Working Paper

LABOR LAW VIOLATIONS IN CHILE

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Abstract

This paper is a contribution to the empirical literature on quantification of labor law violation. It takes up the case of a relatively advanced developing country, Chile, which has a high degree of administrative and bureaucratic capacity. Using micro survey data, the paper establishes the basic facts of compliance with four dimensions of labor law: minimum wage, hours worked, having a contract, and having a pension. On average over the period 1990-2009, we find that the laws were violated in at least one of these dimensions for one third of workers. However, there are large and significant variations over time, across laws and by worker and firm characteristics. Simple tabulation followed by econometric analysis shows that compliance rates are lower for women, foreign born, indigenous and less educated workers; in smaller firms; and in agricultural regions. These initial findings frame a rich research agenda on compliance and enforcement of labor law in Chile.

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1.   Introduction

Reform of labor law is central to the development policy discourse in developing countries, and in Latin America in particular. Proponents of deregulation argue that overly stringent legislation feeds informality and serves to hold back efficiency and growth. Opponents of deregulation argue instead that these laws curtail the power of employers and protect workers.[1] However, both proponents and opponents seem to argue equally from an assumption of effective enforcement of the laws. At least, they do not focus on issues of enforcement or violation of laws. In the extreme case, if the laws are not enforced at all, then the deregulators have the outcome they want by default and their opposition to the current laws is somewhat tangential. Even if violation is partial, both proponents and opponents will have to modify their arguments suitably.

But, how much violation is there of labor laws? The question is at heart an empirical one, and dependent on context and institutions. A growing body of literature has attempted to quantify the degree of compliance.[2] The broad conclusion is that compliance is far from complete, and the degree of violation varies across countries and across regions and sectors within countries.

This paper is a contribution to the empirical literature on quantification of labor law violation. It takes up the case of a relatively advanced developing/middle-income country, Chile, which has a high degree of administrative and bureaucratic capacity. Using micro survey data, the paper establishes the basic facts of compliance with four dimensions of labor law: minimum wage, hours worked, having a contract, and having a pension. On average over the period 1990-2009, we find that the laws were violated in at least one of these dimensions for one third of workers. However, there are large and significant variations over time, across laws, and by worker and firm characteristics. Simple tabulation followed by econometric analysis shows that compliance rates are lower for women, foreign born, indigenous, and less educated workers; in smaller firms and in agricultural regions.

The plan of the paper is as follows. Section 2 sets out the basic legislative frame of labor regulation in Chile. Section 3 discusses the data source used in the paper. Section 4 presents the main results, and Section 5 concludes with implications for policy and research directions.

2.   Legislation

According to Chilean legislation, employers must comply with a number of universally applicable regulations, including writing and signing a labor contract, paying at least the minimum wage, providing a safe and healthy work environment, complying with collective bargaining agreement provisions, and contributing to the social security system.

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[1] See World Bank (2012) for a recent review of the literature.
[2] See for example, Strobl and Walsh (2003), Maloney and Nunez (2003), Kristensen and Cunningham (2006), Andalon and Pages (2008), Ronconi (2010), and Bhorat et al. (2012a).

In this section we briefly describe those regulations for which the available data allows measuring the extent of compliance.[3]

First, employers must provide each worker with a signed copy of his or her labor contract. Having a written contract does not provide any direct legal benefit to workers (e.g., workers are not required to have a written contract to enforce their rights in the court). However, it presumably helps workers to know their rights and establishes pay, hours, and other expectations specific to the job. Furthermore, evidence suggests that the majority of workers in Latin America wrongly believe that they cannot enforce their rights without having a copy of the contract (Piza, 2009).

The minimum wage (known in Chile as *ingreso mínimo mensual*) is set by the government and varies according to the age of the worker. There is, however, no variation across regions. The minimum wage is usually modified once a year. In July 2012, the monthly minimum wage was 193,000 pesos (386 USD) for workers aged 18 to 65 and 144,079 pesos (288 USD) for workers younger than 18 or older than 65 working full-time. For part-time workers the minimum wage is proportional to the number of hours worked.[4] Since March 2011, the same standards also apply to domestic workers.

The maximum number of hours per week that people can work is 57 (i.e., the ordinary workweek is 45 hours and overtime cannot exceed 12 hours per week).[5] Before 2005, the maximum number of hours was 60 (ordinary workweek was 48 hours and overtime 12 hours). Workers are required to receive overtime pay at a rate not less than time and one-half of their regular rate of pay.

