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**“The Politicization of Public Sector Labor Relations:  
Argentine Teachers Strikes in a Decentralized  
Education System”**

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## ABSTRACT

This paper explores labor conflicts in the Argentine education sector and provides a model that explains the politicization of public sector labor relations in a context of high discretion in the application of rules. First, we argue that in those contexts, institutions do not generate stable expectations for actors' interactions, in particular when the government is both the employer and the adjudicator in labor relations. Therefore, actors look for alternative mechanisms to inform their expectations about mutual interactions. These mechanisms vary depending on the context, and in Argentina, these are mainly based on long-term political alignments. Second, public sector employees are not exposed to international competition and typically enjoy job stability. Thus, economic hardship is more likely to define their incentives to strike, with unemployment having a positive effect on strikes by reducing exit options into the labor market. Finally, when public service providers (like teachers) go on strike, the costs of lost classes are internalized by the consumers of their services (i.e. families) rather than by their employers. Hence, teachers' unions pay attention to public perceptions about the legitimacy of their demands because the consumers who suffer the cost of strikes can exercise pressure on their employers (e.g. potential electoral cost).

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*For my friends, whatever they want; for my enemies, the law. (Getulio Vargas, President of Brazil)*<sup>1</sup>

This paper explores labor conflicts in the Argentine education sector and provides a model that explains the politicization of public sector labor relations in a context of high discretion in the application of rules. President Vargas' quote illustrates what is commonplace in many Latin American countries: discretion in the application of the law that makes institutions quite unpredictable. In Argentina, labor relations feature a combination of high levels of state intervention and high executive discretion in the application of labor regulations. In the public sector, the executive is not only involved in labor relations as an employer but also has incentives to use its discretion to apply the law to further its own political fortunes. Political alignments serve as informational mechanisms to form labor expectations regarding government employment decisions and government application of the law. Hence, where formal institutionalization of public sector labor relations is weak, political alignments should exercise a strong influence in defining the opportunity cost of strikes—more so than business cycles, the letter of the law, or organizational variables defining labor strength. In this article, we propose a model that explains labor militancy in a public sector context where there is discretion in the application of labor regulations and we test it using strike activity in the Argentine public education sector.

This article emphasizes both the industrial characteristics of public sector employment (in particular public service provision) and discretion in the application of labor regulations. First, we argue that, with high discretion in the application of labor regulations, institutions do not generate stable expectations for actors' interactions, in particular when the government is both the employer and the adjudicator in labor relations. Therefore, actors look for alternative mechanisms to inform their expectations about mutual interactions. These mechanisms vary depending on the context, and in Argentina, these are mainly based on long-term political alignments. Second, public sector employees are not exposed to international competition and typically enjoy job stability. Thus, they are not likely to factor business cycles into the opportunity cost of staging strikes. Instead, economic hardship is more likely to define their incentives to strike, with unemployment having a positive effect on strikes by reducing exit options into the labor market. Finally, when public service providers (like teachers) go on strike, the costs of lost classes are internalized by the consumers of their services (families) rather than by their employer (the government). Therefore, unions pay attention to public perceptions about the legitimacy of their demands because the consumers who suffer the cost of strikes can exercise pressure on their employers (e.g. potential electoral cost). We build our model based on the incentives of public service workers acting in contexts of high discretion in the application of labor regulations. We expect that its implications regarding the incentives created by public sector conditions and discretion in the application of the law will be applicable to other cases.

Argentina provides a perfect comparative setting to test these effects because education is decentralized among twenty-four provinces and teacher militancy is endemic. The Argentine public sector accounts for only 20% of national employment, but more than half of the strikers in 2000 were in this sector (Consejo Tecnico de Inversiones, 2001). However, we observe considerable variation in strike activity during that year across provinces. Whereas the national average was only 5.4 days of class lost, the standard deviation across the country's 24 provinces was 10.3. For instance, schools in the Northwestern provinces of Tucumán and Jujuy lost at least 35 class days during 2000 due to strikes, but the Northwestern provinces of Salta and La Rioja, which are economically similar to the former, lost none. Moreover, since the return of democracy at the end of 1983, there was a considerable variation across time within each province. Understanding this aspect of labor relations in the education sector is important because the number of days lost to strikes affects student learning and, consequently, has policy implications for the performance of the system as a whole.<sup>2</sup>

In Argentina, provincial governors have a strong influence in the application of laws. Political parties have established long-term social links in addition to those that exist with labor unions.<sup>3</sup> Thus, political alignments between governors and provincial teachers' unions have served to define expectations and exercise a powerful influence on strike activity. Additionally, due to job stability, economic hardship (i.e. income decline) rather than unemployment influences teachers' militancy because unemployment also limits their alternative job opportunities. Finally, because teachers provide a public service,

their militancy is associated with public perceptions of the system, which serve to legitimate grievances within the population at large.

Contributing to the public policy debate surrounding education, this article provides an explanation for a phenomenon that had been widely blamed for the declining quality of Argentine public schools. We also provide empirical support for our model of public sector labor relations with high discretion in the application of regulations, as well as for our claim that the incentive structure for teachers' strikes should include the characteristics of public sector employment and public service provision. This framework contributes to the study of public sector labor relations, with a particular emphasis on contexts where formal labor institutions have been weakened by government discretion in the application of the law. Although contexts with weak formal institutionalization of labor relations are prevalent in Latin America and other regions of the developing world, they have remained underexplored in the labor relations literature.<sup>4</sup> This article is an attempt at building a thicker body of literature in this area.

The article is organized into five sections. The first section reviews the literature on strikes, describes common explanations for the variation in the dependent variable, and presents our theory of public sector labor relations in contexts of low institutionalization. The second section presents the Argentine case and the cross-provincial and cross-time variation in teachers' strikes. In the third section we test our theoretical expectations with a comparison of all Argentine provinces between 1996 and 2000. The last section provides our conclusions and implications of this study for future research.

## **I-Public Teachers' Strikes and Labor Theories**

Most of the theories on strike activity have been derived from the experience of private sector workers. However, public and private sector workers have different degrees of exposure to competition and a different type of employer. In this section we discuss the insights of the literature on public and private sector labor relations to build our own theory while discussing their implications for the case of Argentine teachers.

### **a) Labor Relations and Teachers' Strikes**

The private and public sector create different incentive structures for employers and employees. The public sector is different from the private sector because it is less exposed to competition and job loss. For instance, Garrett and Way (1999) and Shalev (1998) found that public sector workers are more likely to strike than private sector workers in OECD countries with high levels of economic integration. Garret and Way explain this behavior by pointing to public sector employees' lower exposure to international competition, which reduces their costs of striking. Public sector workers are not constrained by bankruptcy and import competition, thus decreasing their incentives for restraint.<sup>5</sup> These theories predict a higher likelihood of strikes by public sector teachers, but do not explain the variation in their propensity to strike across provinces and across time.

The traditional business cycle theories address cross-sectional and cross-time variation in strike patterns. They relate militancy with the cost of striking and the potential benefits

of striking. Thus, they predict more strikes during boom times and the opposite during periods of low economic performance (Aschenfelter and Johnson 1969). In the case of private sector workers, economic booms increase employer demand for them since the cost to employers of losing a production day and employer wage budgets both increase. If we extend this logic to the teachers' case, we should expect that the provincial level of unemployment should be negatively related to the number of lost days in strikes. However, as public sector workers, teachers enjoy job stability and are not vulnerable to economic downturns.

