Productivity in civil justice in Portugal: A crucial issue in a congested system

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Abstract
This article focuses on the determinants of productivity in civil justice in Portugal using panel data covering the period from 1993 to 2013, from a strictly quantitative perspective. The performance indicators and the relationship between demand and resource distribution in the territory suggest that there is room for improving the allocation of resources. Such evidence is confirmed by a positive response of productivity to incoming cases per judge, taking into account the casemix. Moreover, productivity is positively impacted by both the number of judicial staff per judge and the proportion of cases resolved in judgeships that deal mainly with civil cases. (JEL: K40, H11, H40)

Introduction

The implementation of structural reforms that foster the growth potential of the Portuguese economy has been systematically suggested by several international institutions as a way to counteract low medium-term growth perspectives. At the same time, fiscal consolidation needs increased the pressure for efficiency of public policies and, in some areas, the reduction of available resources coincided with an increase in the demand for the services they provide. Justice was one of the sectors pressured during the crisis, namely as regards «economic» litigation (Correia and Videira 2015). In addition, the Portuguese justice system maintains a high congestion level which consistently places the country in the group of low performers in international comparisons (CEPEJ 2014). In this context, the justice sector has been at the centre of the discussions regarding structural reforms and the improvement in efficiency of the public sector.

The connection between efficiency of the justice system and economic growth has been the focus of several articles which relate the reduction of delays in case resolution in economic litigation (mainly civil and tax) to foreign direct investment and firms entry rates, key factors for economic growth (Lorenzano and Lucidi 2014). In the Portuguese case, recent surveys as the Business Cost of Contexts Survey from Statistics Portugal, published in 2015, and Gouveia *et al.* (2012a) show that firms identify the justice system as one of the top constraints to their activity. These results suggest that improving the performance of the justice sector could have relevant economic effects. This has been the basis for the recent reforms in the area of economic litigation, in particular those implemented during the Economic and Financial Assistance Programme, as the changes to the procedure rules for enforcement cases.[1]

This article focuses on the determinants of productivity in civil justice between 1993 and 2013. Note that, although tax cases could also be particularly relevant from an economic perspective, the disclosure of statistics regarding administrative and tax courts, which in Portugal have a separate jurisdiction from judicial courts, is much scarcer.[2] The period under analysis comes just before the most recent change in the judicial map that took place in 2014. This does not hinder the relevance of the analysis which can indeed be useful in the evaluation of the results of this reform, when data for a significantly long period after its implementation become available.

Empirical evidence regarding the determinants of efficiency of the judicial sector is quite vast. In recent years, several cross-country studies focusing on this topic have been released, mainly using CEPEJ data as in Voigt and El-Bialy (2016). The main determinants analysed in the literature concern organizational aspects, as the size of courts and their specialization level, the allocation of human and financial resources, court management and incentives (Gouveia *et al.* 2016). Although CEPEJ information is quite detailed, justice systems have substantial differences in aspects that are hardly quantifiable, such as the different agents' culture or the procedure rules in place. In this context, it is important to complement this evidence with analyses focused on a single country, to better inform public policy decision makers. Additionally, cross-country studies are sometimes based on correlations between very aggregate indicators, at the country level, while a detailed analysis of judicial systems requires more disaggregated data. Regarding studies focused on the Portuguese system, the paper by Borowczyk-Martins (2010) stands out, focusing on the determinants of productivity using 2001 data from civil judgeships in first instance courts.

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1. For further details concerning the measures implemented during the adjustment programme in this area and their effects, see Correia and Videira (2015, 2016) and Pompe and Bergthaler (2015).

2. There has been an improvement in the statistics released in this area more recently. Nonetheless they remain less detailed than judicial courts' statistics.

The main innovation of our paper is the reliance on a much broader sample, with the benefits of panel data. Moreover, it focuses on a more diverse set of explanatory variables.

There are several indicators that reflect the efficiency of justice systems, with the duration of resolved cases standing out as the one impacting economic agents' decisions more directly. In fact, the conclusions of the Business Cost of Contexts Survey, already mentioned, reinforce the importance of the justice system delays that are indicated as the top concern of firms. However, the duration of resolved cases is strongly influenced by internal procedures and practices of courts which may lead to a court resolving mainly very recent or particularly old cases in a certain year. As a result, this measure does not correctly gauges the efficiency of the system in each moment in time. In addition, procedure rules and potential procedural incidents can have an impact on this indicator that is not proportional to the effort made by the judge.

Considering the abovementioned limitations, we chose to focus on the ratio between the results achieved - number of resolved civil cases - and the number of judges. For simplicity, we refer to this ratio as a measure of productivity. A clear limitation of this measure is to ignore the complexity of cases, the so-called casemix (Gomes 2005). In order to overcome this limitation, the econometric approach followed accounts for both the heterogeneity across different *comarcas* and the caseload from other litigation areas, as outlined below. Another limitation of this indicator – common to all strictly quantitative indicators – is the fact that it disregards the quality of judicial decisions, an aspect which certainly also influences investment decisions but that was impossible to consider due to data limitations. The indicator commonly used to gauge the quality of judicial decisions is the reversal rate in higher courts.[3] Note, however, that according to the results from a survey to Portuguese firms presented in Gouveia *et al.* (2012a), negative evaluations are much more prevalent for the duration of cases than the quality of decisions, even for the companies that had a majority of unfavourable rulings.

This article is organized as follows. Firstly, there is a section dedicated to data, presenting the main characteristics of the database that covers 210 *comarcas* from 1993 to 2013. Secondly, the main indicators of resources and performance of the judicial system are presented, including a discussion on their territorial distribution and a brief international comparison. Thirdly, the main determinants of productivity are discussed, taking casemix into account. Finally, we make some concluding remarks.

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3. See, for instance, Rosales-López (2008) for a discussion on the connection between productivity and quality of the decisions using this indicator.

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Data

The database was constructed by merging three different datasets for first instance courts. Direção-Geral da Política de Justiça (DGPJ) provided one dataset on incoming[4], pending and resolved cases, and another one regarding judicial staff.[5] In addition, we gathered budgetary information from Direção-Geral da Administração da Justiça between 2007 and 2013. In order to merge this information into a single dataset, it was necessary to create a correspondence between the different classifications of courts.

As the territorial organization of the justice system changed several times in the period under analysis, we considered the broadest territorial definition of each *comarca*. As such, for the years with a more disaggregated territorial organization, the data were aggregated as if the *comarca* had kept the same territorial scope for the whole period. In addition to the courts identified as belonging to a specific *comarca*, the database includes information on courts that have a regional scope that is broader than the *comarca*, including courts specialized in more complex cases (*tribunais de círculo*) and courts specialized in a particular law area, namely in labour, family and minors or preliminary criminal enquiries.[6] Taking into account that this paper focuses on the relationship between available resources and case flows, we included these courts in the *comarca* where they are located.

This approach leads to the use of a definition of *comarca* that is different from the official one. However, it allows to overcome incomplete reporting (for instance, with the establishment of *tribunais de círculo*, the information regarding judicial staff in some *comarcas* includes the staff working in these courts) and maintains the correspondence between case flows and the human resources allocated to deal with them. Moreover, this approach is suited for the specific analysis made in this paper, which takes advantage of the heterogeneity across *comarcas*, independently of their actual territorial boundaries. The database excludes information on *tribunais de execução de*

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4. The number of incoming cases was corrected whenever, as a result of the creation of new *comarcas* or new judgeships within a *comarca*, there was an unusually high number of incoming cases resulting from the transfer of cases which are reported as resolved in one organizational unit and incoming in another unit. For further details regarding this correction, see Pereira and Wemans (2015).

