Workplace Litigiousness and Labor Market Outcomes: Evidence from a Workers' Compensation Reform*

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Abstract

This paper studies a reform to the workers' compensation system in Argentina that established a mandatory first step after work-related accidents: workers were mandated notify a government medical commission that determines the degree of disability, whether the injury is related to the worker's occupation, and the corresponding compensation, before any further legal action could be taken. Exploiting the staggered implementation of the reform across provinces, we find that the reform substantially reduced workplace lawsuits with no effect on reported accidents, thus generating efficiency gains in the labor market. Results suggest a noisy increase in employment in affected provinces of almost 2% after the reform, with no effects on wages or the number of active firms. When zooming at the sector-by-province level, we find that employment significantly increased by more than 5% one year after the reform in sectors that were most affected by litigiousness in the year prior to the reform –construction, mining, and manufacturing, with no corresponding increase in average wages.

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1 Introduction

The economic rationale for labor market institutions combines efficiency and redistributive motives (Blau and Kahn, 1999; Nickell and Layard, 1999; Boeri and Van Ours, 2013). A prominent example is workers' compensation (WC), an institution that covers health expenses and provides wage replacement for workers that are affected by workplace accidents. On the efficiency side, one of the original motivations for the WC legislation was to reduce the costs driven by the litigation expenses that both workers and employers incurred when determining the responsibilities and compensations after workplace accidents (Fishback and Kantor, 1998, 2007). The objective of reducing litigiousness was also motivated by distributional rationales since, in cases where workers and employers have asymmetric bargaining positions, the lack of regulation may lead to an uneven split of the litigation costs and, potentially, to unfair compensation schemes to affected workers and employers.

The efficiency gains from reducing workplace litigation can affect aggregate labor market outcomes. If WC schemes effectively reduce the litigation costs of workplace accidents, the rents of labor market matches increase, especially in sectors where workplace accidents are commonplace. Reducing the expected costs of labor market interactions can be beneficial for both sides of the market. Larger rents may encourage employers to post more vacancies and attract more applicants, eventually affecting employment. Changes in supply and demand driven by reduced litigiousness can also have redistributive consequences. The relative bargaining positions may induce changes in wages, depending on how the additional rents are split between workers and employers. To the best of our knowledge, however, there is no evidence on how effective WC schemes are for reducing litigation in the workplace. Different policy designs may lead to different effects on workplace litigiousness. Evidence is also lacking on the more general question on the effects of reducing workplace litigiousness on labor market outcomes. Answering these questions seems first order to assess the welfare desirability of WC schemes.

This paper studies a WC reform in Argentina that sought to reduce workplace lawsuits between workers and employers. Argentina established a WC system similar to the United States' system in 1996, where employers were mandated to provide no-fault insurance for workers. In exchange, workers waived their right to sue employers and insurance companies. In the mid 2000s, several Supreme Court rulings opened up room for suing employers and insurance companies (Galiani, 2017). As a result, litigiousness escalated, generating large costs for both employers and workers. To address this problem, the system was reformed in February 2017. The new law required injured workers to go through a local government medical commission as a mandatory step before any further action can be taken. This commission determined the degree of disability, whether the injury was related to the worker's occupation, and the corresponding compensation according to the Law. The decision could be appealed to a higher-order commission, and eventually to labor courts, although few cases ended up doing so: the reform tried to appeal to employees by providing quicker compensation and to employers by reducing the large and unpredictable costs from litigiousness.

We exploit the staggered introduction of the law across provinces to estimate the effect of the reform using an event study design. The new system was sanctioned at the federal level in February of 2017, but each provincial legislature had to sanction its own law to adhere to the federal law.[1] Upon approval of the law, each provincial government had to set-up the medical commissions, which then had to be approved by the federal agency in charge of the WC system. Only after the approval of the medical commissions, the law entered into effect at the province level. Provinces were heterogeneous in how they carried out these steps, leading to a staggered adoption of the policy. We cover the period January 2015 to July 2019, where the law entered into effect in 5 out of 24 provinces.[2] We study the effects of the reform on workplace litigiousness and labor market outcomes using quarterly province- and sector-by-province-level aggregates built from administrative records. For each unit of analysis, we observe information on the number of accidents, lawsuits, and amounts claimed by workers, in addition to equilibrium outcomes of the formal labor market such as employment counts, average wages, and number of firms.

We find that the reform was very effective at reducing workplace litigiousness and its associated costs, with no effect on reported accidents. The number of lawsuits fell by about 0.7 log-points after the reform. The costs of litigiousness –measured as the amount of money claimed in lawsuits as a share of the wage bill– dropped by about 0.4 percentage points after the reform. The effect is twice as large in sectors most affected by litigiousness (measured as the sectors with larger shares of employers that had lawsuits before the reform), namely construction, mining, and manufacturing. The drop in litigiousness was not due to lower accident reporting: we find no significant effect on the number of accidents reported, suggesting that the reform was not hostile towards accident reporting. These results suggest that the reform increased the efficiency in the labor market by reducing the costs of managing workplace accidents.

We then explore the effects of the reform on the labor market. Province-level employment increased around 1.8% after the reform, although the effect is not precisely estimated. The number of active firms was not affected by the reform, suggesting that the employment effect was driven by existing firms increasing their employment levels. Average wages were also unaffected by the reform, suggesting that employed workers did not capture the gains of the smaller litigation costs. The employment effects become larger and more precise when zooming at the sector-by-province level: sector-level employment experienced a significant increase of 2.8% one year after the reform. The total effect is almost exclusively driven by sectors most affected by litigiousness, whose employment level one year after the reform was

[1] The exception was the City of Buenos Aires where the law automatically entered into effect after it was passed at the federal level.

