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THE STATE OF JUSTICE IN CHILE IN 2004: INDICATORS FOR THE SECTOR

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Executive Summary

The aim of this document is to carry out an analysis of the state of justice in Chile in 2004. We hope that this study will be the first of a periodical analysis of the progress of the sector, examining the most important statistics and indicators for the courts system.

In fact, the document seeks to set a precedent in proposing the adoption of public indicators by the Judiciary together with the analysis of key indicators from other institutions that have more sophisticated statistics, such as the Office of the Public Prosecutor.

As the first of its type, this report does not seek to cover all areas of justice but to begin to develop those areas that we considered the most important and from there begin the analysis of new jurisdictions, areas and more sophisticated statistics. It is always beneficial to require the public authorities – particularly the judiciary – to make a greater effort in presenting information about the exercise of their duties. This is the only way that they will respond to the call from the public to carry out their task within society in the most efficient and effective manner.

The structure of the document reflects these aims. Firstly, in the introduction, the importance of the judiciary in a free society is established. It must deal face to face with the public and therefore must carry out its activities with transparency.

Secondly, a basic framework of design is set out for the adoption of public indicators for the country´s courts system. Here, we shall suggest concrete indicators with targets, methodologies and the sources of the data.

Thirdly, we shall analyze key courts indicators for 2004, both generally and in particular. We have sought to analyze the finances of the courts system as well as carry out a breakdown of spending by the judiciary. The analysis also examines data going back to 2000.

With regards to specific statistics, we shall analyze the judicial work of the Supreme Court as well as the criminal and civil courts. The criminal court system is looked at in greater depth as the new system is the only one that has been able to generate regular and relatively sophisticated statistics which will allow us to observe the process and the effort of systematizing information as well as acting as a concrete example to be copied by the rest of the courts system.

In this study, we shall also analyze technical efficiency through Data Envelopment Analysis (DEA). The results shown here come from the seventeen courts of appeals. This studies uses empiric evidence on the performance of these courts in Chile. The results suggest that, from a technical point of view, numerous courts operate at a level of efficiency far below the level of best practice achieved by some relatively more efficient courts. At best, 17.6% of these institutions operate efficiently when compared with their peers. It should be noted that this is not an absolute measure of efficiency and that the variable of efficiency only reflects the performance and production technology of the group.

The most technically efficient courts are those that use the lowest level of inputs to obtain their product and improve their productive process and so make up part of the best performance group.

The Appeals Court of Coyhaique recorded the strongest productive process as the model put it at the productive forefront with greatest frequency for the 2003-2004 period under study. At the other extreme, the Appeals Court of Santiago was in the weakest part of the productive range as its frequency of appearance in this band was the lowest.

It should be noted that the fact that a court relatively improves its production process does not mean that it could not further improve its performance given that when we talk about optimization or relative technical efficiency we are comparing its situation relative to the other courts.

The estimated DEA models indicate the presence of a clear deviation in the efficiency values when compared with the benchmark

levels. It should be noted that labor cases have a higher average level of efficiency than civil and criminal cases.

Technical inefficiency ranges from 98.4% to 106.2%. This is the combined inefficiency as the operation was carried out at a below-optimum scale (because of the inadequate size of the courts). This implies that on average the courts employ between 98.4% and 106.2% more personnel that required for their level of activity.

Similarly, the Malmquist Productivity Index was used with the aim of measuring the Change in Total Factor Productivity (TFPCH) between 2003 and 2004. On average, it was shown that the court with the worst performance saw its TFPCH fall by 17.3% between 2003 and 2004, while that with the best performance rose by 8.1%.

Finally, the study's most important findings are highlighted in the conclusions.

I. INTRODUCTION

Modern societies are characterized by its adherence to the rule of law and its respect for the principle of "government of laws and not of men" as one liberal thinker put it[1]. This means that societies have constitutions and laws that put limits on the power of the state and protect people's rights and freedoms, clearly establishing a framework within which these may be exercised. However, this is only possible if the Judiciary is independent and can carry out the role designated to it by the Constitution: to guarantee the rights and freedoms, avoid vigilantism and provide legal certainty to individuals, reducing the transaction costs.

Further still, this has a decisive impact on countries´ economic development which requires judicial institutions that promote cooperation between private parties and guarantee individuals´ property rights. Otherwise, this can lead not only to inefficiencies in the economy but also to the placing of limits on economic growth. The literature and evidence are consistent on this point.[2]

In practice, most judicial systems have relatively little power within the balance of powers, which is worrying, given the key role they play in society. The situation is even more serious in the case of

[1] According to the contractarians Locke and Hobbes, the very idea of the state reflects a pact between its citizens to assure the best protection of individuals´ freedoms and rights. The minimum we can ask of the state is to uphold law and order and to administrate justice, precisely to avoid vigilantism. In this sense, the observations of *The Federalist No 51* remain relevant today:: "It may be a reflection on human nature, that such devices should be necessary to control the abuses of government. But what is government itself, but the greatest of all reflections on human nature? If men were angels, no government would be necessary. If angels were to govern men, neither external nor internal controls on government would be necessary. In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself. A dependence on the people is, no doubt, the primary control on the government; but experience has taught mankind the necessity of auxiliary precautions.".

[2] In fact, for economists of the so-called *New Institutional Economy*, founded by Douglas North, the market does not function in a vacuum, given that for some transactions to occur and to ensure the efficient assignation of resources, a conjunction of institutions are required to make it possible. These institutions can be formal in character such as laws and bodies or informal, such as a society's cultural spectrum. On this, see Douglas North, *Structure and Change in Economic History*, Norton, 1981; y, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, 1990. Also see S. Norton, "Poverty, Property Rights and Human Well- Being: A Cross National Study", *Cato Journal* 18 (2), 1998, pp.233-245.

Chile – and Latin America in general – largely due to the characteristics of the legal system – largely derived from the continental European tradition – which considers the written law as the essential source of the law, limiting judges´ powers to the application of these rules in each concrete case but without the ability to create law in a general way[3].

But this lack of relative power is made more serious by a judicial culture which appears to evade public scrutiny. This attitude, which is widespread among the majority of public institutions, is particularly acute in the Judiciary. This is no doubt has a major impact when we consider it the low level of confidence that society has in it as many surveys of public opinion have shown[4].

To tackle this situation, a wide range of literature has sought to encourage the Judiciary to adopt an information system which would allow the public to observe its situation and evolution through time[5]. In fact, statistics and indicators on the courts form part of this system and allow one to have a more precise idea on the state of the working of the Judiciary, and from which to make diagnoses and proposals of policies and measures which should be implemented to keep it sailing straight.

The adoption of information systems is valuable not just from the point of view of the internal workings of the judiciary. They are also useful externally as they allow the public to understand how well the judiciary is fulfilling its role.

[3] Anglo-Saxon law (also known as common law) is quite different in this matter. The prevailing culture conceives of judges as authorities that can set precedent jurisprudence for future cases. Further still, in the case of the United States, the role of the judiciary is further strengthened by its wide ranging powers to review the constitution known as *judicial review of legislation*. For more on this, see J.F. García "El control de la constitucionalidad en El Federalista y los fundamentos de una sociedad libre", *Revista Chilena de Derecho*, Vol. 30 N°3, 2003, 491-514.

[4] See the surveys on confidence in the institutions by Centro de Estudios Públicos and Latinobarómetro. Also see Libertad y Desarrollo´s survey on perceptions of corruption.

[5] An important bibliography on this issue can be found in the works Santos Pastor and Liliana Maspons, *Manual Cifrar y Descifrar* o *Indicadores Judiciales para las Américas* (2004); the report by the Vera Institute of Justice *Measuring Progress toward Safety and Justice: A Global Guide to the design of Performance Indicators across the Justice Sector* (2003); *Trial Court Performance Standards* by the National Center for State Courts (1995); and Germán Gavarano, *Indicadores de desempeño judicial* (FORES, 2000).

We should start from the assumption that the judiciary – the same as other branches of the state – has to show and prove to society that it is carrying out the role it has been assigned in an effective and efficient manner. Effective in the sense that it is providing society with the products that it requires: social order, legal certainty, jurisprudence. Efficient in the sense that it is using the resources handed to it in the best possible manner (we should remember that the judiciary competes for resources with other priority areas such as providing education, fighting poverty, ensuring health, etc.).

In this sense, comparing evidence has led to a number of interesting empirical studies evaluating the efficiency of the court system. This is the only way that the judiciary can be made accountable to society for the good and bad exercise of its duties.[6]

[6] S. Kittelsen and F. Forsund, "Efficiency Analysis of Norwegian District Courts", *Journal of Productivity Analysis*, 3, 1992, pp. 277-306; A. Lewin et al., "Evaluating the Administrative Efficiency of Courts", *International Journal of Management Science*, 10, 1982, pp. 401-411; H. Tulkens, "Non-parametric Efficiency Analyses in Four Service Activities: Retail Banking, Municipalities, Courts and Urban Transit", *CORE discussion paper 9050*, 1990, Louvain-la-Neuve, Belgium; A. Ruiz, Aplicación del método de optimización DEA en la evaluación de la eficiencia técnica de las seccionales de la Fiscalía, *Documento CEDE 2004-12*, Universidad de los Andes, Colombia; and F. Pedraja and J. Salinas, *"An assessment of the efficiency of Spanish Courts using DEA*", Universidad de Extremadura, 1996, Spain.

II. BASIS FOR THE DESIGN OF INDICATORS FOR THE COURT SYSTEM

2.1 TRANSPARENCY, INFORMATION AND ACCOUNTABILITY IN THE JUDICIARY

Transparency requires that citizens and the organizations of civil society have access to key and understandable information on the performance of the branches of the state that allows to be evaluated and, where necessary, demand that they meet their responsibilities. Transparency, accountability and information come to be profoundly interrelated concepts.

The principles which have guided the debate in Chile on this issue were clearly examined in the report by the National Commission on Public Ethics (1994). The report states:

> "Public probity applies to the conduct of public figures and refers to integrity in the exercise of obligations and duties by those in and related to public roles and positions.
>
> "Integrity places strong requirements on the upright compliance with the norms that define and regulate activity in the public sector. For this reason, integrity expresses the relation between probity and public conduct and as such, its incorporation into ethical and legal codes is of prime importance."
>
> "However, in a democratic system, integrity is not enough. In democracies, probity extends to responsibility. The public servant must accept an obligation to answer for his performance in the exercise of his duties before civil society. Public responsibility, in consequence, is the quality of one who answers to the corresponding authority over the exercise of the role to which he has been appointed. In this manner, responsibility is part of probity in relation to the authority which in the final instance is charged with evaluating them: the general public (...)"

