

The Impact of Modernization of Justice on Court Efficiency in Costa Rica

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Abstract

Over the last years, there has been growing awareness regarding the importance of transparent and effective courts to achieve economic development. However, many Latin American countries find that their judicial system have important deficiencies in terms of access and efficiency. This paper studies the effect of court modernization on caseload clearance rates in Costa Rica. The analysis exploits the fact that the modernization occurred at different points in time. This observed variation in the allocation of the program across time and space provides a potential instrument to identify the causal effect of the modernization on courts efficiency. We find that the program is associated with an increase of 5 percent in clearance rates and with a reduction of 75 dollars per case disposed. The results are robust to alternative specifications.

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I. Introduction

Many studies have recognized the importance of transparent and effective courts to achieve economic development.² A well functioning judicial system that can enforce contracts and protect property rights equitably and efficiently will also encourage investment, an important factor for economic development. However, many Latin American countries find that their judicial systems have important deficiencies in terms of access and efficiency. One important barrier is the high rate of case backlogs that affect the rule of law and the ability to enforce human rights. In some countries, it can take months or even years to achieve an outcome via the courts, increasing the costs of access and encouraging informal means of resolution. This problem is exacerbated in rural areas where judges have heavy workloads and lack equipment and assistance. According to a survey in Ecuador, 95 percent of respondents consider the legal process to be slow and complicated. The same problem exists in Peru, where an ordinary case takes approximately three years to reach a resolution, even though the code of civil procedure defines a maximum length of 300 days.³

In order to solve these problems, during the 1990's many Latin American countries have implemented significant judicial reforms. Most of these have included modernizing judicial procedures, designing outreach programs, providing legal education, expanding the geographical coverage of judicial institutions and promoting alternative resolution mechanisms. In this paper we will study the impact of the Program for the Modernization of the Administration of Justice in Costa Rica that was implemented jointly with the IDB in 1996. The objective of the program was to improve the management of judicial offices and public services by building a modern system of administration that included the development of a computerized legal-data system.

The justice sector in Costa Rica is made up the Judiciary, the Ministry of Justice, The Office of the Attorney General of the Republic and the Community Defense Office. The Judiciary is composed of justices of the peace, ordinary and appellate courts, and various chambers of the Supreme Court of Justice.⁴ The case of Costa Rica is especially important since, contrary to most Latin American countries, it has maintained a democratic tradition and a broad sense of social justice, providing its inhabitants with a reliable and credible judicial system. According to Kauffman's governance indicators, Costa Rica is among the highest ranked Latin American

² Sherwood et al (1994) and Levine (1998) have considered the quality of the judicial system as an important influence on economic development. In the same vein, Buscaglia et al (1999) have pointed out the importance of solving cases in a fair and timely manner for economic development.

³ World Bank (1999). "Court Performance around the World"

⁴ The Supreme Court is the highest judicial body in Costa Rica, composed of 22 judges that are chosen by the Legislative assembly for an eight-year term. The appellate courts (tribunals) are divided in eight judicial districts: *San José, Alajuela, Cartago, Heredia, Guanacaste, Puntarenas, Zona Sur* and *Zona Atlántica*. The Courts of first judgment (*juzgados*) are the lower courts and are territorially distributed over the 81 cantons. The Justices of Peace are local courts that handle minor cases (*contravencionales y de menor cuantía*) and are territorially spread over the districts in which the cantons are divided.

countries in the Rule of Law Index (see Figure 1).⁵ In addition, the Judiciary is composed of 17 judges per 100,000 inhabitants, placing the country among the highest in the region for this indicator (see Figure A1 in the appendix).

Despite the fact that Costa Rica has good governance indicators in comparison with other Latin American countries, its judicial system has a high incidence of backlogs and congestion in courts that impede effective access to justice. At the beginning of the 1990's, an ordinary commercial or civil case could take up to seven years, and a simple executive judgment around three years.⁶ The potential causes of this inefficiency are the centralization of the administrative operations in San Jose, the lack of technology for administering resources, the formalism of judicial procedures, the inefficiency of the judicial offices and the lack of knowledge on behalf of the judges. According to citizen perception surveys about the judicial system, only 25 percent trusts on the speed of the judicial system.

The purpose of this paper is to analyze the effectiveness of the judicial modernization program on courts efficiency. In particular, we will investigate the effect of the automated system on caseload clearance rates and on expenditure per case disposed. The expected effect of the program on productivity is not evident. One might expect that since the program was intended to facilitate and reduce time of administrative operations, we would find an increase in the proportion of cases filed per year that are disposed during the same year. However, many studies suggest that the adoption of new technology could have some negative effects that might offset the improvements in productivity, such as the change in the ratio of winners-losers due to the modernization.⁷ Blair et al (1994) has pointed out that inefficiencies in court procedures and management can provide opportunities for rent-seeking attorneys and judges, making this group reluctant to accept the reform. In addition, Tomlinson (2006) has suggested that there may be negative effects on productivity and performance at early stages of the implementation of an electronic filing system. According to surveys, these negative effects could be caused by staff being unfamiliar with utilization of new systems, changes in the organizational structure of courts and the duplication of work in the transition between paper and electronic records.

This paper attempts to find the causal effect of the program, using detailed judicial caseload data in every court from 2001 to 2008. It provides an important contribution to the literature addressing the impact of technology on court productivity. While there are many programs that attempt to improve the efficiency of courts, there is little empirical evidence on the impact of such programs. In particular, we provide a rigorous empirical assessment to estimate the impact of

⁵ The same results are found with the indexes: Voice and Accountability, Political and Stability, and Government Effectiveness.

⁶ Inter American Development Bank (1994). "Proposal for a loan for the modernization of the administration of justice"

⁷ Bertschek and Kaiser (2004). "Productivity Effects of Organizational Change". *Management Science* 50(3), pp. 394-404.

Modernization Program on court efficiency in Costa Rica. Since the modernization of the system was implemented in different judicial offices at different moments in time, we can exploit the variation in time and space in order to estimate a causal effect. Accordingly, we propose a difference-in-differences model that controls time and court fixed effect. We also employ propensity score reweighting techniques in order to obtain the most similar comparison group.⁸ One important point to emphasize for our identification strategy is that in the case of Costa Rica it is not necessary to control for all components of the judicial reform or laws which may be simultaneously operating to improve efficiency, because most of them are all national and therefore any effect arising from these laws would be captured by the time effect. The only component that might affect our estimation is the creation of mega-offices that change the number of judicial matters per court and time spent on each matter. In order to control for this component, we include as a control the number of judicial matters per court.

The main findings are that court modernization is associated with an increase of 5 percent of the clearance rates and that it reduces the cost per case disposed by 75 dollars. These results hold when testing different specifications, suggesting the existence of a causal effect.

The rest of the paper proceeds as follows: Section II presents a brief summary of Costa Rica Judicial Reform, Section III provides a literature review, Section IV describes the data, Section V presents the estimation strategy; and Section VI, the results. Finally, Section VII concludes.

II. Review of Costa Rica Judicial Reform

Since the beginning of the 1990s, Costa Rica has embarked on a judicial reform process that has been characterized by the commitment of different political actors such as the state powers, the private sector and many civil societies. The objective of this reform has been to enhance the access to justice and its efficiency, and mostly consisted of the following elements: the introduction of orality in penal processes, the nation-wide implementation of a new criminal procedure, the promotion of alternative dispute resolution mechanisms, the establishment of a unique number per case, the modernization of courts through technology and the creation of “mega-offices.”

Costa Rica is among the first countries in the region to introduce reforms in its criminal prosecution system. In 1973, the country introduced orality and a mixed system in the criminal procedure, which divided the process into two stages: the instruction and the oral and public trial. This change in the judicial process from written to oral procedure promoted judicial transparency and efficiency. In 1998, it was also implemented a new Criminal Procedure Code that restructured administratively the Judiciary and the Public Ministry, transferring the functions of investigation and prosecution of crimes to the latter.

⁸ Throughout the paper we will use the term “judicial offices” as a synonym of courts since the number of tribunals in the database is not very large.

Another central component of reform was the implementation of the Law for Alternative Conflict Resolution Mechanisms, which included arbitration and conciliation as alternative ways for solving conflicts. This law is especially important in the case of Costa Rica, where citizens traditionally resort to courts in order to solve many conflicts that do not need to be assessed by judges, causing a high rate of litigiousness, congestion and a negative public perception about the administration of justice. According to a report by Cejamericas, Costa Rica is among the countries in the region with the highest litigation rates (see Figure 2).

In 1998, the Supreme Court approved the creation of “mega-offices” that consisted of the clustering of services for courts of the same instance into a single office. The mega-offices introduced many technological improvements, such as computers, Internet access, Intranet and centralized notification services. There was also a specialization of functions achieved by separating the offices of family, child support and domestic violence. Another significant change was the establishment of the Unique Number per Case (*Número Unico de Expediente*) in which all the cases were codified with a unique and unrepeatable number which remains the same during the whole judicial process, allowing the monitoring of court processes.