5. For around 3 per cent of the observations, although there were cases resolved, there was no judge assigned to the *comarca*. To fill this gap we obtained information on the judges sitting in *comarcas agregadas* from the nominal lists of judges available at the Conselho Superior da Magistratura site since 2005. These judges are allocated to a specific *comarca* but resolve cases in two different ones. Due to the lack of information regarding the time spent by the judge in each of them, a value of 0.5 was allocated to both. For the remaining observations – where information was only missing in some years – the number of judges and non-judge staff was interpolated.

6. For a description of the organization of the Portuguese Justice system, see Gouveia et al. (2012), volume I.

penas, for which DGPJ stopped reporting information in 2010, as well as courts with a national scope and the two commerce courts.

Regarding courts included in the database that have a scope broader than the *comarca*, it is important to address their relevance in terms of civil justice. In the case of *tribunais de círculo*, which were closed down in 2000 and dealt with more complex cases, their weight on resolved civil cases[7] was around 4 per cent. This percentage is similar when it comes to family and minors courts, which are mainly focused on issues related to minors. As regards labour courts, which deal primarily with labour law, their relevance in the civil area is residual (around 1 per cent of total civil cases). Even less significant, as expected, is the number of civil cases resolved in courts dedicated to preliminary criminal enquiries. It is important to note that, while almost all labour cases are resolved in labour courts, only half of the cases related to minors are resolved in family and minors courts. Therefore, the courts that have the *comarca* as the territorial scope resolve mainly civil and criminal cases, but also some minors' cases.

Main indicators of resources and performance of the judicial system

Evolution between 1993 and 2013

The number of first instance cases resolved in Portugal changed significantly during the period under analysis.[8] Excluding 1993 and 1994[9], there has been an overall increasing trend, with civil cases representing more than half of all resolved cases (Figure 1A). Within civil cases, enforcement cases, intended to demand the fulfilment of an obligation that was previously established, gained predominance over declarative ones, aiming at the definition of a particular right. This composition shift was namely related to the gradual generalisation of the injunction procedure (Figure 1B).[10] Note that the significant increase in the number of resolved cases in civil law in 2013 is related to the measures to end enforcement procedures set in decree-law no.

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7. In this article, by resolved cases we mean the total resolved cases less the number of cases transferred (for further details, see Direção-Geral da Política de Justiça (2014b)).

8. Although the data for 2014 and 2015 were released in April 2016, this information is not considered here as it reflects the major changes related to the implementation of the New Judicial Map (see Introduction).

9. Note that, in 1995 the flows of criminal cases had a sharp reduction related to the decriminalization of some minor offenses, as discussed in Gomes (2006).

10. As mentioned in Pereira and Wemans (2015), the injunction procedure was created in 1993, but its use was rather limited. Legislative changes implemented in 1998, 2003 and 2005 led to a gradual increase in the number of injunction procedures filed.

4/2013.[11] During the period analysed, the change in the number of judges allocated to first instance courts was broadly in line with changes in the number of resolved cases, each judge ending around 550 cases per year (once again, excluding the first two years).

(A) By area of law

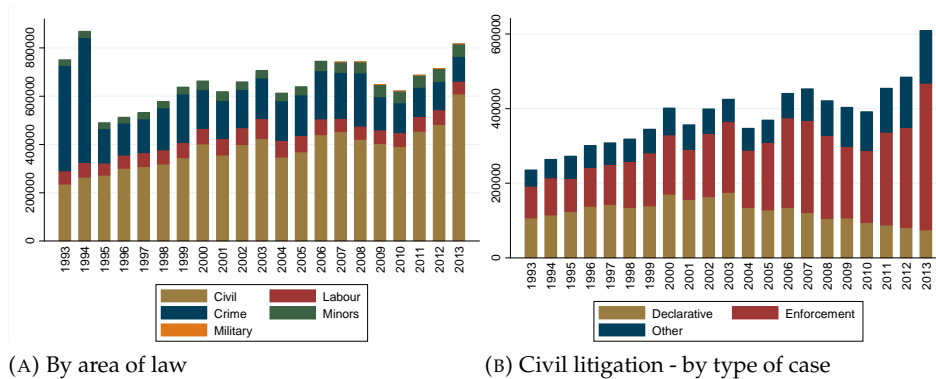(B) Civil litigation - by type of case

FIGURE 1: Resolved Cases

Sources: DGPJ and authors' calculations.

Focusing on civil justice in particular, it is important to highlight some indicators (constructed following the formulas presented in Appendix A) that capture the capacity of the system to deal with citizens' requests. The clearance rate – ratio between resolved and incoming cases – indicates that, with the exception 2006, 2007 and 2013 (years when measures to reduce pending cases were implemented) the number of civil cases resolved by the justice system has been always below the number of incoming cases, as the clearance rate has stood under 100 per cent (Figure 2A).[12] This explains the considerable growth in the number of pending cases that led to the increasing trend in the congestion rate (ratio of pending and resolved cases) (Figure 2B). The Portuguese judicial system is, thus, characterized by a very high congestion level: taking into account 2013 numbers of resolved and pending cases, the system would need two years and three months to solve all pending cases. The analysis of these indicators by type of case clearly shows that, particularly after 2000, the congestion problem is much more severe as regards enforcement cases than for declarative ones.

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11. This decree-law established a number of measures to reduce pending enforcement cases, including the broadening of rules for the extinction of proceedings.

12. The values published in *estatísticas da justiça* for 2014 and 2015 point to the maintenance of clearance rates above 100 per cent (Direção-Geral da Política de Justiça 2016). If maintained for a considerable number of years, this would allow for a consistent reduction in the number of pending cases in civil justice.
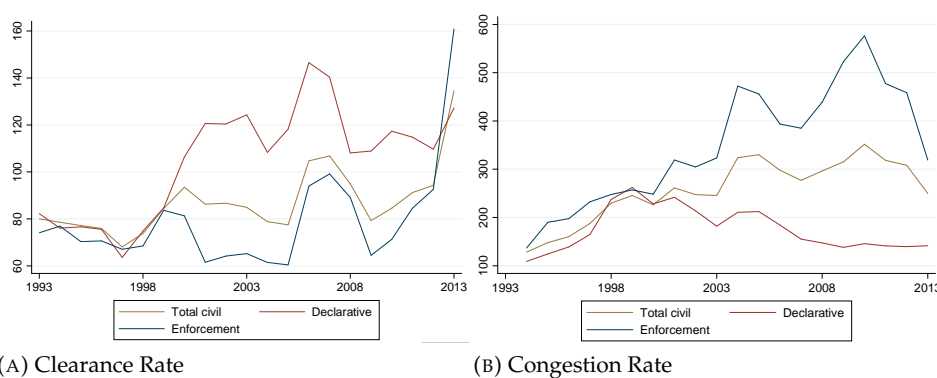
(A) Clearance Rate

(B) Congestion Rate

FIGURE 2: Performance Indicators - civil litigation

Note: The formulas for calculating these indicators are detailed in Appendix A.
Sources: DGPJ and authors' calculations.