> "In democratic societies, this evaluation requires that the duties and actions through which public roles are expressed, are carried out in such a way that they are always, except in exceptional cases, exposed to observance by civil society. The transparent character of these roles is an important annex to integrity and responsibility.
>
> "In the absence of laws, mechanisms and instruments that make transparency possible, public probity cannot be submitted to scrutiny by the citizenry and, in consequence, its pronouncement is hollow. Transparency must apply to the public sector in its entirety. This includes, in consequence, the agent, the performance and public acts. It is well known the corruption proliferates when public roles are not transparent and can, therefore, avoid the controls of the institutions and the general public"[7].

It goes on to say:

> "The best control mechanism is transparency. Visibility and public scrutiny of the management of the state, like any other, favor social scrutiny and act as an effective dissuasive element but should not delay or obstruct the correct advances of acts and procedures that are carried out in the full view of the public"[8].

The judicial system is an essential institution in the fight against corruption. The report notes:

> "When the system is inadequate or slow, this hinders progress in controlling corruption. If the judiciary is not an irreproachable example of probity and transparency in its actions, it makes it difficult to demand and obtain such behavior from the other public authorities and from society in general"[9].

[7] Report by the National Commission for Public Ethics: *"Etica Pública: Probidad, Transparencia y Responsabilidad al servicio de los Ciudadanos"*, Santiago de Chile, 1994, pp. 6 y 7.

[8] Ibid., p. 34.

[9] Ibid, p. 7.

2.2 INDICATORS FOR CHILE´S COURTS SYSTEM

In the case of Chile, there is a notorious lack of public indicators and statistics on the judiciary. The formal channels of information, to a large extent, present common defects in this area: extremely general information; no significant analysis of this data – that is an appraisal of the information provided-; while institutional targets and aims are occasionally presented, the results are not published; there is no comparison of results over time that would allow us to observe the evolution of the information provided, etc.

This absence presents at least two inconveniencies. Firstly, it does not allow information to be gathered on the areas that are effectively being measured through existing indicators on the court system and as well as those which have yet to be developed. Secondly, the lack of publicity given to these indicators prevents transparency over the duties of the powers of the state to make the accountable before the general public.

Indicators[10] allow us to measure different aspects of the activities of the judiciary.

- Indicators on input measure the quantity and quality of the resources assigned to a task, for example, the percentage of spending on justice compared to GDP or the percentage of the judiciary's budget spent on personnel.
- Indicators on product measure the immediate results generated by the input, for example, how many sentences are handed down by the civil courts.
- The result indicators measures the effect of a project, program or measure through the different beneficiaries, for example, changes in the percentage of people gaining access to justice.
- The impact indicators have a wider reach and consider the consequences of these measures, for example, the reduction in crime, expressed as a percentage, achieved through the measures.

[10]For these effects we have generally followed Santos Pastor (CEJA, 2004).

- The reference or benchmarking indicators compare the results of one sector with another; for example, justice with education. An alternative way of comparing involves comparing the results obtained by one body (for example, a court), and another which is considered among the highest scoring within the same sector.

To break it down, the basic minimum indicators could include: means and degree of use of assigned resources (budgetary means, personnel, salaries, infrastructure, technology); independence and impartiality; litigiousness, workload and efficiency of demands; access to justice and legal aid; production, costs and efficiency of supply; duration and dilation; quality (of judicial sentences, of trial, of treatment of users); transparency and predictability (legal security).

As means of an example, a sample of court indicators were chosen which could be elaborated. Among these, we included indicators on issues such as budgetary means, judges´ workloads, legal security and transparency[11].

Table N° 1

Examples of indicators on the issue of

budgetary means in the Judiciary

Aims	Indicators	Sources
Spending on justice and GDP	Spending on justice as percentage of GDP	Budget/Court Statistics
Spending on justice	Spending on justice as percentage of total public expenditure	Budget/Court Statistics
Spending on personnel	Percentage of expenditure dedicated to personnel	Budget/Court Statistics
Spending on goods and services	Percentage of expenditure dedicated to purchase of goods and services	Budget/Court Statistics
Spending on investments	Percentage of expenditure dedicated to investments	Budget/Court Statistics
Expenditure per inhabitant	Expenditure per inhabitant	Budget/Court Statistics

[11] For these effects, we have generally followed Santos Pastor (CEJA, 2004)

Table N° 2
Examples on indicators on Judiciary's budgetary measures

Aims	Indicators	Sources
Filings per judge	Cases entered per judge. Value and rate of variation.	Court Statistics
Congestion rate	Congestion. Value and rate of variation. Distribution by subject.	Court Statistics
Resolution rate	Resolution. Distribution by subject and jurisdiction	Court Statistics
Unopposed sentences	Percentages of settlements without opposition. Value and rate of variation. Distribution by subject and jurisdiction	Court Statistics
Judges and workloads	Percentage of judges who feel that workload is heavy or very heavy. Value and variation.	Survey of judges
Public servants and workloads	Percentage of public servants who feel that workload is heavy or very heavy. Value and variation.	Survey of public servants

Table N° 3
Examples of indicators on legal security

Aims	Indicators	Sources
Predictability	Percentage of users who state the justice is predictable.	Interviews with lawyers and experts
Trustworthiness	Percentage of users who state the justice is trustworthiness	Interviews with lawyers and experts
Jurisprudence	Percentage of users who state that clear or well defined lines of jurisprudence exist.	Interviews with lawyers and experts

Table N° 4
Indicators on transparency in the processes of selection of judges, performance and discipline.

Aims	Indicators	Sources
Selection of judges	Percentage of experts who consider that the process for the selection of judges is open and transparent.	Panel of experts, including lawyers, judges, academics and journalists
Complaints from users	Percentage of users who state that adequate process exists for registering complaints over the failure by judges and other court personnel to carry out professional duties.	Survey of users
Transparency of disciplinary process	Percentage of experts who consider that disciplinary process is transparent	Panel of experts, including lawyers, judges, academics and journalists
Publicity of functions and responsibilities of judiciary	Percentage of users and experts that consider that sufficient publicity exists on the standards expected on the functions and responsibilities from judicial and administrative personnel.	Survey of users. Panel of experts.
Declaration of interests by judges	Percentage of experts that state that an effective system exists for the declaration of interests by judges	Panel or survey of experts
External auditory mechanisms	Percentage of experts that state that there is effective external and independent scrutiny.	Panel or survey of experts

Table N° 5
Indicators on the issue of transparency in trials and judicial resolutions

Aim	Indicators	Sources
Assess for users to cases	Percentage of users that say that they have adequate access to the state of the case	Survey of users
Quantity of public hearings	Percentage of hearings open to the public	Court statistics, reports
Quality of publicity for hearings	Percentage of users that considered that there is adequate publicity for the hearings	Survey of users. Direct observation by experts
Transparency of court trials	Percentage of users that state that court trials are transparent	Interviews with lawyers and experts
Publicity for judicial reso-	Percentage of users who state that	Interviews with lawyers

lutions	the publicity of resolutions is good or very good	and experts
Information on decisions by Supreme Court	Percentage of users that consider that there is information on the decisions of the Supreme Court	Survey of lawyers, judges, academics and journalists
Information on decisions by Appeals Courts	Percentage of users that consider that there is insufficient information on the decisions taken by the Appeals Courts	Survey of lawyers, judges, academics and journalists

There is significant potential for the implementation and periodic use of judicial indicators on several issues. Areas of particular interest include the assignation of resources, budgetary debate, performance measures and incentives policies and for the development and monitoring of the reforms currently underway[12].

It appears advisable to design, perfect and reinforce a series of indicators for the Chilean courts system. In the area of sentencing, there has been a successful experience in the generation and publishing of statistics which constitutes a great step forward for the sector and we should seriously consider applying it not just to the other jurisdiction but to the courts system as a whole.

Once the indicators have been generated, the subsequent and necessary step is that they must be published regularly in a form which is easy for the public to understand. This is the only way that the judiciary can reveal its situation, its evolution through time and whether or not it is meeting the objectives and challenge that it has been set. This is the only way that the concepts of transparency, information and accountability can take a concrete form.

[12] Presentation of results: Judicial Indicators, CEJA, 2005.

III. COURT STATISTICS FOR 2004

3.1 GENERAL STATISITICS ON THE JUDICIARY

3.1.1 Cases entering the courts system 2001-2004

In 2004, the number of cases entering the courts system reached 1,895,773, 10% more than the 1,720,000 seen in 2001. In relative terms, this increase mainly reflects the significant in the number of civil cases during the period, which rose from 624,033 in 2001 to almost 1,000,000 in 2004, a rise of 59%. The cases were directly linked to the increase in the number of claims cases which represented around 70% of civil cases. Meanwhile, the number of labor cases fell by around 4% between 2001 and 2004 while the number of cases involving minors remained steady.

Table N° 6
Cases entering national courts system 2001-2004

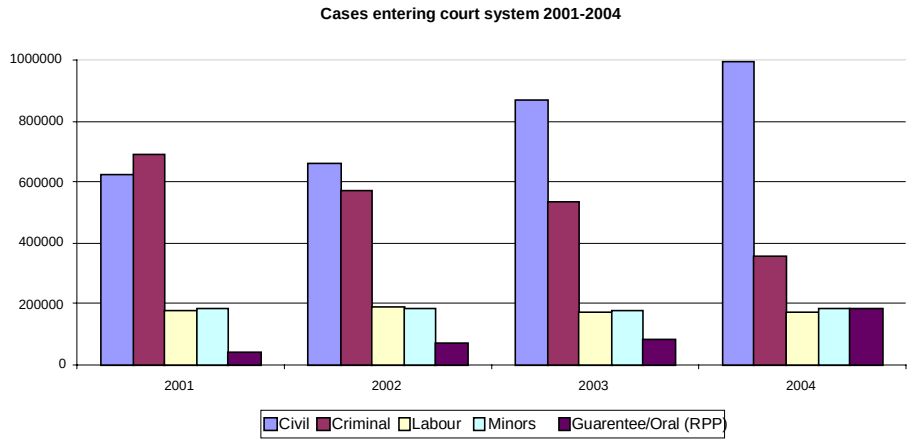
Issue	2001	2002	2003	2004	var. %01-04
Civil	624,033	661,182	871,059	994,266	59.3%
Criminal	689,533	571,972	534,257	357,645	-48.1%
Labor	181,474	189,254	175,031	174,470	-3.9%
Minors	185,470	181,825	179,072	184,801	-0.4%
Guarantee/Oral	43,125	72,239	83,395	184,591	328.0%
Total	1,723,635	1,676,472	1,842,814	1,895,773	10.0%

Source: Annual Justice Report INE 2002 and Judiciary's Annual Report 2004.

Looking at criminal law, the changes resulting from the reform process that is underway in the sector are evident. The 48% fall in the number of cases under the old system (criminal) against the 328% rise in the number of cases under the new system (oral, guarantee) reflects the process of transition the sector is undergoing.

It should be recalled that the figures for the new system do not include the Metropolitan Region where the implementation of the reform does not begin until June 16th this year. Considering this, a significant rise in the number of cases entering under the system is expected in the statistics for 2005.

