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An analysis of how 2002 judicial reorganization has impacted on the performance of the First Instance Courts (Preture) in Ticino

An analysis of how 2002 judicial reorganisation has impacted on the performance of the First Instance Courts (*Preture*) in Ticino

Roberto Ippoliti¹ and Massimiliano Vatterio²

Abstract

With data from 2001 to 2010 of the First Instance Courts of the Canton of Ticino, Switzerland, this paper examines the impact of *Legge sull'istituzione della Pretura penale e della funzione di sostituto Procuratore pubblico* (2002), which meant to improve Cantonal court performance by decreasing penal workload. Our results suggest that such law has posed non-positive effects on judicial length and courts' performance. This work may furnish moreover some intuition about the expected impact of *Legge sull'organizzazione giudiziaria* (2006), which has adapted cantonal judicial system to new Swiss Civil Procedure Code, as well policy proposals for the cantonal programme known as *Giustizia 2018*.

Keywords: Judicial efficiency, Court performance, civil justice, Ticino

JEL Code: K41, M11

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1. Introduction

Judicial systems serve important purposes not only in upholding social values but also in determining economic performance. Well-functioning judiciaries guarantee the security of property rights and the enforcement of contracts, as well as significantly impact on the cost of borrowing loans (Bae and Goyal, 2009; Laeven and Majnoni, 2005). The security of property rights reinforces incentives to save and invest by protecting returns on these activities and, in turn, raising the national GDP (Bianco *et al.*, 2002; Djankov *et al.*, 2008). The good enforcement of contracts stimulates agents to enter into economic relationships by discouraging opportunistic behaviour and reducing transaction costs. Such circumstances positively impact on growth through various channels; they promote competition, foster specialisation in more innovative industries, and contribute to the development of financial and credit markets. Furthermore, judicial systems are significantly related to entrepreneurship (Ardagna and Lusardi, 2008; Ippoliti *et al.*, 2014) and firm growth (Beck *et al.*, 2006; Kumar *et al.*, 2001).

The judiciary organisation in the Canton of Ticino, Switzerland, has been modified during last years, and further reforms are expected. Accordingly, Ticino has promoted the programme known as *Giustizia 2018*, which has prompted much research on judiciary organisation. The analysis in this paper follows the long tradition of the scientific study of judiciary efficiency at the international level (e.g. the case of European Commission for the Efficiency of Justice, CEPEJ³) by focusing on quantitative data from 2001 to 2010 on the Cantonal judicial system.

In Ticino, the first instance level of the cantonal judicial system consists of judges of the peace and 10 first instance courts (FICs); each FIC is called *pretura*.⁴ Judges of the peace are competent for any case of a value less than a certain threshold (the current threshold is 5,000 CHF), while FICs are competent for cases of all higher values, as well as other specific competences (e.g., rent and eviction). By name, Ticino's 10 FICs are Mendrisio Sud, Mendrisio Nord, Bellinzona, Lugano, Locarno Città, Locarno Campagna, Vallemaggia, Riviera, Leventina, and Blenio. All of these courts but Lugano contain one judge (*Pretore*) and one staff unit (*segretario assessore*). The FIC of Lugano involves six sections, each with a specific competence, and six *pretore*.

While, except for relevant cases, there is in Switzerland a general dearth of empirical and theoretical findings on the mode of operation of the justice system (Lienhard and Kettiger, 2009, 2010; Lienhard *et al.*, 2012; Meier, 1999), several approaches for measuring judiciary efficiency have been proposed in the US and EU: the time needed to define a case (Christensen and Szmer, 2012; Di Vita, 2010; Djankov *et al.*, 2003; Mitsopoulos and Pelagidis, 2007), technical efficiency scores (Falavigna *et al.*, 2014; Ippoliti *et al.*, 2014; Santos and Amado, 2014), the number of cases completed in the court (Beenstock and Haitovsky, 2004; Ramseyer, 2012), and the clearance rate (Buscaglia and Ulen, 1997; CEPEJ, 2012; Dakolias, 1999; Soares and Sviatschi, 2010). In the present study, two measures of judicial efficiency are used: clearance rate and disposition time. Clearance rate indicates whether courts have kept pace with the quantity of incoming cases without increasing their backlog, whereas disposition time refers to the time needed to bring a case to its close.

By analysing Cantonal courts' clearance rates and disposition times, this paper seeks to contribute a quantitative estimation of both the performance of Ticino's FICs from 2001 to 2010 and a primary judicial reform enacted in the Canton: *Legge sull'istituzione della Pretura penale e della funzione di sostituto Procuratore pubblico (LexPP)*. Specifically, in 2002, *LexPP* instituted a central penal Court in Bellinzona, which implied that FICs were exempted from handling penal cases, but that judges of the four smallest FICs

³ CEPEJ was founded by the Committee of Ministers of the Council of Europe in September 2002 in order both to assess the efficiency of judicial systems and to propose practical tools and measures to continually improve the efficiency of judicial services offered to EU citizens.

⁴ At the second instance level there is a Cantonal appeal court (i.e., *Tribunale d'Appello*) and, at the third instance level, there is a Federal court (i.e., *Tribunale Federale*).

(i.e., Vallemaggia, Riviera, Leventina, and Blenio) had to work at once in both Bellinzona's central penal court and their respective FICs.

The results of this analysis can suggest, furthermore, some of the expected results of a successive reform, *Legge sull'organizzazione giudiziaria (LOG)*, which has been issued in 2006, but with significant changes only after 2010. Indeed, in 2011, LOG set new thresholds: The competence of judges of the peace rose from 2,000 to 5,000 CHF, meaning that these judges would hear all cases less than 5,000 CHF in value; at the same time, the threshold for non-appealable cases rose from 8,000 to 10,000 CHF, which decreased the workload for higher courts. This change was a consequence of Article 308 of new Swiss Civil Procedure Code (CPC) reformed in 2008. LOG also instituted a new type of judge—*pretore aggiunto*—to assist in completing the activities of the *pretore* and to thus reduce the backlog (articles 32-37).⁵ Also in this case the position became institutionalised only after 2010, by a new law (*Legge di applicazione del codice di diritto processuale civile svizzero del 24/6/2010*).