The incentive structure for teachers' strikes is different because the demand for them is inelastic to business cycles.<sup>6</sup> Instead, this demand is probably related to the school year. At the beginning of the school year, teachers' strikes can affect more school days and threaten the loss of the entire school year. Conversely, as the school year ends, teachers' capacity to impose costs is limited because they have already performed most of their yearly duties before the summer recess. If teacher demands are related to the school year, they should have an effect on the frequency of teachers' strikes in Argentina. That is, more days should be lost at the beginning of the academic year, which starts in March and ends in December. The cumulative data for the period 1996-2000 confirm this expectation because 257 days were lost during the first quarter (March-June), whereas 178 were lost during the following five months (July-November). The following graph illustrates this pattern.

[INSERT GRAPH ONE HERE]

The pattern of strike frequency illustrated by the previous graph shows that teachers' demands and incentive structure for striking are not necessarily related to business cycles. However, this temporal pattern of strikes does not account for the provincial and yearly variation in teacher militancy in Argentina.

Drawing from the implications of the public sector literature, teachers' strikes should be less related to the opportunity costs generated by business cycles and more related to grievances created by economic hardship. That is, there should be more strikes when teachers have more grievances (Tilly, 1981; Posusney, 1993). The public sector is more insulated than the private sector from economic conditions, but there is also a perception of work conditions as entitlements, in particular because many of these conditions are defined by law. Thus, strike activity should be related to wage or income deterioration and there should be more strikes during busts than booms because weak labor markets will result in worse working conditions.

In the case of public service providers, the opportunity cost of striking is further complicated by the principal-agent tensions between striking and hurting consumers of public services on the one hand, and pressing one's employer for work condition improvements on the other. In the case of teachers, the government will only internalize the costs of strikes if it expects that the alienation of families will have negative electoral consequences for it. Therefore, we should expect teachers to pay attention to the public legitimacy of their grievances and to winning the support of families.

Although both economic hardship and public support for their grievances should explain the decision of teachers' unions to go on strike, these factors do not explain why employers (i.e. governments) choose not to give in to teachers to prevent strikes. Micro-level explanations for labor militancy emphasize the strategic interaction between unions and their employers, stressing that strikes are the result of imperfect information because if both parties knew the bargaining strength of their opponents, they would not need to reveal their own strength. According to these explanations, the irony of labor strikes was that strong unions do not need to strike whereas weak unions' strikes are ineffective (Kennan, 1986). Consequently, strikes can only result from imperfect information and serve as a mechanism to acquire information about the strength of bargaining partners (Hayes, 1984). If labor bargaining strength is not known by employers, strikes can serve as informational devices. In this case, employers refuse to give in order to probe the strength of the union (Tsebelis & Lange, 1995). The ratio of unionized teachers to the total number of teachers (union density) can be used as a proxy for union strength. Membership is public information and known to the government, thus making it unnecessary to probe labor strength. However, because the unions do not know the government's budget constraints, they are more likely to use strikes as informational devices in order to better calculate the probability of bargaining success.

A variety of theories analyze variables that affect the interaction and the opportunities for collective action in the labor context. These variables include the level of collective bargaining (Calmfors & Driffil, 1988), the degree of union monopoly (Golden, 1993), and the degree of centralization of labor organization (Cameron, 1984). These theories

argue that peak-level, centralized bargaining and union monopoly reduce the propensity to strike. Peak-level bargaining and centralized labor organization increase the scope of labor interests so that they coincide with the public interest (i.e. economic growth). Union monopoly strengthens the control of union leaders with long-term goals over striking workers with short-term goals, thereby allowing the former to reach stable agreements with employers and prevent strikes. Thus, legal recognition of monopolies over collective bargaining should facilitate negotiations and reduce the incentives for striking. Conversely, union fragmentation makes the coordination of bargaining more difficult, shortens time horizons, and increases incentives to strike.<sup>7</sup>

Institutions affect the incentive structure of potential strikers and the terms of strategic interaction between employers and employees. In a review article dedicated to American public sector labor relations, Freeman (1986) argues that strike legislation explains variation in teachers' strike activity across states in the U.S. Indeed, because the public sector is inelastic to business cycles, the impact of institutions on public sector strikers' incentive structure should be stronger than on that of private sector strikers. Some analysts of Latin American labor coincide in emphasizing the importance of public regulation on the capacity of labor unions to strike and, thus, on the cost and probability of striking across different countries (Collier & Collier, 1979). However, the formal institutionalization assumed by both legal and organizational theories is typically weak in Latin America and other parts of the developing world.<sup>8</sup> For instance, in many Latin American countries, strike legislation is applied in different ways regardless of the

specificity of legal definitions.<sup>9</sup> In this context, actors cannot use institutions to form their expectations in the bargaining.

Political exchange theories assume that political alliances between unions and labor or between unions and left-wing political parties lead unions to trade short-term labor restraint in return for long-term benefits, including growth and decreased unemployment. The exchange is possible because labor unions trust that labor or left-wing parties have similar preferences for low unemployment and growth and will deliver their part of the bargain in the future (Pizzorno, 1978; Korpi, 1978). Alvarez, Garrett and Lange (1991) combine organizational and political exchange variables. They argue that in countries with densely and centrally organized labor movements, leftist governments can promote economic growth by restraining wage militancy.<sup>10</sup> Not only do labor unions share long-term preferences with labor parties, but they also have the organizational means to impose these preferences on all of their members. Labor unions also know that other labor unions will not free ride on their sacrifices due to the inclusiveness of collective bargaining. Political alignments, therefore, generate trust in agreements for long-term distribution of benefits and reduce labor militancy within organizations that have the capacity to control it. It is precisely in this sense that these alignments resolve the informational incentives for striking.

In a context of weak formal institutionalization, political alignments and other informal networks provide information about bargaining partners. In a context of strong partisan networks, political alignments can provide both informal channels of communication

while generating trust based on previous interactions between the parties. Partisan alignments also generate credibility by increasing the stakes of both parties in a broader scope of interactions because both parties know that they will have to deal with each other in the future and in other domains (Murillo, 2001). Thus, political alignment makes the preferences of both parties more similar and generates trust and credibility between them. Accordingly, in a context of high discretion in the application of public sector labor regulations, political alignments generate expectations about the application of rules and the commitment to bargains, thereby influencing the decision to organize and encourage collective action. In all these contexts, the impact of political alignments should be stronger than that of formal institutions, economic conditions, or even organizational variables affecting labor collective action.

#### b) Public Sector Labor Relations with Weak Formal Institutionalization

In short, we expect that weakly institutionalized public sector labor relations will strengthen the influence of political alignments on the interactions between teachers' unions and governments, thereby affecting strike activity patterns. Moreover, as public sector workers, teachers are more likely to respond to economic hardship than to business cycles when deciding whether to strike and, as public service providers, they are likely to account for public discontent when defining their incentives for collective action.