Finally, employers and employees are required to contribute to the social security system. Social security benefits include pension, unemployment insurance, health insurance, and workers' compensation insurance. The total contribution represents approximately 24% of the wage, and the contribution to the pension system is, on average, 12.4% (Aguila et al., 2010).[6]

The legislation also determines the level of fines when employment, social security, safe and healthy, and labor relations regulations are violated. Fines usually vary depending on the size of the firm and in some cases depending on recidivism. Table 1 presents the values of fines in July 2012.

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[3] The Encuesta Laboral (ENCLA) allows measuring the extent of violations with some health and safety regulations, but we have not been able to access the micro data. Aggregate figures provided by the government (Dirección del Trabajo, 2009), show that 25.5% of firms do not comply with the obligation of having a safe practices manual; and 31.7% of firms with 25 employees or more violate the obligation of having a health and safety committee that includes workers' representatives.

[4] For example, the minimum wage for an employee who works 30 hours per week is two thirds the above figures since the ordinary workweek of a full time worker is 45 hours.

[5] These limits do not apply to managers and to workers who perform their duties outside the firm (such as traveling salesmen). Different regulations apply to workers in the transportation, hotel and restaurant sectors.

[6] Ten percentage points go to the worker's individual account, and the remaining amount covers disability insurance and the fees charged by the pension fund manager. The contribution to the pension system is entirely deducted from the worker's salary, and the employer has the obligation to do it.

Table 1 – Fines for Noncompliance with Labor Regulations (in USD)

Violation	Size of firm (No. of employees)		
	1 to 49	50 to 199	200 or more
Written contract [a]	396	792	1,188
Minimum wage [a]	792	3,169	4,754
Maximum hours [a]	792	3,169	4,754
Pension [b]	407	407	407
Safe practices manual [c]	713	2,377	3,169
Health and safety committee [c]	792	3,169	4,754
Dept. occupational risk prevention [c]	792	3,169	4,754

Notes: The law sets fines using two units of measurement (*Unidad de Fomento* for pension contributions and *Unidad Tributaria Mensual* for the rest) which are updated daily or monthly by the government. The table presents the figures in USD at July 2012. [a] Fine per worker; [b] fine per worker assuming lack of contribution during one year; [c] fine per establishment.

3. Data

The main source of data for this paper is the National Socioeconomic Characterization Survey (CASEN)[7] from Chile, which is a repeated cross-sectional household survey. The survey is funded by the Chilean Social Development Agency and administered by the University of Chile MIDEPLAN[8], INE[9], and CIENES.[10] The survey was administered every two years from 1990-2000 and every three years thereafter. The survey is designed to be representative at the national, regional, and geographic stratification (urban v. rural) level. The sampling unit is the household and sampling is based on census figures. Interviews are conducted in person. The scope of the survey was gradually expanded in order to be representative for smaller communities and also to include more questions.[11] CASEN contains question modules on health, education, work characteristics, home characteristics, and a variety of other socioeconomic variables of interest. The interviews are conducted in November and December of each survey year.

This survey is ideal for measuring labor law violations for two reasons. First, employees are more likely to report their actual working conditions compared to employers since they are not fined in case of noncompliance. Second, the survey asks detailed questions of respondents about personal characteristics and the characteristics of their jobs. This allows us to match workers with the labor standards they are subject to. It also allows us to evaluate which characteristics of workers and firms are associated with higher levels of labor standards violations. Respondents are asked questions about their current work status, the number of hours they usually work per week (or month), and the number of

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[7] Encuesta de Caracterización Socioeconómica Nacional.
[8] Ministerio de Planificación y Cooperación.
[9] Instituto Nacional de Estadísticas.
[10] Centro Interamericano de Enseñanza Estadística.
[11] The number of individuals included in the survey increased from 105,189 in 1990 to 246,670 in 2009.

days. They are also asked to provide detailed industry code information and details about their place of employment and position. They also answer basic questions about working conditions including whether they have a contract with their employer, if that contract is signed, if they have a pension, and what type of pension plan they have.

The population of interest for this paper is workers who identify themselves as employees, rather than employers, bosses, or the self-employed, and who do not work in domestic service since a slightly different set of labor laws apply to those workers.[12] We measure violation of the hourly minimum wage and calculate the hourly wage of a worker based on her or his self-reported hours and income and then classify the worker as under the minimum wage if that wage is less than the hourly minimum wage once the monthly minimum is scaled for the standard workweek of 45 or 48 hours depending on year. One potential problem with this method is that self-reported hours and wages can often lead to measurement error due to recall bias or rounding which could result in mis-categorizing workers as in compliance or not in compliance with the minimum wage. An alternative strategy is to look only at full time workers and violations of the monthly minimum wage. However, while this often does estimate a slightly higher level of compliance, the increase in compliance is usually less than 1 percentage point. Additionally, the high level of hours violations leads us to believe that violations of the hourly minimum wage is what matters whether or not the violation derives from workers working more hours than their wage mandates or being paid less than their hours legally mandate.

