

Economic Analysis of Law Review

Legal Institutions and Firm Performance in Brazil

Instituições Jurídicas e Desempenho de Empresas no Brasil

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RESUMO

Este artigo investiga os mecanismos específicos pelos quais instituições jurídicas e o chamado Estado de Direito afetam o desempenho das empresas. Os dados foram obtidos por meio de questionário aplicado a uma amostra de aproximadamente 100 empresas no Brasil, atuantes nos setores têxtil e eletrônico. Foram analisadas as percepções das empresas em relação à atuação do Judiciário em termos de justiça, imparcialidade, corrupção, rapidez, acessibilidade, consistência e eficácia, permitindo a criação de um índice de percepção das instituições jurídicas. É analisada a variação de percepção entre empresas com características diversas, tais como: grande/pequena empregadora, propriedade estrangeira/doméstica, exportadora/não-exportadora e nível de receita. Os resultados sugerem que empresas com uma percepção mais positiva do Judiciário empregam mais e possuem um desempenho econômico melhor.

Palavras-chave: Instituição Jurídica; Previsibilidade; Política Pública; Contrato; Judiciário; Brasil.

JEL: O12, D23, K20, O17, K30

ABSTRACT

This paper analyses the specific mechanisms through which legal institutions and the Rule of Law affect firm performance using survey evidence from a sample of about 100 Brazilian firms in the textile and electronics industries. The data provide firms' perceptions of whether judicial institutions are just, impartial, corruptible, swift, accessible, consistent and effective, which allowed to create an index of firms' perception of legal institutions. It is analyzed how these perceptions vary across firms with different characteristics, such as large/small employer, foreign/domestic-owned, exporter/non-exporters and revenues level. The results suggest that firms that had a better perception of the Judiciary increased levels of employment and had better economic performance.

Keywords: Legal Institutions; Predictability; Public Policy; Contract; Judiciary; Brazil.

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1. Introduction⁴

The focus of standard economics has typically been on the narrow process of production and exchange without much concern for the outer context within which these actions occur. This has lately changed as great interest has arisen in the literature concerning the institutions that form the backdrop for production and exchange and consequently have important effects on growth and welfare. This surge of interest has extrapolated the confines of practitioners of New Institutional Economics and today institutions and terms like ‘rule of law’ are the stuff of standard economics. The roots of this transformation can be traced to Coase (1937) that argued for the importance of transaction cost for understanding the existence of firms and the myriad forms of organization observed in practice. Subsequently Coase (1960) and later Williamson (1985, 2005) underscored the fact that when transactions costs are not negligible and property rights are not well defined, production and exchange will typically not simply cease to occur, but rather institutions tend to arise to allow economic activity and the gains to specialization and trade to be at least partially realized. The specific institutions which do in fact arise are crucially important in determining how efficient those activities will be with important impacts on economic growth and social welfare (North, 1990).

Of the many different topics within this literature this paper is related to that of the enforcement of economic activity through formal institutions in general and the judiciary in particular. North (1990) wrote that “[t]he problems of achieving third-party enforcement of agreements via an effective judicial system [...] are only imperfectly understood and are a major dilemma in the study of institutional evolution.” Since then much work has been done in this area. Specifically, our interest is on the effect of the judiciary on firms. Kumar, Rajan and Zingales (1999) and Laeven and Woodruff (2004) analyze how the judicial system’s impact firm size; Johnson, McMillan and Woodruff (2002) discuss its impact on the decision to reinvest profits; La Porta, Lopez-de-Silanes, Shleifer and Vishney (1997 and 1998) and Johnson et al. (2000) address the judicial system’s effect on the decision by outside investors to become minority owners; Levine (1998) and Jappelli, Pagano and Bianco (2004) focus on the judicial system’s impact on the availability of bank loans to firms; Djankov, La Porta, Lopez-de-Silanes and Shleifer (2002) address the effect of the judiciary on firm entry; Levy and Spiller (1996), Henisz (2000) and Brunetti and Weder (1994) address the judiciary’s role in providing credible commitment by constraining governmental opportunism towards investors. For the specific case of Brazil, the study of the impact of the judiciary on economic activity has been pioneered by Pinheiro (2000, 2001). He presents formal models, surveys with businessmen and magistrates, several case studies and policy recommendations for reform. Pinheiro (2001, p. 5) argues that the role of the judiciary on the promotion of economic development has been understudied in general, but that:

[I]n the case of Brazil, the gap is even more serious. With the end of the military regime (1964-85) and the return to the rule of law, studies about the legal system in our country concentrated primarily on threats to basic human rights and the unequal distribution of justice, with special emphasis on issues of color and gender [our translation].

⁴ We thank an anonymous referee for valuable comments to a first draft of this paper.

Since these pioneering studies there has been a growing interest on the economic impact of the judiciary in Brazil (Arida, Bacha and Lara-Resende, 2005; Sadek, 2006; Yeung, and Azevedo, 2011; Schapiro and Cunha, 2012; among others.) Our paper aims to contribute to the effort of understanding the impact of the judiciary on the economy in Brazil by exploring a survey of approximately 100 firms in two individual industrial sectors (electronics and textiles). The data allows us to investigate at the micro-level the channels through which shortcomings in the rule of law and in the judicial system affect firm behavior.⁵ In addition we attempt to measure the impact that the firms' responses to these deficiencies has on economic activity.

The paper is organized as follows. Section 2 presents details on sampling and on the collection of our survey data. Section 3 has our empirical analysis. We proceed in three stages: we first analyze graphically the responses concerning the expectations of textiles and electronics firms regarding a wide range of features of the judicial system. Then we apply simple differences-in-mean tests to identify whether different individual firm characteristics are somehow associated with their expectations about various aspects of the judiciary. Finally, we provide a more systematic econometric analysis of the relationship between these expectations and the firms' behavior and performance. Section 4 concludes.

2. Data

The objective of this section is to present the data set constructed for this paper. Our data comprises unique survey information collected through face-to-face interviews with CEOs of a representative sample of firms operating in Brazil. From the outset, we decided to focus on a few selected industrial sectors. The majority of existing studies are carried out at the country level. One important reason for focusing on individual sectors is the expectation that at this less aggregate, more detailed, level we may be better able to get a sense of the nuance and variance (across sectors, in this case) of the average aggregate measures provided by the literature.

The choice of sectors is thus very important. Our choice was driven by the following considerations. We wanted to focus on two manufacturing sectors that were different in terms of their technological base but whose firms tend to use production technologies that are similarly mature in the sense that these technologies would present legal barriers to entry and exit of similar nature and magnitude in the two sectors. With this criterion in mind, we first settle on, at the two-digit level ISIC, industry code 17 ("manufacture of textiles") and industry code 32 ("manufacture of radio, television and communication equipment and apparatus"). However, this is clearly too broad, so narrowing down this choice one more level of aggregation was needed. Sector 17 is composed of three sub-sectors: 17.1 is "spinning, weaving and finishing of textiles," 17.2 is "manufacture of other textiles," and 17.3 is "manufacture of knitted and crocheted fabrics and articles." Sector 32 is also composed of three sub-sectors: 32.1 is "manufacture of electronic valves and tubes and other electronic components," 32.2 is "manufacture of television and radio transmitters and apparatus

⁵ Our focus of this paper is on the impact of the judiciary, understood more narrowly as the courts and judges that interpret and apply the law in the name of the state. However, the survey questions sometimes refer to a broader set of arrangements beyond the direct remit of the judiciary, encompassing also policy formulation and enforcement. We will use the term *rule of law* rather than judiciary when we refer to these broader arrangements.

for line telephony and line telegraphy,” and 32.3 is “manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods.”