What is the impact of the *LexPP* on the performance of FICs? And, what are the expected consequences of LOG? To discuss the effects of the cantonal reform in Ticino (*LexPP*) and to indicate the expected impact of the successive reform (LOG),⁶ the remainder of this paper is organised as follows. Section 2 is dedicated to the motivation of this work, illustrating the expected impacts of both reforms. Section 3 presents the methodology to measure judicial efficiency and reports relevant descriptive statistics. Section 4 shows in detail the empirical models used in this study. In Section 4, we explain and discuss our results while, in Section 6, we suggest some policy implication.

2. Motivation

Though *LexPP* implied that FICs were exempted from handling penal cases, judges of the four smallest FICs (i.e., Vallemaggia, Riviera, Leventina, and Blenio) had to work in both this central penal court and their respective FICs at the same time. *LexPP* was expected, on the one hand, to reduce the clearance rate and increase the disposition time of the four smallest FICs, since *pretore* of these FICs are involved in two different courts with increased workloads. On the other hand, since the new penal court judges exempted FICs from all penal cases, *LexPP* should have improved both the clearance rate and disposition time of other FICs by reducing their workloads.

As abovementioned, LOG defined new thresholds: The competence of judges of peace rose from 2,000 to 5,000 CHF, while the threshold for non-appealable cases rose from 8,000 to 10,000 CHF, the latter of which was a consequence of Article 308 of new CPC. As a reform, LOG is expected to reduce FICs workload and consequently improve their clearance rates and disposition times, since competences transferred cases from FICs to judges of peace. It will also expect to decrease the workload of the second instance courts as a consequence of the higher threshold for non-appealable cases. Moreover taking the new personnel into account (i.e. *Pretore Aggiunto*), there might be another reduction of workload for every judge.

Figure 1 shows a flowchart that summarises the primary actions of *LexPP* and LOG and the expected consequences. Observing the figure, readers can better understand the common feature of both reforms, i.e. the reduction of workload to improve FICs performance.

⁵ There are four *pretori aggiunti* in the court of Lugano, two in Bellinzona, and one each in Mendrisio Nord, Mendrisio Sud, Locarno Città, and Locarno Campagna. No *pretore aggiunto* is introduced in the smallest courts (i.e., Vallemaggia, Riviera, Blenio, and Leventina).

⁶ Authors are clearly affected by data availability and, therefore, they cannot estimate directly the real impact of LOG reform.

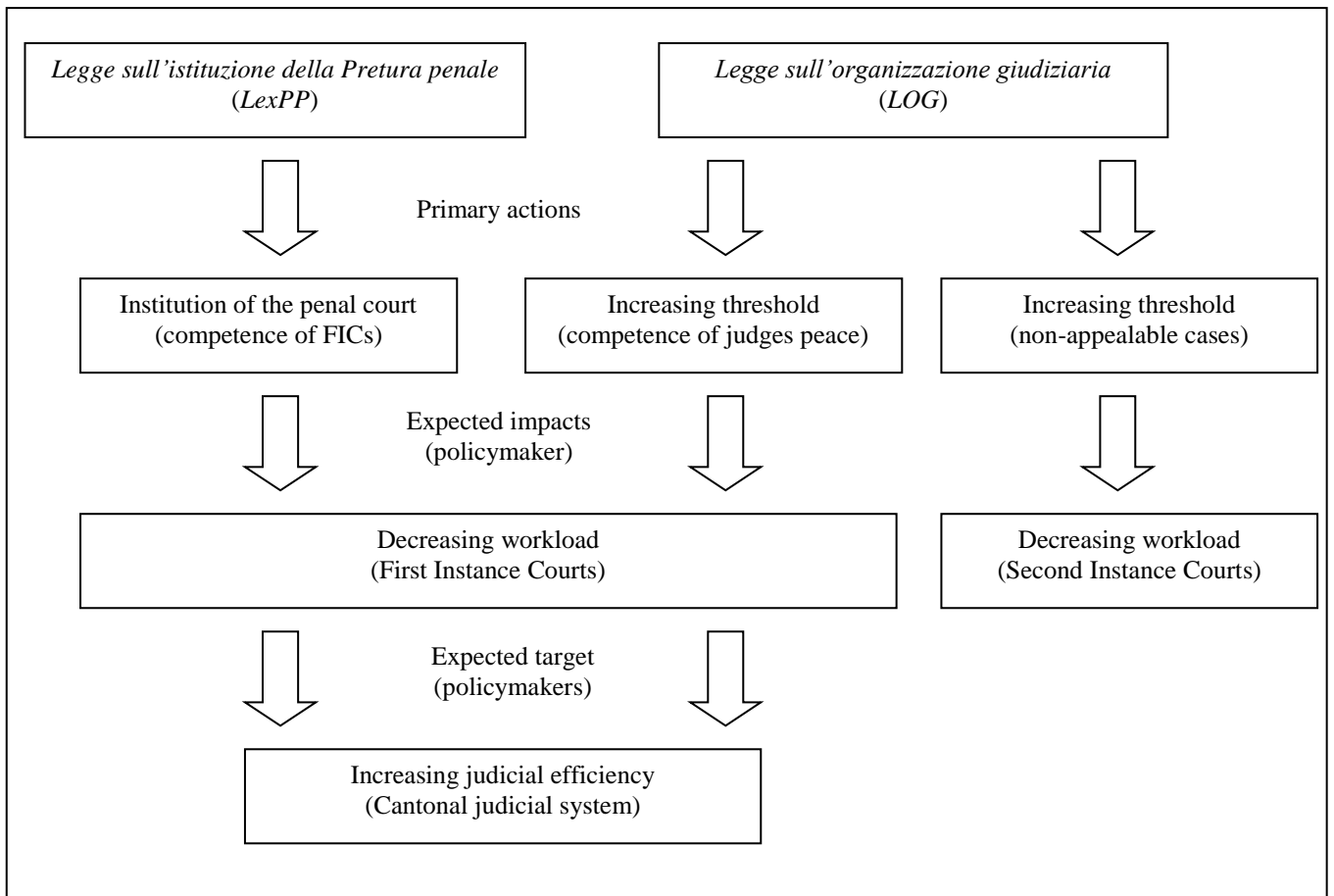


Figure 1. Flowchart of judicial reforms in Ticino

However, in order to confirm, or not, the expected results of the policy maker, an empirical analysis is necessary, taking all determinants of judicial efficiency into account.

