	-48.487 (83.458)
year2004	-67.462 (84.459)
year2005	-53.875 (99.277)
year2006	-16.055 (92.513)
year2007	-13.835 (86.475)
year2008	-33.151 (84.559)
year2009	-59.733 (82.090)
year2010	-76.801 (78.067)
year2011	-58.786 (75.557)
region2	69.826 (50.627)
region3	86.295 (63.799)
Constant	407.655* (244.057)
Observations	3,883
R-squared	0.766

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

VARIABLES	executive_prod
executive_caseload	0.199** (0.096)
judges	-22.163*** (8.097)
jw_judges	-3.228 (2.225)
PPI	-3.903 (3.478)
year1996	9.234 (6.965)
year1997	27.588* (14.323)
year1998	29.260** (14.646)
year1999	26.912*** (4.510)
year2000	45.492** (19.567)
year2001	45.564 (33.579)
year2002	70.245 (43.075)
year2003	79.847 (52.821)
year2004	74.186 (51.751)
year2005	86.197 (60.331)
year2006	98.039* (54.642)
year2007	84.149* (46.536)
year2008	65.385 (42.951)
year2009	42.481 (36.216)
year2010	33.651 (32.022)
year2011	41.790 (26.156)
region2	-112.721 (93.261)
region3	-117.343 (88.602)
Constant	470.588* (273.961)
Observations	3,976
R-squared	0.724

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table IV – Judicial productivity using Fixed-effects (within) IV regression

VARIABLES	total_prod
total_caseload	0.171*** (0.010)
Judges	-12.980*** (2.226)
jw_judges	2.628 (2.978)
PPI	-2.528*** (0.566)
year1996	-136.113*** (21.129)
year1997	-94.027*** (21.084)
year1998	-91.357*** (20.921)
year1999	-124.015*** (20.919)
year2000	-64.730*** (20.479)
year2001	-74.247*** (20.604)
year2002	-59.611*** (20.632)
year2003	-53.707*** (20.634)
year2004	-71.372*** (20.730)
year2005	-55.804*** (21.317)
year2006	-16.828 (21.422)
year2007	-14.434 (21.466)
year2008	-33.237 (21.604)
year2009	-58.447*** (22.200)
year2010	-75.365*** (22.426)
year2011	-53.237** (22.453)
region2	67.861 (237.661)
region3	85.986 (251.312)
Constant	409.673* (226.949)
Observations	3,582
Number of cdtrib	229

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table V – declarative productivity using two-way FE

VARIABLES	(1) Total declarativo_prod
declarative_caseload	0.534*** (0.101)
Judges	0.338 (0.504)
Jw_judges	-2.717 (2.064)
PPI	-0.349 (0.320)
year1996	-4.407 (2.933)
year1997	-3.248 (5.533)
year1998	-12.986** (5.211)
year1999	-13.809* (7.534)
year2000	-12.495*** (3.388)
year2001	-11.459*** (3.457)
year2002	-6.577* (3.694)
year2003	-7.680* (4.217)
year2004	-14.883*** (4.515)
year2005	-14.818*** (5.462)
year2006	-11.091** (5.593)
year2007	-8.295 (5.626)
year2008	-5.237 (5.710)
year2009	-3.170 (6.001)
year2010	-3.928 (7.199)
year2011	-1.970 (7.455)
region2	-9.103 (9.053)
region3	-15.281 (13.400)
Constant	31.624* (17.599)
Observations	3,976
R-squared	0.888

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table VI – Economic productivity using two-way FE

VARIABLES	(1) total eco_prod
eco_caseload	0.533*** (0.023)
Judges	0.837 (0.791)
Jw_judges	0.527* (0.279)
PPI	-0.035 (0.077)
year1996	-0.565* (0.314)
year1997	-0.267 (0.560)
year1998	-0.290 (0.670)
year1999	-0.628 (0.946)
year2000	-0.335 (1.101)
year2001	0.161 (1.385)
year2002	-0.105 (1.481)
year2003	-0.396 (1.582)
year2004	-0.201 (1.675)
year2005	0.820 (1.978)
year2006	1.623 (2.035)
year2007	-0.491 (1.812)
year2008	-0.204 (1.885)
year2009	-0.557 (1.888)
year2010	-1.333 (2.171)
year2011	0.629 (2.147)
region2	3.927 (6.084)
region3	1.387 (5.775)
Constant	-7.307 (11.703)
Observations	3,918
R-squared	0.931