Graph N° 1



Source: Annual Justice Report 2002 – Annual Report of Judiciary 2004.

3.1.2 Breakdown of Judiciary's Actual Expenditure[13] (JAE) 2000-2004

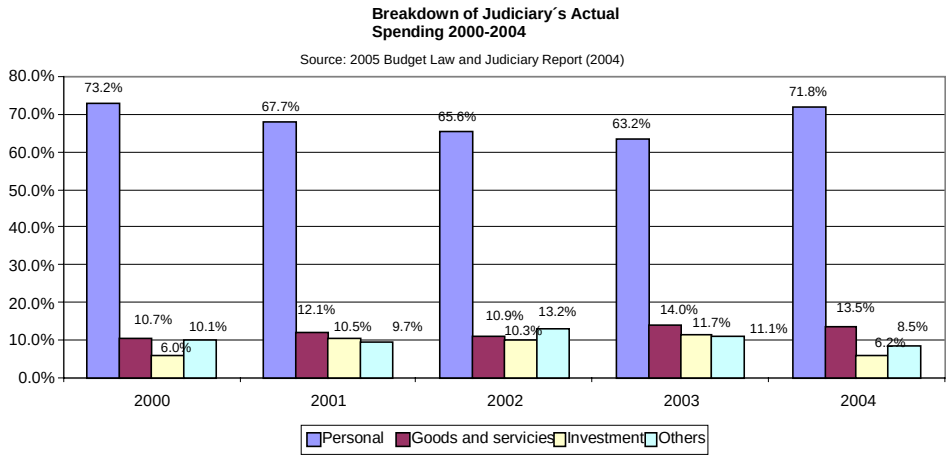
In 2004, the JAE totaled $135,000 millions of pesos, an increase of 35% from the budget in 2000. We can see that spending by the judiciary during the period under study is concentrated on personnel which consumed on average more than 68% of the budget.

We can also observe a relative increase in the amount of the budget spent on investment which rose from 6% in 2000 to more than 10% in the following years. This reflects increased infrastructure

[13] Only refers to budget of the Judiciary. It does not include other bodies such as the Ministry of Justice, the Public Ministry and the Police.

ture investment linked to the implementation of the Criminal Justice Reform[14].

Graph N° 2



Source: 2005 Budget Law and Judiciary's Annual Report 2004

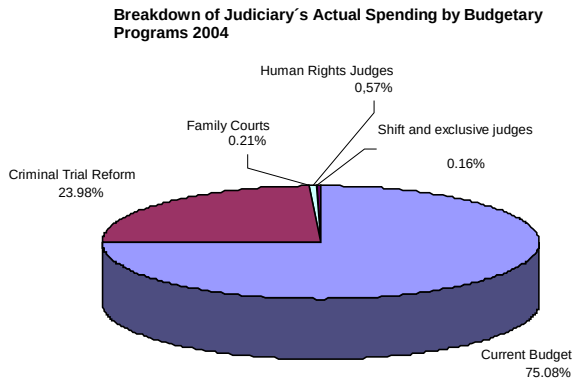
Meanwhile, we can see that between 2000 and 2004, spending on personnel rose by 33%: on goods and services by 71%; on investment by 39%; and others by 13%.

Finally, if we look at the 2004 budget from the point of view of the budgetary program, we can see that it is distributed in the following manner: 75.07% on Current Budget; 23.98% on Criminal Trial Reform; 0.21% on Family Courts; 0.57% on Human Rights Judges; and 0.16% on Shift and Exclusive Judges (Graph N° 3).

In general, all the figures shown here reflected the significant impact caused by the implementation and operation of the Criminal Trial Reform which has meant handing over a large amount of resources to the institutions linked to this process, among them, the Judiciary.

[14] Investment projects in 2004 fell by 63% from the previous year.

Graph N° 3



Source: Judiciary's Annual Report 2004

3.2 SPECIFIC STATISTICS

3.2.1 Supreme Court

The number of cases entering the Supreme Court rose from 5,174 cases in 2000 to 6,720 cases in 2004, an increase of 30%. Meanwhile, the number of sentences handed down rose by 13% to 5,837 in 2004.

It is worrying that the number of pending cases rose from 3,000 to 3,882 between 2003 and 2004.

This figure mainly reflects the increase in the number of pending marriage cases, which totaled 2,844. Looked at from another point of view, these figures show that while in 2000, there were 246.4 cases for every judge, by 2004 there were 280 cases. Meanwhile, the number of sentences handed down per judge rose from 246.9 to 278 over the same period.

Table N° 7
Cases entering Supreme Court and sentences 2000-2004

Year	N° of Cases entered	N° of Sentences	N° of Judges	Cases filed per Judge	Sentences per Judge
2000	5,174	5,185	21	246.4	246.9
2001	5,613	5,349	21	267.3	254.7
2002	5,590	7,055	21	266.2	336.0
2003	6,262	5,534	21	298.2	263.5
2004	6,720	5,837	21	320.0	278.0
Average 00-04	5,872	,5792	21	280	276

Source: Annual Justice Report INE and Speeches from Inauguration of Judicial Year.

3.2.2. Criminal Justice

The start-up of the Criminal Trial Reform has implied the complete transformation of criminal justice in all its facets: oral hearings, immediacy[15], speed, publicity, probation, information, management, the right to an effective defense, etc.

It has involved a change in the paradigm from an investigative criminal justice system[16] to a modern, oral accusatory and combative system[17], that seeks to balance efficiency in the handling of justice with the guarantee of a fair trial to both the accused and victims and which has contributed to the strengthening of the rule of law in our country.

[15] Direct participation of the judge in hearings and most important stages of the trial.

[16] Where the judge takes on the role of investigating the crime as web as judging it.

[17] A system where the main questions are debated resolved in public oral hearings, with judges not involved in the investigation.

The empiric evidence shows results which on initial viewing appear to be positive; however we should be careful in how we read them.

If we look at the relationship between the number of cases completed with the number of cases received by the Office of the Public Prosecutor, we can calculate that in 2004, itemizing the implementation stage, the first achieved an entry-settlement ratio of 98%; the second of 100.3%; the third of 93% and the fourth of 84% (Graph N° 4).

Graph N° 4

Relation between cases entered and cases settled by stages 2001-2004

(Source: Public Ministry

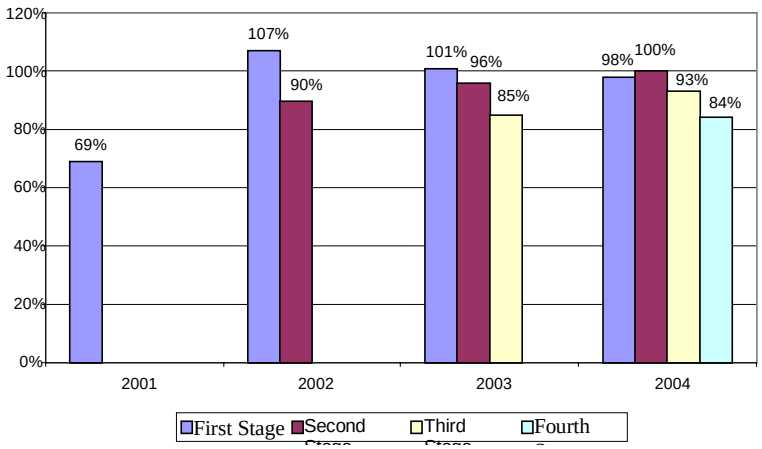
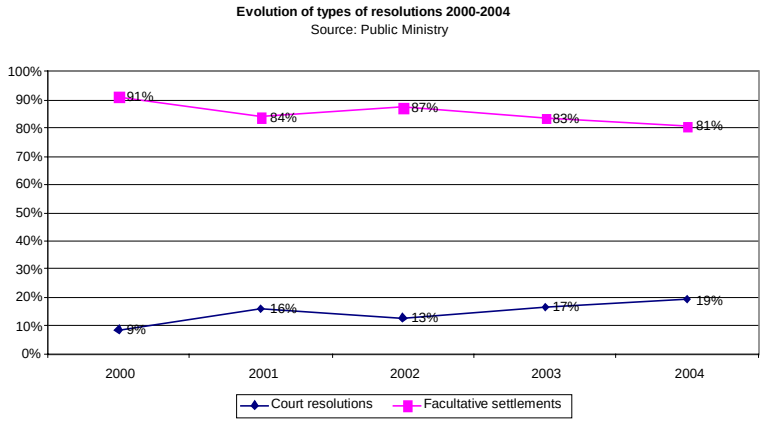


Gráfico N° 5



If we analyze how cases are settled, we can see that between 2000 and 2004, just 14.7% ended in court settlements[18], while 85.3% were ended through facultative sentence mechanisms of the Office of the Public Prosecutor (Graph N° 5). One can also observe a rise in court settlements to 2004.

If we analyze the types of settlement applied by region for 2004 in particular, one can appreciate that in general terms significant differences exist in the settlements applied (Table N° 8). If we take the national average for court settlements in 2004 to be 19.2% and 51.2% in the use of dismissal without prejudice then what stands out is the high percentage of court settlements (27,8%) and the relatively low use of the dismissal without prejudice (41,4%) in regions in the second stage of reform (the Second, Third and Seventh Regions).

By way of contrast, regions in the fourth stage of reform (the Fifth, Sixth, Eighth and Tenth regions) recorded 15% of cases being settled in court while 55,6% ended dismissal without prejudice. While one could hypothesize that this difference basically reflects the greater amount of experience accumulated during the years of implementation of the system (more in the second than fourth stage), which in addition to the staggered implementation scheme, allows

[18] These include definite condemnatory sentences, definite dismissal, conditional suspension of the trial agreement for damages, definitive absolving sentences and temporary dismissal.

new stages to learn with time the best practice of those regions which proceeded them, this is not necessarily so in all cases[19]. Rather it seems to be an invitation to explore why such a difference exists in the application of different kinds of sentences, between one stage and another.

Table N° 8

Type of resolution applied per region 2004 (%)

Stage	Region	Court resolutions	Dismissals without prejudice	Principle of Opportunity	Not investigated	Other faculties
First	IV	18.6	54.1	8.6	9.8	8.9
	IX	19.8	52.6	10.5	8.9	8.2
Total		*19.3*	*53.2*	*9.7*	*9.3*	*8.5*
Second	II	30.3	45.6	9.2	8.4	6.5
	III	26.7	39.9	8.9	13.2	11.3
	VII	26.8	39.5	13.5	9.8	10.4
Total		*27.8*	*41.4*	*11.5*	*9.9*	*9.4*
Tirad	I	20.0	51.8	9.7	12.4	6.1
	XI	24.4	34.1	15.8	10.8	14.9
	XII	17.6	45.0	16.4	11.9	9.1
Total		*20.1*	*48.5*	*11.6*	*12.1*	*7.7*
Fourth	V	14.7	57.3	9.8	7.8	10.4
	VI	20.8	52.5	9.7	9.2	7.8
	VIII	12.6	56.6	13.3	9.5	8.0
	X	15.1	53.1	12.1	10.2	9.5
Total		*15.0*	*55.6*	*11.4*	*9.0*	*9.0*
National Total		19.2	51.2	11.1	9.6	8.9

Source: Annual Report of the Office of the Public Prosecutor 2004

The same analysis can be carried out when we look at the sentences applied to different kinds of crimes. In fact, in 2004, dismissal without prejudice was applied to 75.6% of cases of robbery, 83.8% of violent robbery cases and 63.9% of cases of theft. If one

[19] For example, Stage I results in 52.3% of dismissal without prejudice, falling to 41.4% in Stage II. Stage III was similar to Stage II at 48.5%.

analyses these crimes together, the total number of facultative sentences applied by the Office of the Public Prosecutor reached 84.2%, 91.2% y 83.3%, respectively (Table N° 9).