Taking into account that justice system delays, namely as regards civil litigation, may contribute to an inefficient allocation of resources by economic agents, thereby restraining economic growth, it is important to look into the duration of cases. The average duration of resolved cases had an upward trend between 1993 and 2007, posting a decline thereafter, concentrated on declarative cases (Figure 3). In 2006 and 2007 the figures are affected by the measures to reduce the backlog of pending cases, encouraging the termination of old cases, as mentioned in Direção-Geral da Política de Justiça (2010). In parallel, the increase posted in 2013 for enforcement cases is most probably related with the implementation of the abovementioned decree-law no. 4/2013 (Direção-Geral da Política de Justiça 2014a) that led to the termination of a significant number of older cases. Overall the duration of civil cases stood at around 30 months, a figure which clearly signals the system lengthiness, especially for enforcement cases (around 40 months) as opposed to declarative ones (around 18 months).

International comparison

Although the high heterogeneity of justice systems hampers a direct comparability of summary indicators, the data regularly published by CEPEJ are an important benchmark. Indeed, these data serve as a reference to gauge how the Portuguese justice system compares with its European peers as regards resources allocated and efficiency. Taking into account the 2012 results, which are the most recent with information for Portugal, Table 1 presents some key indicators of judicial systems in the European Union
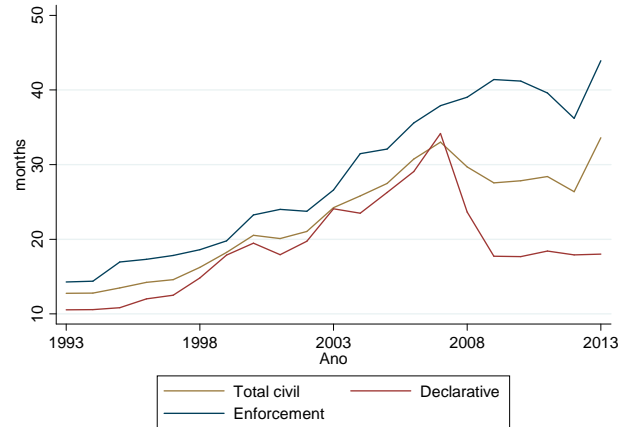
FIGURE 3: Average duration of resolved cases

Sources: DGPJ and authors' calculations.

countries followed by CEPEJ.[13] As justice systems with the same legal origin tend to be more homogeneous and, consequently, can be seen as more directly comparable, we include information on legal origin based on Djankov *et al.* (2007).

Regarding human resources allocated to the system, Portugal has a number of both judges and non-judge staff *per capita* below the overall average and above but close to the average of countries with a French legal origin. Concerning financial resources, the budget for courts per inhabitant is slightly above the European average[14], even for 2012, when temporary cuts to government employees salaries were in place.[15] Moreover, Portugal does not clearly stand out in terms of the level of litigation, as the number of incoming cases *per capita* is close to the average, as discussed in Pereira and Wemans (2015).

The litigation rate and performance indicators presented are for litigious cases other than criminal, which correspond, in the Portuguese system, to civil, labour and minors' cases. In addition, these indicators exclude enforcement cases that are precisely those which present worse performance

13. The most recent CEPEJ report was published in October 2016 (based on 2014 data) but it does not include results for Portugal regarding case flows.

14. Note that Portugal stands out more clearly if we consider this budget in percentage of GDP, showed in brackets in Table 1.

15. In Portugal, compensation of employees represents around 90 per cent of total court expenditure, the second highest percentage of the countries under analysis.

indicators among civil cases (see Figures 2A and 2B).[16] As regards the clearance rate, the results for Portugal are similar to the average for the countries with the same legal origin, but below the overall average. In addition, the country is among the group of 9 countries where pending cases increased in 2012. As an indicator of congestion, Table 1 includes the estimated clearance time. This indicator takes into account the ratio of pending to resolved cases and, considering the 2012 figures, the Portuguese justice system would take 369 days to end all pending cases, a figure that stands above the average.

In a nutshell, the international comparison of summary indicators of the justice system highlights that Portugal has a level of litigation and allocation of resources close to the average of other European countries with the same legal origin. In addition, the country shows up amongst the group of countries with clearance rates below 100 per cent, presenting a congestion level which is slightly above average, even excluding the enforcement cases that have deeper congestion problems, as shown in Figure 2B. This result suggests that there is a wide margin to improve efficiency of the Portuguese judicial system as far as allocation of resources is concerned, in order to close the gap to the top performers.

The explanatory factors of the judicial sector performance are highly complex and it is important to stress that, although this paper covers some relevant issues, there are several others that could only be analysed with case-level data, notably covering cases' procedural steps.[17] Indeed, differences in efficiency can arise from legislation, procedure rules or the behaviour of different players in the system, namely judges and lawyers. It should also be mentioned that, in order to deal with the backlog of pending cases, several measures were implemented over the last years, including changes to the legislation, which may not yet be visible in the data presented but may prove effective in the medium run.[18]

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16.   The exclusion of enforcement cases is justified by the different treatment of these cases in the countries under analysis, and leads to a better comparability of the results.

17.   For an example of a study based on this type of data, see Gouveia *et al.* (2012b).

18.   For instance, Portugal appeared as one of the countries with a higher degree of formality, according to Djankov *et al.* (2003), concerning the procedures needed to evict a tenant for non-payment. Such procedures were, however, considerably eased in the recent past.

Country (legal origin)	Litigation	Judges	Non-judge staff	Budget (% of GDP)	Clearance rate	Estimated clearance time
Austria (G)	1.2	15.7	54.8	- (-)	101	135
Belgium (F)	6.8	11.6	48.9	- (-)	-	-
Bulgaria (G)	-	16.3	82.6	17.2 (0.3)	-	-
Croatia (G)	4.3	32.3	162.6	36.7 (0.4)	95	457
Cyprus	-	10.4	49.0	35.4 (0.2)	84	-
Czech Republic (G)	3.5	17.7	86.9	35.3 (0.2)	103	174
Denmark (N)	0.8	4.6	32.5	43.4 (0.1)	109	165
Estonia	1.3	13.0	74.4	23.1 (0.2)	112	167
Finland (N)	0.2	13.7	40.8	46 (0.1)	103	325
France (F)	2.6	7.6	33.2	44.5 (0.1)	99	311
Germany (G)	2.0	18.5	66.9	103.5 (0.3)	100	183
Greece (F)	5.8	13.7	48.2	- (-)	58	469
Hungary (G)	4.4	16.9	82.2	32.9 (0.3)	105	97
Ireland (E)	3.9	3.0	20.6	23.3 (-)	-	-
Italy (F)	2.6	8.3	39.7	50 (0.2)	131	590
Latvia (G)	2.2	12.9	78.6	21.8 (0.2)	118	241
Lithuania (F)	3.6	22.8	87.2	17.7 (0.2)	101	88
Luxembourg	0.9	35.4	67.6	- (-)	173	73
Malta	1.0	8.1	85.4	27.4 (0.2)	114	685
Netherlands (F)	-	11.1	37.3	63.7 (0.2)	-	-
Poland (G)	2.8	24.5	106.0	35.8 (0.4)	89	195
Portugal (F)	**3.5**	**14.1**	**58.3**	**45.5 (0.3)**	**98**	**369**
Romania (F)	5.2	9.4	43.6	15.2 (0.2)	99	193
Slovakia (G)	3.0	16.1	82.8	28.2 (0.2)	82	437
Slovenia (G)	3.1	38.2	161.7	78 (0.5)	101	318
Spain (F)	3.8	7.9	97.3	80.9 (0.4)	100	264
Sweden (N)	0.7	8.0	54.1	66.7 (0.2)	99	179
Average	**2.9**	**15.2**	**69.7**	**42.3 (0.2)**	**103**	**278**
Average (F)	**4.2**	**11.8**	**54.8**	**45.4 (0.2)**	**98**	**326**

TABLE 1. Resources and performance indicators of judicial systems in 2012

Notes: Legal origin - German (G), French (F), English (E), Nordic (N). Litigation - non-litigious, other than crime incoming cases per 100 inhabitants. Judges - no. of professional judges in first instance courts per 100 inhabitants. Non-judge staff - no. of non-judge staff per 100 inhabitants. Budget - total budget of courts in euros per inhabitant. Clearance rate - non-litigious, other than crime cases (see appendix A). Estimated clearance time - Estimated clearance time in days for non-litigious, other than crime cases (see appendix A).
Sources: Djankov *et al.* (2007) and CEPEJ-STAT dynamic database (accessed on 10 October 2016).