We use three measures of minimum wage violation based on Bhorat et al. (2012a) all of which take the form:

$$V_\alpha = E \{ [(w^m - w)/w^m]^\alpha \; if \; w^m - w > 0; \quad 0 \; if \; w^m - w \leq 0 \}.$$

The first measure, $\alpha = 0$, is the standard headcount violation measure. The other two measures of minimum wage violation are measures of depth: $\alpha = 1$ measures the shortfall depth and all $\alpha > 1$ places larger emphasis on larger gaps. We report $\alpha = 2$ as a measure of the severity of minimum wage violation. Additionally we report V_1/V_0 which measures the average percent paid below the minimum wage for all sub-minimum wage workers.

Measuring contract and hours violations is more straightforward. Workers are classified as having no labor contract if they report either that they do not have a contract, or that their contract has not been signed by an employer. The alternative definition, where only workers who report directly that they do not have labor contracts (excluding those whose are unsigned), does not change the results in any meaningful way. Workers are classified as working more than the maximum level of hours (60 or 57) if they report weekly hours above the threshold or they report monthly hours above 4.2 times the threshold. Workers are classified as not having a pension if they report that they are not covered by any of the available pension systems (both public and private.) Finally, an overall measure of labor law violation is computed, which is defined as the share of workers with at least one violation in any of the four analyzed legally mandated benefits.

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[12] Only 5% of workers are in domestic service in the sample.

4. Results

Table 2 shows the extent and evolution of minimum wage violations from 1990 to 2009. Overall, almost 20% of workers covered by the minimum wage are paid below it during the analyzed period. The level of minimum wage violation was increasing from 1990 to 2006 (with the exception of 1994). Table 2 shows that minimum wages were relatively flat compared to the average wage for prime aged workers in jobs covered by the minimum wage, but that it increased by comparison beginning in 1998. Between 2006 and 2009, however, there was a large reduction in the level of noncompliance that coincides with a reduction in the minimum wage relative to the average wage. The depth of violation follows a similar trend. Workers paid below the minimum wage are paid on average 25% below, with a high of 26% in 1990 and a low of 22% in 1998.

Table 2 – Trends in Violations of Minimum Wage, Hours, Contract and Pension

Year	Minimum Wage Violations				Real Min. wage	Min. wage/Avg. wage	Hours	No contract	No pension	Any violation
	V_0	V_1	V_2	V_1/V_0						
1990	0.148	0.039	0.018	0.263	433.1	0.322	0.111	0.162	0.184	0.366
1992	0.163	0.043	0.018	0.261	457.4	0.335	0.098	0.141	0.198	0.371
1994	0.141	0.036	0.015	0.253	492.0	0.319	0.081	0.198	0.179	0.348
1996	0.161	0.039	0.015	0.239	531.8	0.310	0.084	0.199	0.184	0.365
1998	0.163	0.037	0.013	0.227	585.8	0.338	0.089	0.239	0.221	0.393
2000	0.201	0.048	0.018	0.241	678.2	0.361	0.082	0.188	0.182	0.376
2003	0.214	0.049	0.018	0.230	718.7	0.387	0.068	0.199	0.174	0.380
2006	0.293	0.071	0.028	0.241	831.1	0.475	0.109	0.189	0.157	0.452
2009	0.153	0.038	0.016	0.246	881.8	0.432	0.078	0.177	0.071	0.331
Total	0.182	0.044	0.018	0.245	-	0.364	0.089	0.188	0.172	0.377