Table N° 9

Settlements by type of crime	Robbery	Non-violent robbery	Theft	Other crimes against property	Assault	Murder	Sexual crimes
Convicted	7.5%	3.6%	9.6%	6.3%	11.0%	58.8%	9.9%
Definite dismis-sal	5.7%	2.7%	2.0%	3.1%	2.3%	10.1%	8.5%
Conditional suspension of trial	1.3%	1.6%	3.6%	5.0%	4.5%	1.7%	3.4%
Agreed dam-ages	0.2%	0.5%	1.0%	3.7%	2.6%	0.3%	0.1%
Cleared of of-fence	0.4%	0.1%	0.1%	0.1%	0.1%	2.4%	0.7%
Temporary Dismissal	0.5%	0.3%	0.4%	0.6%	0.2%	2.7%	0.7%
Subtotal of Judicial Sen-tences	**15.6%**	**8.8%**	**16.6%**	**18.8%**	**20.7%**	**76.0%**	**23.3%**
Dismissal with-out prejudice	75.6%	83.8%	63.9%	47.8%	40.5%	3.4%	44.0%
Principal of opportunity	0.2%	0.2%	11.3%	14.6%	23.7%	0.3%	0.2%
Ordered not to investigate	0.5%	0.4%	3.9%	9.1%	4.3%	1.4%	9.1%
Incompetence	1.1%	1.0%	1.2%	4.6%	4.5%	2.9%	15.3%
Administrative annulment	0.4%	0.2%	0.3%	0.3%	0.2%	1.5%	0.8%
Linked to other case	6.1%	5.5%	2.5%	4.6%	3.6%	14.0%	7.0%
Other causes of settlement	0.2%	0.1%	0.1%	0.2%	2.3%	0.3%	0.3%
Others causes for suspension	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%
Subtotal of Facultative Terms	**84.2%**	**91.2%**	**83.3%**	**81.3%**	**79.2%**	**24.0%**	**76.9%**
TOTAL	**32309**	**96013**	**88095**	**41648**	**71523**	**656**	**5746**

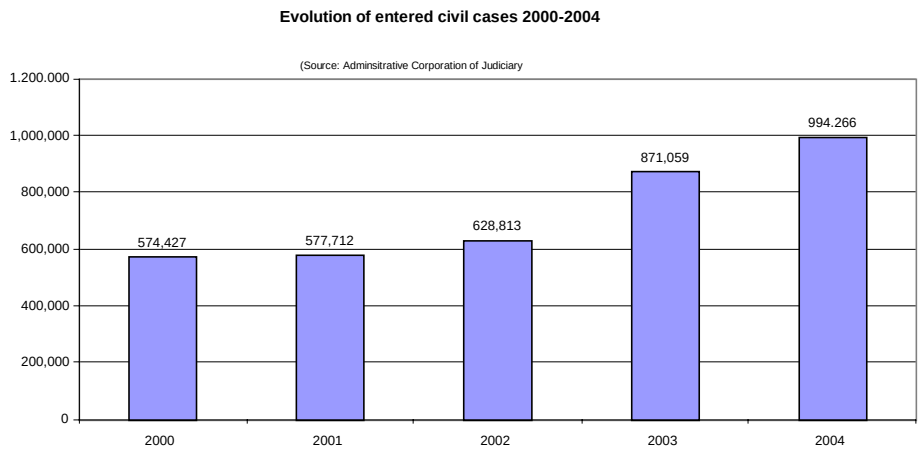
Source: Bulletin of the Office of the Public Prosecutor 2004

We have presented these statistics here with the aim of opening a space for debate on how the Office of the Public Prosecutor is applying these facultative sentences. We are not seeking to argue that the system ought to increase its legal sentences for the sake of it nor to question the facultative sentences applied by the Office of the Public Prosecutor (as they are the essence of the economic rationality of the new scheme) but to restate the fact that there should be a solid reasoning behind the application of this faculty in concrete cases, precisely to avoid the mechanism losing its legitimacy and being used in an inadequate manner. In fact, it is notable that, in 2004, use of dismissal without prejudice for cases of theft in 2004 reached 39.6% in the Second Region but 72% in the Tenth Region. In the same year, use of dismissal without prejudice in cases of robbery totaled 61.5% in the Seventh Region but in the Eighth Region it averaged 84.4%.

3.2.3 Civil Justice

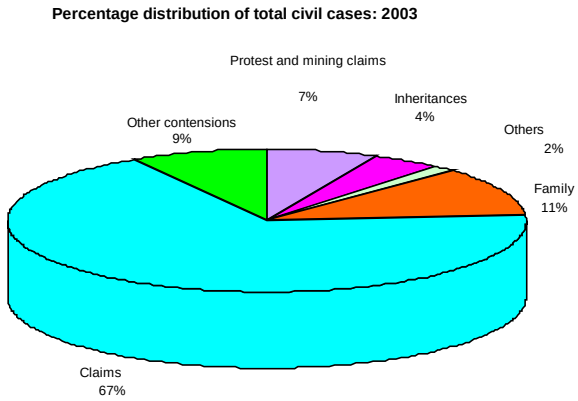
The evidence available shows that between 2000 and 2004, the number of civil cases entering the system rose by 73% (Graph Nº 6). Between 2003 and 2004, the number of civil cases increased by 14%, rising from just 871,000 cases to almost a million.

Graph N° 6



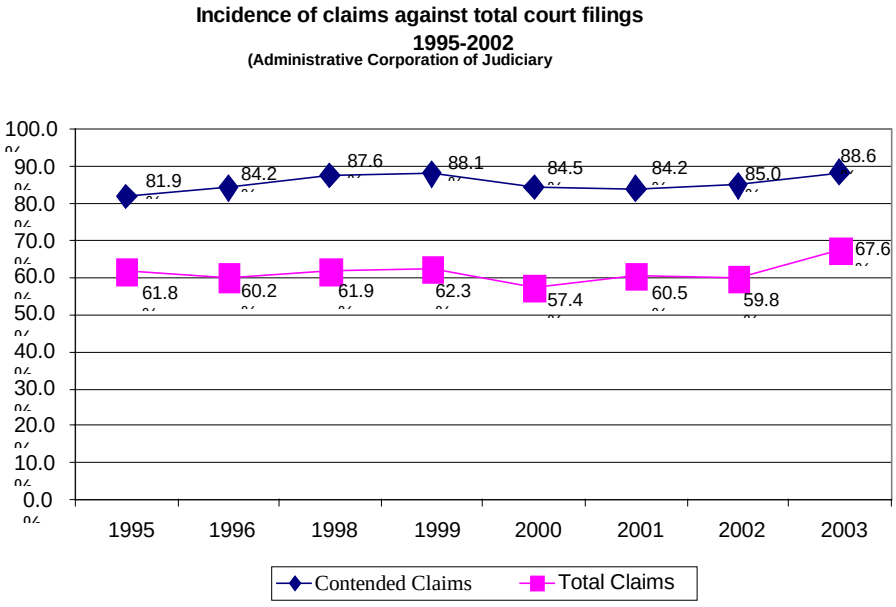
If we analyze the kinds of cases that are reaching the courts, the situation is worrying. In 2003, 67% of cases entering the system were claims cases, 9% covered other cases, 7% were protests and mining claims, 4% inheritances, 2% other voluntaries and 11% family cases (Graph Nº 7). Similar results are seen if we look the average for the period 1995-2003[20].

Graph N° 7



[20] All these statistics have been provided by the Administrative Corporation of the Judiciary.

Gráfico N° 8



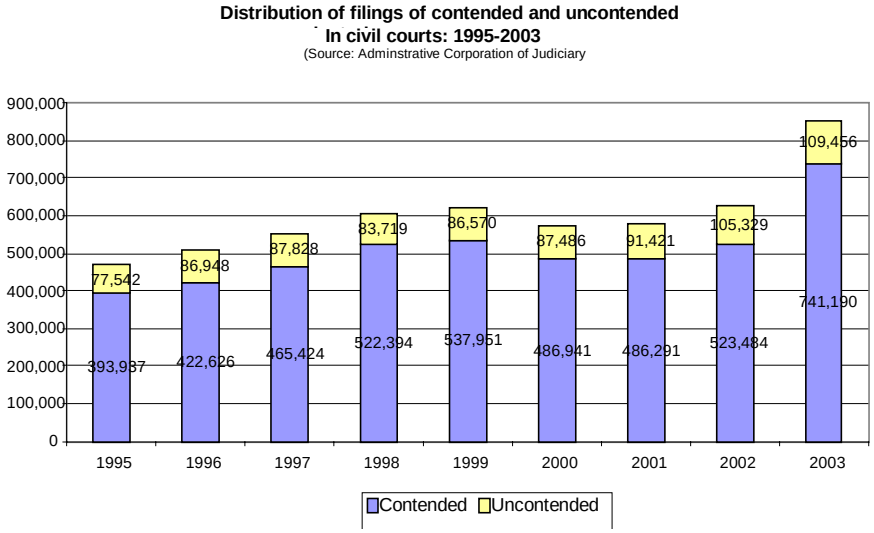
Looking at the case of claims in particular, they represented 67% of cases entering the court system in 2003, up from an average of 61% in the period 1995 to 2003. Additionally, claims represented an average of 85% of contended cases (Graph Nº 8).

The figures confirm the perceptions that civil courts are being mostly tied up seeing to matters which do not require a court settlement. This is the case of judicial claims and all those which rely solely on the exercise of an undisputed obligation. Obviously these can end in legal conflict if the claimant questions in a legally acceptable manner the merits of invoked title. Sadly, information does not exist on the volume of these oppositions but if we use the data on shared law as a pattern, these should not exceed 15%[21].

[21] Statistics from European law, based monitor trial, showed that in France the range of opposition was 5%, in Italy 10%, In Germany, with 7.4 million pay claims was 11%, and in Austria was 10.15%. *"Justicia Civil: Una Reforma pendiente",* a presentation by José Pedro Silva, profesor of the law faculty at Pontificia Universidad Católica de Chile in the seminar "Civil Justice: A Pending Reform", October 2004.