[2] We omit the months after July 2019 because of an unanticipated result in the primary election of August 2019 that led to a stock market crash and a substantial overnight depreciation of the currency. These events, in turn, led to significant changes in economic institutions, such as reinstating capital controls and taxes on agricultural exports. This negative economic shock had a differential effect across provinces and sectors, potentially affecting our identification strategy.

more than 5% larger. Wage effects continue to be negligible when using province-by-sector-level data, although high litigiousness sectors show a modest but imprecise increase of around 1.6% on average wages in the post-reform period.

We end the paper by proposing a simple model of the labor market to rationalize the results. We extend the basic matching model of Pissarides (1985, 2000) to allow for workplace accidents. The model can rationalize positive employment effects when litigation costs decrease through an increase in posted vacancies. The wage effects are ambiguous since the reduction in the expected costs of litigation increase the rents of labor market matches, eventually pushing wages up, but also induce a compensating differential force that pushes wages down. The relative bargaining power between workers and employers mediates how these two forces balance in equilibrium.

This paper contributes to the literature on WC by providing, to our knowledge, the first analysis on the effects of the policy on workplace litigiousness and aggregate labor market outcomes. The literature has mostly focused on moral hazard questions by estimating worker-level behavioral responses on accidents, claims, or private health expenditures (Krueger, 1990; Dionne and St-Michel, 1991; Meyer et al., 1995; Kantor and Fishback, 1996; Dillender, 2015; Hansen et al., 2017; Powell and Seabury, 2018; Huet-Vaughn and Benzarti, 2020; Cabral and Dillender, 2021). Cabral et al. (2021) discuss the role of WC schemes for dealing with other market failures such as adverse selection and market power in private insurance markets and externalities on workers' health. With the exception of the early evidence on wage incidence provided by Fishback and Kantor (1995), there is no evidence on the labor market effects of WC schemes. We show that well-designed WC schemes can significantly reduce labor market litigation, which in turn positively affects aggregate employment. The fact that external government commissions can effectively reduce workplace lawsuits could eventually inform policy-making in other contexts where workplace conflicts could lead to costly litigation as, for example, workplace discrimination (Darity and Mason, 1998; Bohren et al., 2022; Kline et al., 2022) or sexual harassment (Folke and Rickne, 2022).

More generally, the labor market effects of different labor market institutions have been extensively studied. A large literature studies the labor market effects of unemployment insurance policies, both at the individual (Schmieder et al., 2016; Nekoei and Weber, 2017; Lindner and Reizer, 2020) and aggregate (Hagedorn et al., 2017; Marinescu, 2017; Johnston and Mas, 2018; Chodorow-Reich et al., 2019; Boone et al., 2021) levels. Similar analyses exist regarding health insurance (Gruber, 1994; Baicker and Chandra, 2006; Baicker et al., 2014; Kucko et al., 2018; Duggan et al., 2019; Fang et al., 2020; Heim et al., 2021), family policies (Rossin-Slater et al., 2013; Schönberg and Ludsteck, 2014; Givord and Marbot, 2015; Dahl et al., 2016; Olivetti and Petrongolo, 2017; Tamm, 2019), the EITC (Kleven, 2020), the minimum wage (Manning, 2021), and universal basic income policies (Hoynes and Rothstein, 2019). We add to this literature by providing evidence on the labor market effects of WC policies.

This paper also contributes to the literature on compensating differentials that emphasizes the importance of non-wage job amenities for workers' choices and outcomes (Bonhomme and Jolivet, 2009; Mas and Pallais, 2017; Lavetti and Schmutte, 2018a,b; Maestas et al., 2018; Sorkin, 2018; Lavetti, 2020; Taber and Vejlin, 2020; Anelli and Koenig, 2021; Jäger et al., 2021; Le Barbanchon et al., 2021; Lindenlaub and Postel-Vinay, 2021; Marinescu et al., 2021; Sockin, 2021; Lamadon et al., 2022; Roussille and Scuderi, 2022). One particular (dis)amenity that enters the bundle of job characteristics is the likelihood of workplace accidents. The evidence provided in this paper can be thought of as measuring the effect of reducing the cost of this disamenity on labor market outcomes. While the proposed model suggests that employers may use this rationale to push wages down, the increase in labor market rents pushes the wage in the opposite direction, to the extent that workers are able to capture some of this rents. Then, our analysis contributes to the understanding of compensating differential wage effects in contexts where bargaining is important and changes in amenities also affect the value of the job for the employer.

The rest of the paper is structured as follows. Section 2 provides an overview of WC schemes and the institutional setting and reform studied in this paper. Section 3 describes the data. Section 4 describes the empirical strategy and presents the main empirical results. Section 5 presents a simple theoretical framework of labor markets with litigiousness and workers' compensation. Finally, Section 6 concludes.

2 Workers' compensation schemes and institutional setting

Defining WC WC schemes provide some type of insurance for workers who experience accidents or illnesses related to their job. The insurance usually covers the health expenses related to the treatment and provides wage replacement for the duration of the injury, and in some cases they may also provide compensation to the families of workers who die on the job. In addition, these systems typically incorporate mechanisms to limit the need to resort to lawsuits (or forbid them altogether), with the intention of avoiding large and unpredictable costs for both workers and employers (Fishback and Kantor, 2007). Some countries, such as many in Western Europe, implement a "social insurance" system, where the benefits are delivered through some government program and funded through payroll taxes. Other countries, like the United States and Argentina, use an "employer liability" system, where employers are mandated to provide no-fault insurance for their employees and workers cannot sue their employers for negligence.