3. Data, methodology and descriptive statistics of the Cantonal judicial system in Ticino, 2001–2010

In the present study, two measures of judicial efficiency are used: clearance rate and disposition time. Clearance rate indicates whether courts have kept pace with the quantity of incoming cases without increasing their backlog, whereas disposition time refers to the time needed to bring a case to its close.⁷ The clearance rate is the relationship between the new cases and completed cases within a period. More specifically, the clearance rate equals the number of resolved cases divided by the number of incoming ones:

$$\text{Clearance rate}_{i,t} = \frac{\text{Resolved cases}_{i,t}}{\text{Incoming cases}_{i,t}}$$

where i represents the i -th FIC of Ticino at the year t .

⁷ An exposition of indexes is offered at the following Council of Europe's website: <https://wcd.coe.int/ViewDoc.jsp?id=1389931&Site=COE> (last access: 22 September 2014).

A clearance rate greater than 1 indicates that the Court has satisfied the flow of the demand for justice and decreased the backlog from the previous year, whereas a rate less than 1 indicates that the court has not satisfied the demand for justice and that its backlog has increased. For instance, if in a calendar year 500 new cases were submitted to the court, and the court completed at the same time 550 cases, the clearance rate is 1.10. If the court would complete 400 cases, the clearance rate would be 0.8.

The disposition time is based on the fundamental judicial principle that each case receives a fair trial within a reasonable time (Article 6 of the European Convention on Human Rights). This principle must be fully enacted when managing court workload,⁸ despite concerns of proceedings duration and specific measures to reduce such duration. According to CEPEJ, disposition time refers to the number of unresolved cases during any period divided by the number of resolved cases at the end of the same period, multiplied by 365 (i.e., the number of days in the considered period), generating data concerning the estimated time that is needed to bring a case to an end:

$$\text{Disposition time}_{i,t} = 365 \frac{\text{Unresolved cases}_{i,t}}{\text{Resolved cases}_{i,t}}$$

where i represents the i -th FIC of Ticino at the year t .

The ratio measures how quickly the judicial system turns over received cases – that is, how long it takes for a type of cases to be resolved. This indicator provides further insight into how a judicial system manages its flow of cases (CEPEJ, 2012).⁹

Data used in this paper are taken from the annual report of the cantonal judicial system (Rendiconto del Consiglio di Stato).¹⁰ These data refer to the period from 2001 to 2010. In accordance with the judicial classification, we can separate among appealable civil cases, non-appealable civil cases, executions and bankruptcy cases. The difference between appealable and non-appealable cases is based, among other things, on the value of the cases and the opportunity to propose, or not, an appeal at the second instance level. For executions and bankruptcies, data available are ones referring (only) to the cases of the opposition to the rejection. Moreover, data are distinguished between cases concluded by Judge's decision and cases concluded by alternative methods such as the withdrawal of a party or a settlement. The report of the cantonal judicial system offers, finally, the number of pending civil cases at the beginning and the end of each year, as well as the number of incoming cases.

Table 1 reports some descriptive statistics for each FIC of Ticino from 2001 to 2010. In details, the third column indicates the average number of cases resolved each year. Though the distribution among FICs is highly irregular, FICs in Ticino resolve on average more than 7,000 cases per year. Table 1 also shows the percentage of civil cases concluded by Judge's decision, as opposed to being concluded by alternative methods such as the withdrawal of a party or a settlement. For Table 1, it should be noted that the percentage of cases resolved by a Judge's decision is 52% in Blenio, though the cantonal average is 64%, with the highest value in Lugano (68%). Differences based on conclusions may also be relevant since cases concluded by Judge's decisions tend to take longer than cases concluded by other means such as an agreement between the parties.

⁸ *Workload* refers to the number of cases pending at the beginning of each year added to the number of cases incoming during the year.

⁹ Note that, even if the formula offers valuable information on the estimated length of proceedings, the ratio does not provide a clear estimate of the average time needed to process each case and it fails to indicate the mix, concentration, or validity of the cases.

¹⁰ Data are available at the following link: <http://www4.ti.ch/poteri/giudiziario/consiglio-della-magistratura/rendiconti-annuali/> (last access: 25 August 2014).

Table 1. Descriptive average statistics of Ticino, 2001–2010

<i>Pretura</i>	Population	Cases						
		Total solved	By Judge's decision	Appealable (Non-appealable)	Executions and bankruptcies	Pending on 1/1	Incoming	Pending on 12/31
<i>Bellinzona</i>	46,236	813.30	59%	50% (10%)	40%	486.10	820.20	493.00
<i>Blenio</i>	5,602	72.90	52%	46% (11%)	43%	57.00	72.80	56.90
<i>Leventina</i>	9,930	105.90	54%	48% (8%)	44%	63.30	105.00	62.40
<i>Locarno Campagna</i>	41,973	609.10	60%	47% (11%)	42%	307.20	601.80	299.90
<i>Locarno Città</i>	18,350	420.00	57%	48% (10%)	42%	260.90	411.00	251.90
<i>Lugano</i>	136,485	3,731.60	68%	40% (11%)	49%	2,348.10	3,749.70	2,366.20
<i>Mendrisio Nord</i>	8,910	505.00	61%	45% (10%)	45%	331.80	493.90	320.70
<i>Mendrisio Sud</i>	38,822	552.10	64%	44% (11%)	45%	393.60	540.50	382.00
<i>Riviera</i>	12,076	255.90	54%	42% (9%)	49%	164.20	254.70	163.00
<i>Vallemaggia</i>	5,787	63.80	55%	44% (13%)	43%	26.50	64.70	27.40
<i>Ticino</i>	324,170	7,129.60	64%	43% (11%)	46%	4,438.70	7,114.30	4,423.40

Moreover, on average, 43% of the workload represents appealable cases, 11% represents non-appealable cases, and the remaining 46% represents executions and bankruptcy cases. It should be noted that the FIC of Bellinzona differs significantly from the other courts, as it shows the highest percentage of appealable civil cases (50%) and the lowest percentage of executions and bankruptcies (40%).