Before applying this framework, it is critical that we address the context of weak institutionalization of public sector relations. We recognize that public sector labor relations in Argentina, as in other developing countries, involve a high degree of

government discretion with regard to union registration, strike activity, and collective bargaining. Moreover, since the government is also the employer of public educators, it has more of an incentive to use this discretion in a partisan fashion.<sup>11</sup> Because political parties have strong social links with the Argentine citizenry, teachers' unions use political alignments to inform their expectations about the actions of provincial governments, who are both their employer and the adjudicator of regulations. Political alignments inform teacher union expectations regarding the governmental use of discretion in the application of the law and the government's credibility in the distribution of educational resources. Therefore, political alignments inform the expectations of teachers' unions in defining the terms of the union-government interaction and in assessing the likelihood of teachers resorting to strikes. Because political alignments are determined by both provincial and federal elections, there can be changes in the propensity to strike that explain the variation in militancy.

Besides political alignments, other public sector features also factor in the opportunity structure of teachers' strikes. Public sector teachers have job stability. Unemployment therefore has a positive effect on their militancy because it reduces their alternatives in the labor market.<sup>12</sup> Conversely, because business cycles do not generate opportunities to strike, economic hardship explains the propensity of teachers for militancy. Hence, wage improvements should reduce their likelihood to strike. Moreover, the material costs of strikes are partially determined by attendance bonuses, since missing class implies losing this monthly allocation.<sup>13</sup> Finally, if fiscal management can be blamed for teachers' economic hardship, there is more legitimacy for teachers' grievances. This legitimacy,

which generates public discontent with provincial governors, is important for teachers because their employers (the governors) only view the cost of strikes indirectly, rather than from the vantage point of families who have the power to inflict electoral consequences upon government leaders.<sup>14</sup>

In sum, we argue that political alignments will reduce the likelihood of strikes by providing alternative mechanisms for conflict resolution and creating trust and credibility in the government as an employer and as the discretionary adjudicator of labor regulations. Economic hardship and higher unemployment increase the incentives for teacher militancy. Moreover, public discontent with the provincial administration provides legitimacy to teacher demands, making their strikes more effective and, thus, more likely.

## **II- Labor Relations in the Argentine Public Education Sector**

In Argentina, the administration of primary and secondary education is decentralized at the provincial level. The national government transferred primary education administration to the provinces in 1978 and secondary education administration in 1993. A new Federal Education Law (No. 24,049 passed in 1992) gave the provinces a leading role in financial and administrative matters, including labor relations and teachers' career ladders. The national government sets the national curriculum, evaluates the system, implements compensatory programs and, in conjunction with the provinces, promotes teacher education programs.

In this decentralized system, schools depend on the provincial government, which determines public education budgets, teacher salaries, and working conditions and regulations. Most teacher unions are organized at the provincial level, although a majority of them are members of a national confederation called CTERA (Confederation of Education Workers of the Argentine Republic). Moreover, the outcome of provincial level labor relations applies to all teachers and schools in the province regardless of union affiliation, union participation, or whether or not they were represented in the negotiation process.<sup>15</sup> These features make cross-provincial comparison the most appropriate level of analysis for understanding labor relations in the public education system.

#### a) Teachers strikes in Argentina as a Dependent Variable

Teachers' strikes in Argentina present a high level of variation both across provinces and across time within the same province. The average number of days per year lost to strikes in all 24 provinces between 1984 and 2000 was 150, but the standard deviation across all 17 years was 98. The variation ranged from 385 days lost in 1989 to 46 days lost in 1992. Each province lost on average 106 days of class between 1984 and 2000, but the significant variation across provinces is illustrated by a standard deviation of 86. The difference between La Pampa, which lost a single day of class during the period, and Tucumán, which lost 343 days shows the range of provincial variation. We aim at explaining this variation in strike activity across time and across province, which is depicted in the following graph that presents the national average for all twenty-four provinces and for the provinces of Tucumán and Buenos Aires.

[INSERT GRAPH TWO HERE]

Our dependent variable, the number of class days lost to strikes, shows no clear pattern of variation across provinces or time. Therefore, in the next section, we provide an explanation for the wide variation in teacher strike activity both across provinces and across time.

#### b) The Weak Institutionalization of Public Sector Labor Relations in Argentina

In Argentina, rules regulating labor relations are highly interventionist. The federal government—with strong influence over provincial governments—decides matters relating to the registration of unions. Provincial governors have the power to decide on the legality of strikes, to fix the amount of pay strikers lose, and to call for compulsory arbitration to halt conflicts. Most of the Argentine provinces do not have collective bargaining laws for the teaching sector.<sup>16</sup> This interventionist bent in the labor laws has been complicated by wide discretion in their executive application. A forty-year old court ruling states that workers lose their pay for days spent on strike, but there is considerable variation in the interpretation of this rule. For instance, the former governor Buenos Aires province, Carlos Ruckauf, threatened to invoke this ruling while trying to dissuade strikes in 2001; current governor Felipe Solá, however, used the same judicial decision to dock teacher pay for days missed during the first strike of 2002.

Due to their uneven application, rules defining labor relations do not help teachers and their unions predict labor dispute outcomes. As a result, commitments are unstable and actors seek alternative means to reduce the uncertainty involved in strategic interaction.

In this context, the alternatives are political alignments and public discontent with the fiscal management of the provincial governor.

The first alternative is partially a consequence of teachers being employees of provincial education ministries that are headed by political appointees of provincial governors. The governor also has considerable influence within the provincial ministry of labor with respect to all the labor relations matters referred to above. As a result, approval of union registration becomes politicized and is determined more by the relationship between a union and the governor than by the fulfillment of certain requirements. For instance, in 2000, the governor of Tierra del Fuego had plans to create a teacher union more in tune with his politics and grant it a legal monopoly over bargaining in order to avoid negotiations with the existing union, SUTEF, which had a majority of teachers within its ranks, but also supported the governor's political opponents.

In a context of high discretion in the application of rules, the political alignment between union leaders and governors inform labor expectations about government discretion. Alignments also provide informal channels of communication and can result in long lasting relationships based on previous and potentially fruitful interactions. By identifying common interests with political parties, unions can gauge the credibility of political parties' promises because their interaction with these parties is ongoing. Thus, political alignments serve as informational mechanisms to generate expectations about the interactions between labor and government.

### c) Fiscal Mismanagement, Economic Hardship, and Public Discontent in Argentina

The success of fiscal administration varies widely across Argentine provinces. Tommasi and Saiegh (1998) provide a careful analysis of the fiscal problems created by the institutional instability and political battles over pooled resources inherent in Argentine federalism. For instance, ten provinces finance less than 15% of their spending with their own resources (p.14). Between 1997 and 2000, most provinces ran provincial fiscal deficits, which averaged 5.9% of their expenditures. However, some provinces had more stable patterns than others. During these same four years, the average provincial deficit ranged from 14% of expenditures in Buenos Aires, Chaco, Formosa and Misiones. In contrast, other provinces ran surpluses, which ranged from 18% of expenditures in San Luis and 7% in Santiago del Estero to 3.6% in the City of Buenos Aires.<sup>17</sup>

Variations in provincial deficits provide some indication of the wide discretion in the management of resources. More importantly, these variations give rise to perceptions about the quality of fiscal management. Political alignments can increase the credibility of the government's portrayal of budget constraints. Other sources can also serve to inform both teachers' unions and public opinion. In particular, months-long delays in payment of teacher and other public worker salaries demonstrate a mismanagement of provincial funds that is likely to spur general public sector strikes. During general strikes, teachers are more likely to go on strike because their demands are more likely to be perceived as legitimate by the citizenry. When teacher salaries are low, teacher strikes are not necessarily perceived as just. But when all public servants are suffering from long delays in the payment of their salaries, the perception of public mismanagement of funds

is higher and it is precisely this perception that helps legitimate teachers' grievances. This legitimating, in turn, leads teachers to reach the limits of their tolerance for economic hardship. For these reasons we expect that general public sector discontent will increase the likelihood of teachers' strikes.