WC in Argentina before the reform Argentina established its first WC system in 1915. This system was changed multiple times and frequently experienced issues with litigiousness (Galiani, 2017). In 1995, a new law was passed, which established a WC scheme similar to the United States' system. Under this new law, employers are mandated to provide no-fault insurance for injured workers. This was typically purchased from insurance companies, called Work Hazards Insurers (*Aseguradoras de Riesgos del Trabajo*), while a few employers chose to self-insure. On the other hand, workers waived their right to sue employers and insurance companies. The system achieved the goal of limiting litigiousness for about a decade. However, between 2004 and 2007, several Supreme Court rulings gradually allowed workers to sue both their employers and insurance companies (Galiani, 2017).[3] This resulted in a massive escalation of the number of lawsuits, imposing a large burden on the WC system by increasing bureaucracy and waiting times, and leading to concerns about excessive and unpredictable costs due to litigiousness. Panel (a) of Figure 1 shows the number of new reported lawsuits for each quarter since the system started reporting in January of 2010 until the second quarter of 2017. The number of new quarterly lawsuits more than tripled between 2010 and 2017. Panel (b) of Figure 1 shows the share of firms in each sector that had lawsuits during 2016. The incidence of litigiousness was substantial: in the most affected sectors –construction, mining, and manufacturing– almost one in five firms faced at least one lawsuit in 2016.

The reform In February 2017, a reform was introduced (Law 27,348). The new law established a mandatory first step after work-related accidents: injured workers' claims have to be processed by a Jurisdictional Medical Commission that determines the degree of disability, whether the injury is related to the worker's occupation, and the corresponding compensation as determined by the law passed in 1995, before any further legal action can be taken. This decision could be appealed by any party involved to a higher-level commission and, eventually, to labor courts, although few cases end up doing so. The intention behind the reform was to appeal to workers by streamlining the process and ensuring a quick compensation, and to employers and insurance companies by reducing the large and unpredictable costs due to litigiousness. The law was passed at the national level, but provinces were free to adhere to it or not by sanctioning their own adherence laws at the provincial level. Most provinces adhered in the years that followed. Upon adherence to the law, the provincial government has to set up their medical commissions, which then have to be approved by the Superintendence of Work Hazards. Once this approval takes place, the law enters into effect in that province, which happened in 5 out of 24 provinces during the sample period we cover (January of 2015 to July 2019).[4]

3 Data

We combine administrative data from two main sources. The first source contains labor market information, while the second source contains information about the WC system. For the labor market data, we collect administrative records from the Ministry of Employment and Social Security (*Ministerio de Trabajo, Empleo, y Seguridad Social*). These records are constructed from the payroll tax forms that firms have to file monthly to submit their payroll taxes to the Social Security Agency. These data contain

[3] In September 2004, the *Astudillo* and *Aquino* rulings established that provincial labour courts (instead of federal courts) were responsible for handling workplace accidents and established that employers could be liable for workplace accidents. The *Llosco* ruling of June of 2007 confirmed employees' possibility of civil action against employers and insurance companies, while still receiving the wage replacement payments from insurance companies.

[4] The first instance of law adoption is from the City of Buenos Aires in February of 2017. This was followed by Córdoba in September of 2017, Mendoza in February of 2018, Buenos Aires in October 2018, and Río Negro in December 2018.

quarterly information on the number of workers, number of active firms, and average salaries paid at the 4-digit sector for each province.[5] We use this information to construct quarterly province-level and 1-digit sector-by-province-level aggregates of number of workers, number of active firms, and average salary (monthly earnings).

We combine the labor market data with information from the government agency in charge of the WC system, the Superintendence of Work Hazards (*Superintendencia de Riesgos del Trabajo*). These records are constructed from insurance companies reports that are submitted each month to the Superintendence of Work Hazards. The Superintendence then constructs comprehensive monthly information on the number and type of accidents reported, number of lawsuits started, and the amounts claimed in lawsuits in each sector-by-province cell. We use this information to construct quarterly province-level and 1-digit sector-by-province level aggregates of the number of lawsuits, the number of accidents, and the average amount claimed in lawsuits as a share of labor costs.

Our final dataset consists of a quarterly panel of employment counts, firm counts, average salary, number of lawsuits, number of accidents, and amounts claimed in lawsuits as a share of labor costs at the province and sector-by-province-level. The sample period is January 2015 (two years before the first province adopts the law) through July 2019. Summary statistics are shown in Table 1. Panel A presents variables aggregated at the province-level and Panel B presents variables aggregated at the sector-by-province-level. There are, on average, 5,767 accidents and 1,051 new lawsuits reported each quarter on each province. However, there is substantial heterogeneity across provinces. On average, the amount claimed in lawsuits represents 0.4% of total labor costs. The degree of heterogeneity increases when zooming at the sector-by-province level, which is consistent with the sector-level heterogeneity documented in Figure 1.

4 Results

This section presents our main results. We first present event study analyses using the data aggregated at the province level, which are more likely to inform about the aggregate effects of the policy. We then present event-study analyses using the data aggregated at the sector-by-province-level which inform about the sector-level effect of the reform.

Empirical strategy We exploit the staggered introduction of the law across provinces to estimate the effect of the reform using an event study design. For the province-level event studies, we estimate the

[5] Some of the information is produced with quarterly frequency (e.g. employment) and some with monthly frequency (e.g. wages). We construct quarterly values of the monthly variables by computing quarterly averages.

following equation by OLS:

$$Y_{pt} = \alpha_p + \mu_{r(p)t} + \sum_{k \neq -1} \beta_k \cdot 1\{t = e_p + k\} \cdot \text{Treated}_p + \varepsilon_{pt}, \tag{1}$$

where Y_{pt} is an outcome of interest in province p at quarter t, α_p is a province fixed effect, $\mu_{r(p)t}$ is a region-by-quarter fixed effect with $r(p)$ the region of province p, Treated_p is a dummy variable equal to 1 if province p is ever treated, $1\{t = e_p + k\}$ is a dummy variable equal to 1 if province p was treated k quarters ago at quarter t with e_p the calendar quarter in which the province is treated, and ε_{pt} is the error term. The coefficients of interest are the β_k, which measure the differences in trends between treated and untreated provinces within a window of quarters around the adoption of the law. We normalize $\beta_{-1} = 0$ and cluster the standard errors at the province level. We fully saturate the regression including all time and treatment interactions and report the coefficients for a more balanced window of 8 quarters prior and 5 quarters after the reform. For the sector-by-province-level analysis, we estimate the same event-study equation, but including sector-by-province fixed effects (instead of province-level fixed effects).