Notes: Real minimum wage is calculated using the CPI from the Chilean Central Bank. Average wage is the average hourly wage for prime aged workers (25-55) subject to the minimum wage.
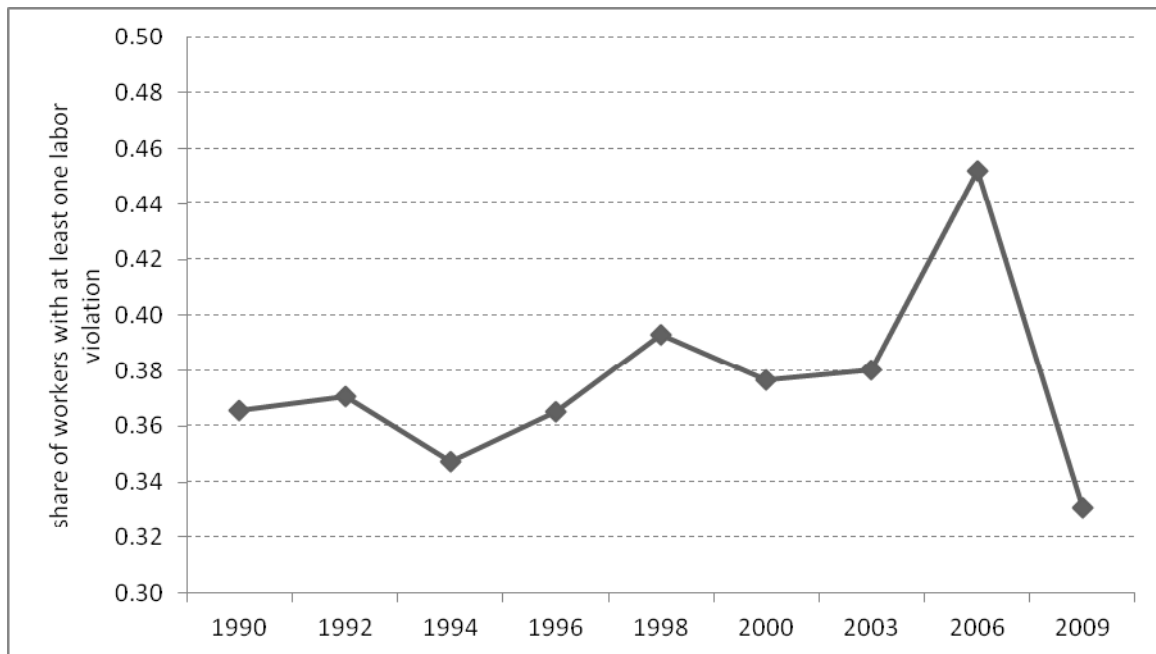
Table 2 also presents measures of violations for the other regulations we study. The percentage of workers without a contract also increased during the nineties reaching its peak in 1998 at 23.9%, but has declined since then. The percentage of people without a pension follows a similar pattern as contract violation:[13] it increased during the nineties – reaching a peak value of 22.1% in 1998– and declined during the 2000s'; unlike contact violations, it experienced a sharp drop between 2006 and 2009 of similar magnitude to the reduction in minimum wage violations. In contrast, maximum hours violations have a negative trend over the entire period that was only interrupted in 2006, presumably due to

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[13] Pensions violations are heavily tied up with contract violations: two thirds of workers without contracts also do not have pensions compared to only 6% for those with contracts.

the introduction of a new law in 2005 that reduced the maximum number of hours from 60 to 57.

Figure 1 shows the evolution of the overall measure of labor violations. There is a positive trend between 1990 and 2006, and a large reduction between 2006 and 2009. This recent improvement is most likely due to more government enforcement: the number of labor inspections increased from an average of 102,802 per year during 2002-2006 to 126,310 per year during 2007-2009 (Dirección de Trabajo, 2011).

Figure 1 – Trend in Overall Labor Law Violations

The rest of the results focus on differences in the level of noncompliance based on worker, firm, and geographic characteristics. Although the level of violations changes over time, the relative intensity of violation based on these characteristics does not. For ease of interpretation we focus on pooled measures across all waves of the survey.

4.1   Worker Characteristics

We broke workers into four age categories: 15-17 and 65+ which correspond to the lower minimum wage level and also evaluate younger workers 18-25 separately from prime aged workers (25-65). Table 3 shows that despite having a lower minimum wage, teenagers (15-17) have a higher level of minimum wage violation and a larger depth of violation. 32% are paid below the minimum wage and the average deviation is 31% below which is much higher than the 25% population average. Nearly two thirds of young workers do not have a contract or pension. Over 9% of these extremely young workers reported working more than the maximum number of hours per week. Overall, nearly 80% of teenagers are subject to some form of labor standards violation. Workers 18-25 look

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more like their older counterparts than teenagers but they still have higher levels of labor standards violations than prime aged workers. They have a higher level of minimum wage violation and a greater depth of violation. Prime aged workers are also 10 percentage points more likely to have a pension than younger workers.

There are also interesting results for older workers. Since 65 is the retirement age in Chile, the selection into the labor market for those over 65 is likely to be different than at other ages. This is borne out in the data. While only 15% of prime aged workers do not have pensions nearly 40% of workers who are still employed after 65 do not have pensions, which is suggestive evidence that those workers without pension coverage stay employed longer. They are also much more likely not to have a contract. Conversely, these workers are also the least likely to face minimum wage violations (only 16.5% of workers[14]); however, the depth of violation is almost as high as for teenagers. Workers making below the minimum wage on average make 30% below the already discounted minimum wage. Older workers are also much more likely to have at least one violation than prime-aged workers: 57% of older workers compared to only 35% of prime aged workers.