We chose to focus on sectors 17.1 and 32.3 (hereafter “textiles” and “consumer electronics,” respectively) because they are both clearly important in their two-digit sectors (in terms of their share in output and employment), they are both capital intensive, relatively concentrated, and technologically mature. Further, final users in the two sectors combine industrial and final consumers. Finally, and no less importantly, in these two industries the importance of informal sector considerations seems satisfactorily remote.

Once the sectors were selected, a representative sample of firms was drawn from a firm (not plant) register at the main industrialists’ association in Brazil (FIESP).⁶ The survey was carried out by a private firm (Datametrica), and consisted of face-to-face interviews with CEOs of 98 firms, with 28 from consumer electronics and 70 from textiles. The interviews were carried out between December 2004 and July 2005 and lasted an average of one hour and 30 minutes.

Our aim was to design a sample of firms that is representative of these two sectors in terms of number of full-time employees, revenues and export propensity. There was also an important concern about the spatial distribution of these firms driven by the expectation that those located in the richer Southeast region (e.g., in São Paulo and Rio de Janeiro) would benefit from a better physical and service infrastructure as well as from other sources of agglomeration economies and would thus unduly bias our results. The sampling procedure therefore tried to follow the distribution by region and firm size of the 2002 RAIS register (the Labor Ministry’s Annual Listing of Social Information), which was its latest publicly available version. From the 2002 RAIS, we observe that the regional concentration in the Southeast is rather strong in these two sectors (more than 50% of plants) in the year 2002 (Table 1) and that is the reason why almost 80% of the firms in our sample have headquarters in the Southeast region.

**Table 1 - Distribution of Plants in 2002 per Region and Sectors
17.1 (Textiles) and 32.3 (Electronics) – ISIC**

	Brazil	North	Northeast	Southeast	South	Centre-West
Textiles	2702	28	421	1414	711	128
Electronics	244	24	8	148	58	6
Total	2946	52	429	1562	769	134

Source: RAIS 2002

The average textile firm in our sample had about 73 full-time employees in 2005 (Graph 1) which compares well with the corresponding figure for the population which was about 64 employees from the 2002 RAIS data. The textile firms in our sample export on average 15% of the value of their output which also compares well with the values for the population (11%). In terms of destination of these exports, more than 75% of them are for Mercosur countries (mostly to Argentina which is by far the largest destination market). With respect to the electronics sector, the

⁶ The various public sources are not a viable alternative because the various data sets generated by the government, by law, protect the anonymity of respondent firms and therefore do not allow the identification of a random sample of firms from them.

average firm in our sample had about 80 full-time employees in 2005 (somewhat below the population average for 2002 of about 130 workers) and tended to export approximately 10% of their output, which compares well with the population value from RAIS (about 8%). It is important to mention that although a larger average share of output is exported in textiles than in electronics (as textiles has traditionally produced for the domestic market), the percentage of firms that are involved in exporting activities is higher in the electronics than in the textiles sector (Graph 2). Finally, Graph 3 shows that about 20% of the firms in our sample from the electronics sector have some degree of foreign ownership; the same figure for the textile companies in our sample is below 5%. These figures are similar to data from the late 1990s from Moreira (1999), especially taking into account the different definitions used for foreign direct investment.

3. The Impact of Judicial Institutions on Brazilian Firms

In this section we analyze the survey data in order to measure the firms' perception of the judicial system and also to measure the effect of that perception on firm behavior and performance. This is done in three ways. First we examine in detail the variables that attempt to capture the firms' perception of the judiciary both graphically and through descriptive statistics. Then we perform some tests to analyze how firm characteristics determine their perceptions of the judiciary. This is done both through difference-in-means test and through regression analysis. Finally we test how the firms' perception of the judiciary affects their behavior and performance through further regression analysis.

3.1. Firms' Perceptions of the Judiciary

There are eight questions in the survey that attempt to get at the firms' expectations about the workings of the judiciary (or the rule of law more generally), either by asking for it directly or by asking about the rules and regulations the firms face. Graphs 4 to 14 display those variables and Table 2 provides descriptive statistics. Graphs 4 and 5 show for the years 2004/2005 and 2000 the extent of agreement to the following statement: "In general information about rules and regulations that affect my firm are readily available."⁷ The answers respondents could choose were 1 – totally agree, 2 – usually agree, 3 – tend to agree, 4 – tend to disagree, 5 – usually disagree and 6 – totally disagree. The average response was 3.41 in 2004/2005, with 52.04% of the respondents agreeing at different level of intensity (see Table 2).⁸ This reflects a perception about information availability on rules and regulations right at the border between positive and negative. Yet there was a slight improvement from 2000, when the average was 3.59 with 47.93% agreeing, though the difference is not statistically significant. Graphs 6 and 7 show the responses to the statement "In general interpretations about rules and regulations that affect my firm are consistent and predicta-

⁷ We also have collected information with reference to year 1995 but no discernibly different pattern could be identified.

⁸ To evaluate average values consider that the mid-point that divides positive from negative responses is 3.5. Note, however, that in this case the distribution is bimodal so that simply looking at the average may mask the fact that there are a large proportion of firms in each extreme. Below we attempt to discern the characteristics of the firms with different perceptions of the judiciary.

ble.” The averages for 2004/2005 and 2000 are 3.79 and 3.85 (43.98% and 39.58% agreeing), with the improvement once again not statistically significant. The firms thus, on average, had a moderately negative perception about the consistency and predictability of the judiciary. This ambiguity partly confirms the result in previous research (Pinheiro, 2000) and a popularly held notion in Brazil that the problem of the judicial system is not so much in the law itself as it is in various aspects of the workings of the system.