Territorial distribution of demand, resources and congestion

The average number of incoming civil cases in a certain *comarca* can be seen as a measure of demand for civil justice directed to courts with jurisdiction there. Therefore, it is interesting to analyse the connection between this demand and

the human resources allocated to those courts.[19] As previously mentioned, these resources are not exclusively allocated to civil justice, but also to other litigation areas such as crime, labour and minors.

Taking into account the average number of incoming civil cases between 1993 and 2013, we separated out the *comarcas* into two groups of the same size.[20] Regarding the territorial distribution, small *comarcas* are almost exclusively located in inland *círculos* (which tend to have population density below average) or on the islands.

Furthermore, the restriction concerning the allocation of at least one judge to each *comarca*[21] is very biding in the group of small *comarcas* and makes the number of judges largely independent from demand for this group (Figure 4A). As a result, most of these *comarcas* have on average one judge, while the number of incoming civil cases ranges between less than 100 and more than 500. In contrast, for large *comarcas* there is a positive relationship between demand and the number of judges (Figure 4B). As a consequence, there is a lower dispersion in the distribution of incoming cases per judge for this last group, with a coefficient of variation of 0.43 as opposed to 0.57 in small *comarcas*. This distribution reflects, as expected, a higher pressure on judges located in large *comarcas* (the median is 234 incoming cases per judge in small and 381 in large *comarcas*), but there is a significant overlap of the two distributions (Figure 5). Regarding non-judge staff, their allocation does not face a similar restriction, and there is a positive relationship between incoming civil cases and the number of non-judge staff, regardless of the size of the *comarca*. The differences in the number of incoming cases per judge could be explained by a different pressure from other legal areas on judge's workload. However, the results remain valid if one considers all litigation, instead of civil litigation only. The only change is a smaller overlapping of the distributions on Figure 5.

Expenditure on judges' wages can be regarded as a proxy for the average experience of the judges allocated to the *comarca*, as there is evidence that the career of judges in Portugal is highly based on tenure (see Centeno and Pereira 2005). In particular, the connection between wages and experience is quite strong during the first half of the career, stage clearly overrepresented in a sample of first instance judges. In this context, there is some evidence that judges are, on average, more experienced in large *comarcas*, as spending

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19. This relationship mainly mirrors decisions regarding the allocation of resources in the territory, but could also be influenced by the response of demand to changes in the availability of resources, as there is evidence of rationing by waiting line in the Portuguese judicial system (Pereira and Wemans 2015).

20. For the purpose of replicating the results, the list of the *comarcas* in each group is available upon request.

21. As mentioned in a previous footnote, there are exceptions to this rule as some very small *comarcas* are sometimes linked to neighbouring ones. However, these happens in very few cases.
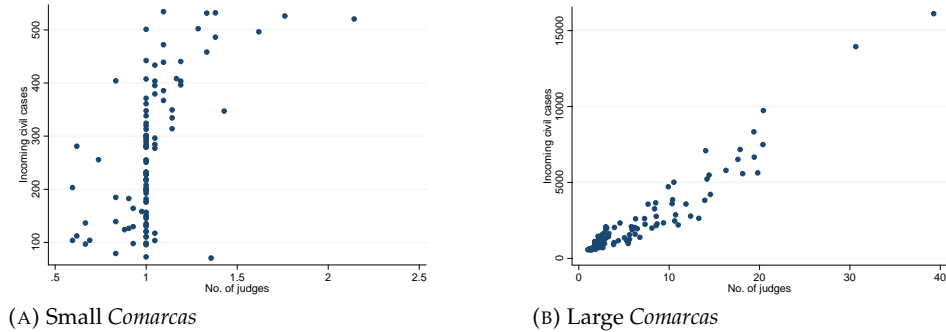
(A) Small *Comarcas*

(B) Large *Comarcas*

FIGURE 4: Incoming cases vs the number of judges

Note: Lisbon and Porto *comarcas* were excluded from figure B, as the average number of incoming cases in these areas is very high. The figures depict averages for each *comarca* between 1993 and 2013.
Sources: DGPJ and authors' calculations.
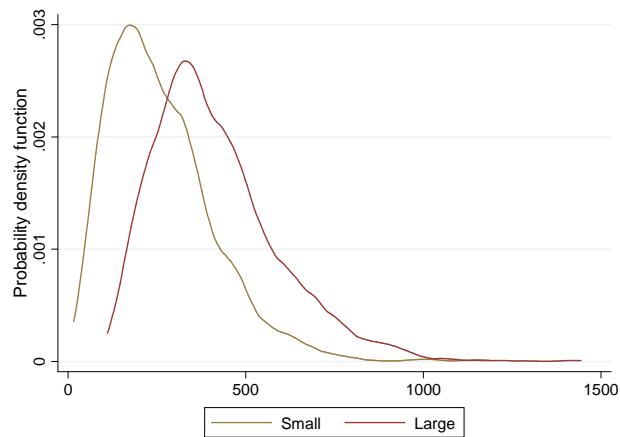
FIGURE 5: Distribution of the number of incoming cases per judge in small and large *comarcas*

Sources: DGPJ and authors' calculations.

on wages per judge in this group is higher than in small *comarcas*. However, the correlation between the size of the *comarca* and average wage per judge is quite low (0.12).

It is also relevant to gauge if there are significant differences between the two groups regarding performance indicators. Concerning the average duration of resolved cases, small *comarcas* usually present more favourable outcomes (Figure 6), although the difference is not very clear. In addition,

FIGURE 6: Duration and clearance rate for small and large *comarcas*

Note: The figure depicts averages for each *comarca* between 1993 and 2013.
Sources: DGPJ and authors' calculations.

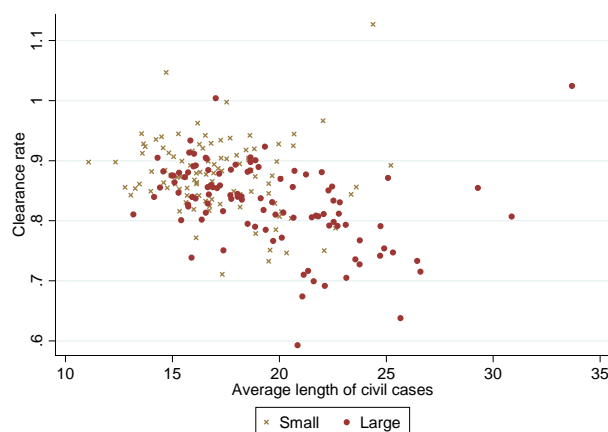regarding clearance rates the difference between the two groups is even less clear, as the distributions are very similar.