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1



Table VII – Correlation matrix

	PPI	pop_density	companies
PPI	1.0000		
pop_density	0.7558	1.0000	
companies	0.7754	0.8052	1.0000

Table VI – Variable names, description and sources

Tribunal	Court name	Source
Cdproc	Litigation code	
Cdtrib	Court code	
Anotrib	Year code	
entrados	Filed files	DGPJ
Findos	Terminated files	DGPJ
Pendientes	Pending files	DGPJ
Judges	Number of judges	DGPJ
Juizes_mp	Number of DA judges	DGPJ
Ne_ne	Assessores	DGPJ
sj_sec_trib_sup	Sec. Judiciais - Secretário de tribunal superior	DGPJ
Sj_sec_just	Sec. Judiciais - Secretário de justiça	DGPJ
sj_escrivao_adj	Sec. Judiciais - Escrivão de direito ou adjunto	DGPJ
sj_escrivao_aux	Sec. Judiciais - Escrivão de auxiliar	DGPJ
Sj_informatica	Sec. Judiciais - Pessoal de informática	DGPJ
Sj_tecnico	Sec. Judiciais - Pessoal técnico-profissional	DGPJ

Sj_auxiliar	Sec. Judiciais - Pessoal auxiliar e operário	DGPJ
Sj_ne	Sec. Judiciais - N.E.	DGPJ
Mp_sec_just	Serviços do MP - Secretário de justiça/Secretár	DGPJ
mp_escrivao_adj	Serviços do MP - Escrivão de direito ou adjunto	DGPJ
mp_escrivao_aux	Serviços do MP - Escrivão auxiliar	DGPJ
Mp_tecnico	Serviços do MP - Pessoal técnico-profissional	DGPJ
Mp_auxiliar	Serviços do MP - Pessoal auxiliar e operário	DGPJ
Mp_ne	Serviços do MP - N.E.	DGPJ
sc_sec_trib_sup	Serviços Comuns - Secretário de tribunal superior	DGPJ
Sc_sec_just	Serviços Comuns - Secretário de justiça/Secretár	DGPJ
sc_escrivao_adj	Serviços Comuns - Escrivão de direito ou adjunto	DGPJ
Sc_escrivao_aux	Serviços Comuns - Escrivão auxiliar/técnico de j	DGPJ

Sc_informatica	Serviços Comuns - Pessoal de informática	DGPJ
Sc_tecnico	Serviços Comuns - Pessoal técnico-profissional	DGPJ
Sc_auxiliar	Serviços Comuns - Pessoal auxiliar e operário	DGPJ
Sc_ne	Serviços Comuns - N.E.	DGPJ
Adv_masc	Number of male lawyers	DGPJ
Adv_fem	Number of female lawyers	DGPJ
Adv_est_masc	Number of intern male lawyers	DGPJ
Adv_est_fem	Number of intern female lawyers	DGPJ
Solic_masc	Number of male solicitors	DGPJ
Solic_fem	Number of female solicitors	DGPJ
Solic_exec_masc	Number of executive male solicitors	DGPJ
Solic_exec_fem	Number of executive female solicitors	DGPJ
Solic_est_masc	Number of intern male solicitors	DGPJ
Solic_est_fem	Number of intern female solicitors	DGPJ
Pop_density	Population density	INE
Companies	Number of companies in <i>concelho</i>	INE
PPI	Purchasing power parity in <i>concelho</i>	INE
Basico	(Alunos matriculados no ensino básico/ População residente com idade entre 6 a 14 anos)*100	INE
Secundario	(Alunos matriculados no ensino secundário/ População residente com idade entre 15 a 17 anos)*100	INE
superior	(Diplomados do ensino superior/ População residente com idade entre 20 e 29 anos)*1000	INE
Entrad1	Número de processos entrados de Acções declarativas comuns	DGPJ
Find1	Número de processos findos de Acções declarativas comuns	DGPJ
Pend1	Número de processos pendentes de	DGPJ