Table 1 also presents the number of pending civil cases at the beginning and at the end of each year, as well as the number of incoming cases. Such figures allow us to define the demand for civil justice (i.e., the number of pending civil cases at the beginning of each year and the number of incoming cases during the year), the supply of civil justice (i.e., the number of resolved cases during the year), and the backlog (i.e., the number of pending cases at the end of each year)—all of which are shown in Table 2.

Table 2. Descriptive average statistics for Ticino, 2001–2010

<i>Pretura</i>	Demand for justice	Supply of justice	Backlog
<i>Bellinzona</i>	1,306.3	813.3	493
<i>Blenio</i>	129.8	72.9	56.9
<i>Leventina</i>	168.3	105.9	62.4
<i>Locarno Campagna</i>	909	609.1	299.9
<i>Locarno Città</i>	671.9	420	251.9
<i>Lugano</i>	6,097.8	3,731.6	2,366.2
<i>Mendrisio Nord</i>	825.7	505	320.7
<i>Mendrisio Sud</i>	934.1	552.1	382
<i>Riviera</i>	418.9	255.9	163
<i>Vallemaggia</i>	91.2	63.8	27.4
<i>Ticino</i>	11,553	7,129.6	4,423.4

In more detail, Table 3 shows that Ticino's judicial system can satisfy the demand for justice (i.e., an average clearance rate of 1.010), though the trend is not constant. In fact, Ticino's clearance rate was less than 1 in

three years (2003, 2004, and 2010), due to the poor performance of some FICs—particularly Lugano, which had to satisfy half of the total cantonal demand for justice.

Table 3. Clearance rates in Ticino, 2001–2010

<i>Pretura</i>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	<i>Mean*</i>
<i>Bellinzona</i>	1.001	1.106	0.951	0.936	0.963	0.972	1.073	1.036	0.922	0.966	0.993
<i>Blenio</i>	1.000	1.000	0.893	1.074	1.102	1.196	1.033	0.959	1.060	0.788	1.010
<i>Leventina</i>	0.935	1.099	0.920	1.083	1.000	1.100	0.968	0.957	1.011	1.034	1.011
<i>Locarno Campagna</i>	1.066	1.024	1.038	0.955	0.936	0.997	1.050	1.020	1.067	0.977	1.013
<i>Locarno Città</i>	1.165	1.025	1.012	0.982	0.956	1.047	1.038	1.122	1.028	0.900	1.027
<i>Lugano</i>	1.030	0.963	1.000	0.932	1.087	1.037	1.054	0.938	1.047	0.889	0.998
<i>Mendrisio Nord</i>	1.061	0.971	1.049	1.027	0.978	0.909	1.053	1.130	1.168	0.917	1.026
<i>Mendrisio Sud</i>	1.087	1.090	1.028	0.855	1.223	1.023	1.004	0.988	0.998	0.925	1.022
<i>Riviera</i>	1.008	1.034	1.039	0.852	0.919	1.060	1.038	1.128	0.941	1.157	1.017
<i>Vallemaggia</i>	1.014	1.065	1.000	1.070	1.000	0.872	0.867	0.978	1.065	0.889	0.982
<i>Ticino</i>	1.037	1.038	0.993	0.976	1.016	1.021	1.018	1.026	1.031	0.944	1.010

*Average clearance rate accounts for the panel (2001–2010).

Figure 2 shows the ranking of FICs according to average disposition time from 2001 to 2010. Blenio has the highest average disposition time.

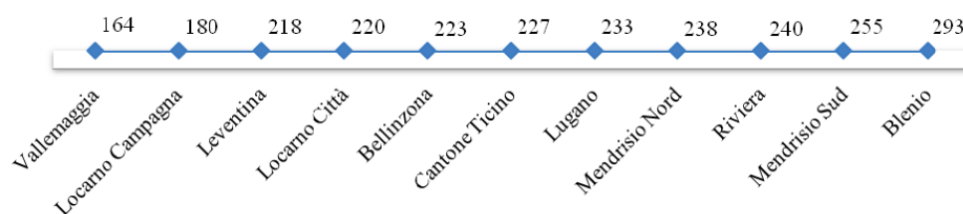


Figure 2. Descriptive statistics of disposition times at FICs in Ticino, 2001–2010

Table 4. Disposition times in Ticino, 2001–2010

<i>Pretura</i>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	<i>Mean*</i>
<i>Bellinzona</i>	211	159	207	203	267	242	217	216	271	239	223
<i>Blenio</i>	291	277	387	320	326	287	277	261	152	353	293
<i>Leventina</i>	230	234	259	176	198	199	231	247	233	170	218
<i>Locarno Campagna</i>	177	166	169	162	211	193	190	186	177	174	180
<i>Locarno Città</i>	204	227	215	180	240	247	245	211	210	221	220
<i>Lugano</i>	190	214	223	259	220	230	217	278	235	267	233
<i>Mendrisio Nord</i>	263	327	249	151	275	282	239	220	169	210	238
<i>Mendrisio Sud</i>	234	241	257	343	194	254	267	245	262	255	255
<i>Riviera</i>	204	181	154	203	276	261	309	262	355	196	240
<i>Vallemaggia</i>	137	127	118	86	144	223	232	142	177	254	164
<i>Ticino</i>	214	215	224	208	235	242	242	227	224	234	227

*Average disposition time accounts for the panel (2001–2010).