The analysis of the distribution of demand and resources in the territory shows a high heterogeneity in the ratio of incoming cases per judge in small *comarcas*. Additionally, although these *comarcas* have on average a lighter caseload per judge than large ones, this does not clearly translates into better performance as regards disposition time or congestion. Indeed, the prevalence of clearance rates below 100 per cent, which is on the basis of congestion problems, is common to both small and large *comarcas*.

Some determinants of productivity in civil justice

Variables

The specification estimated in this article intended to explain the number of resolved cases per judge in civil justice (variable *ResCiv*). As mentioned in the introduction, this dependent variable appears, as a productivity indicator, preferable to the length of resolved cases that is also available in the database. The estimation is based on a panel dataset (210 *comarcas*, followed over the period 1993-2013). Given that this panel covers a relatively long time horizon, we chose a dynamic specification that includes the lagged dependent variable, that is, the number of civil cases completed per judge in the previous year.

A first group of explanatory variables refers to the caseload in each *comarca*, captured by the number incoming civil cases in the year and pending

ones at the end of the year before per judge (respectively, *IncCiv* and *PendCiv*). For the first of these variables, a quadratic term was also included, which aims to capture a possible non-linear response of resolved cases to incoming ones.

A second group of variables includes measures of specialization in civil litigation. The first one flags the *comarcas* where there were courts with specific jurisdiction in this area. Specific jurisdiction is defined as court specialization concerning the applicable form of procedure or the value of the claim, for example, civil judgeships (*varas cíveis*) that deal only with claims above a certain amount (*ClaimSpec*).[22] The second variable reflects the percentage of civil cases completed in judgeships that deal mostly with civil cases (*CivSpec*). This variable therefore reflects *de facto* specialization and not *de jure* specialization, flagging judgeships in which, in a given year, more than 80 percent of resolved cases were civil.[23] A third variable that reflects the proportion of enforcement cases in overall civil cases in the *comarca* (*WEnfor*) has also been included.

The number of cases resolved by a judge in a given *comarca* in other areas, such as criminal justice, will also have an impact on the number of resolved civil cases. In fact the judges considered deal in general with both civil and non-civil justice. Therefore there should be a negative «rivalry» effect between the resolution of civil and non-civil cases (in particular as regards the time spent by judges) that will be all the more intense the greater the degree of utilization of available resources. However, this effect may be mitigated by differences in the productivity of judges: a more productive judge will tend to resolve more cases whatever the litigation area.

This kind of effects is first captured by the number of resolved criminal cases per judge (*ResCrim*), in which we consider separately ordinary and special proceedings, misdemeanour and a residual category. In addition, in the *comarcas* whose data do not include labour courts or family and minors courts, cases pertaining to labour and minors law (*ResLab* and *ResMin*) were taken on board as well, as these are heard in the same courts as civil cases. In the *comarcas* whose data include both the cases and resources belonging to labour courts or family and minors courts (see section Data), binary variables have been added (*LabCou* and *FamCou*), in order to capture the impact on resolved civil cases. Note that *comarca* fixed-effects (see below) should capture to a large extent such an impact, as there have been only a few changes during the sample period in terms of the creation or extinction of these courts.

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22. More specifically, the variable flags the *comarcas* in which there was at least one court with the following designation: *vara cível*, *vara mista*, *tribunal de pequena instância cível* or *juízo de execução*.

23. This percentage is intended to approximate a substantial degree of specialization in civil justice, but it is arbitrary. We experimented with 90 percent, and the results shown below did not change significantly.

With regard to resources allocated to the courts, we only have variables related to human resources: judicial staff per judge in the *comarca* (*JudSt*) and, for the period after 2006 only, a variable that intends to approximate the experience of judges (*Exper*) through their average salary. As said, a strong association between salary and experience is documented for this professional group.[24] It would have been useful to have variables capturing the availability of equipment, particularly as regards investment in IT, but such information was unavailable.

As for the judicial organization of *comarcas*, we experimented with including in the regression a binary variable for those where *tribunais de círculo* (that existed between 1993 and 1999) were located. However, this variable was not significant, perhaps due to the relatively small number of cases heard by these courts, despite the fact that such cases were more relevant, notably, as far as the value of the claim was concerned (for civil justice).

The regression has an indicator that measures purchasing power of *comarcas* (*PurcPower*) - see Pereira and Wemans (2015) - in logs, to approximate their economic development. The latter should impact the characteristics of civil litigation, e.g. its complexity. We also considered the number of incoming civil cases (in logs), intended to capture the «size» of *comarcas* (*Size*).

The regression includes *comarca* fixed-effects (α) that model a multiplicity of time-invariant factors impacting on the number of resolved cases. These include the differences among *comarcas* as to the characteristics of litigation (i.e. the casemix) and judicial organization, whenever there has been no substantial changes over the sample period. In particular, these fixed-effects will capture the bulk of the impact of including data on labour courts and family and minor courts in the *comarcas* where they are located.

Finally, the regression includes year fixed-effects (δ) that model the impact on resolved cases of factors affecting similarly the various *comarcas*, such as methodological changes to justice statistics[25] or the legislative measures to reduce the backlog of pending cases mentioned in the previous section.

The estimated specification for the complete sample period is thus as follows:

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24. Naturally there are wage variations not due to changes in the experience of judges, such as changes in the wage scale and the wage cuts and reinstatements in the last few years of the sample period. Thus, the average salary of each *comarca* was taken against the average salary for all of them in a given year.

25. An example of these changes is the one in 2007 in the procedure for collecting information that started to be made directly from the courts' computer system.

$$
\begin{aligned}
ResCiv_{i,t} = {} & c + \beta_1 ResCiv_{i,t-1} + \beta_2 IncCiv_{i,t} + \beta_3 IncCiv_{i,t}^2 \\
& + \beta_4 PendCiv_{i,t-1} + \beta_5 CivSpec_{i,t} + \beta_6 ClaimSpec_{i,t} \\
& + \beta_7 WEnf_{i,t} + \beta_8 ResCrim_{i,t} + \beta_9 ResLab_{i,t} \\
& + \beta_{10} ResMin_{i,t} + \beta_{11} LabCou_{i,t} \\
& + \beta_{12} FamCou_{i,t} + \beta_{13} JudSt_{i,t} \\
& + \beta_{14} Size_{i,t} + \beta_{15} PurcPower_{i,t} + \alpha_i + \delta_t + \varepsilon_{i,t},
\end{aligned}
\tag{1}
$$

where i indexes the *comarca* and t the year. This specification is estimated for all *comarcas* and also for the subsets of large and small ones (the definition used in the previous section has been kept). Another estimated specification includes the indicator of experience of judges, for the subsample 2007-2013. Appendix B presents the descriptive statistics of the variables included in the regressions.

Taking into account that declarative and enforcement cases differ much in terms of substance and procedure, the weight of the latter in overall civil cases is held constant in the specification above. Nevertheless, we also estimate regressions taking resolved declarative and enforcement cases as the dependent variable (changing the definition of incoming and pending cases accordingly). The role of judges in the resolution of enforcement cases has been played down with the reform of the respective procedure rules (from 2003 onwards). Therefore, the explanatory power of the regression in which enforcement cases show up as the dependent variable will be smaller, for we do not include variables that capture the intervention of enforcement agents, which has been gaining prominence.