Table 3 – Labor Violations by Worker Characteristics

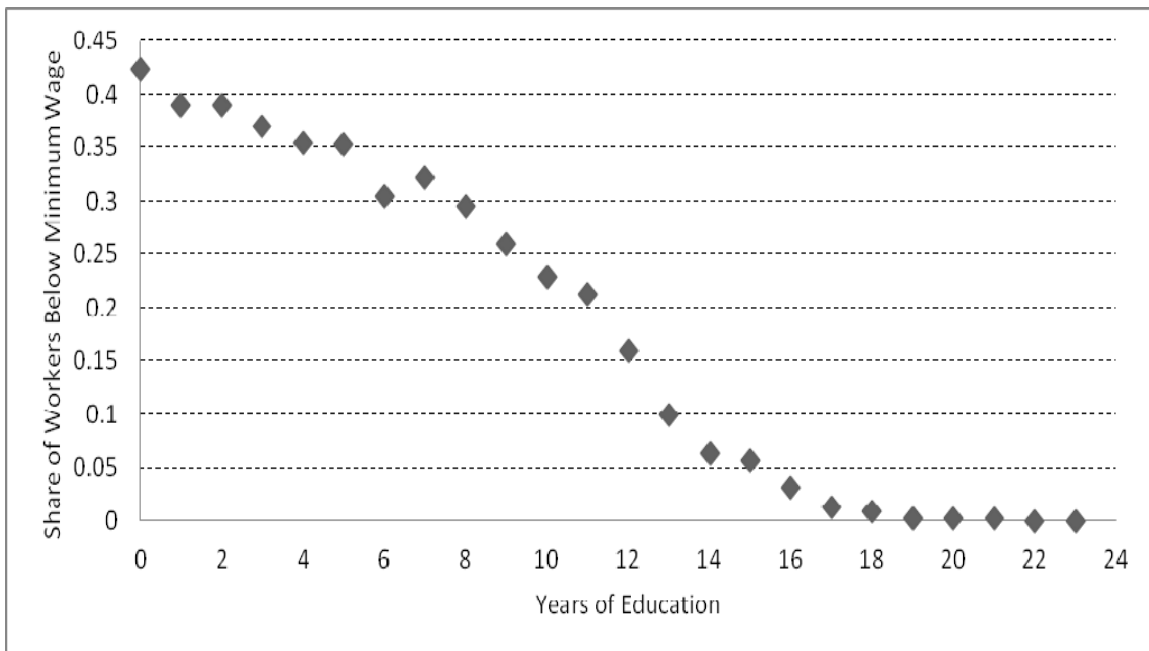|	Minimum Wage Violations				Hours	No Contract	No Pension	Any Violation
Panel A – Age	V_0	V_1	V_2	V_0/V_1				
15-17	0.3247	0.1014	0.0499	0.3122	0.0934	0.5949	0.6505	0.7927
18-25	0.2426	0.0588	0.0238	0.2424	0.0795	0.2487	0.2367	0.4628
25-65	0.1710	0.0411	0.0161	0.2402	0.0905	0.1693	0.1464	0.3502
65+	0.1646	0.0489	0.0231	0.2968	0.0862	0.3488	0.3857	0.5730
Panel B – Gender								
Male	0.1872	0.0453	0.0181	0.2418	0.1046	0.1948	0.1735	0.3903
Female	0.1805	0.0439	0.0175	0.2435	0.0554	0.1779	0.1622	0.3495
Panel C – Education								
<8 years	0.3446	0.0921	0.0392	0.2673	0.1000	0.3167	0.3005	0.5745
8-12 years	0.2568	0.0610	0.0237	0.2376	0.1122	0.2416	0.2190	0.4780
12-16 years	0.1360	0.0299	0.0112	0.2195	0.0838	0.1440	0.1225	0.3111
16+ years	0.0244	0.0061	0.0025	0.2511	0.0519	0.0844	0.0715	0.1730
Panel D – Immigration Status								
Native	0.2244	0.0544	0.0221	0.2424	0.0932	0.1828	0.1139	0.3915
Foreign Born	0.1558	0.0370	0.0137	0.2375	0.1085	0.1787	0.1240	0.3817
Panel E – Ethnicity								
Non Indigenous	0.2016	0.0479	0.0187	0.2375	0.0842	0.1886	0.1496	0.3772
Indigenous	0.3132	0.0809	0.0337	0.2582	0.0970	0.2194	0.1806	0.4806

Notes: Due to data limitations, immigration status is based on years 2006 and 2009 only, and ethnicity is based on years 1996, 2000, 2003, and 2009 only.

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[14] This is likely to be in part due to the fact that older workers have a lower minimum wage than prime aged workers.