III. Literature Review

Many programs were implemented in many Latin American countries in order to reduce the low clearance rates and the large backlog of cases. Programs centered on changing from a manual to an automated system to record cases, merit based promotions, legal training, active case-management style and judge’s specialization of tasks.

According to previous studies evaluating the impact of modernization programs, scarce empirical evidence exists to support their benefits. Most of the evidence is based on case studies that provide extensive observational research of the reforms. The most common approach found in this literature is to ask judicial actors about their views and how the reform has affected their work.

Ravinovich (2008) has analyzed the computerization of Israeli courts and pointed out the advantages and disadvantages of introducing modernized techniques; however, there is no empirical evidence of the impact on court productivity indicators. In the same vein, Domino (1995) has also studied, through perception surveys of jury administrators, the impact of the introduction of technology on jury selection and has found that 91 percent of the respondents believe that automation has enabled their court to process jurors more efficiently by reducing the time and cost.

The U.S. National Center for State Courts has also provided evidence of the most recent advances in court technology improvements. Using the survey method, Holbrooks (2001), has showed how the implementation of an automated case management system would improve productivity and efficiency in a court in Missouri.⁹ Since the automated system allows queries by file

⁹ This system was developed in the information retrieval system since it was very time intensive to locate files and information. The manual system consisted of index cards alphabetically filed containing limited information. A request of information from attorneys and government agencies could last up to thirty

name, file number and attorney name, it reduces the time spent on information requests, allowing the clerks to concentrate on their judicial duties. Similarly, Webster (1996) has suggested multiple benefits from an automated court support system such as the reduction of repetitive tasks, the increase of information accessibility and organization integration and enhanced statistics. Tomlinson (2006), based on data from opinion surveys, has studied the impact of electronic filing processes in trial courts and has suggested negative effects on productivity and performance at early stages of the implementation of the system.

A study done by Buscaglia et al (1999) has provided an extensive qualitative assessment of the judicial reforms in several countries. This study suggests that Chile, Peru, Panama, France and Singapore have experienced positive results in terms of efficiency from their reforms. In the case of France, where the reform consisted of the separation of judicial and administrative tasks, the study states that since the judges do not spend time on administrative tasks such as filing cases, they are not overburdened by new cases. In the case of Panama, where the reform has established a merit-based competition in order to assign judicial positions and an increase in the capital budget, the authors found a positive effect on court efficiency. In the case of Peru, they suggest that the reform, which consisted in purchasing new computers for Lima, creating new judicial institutions and changing the assignment of tasks, reduced the time judges spent on administrative tasks and increased the caseload clearance rates. The same is found in the case of Singapore, where the introduction of Technology Court (a videoconferencing system that allows lawyers to examine witnesses outside the courtroom) and the separation of administrative responsibilities from judges increased court efficiency. This study has also analyzed the factors that most affect the performance of the court system measured by clearance rates, procedural times and cost elasticity of supply of court services. Surveying a representative sample of judges, they find that the use of technology to track cases and the budget allocated to capital investments for each court have a positive and significant effect on clearance rates. They suggest that countries with inefficient court performance should concentrate on increasing the capital investment in infrastructure and information technology rather than increasing staff sizes and salaries since these do not have an impact on clearance rates.

In conclusion, while many papers present a qualitative analysis of different judicial reforms, none of them provides empirical and rigorous evidence of the effects associated.

IV. Data

The data consists on a panel of observations of 264 judicial offices for the period 2000-2008 covering 67 cantons.¹⁰ Two different sets of data are used: judicial office-level data on disposed,

minutes with the manual system. With the automated system each case has an easily locatable identification number, eliminating the constant need to transfers files among staff. The clerk only enters the data upon initiation of the case and then easily tracks the information by an identification number.

¹⁰ Costa Rica is composed of seven provinces and the provinces are divided into 81 cantons.

filed, pending cases and courts expenditure, and information on the dates in which the judicial offices were modernized.

The information about the dates of treatment of each judicial office was obtained from the project executor unit. In every office the modernization process was quite similar; it consisted on the specialization of functions, the clustering of work on the same judicial matter and the setting up of microcomputer networks and automated word processing and case flow management. With this information we construct our treatment variable which is a dummy indicating if the judicial office was modernized or not. Table A1 from the appendix describes the year in which each office was treated. Over the analyzed period, most of the judicial offices were modernized at different moments. This variation in time and space is used to identify the causal effect of the program on court efficiency.

The judicial office-level data set comes from the Planning Department of the Judiciary.¹¹ It includes 121 treated judicial offices and 143 control judicial offices. This data is used to construct two court efficiency outcome indicators: the caseload clearance rates and the expenditure per disposed case in each judicial office. We define the caseload clearance rates as the ratio between the number of disposed cases and the sum of new filed cases, re-filed cases and pending cases from the last year. One important limitation of this study is the lack of data on judicial process duration available to calculate a third efficiency indicator of interest: case resolution duration. Table 1 presents summary statistics for these judicial indicators. A total of 5,060 observations are available for estimation and variability exists across courts and time in these outcomes.

In Costa Rica, the Judicial jurisdiction is divided into 8 areas: Agrarian Law, Penal, Civil, Juvenile (Penal Juvenile), Labor, Administrative, Family and Notary discipline. Table 2 presents the clearance rates disaggregated by judicial matter. The courts with smaller clearance rates are those that solve civil, administrative and child support matters.

Analyzing the evolution of filed, pending and disposed cases for the whole sample of judicial offices, we found similar trends for disposed and new filed cases. From 2001 to 2008, the number of new and disposed cases decreased by 39 percent (see Figure 3). It is important to note that the significant reduction in the number of new and disposed cases in the year 2005 is due to the reassignment of transit matters to a special division.¹²

Regarding the modernized judicial offices, during this period, the number of new cases was reduced by about 42 percent, while the number of disposed cases was reduced by only 33 percent. In addition, the number of pending cases from the previous year was reduced by 45 percent (see Figure 4). It is important to note that although there was a reduction in the number of new and pending cases, the reduction in the number of disposed cases was lower. This result suggests that

¹¹ The court expenditure database does not include the costs for agrarian and transit matters.

¹² According to a report of Cejamericas, the Public Roadways Transit Law was modified in order to decongest the transit courts which had the highest caseload rates. Most of the modifications established that infractions with a set fine no longer merited a citation to appear before the court and that they should be presented administratively to the Highway Safety Council.

there was an increase in court productivity during the period. On the other hand, if we analyze the non-treated judicial offices, we find that the reduction in disposed and new cases is the same.

Figure 6 presents the clearance rates disaggregated by treated and non treated judicial offices. It is found that the clearance rates of the treated courts have been increasing at a higher rate than the non-modernized courts. This result remains for most of the judicial matters and judicial circuits (see Figures A2-20 in the Appendix).¹³

V. Identification Strategy

A. Difference-in-Differences Model

The purpose of this study is to estimate the mean effect of modernizing the judicial administration system on court efficiency, comparing judicial offices covered by the program to those not covered. Since the design was not experimental, it could be possible that the allocation of the program was not random in each court. In this sense, we could have different endogeneity problems. First, we could have a reverse causality problem if the allocation of the program is the result of the productivity rates of courts. One possibility is that judicial offices with lower rates of productivity were the first ones selected to participate in the program or conversely those with higher productivity rates. Second, different particular characteristics in the courts may have affected the intervention and the productivity of courts. It could be the case that some courts, for example those with more corrupt judges are the ones with lower caseload rates and also the ones selected to participate in the program.¹⁴ In this sense, correlation between court efficiency and certain factors such as corruption that influence the treatment can lead to biased estimates. The same could also happen with the number of judges per canton since this variable might affect both the treatment and caseload clearance rates. In order to control for these potential biases that might confound our identification, we will use panel data and estimate a difference-in-differences model. This specification controls for biases that could come from those observable and non observable characteristics that vary between courts but are fixed over time, such as the judicial circuit, canton, geographical characteristics, etc. This model compares the evolution of the clearance rate in the treated courts before and after the allocation of the program to the evolution of the clearance rate in the non-modernized courts. The difference-in-differences model includes year fixed effects that control for potential common shocks in given year and court-fixed effects control for all differences between courts that are time invariant. Formally we estimate the following equation:

$$ClearanceRate_{it} = \alpha Program_{it} + \beta X_{it} + \gamma(Canton_j * \mu_t) + \tau(Circuit_k * \mu_t) + \eta(Court_i * t) + \varphi_i + \mu_t + \varepsilon_{it}$$

¹³ It is important to note that the trends of the transit matters do not present differences in the clearance rates since none of these courts were modernized.

¹⁴ Buscaglia et al (1999) have suggested that court delays might allow court personnel to ask for bribes in order to expedite the procedure.

where $ClearanceRate_{it}$ is the caseload clearance rate for court i in year t ; $Program_{it}$ is a dummy variable which takes the value of 1 if the court was modernized and 0 otherwise; X_{it} is the number of judicial matters and expenditures that vary across time and per court; μ_t is the time effect common to all the courts; φ_i is a court fixed effect; $Canton_j * \mu_t$ is an interaction of the canton fixed effect and the time fixed effect, controlling for all the variables that vary in time and per canton but affect equally all the courts that are part of the canton; $Circuit_k * \mu_t$ controls for all circuit fixed effects and for all variables that vary in time and per judicial circuit and affect equally all the courts that are part of the circuit; $\eta(Court_i * t)$ is the specific trend per court.