### III-Empirical Test at the Provincial Level

Most empirical studies on work stoppages have analyzed strike incidence—fewer have studied strike duration (Card, 1990). However, our argument intends to explain total conflict (i.e. number of days lost). Therefore, our dependent variable ( $S_{it}$ ) is the number of class days lost per year in each province due to teachers' strikes. This information was derived from the yearly reports of the Consejo Técnico de Inversiones.<sup>18</sup> Class days lost vary substantially across provinces. This variation is partially explained by differences in the *number* of strikes across provinces, but it is also determined by the *duration* of strikes. Although the average duration of strikes is 3.5 days, in those provinces where the probability of a strike is higher, the expected duration is longer. For 1996-2000, the correlation coefficient between the number of strikes and the average duration of strikes within each province is 0.42.<sup>19</sup> For example, in Mendoza and La Pampa there was only one strike and one class day lost; while in Neuquén and Jujuy, the number of strikes was 16 and 18, and the average duration 4.6 days and 4 days, respectively. The duration, rather than the frequency of strikes, provides information about the intensity and effect of militancy, as well as about the impact on learning, which is important for policy purposes.<sup>20</sup>

Our main independent variable is political alignment (PA). To measure it, we have coded all 24 provinces in terms of the political identities of both the governor and the principal teacher's union<sup>21</sup>. Values were primarily assigned based on the party affiliation of the governor and the union, on press information about and interviews with union leaders, and on interviews with provincial public authorities.<sup>22</sup> Teachers' unions, even those organized under the national confederation CTERA, have a high degree of pluralism in their provincial leadership, which allowed for variation in "political alignment."<sup>23</sup>

Our complementary independent variables include income and public discontent. Data on teacher wages was provided by the Ministry of Education. In our model, we use the percentage change in real teacher earnings per year ( $\Delta W$ ) to estimate the impact that wage changes have on strikes. Because attendance bonuses increase the cost of strikes, we include it as a control variable. Information on attendance bonuses as a percentage of wages (AB), was obtained from the Ministry of Education. Only 13 out of 24 provinces provide attendance bonuses to teachers with perfect attendance. On average, attendance bonuses represent 6% of salary, but in some provinces, such as Santa Cruz, attendance bonuses represent almost one third of teachers' base salary. As a proxy for public discontent (PD) we use the number of strike days of other public sector workers, a figure obtained from the Consejo Técnico de Inversiones.<sup>24</sup>

Finally, we also test for alternative explanations based on formal institutions and on business cycles. Available data on union membership, necessary to measure union

strength, is relatively poor in Argentina, at least in comparison to that available in developed countries. However, the Ministry of Labor<sup>25</sup> has recently updated and improved its data on unionization, making us reasonably confident about the data we use for the period between 1996 and 2000. To construct the variable union density (D), which measures the degree of unionization, we sum up all union members located in the same province and then divide by the number of teachers.<sup>26</sup> Using data also obtained from the Ministry of Labor, we define union fragmentation (UF) as the number of unions per province holding more than 10% of total union members, under the assumption that very small unions are unable to generate coordination problems if a large number of workers are members of one large union that bears the costs of collective action. Legal Recognition (LR) is a dummy variable, where 1 denotes that the principal provincial teachers' union has *personería gremial*<sup>27</sup> (i.e. legal monopoly). Finally, to assess the effect of business cycles, we use the provincial rate of unemployment (UN) obtained from the national household survey.<sup>28</sup> The means for all variables are in appendix 2.

### The Model

In this section, we test our theory for all Argentine provinces during the 1996-2000 period.<sup>29</sup> Our theory suggests that:

$$S_{it} = \beta_1 D_{it} + \beta_2 UF_{it} + \beta_3 LR_{it} + \beta_4 PA_{it} + \beta_5 PD_{it} + \beta_6 AB_{it} + \beta_7 \Delta W_{it} + \beta_8 UN_{it} + \lambda T + e_{it}$$

where:  $S_{it}$  = number of class days lost per year ( $t$ ) in each province ( $i$ ) due to teacher union strikes;  $D$  is the ratio of union members to teachers;  $UF$  refers to union fragmentation;  $LR$  to legal recognition;  $PA$  to political alignment;  $PD$  to public discontent;  $AB$  to attendance bonuses;  $UN$  to unemployment;  $\Delta W$  is the percentage

change in real teacher earnings; and  $T$  is a vector of time effects. Year dummies are included in all the calculations. They are used to account for variations in economic conditions over the course of our time period: 1996 and 1997 were years of relative growth, whereas recession has characterized the subsequent 3 years.

Based on the discussion in the previous section, the predicted signs of these variables are:

$$\beta_1 > 0, \beta_2 > 0, \beta_3 < 0, \beta_4 < 0, \beta_5 > 0, \beta_6 < 0, \beta_7 < 0, \text{ and } \beta_8 > 0.$$

### Econometric Issues

There are three salient aspects of the data that we wish to analyze: (i) Our dependent variable is a *count* of the total number of class days lost due to teacher strikes in a particular province in a given year. For some provinces, the value of this variable varies from zero to many. The “zero value” is the usual outcome: almost 55 per cent of the observations were zero.<sup>30</sup> (ii) We have repeated observations (5 years) for the same provinces (24). That is, our data form a combined time-series cross-section *panel*. (iii) However, the data spans over a short period of time and the values of some of the independent variables in our model did not change over the period (i.e. “union fragmentation”, “legal recognition” and “attendance bonus”), or they did so very sporadically. This is the case of “political alignment,” which only shows variation in the six provinces that had a change in governor in December 1999.<sup>31</sup> Therefore, our empirical strategy consists of estimating three different models for count data: OLS, Poisson, and the Negative Binomial. These models vary along the following dimensions:

objective function, the mean, and variance of the dependent variable (Cameron & Trivedi, 1986).

As a first step, we begin estimating an ordinary least square (OLS) model, correcting for heteroscedasticity and clustering across provinces because it is probable that a province with a more-than-average number of strikes in one year has a more-than-average number in other years.<sup>32</sup> We include a lagged dependent variable specification to correct for potential serial correlation within provinces.<sup>33</sup> Results are reported in the first column of Table 1. For purposes of comparison with the Poisson and Negative Binomial models, a log-linear form was used and a positive constant equal to 0.01 was added to the dependent variable before taking the log. Following Hausmann, Hall, and Griliches (1984) we reexamine the earlier findings using a more appropriate model for our data. The preponderance of zeros and the clearly discrete nature of the dependent variable suggest that we could improve on least squares and the linear model with a specification that accounts for these characteristics. The Poisson regression model is a natural first alternative.<sup>34</sup> Results obtained through this model are reported in the second column of Table 1.