	Acções declarativas comuns	
Entrad2	Número de processos entrados de Acção Declarativa(DL.108/2006)	DGPJ
Find2	Número de processos findos de Acção Declarativa(DL.108/2006)	DGPJ
Pend2	Número de processos pendentes de Acção Declarativa(DL.108/2006)	DGPJ
Entrad3	Número de processos entrados de Execução comum	DGPJ
Find3	Número de processos findos de Execução comum	DGPJ
Pend3	Número de processos pendentes de Execução comum	DGPJ
Entrad4	Número de processos entrados de Execução comum (< 15-Set-2003)	DGPJ
Find4	Número de processos findos de Execução comum (< 15-Set-2003)	DGPJ
Pend4	Número de processos pendentes de Execução comum (< 15-Set-2003)	DGPJ
Entrad5	Número de processos entrados de Execução especial	DGPJ
Find5	Número de processos findos de Execução especial	DGPJ
Pend5	Número de processos pendentes de Execução especial	DGPJ
Entrad6	Número de processos entrados de Execução Cump.Obrig.Pecuniária	DGPJ
Find6	Número de processos findos de Execução Cump.Obrig.Pecuniária	DGPJ
Pend6	Número de processos pendentes de Execução Cump.Obrig.Pecuniária	DGPJ
Entrad7	Número de processos entrados de Execuções N.E.	DGPJ
Find7	Número de processos findos de Execuções N.E.	DGPJ

Pend7	Número de processos pendentes de Execuções N.E.	DGPJ
Entrad8	Número de processos entrados de cível – administrative especial	DGPJ
Find8	Número de processos findos de cível – administrative especial	DGPJ
Pend8	Número de processos pendentes de cível – administrative especial	DGPJ
Entrad9	Número de processos entrados de divórcios e separações	DGPJ
Find9	Número de processos findos de divórcios e separações	DGPJ
Pend9	Número de processos pendentes de divórcios e separações	DGPJ
Entrad10	Número de processos entrados de cível - inventário	DGPJ
Find10	Número de processos findos de cível - inventário	DGPJ
Pend10	Número de processos pendentes de cível - inventário	DGPJ
Entrad11	Número de processos entrados de Falência/ Insolvência/ R.Emp.	DGPJ
Find11	Número de processos findos de Falência/ Insolvência/ R.Emp.	DGPJ
Pend11	Número de processos pendentes de Falência/ Insolvência/ R.Emp.	DGPJ
Entrad12	Número de processos entrados de cível - Outras acções especiais	DGPJ
Find12	Número de processos findos de cível - Outras acções especiais	DGPJ
Pend12	Número de processos pendentes de cível - Outras acções especiais	DGPJ
Entrad13	Número de processos entrados de Proc. Especial Revitalização	DGPJ
Find13	Número de processos findos de Proc. Especial Revitalização	DGPJ
Pend13	Número de processos pendentes de	DGPJ

	Proc. Especial Revitalização	
Entrad14	Número de processos entrados de cível - Procedimentos cautelares	DGPJ
Find14	Número de processos findos de cível - Procedimentos cautelares	DGPJ
Pend14	Número de processos pendentes de cível - Procedimentos cautelares	DGPJ
Entrad15	Número de processos entrados de Procedimento Europeu Injunção	DGPJ
Find15	Número de processos findos de Procedimento Europeu Injunção	DGPJ
Pend15	Número de processos pendentes de Procedimento Europeu Injunção	DGPJ
Entrad16	Número de processos entrados de Embargos / Oposição	DGPJ
Find16	Número de processos findos de Embargos / Oposição	DGPJ
Pend16	Número de processos pendentes de Embargos / Oposição	DGPJ
Entrad17	Número de processos entrados de Habilitação de Herdeiros	DGPJ
Find17	Número de processos findos de Habilitação de Herdeiros	DGPJ
Pend17	Número de processos pendentes de Habilitação de Herdeiros	DGPJ
Entrad18	Número de processos entrados de Reclamação de Créditos	DGPJ
Find18	Número de processos findos de Reclamação de Créditos	DGPJ
Pend18	Número de processos pendentes de Reclamação de Créditos	DGPJ
Entrad19	Número de processos entrados de Notificação Judicial Avulsa	DGPJ
Find19	Número de processos findos de Notificação Judicial Avulsa	DGPJ
Pend19	Número de processos pendentes de	DGPJ