Table 4 presents a more detailed descriptive statistics of disposition times. The average disposition time in Ticino is about 227 days, though this average figure has shown an increasing trend. Moreover, if we consider a single court, the trend is not as constant.

Table 5 proposes the disposition time and the clearance rate for each case-law, i.e. considering executions and bankruptcies, appealable and non-appealable cases. According to data, only in four FICs the clearance rate of executions and bankruptcies cases is higher than 1 (i.e. Locarno Città, Locarno Campagna, Riviera and Vallemaggia). It is worthy to underline that, though the time necessary to define an execution and bankruptcy case is estimated to be the lower (i.e. 73 days) than appealable (561 days) and non-appealable (246 days) cases, the clearance rate is lower in executions and bankruptcies (1.0003) than appealable (1.0396) and non-appealable (1.0495). It means that, though cases involving executions and bankruptcies are more rapid than appealable and non-appealable cases, the decreasing of workload in executions and bankruptcies is lower rapid than appealable and non-appealable cases.

Table 5. Disposition times and clearance rate in Ticino, 2001–2010

<i>Preture</i>	Clearance rate				Disposition time			
	Appealable cases	Non appealable cases	Executions and bankruptcies	Total	Appealable cases	Non appealable cases	Executions and bankruptcies	Total
<i>Bellinzona</i>	0.9996	1.0052	0.9894	0.9926	612	189	34	223
<i>Blenio</i>	1.1238	0.9904	0.9949	1.0104	639	391	108	293
<i>Leventina</i>	1.0287	1.0670	0.9971	1.0107	568	256	55	218
<i>Locarno Campagna</i>	1.0123	1.0695	1.0092	1.0130	404	156	51	180
<i>Locarno Città</i>	1.0671	1.0986	1.0017	1.0275	484	247	68	220
<i>Lugano</i>	1.0163	1.0240	0.9880	0.9976	638	236	84	233
<i>Mendrisio Nord</i>	1.0740	1.1669	0.9948	1.0262	612	225	75	238
<i>Mendrisio Sud</i>	1.0639	1.1163	0.9980	1.0221	670	312	80	255
<i>Riviera</i>	1.0352	0.9946	1.0181	1.0174	646	200	99	240
<i>Vallemaggia</i>	0.9745	0.9626	1.0121	0.9820	342	246	75	164
<i>Ticino</i>	1.0396	1.0495	1.0003	1.0100	561	246	73	227

Finally, the table 6 reports the average clearance rates and disposition times before and after the cantonal reform (*LexPP*).

Table 6. Judicial system before and after *LexPP* reform in Ticino, 2001–2010

Period	Clearance rate	Disposition times	Workload (Appealable cases)	Workload (Executions and bankruptcies)	Total workload
Before <i>LexPP</i> (2001–2002)	1.0373	224	0.4331	0.4514	1,236
After <i>LexPP</i> (2003–2010)	1.0031	228	0.4575	0.4412	1,135
Total (2001–2010)	1.0100	227	0.4526	0.4432	1,155

According to these data, the average clearance rate from 2001 to 2002 was 1.0373, which decreased to 1.0031 after *LexPP*. In terms of disposition time, the reform lengthened case duration. In this sense, *LexPP* does not seem to have improved FIC performance. However, it is necessary to analyse all determinants of

judicial efficiency together in order to correctly estimate and better understand the poor outcomes of the *LexPP* reform, since several causes might have each partly affected FIC performance.

4. Empirical Model

To explain cantonal judicial efficiency and the impact of *LexPP* and the expected consequences of *LOG*, we have accounted for the following variables:

- **Workload (executions and bankruptcies)**, which equals the percentage of such cases out of the total workload; note that we refer only to data of cases of the opposition to the rejection.
- **Workload (appealable cases)**, which equals the percentage of such cases out of the total workload;
- **Workload (non-appealable cases)**, which equals the percentage of such cases out of the total workload;
- **Index of resolved cases**, which equals to the number of cases resolved in the court by a decision out of the number of cases resolved by alternative means;
- ***LexPP***, which is an ordinal categorical variable equal to 0 (for all courts before 2003), -1 (for courts with a judge who must work in the unique penal court in Bellinzona after 2003), and 1 (for courts with a judge who does not have to work in the unique penal court in Bellinzona after 2003);
- **Personnel rate**, which equals the number of court workers (i.e., *pretore* and *segretario assessore*) per every 1,000 cases of workload.

The empirical analysis proposed in this section is based on multiple regression models involving random effect, panel data, and robust option. Three models are proposed.

Model 1 concerns the determinants of judicial efficiency and the impact of the law, as follows:

$$Clearance_rate_{i,t} = \beta_0 + \beta_1 Resolved_cases_{i,t} + \beta_2 Workload_Executions_{i,t} + \beta_3 Personnel_{i,t} + \beta_4 LexPP_{i,t} + \varepsilon_{i,t}$$

$$Disposition_time_{i,t} = \beta_0 + \beta_1 Resolved_cases_{i,t} + \beta_2 Workload_Executions_{i,t} + \beta_3 Personnel_{i,t} + \beta_4 LexPP_{i,t} + \varepsilon_{i,t}$$

in which i represents the i -th FIC of Ticino at the year t , while ε the error.

Since the three variables of appealable, non-appealable, and executions and bankruptcy cases are categorical variables, one must be dropped for collinearity, which is the base category against which the other(s) are assessed (Suits, 1957). The intercept of the model represents the omitted categories: the residual workload (appealable and non-appealable cases) and cases resolved by other means.

To obtain more robust results, this analysis proposes two sub-models: Model A, which considers all cantonal courts, and Model B, which considers all courts but Lugano, since it represents more than half of the demand for justice, meaning that the performance of the total cantonal system might be unduly affected by this one court (Table 2). In both Models A and B, the Hausman test has been applied to verify whether the random effect is more appropriate than the fixed one (e.g., considering the clearance rate, the p -value in Model A is 0.2135).¹¹ To verify collinearity among variables, the pairwise correlation has been tested with acceptable values.