We also estimate difference in differences regressions that summarize the post-reform effect:

$$Y_{pt} = \alpha_p + \mu_{r(p)t} + \beta \cdot \text{Treated}_p \cdot \text{Post}_{pt} + \varepsilon_{pt}, \tag{2}$$

where $\text{Post}_{pt} = \mathbb{1}\{t \geq e_p\}$ is a dummy variable that takes value 1 if province p was already treated at quarter t, and all other variables are defined as in equation (1). In this regression, β summarizes the aggregate post-reform treatment effect. While we continue to cluster the standard errors at the province level, given the small number of provinces, we also report Wild Bootstrap p-values (Cameron et al., 2008) for the main coefficient of interest. Noting that the length of the post-period differs by treated province, tables report the average effect on the 5 quarters after the reform.

Province-level results Figure 2 plots the $\{\beta_k\}$ coefficients from equation (1) with their corresponding confidence intervals. Panel (a) uses the inverse hyperbolic sine transformation of the number of lawsuits reported in a given quarter as a dependent variable.[6] Trends in litigiousness before the adoption of the law are stable but there is a significant negative break in trends after the adoption of the law. Panel (c) shows that the total amount of money claimed in lawsuits as a percentage of total labor costs also falls significantly after adoption of the law, suggesting that the decrease in lawsuits generates monetary gains. Panel (b) shows that these results are not due to lower accident reporting: while there seems to exist a mild negative trend, there is no significant drop in reported accidents after the implementation of the law. Regarding the labor market effects, Panel (d) reports coefficients on the inverse hyperbolic sine

[6]We use the inverse hyperbolic sine transformation because for one period there were zero reported lawsuits, but we get equivalent results when using the natural logarithm.

of the total number of workers at the province level as dependent variable, and shows a positive albeit imprecise increase in the total number of workers.[7] Panels (e) and (f) show that there is no significant effect on the total number of active firms and on the average salary at the province level.

Panel A of Table 2 presents the difference-in-differences estimates of the β coefficient from equation (2) of the effect of the law adoption, with the corresponding clustered standard errors and the Wild Bootstrap p-value. Results indicate a substantial decrease in the number of lawsuits (0.77 log points) and amounts claimed in lawsuits (0.4 percentage points of the wage bill), with a mild and noisy increase in employment of 1.8%. Table 2 also corroborates the small and non-statistically significant effects on accidents, average salaries, and number of active firms.

Sector-by-province-level results The province-level results inform about the aggregate effects of the policy. We complement these results with sector-by-province level regressions to both increase the statistical power and estimate the sector-level impact of the reform. Figure B.I of Appendix B plots the $\{\beta_k\}$ coefficients from equation (1) with their corresponding confidence intervals for the lawsuits and accidents outcomes. Results essentially mirror the province-level results. This is confirmed in Panel B of Table 2: when zooming at the sector-by-province level, results also indicate a drop in lawsuits after the implementation of the reform with no corresponding change in reported accidents. Figure 2 plots the $\{\beta_k\}$ coefficients from equation (1) with their corresponding confidence intervals for the labor market outcomes. The employment effect is larger and more precisely estimated when using the sector-by-province data. Panel B of Table 2 shows that the estimated employment effect is 2.8% and is significant at the 5% level. Again, the effect on average salaries and number of firms are negligible.

Sector-level heterogeneity To further understand the sector-level effect of the reform, we classify sectors based on the degree of litigiousness they experienced in 2016, defined as the share of employers that had lawsuits during the year (see Panel (b) of Figure 1). We classify construction, mining, and manufacturing as sectors with "high litigiousness" and estimate separate event studies for this group and the residual sectors. Panel (b) of Figure 2 shows the results for the employment count, indicating that the increase in employment is driven by the high-litigiousness sectors. Panel C of Table 1 shows that the reform increased employment around 5% in these sectors. Panel (d) shows that high-litigiousness sectors experienced modest wage increase, although the estimated effect is noisy and partially confounded by differential trends. Panel C of Table 2 suggest that the effect on average earnings in these sectors is around 1.6%. Finally, these results confirm the null effect on number of firms.[8]

[7] We use the inverse hyperbolic sine even though there are no instances of zero reported workers to stay consistent with the sector-by-province-level analysis, in which there are occasional instances of zero reported workers for some sector-province pairs. Results are the same when using the natural logarithm of the number of workers.

[8] Panels (b), (d), and (f) of Figure B.I of Appendix B, and Panel C of Table 2 show the heterogeneities for the lawsuits and accidents outcomes. The main difference between sectors relates to the amount claimed as a share of labor costs, which

Robustness checks A recent literature suggests that staggered event studies estimated using two-way fixed effects models may be biased when treatment effects are heterogeneous (de Chaisemartin and D'Haultfœuille, 2022; Roth et al., 2022). This potential bias comes from "forbidden comparisons" between treated units, that is, when already treated units integrate the control group of units treated in later periods. In these cases, the estimated treatment effect may not be a convex combination of the heterogeneous treatment effects since the forbidden comparisons may induce negative weights. We perform two exercises to show that the source of bias is negligible in our setting. First, we implement the decomposition suggested by Goodman-Bacon (2021) that shows the relative importance that different pairwise comparisons play when computing the aggregate estimate. As shown in Appendix A, all regressions are almost exclusively estimated using comparisons between treated and never treated units. This is not surprising given the small number of treated provinces relative to the never treated ones. These results suggest that the scope for negative weighting is negligible. To further address this concern, we estimate stacked event study specifications (Cengiz et al., 2019, 2022; Gardner, 2021; Baker et al., 2022) where we force the event-specific control groups to be exclusively composed by never-treated provinces. As we show in Appendix D, results remain virtually unchanged under this alternative specification.