Table 2 – Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
“In general, information about rules and regulations that affect my firm are readily available.”	98 (96)	3.41 (3.59) [0.25]	1.94 (1.86)	1 (1)	6 (6)
“In general, interpretations about rules that affect my firm are consistent and predictable.”	98 (96)	3.79 (3.85) [0.40]	1.88 (1.82)	1 (1)	6 (6)
“In your firm’s legal disputes, how frequently do you think the judicial system is:”					
i - Just and impartial	98	3.55	1.49	1	6
ii – Honest/Incorruptible	98	3.59	1.64	1	6
iii - Expeditious	98	5.55	1.08	1	6
iv – Economically accessible	98	4.31	1.60	1	6
v – Consistent	98	3.87	1.55	1	6
vi – Capable of making its decisions respected	98	3.46	1.79	1	6
vii – Perception of Justice (Index composed of I – V)	98	24.36	6.63	6	36
“I’m certain the judiciary will uphold my contract/prop. right in legal/commercial disputes.”	96 (94)	3.38 (3.40) [0.45]	1.65 (1.64)	0 (0)	1 (0)
“Do you deal regularly with unexpected policy changes?”	96	1.21	0.41	0	1
“How predictable are these policy changes?”	75 (74)	3.91 (3.97) [0.39]	1.54 (1.41)	1 (1)	6 (6)
“Do you deal regularly with unexpected rule/law/reg. changes?”	96	1.28	0.45	0	1
“How predictable are these changes in rules, laws and reg.?”	71 (69)	3.92 (4.00) [0.35]	1.34 (1.27)	1 (0)	6 (6)
Improved perception on predictability of rules and regulations from 2000 to 2004/2005	98	0.08	0.28	0	1

Full-time employee growth 2000-2004	90	0.085	0.692	-1.43	3.09
Capital-Labor ratio growth 2000-2004	57	0.41	0.82	-0.69	4.58
Textile	98	0.71	0.45	0	1
Export	96	0.24	0.43	0	1
Import	97	0.35	0.48	0	1
Firm Age (years)	98	29.7	28.2	3	133
FDI	96	0.19	0.39	0	1
State Participation	98	0.02	0.14	0	1
Sells to Public Sector	95	0.34	0.48	0	1
Subsidy	97	0.09	0.29	0	1
Fiscal Incentive	97	0.25	0.43	0	1
Holding	97	0.41	0.20	0	1
One Owner	98	0.36	0.48	0	1
Two or Three Owners	98	0.43	0.50	0	1
Minas Gerais	98	0.48	0.50	0	1
São Paulo	98	0.32	0.47	0	1
Pernambuco	98	0.19	0.40	0	1

Values for 2004/2005. For selected variables values for 2000 are shown in parentheses. P-value of difference in means t-test in square brackets: $H_0: \text{mean}(x^{2004/2005}) - \text{mean}(x^{2000}) = \text{diff} = 0$, $H_a: \text{diff} < 0$.

These aspects are explored directly in the survey through a question that asks “In your firm’s legal disputes, how frequently do you think the judicial system is: i- just and impartial, ii- honest/incorruptible, iii- expedite, iv-economically accessible, v- consistent, and vi- capable of making its decisions respected.” The choices available to the respondent were 1 – always, 2 – usually, 3 – frequently, 4 – sometimes, 5 – rarely, 6 – never. The averages for each item are shown in Table 2. All items, with the exception of ‘expeditious’ and ‘economically accessible’, had averages between 3 and 3.99 that lie in the ‘frequently-sometimes’ range, denoting a moderate evaluation of the judiciary. For ‘economically accessible’ the average evaluation was 4.31 and for ‘expedite’ the average was a remarkable 5.55 out of a maximum of 6, indicating that the respondents overwhelmingly assess that the judicial system is ‘never’ expeditious. Once again this confirms other research (Pinheiro, 2000, 2001) that the main problems of the Brazilian judicial system seem to be its sluggishness and inaccessibility.

In order to have a unified index of the firms’ expectations of the judiciary we simply added the responses to all six questions.⁹ The distribution of this index of perception of justice, which ranges from 6 (excellent) to 36 (awful), is shown in Graph 8. The average value of the index is 24.36 (standard deviation = 6.63) which denotes an overall moderately negative view of the judicial system. This index will be used below to determine the impact of the judiciary on firm performance.

The firms’ perception of the judicial system was also investigated in the survey through the respondents’ reaction to the following comment: “I am certain that the judicial system will uphold my contract and property rights in legal/commercial disputes.” The response categories were 1–

⁹ Another possibility would be to use the principal components method, but because all answers are on the same scale and their correlation seems high, we opt for the simplicity and transparency of using the simple averages.

totally agree, 2-usually agree, 3-tend to agree, 4-tend to disagree, 5-usually disagree, and 6-totally disagree. The distribution of responses for the years 2004/2005 and 2000 are shown respectively in Graphs 9 and 10. The averages for these years was 3.38 and 3.40 (60.42% and 58.51% agreeing at different levels of intensity) which shows a mildly positive view but we find no statistically significant improvement over time.¹⁰

The survey also sought to capture the firms' perception of the effect of unexpected changes in policies and rules.¹¹ Seventy nine percent of the firms in the sample responded affirmatively to the question "Do you deal regularly with unexpected policy changes?" Graphs 11 and 12 show the distribution of answers to the follow-up question: "How predictable are these policy changes?" The possible answers were 1 – completely predictable, 2 – highly predictable, 3 – reasonably predictable, 4 – reasonably unpredictable, 5 – highly unpredictable, and 6 – completely unpredictable. The averages for 2004/2005 and 2000 were 3.91 and 3.97, respectively, indicating that overall the firms considered policy changes largely unpredictable (38.25% and 43.84% respectively in the 'predictable' range). Similar results obtain from the question regarding unexpected changes in rules, laws and regulations (Graphs 13 and 14). The averages in this case are 3.92 and 4.00, with 42.25% and 37.68% classifying the changes with moderate levels of predictability.

3.2. Firm Characteristics and Expectations about the Judicial Institutions

In this subsection we seek to determine whether firms with different characteristics have any systematic difference in terms of their expectations about the workings of the judicial system. Information of firm characteristics was collected through the survey yielding a rich set of variables whose descriptive statistics are shown in Table 2.

The interpretation of the results requires some discussion of what are our priors concerning the effect of different firm characteristics on their perception of the judicial system. Exporting firms, FDI recipients and large firms are typically involved in more complex transactions and interactions with government, and consequently are more prone to be parties to conflicts and litigation, which would tend to lead to more negative perceptions of the judicial system if it is in fact dysfunctional. On the other hand, precisely because these types of firms have a greater need to use the judicial system it may be that they have become better adept at using it (they may have specialized legal departments) and avoiding it. Thus their survey responses may express the notion that they have learnt to live with the shortcomings of the judiciary, at a cost. Corruption and informal fixes are other ways through which the firms may adjust to dysfunctional courts.¹² There are thus two competing expectations regarding the impact of being a larger and more complex firm. On the one hand they might have better means to adapt to the judiciary's inefficiencies and on the other hand they are more vulnerable to those inadequacies. A positive perception of the judiciary by these larger exporting and/or FDI receiving firms will be interpreted as evidence of the first effect while a

¹⁰ The intention of this question is to assess the respondents' perception of the predictability and reliability of the judiciary. It is implicit that the question refers to the firm's perception of the judiciary upholding the firm's rights in a dispute when that firm's rights were effectively violated.

¹¹ This question refers to the broader issue of rule of law instead of the narrower role of the judiciary.

¹² The survey did not include explicit questions on corruption.

negative perception will be evidence of the second, though we note that these are assumptions that would require additional evidence to confirm.