	Notificação Judicial Avulsa	
Entrad20	Número de processos entrados de Notificação Judicial Avulsa	DGPJ
Find20	Número de processos findos de Notificação Judicial Avulsa	DGPJ
Pend20	Número de processos pendentes de Notificação Judicial Avulsa	DGPJ
Entrad21	Número de processos entrados de cível - Outros processos N.E.	DGPJ
Find21	Número de processos findos de cível - Outros processos N.E.	DGPJ
Pend21	Número de processos pendentes de cível - Outros processos N.E.	DGPJ
Entrad22	Número de processos entrados de Justiça Penal - Comum	DGPJ
Find22	Número de processos findos de Justiça Penal - Comum	DGPJ
Pend22	Número de processos pendentes de Justiça Penal – Comum	DGPJ
Entrad23	Número de processos entrados de Justiça Penal - especial	DGPJ
Find23	Número de processos findos de Justiça Penal - especial	DGPJ
Pend23	Número de processos pendentes de Justiça Penal – especial	DGPJ
Entrad24	Número de processos entrados de Recurso contra-ordenação	DGPJ
Find24	Número de processos findos de Recurso contra-ordenação	DGPJ

Pend24	Número de processos pendentes de Recurso contra-ordenação	DGPJ
Entrad25	Número de processos entrados de Transgressão	DGPJ
Find25	Número de processos findos de Transgressão	DGPJ
Pend25	Número de processos pendentes de Transgressão	DGPJ
Entrad26	Número de processos entrados de Processo de Segurança	DGPJ
Find26	Número de processos findos de Processo de Segurança	DGPJ
Pend26	Número de processos pendentes de Processo de Segurança	DGPJ
Entrad27	Número de processos entrados de Concessão Lib. Condicional	DGPJ
Find27	Número de processos findos de Concessão Lib. Condicional	DGPJ
Pend27	Número de processos pendentes de Concessão Lib. Condicional	DGPJ
Entrad28	Número de processos entrados de Reabilitação Judicial	DGPJ
Find28	Número de processos findos de Reabilitação Judicial	DGPJ
Pend28	Número de processos pendentes de Reabilitação Judicial	DGPJ
Entrad29	Número de processos entrados de Indulto	DGPJ
Find29	Número de processos findos de Indulto	DGPJ
Pend29	Número de processos pendentes de Indulto	DGPJ



Entrad30	Número de processos entrados de Saída Precária Prolongada	DGPJ
Find30	Número de processos findos de Saída Precária Prolongada	DGPJ
Pend30	Número de processos pendentes de Saída Precária Prolongada	DGPJ
Entrad31	Número de processos entrados de Liberdade para Prova	DGPJ
Find31	Número de processos findos de Liberdade para Prova	DGPJ
Pend31	Número de processos pendentes de Liberdade para Prova	DGPJ
Entrad32	Número de processos entrados de Proc. Saída Provisória	DGPJ
Find32	Número de processos findos de Proc. Saída Provisória	DGPJ
Pend32	Número de processos pendentes de Proc. Saída Provisória	DGPJ
Entrad33	Número de processos entrados de Revogação Liberd. Condicional	DGPJ
Find33	Número de processos findos de Revogação Liberd. Condicional	DGPJ
Pend33	Número de processos pendentes de Revogação Liberd. Condicional	DGPJ
Entrad34	Número de processos entrados de Revog. Saída Prec. Prolongada	DGPJ
Find34	Número de processos findos de Revog. Saída Prec. Prolongada	DGPJ
Pend34	Número de processos pendentes de Revog. Saída Prec. Prolongada	DGPJ
Entrad35	Número de processos entrados de Proc. Delinq. Inimp. Perigoso	DGPJ
Find35	Número de processos findos de Proc. Delinq. Inimp. Perigoso	DGPJ