The Poisson model's defining characteristic is that the conditional mean of the outcome is equal to the conditional variance. However, our dependent variable has greater variation than that of a Poisson, and the conditional variance exceeds the conditional mean (i.e. overdispersion).<sup>35</sup> Therefore, we estimate a Negative Binomial maximum-

likelihood regression, specifying that the observations are independent across provinces but not within provinces.<sup>36</sup>

[INSERT TABLE ONE HERE]

Since the Poisson regression model and the Negative Binomial model are non-linear, the marginal effect of this discrete change depends on the values of all independent variables. Table 2 summarizes our expectations and findings. We present the discrete change in the expected value of the number of class days lost for a unit change in the regressors, computed with all variables held at their means. We used the negative binomial estimates because that was the best specification.<sup>37</sup>

[INSERT TABLE TWO HERE]

Our main hypothesis is confirmed by the data. Political alignment is significant in all our specifications and always has the expected negative sign on teacher militancy. Indeed, political alignment has the strongest substantive effect on the dependent variable in all specifications. That is, the political alignment between governors and unions reduces the propensity of teachers to strike. Provinces where the governor and the teachers' union are politically aligned lose 1.2 fewer days to strikes per year than provinces where they are not aligned, which represents a third of the time lost on an average teachers' strike in the studied period.

We also confirmed our expectations regarding public discontent, wage improvement and unemployment. Public discontent is significant in all specifications and has the expected positive sign, showing that it increases the possibility of teacher militancy. For every additional general strike within the public sector, class days lost increased by 0.05. Wage

deterioration and unemployment also have the expected effects. Because the risks of striking in a deteriorated economic environment are tempered by job stability, teacher propensity to strike is related to economic hardship and the lack of job alternatives. Real wage change is statistically significant in all specifications and has the expected negative sign: a ten percent increase in real wages produces 1.4 fewer days lost to strikes per year. Unemployment is also significant and has the expected positive sign, contrary to the expectations of business cycle theories. An increase of one per cent in the provincial unemployment rate increases the expected number of class days lost by 0.2. Finally, the effect of attendance bonuses is also statistically significant in all specifications and has the expected negative sign. That is, in the provinces with attendance bonuses, which can be lost if the teacher misses a day of class, there are fewer teacher strikes. For every 10 percentage point increase in attendance bonuses (as a percentage of wages), there are 1.7 fewer expected days lost to strikes.

In short, teacher unions use political identities as informational devices in their interaction with governors, who are both employers and adjudicators when applying interventionist labor regulations. Unions also rely on public discontent as a way of gauging the public legitimacy of their grievances. Finally, they are more likely to “voice” their concerns with active militancy when they are suffering economic hardship and have fewer “exit” alternatives: higher unemployment in the economy and their own job stability are mutually reinforcing. Thus, the effect of unemployment is different for public sector workers than it is for private sector workers because it has the opposite effect on their incentive to strike and reverses the effect of wage improvements and

attendance bonuses. In contrast, we do not find strong support for theories based on labor laws, which are supposedly important for the public sector (Freeman, 1986), or for theories based on labor capacity for collective action: legal recognition of unions as collective bargaining agents, union density, and organizational fragmentation are not significant in the negative binomial maximum likelihood regression.

## **V- Conclusions**

This article shows the need to qualify theories of labor relations as applied to developing countries and to different sectors of the economy. Strike theories based on the failure of bargaining or general economic conditions cannot account for the behavior of public educators. Public teachers' incentives to strike are related to the industrial structure of their employment and, in particular, to job stability. Moreover, in a context of weak formal institutionalization of labor relations, the parties involved resort to alternative mechanisms to reduce the uncertainty of their strategic interaction. In a context where the government is the employer and has large discretion over the application of highly interventionist labor relations rules, employees use political cues to inform their expectations. Political alignment illuminates the information generated in previous formal and informal interactions and broadens the scope of bargaining by including parties that interact in multiple dimensions. Consequently, political alignment generates trust and credibility. Yet, because teachers are public servants and the cost of their strikes is internalized by the families they serve, they need to pay attention to the legitimacy of

their grievances. Public discontent provides information about the public legitimacy of teachers' demands by discrediting governors' fiscal management.

The findings presented in this article support our argument of public sector labor relations in contexts of weak formal institutionalization. These findings highlight the importance of complementing the focus on formal institutions with some attention to the alternative mechanisms that inform actors' expectations in settings of unpredictable institutions. It thus qualifies the possibility of applying theories derived from contexts of institutional stability to contexts of weak formal institutionalization. Analyses of the developing world can use the intellectual insights of institutionalist theories, but they need to complement them with an analysis of regularized practices and informal institutions, which generate expectations for labor relations actors. The fact that we are focusing on the public sector, where employment is by definition formal, heightens the significance of our findings. If in a country like Argentina, where most analysts estimate that half of the work force is in the informal sector, and where institutional factors such as the legal recognition of labor unions for collective bargaining do not have a strong effect on labor relations, we should expect an even weaker effect in the informal sector.<sup>38</sup> However, in the informal sector, we do not expect political alignments to play much of a role since the government is not an employer. Instead, we expect alternative mechanisms to generate expectations for labor relations actors. This is an area where further research will advance our understanding of labor relations in the developing world.

#### Appendix 1. Descriptive statistics

| Variable                       | Mean  | Std. Dev | Min.   | Max.  | Obs. |
|--------------------------------|-------|----------|--------|-------|------|
| Days Lost due to Strikes       | 3,96  | 9,60     | 0      | 74    | 120  |
| Union Density                  | 0,52  | 0,15     | 0,22   | 0,82  | 120  |
| Union Fragmentation            | 1,29  | 0,61     | 1      | 3     | 120  |
| Union Recognition              | 0,79  | 0,41     | 0      | 1     | 120  |
| Political Alignment            | 0,33  | 0,37     | 0      | 1     | 120  |
| Public Discontent              | 2,56  | 8,64     | 0      | 81    | 120  |
| Attendance Bonus (% of salary) | 6,08  | 7,61     | 0      | 26    | 120  |
| Real Wage Change (%)           | 2,94  | 7,60     | -20,62 | 33,35 | 120  |
| Unemployment Rate (%)          | 12,08 | 3,94     | 1,90   | 21,10 | 120  |