¹¹ Authors didn't find significant differences between fixed and random effects: both models confirm the same statistically significant coefficients and the estimated degree of the change between random effect and fixed effect is not relevant.

Table 7 presents the results of the Model 1 with clearance rate as the dependent variable. Both Models 1.1A and 1.1B are statistically significant (Wald test)¹² with an acceptable R^2 . Considering the between R^2 , the variance of the dependent variable explained by the explanatory variables is 22.60% both in Model 1.1A and in Model 1.1B, while, considering the within R^2 , the variance is 14.19% in Model 1.1A and 14.22% in Model 1.1B. These results are reasonable if we consider the heterogeneity of the sample, which is lower within the panel but higher among observations.

Table 7. Multiple regression model involving panel data, random effect, and robust option for Ticino, 2001–2010

Variables	Mod. 1.1A Clearance rate	Mod. 1.1B Clearance rate
Workload (executions and bankruptcy cases)	-0.273** (0.126)	-0.287** (0.133)
Index resolved cases	-0.0374** (0.0151)	-0.0434*** (0.0147)
Personnel (per every 1,000 cases of workload)	-0.00350*** (0.000748)	-0.00355*** (0.000756)
<i>LexPP</i>	-0.0165* (0.00927)	-0.0181* (0.00991)
Constant	1.213*** (0.0635)	1.226*** (0.0649)
R^2		
Within	0.1419	0.1422
Between	0.2260	0.2260
Overall	0.1032	0.1032
Wald test (4)	29.23	37.11
Probability > chi-square	0.0000	0.0000
Observations	100	90
Number of FICs	10	9

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Robust standard errors in parentheses.

Results suggest that increasing the percentage of executions and bankruptcy cases in the total workload decreases the clearance rate. In both Models 1.1A and 1.1B, the coefficients are statistically significant ($p < 0.05$). This result is coherent with the data proposed in table 5. Indeed, table 5 shows that the clearance rate in this specific case law is significantly lower than the others, even if the time necessary to define a case is relatively low. Moreover, we find that increasing the number of cases resolved by Judge's decision with respect the number resolved in other ways, courts performance will decrease ($p < 0.05$). Obviously, the effect of the dropped variables (i.e., the base categories against which the others are assessed) is represented by the intercept, which is positive and statistically significant ($p < 0.01$).

Considering personnel, this result suggests that the number of workers per every 1,000 cases negatively impacts the clearance rate, meaning that decreasing the workload or increasing the personnel will negatively impact court performance ($p < 0.01$). This is consistent with the literature since it suggests that decreasing the pressure on judges can decrease their productivity (Beenstock and Haitovsky, 2004). Indeed, since the number of staff and the number of judges did not change in the period, workload has affected court

¹² The Wald test assesses the hypothesis that at least one of the predictors' regression coefficients is not equal to zero. The number in the parentheses indicates the degrees of freedom of the chi-square distribution used to test the Wald test statistic and is defined by the number of predictors in the model.

productivity. As such, the results suggest that decreasing the workload and maintaining the same number of personnel, the court performance will decrease.

Table 8. Multiple regression model involving panel data, random effect, and robust option for Ticino, 2001–2010

Variables	Mod. 1.2A Disposition times [†]	Mod. 1.2B Disposition times [†]
Workload (executions and bankruptcy cases)	-1.024 (0.904)	-1.069 (0.955)
Index resolved cases	0.192*** (0.0543)	0.190*** (0.0572)
Personnel (per every 1,000 cases of workload)	0.00408 (0.00527)	0.00383 (0.00523)
<i>LexPP</i>	-0.00406 (0.0609)	-0.0160 (0.0646)
Constant	5.534*** (0.509)	5.560*** (0.538)
R^2		
Within	0.2067	0.2102
Between	0.1220	0.1988
Overall	0.0380	0.0347
Wald test (4)	29.16	28.72
Probability > chi-square	0.0000	0.0000
Observations	100	90
Number of FICs	10	9

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

[†]Logarithmic transformation

Robust standard errors in parentheses.

Table 8 shows the role of the *LexPP* with the disposition time as the dependent variable: Both Models 1.2A and 1.2B are statistically significant (Wald test) and have acceptable R^2 , taking the number of observations and variables into account. Considering the between R^2 , the variance of the dependent variable explained is 12.20% in Model 1.2A and 19.88% in Model 1.2B, while, considering the within R^2 , the variance is 20.67% in Model 1.2A and 21.02% in Model 1.2B.

Both models suggest that cases needing Judge's decisions lengthen the time needed for courts to process cases more than cases decided by other means. This result is statistically significant ($p < 0.01$), though there are no other statistically significant results but the intercept of the model. This outcome might rely on litigation among parties, as well the opportunity to propose an appeal at the second instance courts. In this sense, the reduction of opportunity to propose an appeal at a second instance court as introduced by LOG (threshold for non-appealable cases rose from 8,000 to 10,000 CHF) might provide incentives to achieve an agreement among parties, meaning that the case does not requires a judge's final decision. If correct, we can expect that increasing of the threshold of non-appealable cases, as *LOG* does after 2010, will reduce the resolved cases with Judge's decision.

Model 2 focuses on FICs to test the hypothetical impact of litigiousness, i.e. whether the increased threshold of non-appealable cases was able to decrease the litigiousness among parties and thus increase court performance. In this sense, it also tests whether adherence to federal legislation will decrease litigiousness and thus will increase court efficiency. Indeed, the main analysis suggests that any case requiring a judge to make a final Judge's decision can decrease court efficiency and, as such, the court's clearance rate.

Three sub-models are proposed: considering all FICs but Lugano (Mod. 2.A), considering all sections of the FICs of Lugano (Mod. 2.B) and considering all judges, which means all FICs and sections together (Mod. 2.C). In other words, considering each single judge of the cantonal system, this analysis seeks to estimate whether litigiousness affects judicial efficiency. The proxy for litigiousness is the possibility of proposing an appeal at the second instance courts. Model 2 is as follows:

$$Resolved_cases_{i,t} = \beta_0 + \beta_1 Workload_non-appealable_{i,t} + \beta_2 Workload_appealable_{i,t} + \beta_3 Personnel_{i,t} + \varepsilon_{i,t}$$

in which i represents the i -th FIC of Ticino at the year t , while ε the error.