Econometric issues

The dynamic panel (1) can be estimated consistently by the Arellano and Bond (1991) estimator, under the usual conditions (see, for example, Wooldridge (2002, chapter 11)). The fixed-effects estimator for panel data is not consistent in this case, but its results are still presented as a benchmark. The Arellano-Bond estimator instruments the lagged dependent variable by a certain number of the respective lags. Given that pending cases may respond to the number of cases resolved in previous periods, such variable was instrumented in a similar way. In the implementation of the Arellano-Bond method, particularly in a long panel as ours, the problem of an excess of instruments arises as the number of lags used increases. To address this problem, the methods suggested in the literature (Roodman 2009) have been followed, namely, the use of a relatively small number of lags to construct the matrix of instruments as well as collapsing the latter. In addition, the robustness of coefficients to the change in the number of lags was checked for each one of the regressions. Coefficients are, in general, robust (the exceptions are indicated

in the text). In order to have a general indication about the validity of the instrumentation, the results of Hansen's overidentification test are presented.

Another relevant econometric point is that, as mentioned, the resolution of civil cases occurs simultaneously with the resolution of criminal, labour and minor' cases. Therefore, resolved non-civil cases cannot be considered exogenously determined in the regression above, and were instrumented by the number of incoming cases in the same litigation area. Such instrumentation strategy is justified, firstly, by the high degree of correlation between incoming and completed cases within each area. Moreover, it seems reasonable to assume that resolved civil cases do not respond directly to criminal, labour and minors' cases filed (although they may indirectly respond via the variables included in the regression above, particularly the number of incoming civil cases).

Results

Table 2 shows the estimation results for all of *comarcas* and taking overall civil cases as the dependent variable, in the full sample (including the results for the fixed-effects estimator) and in the most recent period. This last regression includes the indicator of average experience of judges in the *comarca*, allowing at the same time to study the changes vis-à-vis the entire sample period.[26] Table 3 presents separate estimates for declarative and enforcement cases, as well as for large and small *comarcas* (overall civil and full sample). The Hansen statistic indicates the non-rejection of the null hypothesis in the regressions for overall civil (shown in table 2). However, two of the regressions presented in table 3 have symptoms of endogeneity: the one that has enforcement cases as the dependent variable and the one referring to small *comarcas*. Even taking into account the conservative instrumentation strategy followed (precisely to avoid weakening Hansen's statistic), the results of these regressions must be viewed with caution. We present them nevertheless, in order to compare with the remaining results. In any case, the conclusions drawn in this section are based on evidence following from the full set of regressions run.

The coefficient of the lagged dependent variable is significant in the fixed-effects regression, but not in the Arellano-Bond regression for overall civil, both in the full sample and in the post-2007 sample. However, the results of the full-sample regression are sensitive to the instrumentation procedure, being significant and with a magnitude similar to the one in the fixed-effects regression when instruments are not collapsed. Moreover, in the regressions with declarative and enforcement cases as the dependent variable, the coefficient at issue is always significant. The smaller persistence of resolved

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26.   In fact the results changing the sample period only (i.e. without adding the new variable) are quite similar to those presented, both in terms of significance of regressors and size of the statistically significant coefficients.

declarative cases may have several explanations, such as the more important role of judges in their resolution that may lead to a greater fluctuation in the completion of cases, associated with their rotation across *comarcas*. Comparing the sets of estimates in the Arellano-Bond and fixed-effect regressions, these are generally close, with the exception of the coefficient of the lagged dependent variable, already mentioned, and the coefficient of the lagged pending cases (see below).

The number of resolved civil cases per judge varies positively with incoming ones (a result that holds across all regressions), meaning that productivity of judges responds to the pressure put by demand on the judicial system. Such an evidence helps explain the relative homogeneity in performance indicators between small and large *comarcas*, notwithstanding the differences in the volume of civil litigation they face, as documented above. In general terms, this type of effect is described both for Portugal (Borowczyk-Martins 2010) and other countries (e.g. Dimitrova-Grajzl *et al.* 2012, for Slovenia, and Beenstock and Haitovsky 2004, for Israel). Beenstock and Haitovsky interpret this increase in effort as a response to pressure as an attempt by judges to prevent an increase in congestion in the jurisdictions for which they are responsible.

In addition, in the regression for overall civil, the estimated coefficient of the quadratic term is negative and statistically significant, indicating that, as the number of incoming cases grows, resolved cases increase at a progressively lower rate. This is expectable given the more intense use of resources, as incoming and completed cases grow. Exemplifying with the estimates for the full-sample regression, combining the linear and non-linear terms in the average of incoming cases per judge, 100 additional cases filed lead to an increase by about 50 in resolved ones. Such nonlinear effect does not hold, however, for small *comarcas*, indicating less pressure on resources there. This evidence, coupled with the heterogeneity in the relationship between incoming cases and the number of judges documented for the smaller *comarcas*, suggests that there is scope for increasing efficiency with a more equitable sharing of caseload among judges through territorial aggregation, in the spirit of the New Judicial Map, implemented in 2014.

The impact of pending cases is negative and significant for overall civil in the full sample. However, this result is not robust to the variation in the number of lags in the implementation of the Arellano-Bond estimator, losing statistical significance when instruments are not collapsed. In the fixed-effects regression, the coefficient is positive and significant, but this change in sign could result precisely from the correction of endogeneity. For the more recent sample period and when declarative and enforcement cases are considered separately, the coefficients of pending cases are not statistically significant. This apparent lack of impact of pending cases on judges' productivity does not imply that they only deal with the new cases, but suggests that they establish

	Full sample	Sample 2007-13	Fixed-effects estimator
Resolved civil / judge(t-1)	0.05	0.16	0.16***
	0.16	*0.21*	*0.01*
Incoming civil/ judge (100 cases)	72.80***	76.99***	68.40***
	17.35	*21.15*	*4.09*
Incoming civil / judge^2	-3.03***	-2.83*	-1.74***
	0.94	*1.45*	*0.27*
Pending civil / judge(t-1) (100 cases)	-32.94**	-28.63	3.22***
	13.22	*21.23*	*0.47*
Specialization civil (perc.)	0.51***	0.76***	0.53***
	0.11	*0.20*	*0.06*
Claim type spec. (binary var.)	64.17**		6.45
	31.58		*10.03*
Weight enforc. cases (perc.)	2.60***	4.27***	1.86***
	0.37	*1.07*	*0.13*
Resolved criminal (ord.) / judge	-0.51**	-0.15	-0.51***
	0.21	*0.57*	*0.07*
Resolved labour / judge	-1.69	-5.05	-0.63**
	1.04	*5.44*	*0.31*
Resolved minors / judge	0.14	0.49	0.03
	0.53	*0.74*	*0.08*
Judicial staff / judge	8.00***	4.71	9.51***
	2.36	*4.29*	*0.96*
Ind. experience of judges		-27.83**	
		13.11	
Size of *comarca*	-88.22***	-57.22	-39.78***
	28.21	*56.02*	*7.10*
Purchasing power of *comarca*	-70.99*	-91.79	20.39**
	36.31	*116.79*	*10.26*
Hansen Test (p-value)	0.30	0.13	
N. of instruments	43	28	
N (*Comarcas*)	210	192	210
T (Years)	19	6	19

TABLE 2. Determinants of productivity in the resolution of civil cases

Notes: Regressions estimated by the Arellano-Bond method (except for the third column), instrumenting resolved and pending civil cases in the previous year by their lags (2nd to 5th) and collapsing the instruments as in Roodman (2009). In all regressions, resolved non-civil cases were instrumented by the incoming ones. In addition to the variables in the table, it is controlled for the existence of a labour court or family and minors court in the *comarca*, for the other categories of resolved criminal cases (special, misdemeanour and others) and *comarca* and year fixed-effects. Robust standard deviations in italics. P-values: * <0.1; ** <0.05; *** <0.01.

their objectives of resolution of cases with reference to the number of those entering in the year.