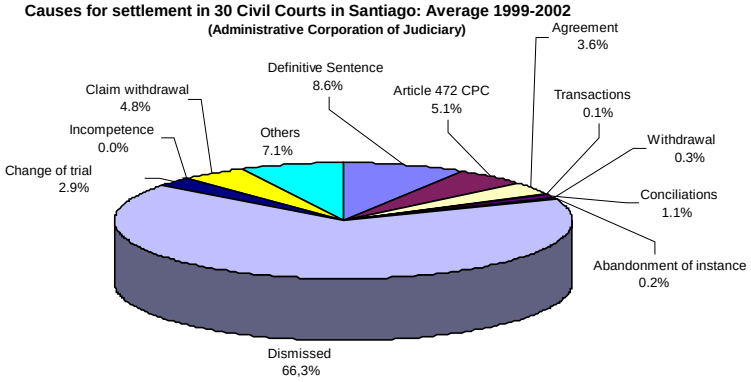
The same occurs with voluntary (non-contended) cases, which made up an average of 15% of cases between 1995 and 2003 and make up a significant percentage of total cases entering the system (Graph Nº 9). In 2003, this figure hit 13%.

Gráfico N° 9



Finally, if we observe the scanty information available on how cases are settled, we can see that less than 9% of cases settled in the thirty courts in Santiago ended in definite sentence (Graph Nº 10).

Gráfico N° 10



Many questions remain about the other kinds of settlements. It is notable, for instance, that 66% of cases that are filed. Given that the data does not specify the motives for the cases being filed, it is difficult to explain this high percentage. One could assume that the institutional design encourages the use of civil courts as a part of one's negotiation strategy, that parties feel forced into overcoming their differences in a shorter time than a trial would allow and that many cases are much more expensive than the cost to the actor that the cost of abandoning his claim.

IV. MEASURING THE RELATIVE EFFICIENCY OF THE APPEALS COURTS

4.1 INTRODUCTORY BACKGROUND

It is evident that efficiency is a relative concept. Further still, the validity and interpretation of empiric measures of efficiencies depend directly on the data available to measure on production. The economic focus of the measure of efficiency compares the resources consumed with the production of services. However, there is a difference between the intermediate product and the final product. The judiciary is a prime case of this difference. The final product is the contribution of the judicial services to a more just society and state. In general, the empiric studies measure the product of the judicial services through measures of activity (for example, cases filed and settled). The selection of the conjunction of variables that represent the product and the resources always imply the implicit adoption of various suppositions about the quality and the suitability of attention and the complexity of the judicial cases served.

The methodology used in this study (Data Envelopment Analysis, DEA) allows us to carry out a comparison between a reference point (or benchmark) and the relative efficiency of a decision making unit (an appeals court). This analysis attributes a global measure, determined in an objective and numeric way, of the efficiency value that allows the ordering of the organizations that is not influenced by other focuses. DEA is an application of lineal programming that has become an extremely useful tool for carrying out comparative efficiency analysis, particularly in the public sector (Nyhan and Cruise 2000). The development of the DEA instrument is attributed to Charnes, Cooper y Rhodes (1978) and is based on Farrell's frontier methodology (1957). This method analyzes the inputs and products of service providers, which are known as decision making units (DMU) to identify global levels of efficiency.

One advantage of DEA is its flexibility in the way its uses information.

Inputs and products can be continuous variables, ordinals or categories of variables. Equally they can measured in different analysis units (monetary units, the number of cases filed or settled, etc). The product can also be interpreted in a broad way to include not just product performance measures but also measures of quality and results. In the same way, the term efficiency can be interpreted to calculate measures of quality and effectiveness.

The advantages of this methodology, when making comparisons between service providers, are:

- It assigns, in a mathematical manner, optimum weightings to all the inputs and products considered. As DEA is a non-parametric technique, weightings must be assigned to the variables. These weightings are derived in a empiric method and are assigned to each of the providers´ variable inputs and each performance variable.

- It can make simultaneous comparisons between multiple performance measures (product, quality and results) and provides a scaled measure for “best practice”. The providers´ assigned and technical efficiencies can be measured simultaneously.

- It can calculate the quantity of resources that can be saved or the additional quantity of product, quality or result that each inefficient provider can produce.

- It can measure the impact of what are known as uncontrolled variables in the performance of the providers. It also requires that appropriate returns to scale are identified in the model under study. If they are not specified, DEA assumes constant returns to scale.

Meanwhile the main limitations of DEA are:

- As a non-parametric technique, it does not use statistical indicators to measure the degree of error (noise). As such, this technique is not suitable for testing hypotheses.

- Another important technical consideration is the number of DMUs (service providers) to include. No rule exists but many authors suggest including between four and fifteen observations for each independent variable in the regression analysis. The number of input and product variables to include in the exercise is also an issue to be considered: the use of many input and product variables is considered a methodological error.

- It does not measure the relative difference between efficient providers. As such, it does not provide comparative information based on a theoretical optimum and, in some cases, the providers can appear inefficient although some are relatively more inefficient than others.

- These problems lead the majority of authors to use DEA analysis to complement other methodologies (regressions, equivalence relations, etc) with the aim of obtaining different perspectives on results measuring relative efficiency.

DEA as applied in this study seeks to calculate the technical efficiency of Chile's seventeen appeals courts. It should be noted that comparative analysis does not consider scale efficiency, given that the operating size of the different courts varies significantly.

In this context, the use of the DEA method in this study allows us to identify those courts which are operating in conditions of relative technical efficiency. The model selects those courts which are operating at maximum productivity, which in this case means those than obtain their product (the number of cases filed versus the number of cases settled) with the minimum number of personnel (first rank, second rank, employees). The selection process required us to eliminate the effect of scale efficiency, using the procedure of variable returns to scale.

The courts classified as having optimum relative technical efficiency make up the "productive frontier" and present the maximum coefficient of relative technical efficiency. The DEA method shows the value of the coefficients of relative technical efficiency under which operate the other courts which fall below the production frontier.

The analysis shows that the courts that made up the productive frontier in 2003 and 2004 were those of La Serena and Punta Arenas. The application of DEA allows us identify possible savings in resources that can be achieved if courts that fall below the "productive frontier" adopt the best productive practices used by the courts located in this frontier and achieve comparable coefficients of technical efficiency.

Following various efficiency studies carried out on court systems in developed countries[22] the DEA model has been shown to be a tool capable of promoting competition in a sector where market forces are not present. This model could also be the solution to the problems of efficiency and optimization in the court system in Chile.

4.2 MODEL

The application of the DEA model of optimization allows us to achieve the following fundamental steps in the search for the optimization of resources by the Appeals Courts: increase production to its maximum level (settled cases/entered cases) that the entity can achieve with its current staffing levels; or rather to minimize the costs incurred in settling cases and, in this way, allow courts to identify the maximum possible savings or budgetary assignations that can be achieved when the activities carried out by the different courts are optimized.

This rationalization in the use of resources seeks to find the possible savings in the use of the sector's budget and, in this way be able to free up resources to support the financing of the criminal trial reform. The DEA model allows us to determine the possible savings in resources in the following manner:

[22] For examples, see the following three studies on the subject 1) S. Kittelsen and F. Forsund: "*Efficiency Analysis of Norwegian District Courts,* en: The Journal of Productivity Analysis, 1992. (2) J. Ganley and J. Cubbin: *"Public Sector Efficiency Measurement. Applications of Data Envelopment Analysis"*, Holanda, 1992. (3) A. Lewin, Y. Morey and T. Cook: *"Evaluating the Administrative Efficiency of Courts".* En: The International Journal of Management Science, 1982.

First, through a process of optimization, DEA identifies the courts with the highest relative technical efficiency out of the seventeen courts that exist in the country. These courts are those that use the minimum amount of inputs (number of staff) in comparison to the product (number of cases entered/settled) that they generate. For this reason, they are mark the limit of the production frontier. Secondly, the DEA program compares the inputs used by the courts with lower relative efficiency (and those that fall below the production frontier) with the minimum necessary that they could used if they applied the optimum operating procedures used by the most efficient courts that make up the production frontier.

Estimating the saving in resources involves calculating technical efficiency, separating it from the other efficiency components. It should be noted that the indicators of relative efficiency of the courts incorporates two components: technical efficiency (derived from the relation between products and inputs of each court) and scale efficiency (derived from the size of each court).

This means that when technical efficiency and scale efficiency are considered together, the data does not allow us to observe these two components of productive efficiency separately. So, for example, a court that shows high technical efficiency (as is the case of La Serena) but low scale efficiency due to the large size of its operation, appears to have only an average aggregate efficiency. On the other hand, a court with high technical efficiency and scale efficiency (achieved by having a moderate operating volume), as is the case of Coyhaique, achieves a high aggregate efficiency.

The literature indicates that each court can achieve a higher or lower degree of technical efficiency depending on the degree of optimization it achieves in its productive processes. If the production units to be compared have different levels of technical efficiency or scale efficiency then the measure and comparison of relative technical efficiency between the courts ought to be carried out through a process of variable returns to scale. This allows us to leave to one side the impact of scale efficiency, which is derived from a court's size, and allows us to compare the component of technical efficiency on its own. On the other hand, if the productive units to be compared have different technical efficiency but similar

scale efficiency, then the comparison of relative efficiency between the courts can be done through a process of constant returns to scale, because in this case it is clear that any change in total efficiency reflects a change in technical efficiency.

Taking into account that the courts show different scale efficiencies which suggest growing, constant and declining returns to scale, depending on the size of the operation, it is evident that the comparability of the technical efficiencies between the courts demand the application of a process of variable returns to scale.

This means that the potential savings in resources that would result from the fact that the court optimize their productive processes can be adequately calculated by using the method of variable returns to scale and would be overestimated if the method of constant returns to scale was applied. The result of this model makes it possible to place each court according to its level of scale efficiency, that is to say, whether it operates with growing, constant or declining returns.

The application of the DEA method (varied analysis of inputs and products of all the courts) allows us to estimate the relative technical efficiency of each one of the courts. Those placed in the production frontier represent the maximum coefficient of efficiency (equal to 1) and the rest show coefficients of less than 1. On applying these results, it is possible to estimate the savings in resources that can be achieved by each one in its productive process.

4.3 DATA

We used data generated by the seventeen appeals courts in 2003 and 2004. Two main groups of variables were used in particular: inputs and product.

4.3.1 Inputs

This group includes the staff of the court. It was found that there was a correlation of 0.82 between the two measures of this variable, calculated as the productivity of each court's total number of staff (judges, primary personnel, secondary personnel and employees) and number of judges. This result ensured that the measure of staff productivity through primary personnel, secondary personnel and employees presented a similar result to that obtained through the number of judges.