In Table 3 we regress the perception variables against a wide range of variables that describe different aspects of the firms and the markets in which they operate. The estimation shows the effects of firm characteristics on the variables described in Graphs 4 and 6 that measure the availability of information on rules and regulations and on the consistency and predictability of the interpretation of those rules.¹³ The exogenous variables are (i) firm age (years), (ii) value of production in 2004/2005 (in R\$/1,000,000), (iii) Number of full-time workers, (iv) dummy for textile, (v) dummy for state participation in firm, (vi) dummy for exporting firms, (vii) dummy for importing firms, (viii) dummy for firms that receive subsidies, (ix) dummy for firms that receive tax incentives, (x) dummy for firms owned by one individual, (xi) dummy for firms owned by two or three individual (excluded category is firms owned by more than three individuals), (xii) dummy for firms that are part of a holding company. Because of the ordinal nature of the dependent variable the estimation technique is ordered logit.¹⁴

In column 1 of Table 3 we present the results regarding the availability of rules and regulation, while those of consistency and predictability of their interpretation are in the second column.¹⁵ The results show that companies with larger value of production have a statistically significant more positive perception of (that is a negative coefficient) both the availability and interpretation of rules and regulations. As noted, we take this result as suggesting that larger firms are better equipped to deal with (or avoid) the shortcomings of the judiciary. Interestingly, the coefficient for firm size (number of full-time workers), on the other hand, is positive and significant, indicating that a larger labor force leads to a more negative perception of the two aspects of rules and regulation under consideration. This result suggests that, given the level of production, a larger work force means the likelihood of more litigation and a higher risk for the firm to be subject to the deficiencies of the judiciary. Given the labor-biased nature of the Brazilian judiciary in labor disputes (Pinheiro, 2000), firms find it much harder to overcome these problems as they seem to do in other areas, hence a worse perception.¹⁶

It is worth mentioning that other significant variables in column I are the dummies for one and for two-three owners. Both of these categories have a worse perception of availability of rules and regulation than those with more than three owners (maybe suggesting that family firms are less likely to have developed in-house legal departments or maybe that labor disputes are more intense, frequent or costly to this type of firms). In the second column, we report that firms that are im-

¹³ As noted above, the specific question for the first column of Table 4 refers to the broad sense of rule of law and not just the courts and judges, while the second column addresses the judiciary in a more narrow sense.

¹⁴ Some care must be taken when interpreting the estimated coefficients. Although generally a positive (negative) coefficient indicates that an increase in that characteristic increases (decreases) the firms perception (which in this case implies more negative view as the dependent variable varies from 1 (totally agree) to 6 (totally disagree), this is not always the case for all firms, especially those in the middle range of the dependent variable (see Greene, 2002, 378).

¹⁵ The size of the sample in each estimation varies throughout the paper because for some firms did not provide answers to all variables.

¹⁶ Ideally the specificity of the impact of uncertainties in Brazilian labor legislation could be tested by separating cases that involve labor disputes from those related to other issues. In principle this could be done as labor disputes in Brazil are reviewed in separate courts. Unfortunately our data does not allow for this disaggregation as all questions were asked concerning the judicial system in general.

porters and those that receive subsidies tend to have more positive expectations regarding the interpretation of rules and regulations, whereas those that receive fiscal incentives have a worse perception. It is interesting that being recipients of subsidies has an opposite effect from being a recipient of fiscal incentives, a result that is robust in all estimations in this subsection.¹⁷ Although these variables are positively correlated, the result is not due to multicollinearity as both results hold even when the other variable is excluded.

Table 3 – Perceptions of Rules and Regulations

Dependent variable	Model I [†]	Model II ^{††}
Textile	2.14 (1.29)	0.91 (0.68)
Firm age	0.02 (1.26)	0.003 (0.25)
State Participation		0.09 (0.14)
FDI	0.07 (0.09)	0.22 (0.26)
Product (R\$)	-0.002* (-1.71)	-0.01** (-2.17)
Export	0.02 (0.02)	0.30 (0.25)
Import	0.18 (0.21)	-1.29* (-1.63)
Subsidy	-1.12 (-0.65)	-3.35* (-1.73)
Fiscal incentive	-0.04 (-0.07)	2.42* (1.63)
N. full-time workers	0.0005*** (2.97)	0.0005** (2.23)
2004/05		
One owner	3.18** (2.25)	-0.08 (-0.07)
Two-Three owners	3.92*** (2.68)	1.07 (0.92)
Holding	-0.88 (-0.97)	-1.72 (-1.26)
Sell to public sector	0.24 (0.24)	1.02 (1.12)
Cut 1	2.727 [2.396]	-0.412 [1.869]
Cut 2	3.753 [2.474]	0.380 [1.878]
Cut 3	4.824 [2.520]	1.143 [1.890]
Cut 4	5.392 [2.527]	1.744 [1.867]
Cut 5	2.51 [6.395]	2.774 [1.896]
Pseudo R ²	0.21	0.11
Observations	59	64
Prob. > χ^2	0.0000	0.0049
[†] Model I – “In general, information about rules and regulations that affect my firm are readily available.” ^{††} Model II – “In general, interpretations about rules that affect my firm are consistent and predictable.” Choices in ordered logit models I and II: 1 – totally agree, 2 – usually agree, 3 – tend to agree, 4 – tend to disagree, 5 – usually disagree, 6 – totally disagree. T-ratios in parentheses for coefficients standard deviation in brackets for cut parameters. Statistical significance: 1% ***, 5% **, 10% *. Controlled for state effects.		

¹⁷ Subsidies are direct and pre-tax transfers, while fiscal incentives are indirect and after tax.

Table 4 shows the estimation of the effect of firm characteristics on their answers to the following question: “In your firm’s legal disputes, how frequently do you think the judicial system is: i- just and impartial, ii- honest/incorruptible, iii- expedite, iv-economically accessible, v- consistent, and vi- capable of making its decisions respected.”¹⁸ Notice that no estimation could be carried out for ‘expeditious’ as there was too little variation in the dependent variable, since the respondents overwhelmingly chose ‘never.’ The final column uses as dependent variable the index made up of the sum of the answers to the six separate questions. The latter is estimated by ordinary least squares (as it is closer to a continuous variable) while the other columns use ordered logit.