Panel B of table 3 presents levels of violation by gender. The results for men and women are very similar. About 20% of both men and women are paid below the minimum wage and the depth of violation is almost identical. The strongest difference is that women are less likely to work more than the maximum number of hours. This is in part because women are more likely to be part time workers.[15] We show below, however, that after controlling for education, women are more likely to suffer a labor law violation.
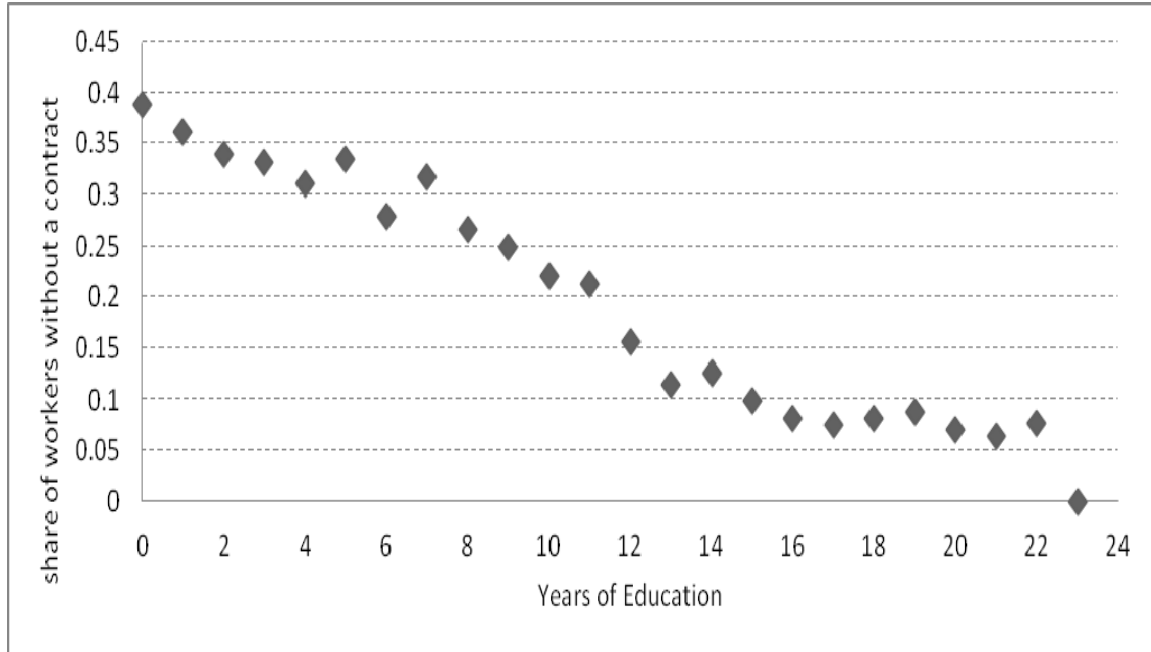
The results for education are the most striking; workers with more years of schooling are less likely to be subject to labor standards violations. Figures 2 and 3 show the relationship between minimum wage and contract violations with years of education. There is a clear downward trend in the level of violations as education increases.

Figure 2 – Minimum Wage Violations by Education

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[15] In Argentina, the extent of violation of the minimum wage is also almost identical for men and women, and hours violations are more prevalent among men (Ronconi, 2010).

Figure 3 – Contract Violations by Education

This result can also be seen in Panel C of Table 3. Workers with very low education (fewer than 8 years) have much higher levels of minimum wage, contract, and pension violations than all other education categories, and a greater depth of minimum wage violation. For workers with more than 16 years of education, minimum wage violations are almost nonexistent (3%) and the level of pension and contract violations are also low compared to the population as a whole.

Finally, results vary by national origin and ethnicity. Panels D and E show that the indigenous population is less likely to receive any of the legally mandated benefits compared to the non-indigenous population. The difference is particularly large for the minimum wage (i.e., 31% of violations among the indigenous compared to 20% among the rest). The simple difference by country of birth suggests that foreign born workers are less likely to experience violations than native citizens, but we show below that this difference reverses after controlling for education and other factors.

4.2   Firm Characteristics

We looked at two dimensions of firm characteristics: firm size and industry. Violations differ greatly across industries as can be seen in Table 4 panel A. In agriculture, 40% of workers are paid below the minimum wage compared to only 6% of workers in mining. Agricultural workers, in general, have the highest level of violations across categories with 37% of workers without contracts and 34% of workers without pensions. Overall, 63% of agricultural workers are subject to some form of labor law violation. Construction also has higher levels of violations than average with 41% of workers subject to a violation.