As a consequence of this, it was sufficient to consider the total human resources of each court to measure its product and from there, its productivity. In fact, staff productivity reflected both the court part as well as the administrative part. A detailed description of the number of staff in each court can be seen in Tables N° 10 y 11 for 2003 and 2004 respectively.

Table N° 10
Inputs: Court Personnel (2003)

	Judges	Primary	Secondary	Employees
Arica	8	30	14	94
Iquique	4	29	15	100
Antofagasta	7	57	28	192
Copiapó	4	45	17	144
La Serena	6	70	23	213
Valparaíso	16	137	58	573
Rancagua	7	60	24	223
Talca	7	83	50	284
Chillán	4	35	11	111
Concepción	16	115	32	416
Temuco	7	72	38	246
Valdivia	7	49	18	212
Puerto Montt	4	46	20	166
Coyhaique	4	26	12	72
Punta Arenas	4	31	13	75
Santiago	31	221	57	1,110
San Miguel	19	106	32	435
Total	155	1,212	462	4,666

average	9	71	27	274
Minimum	4	26	11	72
Maximum	31	221	58	1,110
Standard deviation	7.3	50.4	15.4	256.2

Table N° 11
Inputs: Court Personnel (2004)

	Judges	Primary	Secondary	Employees
Arica	8	25	14	97
Iquique	4	32	15	110
Antofagasta	7	51	26	213
Copiapó	4	40	15	150
La Serena	6	57	25	229
Valparaíso	16	141	67	574
Rancagua	7	60	22	236
Talca	7	79	52	312
Chillán	4	37	11	108
Concepción	16	115	34	413
Temuco	7	72	43	269
Valdivia	7	57	19	198
Puerto Montt	4	43	19	163
Coyhaique	4	25	12	73
Punta Arenas	4	31	13	82
Santiago	31	249	67	1,120
San Miguel	19	115	40	442
Total	155	1,229	494	4,789
Average	9	72	29	282
Minimum	4	25	11	73
maximum	31	249	67	1,120
Standard Deviation	7.3	56.8	18.6	257.1

4.3.2 Product

Following the guidelines set down by the literature on the subject, we chose to use the number of cases filed and the number of cases settled in each court as the product for our DEA model. These were divided into three areas: civil/criminal cases, labor cases and the total number of cases (which also includes minors and guarantees). A detailed description of the variable product

(cases filed and cases settled) can be seen in Tables N° 12 y 13 for 2003 and 2004, respectively.

Table N° 12
Product: Cases Filed/Settled (2003)

	Civil /Criminal	Labor	Minors/ Oral Guaran-tees	Total
Arica	0.93	0.90	0.94	0.93
Iquique	0.59	0.65	0.33	0.59
Antofagasta	0.98	0.98	0.95	0.98
Copiapó	1.01	0.99	1.03	1.01
La Serena	1.09	1.02	0.99	1.08
Valparaíso	0.92	0.99	-	0.92
Rancagua	1.01	0.93	-	1.01
Talca	0.87	0.86	0.98	0.89
Chillán	0.99	1.06	-	0.99
Concepción	0.97	0.67	0.00	0.96
Temuco	1.01	1.01	0.99	1.01
Valdivia	0.96	0.95	0.00	0.96
Puerto Montt	0.98	0.92	-	0.98
Coyhaique	1.05	0.96	0.99	1.04
Punta Arenas	1.01	0.93	-	1.01
Santiago	0.92	0.90	-	0.92
San Miguel	1.05	0.95	-	1.05
Average	0.96	0.92	0.72	0.96
Minimum	0.59	0.65	0.00	0.59
maximum	1.09	1.06	1.03	1.08
Standard deviation	0.11	0.11	0.43	0.11

Table N° 13
Product: Cases Filed/Settled (2004**)**

	Civil /Criminal	Labor	Minors/Oral Guarantee	Total
Arica	0.92	1.10	0.99	0.94
Iquique	0.58	0.62	0.88	0.59

Antofagasta	1.06	1.03	0.94	1.05
Copiapó	0.96	1.04	0.98	0.97
La Serena	0.95	1.04	0.95	0.95
Valparaíso	1.02	0.96	0.84	1.00
Rancagua	0.97	0.98	0.91	0.97
Talca	0.79	0.52	0.94	0.80
Chillán	0.97	0.87	0.98	0.96
Concepción	0.79	0.78	0.99	0.80
Temuco	0.90	0.95	0.98	0.93
Valdivia	1.03	0.94	0.95	1.02
Puerto Montt	1.00	0.69	0.92	0.97
Coyhaique	0.85	0.95	0.89	0.86
Punta Arenas	1.08	0.94	0.94	1.05
Santiago	0.93	0.99	-	0.93
San Miguel	1.03	1.17	-	1.03
Average	0.93	0.92	0.94	0.93
minimum	0.58	0.52	0.84	0.59
maximum	1.08	1.17	0.99	1.05
Standard Deviation	0.12	0.17	0.04	0.12

4.4 ANALYSIS OF RESULTS

4.4.1 Analysis of Efficiency and Ranking of Courts

Efficiency and how we calculate it depends on the definitions and suppositions we make. Following this, the efficiency of a court depends on two principal aspects: the use it makes of its inputs and its costs. The first aspect is commonly known as technical efficiency and involves comparing the product generated with the inputs consumed. The efficiency analysis, which involve the costs of the factors and include considerations for the minimization of costs, is known as the economic and assigned efficiency. Independently of how we measure efficiency, we have two options when looking at the inefficiency of an appeals court: input-orientated analysis or product-orientated analysis. Input-orientated analysis measures the optimum level of input that each court ought to contract in order to be efficient given a certain level of production, while the product-orientated analysis takes an optimum level of production needed to

make a court efficient while maintaining the level of inputs constant.

Although one might suppose that the courts operate at an optimum level and as such present constant returns to scale, the existence of imperfections in the justice market (characteristic of a public service) mean that not all these institutions operate at the optimum scale in such a way that the returns to scale can vary between courts (VRS). This document uses the qualitative method of scale efficiency[23] that allows one to calculate the difference between the existence of technical efficiency and scale efficiency (Lothgren and Tambour, 1996 and Fare, 1994).

As such, here we present the results of input-orientated analysis and product-orientated analysis with the aim of visualizing different alternative policies, considering that in the case of the judiciary cuts in personnel are not always possible (as it is part of the public sector) and, as such, the possibility of increasing production levels, while keeping input levels constant, could have significant repercussions in terms of the competitiveness of the services they provide.

Table N° 14
Analysis of Efficiency and Ranking of Civil and Criminal Courts (2003)

	Input-orientated		Product-orientated		
Court	VRS TE	Ranking	VRS TE	Ranking	CRS TE
Arica	0.797	4	0.883	13	0.708
Iquique	0.764	5	0.556	17	0.428
Antofagasta	0.397	9	0.901	10	0.371
Copiapó	0.534	7	0.942	5	0.514
La Serena	1.000	1	1.000	1	0.375
Valparaíso	0.143	16	0.842	15	0.126
Rancagua	0.358	11	0.924	8	0.345
Talca	0.264	13	0.796	16	0.219
Chillán	0.701	6	0.935	6	0.662

[23] It indicates scale efficiency by using an optimum combination of inputs and products and maximizes its average productivity. The combination of inputs and products is equally efficient with a constant returns to scale technology as with one with variable returns to scale.

Concepción	0.195	14	0.889	11	0.181
Temuco	0.309	12	0.928	7	0.299
Valdivia	0.394	10	0.888	12	0.363
Puerto Montt	0.474	8	0.910	9	0.443
Coyhaique	1.000	1	1.000	1	1.000
Punta Arenas	0.924	3	0.965	3	0.893
Santiago	0.079	17	0.846	14	0.070
San Miguel	0.192	15	0.959	4	0.192
Average	0.501		0.892		0.423
Minimum	0.079		0.556		0.070
Maximum	1.000		1.000		1.000
Standard Deviation	0.307		0.102		0.262

notes:
VRS TE: Technical Efficiency with variable returns to scale.
CRS TE: Technical Efficiency with constant returns to scale.
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Empiric estimations of the efficiency measures require two stages: (i) the estimation of a frontier and (ii) the calculation of individual deviations from the frontier. Currently two types of methods are used to estimate frontiers (Seiford and Thrall, 1990 and Coelli, 1998). These are the parametric focus, which uses econometric methods, and the non-parametric method which uses lineal programming. In this study, we applied the non-parametric method known as data envelopment analysis (DEA).

The courts with the highest relative technical efficiency are those which use the lowest amount of inputs to obtain their products and, as such, optimize their productive process and form part of the production frontier. The court with the strongest optimum productive process is the one in Punta Arenas as our model placed it in the productive frontier with the greatest frequency, during the period under study 2003 to 2004. At the other extreme, the San Miguel court was placed in the weakest part of the productive frontier as the frequency of its appearance in this frontier was the lowest.

Table N° 15
Analysis of Efficiency and Ranking of Courts
Labor Cases (2003)

	Input orientated		Product orientated		
Court	**VRS TE**	**Ranking**	**VRS TE**	**Ranking**	**CRS TE**
Arica	0.797	4	0.881	11	0.743
Iquique	0.764	5	0.632	17	0.517
Antofagasta	0.420	9	0.922	8	0.402
Copiapó	0.592	6	0.933	7	0.547
La Serena	0.455	8	0.966	3	0.381
Valparaíso	0.160	16	0.935	6	0.147
Rancagua	0.358	12	0.876	12	0.345
Talca	0.264	13	0.810	15	0.235
Chillán	1.000	1	1.000	1	0.770
Concepción	0.195	14	0.637	16	0.137
Temuco	0.378	11	0.957	4	0.325
Valdivia	0.394	10	0.894	10	0.387
Puerto Montt	0.474	7	0.872	13	0.454
Coyhaique	1.000	1	1.000	1	1.000
Punta Arenas	0.924	3	0.952	5	0.897
Santiago	0.079	17	0.853	14	0.074
San Miguel	0.192	15	0.896	9	0.189
Average	0.497		0.883		0.444
Minimum	0.079		0.632		0.074
Maximum	1.000		1.000		1.000
Standard Deviation	0.300		0.106		0.272

It should be remembered that the fact that a court optimizes its production process relatively speaking does not mean that it can-

not further improve its performance, given that when we talk about optimums or maximum relative technical efficiency, we are talking about a position relative to the other courts.