Table 4 – Perception of Judiciary

Dependent variable	In your firm’s legal disputes, how frequently do you think the judicial system is:					
	I Just and impartial	II Honest/ In-corruptible	III Economic-ally accessible	IV Consistent	V Capable of making its decisions respected	VI Perception of Justice Index. Sum of I-V
Textile	-0.47 (-0.41)	-0.06 (-0.06)	-1.94 (-1.43)	0.45 (0.30)	-2.01* (-1.62)	-3.22 (-1.03)
Firm age	0.006 (0.59)	0.0004 (0.03)	0.01 (0.53)	0.007 (0.44)	0.005 (0.51)	0.03 (1.25)
State Participation	-1.09 (-0.81)	-0.55 (-0.35)	2.57*** (3.08)	3.70** (2.35)	0.18 (0.12)	3.67 (1.06)
FDI	1.03* (1.63)	1.55* (1.90)	2.34** (2.29)	2.35** (2.07)	2.73*** (3.96)	7.83*** (4.82)
Product (R\$)	-0.005*** (-2.79)	-0.003*** (-2.76)	-0.005*** (-3.44)	-0.005*** (-3.58)	-0.006*** (-3.11)	-0.02*** (-5.06)
Export	2.28** (2.33)	0.51 (0.60)	2.52*** (2.78)	2.20** (2.02)	1.55 (1.33)	6.59*** (3.03)
Import	-1.14 (-1.31)	-0.04 (-0.05)	-1.85* (-1.72)	-0.43 (-0.59)	-1.05 (-0.95)	-3.46 (-1.49)
Subsidy	0.17 (0.15)	-0.67 (-0.58)	-0.06 (-0.03)	1.96 (1.35)	0.15 (0.15)	1.79 (0.62)
Fiscal incentive	0.77 (1.13)	0.02 (0.02)	0.64 (0.53)	0.66 (0.65)	1.03 (0.95)	2.02 (1.19)
N. full-time workers	0.0007*** (3.53)	0.0005*** (3.52)	0.0007*** (3.97)	0.0007*** (3.31)	0.0006*** (2.77)	0.002*** (6.23)
2004/05						
One owner	3.92*** (3.54)	2.53*** (2.72)	2.15 (1.59)	4.18*** (2.91)	1.45 (1.22)	11.02*** (4.50)

¹⁸ The choices available to the respondent were 1 – always, 2 – usually, 3 – frequently, 4 – sometimes, 5 – rarely, 6 – never.

Two-Three owners Holding	3.22*** (3.42)	2.35*** (2.60)	1.86 (1.72)	3.59** (2.43)	0.33 (0.28)	8.34*** (3.73)
Sell to public sector	0.95 (0.81)	1.43 (0.90)	1.34 (1.33)	-0.66 (-0.56)	0.06 (0.04)	2.85 (1.01)
Constant	0.47 (0.86)	0.46 (0.89)	0.25 (0.28)	0.95 (1.16)	0.39 (0.62)	1.04 (0.61)
						19.08*** (4.50)
Cut 1	-1.262 [1.535]	-1.181 [1.339]	-3.289 [2.000]	1.835 [2.550]	-2.868 [1.927]	
Cut 2	0.587 [1.421]	1.063 [1.337]	-2.449 [1.950]	2.761 [2.569]	-1.785 [1.940]	
Cut 3	1.594 [1.409]	1.876 [1.398]	-2.025 [1.939]	3.578 [2.596]	-1.468 [1.892]	
Cut 4	4.043 [1.425]	3.414 [1.416]	-0.057 [1.977]	5.331 [2.638]	0.026 [1.826]	
Cut 5	4.587 [1.458]	4.171 [1.455]	-0.708 [1.989]	6.350 [2.748]	1.108 [1.769]	
Pseudo R ²	0.15	0.10	0.16	0.14	0.13	0.42
Observations	59	59	59	59	59	59
Prob. > χ^2	0.0016	0.0000	0.0000	0.0054	0.0000	0.0000

Columns I-V Ordered Logit, column VI OLS. Z-stats in parentheses for coefficients, standard deviation in brackets for cut parameters. Robust standard errors. Statistical significance: 1% ***, 5% **, 10% *. Choices in ordered Logit models I - V: 1 – always, 2 – generally, 3 – frequently, 4 – sometimes, 5 – rarely, 6 – never. Controlled for state effects.

The main results are consistent with our previous findings and show that, for all six aspects of the workings of the judiciary, the coefficient on *Product* was negative and significant and the number of full-time workers positive and significant. That is, two margins of firm size have opposing effects on their expectations about the judicial system. Greater level of production significantly improves those expectations while greater number of workers worsens them. Also, as before, less disperse ownership leads to a poorer view of the judiciary. New results in this table are that being an FDI recipient (positive and significant in all six columns) and being an exporter (positive and significant in four columns) leads to an overall less positive expectation about the workings of judicial institutions. This suggests that these larger and more complex firms' ability to adapt to the dysfunctions of the judiciary is not sufficient to outweigh the problems these inefficiencies create.

Interestingly, firms that have any level of state ownership also had poorer views of the judiciary, but this was only statistically significant with respect to 'economic accessibility' and 'consistency.' Note that the R²s for these regressions are relatively low, which indicates that there are other firm characteristics which we did not control for that may contribute towards the variability of their perception of the judicial system. One of these would be the extent of past experience with the judiciary, and more specifically, with the perception of having been unfairly treated in court in the past.

3.3. The Effect of Expectations of the Judicial System on Firm Performance

We now turn to trying to measure whether firms' different expectations about the judicial system reflect on their behavior and/or performance. It is expected that if a firm believes that the judicial system will not be effective, this firm will have to resort to alternative and possibly inferior institutions, or will have to forego otherwise profitable opportunities (North, 1990). In order to try to test for this effect we regress two different measures of firm performance on a set of variables capturing expectations and a set of controls for firm characteristics. The two dependent variables are the growth in full-time employment from 2000 to 2004/2005, and the growth of the capital-labor ratio in that same period. It is expected that firms that are more distrustful of the judicial system will be more reluctant to hire permanent workers even when purely economic considerations recommend doing so. We control for the growth in production over the period of 2000 to 2004 which is a major determinant of the demand for workers, so the perception variables will capture their separate effect of the firm's views of the judiciary. Given the nature of labor legislation in Brazil and the aforementioned bias in labor dispute arbitration, we expect that firms' perceptions should have a strong impact over their employment decisions. In the same manner the decision regarding capital-labor ratios may be distorted from purely economic considerations if firms perceive severe problems with the judiciary, in particular related to employment. When this is the case, they may opt to use more capital relative to labor than would be optimal. Our expectation is thus that firms with more negative expectations about the judiciary will tend to have higher capital labor ratios, controlling for growth in production and other firm characteristics.

To capture the firms' expectations about judicial institutions we use three different explanatory variables. The first is the perception of the judicial system index shown in Graph 9 and created by the sum of the six responses by firms regarding their views of the judiciary. This variable ranges from 6 (excellent) to 36 (awful) and will be entered in quadratic form to allow for a non-linear effect. The second variable is called *Belief in the Judiciary* and is a dummy which equals 1 if the firm responded positively (at any level of intensity) to the question "I'm certain the judiciary will uphold my contract/property right in legal commercial disputes." The expectation is that firms that believe that the judiciary will uphold contracts will be more inclined to hire full-time workers and use lower capital/labor ratios, given past growth in production. The third perception variable is a dummy variable which equals 1 if the firm's response to the question on its perception of the predictability of policy changes has improved from 2000 to 2004/2005. Our expectation here is that if a firm believes that policy, rules and regulations are becoming more predictable, then it will be more willing to hire and reduce its capital-labor ratio.