Table 9. Multiple regression model involving panel data, random effect, and robust option, 2001–2010

Variables	Mod. 2A Resolved cases by Judge's decision†	Mod. 2B Resolved cases by Judge's decision†	Mod. 2C Resolved cases by Judge's decision†
Workload (appealable cases)	0.213 (0.178)	0.183*** (0.0693)	0.228*** (0.0685)
Workload (non-appealable cases)	-0.624** (0.308)	-0.595*** (0.162)	-0.835*** (0.140)
Personnel (every 1,000 cases of workload)	-0.00283* (0.00165)	-0.0247*** (0.00584)	-0.0125*** (0.00406)
Constant	0.561*** (0.0871)	0.710*** (0.0222)	0.656*** (0.0416)
R^2			
Within	0.1055	0.6836	0.3502
Between	0.2580	0.6295	0.6235
Overall	0.1295	0.6195	0.4905
Wald test (3)	5193.61	1353.56	2141.78
Probability > chi-square	0.0000	0.0000	0.0000
Observations	90	60	150
Number of judges	9	6	15

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Robust standard errors in parentheses.

† percentage of cases defined by Judge's decision out of the total number of cases resolved by the judge

Table 9 shows the results of Model 2, which is statistically significant (Wald test) and has a very high R^2 . Considering the between R^2 , the variance of the dependent variable explained by the model is 25.80 % in the model 2.A, and it raises more than 62 % in the model 2.B and 2.C. In both cases, the extremely high R^2 depends upon the sections of the FIC of Lugano, which is clearly due to the reallocation of workload among the sections (i.e. high level of heterogeneity among sections).

Model 2's results suggest that, by increasing the percentage of appealable cases in the total workload, the percentage of cases resolved by Judge's decision will increase ($p < 0.01$). By contrast, decreasing the percentage of non-appealable cases in the total workload decreases the percentage of cases resolved by Judge's decision, meaning that the percentage of cases resolved by other means will increase ($p < 0.01$). According to these results, the opportunity to propose an appeal increases litigiousness and, in turn, judicial inefficiency in Ticino's courts by increasing the time needed to resolve cases.

5. Results and discussion

Table 10 summarises our results. They indicate that an increasing of executions and bankruptcies in respect to the total workload reduces the clearance rate, though it has no significant effects on disposition time. The same first result occurs if we consider the number of cases resolved by Judge's decision out of the total number of concluded cases, though this variable also positively affects disposition time. As such, cases resolved by Judge's decision require more time than cases resolved by alternative means and, in turn, decrease court productivity.

Considering personnel (i.e. judges and staff), literature shows a theoretical negative impact on clearance rate if we decrease the workload (Beenstock and Haitovsky, 2004). This result suggests that decreasing the pressure on judges's workload—which might represent the labour pressure put on judges without an appropriate incentive system to maximise their activity— can also diminishing their productivity. That is, for the same workload, judges complete more cases under pressure, yet complete fewer cases when new judges are appointed. It should also be noted that the number of judges and staff do not significantly impact on disposition time.

Finally, *LexPP* had a negative and statistically significant impact on clearance rate, which indicates the negative impact of the law on court performance. If we consider disposition time as a measure of judicial efficiency, then there is no significant effect on court performance.

Table 10. Results of our empirical model (expected and estimated impact on court performance)

Variables	Effect on Court Performances
Executions and bankruptcy cases	Decreases clearance rate (negative effect on court efficiency); Irrelevant to disposition time*
Resolved cases with Judge's decisions	Decreases clearance rate (negative effect on court efficiency); Increases disposition time (negative effect on court efficiency)
Personnel	Decreases clearance rate (negative effect on court efficiency); Irrelevant to disposition time*
Workload	Decreases clearance rate (negative effect on court efficiency); Irrelevant to disposition time*
<i>LexPP</i>	Decreases clearance rate (negative effect on courts' efficiency); Irrelevant to disposition time*
Threshold for non-appealable cases (LOG)	Decreases the percentage of cases resolved by Judge's decision (i.e., the litigiousness of parties), that is, expected positive effect on court efficiency
Threshold for judges of peace (LOG)	Decreases the workload, that is, expected negative effect on court efficiency

* $p > 0.1$; see Section 4 for the empirical model.

Our results offer also some suggestions on the expected impact of the *LOG*. We can affirm that the opportunity to propose an appeal against the judge's decision can increase the parties' propensity to litigate instead of reaching an agreement. In this sense, the possibility of proposing an appeal at a second instance court might preclude any (amicable) agreement among parties and require a final decision to be made by a judge, which increases the time necessary to define the case. In effect, increasing of threshold of non-appealable cases (as introduced by *LOG*, in order to align cantonal regulation with federal regulations, such as those posed by the Swiss CPC) might decrease the time that Ticino's courts require to process cases and, in this way, increase court efficiency.

Nonetheless, the *LOG* increased both the threshold of judges of peace and the number of judges (*Pretore aggiunto*). It could imply a lower level of pressure on each judge in the FICs. Hence, without an appropriate

incentive system on judges, the positive impact deriving from new threshold of non-appealable cases may be not sufficient to produce a significant positive impact to the courts performance since judges effort could be negatively affected by the decrease of the workload. A preliminary evidence can be derived from data which are available only at cantonal level after 2010 (i.e. aggregate data).