Another concern is the small number of treated provinces, given that the law entered into effect in only five provinces in the period considered. This could be a concern if the estimated difference-in-differences effects capture some differential trend for some treated provinces and not the inherent effect of the reform. Alternatively, the main results could be driven by specific provinces which could compromise the external validity of the result. To assess whether this concern bears some relevance for our results, we replicate our main results with several "leave-one-out" estimations in which we sequentially drop one of the treated provinces and compare these results to our baseline estimates using all of the provinces. The results from these exercises can be found in Appendix C. All of our results remain very similar to our baseline estimates in all of the leave-one-out estimations, suggesting that results are not driven by some differential trend for some treated province.

5 Model

To rationalize the employment and wage effects, this section extends the standard Pissarides (1985, 2000) matching model to incorporate workplace accidents. In the model, reduced litigation costs generates employment increases. Wage effects are ambiguous, with the relative bargaining power determining the balance of two competing forces: compensating differentials and larger labor market rents.

is twice as large for the more exposed sectors.

Preliminaries Labor supply L is exogenous. Let u be the unemployment rate and v the vacancies per worker rate, both endogenous. The number of matches is given by the matching function $M = M(uL, vL)$, which is assumed to be increasing and concave and to have constant returns to scale. Define labor-market tightness as $\theta = v/u$. Constant returns to scale in M implies that the job filling rate, $M(uL, vL)/vL$, is given by $q(\theta)$, with $q_\theta := \partial q(\theta)/\partial\theta < 0$. Likewise, the job finding rate, $M(uL, vL)/uL$, is given by $p(\theta) = \theta q(\theta)$, with $p_\theta := \partial p(\theta)/\partial\theta > 0$. The exogenous job destruction rate is δ. The unemployment law of motion is given by $\dot{u} = \delta(1-u) - \theta q(\theta)u$. In steady state, $\dot{u} = 0$, which implies that

$$u = \frac{\delta}{\delta + \theta q(\theta)}. \tag{3}$$

(3) is called the Beveridge curve, and establishes an equilibrium relationship between u and θ.

Value functions Firms are atomistic and decide whether to post a vacancy at cost c. If the vacancy is filled, it produces ϕ and pays wage w. Filled vacancies have a probability a of having a workplace accident. When occurring, accidents induce a cost for the firm, k_F. Let V and J be the value for the firm of a vacant job and a filled vacancy, respectively. Then, if r is the discount rate, the value functions can be written as

$$rV = -c + q(\theta)(J - V), \tag{4}$$

$$rJ = \phi - w - ak_F + \delta(V - J). \tag{5}$$

Free entry implies $V = 0$, so (4) is reduced to $J = c/q(\theta)$. Replacing in (5) yields

$$\phi - w - ak_F = \frac{(r+\delta)c}{q(\theta)}, \tag{6}$$

which is called the job-creation curve.

Define by b the workers' reservation value and by k_W the cost of a workplace accident for the worker. Let U and W be the value for the worker of being unemployed and employed, respectively. Then

$$rU = b + \theta q(\theta)(W - U), \tag{7}$$

$$rW = w - ak_W + \delta(U - W), \tag{8}$$

We assume that $k_F + k_W > 0$, that is, the process of a workplace injury is not a zero-sum game where employers just compensate workers. The potential presence of, for example, lawsuits implies that there is a deadweight loss associated with accidents.

Wage setting There is Nash bargaining over the total match surplus, with β the workers' bargaining power, so $w = \arg\max_w (W-U)^\beta (J-V)^{1-\beta}$. Solving the problem yields

$$w \quad = \quad (1-\beta)(b + ak_W) + \beta(\phi + c\theta - ak_F). \tag{9}$$

Note that (9) coincides with the standard solution of the basic DMP model when $k_F = k_W = 0$. The fact that, in partial equilibrium, w depends positively on k_W, suggests that compensating differentials play a role in the wage determination.

Equilibrium To understand the equilibrium, we replace (9) in (6) and differentiate, which yields

$$\frac{d\theta}{dk_F} \quad = \quad \frac{q(\theta)(1-\beta)a\left(\frac{dk_W}{dk_F}+1\right)}{q_\theta(\phi - w - ak_F) - q(\theta)\beta c}, \tag{10}$$

which is unambiguously negative under the assumption that $J \geq 0$, and $dk_W/dk_F \geq 0$. The former is a standard assumption that essentially implies that there is value to employers to create vacancies, and the latter implies that the hypothetical reform that lower the costs of accidents for employers do so for workers as well. That assumption holds in the reform we study since the reduction in lawsuits imply lower costs for both workers and employers. Equation (10) implies that higher (lower) costs for firms of workplace injuries decrease (increase) the vacancies to applicants ratio. Together with equation (3), this implies that higher (lower) costs of workplace injuries induce higher (lower) equilibrium unemployment rates. Then, this simple model rationalizes how a reform that reduces k_W and k_F can induce positive employment effects.

A couple of things are worth discussing about equation (10). First, the magnitude of $d\theta/dk_F$ depends positively on a: the employment effect is larger when workplace accidents are more likely. This is consistent with the heterogeneous results presented in Section 4. Second, the magnitude of $d\theta/dk_F$ depends negatively on β: the employment effect is larger when workers' bargaining power is low. This is due to the fact that when β is large, employers anticipate that workers capture a large share of the increase in rents. Therefore, the incentives for creating more vacancies are attenuated. Third, the magnitude of $d\theta/dk_F$ depends positively on dk_W/dk_F, that is, the employment effect is larger when workers' costs are also reduced with the reform. This comes from the fact that the value workers put on the reform induce a compensating differential force that employers can use to push wages down and, therefore, capture more rents from the labor market matches, thus increasing the incentives of posting more vacancies.