Pend35	Número de processos pendentes de Proc. Delinq. Inimp. Perigoso	DGPJ
Entrad36	Número de processos entrados de Modificação Execução da Pena	DGPJ
Find36	Número de processos findos de Modificação Execução da Pena	DGPJ
Pend36	Número de processos pendentes de Modificação Execução da Pena	DGPJ
Entrad37	Número de processos entrados de Revogação Liberdade Prova	DGPJ
Find37	Número de processos findos de Revogação Liberdade Prova	DGPJ
Pend37	Número de processos pendentes de Revogação Liberdade Prova	DGPJ
Entrad38	Número de processos entrados de Complemento Alter.Perigosidade	DGPJ
Find38	Número de processos findos de Complemento Alter.Perigosidade	DGPJ
Pend38	Número de processos pendentes de Complemento Alter.Perigosidade	DGPJ
Entrad39	Número de processos entrados de Complementares (Outros)	DGPJ
Find39	Número de processos findos de Complementares (Outros)	DGPJ
Pend39	Número de processos pendentes de Complementares (Outros)	DGPJ
Entrad40	Número de processos entrados de Cancelamento Prov.Reg.Criminal)	DGPJ
Find40	Número de processos findos de Cancelamento Prov.Reg.Criminal	DGPJ
Pend40	Número de processos pendentes de	DGPJ

	Cancelamento Prov.Reg.Criminal.	
Entrad41	Número de processos entrados de Incidente de Incumprimento	DGPJ
Find41	Número de processos findos de Incidente de Incumprimento	DGPJ
Pend41	Número de processos pendentes de Incidente de Incumprimento	DGPJ
Entrad42	Número de processos entrados de Recurso de Sanção Disciplinar	DGPJ
Find42	Número de processos findos de Recurso de Sanção Disciplinar	DGPJ
Pend42	Número de processos pendentes de Recurso de Sanção Disciplinar	DGPJ
Entrad43	Número de processos entrados de Processo Supletivo	DGPJ
Find43	Número de processos findos de Processo Supletivo	DGPJ
Pend43	Número de processos pendentes de Processo Supletivo	DGPJ
Entrad44	Número de processos entrados de Cúmulo Jurídico	DGPJ
Find44	Número de processos findos de Cúmulo Jurídico	DGPJ
Pend44	Número de processos pendentes de Cúmulo Jurídico	DGPJ
Entrad45	Número de processos entrados de Caução (art.º 197.º CPP)	DGPJ
Find45	Número de processos findos de Caução (art.º 197.º CPP)	DGPJ
Pend45	Número de processos pendentes de Caução (art.º 197.º CPP)	DGPJ
Entrad46	Número de processos entrados de Caução Económica (art.º 227.º)	DGPJ

Find46	Número de processos findos de Caução Económica (art.º 227.º)	DGPJ
Pend46	Número de processos pendentes de Caução Económica (art.º 227.º)	DGPJ
Entrad47	Número de processos entrados de Interrogatório Estrangeiros)	DGPJ
Find47	Número de processos findos de Interrogatório Estrangeiros	DGPJ
Pend47	Número de processos pendentes de Interrogatório Estrangeiros	DGPJ
Entrad48	Número de processos entrados de Expulsão Judicial (DL 244/98	DGPJ
Find48	Número de processos findos de Expulsão Judicial (DL 244/98	DGPJ
Pend48	Número de processos pendentes de Expulsão Judicial (DL 244/98	DGPJ
Entrad49	Número de processos entrados de Internam. comp. (confirmação)	DGPJ
Find49	Número de processos findos de Internam. comp. (confirmação)	DGPJ
Pend49	Número de processos pendentes de Internam. comp. (confirmação)	DGPJ
Entrad50	Número de processos entrados de Execução Sentença Estrangeira	DGPJ
Find50	Número de processos findos de Execução Sentença Estrangeira	DGPJ
Pend50	Número de processos pendentes de Execução Sentença Estrangeira	DGPJ
Entrad51	Número de processos entrados de Habeas Corpus	DGPJ
Find51	Número de processos findos de Habeas Corpus	DGPJ
Pend51	Número de processos pendentes de Habeas Corpus	DGPJ
Entrad52	Número de processos entrados de Caução boa conduta (C.Estrada)	DGPJ