Appendix 2.- Provincial means for the period 1996-2000

| Province      | Strikes | Density | Union<br>Fragm. | Political<br>Alignment | Attendance<br>Bonus | Discontent | Real Wage<br>Change | Unem-<br>ployment |
|---------------|---------|---------|-----------------|------------------------|---------------------|------------|---------------------|-------------------|
| Buenos Aires  | 1.6     | 0.47    | 2               | 0.33                   | 21                  | 0          | 5.17                | 18.0              |
| Catamarca     | 11.6    | 0.56    | 2               | 0.33                   | 0                   | 2.2        | 2.01                | 14.6              |
| Chaco         | 0.6     | 0.76    | 1               | 1                      | 0                   | 2.6        | 3.53                | 11.0              |
| Chubut        | 0       | 0.52    | 1               | 0.40                   | 18                  | 0.6        | -0.10               | 12.1              |
| Ciudad Bs.As. | 0.6     | 0.27    | 3               | 1                      | 4                   | 0          | 3.36                | 11.2              |
| Córdoba       | 0.8     | 0.48    | 1               | 0.40                   | 0                   | 3.2        | 10.26               | 15.1              |
| Corrientes    | 14.8    | 0.55    | 3               | 0.60                   | 0                   | 16.4       | 8.86                | 13.6              |
| Entre Ríos    | 0.8     | 0.63    | 1               | 0.40                   | 0                   | 0.2        | 4.97                | 13.5              |
| Formosa       | 0.6     | 0.50    | 2               | 0.33                   | 8                   | 0          | 3.12                | 8.4               |
| Jujuy         | 14.2    | 0.59    | 1               | 0                      | 0                   | 11.4       | 2.95                | 16.3              |
| La Pampa      | 0.2     | 0.44    | 1               | 0                      | 16                  | 0          | 2.59                | 11.2              |
| La Rioja      | 2.4     | 0.56    | 1               | 0                      | 5                   | 2          | -0.91               | 9.9               |
| Mendoza       | 0.2     | 0.43    | 1               | 0.20                   | 7                   | 0          | 2.56                | 7.7               |
| Misiones      | 0.8     | 0.42    | 1               | 0                      | 7                   | 0.6        | 4.09                | 6.3               |
| Neuquén       | 14.6    | 0.70    | 1               | 0                      | 0                   | 11.2       | -0.23               | 14.0              |
| Río Negro     | 5.6     | 0.64    | 1               | 0.40                   | 0                   | 1.8        | -0.27               | 10.3              |
| Salta         | 0.4     | 0.75    | 1               | 0.66                   | 7                   | 0.6        | 3.03                | 16.0              |
| San Juan      | 3.6     | 0.50    | 1               | 0.20                   | 0                   | 0.4        | 7.41                | 11.3              |
| San Luis      | 0.4     | 0.23    | 1               | 0.66                   | 5                   | 0.8        | 2.63                | 9.6               |
| Santa Cruz    | 0       | 0.71    | 1               | 0                      | 26                  | 0.2        | 1.56                | 4.5               |
| Santa Fe      | 0.4     | 0.54    | 1               | 0                      | 16                  | 0          | 2.65                | 16.6              |
| Sgo. Estero   | 1.6     | 0.34    | 1               | 1                      | 6                   | 0          | 2.16                | 9.7               |
| Tierra Fuego  | 9.4     | 0.31    | 1               | 0                      | 0                   | 1.4        | -3.84               | 10.5              |
| Tucumán       | 9.8     | 0.39    | 1               | 0                      | 0                   | 5.8        | 2.99                | 17.7              |

### Appendix 3: Estimated Results for Explaining the number of Teacher Strikes.

Dependent Variable = *Number of teacher unions strikes*

|                         | LnOLS               | Poisson<br>(2)       | Negative Binomial<br>(3) |
|-------------------------|---------------------|----------------------|--------------------------|
| Union Density           | 1.173<br>(1.222)    | 0.890<br>(0.656)     | 0.697<br>(0.904)         |
| Union Fragmentation     | 0.292<br>(0.576)    | 0.165<br>(0.306)     | 0.039<br>(0.329)         |
| Union Legal Recognition | -0.303<br>(0.469)   | -0.081<br>(0.348)    | -0.018<br>(0.393)        |
| Political Alignment     | -1.248**<br>(0.494) | -0.796***<br>(0.299) | -0.800***<br>(0.291)     |
| Public Discontent       | 0.036**<br>(0.014)  | 0.013*<br>(0.007)    | 0.013*<br>(0.007)        |
| Attendance Bonus        | -0.084**<br>(0.039) | -0.077***<br>(0.026) | -0.078***<br>(0.026)     |
| Real Wage Change        | -0.090**<br>(0.035) | -0.050***<br>(0.016) | -0.055***<br>(0.021)     |
| Unemployment Rate       | 0.167**<br>(0.061)  | 0.093***<br>(0.030)  | 0.092***<br>(0.029)      |
| Lag Strikes             | 0.208*<br>(0.104)   | -                    | -                        |
| <i>Year dummies</i>     | <i>Yes</i>          | <i>Yes</i>           | <i>Yes</i>               |
| R-squared               | 0.43                |                      |                          |
| Log Likelihood          |                     | -145.848             | -145.455                 |

Note: The province is the unit of observation. N =120. Standard errors are in parentheses. Estimates are corrected for panel heteroscedasticity using White's procedure. Estimated ancillary parameter and its standard error is 0.133 and (0.293), respectively. \* Significant at the 90% level of confidence; \*\* significant at the 95% level; \*\*\* significant at the 99% level.

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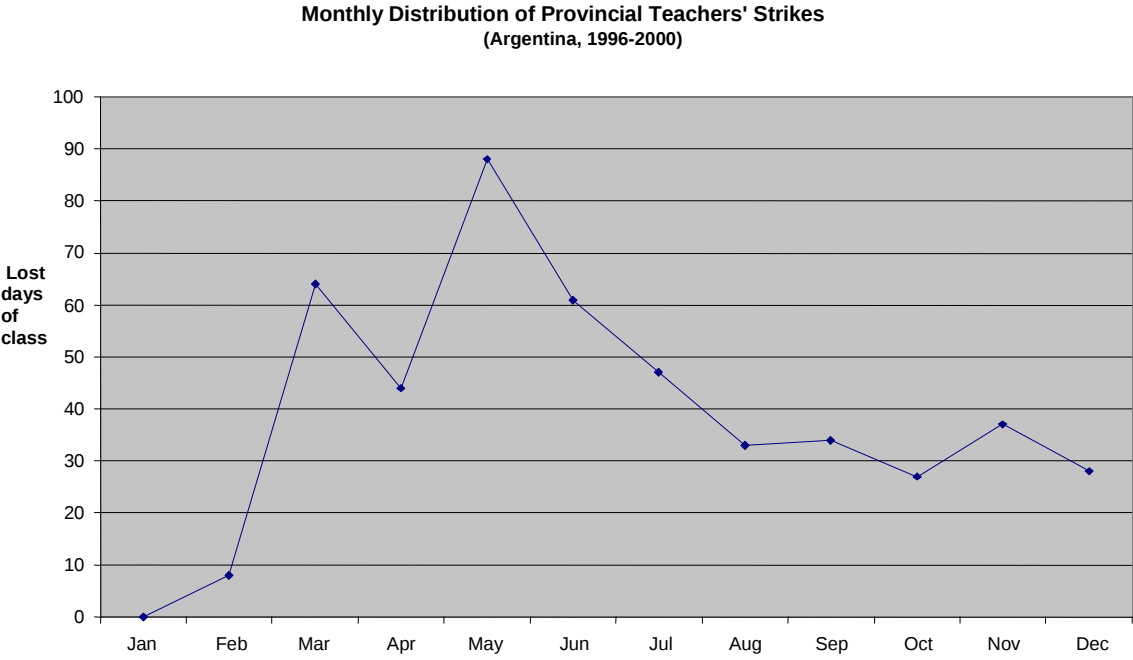
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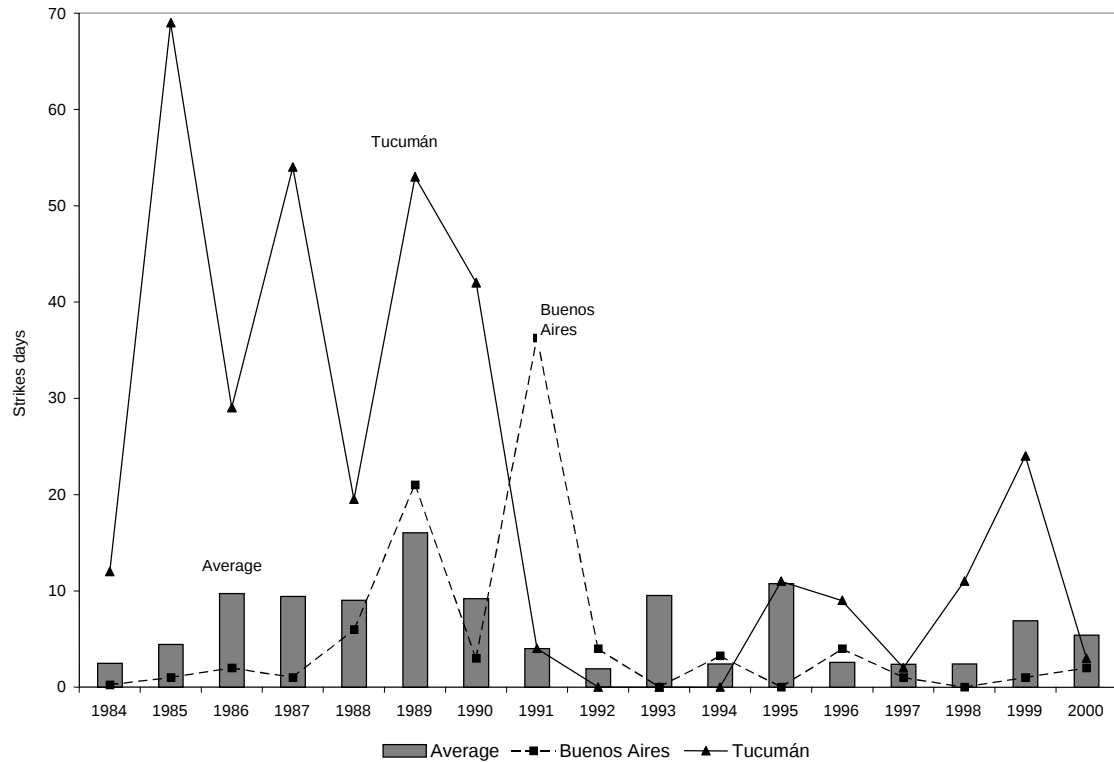
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GRAPH ONE