We include two important covariates: the number of judicial matters and the expenditures of courts which vary across courts and time. By including the number of judicial matters we are controlling for the specialization and clustering of judicial matters that was also part of the judicial reform via the creation of mega-offices. The variable that controls for the expenditures is used as a proxy of the capital budget resources allocated to each court and judge salaries. It is reasonable to argue that an increase in investment in court equipment and infrastructure and in judge's salaries might tend to increase the clearance rate. Many studies, such as Contini et al. (2007) have suggested that one of the most common factors attributed to the excessive duration of trials or inefficiencies is the lack of resources.

We do not include a proxy for corruption since we can argue that although the corruption rates might differ between courts, they might also be fixed in time as many institution related variables.

The error ε_{it} is a canton time-varying error which is generally assumed to be independent across time and space; however, as the analysis uses panel data, the errors could be correlated across time in the same canton. In addition, since our data is at the court level it also is possible that the errors of courts that belong to the same canton are correlated. In the case of a positive correlation, the standard errors could be computed smaller and the null hypothesis could be over rejected. To avoid potential biases in their estimation, standard errors are clustered at the canton level, allowing an arbitrary covariance structure within cantons over time.¹⁵

One key assumption of this model is that the evolution of control courts (those that were not part of the program) is an unbiased estimator of what would have happened to the treated courts in the absence of the program. Although this assumption cannot be tested directly, we can analyze the pre-program trends of both groups. If in the pre-intervention period the trends are not different, then it is plausible to assume that in the absence of treatment the trends would remain the same in the post-intervention period. In order to test the similarity of the previous trends we take two approaches. First, following Galiani (2006), using only observations for the pre-intervention period we estimate a modified version of equation (1) which instead of the treatment variable includes an interaction between the year dummy and a dummy variable that takes the value of 1 if the court will

¹⁵ See Bertrand *et al.* (2004).

be eventually treated and 0 if the court will never be treated. We find that the null hypothesis that the pre-intervention year dummies are the same for the eventually treated and control courts cannot be rejected (average p-value 0.21). Second, we provide a figure of the clearance rate trends before the allocation of the program. Since most of the courts were not modernized in the same year in order to analyze the previous trends, we keep only those courts that were not treated and compare them with those courts that were modernized in the years 2005, 2006 and 2007. The following figure presents the pre-program trends. There are no significant difference between the clearance rate of those courts that were not part of the program to those that were part in 2005, 2006 and 2007. Both results suggest that clearance rates in the treated and control courts have equal trends in the pre-intervention period, giving validity to the difference-in-differences approach.

B. Modernized Courts Selection

Since the allocation of the program was not random, in order to compare similar courts we employ propensity score reweighting. The idea behind this procedure is to use the estimated probabilities of treatment (propensity scores) to reweight the data in order to compare the most similar courts. First, we estimate a probit model to obtain the probability of being covered by the program conditional on the pre-intervention clearance rates.¹⁶ We include clearance rates in the model because it is considered a key variable to explain the program allocation. Second, we calculate the propensity score (the probability of being part of the program) using the results obtained from the probit model. Finally, following Nichols (2008) we reweight the sample using the propensity score and estimate the model presented in the equation (1). We assign a weight equal to one to observations receiving the treatment (the courts that are part of the program) and a weight equal to $P_s/(1-P_s)$ for observations that are part of the control group.¹⁷ This procedure estimates the average treatment effect on the treated after obtaining the propensity score to approximate the distribution of the control to the treatment group. This estimator combines the advantages of using matching methods with the main benefit of a straight forward estimation of standard errors using the difference-in-differences model.

Table 3 presents the results of estimating the marginal effects of the probit specification. We find that the clearance rates affect the probability of being covered by the program by about 26 percent.

VI. Results

Table 4 presents the results for the difference-in-differences estimates. Modernized judges experience a statistically significant increase at the 10 percent level in clearance rates of about 0.018, which amounts to a 3 percent increase of the baseline rate. That is, we passed from an average of

¹⁶ Rosembaum and Rubin (1983) show that if it is valid to conduct matching on X 's, it is equally valid to do so for the propensity score. The advantage of using the propensity score is that it has one dimension. The propensity score is $P(I=1/X)$ which, of course, has one dimension.

¹⁷ Nichols (2008). "Erratum and Discussion of Propensity Score Reweighting".

54 annually disposed cases per 100 filed cases to 57 annually disposed cases with the court modernization program.

Column (2) presents the results including dummies for the interaction of canton and year fixed effects, judicial circuit and year fixed effect and courts trends. We found that the results and significance increased to 6 percent.

One concern regarding the difference-in-differences model is that some characteristics that vary over time and across courts can be correlated with the clearance rates and the allocation of the program. To address this issue in column (3), we include the expenditures per court since we could argue that the most efficient cantons are the ones that spend more resources in courts. We found that results do not change under this specification.

The results from the re-weighted difference-in-differences model are presented in columns (4)-(6)(we include also all the controls that were included in the difference-in-differences model). Results are almost unaltered (an increase of about 5 percent is found and is significant at the 1 percent level).

Overall, these results suggest that the modernization of courts generates a significant increase in the clearance rates. The parameter estimates for caseload clearance rates are remarkably stable, both across specifications, and, more importantly, between specifications.

We also analyze a second efficiency indicator using courts expenditure data. We use this data to calculate the average cost of disposed cases per court. These results are presented in Table 5. We found that modernization of courts reduces the cost per case disposed by about 75 dollars, which amounts to a 10 percent reduction of the baseline rate (we use as the baseline rate the average cost per case resolved of the treated courts in the pre-program period which is of about \$767.24). Since an average of 1,000 cases is solved per court annually, we estimate a reduction of about \$75,000 per year in each court.

A. Regarding Potential Negative Effects

In this section, we will test two hypotheses. First, we will analyze whether the clearance rates have been increasing over the years of implementation of the program. We would expect an increase in the clearance rates for those judges in courts that have been modernized for a longer period of time since there is a learning process in the use of the program. Second, we test whether in the first year of the program the existence of a transitional negative effect could offset the improvements of the modernization. In this regard, we would expect to see small or null effects during the first year of implementation.

In order to test the first hypotheses, we construct a variable that measures the years of implementation for each court and estimate the model presented in equation (1), replacing the treatment variable for the variable years of implementation. Table A2 in the appendix presents the results and it is found that there is no statistical evidence that over the years there is an increase in

clearance rates. This could be due to the fact that the learning may only increase over a short initial period and not indefinitely.¹⁸

In order to test the second hypothesis, we follow two approaches. The first one considers the differences in the same courts of the impact of the treatment in the first year of implementation to the following years. We construct the variable “treatment in year 1” that takes the value of 1 only in the first year of the implementation and 0 in the other years, and the variable “treatment from the second year” that takes the value of 1 from the second year of implementation onwards. Table 6 presents the results. In column (1) and (3), it is found that the effects of the modernization are smaller in the first year of the program, suggesting the existence of negative transitional effects that reduce the positive effects. In the first year, we find an improvement in the caseload clearance rates of about 2 percent while from the second year onwards this effect more than duplicates (about 5 percent). However, in column (4), when we introduce the weights the effect from the second year onwards lose statistical significance.

The second approach divides the data in groups of courts by taking into account the years of implementation. We first estimate the equation (1) only comparing those courts that have one year of implementation with those that are not covered by the program and second we estimate the same equation for a subgroup of courts that have been with the program for more than two years. Table 7 and Table 8 present the results. We find that while the courts that are in the first year of the program experience negative effects in the clearance rates, the courts that have two or more years of program implementation experience positive effects. Furthermore, the magnitude of the effect for this last group of courts is even higher than the average effect found using the whole sample of courts.

B. Falsification Tests

In this section we exploit the timing of the allocation of the program to construct placebo treatments. In order to do so, we keep pre-treatment observations and we assign the treatment before it was actually assigned. If the model presented in the previous section is correctly specified, the allocation of the modernization program should not affect the clearance rates between the years in which it did not exist. We test this for several false treatments: if the treatment was assigned one, two, three and four years before it was actually assigned. The results are presented in Table 9. Clearly, the program did not affect the caseload clearance rates in these years, discarding the possibility of the results being product of spurious correlation in the data, thus giving validity to our previous results.

¹⁸ Results do not change if instead of including a linear specification we include dummy interactions for each year of implantation.