The estimation results are in Table 5.¹⁹ In the first column (dependent variable fulltime worker growth 2000-2004) the perception-of-judiciary index and its quadratic term are significant and denote an inverted U relationship. The maximum of the estimated relationship occurs where the index is at 20, so that the vast minority of the sample is in the positively sloped portion. Overwhelmingly, the relationship is thus negative, indicating that firms with lower perception of the

¹⁹ Notice that a loss of degrees of freedom occurs with the dependent variable expressed in changes over time. This is because of no answers to some questions due to the fact that some of the firms did not started to operate until after 2000.

judicial system (higher values of the index) had a lower growth of fulltime employees over the period, all else equal including product growth.

The variable *Belief in the Judiciary* is a dummy equal to 1 for firms that responded to believe that the judiciary would uphold its contracts. Its estimated coefficient is, contrary to expectations, negative, however it is not statistically significant. The dummy that equals 1 for firms whose perception of the predictability of rules and regulations improved from 2000 to 2004 has a positive and significant estimated coefficient, indicating that those firms, in accordance with those positive perceptions, choose to increase the level of employment, *ceteris paribus*.

Of the variables that control for firm characteristics, two are found to have statistically significant effects. The first is firm age, with older firms less likely to increase employment during the period. The other is the dummy for firms that receive government subsidies. These firms had less employment growth than other firms during the period, a clear indication that subsidies do not always result in broader benefits to society as is often alleged. Overall these results provide evidence that, at least regarding the decision to employ fulltime workers, the shortcomings of the judicial system do in fact significantly constrain firm behavior.

The second column in Table 5 shows the results of the estimation of the growth in capital/labor ratios from 2000 to 2004/2005. The same explanatory variables are used that were used to estimate fulltime employment growth, with an additional interaction term for the perception index with firm age. Our expectation in this case is that when firms do not expect that the judiciary is able to carry out its functions, or worse, see it as a source of instability in itself, than they will be more reluctant to hire labor and will thus have higher capital/labor ratios. As noted by Pinheiro (2001): “Brazilian companies are organized in order to avoid any contact with the judiciary, even if it entails losing business, producing inefficiently, using machines instead of workers.” Those firms with better expectations of the judiciary should thus have falling capital labor ratios in the 2000 - 2004 period.

Table 5 – Effect of Perceptions of Judiciary on Firm Performance

Dependent variable	Full-time employee growth 2000-2004	Capital-Labor ratio growth 2000-2004
Perception of Judiciary	0.26*** (3.01)	-0.26* (-1.91)
(Perception Judiciary) ²	-0.006*** (-3.13)	0.008** (2.05)
Belief in Judiciary	-0.34 (-1.43)	0.78 (1.53)
Improved Predictability 2000 to 2004	0.89* (1.89)	-1.20* (1.70)
Interaction: Perception of Judiciary x Firm Age		-0.002* (-1.75)
Product Growth	0.15** (2.42)	-0.02 (-0.09)
Textile	-0.07 (-0.15)	0.07 (0.13)
FDI	-0.25 (-0.81)	-0.04 (-0.01)
Import	0.52 (1.12)	0.23 (0.66)
Export	-0.06 (-0.20)	-0.08 (-0.22)
Firm age	-0.008* (-1.70)	0.06* (1.82)
Subsidy	-1.07** (-2.38)	2.37 (1.56)
48		

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Fiscal Incentive	0.15 (0.45)	-0.49 (-1.43)
Constant	2.71* (-1.95)	1.80 (1.31)
R ²	0.69	0.50
Observations	43	38

OLS estimation. Full-time employment growth in logs. T-stats in parentheses. Robust standard errors. Statistical significance: 1% ***, 5% **, 10% *. Controlled for state effects.

The variable *Perception of the Judiciary* with its quadratic term in this case reveals a statistically significant U-shape relationship. On this curve the overwhelming majority of the sample are located on the upward sloping portion (except for seven firms and even most of these are near the minimum point). This implies that as the firms' perception of the judicial system deteriorates (that is, as the index increases) the firms' capital/labor ratio increases. This suggests that in fact firms that are more distrustful of the judiciary do substitute capital for labor. We added an interaction term where this overall perception index is multiplied by the firm's age. Its coefficient is negative and significant, with a value of -0.002. The direct coefficient for firm age, on the other hand, is positive and significant at 10%, with an estimated coefficient of 0.06. This is interpreted as suggesting that older firms had higher capital/labor ratio growth during the investigated period although this effect is not necessarily due to the judicial system. However, the interaction term says that for every additional year of a firm's existence, the effect of the perception index on the growth of the capital/labor ratio decreases. That is, newer firms are more susceptible to have their performance negatively impacted by the dysfunctions of the judicial system. Possibly older firms have learnt ways to adapt to those shortcomings or have already internalized the costs of doing so.

The dummy for firms that have higher belief that the judiciary will uphold their property rights is again of the wrong sign but again not statistically significant. The dummy for firms that have improved their perception of the predictability of rules and regulations from 2000 to 2004 is negative and significant, as expected, indicating that those improved expectations have lead them to reduce their capital labor ratios. None of the firm characteristic variables were statistically significant, except for firm age which was discussed above.

In sum, our econometric analysis provide some evidence towards our prior that the judicial system's shortcomings do negatively impact firm performance in Brazil, and that this impact seems particularly more severe through inefficient labor legislation litigation and, even more so, for the case of newly established firms.

4. Conclusions

This paper contributes to a growing literature that analyzes the impact of judicial institutions on firms' economic performance. Although it may be intuitive and straightforward that judicial institutions affect firms' behavior and choices, the details of that impact are often subtle and vary across sectors, industries and countries, as other institutions and sector/industry-characteristics affect the ways in which firms react to the incentives and constraints posed by the judicial institutions they face. These can affect, for example, the choice of firm size, the extent to which firms reinvest profits, the decision by outside investors to become minority owners, the availability of bank loans and the availability of safeguards against opportunistic behavior by government.

In this paper we used data from a survey on approximately 100 Brazilian firms in the textile and consumer electronic sectors carried out between December 2004 and July 2005. It was found that whereas firms had an only moderately negative perception about the judicial systems' impartiality, honesty, consistency and ability to make its decisions respected, the perception of the systems' accessibility was very negative and that of its expeditiousness had practically all respondents choosing the most negative qualifier. These results confirm previous research (Pinheiro 2000, 2001) that point to the sluggish nature of the Brazilian judiciary as one of the priorities in terms of reform. Although firms, labor and government often come to use this characteristic of the system to their own advantage, the results indicate that firms nevertheless perceive it as a barrier to doing business.

In terms of the variation of firms' expectations about judicial institutions we found that larger firms (in value of production) tend to have better expectations, but those with, *ceteris paribus*, more workers, had a more negative perception. This suggests that larger firms are better able to adapt to the judicial systems' shortcomings, and that the inherent bias towards workers' rights, though predictable, is seen as a significant hindrance by the firms. In addition we found that, as expected, exporters and firms that received direct foreign investment tended to have more negative perceptions of judicial institutions.