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Table 4 – Labor Violations by Firm Characteristics

Panel A – Industry	Minimum Wage Violations				Hours	No Contract	No Pension	Any Violation
	V_0	V_1	V_2	V_0/V_1				
Agriculture	0.3990	0.1060	0.0454	0.2657	0.0890	0.3610	0.3270	0.6268
Manufacturing	0.1530	0.0332	0.0123	0.2173	0.0750	0.1460	0.1370	0.3232
Mining	0.0610	0.0156	0.0065	0.2550	0.1210	0.0580	0.0610	0.2278
Construction	0.1660	0.0378	0.0145	0.2275	0.0930	0.2240	0.1870	0.4117
Services	0.1240	0.0521	0.0113	0.4199	0.0580	0.1410	0.1300	0.2901
Panel B – Size (No. of employees)								
1 to 49	0.2336	0.0591	0.0241	0.2530	0.0953	0.2673	0.2462	0.4653
50 to 199	0.1408	0.0307	0.0115	0.2182	0.0771	0.1113	0.0979	0.2891
200 or more	0.1332	0.0303	0.0116	0.2271	0.0840	0.1097	0.0896	0.2865

Violations also differ by firm size. Small firms have higher levels of violation across all labor standards, 47% of workers in small firms have at least one violation. The difference is most notable for pensions and contracts. Workers in small firms are over twice as likely not to have a contract or pension as workers in medium and large firms. There also appears to be very little difference in the level of violation between large and medium firms as can be seen in panel B of table 4. The firm size distinctions were chosen based on the rules governing labor standards violations fines. Larger firms are subject to harsher penalties if found to violate labor laws.

4.3   Geography

The level of violation is very different for urban and rural areas as can be seen in table 5. 39% of rural workers are paid below the minimum wage compared to 16% of urban workers and the depth and severity of violation is higher for rural workers. Rural workers are also twice as likely not to have a contract or pension as urban workers. This is likely to be in part due to industrial differences between urban and rural areas since agricultural workers have the highest levels of labor standards violations.

Table 5 – Labor Violations by Geography

Panel A - Region	Minimum Wage Violations				Hours	No Contract	No Pension	Any Violation
	V_0	V_1	V_2	V_0/V_1				
Tarapacá (I)	0.1680	0.0386	0.0145	0.2300	0.1310	0.1682	0.1507	0.3711
Antofagasta (II)	0.1055	0.0250	0.0100	0.2372	0.1093	0.1269	0.1187	0.3046
Atacama (III)	0.1726	0.0414	0.0162	0.2398	0.1051	0.1508	0.1295	0.3517
Coquimbo (IV)	0.2519	0.0614	0.0241	0.2438	0.0968	0.2365	0.2122	0.4579
Valparaíso (V)	0.1970	0.0461	0.0178	0.2338	0.0972	0.1989	0.1728	0.3982
O'Higgins (VI)	0.2440	0.0535	0.0203	0.2193	0.0681	0.2181	0.1881	0.4388
Maule (VII)	0.3223	0.0834	0.0350	0.2588	0.0778	0.3000	0.2602	0.5146
Bío Bío (VIII)	0.2612	0.0706	0.0303	0.2703	0.0945	0.2103	0.1759	0.4218
La Araucanía (IX)	0.2962	0.0784	0.0332	0.2647	0.0875	0.2152	0.2112	0.4609
Los Lagos (X)	0.2922	0.0710	0.0271	0.2429	0.1044	0.2081	0.1946	0.4546
Aysén (XI)	0.1830	0.0395	0.0143	0.2159	0.0779	0.1502	0.1369	0.3411
Magallanes (XII)	0.1093	0.0255	0.0099	0.2333	0.0856	0.1290	0.1125	0.2859
Región Metropolitana	0.1148	0.0259	0.0099	0.2259	0.0822	0.1631	0.1508	0.3178
Los Ríos (XIV)	0.2668	0.0655	0.0273	0.2455	0.0754	0.1585	0.0672	0.3859
Arica y Parinacota (XV)	0.1798	0.0420	0.0158	0.2333	0.1265	0.1965	0.0911	0.4073
Panel B - Urban/Rural								
Urban	0.1574	0.0369	0.0143	0.2343	0.0893	0.1694	0.1495	0.3470
Rural	0.3856	0.1027	0.0441	0.2662	0.0824	0.3332	0.3174	0.5946

Notes: Regions 14 and 15 are only administrative divisions in the 2009 data.