Find52	Número de processos findos de Caução boa conduta (C.Estrada)	DGPJ
Pend52	Número de processos pendentes de Caução boa conduta (C.Estrada)	DGPJ
Entrad53	Número de processos entrados de Incid. Quebra Sigilo Bancário	DGPJ
Find53	Número de processos findos de Incid. Quebra Sigilo Bancário)	DGPJ
Pend53	Número de processos pendentes de Incid. Quebra Sigilo Bancário)	DGPJ
Entrad54	Número de processos entrados de Incidente de Alienação Menta	DGPJ
Find54	Número de processos findos de Incidente de Alienação Menta	DGPJ
Pend54	Número de processos pendentes de Incidente de Alienação Menta	DGPJ
Entrad55	Número de processos entrados de Execução de Sanção Acessória	DGPJ
Find55	Número de processos findos de Execução de Sanção Acessória	DGPJ
Pend55	Número de processos pendentes de Execução de Sanção Acessória	DGPJ
Entrad56	Número de processos entrados de Fixação Indemnização (DL26/97)	DGPJ
Find56	Número de processos findos de Fixação Indemnização (DL26/97)	DGPJ
Pend56	Número de processos pendentes de Fixação Indemnização (DL26/97)	DGPJ
Entrad57	Número de processos entrados de Caução boa conduta (L 109/91))	DGPJ
Find57	Número de processos findos de Caução boa conduta (L 109/91)	DGPJ
Pend57	Número de processos pendentes de Caução boa conduta (L 109/91)	DGPJ
Entrad58	Número de processos entrados de Internamento Compulsivo	DGPJ

Find58	Número de processos findos de Internamento Compulsivo	DGPJ
Pend58	Número de processos pendentes de Internamento Compulsivo	DGPJ
Entrad59	Número de processos entrados de Incid. Dtos Terceiro - DL15/93	DGPJ
Find59	Número de processos findos de Incid. Dtos Terceiro - DL15/93	DGPJ
Pend59	Número de processos pendentes de Incid. Dtos Terceiro - DL15/93	DGPJ
Entrad60	Número de processos entrados de Outros processos N.E.	DGPJ
Find60	Número de processos findos de Outros processos N.E.	DGPJ
Pend60	Número de processos pendentes de Outros processos N.E.	DGPJ
Entrad61	Número de processos entrados de Reconhecimento Exec de Decisão	DGPJ
Find61	Número de processos findos de Reconhecimento Exec de Decisão	DGPJ
Pend61	Número de processos pendentes de Reconhecimento Exec de Decisão	DGPJ
Entrad62	Número de processos entrados de Comum	DGPJ
Find62	Número de processos findos de Comum	DGPJ
Pend62	Número de processos pendentes de Comum	DGPJ
Entrad63	Número de processos entrados de Execução Laboral	DGPJ
Find63	Número de processos findos de Execução Laboral	DGPJ
Pend63	Número de processos pendentes de Execução Laboral	DGPJ
Entrad64	Número de processos entrados de	DGPJ

	Acidente trabalho/doença prof.	
Find64	Número de processos findos de Acidente trabalho/doença prof.	DGPJ
Pend64	Número de processos pendentes de Acidente trabalho/doença prof.	DGPJ
Entrad65	Número de processos entrados de Outras acções especiais	DGPJ
Find65	Número de processos findos de Outras acções especiais	DGPJ
Pend65	Número de processos pendentes de Outras acções especiais	DGPJ
Entrad66	Número de processos entrados de Procedimentos cautelares	DGPJ
Find66	Número de processos findos de Procedimentos cautelares	DGPJ
Pend66	Número de processos pendentes de Procedimentos cautelares	DGPJ
Entrad67	Número de processos entrados de laboral - Embargos / Oposição	DGPJ
Find67	Número de processos findos de laboral - Embargos / Oposição	DGPJ
Pend67	Número de processos pendentes de laboral - Embargos / Oposição	DGPJ
Entrad68	Número de processos entrados de laboral - Outros processos N.E.	DGPJ
Find68	Número de processos findos de laboral - Outros processos N.E.	DGPJ
Pend68	Número de processos pendentes de laboral - Outros processos N.E.	DGPJ
Entrad69	Número de processos entrados de laboral penal - Recurso contra- ordenação	DGPJ
Find69	Número de processos findos de laboral penal - Recurso contra- ordenação	DGPJ
Pend69	Número de processos pendentes de	DGPJ