In the final section we turned to measuring the impact of firms' expectations of the judicial institutions on their performance. We found that firms' expectations of, and belief in, the judiciary decreased, all else constant, the growth of employment from 2000 to 2004/2005 and increased capital labor ratios, though we found no effect on worker productivity. These results suggest that firms learn to circumvent the constraints posed by a deficient judiciary by altering key economic variables away from optimal levels that would prevail without such constraints. Although such adaptations allow them to survive and continue to thrive in the face of ill-functioning judicial institutions, this does not lessen the need for reforms of these institutions. Beyond showing the need for such reform, our paper also suggests that the design of such reforms is not straightforward, as judicial institutions are intertwined in complex ways within the broader institutional matrix of the country. This highlights the need for further research on the impact of judicial institutions on firm performance to increase our understanding of these issues.

5. References

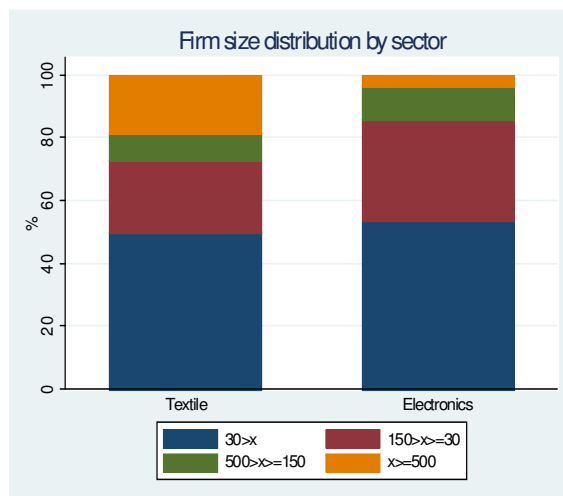
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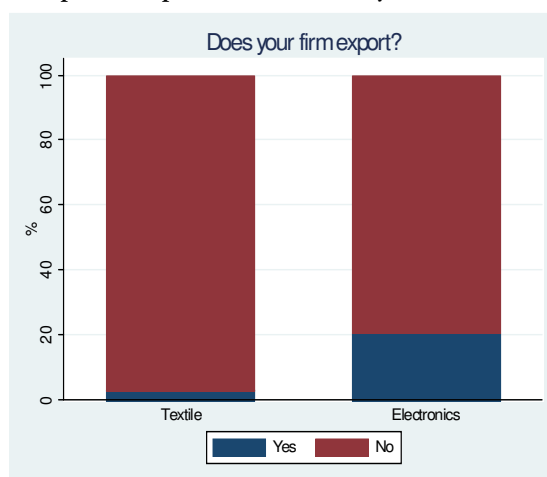
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6. Annex:

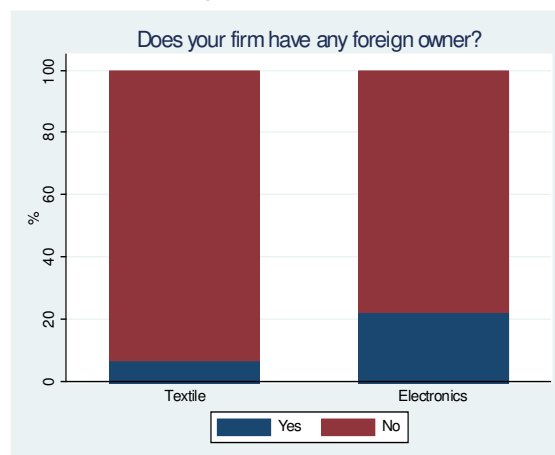
Graph 1 – Firm Size Distribution by Sector (2005)



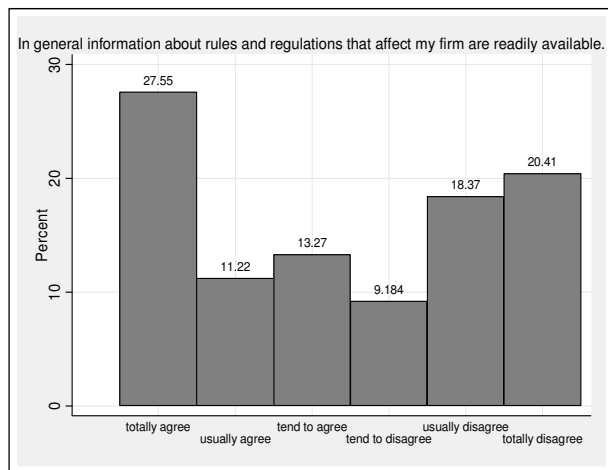
Graph 2 – Export Profile of Survey Firms (2005)



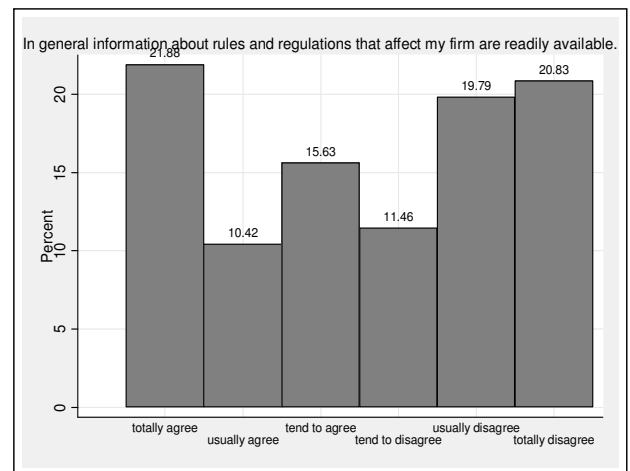
Graph 3 – Foreign Ownership of Firms (2005)



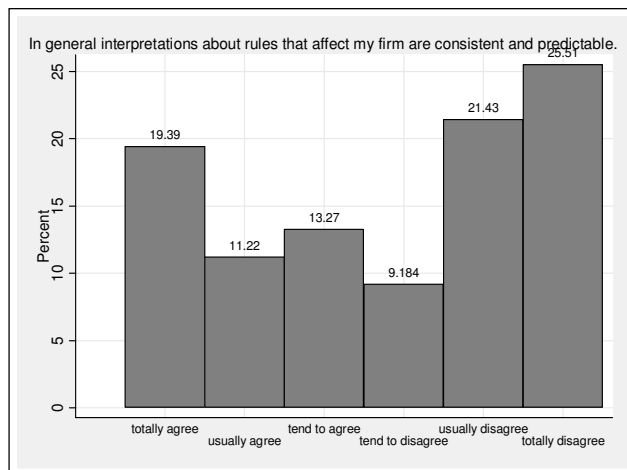
Graph 4 – Information on Rules and Regulations (2004/2005)



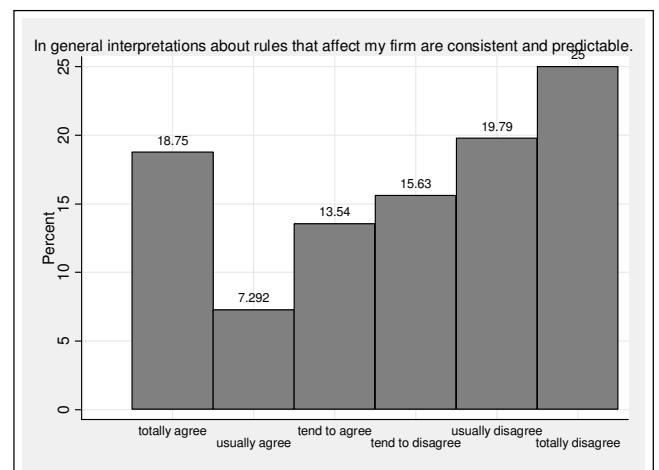
Graph 5 – Information on Rules and Regulations(2000)