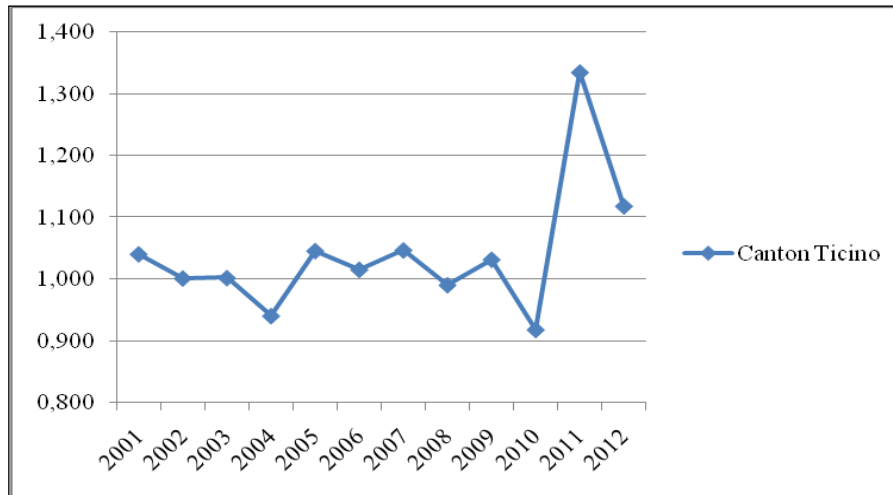


Figure 3. Trend of the cantonal clearance rate in Ticino (2001-2012)

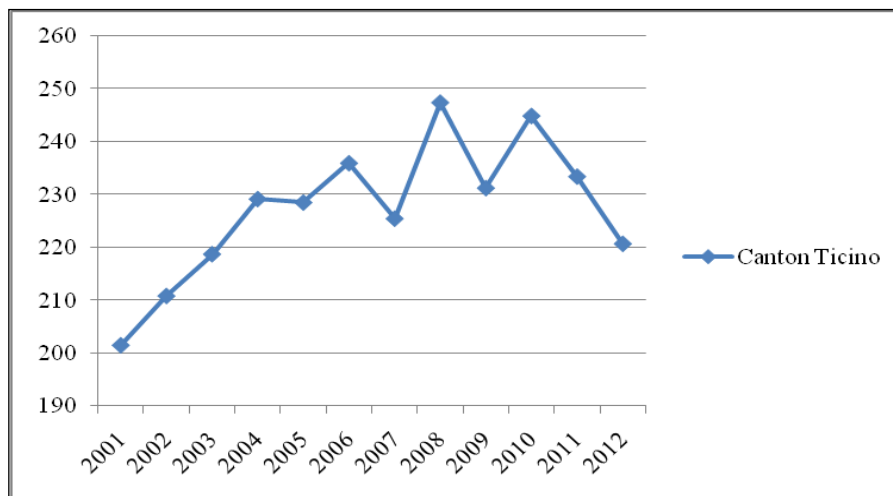


Figure 4. Trend of the cantonal disposition time in Ticino (2001-2012)

The impact both in the case of clearance rate and of disposition time seems to be positive as well showed by figures 3 and 4.¹³ However, the aggregate clearance rate decreased dramatically after the year 2011. Could such diminishing of clearance rate derive from a reduction of pressure on judicial staff? Further researches and data should analyze such circumstance.

¹³ Note that in figures 3 and 4 we refer to aggregate clearance rate and aggregate disposition time of Canton Ticino instead of the average of cantonal FICs, which have been proposed in the tables 3 and 4.

6. Policy implications

The results of this study suggest that *LexPP* has negatively affected court efficiency, even if it was able to decrease the workload of the most visited courts and, in turn, to increase judges' availability. As such, the policy aimed at establishing that *pretore* of the smallest FICS must also work in the *Tribunale Penale* did not succeed.

Moreover, findings of this study indicate that changing the threshold of non-appealable cases as pushed by the Swiss CPC and as introduced by *LOG* might decrease the propensity of parties to seek decisions by the courts, provided that there is not the possibility to appeal. In line with the current literature (Bianco *et al.*, 2007; CEPEJ, 2012), the study can support the hypothesis that litigiousness might be one of the determinants of judicial inefficiency, creating costs, not only for the disputing parties, but also for society as a whole. Trials tie up tangible and scarce social resources, such as the time of the parties, their lawyers, their judges, and their witnesses, to name a few.

In order to improve the efficiency of the cantonal judicial system this work may suggest the following proposals. A first suggestion is that Ticino strongly facilitates alternative dispute resolution (ADR) procedures. Even if court proceedings are the traditional means used by legal systems for settling disputes and have developed into their current form over many centuries, disputes need not be settled in court only. ADR procedures (e.g., mediation) coexist alongside statutory rules regarding the settlement of disputes. To reduce litigiousness, lawmakers might regulate lawyer fees (Ippoliti, 2014) and/or court fees in order to stimulate ADRs and discourage appeals, since research has shown that these fees could be linked to ADRs (Bernstein, 1993; Shavell, 1995).

Since court fees might reduce the public expense by passing part of judicial costs to the market (Esposito *et al.*, 2014), a better balanced distribution of litigation costs between taxpayers and the market might reduce the inflow of cases. The application of similar courts fees has increased throughout Europe in the last years, in the UK, the Netherlands, Germany, and France, among others (Faure, 2006; Hodges *et al.*, 2010; CEPEJ, 2012).

Nevertheless, the reduction of the workload by higher fees is not a sufficient solution if an appropriate incentive system for judges and staff is not in place. The literature shows that an appropriate motivation system should be developed by the policymaker (Cooter, 1983; Deyneli, 2012; Posner, 1993).

A further implication of our results is that executions and bankruptcy cases, even if they are significantly shorter, they reduce the performance of cantonal courts in terms of clearance rate. Further studies should thus focus on executions and bankruptcy procedures and the level of personnel and specialization of judges. For instance, since the specialisation of a magistrate in a specific topic might increase judges' productivity (Marchesi, 2003), a specific FIC with a competence for executions and bankruptcies might increase cantonal efficiency (e.g., *pretori aggiunti* might work in such a court). A more in-depth analysis of the fifth section of the FIC of Lugano, which retains personnel dedicated to bankruptcies and executions, might produce insights for further studies, as well as guide policymakers in making future reforms.

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