## GRAPH TWO

Number of class days lost due to teacher's strikes: National average, Buenos Aires and Tucumán. 1984-2000



Source: McGuire (1996) and Consejo Técnico de Inversiones.

**Table 1: Estimated Results for Explaining Teacher Strikes.**

Dependent Variable = number of class days lost due to teacher union strikes

|                         | OLS (log)<br>(1)    | Poisson<br>(2)       | Negative Binomial<br>(3) |
|-------------------------|---------------------|----------------------|--------------------------|
| Union Density           | 1.488<br>(1.427)    | 2.083**<br>(0.912)   | 0.796<br>(0.958)         |
| Union Fragmentation     | 0.293<br>(0.654)    | -0.074<br>(0.310)    | 0.312<br>(0.464)         |
| Union Legal Recognition | -0.529<br>(0.557)   | -0.681*<br>(0.382)   | 0.077<br>(0.411)         |
| Political Alignment     | -1.309**<br>(0.577) | -1.049*<br>(0.570)   | -1.017***<br>(0.397)     |
| Public Discontent       | 0.067***<br>(0.015) | 0.036***<br>(0.009)  | 0.036***<br>(0.011)      |
| Attendance Bonus        | -0.098**<br>(0.043) | -0.135***<br>(0.044) | -0.135***<br>(0.034)     |
| Real Wage Change        | -0.113**<br>(0.044) | -0.082***<br>(0.020) | -0.108***<br>(0.025)     |
| Unemployment Rate       | 0.184**<br>(0.073)  | 0.124***<br>(0.044)  | 0.137***<br>(0.044)      |
| Lagged Strike Days      | 0.222**<br>(0.094)  | -                    | -                        |
| <i>Year dummies</i>     | <i>Yes</i>          | <i>Yes</i>           | <i>Yes</i>               |
| R-squared               | 0.49                |                      |                          |
| Log Likelihood          |                     | -301.112             | -209.842                 |

Note: The province is the unit of observation. N =120. Standard errors are in parentheses, Estimates are corrected for panel heteroscedasticity using White's procedure. Estimated ancillary parameter and its standard error is 1.544 and (0.436), respectively. The probability we would observe this data under a Poisson model is virtually zero. (Likelihood ratio test of ancillary parameter = 0,  $\chi^2(1) = 182.54$ ). \* Significant at the 90% level of confidence; \*\* significant at the 95% level; \*\*\* significant at the 99% level.

**Table 2: Summary of the Expected and Actual Effect of IVs on Teacher Militancy**

Dependent Variable: days of class lost to strikes. Results correspond to negative binomial maximum likelihood regression

| <b>Independent Variables</b>                                            | <b>Expected Sign</b> | <b>Coefficient</b> | <b>Expected change in the number of class days lost</b> |
|-------------------------------------------------------------------------|----------------------|--------------------|---------------------------------------------------------|
| <b>Political alignment between the governor and the teachers' union</b> | NEGATIVE             | -1.017***          | -1.2                                                    |
| <b>Public discontent with the governor</b>                              | POSITIVE             | 0.036***           | 0.05                                                    |
| <b>Provincial unemployment rate</b>                                     | POSITIVE             | 0.137***           | 0.2                                                     |
| <b>Attendance bonus (as a % of teachers' wage)</b>                      | NEGATIVE             | -0.135***          | -0.17                                                   |
| <b>Real provincial wage increase</b>                                    | NEGATIVE             | -0.108***          | -0.14                                                   |
| % of Unionized Teachers in the Province                                 | POSITIVE             | 0.796              |                                                         |
| Union Fragmentation                                                     | POSITIVE             | 0.312              |                                                         |
| Union Legal Recognition for Collective Bargaining                       | NEGATIVE             | 0.077              |                                                         |

\*\*\* Significant at the 99% level of confidence.

## FOOTNOTES

<sup>1</sup> Quoted in O'Donnell (1999).

<sup>2</sup> See Murillo, Ronconi, Sanguinetti, & Tommasi (2001).

<sup>3</sup> The two main Argentine political parties are quite old. The UCR (Radical Civic Union) is 114 years old and the PJ (Justicialista, or Peronist, Party) is 59 years old. Despite political instability, political parties retained their links to society throughout the twentieth century. According to Mainwaring & Scully (1995: p. 8), the mean volatility of lower-chamber seats was 12.7% (Pedersen Index) during the first ten years of democracy (1983-1993). The plurality of ideologies of teachers' provincial unions provide for variation in terms of political alignments with provincial governors. That is, there are teachers' unions affiliated to the Peronist party, to the UCR, and to other left-wing political parties whereas provincial governors are either Peronists, Radicals, or belong to conservative provincial parties.

<sup>4</sup> There is, however, a growing literature on the informal economy in Latin America, including Portes, Castells, & Benton (1989) and Itzigsohn (2000).

<sup>5</sup> Pencavel (1997) argues that the problem of public sector unionism is that there are no substitutes for the services interrupted for consumers because their service markets tend to be monopolistic. In this interpretation the degree of openness of the economy does not matter because public sector workers always lack competition and thus avoid the internalization of the costs of striking.