There are also regional differences in violations. The highest levels of minimum wage violations are in the regions in the middle of the country which are more agricultural (excluding Santiago and Valparaiso which are more industrial) and lowest in the extremes of the country which are less populated. Minimum wage violations range from 11% in the farthest south region of the country (Region XII: Magallanes) to 32% in the agricultural Maule (VII) region in the middle of the country. Santiago has some of the lowest levels of violations with only 11.5% of workers paid below the minimum wage and only 16% and 15% without contracts and pensions respectively. Lower levels of violation are also found in the north of Chile where mining and manufacturing are more important industries. Finally, the Los Lagos Region (X), where the country's aquaculture (fish farming) industry is primarily located, has some of the highest levels of violation with 30% of workers paid

below the minimum wage and 21% without contracts. It also has the second highest level of hours violations in the country.

4.4   Econometric evidence

The previous sections presented simple differences in the extent of labor violations across workers' and firms' characteristics. In this section we compute correlations controlling for the other variables. We estimate the following equation using the pooled sample:

$$Labor\ Violation_i = \beta X_i + \delta Z_i + \varepsilon_i,$$

where *Labor Violation* is equal to 1 if worker i does not receive at least one of the four analyzed benefits (i.e., minimum wage, pension, contract, and hours) and 0 otherwise; X is a vector of worker's characteristics that includes: age, age-squared, gender, years of schooling, ethnicity, and nationality; Z is a vector of the characteristics of the firm employing worker i: size, geographic location, and sector of activity. Table 6 presents the results. In column 1 we only include age, gender, and years of education; in column 2 we add nationality and ethnicity; in column 3 we add firm size, and a set of dummies for region, industry, and rural sector. All models include year dummies and are estimated using a probit model. We report the marginal effects (dF/dx).

Table 6 – Labor Violations and Workers' Characteristics

	(1)	(2)	(3)
Schooling	-0.102***	-0.094***	-0.075***
	(0.0010)	(0.0021)	(0.0023)
Age	-0.064***	-0.048***	-0.050***
	(0.0017)	(0.0034)	(0.0035)
Age squared	0.0006***	0.0005***	0.0005***
	(0.0001)	(0.0001)	(0.0001)
Female	0.047***	0.084***	0.095***
	(0.0079)	(0.0147)	(0.0164)
Foreign born	-	0.152*	0.155*
		(0.0837)	(0.0888)
Indigenous	-	0.101***	0.080***
		(0.0262)	(0.0275)
N	390,896	120,645	120,645
pseudo R2	0.082	0.069	0.093

Notes: The DV is the overall measure of labor violations. All models include year dummies. Column 3 also includes firm size, region, industry and rural dummies. Robust standard errors are in parentheses. *** Significant at the 0.001, ** 0.05, and * 0.1 level.

The econometric results tend to confirm the evidence based on simple differences. Indigenous and less educated workers are more likely to suffer a violation of labor rights controlling for other determinants. The size of the effects is substantial: An additional year of schooling reduces the probability of a labor law violation by approximately 8% and indigenous workers are between 8% and 10% more likely to suffer a labor violation. Differences by sex and national origin, however, appear to be relevant in the econometric results but not in the analysis based on simple differences. After controlling for education and other factors, women are approximately 10% less likely to receive legally mandated labor benefits than men and immigrants are 15% more likely to suffer a labor violation than natives.[16]

5.   Conclusion

This paper presents a first look at the extent and pattern of labor law violations in Chile. The major findings are as follows:

- There was a rising trend in violation from 1990 till 2006, when the trend was checked sharply and government enforcement improved significantly. Despite the recent improvement, still one third of workers are excluded from at least one of the four legally mandated benefits.
- While violations have been relatively minor for hours, they have been significant for minimum wage, having a contract, and pension arrangements.
- There are significant regional variations around the national average—for example, for the minimum wage the national average is around 20% but goes from 12% in Santiago to 33% in Maule, and agricultural regions.
- Smaller firms, which have lower fines and could be harder to reach by the enforcement agency, have higher rates of labor law violation.
- Compliance is lower among women, foreign born, indigenous, and less educated workers.

These trends and patterns raise a number of research and policy questions. A key issue which bridges research and policy is how enforcement effort on the part of the authorities can change the degree of compliance. There are some suggestions in the literature that enforcement can indeed improve compliance, but econometric difficulties in controlling for the endogeneity of resource allocation for enforcement make this a challenging identification problem.[17] But, in addition to enforcement, variations in compliance across worker characteristics, in firm characteristics, and in regional location present a rich and fruitful research agenda.

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[16] Similar results are obtained for each component of the overall measure of labor law violations. Results are available upon request to the authors.

[17] Bhorat et al. (2012b) and Ronconi (2010) compute two stage least squares estimates of the effects of enforcement on compliance in South Africa and Argentina using, respectively, the number of non-inspectors and election years as instrumental variables for labor law enforcement.

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