With regard to specialization, judges tend to be more productive in the resolution of civil cases in *comarcas* where judgeships dealing almost exclusively with this litigation area have more importance. This positive effect

	Declarative cases	Enforcement cases	Small comarcas	Large comarcas
Resolved civil / judge(t-1)	0.27***	0.42***	0.16	0.26
	0.06	*0.12*	*0.16*	*0.16*
Incoming civil / judge (100 cases)	70.64***	79.88***	68.79***	104.14***
	11.26	*10.83*	*14.19*	*18.68*
Incoming civil / judge^2	-3.83**	-3.04**	-1.91	-4.23***
	1.81	*1.35*	*1.55*	*0.94*
Pending civil / judge(t-1) (100 cases)	3.61	1.67	4.36	-27.55***
	2.7	*11.26*	*8.91*	*9.33*
Specialization civil (perc.)	0.02	0.54***	0.27***	0.61***
	0.04	*0.11*	*0.10*	*0.18*
Claim type spec. (binary var.)	1.61	16.25		50.21*
	12.08	*10.91*		*26.77*
Weight enforc. cases (perc.)			1.46***	4.02***
			0.30	*0.56*
Resolved criminal (ord.) / judge	-0.26***	-0.52***	-0.74*	-0.30
	0.08	*0.17*	*0.38*	*0.21*
Resolved labour / judge	-0.36	-1.34	-1.60	-0.60
	0.28	*1.14*	*1.93*	*0.46*
Resolved minors / judge	-0.25**	0.03	1.11***	-0.05
	0.11	*0.28*	*0.39*	*0.76*
Judicial staff / judge	2.89***	10.55***	8.44***	3.27
	0.92	*2.32*	*3.14*	*4.57*
Size of *comarca*	-19.37***	-49.62***	-63.31***	-182.64***
	5.15	*11.36*	*18.88*	*50.11*
Purchasing power of *comarca*	4.33	-59.14**	-49.18	8.10
	12.36	*28.95*	*40.08*	*47.97*
Hansen test (p-value)	0.14	0.00	0.03	0.50
N. of instruments	43	43	40	43
N (*Comarcas*)	210	210	105	105
T (Years)	19	19	19	19

TABLE 3. Determinants of productivity by case type and size of *comarca*

Notes: The size of *comarcas* is defined by reference to the number of incoming civil cases. Regressions estimated by the Arellano-Bond method, instrumenting resolved and pending civil cases in the previous year by their lags (2nd to 5th) and collapsing the instruments as in Roodman (2009). Resolved non-civil cases were instrumented by the respective incoming ones. In addition to the variables in the table, it is controlled for the existence of a labour court or family and minors court in the *comarca*, for the other categories of resolved criminal cases (special, misdemeanour and others) and *comarca* and year fixed-effects. In the regression for declarative (enforcement) cases, all case flow variables refer to them and it is controlled, in addition, for the number of enforcement (declarative) cases. Robust standard deviations in italics. P-values: * <0.1; ** <0.05; *** <0.01.

of specialization in civil litigation (relative to other areas) on the number of completed cases per judge shows up in all regressions, except the one for declarative cases. As regards judgeships of specific jurisdiction - specialization within the civil area, by the value of the claim - the evidence of an effect on productivity is less robust. In fact, this variable is only statistically significant

in the regression for overall civil in the full sample, and even there this depends on the instrumentation procedure. Note that, regardless of the impact on the number of resolved cases, there may be gains in terms of the quality of decisions which measures based on the number of completed cases do not capture. Quality is an important factor to consider in assessing the effects of specialization.

Productivity in the resolution of civil cases varies positively with the proportion of enforcement cases heard in the *comarca*, indicating that the time spent by judges to resolve them will be shorter than for declarative cases. In a *comarca* where this proportion is 1 percentage point higher, with everything else constant, about 2.5 additional cases per judge are completed (full sample). In addition, there is a stronger impact of this variable (around 4 cases per judge), when the sample is restricted to the more recent years, possibly reflecting the modification of procedure rules, playing down the role of judges. With regard to the number of cases of each type that a judge can resolve in a year, the resolution benchmark figures presented in annex 1 to Direção-Geral da Administração da Justiça (2012) point precisely in that direction: 6500 cases in enforcement judgeships vis-à-vis 550 cases in generic judgeships dealing with civil cases of other type (already taking into account the simplified enforcement procedure in force at the time of publication of that report). It is interesting to note that, despite requiring less time for the judge, figure 2 shows that the duration of completed enforcement cases is, on average, higher than that of declarative cases (increasing steadily over the period analysed). This results from backlog in pending cases that implies a higher proportion of older cases among resolved ones. In addition, note that the duration of enforcement cases can be extended by mere procedural issues that do not involve court intervention, such as instalment payment plans.

The number of ordinary criminal cases[27] resolved per judge has a negative impact on the resolution of civil cases, perhaps reflecting the aforementioned rivalry effect, accentuated by the priority that criminal cases generally enjoy. With regard to completed labour and minors' cases (not dealt with in the specialized courts), there is a lack of effect on overall civil, although there is still a negative effect of resolved minors' cases, when declarative cases figure as the dependent variable. This lack of an effect of completed labour cases may reflect an uninformative sample, given the small proportion of cases of this type heard outside labour courts (see Appendix B). When the sample is divided into small and large *comarcas*, the coefficient of resolved family cases is positive for the first group, perhaps reflecting productivity differences among judges, as the overwhelming majority of such *comarcas* has only one judge (Figure 4A).

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27. This category is the most important one within criminal litigation and covers the majority of crimes, with the exception chiefly of certain petty crimes that are included in the special criminal category.

Judicial staff per judge has a positive and statistically significant impact on resolved civil cases - of a greater magnitude for enforcement cases - highlighting the importance of considering jointly the allocation of judges and remaining resources making up the judicial system. The importance of staff in judicial proceedings in Portugal is evidenced in Gomes (2005) who, analysing the procedural acts practiced in a sample of declarative cases, concludes that 61 percent of such acts are conducted by judicial staff.

We estimate a negative effect of the indicator of experience of judges on the number of completed civil cases, a result that may reflect several factors, such as incentives to the resolution of cases and the balance between quantity and quality of judicial decisions. As regards the second interpretation, this result is in line with Backes-Gellner *et al.* (2011) who, for second instance labour courts in Germany, find a negative impact of experience on the number of completed cases, but a positive one on the quality of judicial decisions - measured by the proportion of appeals upheld by a higher court. As already mentioned, one of the important limitations of our data is that we only have strictly quantitative indicators of productivity. It is possible to cite other literature that finds evidence of an improvement in the quality of judicial decisions as judges become more experienced, such as Kosma (1998), although there are also studies that do not find this kind of relationship, such as Posner (1995), both looking at higher courts for the United States.