<sup>6</sup> We are studying primary school teachers in a country with compulsory education. According to the Argentine Ministry of Social Development, only 1.1% of the Argentine children between 6 and 13 do not attend school (SIEMPRO 1997).

<sup>7</sup> Murillo (2001) argues that the combination of union fragmentation and partisan alignments influences the bargaining power of unions with respect to policy-making, but not necessarily with respect to their strike activity.

<sup>8</sup> Most Latin American countries forbid collective bargaining in the public education sector. Argentina has allowed for collective bargaining in the public sector at the national level only since 1990. Only recently have a handful of Argentine provinces started to pass laws regulating collective bargaining in the public education sector. Many Latin American countries feature executive intervention in union registration and (where they are allowed) in the process of granting formal legal approval for strikes (Ojeda Aviles & Ermida Uriarte, 1993).

<sup>9</sup> For criticisms of the formalism of Collier & Collier's (1979) understanding of labor relations in Venezuela and Mexico, see Davis (1989).

<sup>10</sup> The outcome they measure, however, is not strike activity but economic growth—with the assumption that economic growth results from labor peace and wage restraint that permits increasing employment without inflationary consequences in the OECD countries.

<sup>11</sup> Whereas Pencavel (1997) and Cox Edwards (1997) emphasize that the public character of the employer is what politicizes labor relations, in this paper we also attribute the politicization of labor relations with the high degree of executive discretion in the application of regulations.

<sup>12</sup> The alternative of foregoing public education for private education is limited by both income and availability (private schools are geographically concentrated in the wealthier regions of Argentina).

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<sup>1313</sup> The myopia of the national teachers' union regarding the costs of striking was evident, though, on one occasion. In 2001, the main teachers' confederation (CTERA) threatened the government with teacher withdrawal from participation in the census in response to the government's failure to pay a national annual bonus in 2001 that had been fixed by law in 1997. Nevertheless, most teachers performed the census work anyway and accepted the government stipend for it because it constituted a large portion of their income.

<sup>14</sup> Godard (1992) argues that, even in the case of private sector workers in Canada, discontent explains days lost to strikes because of the heightened economic hardship it causes.

<sup>15</sup> These institutional features complicate a potential school-level, cross-sectional analysis and differentiate the Argentine case from the U.S. case to such an extent that makes it virtually impossible to replicate the path-breaking study of Hoxby (1996).

<sup>16</sup> The main constraint to this discretion is the National Teachers' Statute, which defines general work conditions (although not wages).

<sup>17</sup> The data from the Ministry of the Economy was provided by CEDI and was originally gathered for the study performed in Jones, Sanguinetti, & Tommasi (2000).

<sup>18</sup> Consejo Técnico de Inversiones, "Tendencias Económicas" (1984-2000). See J. McGuire (1996).

<sup>19</sup> We have only been able to obtain data on the independent variables for the 1996-2000 period and thus restrict our study to those years.

<sup>20</sup> In Appendix 3 we test our theory with an alternative measure of strike activity: The *number* of strikes. Although we believe that the number of days lost is the most appropriate measure to capture total conflict, we have included the alternative measure in order to provide additional evidence about the occurrence of strikes.

<sup>21</sup> In most provinces, there is only one teacher union. In those where there are more than one, we have considered only the most important union (determined by density and legal status). Finally, in those provinces where any union could be defined as the principal one (such as in Buenos Aires, where two unions have almost equal membership), we have computed 'Political Alignment' by taking the average political relationship between the governor and the unions. The only election for governors during the period studied was in 1999. For the governors data, see Jones, Sanguinetti, & Tommasi (2000).

<sup>22</sup> The interviews were done by the authors in Argentina in 2000 and 2001. Teacher union experts confirmed the coding.

<sup>23</sup> To those provinces where the main union is affiliated to CTERA (a founding member of the left wing FREPASO party) and the governor is Peronist or right wing, a value of 1 was assigned, with the exception of provinces where the union leaders were politically close to the local Peronist party. Conversely, those cases where the governor's party is center-left (UCR or ALIANZA) and the union is affiliated to CTERA, were assigned lower values ranging from 0.33 to 0.66, depending on how specialists have characterized union's leaders local strategy. Finally, we assigned a value of 0 to those provinces where the main union is not affiliated to CTERA and has a historically close relationship with the ruling local party.

<sup>24</sup> We have also tried a model without the public discontent variable because we find our proxy for it, the number of days lost in other public sector strikes, not completely

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satisfying. However, discarding this variable from the model does not affect the results the signs or significance of the other variables.

<sup>25</sup> Dirección Nacional de Asociaciones Sindicales, Ministerio de Trabajo. Refer to the web page <http://www.trabajo.gov.ar>.

<sup>26</sup> Annual data on the number of teachers per province is obtained from “Anuarios,” Ministerio de Educación.

<sup>27</sup> In Argentina, those unions with *personería gremial* have several exclusive rights, such as representing all workers in collective negotiations, enforcing labor legislation and social security regulations, managing the compulsory health insurance plan, and assisting the government with improving workplace practices. However, any labor union has the right to call for a strike, regardless of whether or not it possesses a legal monopoly.

<sup>28</sup> INDEC, “Encuesta Permanente de Hogares,” Ministerio de Economía.

<sup>29</sup> We have data on provincial strikes for 1984-2000, but we lack information on most independent variables for the whole period.

<sup>30</sup> For a recent survey of specification and estimation of models for counts see Cameron & Trivedi (1998).

<sup>31</sup> Given the nature of our data, we believe that the fixed effects (within) provinces model is not a useful method to test our hypothesis.

<sup>32</sup> We assume that errors for one province are unrelated to the errors for every other province (i.e. no spatial correlation). Our assumption is based on the institutional characteristics of labor relations in the education sector. There is no inter-provincial teacher union organization other than that found at the national level. Furthermore, an analysis of the data shows no sign of correlation between geographically close provinces.

<sup>33</sup> Teacher union decisions to strike during year  $t$  might be affected by their behavior during the previous year. We also ran the regression without the lagged variable and found no significant effect on the results.

<sup>34</sup> In the Poisson regression model, we assume that the number of class days lost due to strikes has a Poisson distribution with a conditional mean that depends on provincial characteristics. For a clear exposition, see Long (1997). The use of count data models to analyze the number of strikes is suggested in Cameron & Trivedi (1986) and Olkin, Gleser, & Derman (1994).

<sup>35</sup> The extreme significance of the best-fit test of the Poisson model indicates that the model is inappropriate. (Best-fit  $\chi^2 = 416.2$ ; Prob >  $\chi^2(107) = 0.000$ ).

<sup>36</sup> The use of the Negative Binomial regression model to deal with the over dispersion problem, is a common practice in econometrics. See Long (1997), Greene (1999), Hausman, Hall, & Griliches (1984), Cameron & Trivedi (1986).

<sup>37</sup> For the binary variables the effect is obtained by letting the regressor change from 0 to 1. For all the other regressors the effect is computed by changing from  $\bar{x}_k$  to  $\bar{x}_k + 1$ .

<sup>38</sup> Marshall (1996) has also found that legal changes do not have the expected effect on unemployment in three Latin American countries (including Argentina), thereby emphasizing the limitations of literature based on formal institutions in helping us understand labor relations in this region.