Using the fact that $p(\theta) = \theta q(\theta)$, we can replace (6) in (9) and then differentiate to explore the equilibrium change in w. This yields the following expression

$$\frac{dw}{dk_F} = \frac{\left[(r+\delta)(1-\beta)a\frac{dk_W}{dk_F} + \beta p_\theta \frac{d\theta}{dk_F}(p - w - ak_F) - \beta(r+\delta+p(\theta))a\right]}{r+\delta+\beta p(\theta)}. \tag{11}$$

The sign of the expression is ambiguous. The first term in the numerator is positive and reflects the compensating differential force that pushes wages downward when k_F decreases. The second and third terms are negative, implying that they push the wage upwards when k_F decreases. The second term measures the increase in rents in the labor market given by the change in θ because of the larger amount of vacancies, and the third term measures the direct benefits on employers given by the reduction of k_F. The parameter that mediates the final sign of the wage effect is β. When β is small, workers are unlikely to capture the additional rents, thus the compensating differential force dominates pushing wages downwards. As β increases, workers gradually capture additional rents, making the wage effect eventually positive. As in the employment analysis, the magnitude of the effect is proportional to a.

While simple, this model helps to rationalize why a reduction in litigiousness may have a positive employment effect with no change in average wages.

6 Conclusion

WC schemes may be beneficial to workers and employers if they are able to streamline the process of compensation for workplace accidents and limit the need to resort to costly and inefficient litigation. This paper shows that a reform in Argentina that imposed a government medical intermediary to mediate between parties was very successful at reducing lawsuits, implying a substantial reduction in litigation costs. We find that this efficiency gain had effects on the labor market equilibrium: the reform increased aggregate employment with no aggregate effect on the number of active firms nor average wages. In the most affected sectors –construction, mining, and manufacture– the employment effect is especially pronounced and wage effects seem to be slightly positive.

Our results suggest that the efficiency-enhancing potential of WC schemes depends on their ability of limiting litigation and costly lawsuits. WC policies, however, should not be uniquely analyzed from this angle since they also affect job quality (ILO, 2017) and may have distributional effects. Our analysis shows that the positive employment effects are not tied to significant changes in wages, suggesting that employers are capturing the incremental job surplus derived from the decrease in litigation. The heterogeneous effects by economic sector also suggest that the benefits of the policy are not evenly distributed in the labor market.

More research is needed to have a more comprehensive picture of the winners and losers of the policy. Private insurance companies are also likely to be affected by the implementation of government medical intermediaries. Knowing if profits of firms and insurers were affected by the reform would shed light on the conjectured redistributive consequences of WC policies. Other policy tools, such as income and corporate taxes or sector specific minimum wages, could help to balance asymmetric rent-sharing when efficiency gains are not translated to higher wages.

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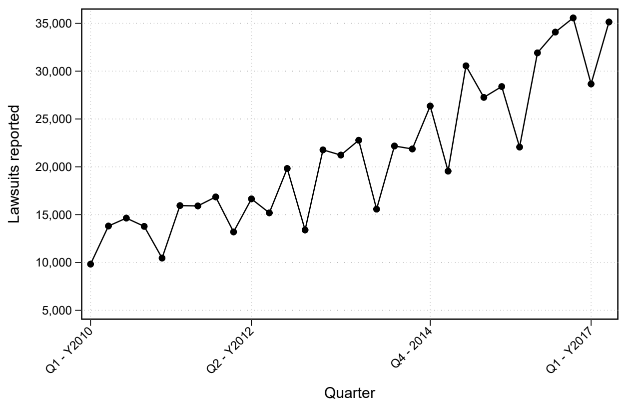
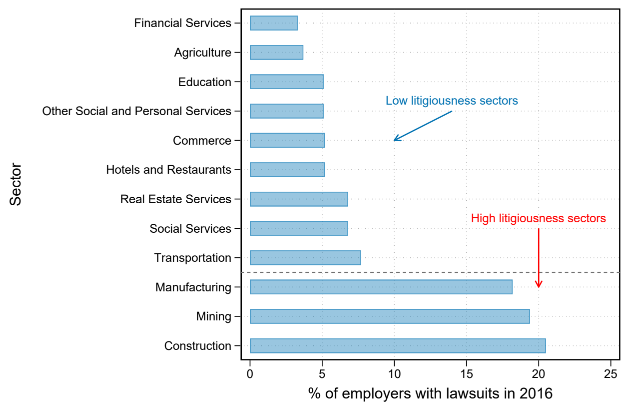
A Figures