C. Impact by Poverty Regions

The judicial backlog and congestion of courts in Costa Rica have particularly inhibited the provision of justice to the poorer segments of the society. According to a survey done by the program executing unit, only 17 percent of the respondents with elementary education resolved their conflicts with the judicial system. In this sense, we found important to test if there is any differential effect in terms of efficiency and access by type of region. We define the indicator of access as the number of new cases filed per 100,000 inhabitants. In order to test this hypothesis, we use data of the extreme poverty levels using the statistics division of the regions from the National Institute of Statistics and Census. Since the regions of *Brunca*, *Chorotega* and *Pacífico Central* present the higher levels of extreme poverty, first we generate a dummy which takes the value of one if the justice offices are part of these regions and zero otherwise (if they are part of the *Central*, *Huetar Norte* and *Huetar Atlántica* regions).¹⁹ Second, we estimate equation (1) restricting the sample to the poorer regions. We expected to find that by reducing the transaction costs, the program would have increased the access to justice for these regions. In the case of the caseload clearance rates, we found that the program has only significant effects for the regions with higher levels of poverty. This result may be related to the fact that access to technology, an important component of the program, should be easier in rich regions rather than in poverty ones where besides of the program the access is difficult to find. Finally, for the outcome of access we found that there are no significant effects for both groups.²⁰

We check the robustness of this result using data at the level of canton of extreme poverty levels; we divide the sample by extreme poverty quantile categories (we use four quantiles) and estimate equation (1) for each quantile. We found that there are only significant effects in those cantons that are at the higher quantile of poverty. This result holds for other definitions of poverty.

VII. Conclusions

This paper shows that the program of Modernization for the Administration of Justice in Costa Rica increased court efficiency. It provides evidence that training, giving computers and other resources to courts can have important results in case backlogs and costs per case disposed. Using a combination of methods, we found that modernized courts experience on average an increase of about 6 percent in clearance rates and an annual reduction of about \$75,000 in disposed cases.

This study suggests one way to increase court efficiency in the context of developing countries, where the backlogs of cases have been increasing substantially over the last years. Although there is general recognition of the importance of judicial reform for development, little is known about the impact of improvements in this area. While the previous literature has

¹⁹ About a 60 percent of the courts that are modernized are in non-poverty regions.

²⁰ Regression results are available upon request.

focused on case studies, this paper is among the first to provide empirical evidence of the impact of a court modernization program.

Many factors suggest that the relation between the program and the case management of the courts may be causal. First, the treatment and the control group exhibited similar time trends in the pre-intervention period, validating the difference-in-differences identification strategy. Second, the model includes court and time fixed effects and the conclusions are robust to the inclusion of time-varying covariates that may affect the allocation of the program and may also influence clearance rates. Results remain after controlling for heterogeneous courts, reweighting the control and treatment groups according to each court's propensity score. Furthermore, the falsification test suggests that any other plausible explanation of the main estimates can be eliminated and strengthens the causal interpretation.

One important limitation of this study is the lack of data on judicial process duration available to calculate a third efficiency indicator of interest: case resolution duration. Nevertheless, since we find that the number of disposed cases increased, it is reasonable to think that this result was achieved via a reduction in the time used to dispose each case.

Future research should analyze the impact of these modernization programs by developing a more detailed analysis, differentiating by type of judicial matter (civil, penal, labor, etc.) In this paper, we could not address this analysis because there was not enough statistical power to do a rigorous study in each subsample of matters.

This study sheds light on the effect of court modernization programs. We found significant and positive impacts on clearance rates. It is important to note that one significant feature that contributes to this result is the general consensus and commitment that existed in Costa Rica among political actors to reform the judicial system. As Blair et al (1994) mentioned: consensus for judicial reform is an essential pre-existing condition in order to get positive results from modernization programs. In this sense, it is important to take into account the context of each country in order to externalize the results.

Our future research will consider the relationship between the increase in the clearance rates and crime indicators. This is also another important outcome, especially since over the last years delinquency rates have been increasing in Costa Rica.

Tables and Figures

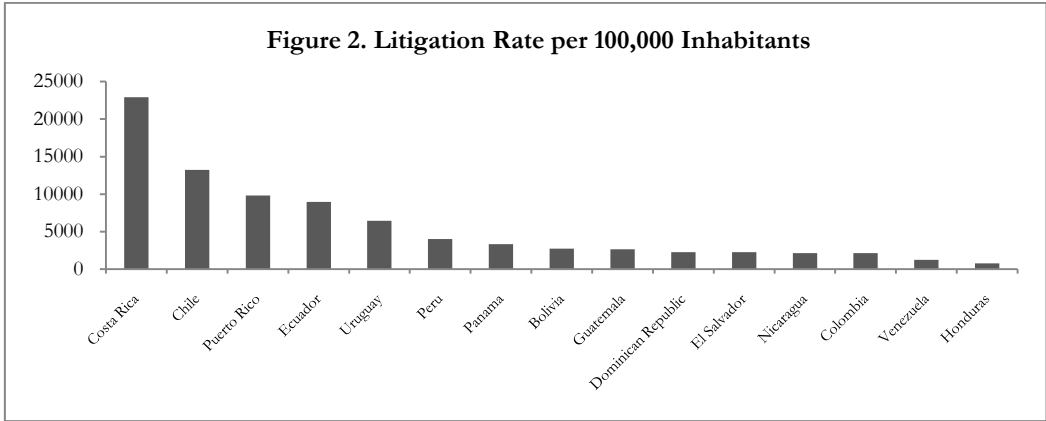
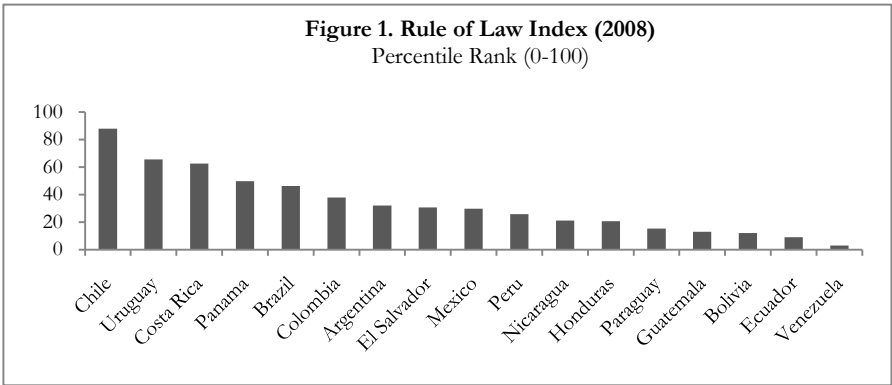


Table 1. Summary Statistics

	Mean	Std. Dev.	Min	Max
Pending Cases	634.7476	1886.249	0	48929
Filed Cases	1174.866	407.0866	1	107213
Re-filed Cases	40.89104	151.9934	0	2343
Disposed Cases	1110.873	4049.158	1	115874
Clearance Rate	0.5701	0.2729	0.0104	1
Cost per Case Disposed	1005.012	2296.762	3.494633	68945.38

Note: Each mean was calculated taking into account the whole period (2001-2008).

Table 2. Filed, Re-filed, Pending, Disposed Cases and Caseload Clearance Rates for all the Judicial Circuits per Type of Matter (mean for the period 2001-2008)

Type of Matter	New Filed Cases	Pending Cases from Last Year	Re-filed Cases	Disposed Cases	Clearance Rate
Agrarian Law	297.78	412.80	3.62	245.48	0.34
Civil	729.11	819.07	12.51	438.22	0.28
Administrative	6700.63	10283.77	84.23	4005.40	0.23
<i>Faltas y Contravenciones</i>	667.20	371.84	5.65	680.59	0.65
Family	896.13	592.69	6.27	801.05	0.54
Labor	256.38	307.50	20.35	275.55	0.47
Notary Discipline	18.88	3.63	0.20	18.63	0.82
Other	68.75	8.94	1.25	67.94	0.86
Penal	1986.80	627.55	178.55	2148.20	0.77
Juvenile	484.18	173.14	95.91	559.36	0.74
Child Support	312.64	1041.40	-	144.65	0.11
Transit	5472.50	938.09	30.71	5559.18	0.86
Domestic Violence	639.25	131.58	2.56	663.44	0.86
Constitutional	15045.13	2566.63	7.71	14921.75	0.85