The size of *comarcas* has a negative coefficient in the various regressions presented, a result that can be read in several ways. It is conceivable that an increase in size is negatively correlated with the availability of physical resources, omitted in the regression, or has implications in terms of court organization, with negative repercussions on productivity. However, given that there is an association between the size of *comarcas* and litigation characteristics, a negative coefficient may also arise from the variable being capturing features that make case resolution more difficult. The regression includes a purchasing power indicator that intends to model the complexity of litigation and also has a negative coefficient for overall civil (and for enforcement cases), pointing to a greater complexity in more developed *comarcas*. However, although this indicator (along with *comarca* fixed-effects) captures certain characteristics of litigation, others may be captured by the size indicator. In fact it is difficult to distinguish the impact on productivity of demand and supply factors based on the size of *comarcas*, given that this variable stems from the litigation itself, but at the same time has implications from the viewpoint of judicial organization. This is mirrored by the high correlation, around 70 percent, between the indicators of purchasing power and size of *comarcas*.

Conclusions

This work focused on the determinants of productivity in civil justice in Portugal, presenting at the same time some descriptive evidence, based on data by *comarca* for the period from 1993 to 2013. The summary indicators of performance of the Portuguese judicial system point to a congestion problem in this litigation area, much more marked for enforcement than for declarative cases. It will be necessary to keep clearance rates well above 100 per cent over a considerable period of time, to substantially bring down congestion and allow the country to move closer to the set of countries with fastest justice systems.

Given the ineffectiveness of backlog reduction plans for solving the structural problems of the system and the medium-term budgetary constraints on resource increases, it is essential to act on the determinants of productivity in the resolution of civil cases. The results of this study indicate that resolved cases per judge respond positively to demand pressure, but in a different way in large and small *comarcas*. In fact, there is evidence of a greater degree of resource use in large *comarcas*. In this framework, more flexible human resource management, in the spirit of the New Judicial Map, will tend to increase productivity while allowing a more balanced distribution of the caseload within the system.

With regard to specialization and in a purely quantitative dimension of productivity, there is a positive effect of specialization in civil cases vis-à-vis other litigation areas. Another result to be highlighted is the importance of judicial staff in case resolution, reinforcing the idea that resources allocated to the system should be considered as a whole in decision making. In the analytical framework of this article, some aspects could not be addressed due to the lack of data. For instance, it would be important to introduce in the analysis the quality of judicial decisions, notably through a measure of the rate of reversal. In addition, it would be interesting to assess the impact of changes in the size of *comarcas* on efficiency, measured taking into account total financial resources.

As regards future research on the impact of a wide range of other factors on productivity, already mentioned, it seems crucial to use disaggregated data at the case level (as in (Gomes 2005) and (Gouveia *et al.* 2012b)), naturally anonymised. The use of this type of data would allow, in particular, to identify the main bottlenecks in court procedures. Finally, the recent improvement in the statistics released for administrative and tax courts should make it possible to carry out quantitative studies focusing on this area.

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Appendix A: Performance Indicators

$$CongestionRate_t = Pending_{t-1}/Resolved_t, \qquad \text{(A.1)}$$

$$ClearanceRate_t = Resolved_t/Incoming_t, \qquad \text{(A.2)}$$

$$EstimatedClearanceTime_t = Pending_t/Resolved_t * 365, \qquad \text{(A.3)}$$

Note: When we present results for these indicators, whenever feasible, both incoming and resolved cases are corrected for transferred cases (moved between courts).

Sources: DGPJ and CEPEJ.

Appendix B: Descriptive Statistics

Variable	Unit	Observations	Mean	Standart deviation	Min.	Max.
Resolved civil cases per judge	No. / judge	4410	278.7	148.1	3.0	1325.0
Resolved civil cases per judge - declarative	No. / judge	4410	77.7	48.0	1.0	443.8
Resolved civil cases per judge - enforcement	No. / judge	4410	165.6	104.9	1.0	1080.0
Resolved labour cases per judge - Comarcas without LC	No. / judge	4410	1.1	6.6	0.0	150.0
Resolved criminal cases per judge	No. / judge	4410	167.1	233.3	4.0	5793.0
Resolved criminal cases per judge - common	No. / judge	4410	76.8	48.6	0.0	453.5
Resolved criminal cases per judge - special	No. / judge	4410	31.8	25.6	0.0	214.0
Resolved criminal cases per judge - misdemeanour	No. / judge	4410	53.9	214.9	0.0	5657.0
Resolved criminal cases per judge - other	No. / judge	4410	4.6	12.2	0.0	190.0
Resolved minors' cases per judge - Comarcas without FMC	No. / judge	4410	25.8	23.3	0.0	442.0
Incoming cases per judge	100 cases / judge	4410	3.4	1.8	0.2	14.4
Pending cases per judge	100 cases / judge	4410	6.1	4.4	0.3	33.2
Civil specialization	Percentage	4410	13.7	30.9	0.0	100.0
Type of claim specialization	Binary variable	4410	0.0	0.2	0.0	1.0
Percentage of enforcement cases	Percentage	4410	57.4	12.0	1.6	93.6
Judicial staff per judge	No. / judge	4410	7.3	2.6	1.5	30.0
Proxy for the seniority of judges	Salary per judge / average	1327	1.0	0.3	0.2	3.7
Size of the Comarca	100 incoming civil cases	4410	21.4	89.2	0.2	1805.4
Purchasing power index	Index base 100	4410	71.0	27.9	18.9	314.2
Labour Court (LC)	Binary variable	4410	0.2	0.4	0.0	1.0
Family and Minors Court (FMC)	Binary variable	4410	0.1	0.3	0.0	1.0

TABLE B.1. Descriptive statistics - all *comarcas*

Variable	Unit	Observations	Mean	Standard deviation	Min.	Max.
Resolved civil cases per judge	No. / judge	2205	222.9	129.4	3.0	1142.0
Incoming cases per judge	100 cases / judge	2205	2.6	1.5	0.2	11.9
Pending cases per judge	100 cases / judge	2205	4.5	3.6	0.3	33.1
Civil specialization	Percentage	2205	2.1	14.4	0.0	100.0
Type of claim specialization	Binary variable	2205	0.0	0.0	0.0	0.0
Percentage of enforcement	Percentage	2205	56.0	12.7	1.6	93.6
Non judge staff per judge	No. / judge	2205	6.7	2.4	1.5	18.0
Size of the Comarca	100 incoming civil cases	2205	2.6	1.6	0.2	9.5
Purchasing power index	Index base 100	2205	55.6	13.8	18.9	139.9

TABLE B.2. Descriptive statistics - small *comarcas*

Variable	Unit	Observations	Mean	Standard deviation	Min.	Max.
Resolved civil cases per judge	No. / judge	2205	334.5	144.5	56.5	1325.0
Incoming cases per judge	100 cases / judge	2205	4.1	1.8	1.1	14.4
Pending cases per judge	100 cases / judge	2205	7.6	4.5	1.0	33.2
Civil specialization	Percentage	2205	25.3	37.8	0.0	100.0
Type of claim specialization	Binary variable	2205	0.1	0.3	0.0	1.0
Percentage of enforcement	Percentage	2205	58.7	11.1	15.7	89.7
Non judge staff per judge	No. / judge	2205	7.9	2.7	1.8	30.0
Size of the Comarca	100 incoming civil cases	2205	40.2	123.4	2.0	1805.4
Purchasing power index	Index base 100	2205	86.4	29.9	28.2	314.2

TABLE B.3. Descriptive statistics - large *comarcas*