	laboral penal - Recurso contra-ordenação	
Entrad70	Número de processos entrados de laboral penal – Transgressão	DGPJ
Find70	Número de processos findos de laboral penal – Transgressão	DGPJ
Pend70	Número de processos pendentes de laboral penal – Transgressão	DGPJ
Entrad71	Número de processos entrados de laboral penal - Outros processos N.E.	DGPJ
Find71	Número de processos findos de laboral penal - Outros processos N.E.	DGPJ
Pend71	Número de processos pendentes de laboral penal - Outros processos N.E.	DGPJ
Entrad72	Número de processos entrados de Processo tutelar cível	DGPJ
Find72	Número de processos findos de Processo tutelar cível	DGPJ
Pend72	Número de processos pendentes de Processo tutelar cível	DGPJ
Entrad73	Número de processos entrados de Promoção/Protecção (men.risco)	DGPJ
Find73	Número de processos findos de Promoção/Protecção (men.risco)	DGPJ
Pend73	Número de processos pendentes de Promoção/Protecção (men.risco)	DGPJ
Entrad74	Número de processos entrados de Tutelar educativo (inf. penal)	DGPJ
Find74	Número de processos findos de Tutelar educativo (inf. penal)	DGPJ
Pend74	Número de processos pendentes de Tutelar educativo (inf. penal)	DGPJ
Entrad75	Número de processos entrados de	DGPJ



	Justiça Militar - Comum	
Find75	Número de processos findos de Justiça Militar - Comum	DGPJ
Pend75	Número de processos pendentes de Justiça Militar – Comum	DGPJ
Execução_entrados	$\sum_{i=3}^7 \text{entrad}'i'$	
Execução_findos	$\sum_{i=3}^7 \text{find}'i'$	
Execução_pendentes	$\sum_{i=3}^7 \text{pend}'i'$	
Execução_clearance	$\frac{\text{execução\_clearance}}{\text{execução\_findos} / \text{execução\_entrados}}$	
Sj_total	$\text{sj\_total} = \text{sj\_sec\_trib\_sup} + \text{sj\_sec\_just} + \text{sj\_escrivao\_adj} + \text{sj\_escrivao\_aux} + \text{sj\_informatica} + \text{sj\_tecnico} + \text{sj\_auxiliar} + \text{sj\_ne}$	
sj_total_juizes	$\text{sj\_total\_juizes} = \text{sj\_total} / \text{juizes}$	
Total_advogados	$\text{total\_advogados} = \text{adv\_masc} + \text{adv\_fem} + \text{adv\_est\_masc} + \text{adv\_est\_fem}$	
Total_solicitadores	$\text{total\_solicitadores} = \text{solic\_masc} + \text{solic\_fem} + \text{solic\_exec\_masc} + \text{solic\_exec\_fem} + \text{solic\_est\_masc} + \text{solic\_est\_fem}$	
companies	$\begin{cases} 1 & \text{if } 0 < \text{companies} \leq 2150 \\ 2 & \text{if } 2150 < \text{companies} < 10000 \\ 3 & \text{if } \text{companies} \geq 10000 \end{cases}$	
Recursos2	$\text{recursos2} = 0.7 * \text{juizes} + 0.3 * \text{sj\_total\_juizes}$	
Total_prod2	$\text{total\_prod2} = \text{total\_findos} / \text{recursos2}$	
Total_carga2	$\text{total\_carga2} = (\text{total\_entrados} + \text{total\_pendentes}) / \text{recursos2}$	
Total_congestion	$\text{total\_congestion} = (\text{total\_pendentes} - \text{total\_entrados} + \text{total\_findos}) / \text{total\_findos}$	

Total_backlog	$\text{total\_backlog} = \frac{\text{total\_findos}}{(\text{total\_pendentes} + \text{total\_entrados})}$	
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