Figure 1: Workplace litigiousness before the reform



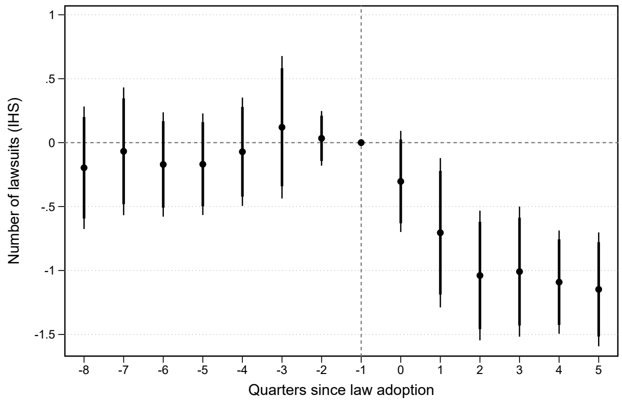
(a) New lawsuits reported by quarter



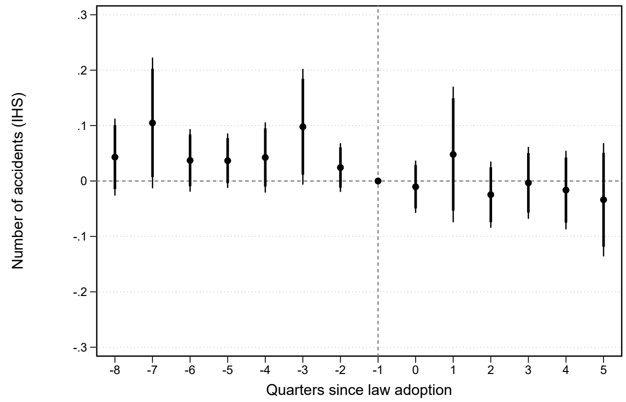
(b) Litigiousness by sector

Notes: Panel (a) shows the total number of new lawsuits reported in the country in each quarter, from the first period in which the system for reporting lawsuits entered into effect (January of 2010) to the quarter in which the reform we study was sanctioned at the Federal level (February of 2017). Panel (b) shows the share of employers in each sector that had lawsuits during the 2016. Manufacturing, Mining, and Construction are indicated as sectors highly affected by litigiousness.

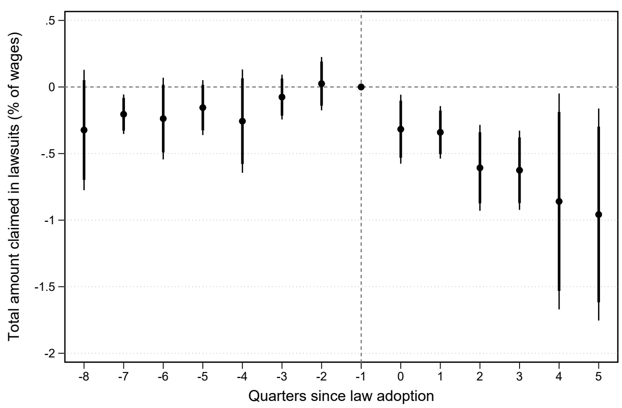
Figure 2: Province-level results



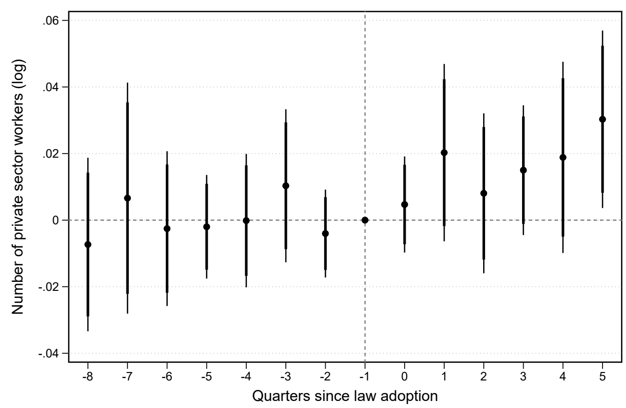
(a) Number of lawsuits (IHS)



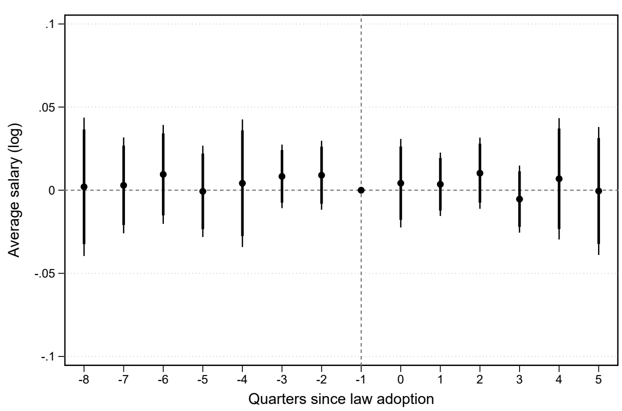
(b) Number of accidents (IHS)



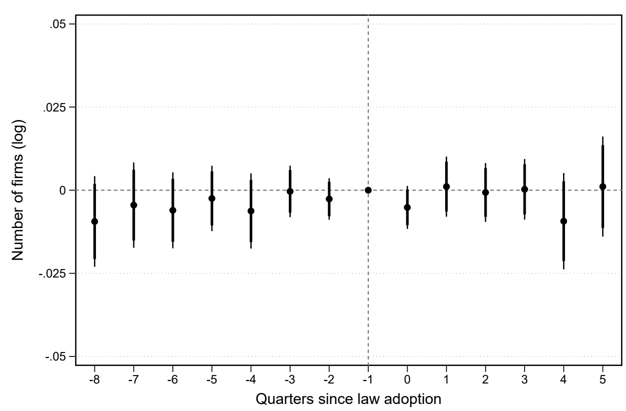
(c) Amount claimed (% of labor costs)



(d) Employment (log)



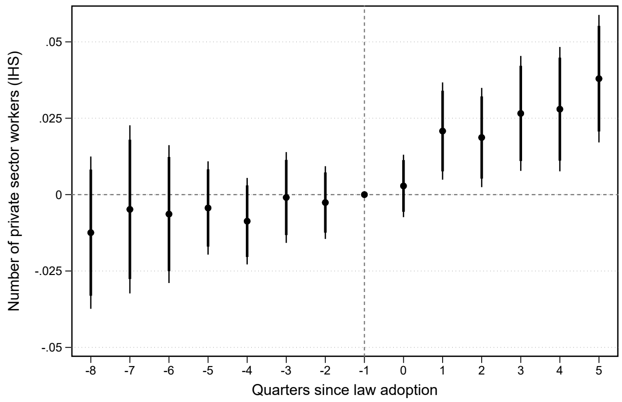
(e) Average salary (log)