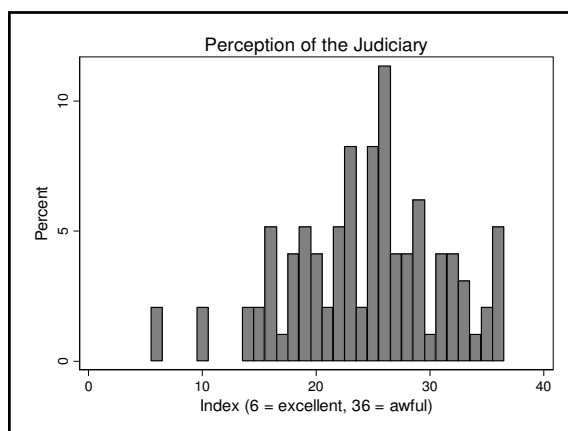
Graph 6 – Interpretations about Rules and Regulations (2004/2005)



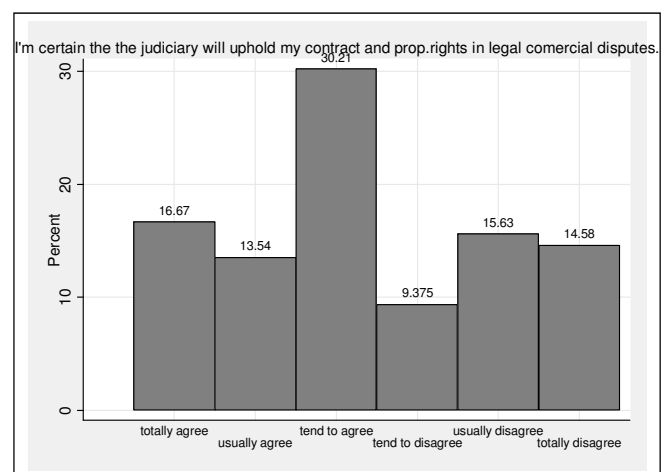
Graph 7 – Interpretations about Rules and Regulations (2000)



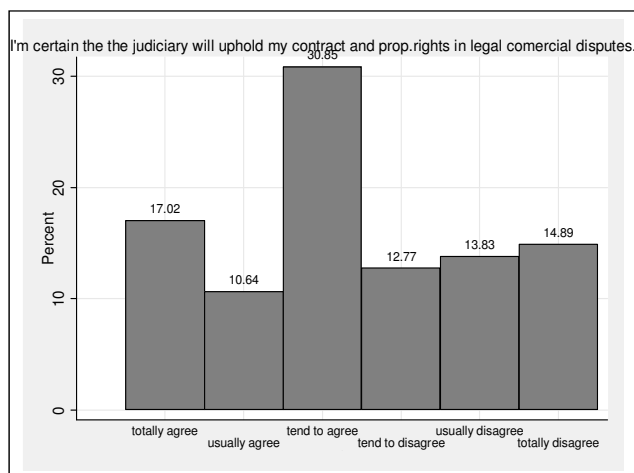
Graph 8 – Index of Perception of the Judiciary (2004/2005)



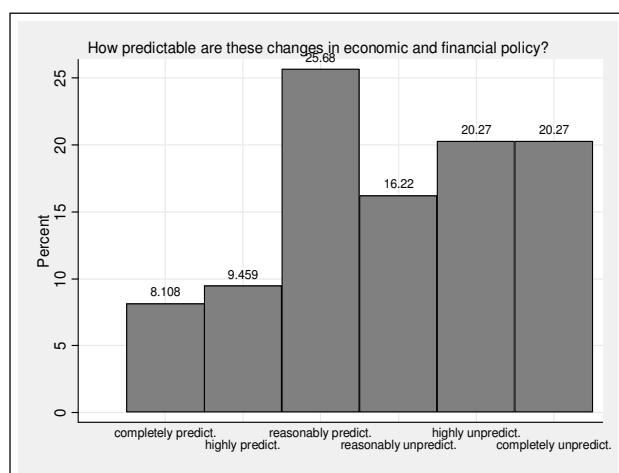
Graph 9 – Perception of the Judiciary's Propensity to Uphold Contracts in Commercial Disputes (2004/2005)



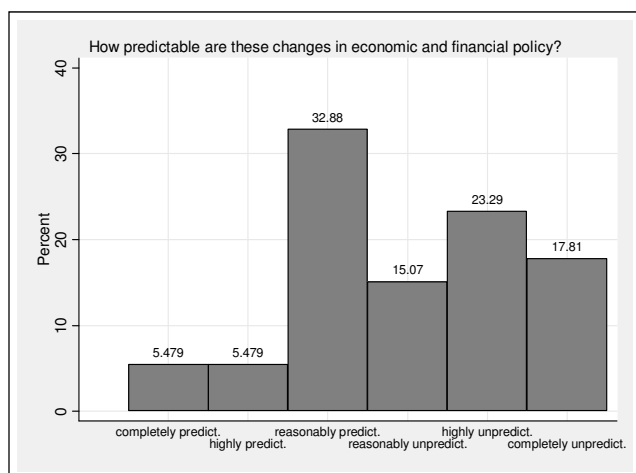
Graph 10 – Perception of the Judiciary’s Propensity to Uphold Contracts in Commercial Disputes (2000)



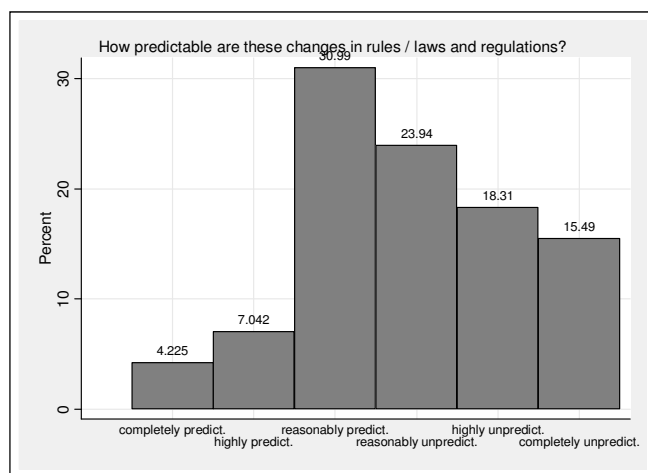
Graph 11 – Predictability of Economic and Financial Policy (2004/2005)



Graph 12 – Predictability of Economic and Financial Policy (2004/2005)



Graph 13 – Predictability of Rules and Regulation (2004/2005)



Graph 14 – Predictability of Rules and Regulation (2004/2005)