Table N° 16
Analysis of efficiency and ranking of courts
in all cases **(2003)**

	Input-orientated		**Product-orientated**		
Court	**VRS TE**	**Ranking**	**VRS TE**	**Ranking**	**CRS TE**
Arica	0.797	4	0.889	12	0.712
Iquique	0.764	5	0.563	17	0.433
Antofagasta	0.397	9	0.910	10	0.373
Copiapó	0.534	7	0.952	5	0.518
La Serena	1.000	1	1.000	1	0.373
Valparaíso	0.143	16	0.853	15	0.127
Rancagua	0.358	11	0.934	8	0.347
Talca	0.264	13	0.820	16	0.224
Chillán	0.701	6	0.946	6	0.668
Concepción	0.195	15	0.888	13	0.180
Temuco	0.309	12	0.936	7	0.300
Valdivia	0.394	10	0.898	11	0.365
Puerto Montt	0.474	8	0.918	9	0.445
Coyhaique	1.000	1	1.000	1	1.000
Punta Arenas	0.924	3	0.969	3	0.897
Santiago	0.079	17	0.856	14	0.070
San Miguel	0.236	14	0.969	4	0.193
Average	0.504		0.900		0.425
Minimum	0.079		0.563		0.070
Maximum	1.000		1.000		1.000
Standard Deviation	0.304		0.100		0.263

The estimated DEA models indicated the presence of a clear deviation in the efficiency values when compared to the best practice frontier (“benchmark”). Here we should highlight that the labor cases presented a higher average level of efficiency than civil and criminal cases. A summary of these results is presented in Tables Nº 20 y 21.

Table N° 17
Analysis of Efficiency and Ranking of Courts
In Civil/Criminal Cases (2004)

	Input-orientated		Product-orientated		
Court	**VRS TE**	**Ranking**	**VRS TE**	**Ranking**	**CRS TE**
Arica	0.844	3	0.851	13	0.789
Iquique	0.701	5	0.537	17	0.431
Antofagasta	0.430	9	0.982	3	0.427
Copiapó	0.571	6	0.882	10	0.542
La Serena	0.375	10	0.877	11	0.355
Valparaíso	0.155	16	0.939	6	0.151
Rancagua	0.372	11	0.897	8	0.356
Talca	0.248	13	0.726	16	0.206
Chillán	0.757	4	0.895	9	0.723
Concepción	0.196	15	0.728	15	0.163
Temuco	0.296	12	0.836	14	0.274
Valdivia	0.447	8	0.954	4	0.439
Puerto Montt	0.533	7	0.919	7	0.515
Coyhaique	1.000	1	1.000	1	0.903
Pta. Arenas	1.000	1	1.000	1	1.000
Santiago	0.080	17	0.855	12	0.075
San Miguel	0.205	14	0.951	5	0.201
Average	0.483		0.872		0.444
Minimum	0.080		0.537		0.075
Maximum	1.000		1.000		1.000
Standard Deviation	0.290		0.118		0.273

Table N° 18
Analysis of Efficiency and Ranking of Courts
In Labor Cases (2004)

	Input-orientated		Product-orientated		
Court	**VRS TE**	**Ranking**	**VRS TE**	**Ranking**	**CRS TE**
Arica	1.000	1	1.000	1	0.943
Iquique	0.701	6	0.556	16	0.455
Antofagasta	0.427	9	0.915	6	0.413
Copiapó	0.615	7	0.937	4	0.591
La Serena	0.401	10	0.918	5	0.387
Valparaíso	0.144	16	0.824	12	0.143
Rancagua	0.362	12	0.865	8	0.357
Talca	0.248	14	0.450	17	0.136
Chillán	0.705	5	0.782	13	0.645
Concepción	0.196	15	0.671	14	0.162
Temuco	0.287	13	0.831	11	0.287
Valdivia	0.401	11	0.834	10	0.397
Puerto Montt	0.489	8	0.618	15	0.356
Coyhaique	1.000	1	1.000	1	1.000
Punta Arenas	0.873	4	0.901	7	0.867
Santiago	0.082	17	0.847	9	0.080
San Miguel	1.000	1	1.000	1	0.228
Average	0.525		0.821		0.438
Minimum	0.082		0.450		0.080
Maximum	1.000		1.000		1.000
Standard Deviation	0.308		0.160		0.284

Table N° 19
Analysis of Efficiency and Ranking of Courts
in all cases (2004)

	Input-orientated		Product-orientated		
Court	**VRS TE**	**Ranking**	**VRS TE**	**Ranking**	**CRS TE**
Arica	0.854	3	0.887	12	0.822
Iquique	0.701	5	0.560	17	0.450
Antofagasta	0.433	9	0.996	3	0.433
Copiapó	0.578	6	0.916	9	0.563
La Serena	0.378	10	0.905	11	0.367
Valparaíso	0.156	16	0.952	6	0.153
Rancagua	0.374	11	0.919	8	0.364
Talca	0.248	13	0.756	16	0.215
Chillán	0.758	4	0.913	10	0.737
Concepción	0.196	15	0.758	15	0.170
Temuco	0.300	12	0.879	14	0.288
Valdivia	0.450	8	0.970	5	0.446
Puerto Montt	0.530	7	0.922	7	0.516
Coyhaique	1.000	1	1.000	1	0.937
Pta. Arenas	1.000	1	1.000	1	1.000
Santiago	0.080	17	0.881	13	0.077
San Miguel	0.208	14	0.979	4	0.207
Average	0.485		0.894		0.456
Minimum	0.080		0.560		0.077
Maximum	1.000		1.000		1.000
Standard Deviation	0.290		0.112		0.278

Table N° 20
Summary of values of Technical Efficiency (2003)

Measure of technical efficiency	Average	Standard Deviation	Minimum	Maximum	Courts in Frontier
Civil/Criminal Cases					
RCE	0.423	0.262	0.070	1	1
RVE	0.501	0.307	0.079	1	2
Escala	0.878	0.164	0.375	1	1
Labor Cases					
RCE	0.444	0.272	0.074	1	1
RVE	0.497	0.300	0.079	1	2
Scale	0.898	0.099	0.677	1	1
Total Cases					
RCE	0.425	0.263	0.070	1	1
RVE	0.504	0.304	0.079	1	2
Scale	0.873	0.162	0.373	1	1

A breakdown of total inefficiency into scale inefficiency and pure technical inefficiency is shown in Table Nº 22.

Technical inefficiency ranges between 98.4% and 106.2%. This is the combined inefficiency as the operation was carried out at a below-optimum scale (because of the inadequate size of the court) and based on pure technical efficiency. This implies that on average the courts employ between 98.4% and 106.2% more personnel than required for their level of activity. A breakdown of total inefficiency between scale inefficiency and technical efficiency is shown in Table Nº 22.

Table N° 21
Summary of Values of Technical Efficiency (2004)

Measure of technical efficiency	Average	Standard Deviation	Minimum	Maximum	Courts in Frontier
Civil/Criminal					
RCE	0.444	0.273	0.075	1	1
RVE	0.483	0.290	0.080	1	2
Scale	0.923	0.092	0.616	1	1
Labor					
RCE	0.438	0.284	0.080	1	1
RVE	0.525	0.308	0.082	1	3
Scale	0.863	0.213	0.228	1	1
Total					
RCE	0.456	0.278	0.077	1	1
RVE	0.485	0.290	0.080	1	2
Scale	0.943	0.087	0.642	1	1

Table N° 22

Breakdown of Technical Inefficiency

Year	Pure Technical Inefficiency (%)	Scale Inefficiency (%)
2003	98.4	14.6
2004	106.2	6.1

4.4.2 Changes in productivity (Malmquist Index)

Finally, the Malmquist Productivity Index was used with the aim of measuring the Change in Total Factor Productivity (TFPCH) between 2003 and 2004. A score higher than 1 indicates growth in productivity while a score lower than 1 indicates a fall. On average it was shown that the appeals court with the worst performance saw its TFPCH fall by 17.3% between 2003 and 2004, while that with the best performance rose by 8.1%.

Table N° 23

Malmquist Productivity Index (Civil and Criminal Cases)

Courts	EFFCH	TECHCH	PECH	SECH	TFPCH
Arica	1.114	0.902	0.964	1.155	1.005
Iquique	1.007	0.902	0.966	1.043	0.908
Antofagasta	1.151	0.902	1.090	1.056	1.038
Copiapó	1.056	0.902	0.937	1.127	0.952
La Serena	0.948	0.902	0.877	1.081	0.855
Valparaíso	1.203	0.902	1.115	1.079	1.085
Rancagua	1.030	0.902	0.971	1.060	0.928
Talca	0.943	0.902	0.912	1.034	0.850
Chillán	1.092	0.902	0.957	1.141	0.985
Concepción	0.901	0.902	0.819	1.100	0.812
Temuco	0.917	0.902	0.900	1.018	0.827
Valdivia	1.209	0.902	1.075	1.125	1.090
Puerto Montt	1.162	0.902	1.010	1.150	1.048
Coyhaique	0.903	0.902	1.000	0.903	0.814

Punta Arenas	1.119	0.902	1.037	1.080	1.009
Santiago	1.073	0.902	1.010	1.062	0.967
San Miguel	1.046	0.902	0.992	1.054	0.943
Average	1.051	0.902	0.978	1.075	0.948
Minimum	0.901	0.902	0.819	0.903	0.812
Maximum	1.209	0.902	1.115	1.155	1.090
Standard Deviation	0.103	0.000	0.077	0.061	0.093

Notes:
EFFCH: Change in technical efficiency (relative to technology with constant returns to scale). TECHCH: Technological change. PECH: Change in pure technological efficiency (relative to technology with variable returns to scale). SECH: Change in scale efficiency. TFPCH: Change in total productivity of factors (PTF).

This focus does not require us to know the type of technology nor the price of the inputs and services. These characteristics make it better suited for measuring productivity in the public sector (Färe et al., 1994). Färe et al highlight different methods to calculate the Malmquist Productivity Index. However, the most suitable method is to use lineal programming techniques, such as DEA. The four problems of lineal programming for each court with the aim of calculating four function of distance that measure the change in the total productivity in factors between two periods with a technology of variable returns to scale. The change in technical efficiency can be broken down into a change in pure efficiency and a change in scale, resolving two problems of lineal programming with a technology of variable returns to scale (Coelli et al, 1998).