Figure 3. Number of New, Pending and Disposed Cases

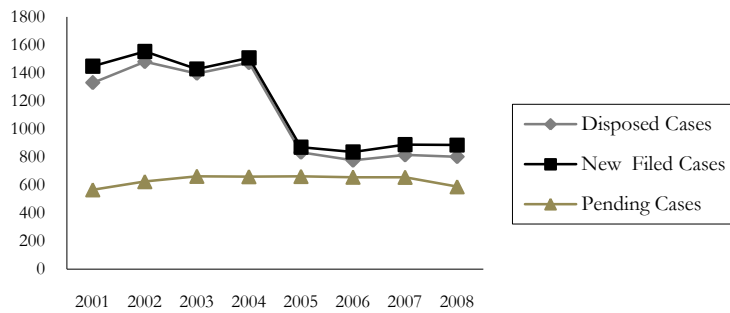


Figure 4. Number of New, Pending and Disposed Cases in Modernized Courts

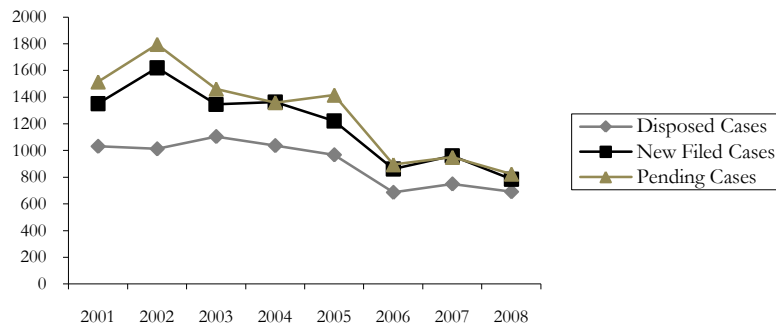


Figure 5. Number of New, Pending and Disposed Cases in Non-Modernized Courts

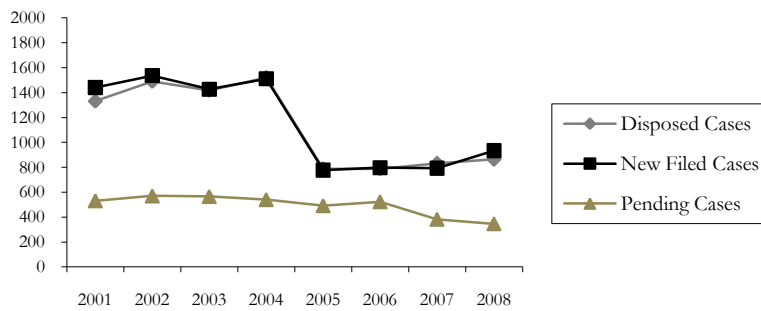


Figure 6. Caseload Clearance Rates

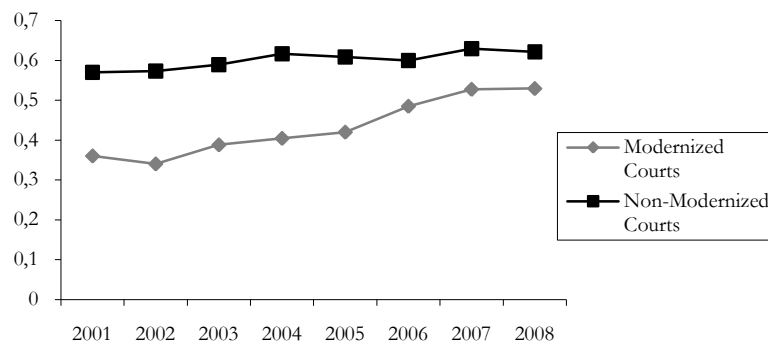
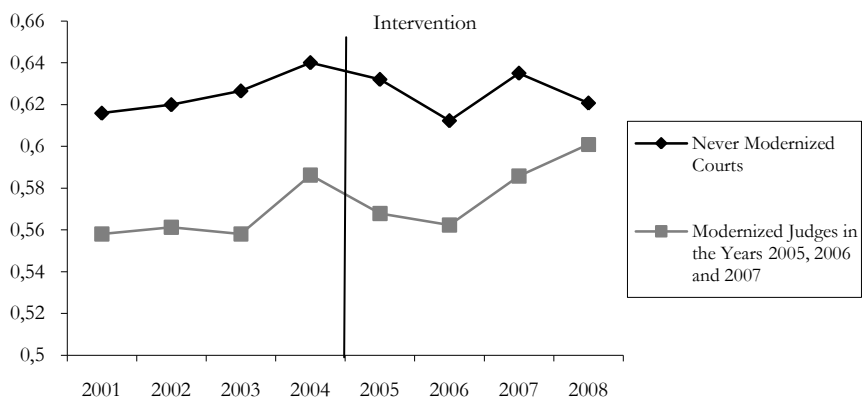


Figure 7. Clearance Rate Trends



**Table 3. Probit Estimates of Allocation of the Program
(marginal effects)**

Clearance Rates	-0.2604*** (0.02836)
Observations	3843

Note: Standard errors are in parenthesis.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

Table 4. Justice Modernization Program and Court Efficiency

	Difference-in-Differences Model			Re-weighted Difference-in-Differences Model		
	(1)	(2)	(3)	(4)	(5)	(6)
Justice Program (=1)	0.01843* (0.00976)	0.03194** (0.01401)	.029459* (.0152566)	0.02001** (0.00912)	0.02640* (0.01359)	.027964** (.0130855)
Number of Judicial Matters	0.01722 (0.01127)	0.04164*** (0.01097)	.0628217*** (.0116389)	0.01184 (0.00923)	0.04319*** (0.01101)	0676693*** (.0146485)
Expenditures per Court			-3.16e-09 (3.37e-09)			-3.92e-09 (3.08e-09)
Δ % in Clearance Rates	3.41	5.91	5.44	3.70	4.88	4.88
Observations	4893	4877	3725	4747	4747	3601
R-squared	0.002	0.054	0.0036	0.0037	0.054	0.0045
Number of courts	264	263	219	251	251	208

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the caseload clearance rate. Standard errors clustered at the “canton” level are in parenthesis. Columns (1) and (4) include year fixed effects and the number of judicial matters per court. Column (2) and (5) include dummies for the interaction of canton and year fixed effects, judicial circuit and year fixed effect and courts trends. Column (3) and (6) include the expenditures per court.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

Table 5. Justice Modernization Program and Court Expenditure per Disposed Case

	Difference-in-Differences Model	Re-weighted Difference-in-Differences Model
Justice Program (=1)	-89.90631** (38.54641)	-75.17066** (35.13216)
Number of Judicial Matters	7.134304 (65.03802)	18.81995 (80.02514)
Δ % in Cost per Case Disposed	11.7	9.7
Observations	3580	3403
R-squared	0.0767	0.0769
Number of courts	210	198

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the cost per case disposed. Standard errors clustered at the “canton” level are in parenthesis. The model includes year fixed effects, the number of judicial matters per court, dummies for the interaction of canton and year fixed effects and courts trends.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

Table 6. Justice Modernization Program and Court Efficiency Differentiating the First Year of Treatment

	Difference-in-Differences Model		Re-weighted Difference-in-Differences Model	
	(1)	(2)	(3)	(4)
Justice Program in Year 1 (=1)	.0111457 (.0103193)	.034503** (.0131341)	.0123064 (.0097993)	.030464** (.0133736)
Justice Program from Year 2 Onwards (=1)	.0240141** (.0117619)	.0412392* (.0230006)	.0272956** (.01139)	.0369374 (.022618)
Δ % in Treatment Year 1	2.06	6.38	2.27	5.64
Δ % in Treatment from Year 2	4.45	7.63	5.05	6.84
Observations	4893	4893	4747	4747
R-squared	0.0018	0.0058	0.0050	0.0076
Number of courts	264	264	251	251

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the caseload clearance rate. Standard errors clustered at the “canton” level are in parenthesis. Columns (1) and (3) include year fixed effects and the number of judicial matters per court. Column (2) and (4) include dummies for the interaction of canton and year fixed effects and courts trends.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

Table 7. Justice Modernization Program and Court Efficiency.
Sample: Courts with only 1 year of Implementation

	Difference-in-Differences Model	Re-weighted Difference-in-Differences Model
Justice Program (=1)	-.0266033*** (.000)	-.0224053*** (.000)
Δ % in Clearance Rates	4.92	4.07
Observations	2624	2622
R-squared	0.0046	0.0053
Number of courts	151	149

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the average cost per case finished. Standard errors clustered at the “canton” level are in parenthesis. The model includes year fixed effects, the number of judicial matters per court, dummies for the interaction of canton and year fixed effects and courts trends. * Statistically different from zero at the .1 level of significance.** Statistically different from zero at the .05 level of significance.*** Statistically different from zero at the .01 level of significance.

Table 8. Justice Modernization Program and Court Efficiency.
Sample: Courts with more than 1 year of Implementation

	Difference-in-Differences Model	Re-weighted Difference-in-Differences Model
Justice Program (=1)	.0322566** (.0141291)	.0265203* (.0137342)
Δ % in Clearance Rates	5.92	4.07
Observations	4748	4604
R-squared	0.0078	0.0061
Number of courts	258	247

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the average cost per case finished. Standard errors clustered at the “canton” level are in parenthesis. The model includes year fixed effects, the number of judicial matters per court, dummies for the interaction of canton and year fixed effects and courts trends.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

**Table 9. The Impact of the Modernization Program on Clearance Rates Between the Years
in Which It Was Not Assigned**

	False Treatment 1	False Treatment 2	False Treatment 3	False Treatment 4
Justice Program (=1)	.0051111 (.008191)	.0085953 (.0084596)	.0039775 (.0088625)	.0065595 (.0110367)
Δ % in Clearance Rates	0.92	1.59	0.72	1.21
Observations	3861	3861	3861	3861
R-squared	0.0066	0.0070	0.0063	0.0071
Number of courts	253	253	253	253

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the caseload clearance rate. Standard errors clustered at the “canton” level are in parenthesis. The model includes year fixed effects, the number of judicial matters per court, dummies for the interaction of canton and year fixed effects and courts trends.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance

Appendix

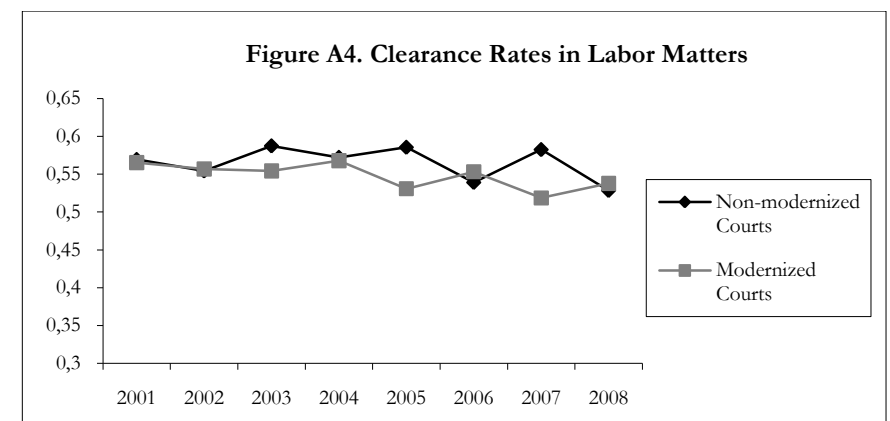
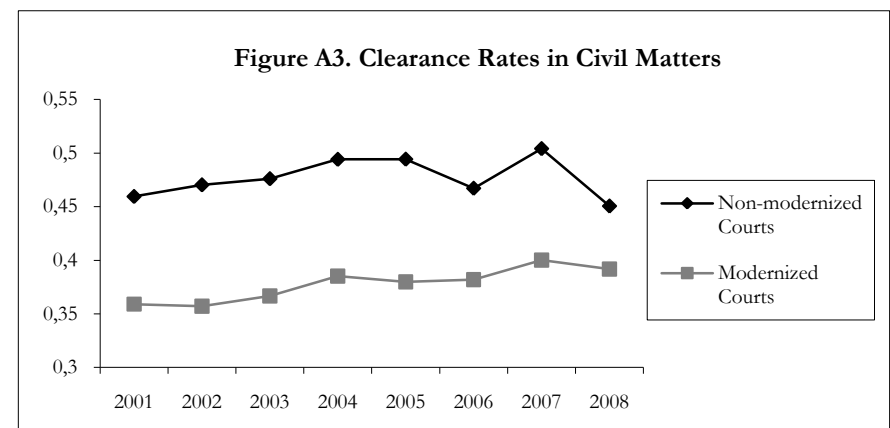
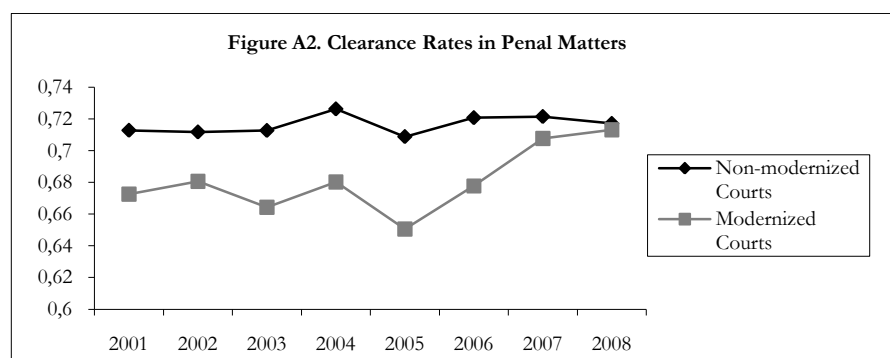
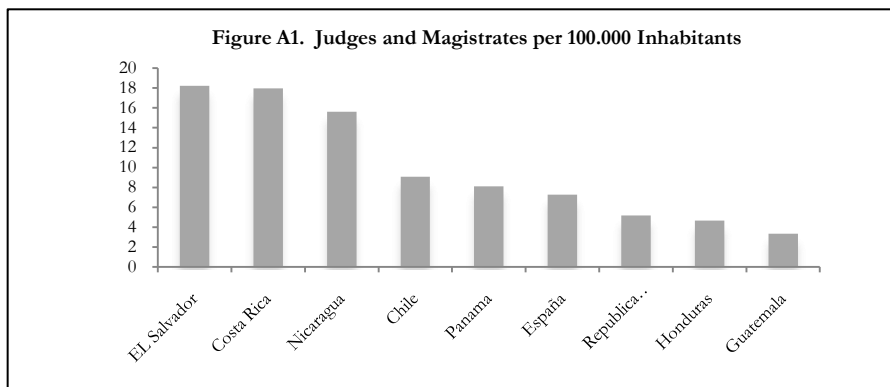