Table N° 24
Malmquist Productivity Index (Labor Cases)

Courts	EFFCH	TECHCH	PECH	SECH	TFPCH
Arica	1.269	0.984	1.136	1.117	1.248
Iquique	0.880	0.984	0.880	1.001	0.866
Antofagasta	1.026	0.984	0.992	1.034	1.099
Copiapó	1.081	0.984	1.004	1.076	1.063
La Serena	1.015	0.984	0.950	1.068	0.998
Valparaíso	0.973	0.984	0.881	1.105	0.958
Rancagua	1.035	0.984	0.987	1.049	1.018
Talca	0.578	0.984	0.556	1.039	0.568
Chillán	0.837	0.984	0.782	1.071	0.824
Concepción	1.183	0.984	1.054	1.122	1.164
Temuco	0.882	0.984	0.868	1.016	0.868

Valdivia	1.026	0.984	0.933	1.100	1.010
Puerto Montt	0.785	0.984	0.709	1.107	0.772
Coyhaique	1.000	0.984	1.000	1.000	0.984
Punta Arenas	0.966	0.984	0.946	1.022	0.950
Santiago	1.081	0.984	0.994	1.088	1.064
San Miguel	1.205	0.984	1.116	1.080	1.186
Average	0.990	0.984	0.929	1.064	0.979
Minimum	0.578	0.984	0.556	1.000	0.568
Maximum	1.269	0.984	1.136	1.122	1.248
Standard Deviation	0.166	0.000	0.144	rt0.040	0.166

Table N° 25
Malmquist Productivity Index (Total Cases)

Courts	**EFFCH**	**TECHCH**	**PECH**	**SECH**	**TFPCH**
Arica	1.154	0.885	0.998	1.156	1.021
Iquique	1.039	0.885	0.995	1.044	0.919
Antofagasta	1.161	0.885	1.095	1.061	1.027
Copiapó	1.087	0.885	0.961	1.130	0.961
La Serena	0.984	0.885	0.905	1.087	0.870
Valparaíso	1.210	0.885	1.115	1.085	1.070
Rancagua	1.049	0.885	0.984	1.066	0.928
Talca	0.958	0.885	0.922	1.040	0.848
Chillán	1.103	0.885	0.965	1.143	0.976
Concepción	0.944	0.885	0.853	1.106	0.835
Temuco	0.961	0.885	0.939	1.024	0.851
Valdivia	1.222	0.885	1.081	1.130	1.081
Puerto Montt	1.160	0.885	1.005	1.154	1.026
Coyhaique	0.937	0.885	1.000	0.937	0.829
Punta Arenas	1.115	0.885	1.032	1.080	0.986
Santiago	1.099	0.885	1.029	1.067	0.972
San Miguel	1.071	0.885	1.011	1.060	0.948
_					
Average	1.074	0.885	0.994	1.081	0.950
Minimum	0.937	0.885	0.853	0.937	0.829
Maximum	1.222	0.885	1.115	1.156	1.081

Standard Deviation	0.093	0.000	0.068	0.055	0.082

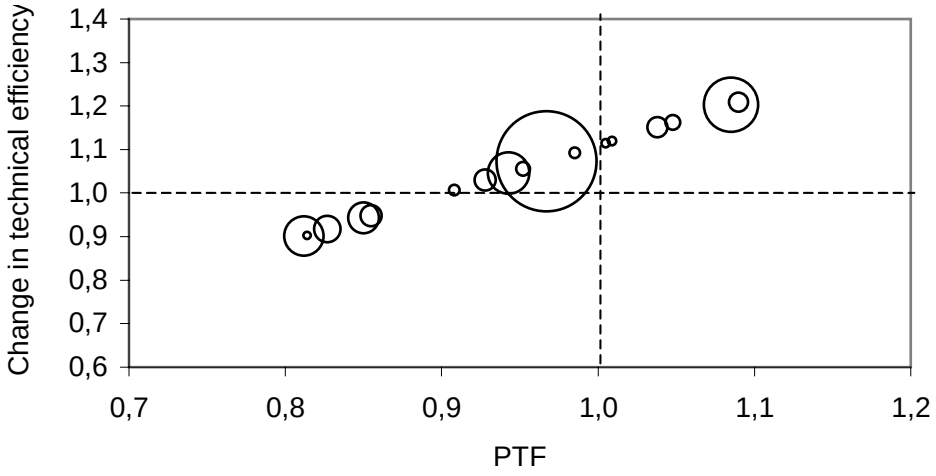
From the point of view of public policy, the evolution of productivity through time is key for taking decisions over resources in the public sector. Quantification of the evolution of productivity allows one to form a base from which to improve the measure of national accounts while at a micro-level the change in productivity can be broken down into changes in efficiency and the displacement of production technology. The most appropriate policies will be different in a fall in productivity when the changes in efficiency are modest and when there is no displacement in the production technology. (Grosskopf. 1992).

The general expression of the Malmquist Productivity Index Mi(1.2) and its components (change in technical efficiency (MC) and total productivity of factors (PTF or displacement in the production technology). MFi(1.2) calculated for two periods 1 and 2 with technology base i) is:

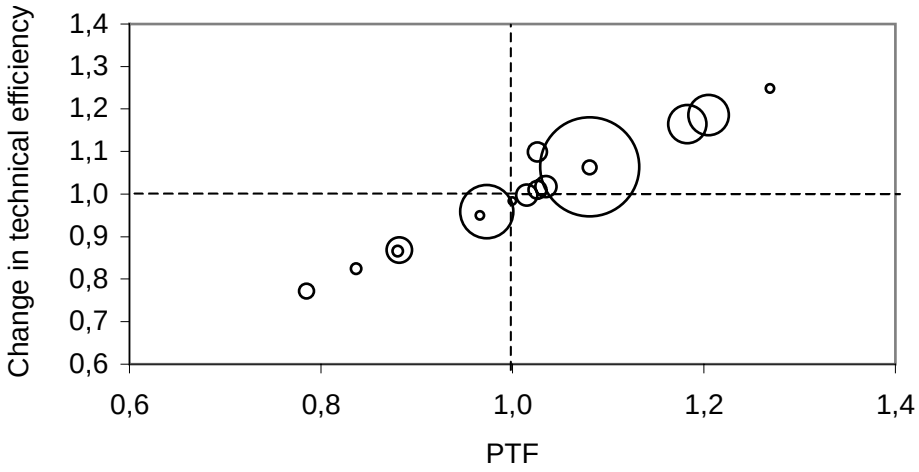
$$Mi(1.2) = MC \times MFi(1.2)$$

The link between the three indices can be seen in the Graphs N° 11, 12 y 13 (the distribution of the change in technical efficiency and the PTF). Each circle represents a court of appeal and the size of each one is proportional to the size of its total staff in 2003. The vertical and horizontal lines on level one divide the courts with positive and negative changes in productivity. The trend is lineal but with high dispersion.

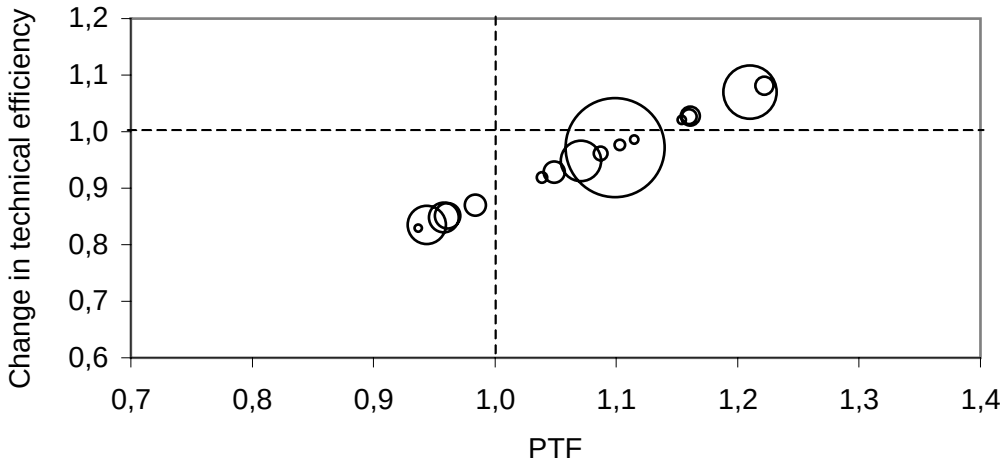
Graph N° 11
Distribution of the change in technical efficiency
and PTF for civil and criminal cases



Graph N° 12
Distribution of the change in technical efficiency
and PTF for labor cases



Graph N° 13
Distribution of the change in technical efficiency
and PTF for all cases



V. CONCLUSIONS

The aim of this study has been to present statistics on Chile's courts from 2004 that we considered to be the most important and at the same time – as outlined in the introduction - would act as the first step in establishing a regular and increasingly specialized analysis on the progress of justice in our country.

We cannot ignore the fundamental role that an autonomous and powerful judiciary plays in society in being able to guarantee individuals´ freedoms and rights. Strengthening its role as a counterweight to political power should be a constant challenge and permanent aim of all those who seek to create a society that adheres to the principles of freedom. Considering this, the activities of the judiciary should be carried out in full view of the general public and the judiciary should always be aware that it is permanently subject to public scrutiny. The mass media also has a duty to adopt systems of informing on how the judiciary is fulfilling its role.

This study proposes a basic design framework for the adoption by the judiciary of public indicators. In this aim, we have presented concrete indicators, their objectives and the sources of the information on matters such as transparency, judges´ workloads and budgetary measures.

We have analyzed what we considered the most important indicators for 2004. Among these, we should highlight the significant increase in the number of cases entering the court system which mainly reflects an increase in civil cases. As for spending, the structure appears quite stable, although marked by a relatively large expenditure on personnel.

Looking at specific cases, we analyzed the legal work of the Supreme Court, noting a worrying need for the court to revise the way it manages its workload from day to day.

In the civil courts, the most notable aspect was the increase in the number of cases but also the high impact of earnings from these

cases which should lead to a rethink in the sense of having courts largely dedicated to issues which do not strictly fall within their sphere of the law.

Thanks to the more sophisticated information presented by the new criminal justice system it was possible to analyze various aspects of the new scheme. It appears necessary to study in greater depth the types of sentences handed out by the system, in particular, the use being given to the facultative terms of the Office of the Public Prosecutor.

In this study, we also analyzed technical efficiency through Data Envelopment Analysis (DEA). The results published here come from the seventeen courts of appeals, showing empiric evidence on the performance of these courts in Chile. The results suggest that numerous courts operate at a purely technical level of efficiency far below the level of best practice achieved by some relatively more efficient courts. At best, 17.6% of these institutions operate efficiently when compared with their peers. It should be noted that this is not an absolute measure of efficiency and that the efficiency variable only reflects the performance and production technology of the group.

The most technically efficient courts are those that use the lowest level of inputs to obtain their product and improve their productive process and so make up part of the best performance group.

The Court of Appeals of Coyhaique recorded the strongest productive process as the model put it at the productive forefront with greatest frequency during the 2003-2004 period under study. At the other extreme, the Court of Santiago was in the weakest part of the productive range as its frequency of appearance in this band was the lowest.

It should be noted that the fact that a court relatively improves its production process does not mean that it could not further improve its performance. This is because when we talk about optimization or relative technical efficiency we are comparing its situation relative to the other courts.

The estimated DEA models indicated the presence of a clear deviation in the efficiency values when compared with the benchmark levels. It should be noted that labor cases have a higher average level of efficiency than civil and criminal cases.

Technical inefficiency ranges between 98.4% and 106.2%. This is the combined inefficiency as the operation was carried out at a below-optimum scale (because of the inadequate size of the court) and based on pure technical efficiency. This implies that on average the courts employ between 98.4% and 106.2% more personnel than required for their level of activity.

Finally, the Malmquist Productivity Index was used with the aim of measuring the Change in Total Factor Productivity (TFPCH) between 2003 and 2004. On average, it was shown that the appeals court with the worst performance saw its TFPCH fall by 17.3% between 2003 and 2004. while that with the best performance rose by 8.1%.

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