Figure A5. Caseload Clearance Rates in the Judicial Circuit of Cartago

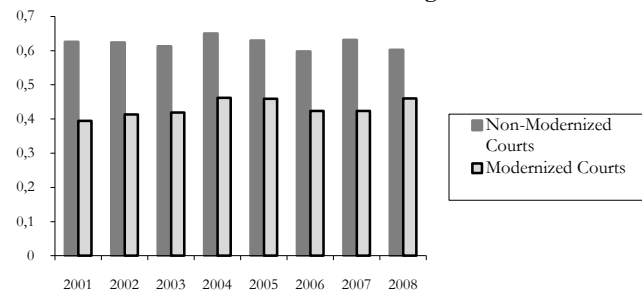


Figure A6. Caseload Clearance Rates in the Judicial Circuit of Heredia

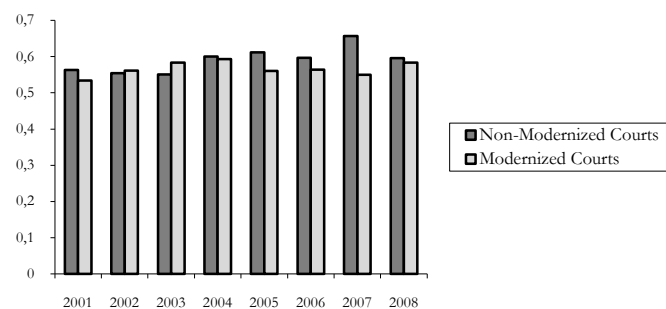


Figure A7. Caseload Clearance Rates in the Judicial Circuit of Puntarenas

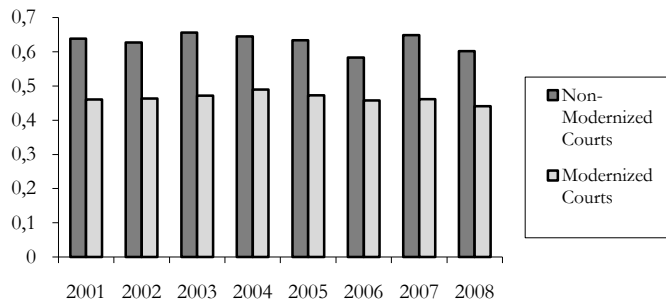


Figure A8. Caseload Clearance Rates in the I Judicial Circuit of Alajuela

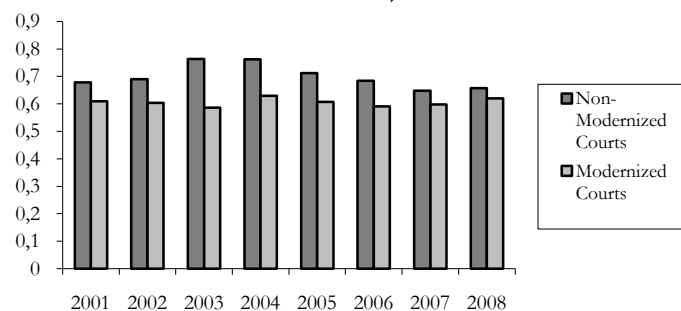


Figure A9. Caseload Clearance Rates in the I Judicial Circuit of Guanacaste

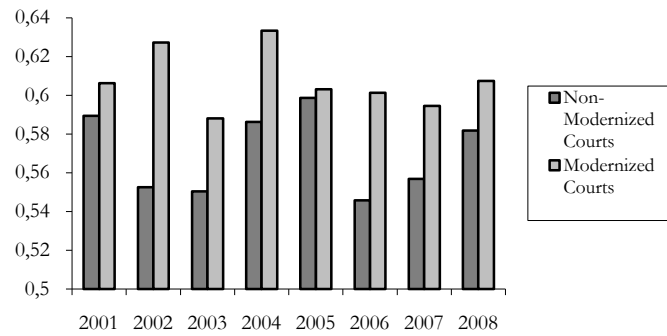


Figure A10. Caseload Clearance Rates in the I Judicial Circuit of San Jose

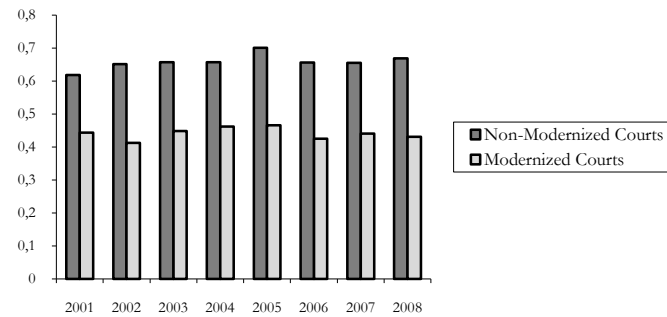


Figure A11. Caseload Clearance Rates in the I Judicial Circuit of Zona Atlantica

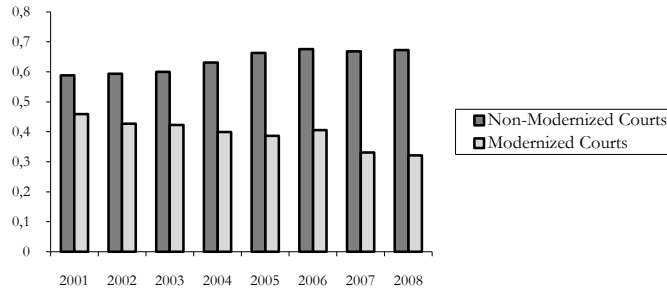


Figure A12. Caseload Clearance Rates in the I Judicial Circuit of Zona Sur

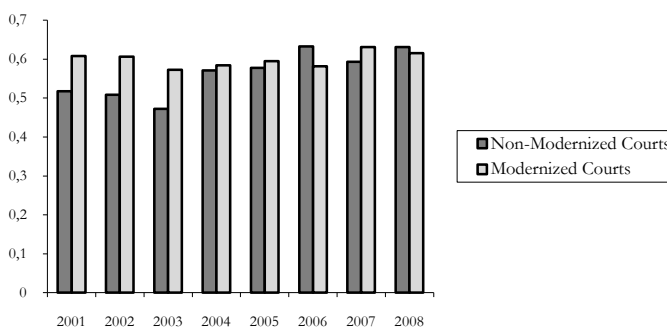


Figure A13. Caseload Clearance Rates in the II Judicial Circuit of Zona Sur

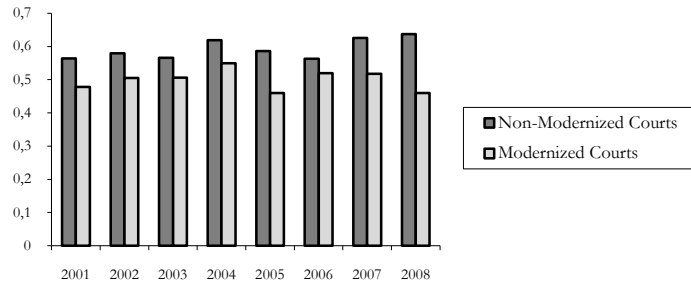


Figure A15. Caseload Clearance Rates in the II Judicial Circuit of Alajuela

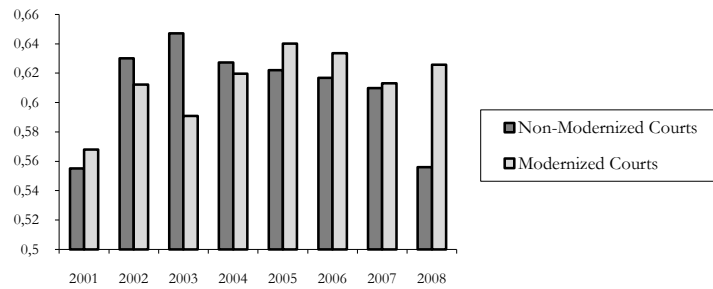


Figure A16. Caseload Clearance Rates in the II Judicial Circuit of Guanacaste

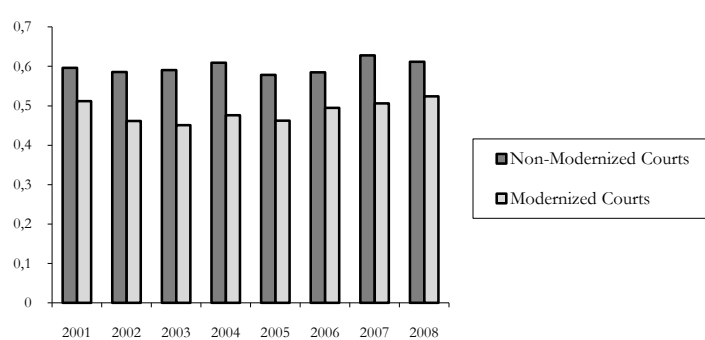


Figure A17. Caseload Clearance Rates in the II Judicial Circuit of San Jose

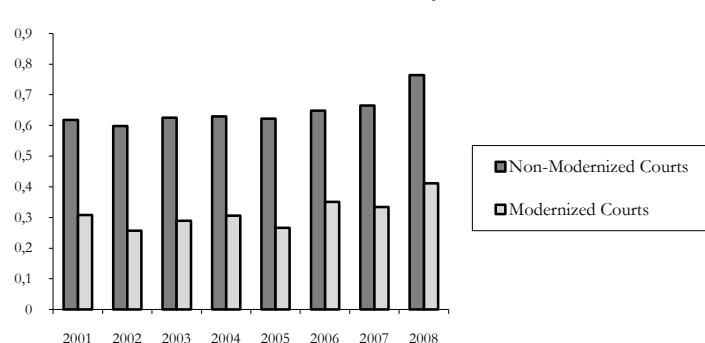


Figure A18. Caseload Clearance Rates in the II Judicial Circuit of Zona Atlantica

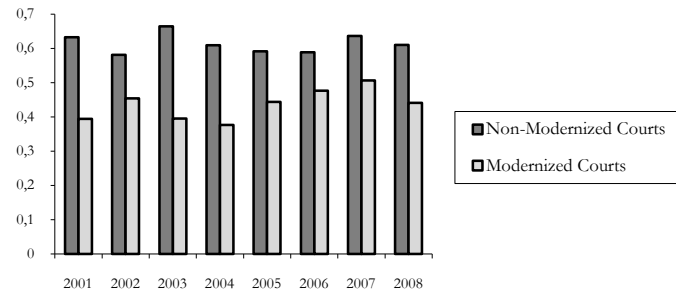


Figure A19. Caseload Clearance Rates in the III Judicial Circuit of San Jose

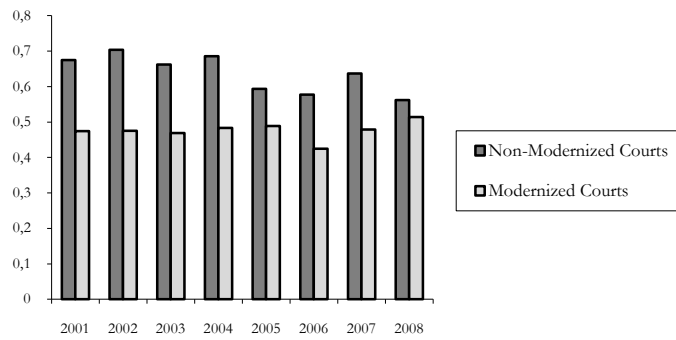


Figure A20. Caseload Clearance Rates in the III Judicial Circuit of Alajuela

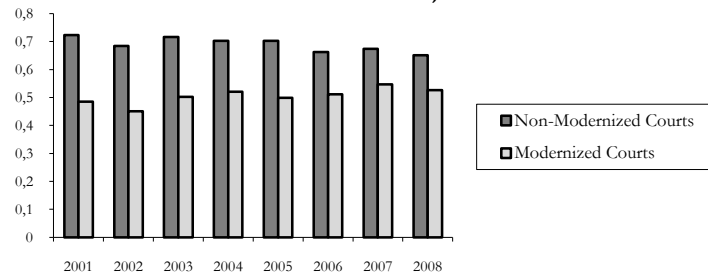


Table A1.1. Modernized Courts

Justice Office	Year of Implementation	Justice Office	Year of Implementation
1022-Tribunal Laboral Menor Cuantía I Circuito Judicial Alajuela (División del 0307)	2008	0439 - Juzgado Contravencional De Golfito	2003
0292-Juzgado de Familia del I Circuito Judicial de Alajuela	2007	0933 - Juzgado de Pensiones y VD de Siquirres (*)	2007
0285-Tribunal del I Circuito Judicial de Alajuela	2007	0934 - Juzgado Contravencional y Menor Cuantía de Siquirres (*)	2007
0321 - Juzgado Contravencional Valverde Vega	2007	(*) 0475 - Ya no existe se especializó en 0933 y 0934	2005
0314 - Juzgado Contravencional y Menor Cuantía de Poás	2006	0680 - Juzgado Contravencional De Pococí	2003
0900 - Juzgado Contravencional y Menor Cuantía de Grecia	2006	0375 - Juzgado Contravencional y Menor Cuantía de San Rafael	2008
0510 - Juzgado Penal del I Circuito Judicial de Alajuela	2005	925 - Juzgado de Pensiones y VD de San Joaquín de Flores	2007
0639 - Juzgado de Trabajo del I Circuito Judicial de Alajuela	2005	926 - Juzgado Contrav. y Menor Cuantía de San Joaquín de Flores	2007
0638 - Juzgado Civil de Alajuela	2005	0572 - Juzgado Penal de San Joaquín de Flores	2007
0307 - Juzgado Civil y Menor Cuantía de Alajuela	2005	0377-Juzgado Contravencional y Menor Cuantía de Sarapiquí	2007
0815 - Juzgado Agrario de Alajuela	2005	0364-Juzgado de Familia de Heredia	2007
0312 - Juzgado Contravencional y Menor Cuantía de Atenas	2005	0361-Tribunal de Juicio de Heredia	2007
0308 - Juzgado Pensiones Alimenticias I Circ. Jud. Alajuela	2003	0513-Juzgado Penal de Heredia	2007
1023-Tribunal Laboral Menor Cuantía I Circuito Judicial Alajuela (División del 0346)	2008	0366-Juzgado Penal Juvenil Heredia	2007
0640 - Juzgado Civil de Cartago	2005	0505-Juzgado de Trabajo Heredia	2007
0699 - Juzgado Agrario de Cartago	2004	0373 - Juzgado Contravencional de Santo Domingo	2007
0352 - Juzgado Contravencional y Menor Cuantía de Turrialba	2004	0504 - Juzgado Civil de Heredia	2004
0346 - Juzgado Civil y Menor Cuantía de Cartago	2004	0370 - Juzgado Civil Menor Cuantía De Heredia	1999
0772 - Juzgado Pensiones Alimenticias de Cartago	1999	0503 - Juzgado Pensiones Alimenticias De Heredia	1998
0440 - Juzgado Contravencional De Corredores	2003	0385 - Juzgado Penal Juvenil de Liberia	2006
0170 - Juzgado Civil Hacienda de Asuntos Sumarios II CJSJ	2007	0387 - Juzgado Agrario de Liberia	2006
0166 - Juzgado Trabajo II Circ. Jud. S. J.	2005	0579 - Juzgado Penal de Liberia	2006
0164 - Juzgado Civil II Circ. Jud. S. J., Ci	2003	0384 - Tribunal de Guanacaste	2006
0689 - Juzgado Civil II Circ. Jud. S. J., Ag	2003	0386 - Juzgado Civil y Trabajo de Liberia	2006
0165 - Juzgado Familia II Circuito Judicial S. J.	1998	0404 - Juzgado Contravencional Y Menor Cuantía de Tilarán	2006
0169 - Juzgado Civil Menor Cuantía II Circ. Jud. S. J.	1998	0399 - Juzgado Contravencional Y Menor Cuantía de Bagaces	2006
0172 - Juzgado Pensiones Alimenticias II Circ. Jud. S. J.	1997	0397 - Juzgado Contravencional Y Menor Cuantía de Liberia	2000
0422 - Juzgado Civil y Trabajo de Golfito	2004	930 - Juzgado Civil del II Circuito Judicial de la Zona Atlántica	2007

0679- Juzgado de Trabajo del I C.J Zona Atlántica	2007	0300- Juzgado Penal Juvenil y Familia II Circ. Jud. Alajuela	2007
0473 - Juzgado Menor Cuantía I Circ. Jud. De La Zona Atlántica	2004	0511 - Juzgado Penal de San Carlos	2007
0678 - Juzgado Civil I Circ. Jud. De La Zona Atlántica	2004	0318 - Juzgado Contravencional II Circuito Judicial De Alajuela	2003
0859 - Juzgado de Pensiones Alimentarias de Limón	2003	0521 - Juzgado Contravencional y Menor Cuantía de Alajuelita	2008
0868 - Juzgado Civil y de Trabajo de Nicoya (* antes 0390)	2007	0242 - Juzgado Contravencional y Menor Cuantía de Santa Ana	2007
0869 - Juzgado de Familia, Penal Juvenil y Violencia Domestica de Nicoya (* antes 0390)	2007	0891 - Juzgado Pensiones Alimentarias y VD de Pavas	2007
0577 - Tribunal de Juicio de Nicoya	2006	0891 - Juzgado Contravencional de Parás	2007
0581 - Juzgado Penal de Nicoya	2006	0958 - Juzgado Concursal de San José	2007
0390 - Ya no existe se especializó en 0868 y 0869	2005	0250 - Juzgado Contravencional y Menor Cuantía de San Sebastián	2006
0872 - Juzgado Contravencional y Pensiones de Nicoya	2003	0241 - Juzgado Contravencional y Menor Cuantía de Puriscal	2006
0873 - Juzgado de Menor Cuantía y Transito de Nicoya	2003	0916 - Juzgado de Pensiones y Violencia Doméstica de Escazú	2006
0444-Juzgado Contravencional y Menor Cuantía de Buenos Aires	2007	0917 - Juzgado Contravencional y Menor Cuantía de Escazú	2006
0919-Juzgado de Familia y Penal Juvenil de Pérez Zeledón	2007	0240 - Juzgado Contravencional y Menor Cuantía de Mora	2006
0508 - Juzgado Penal de Pérez Zeledón	2006	0236 - Juzgado Contravencional y Menor Cuantía de Aserri	2006
0030 - Tribunal de la Zona Sur, sede Pérez Zeledón	2006	0239 - Juzgado Contravencional y Menor Cuantía de Hatillo	2006
0188 - Juzgado Civil y Trabajo de Pérez Zeledón	2006	0532 - Juzgado Penal I Circ. Jud. S. J.	2005
0856 - Juzgado Contravencional de Pérez Zeledón	2000	0186 - Juzgado Primero de Familia I Circ. Jud. S. J.	2005
0857 - Juzgado Civil de Menor Cuantía de Pérez Zeledón	2000	0187 - Juzgado Segundo de Familia I Circ. Jud. S. J.	2005
0432 - Juzgado de Menor Cuantía de Puntarenas	2006	0185 - Juzgado 6 Civil I Circ. Jud. S. J.	2004
0642 - Juzgado Civil de Puntarenas	2006	0184 - Juzgado 5 Civil I Circ. Jud. S. J.	2004
0643 - Juzgado de Trabajo de Puntarenas	2006	0183 - Juzgado 4 Civil I Circ. Jud. S. J.	2004
0443 - Juzgado Contravencional y Menor Cuantía de Aguirre-Parrita	2006	0180 - Juzgado 1 Civil I Circ. Jud. S. J.	2004
0315 - Juzgado Contravencional y Menor Cuantía de Orotina	2006	0182 - Juzgado 3 Civil I Circ. Jud. S. J.	2004
0437 - Juzgado Contravencional y Menor Cuantía de Esparza	2005	0181 - Juzgado 2 Civil I Circ. Jud. S. J.	2003
0433 - Juzgado I Contravencional De Puntarenas	2000	0225 - Juzgado 6 Civil Menor Cuantía I Circ. Jud. S. J.	2003
0434 - Juzgado II Contravencional De Puntarenas	2000	0224 - Juzgado 5 Civil Menor Cuantía I Circ. Jud. S. J.	2002
0288 - Tribunal de Juicio II Circ. Jud. Alajuela	2007	0223 - Juzgado 4 Civil Menor Cuantía I Circ. Jud. S. J.	2002
0298 - Juzgado Agrario II Circ. Jud. Alajuela	2007	0222 - Juzgado 3 Civil Menor Cuantía I Circ. Jud. S. J.	2002
0221 - Juzgado 2 Civil Menor Cuantía I Circ. Jud. S. J.	2002	0551 - Juzgado Penal de San Ramón	2007
0220 - Juzgado 1 Civil Menor Cuantía I Circ. Jud. S. J.	2002	0688 - Juzgado de Familia Violencia Domestica y PJ de San Ramón	2007
0256 - Juzgado Contravencional De Desamparados	1999	0296 - Juzgado Civil Y Trabajo San Ramón	2004
0625 - Juzgado Pensiones Alimenticias I Circ. Jud. S. J.	1998	0693 - Juzgado Contravencional De San Ramón, Materia Pa	2003
0310 - Juzgado Contravencional y Menor Cuantía de Naranjo	2008	0691 - Juzgado Civil de Menor Cuantía de San Ramón	2003
0319-Juzgado Contravencional y Menor Ctía de Palmares	2007	0401 - Juzgado Contravencional Y Menor Cuantía de Carrillo	2006
0548-Tribunal de Juicio de San Ramón	2007	0400 - Juzgado Contravencional Y Menor Cuantía De Santa Cruz	2003

**Table A1.1 Number of Courts Modernized
Each Year**

2000	5
2001	0
2002	5
2003	15
2004	13
2005	13
2006	27
2007	34
2008	5

Table A2. The Effect of the Years of Implementation on Caseload Clearance Rates

	Difference-in-Differences Model	Re-weighted Difference-in-Differences Model
Years of Implementation	.0108856 (.0154221)	.0142397 (.0165024)
Observations	4903	4731
R-squared	0.0108	0.0013
Number of courts	265	250

Note: Each column reports the estimated coefficients of a regression model in which the dependent variable is the clearance rate. Standard errors clustered at the "canton" level are in parenthesis. The model includes year fixed effects, the number of judicial matters per court, dummies for the interaction of canton and year fixed effects and courts trends.

* Statistically different from zero at the .1 level of significance.

** Statistically different from zero at the .05 level of significance.

*** Statistically different from zero at the .01 level of significance.

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