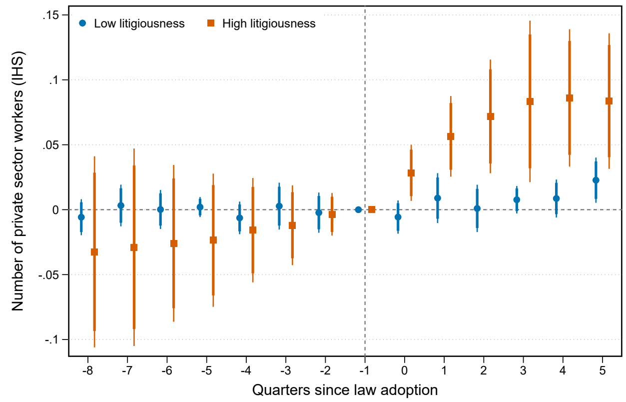
(f) Number of firms (log)

Notes: This figure plots the β_k coefficients from equation (1) using different dependent variables. The unit of observation is a province-by-quarter. Standard errors are clustered at the province level. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the natural logarithm of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the natural logarithm of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms.

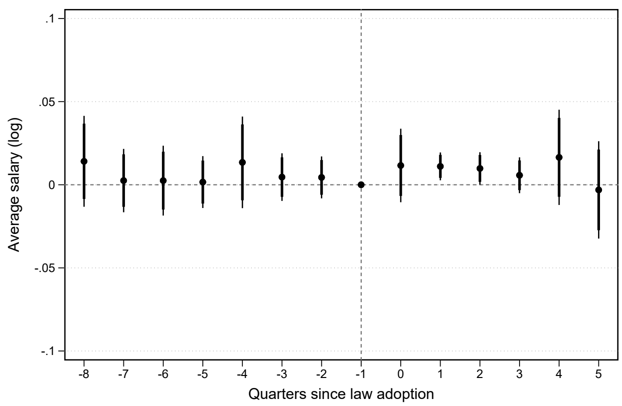
Figure 3: Sector-by-province level results: Labor market outcomes



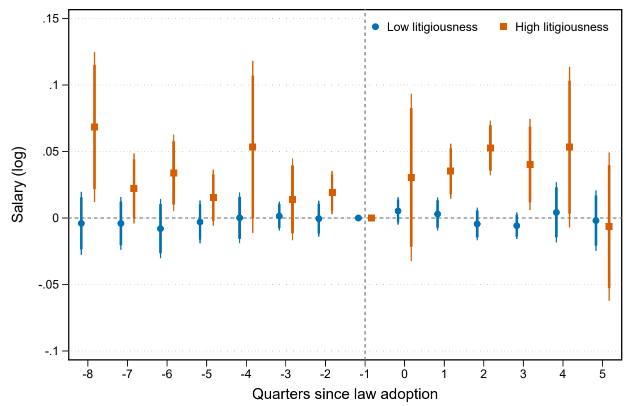
(a) Employment (log)



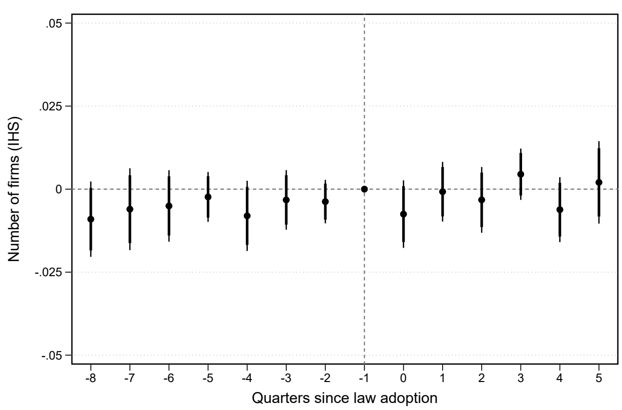
(b) Employment (log) - Heterogeneity



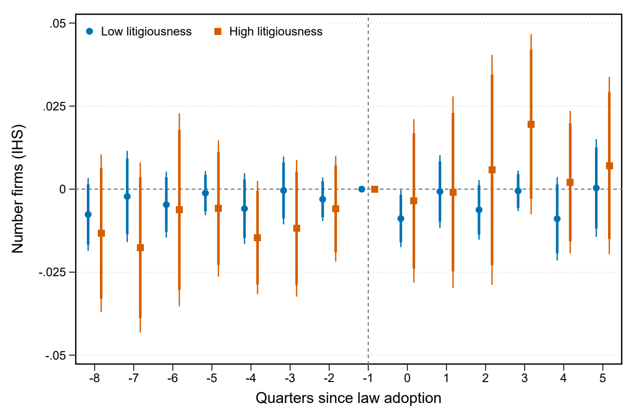
(c) Average salary (log)



(d) Average salary (log) - Heterogeneity



(e) Number of firms (log)



(f) Number of firms (log) - Heterogeneity

Notes: This figure plots the β_k coefficients from equation (1) at the province-by-quarter level using different dependent variables. The unit of observation is a province-by-quarter. Standard errors are clustered at the province level. Coefficients in orange correspond to the event study for sectors indicated as "high litigiousness" in figure 1: construction, mining, and manufacturing. Coefficients in blue correspond to the event study for the rest of the sectors. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panels (a) and (b) is the natural logarithm of the total number of workers. The dependent variable in Panels (c) and (d) is the inverse hyperbolic sine of the average salary. The dependent variable in Panels (e) and (f) is the natural logarithm of the total number of firms.

B Tables

Table 1: Summary statistics

	Observations	Mean	Standard Deviation	Median
Panel A. Province level				
Number of lawsuits	432	1051	2531	115
Amount claimed in lawsuits (as % of labor costs)	432	.386	.496	.229
Number of accidents	432	5767	11493	1867
Number of workers	432	271499	500124	90448
Average salary	432	24109	12714	21263
Number of firms	432	23430	42262	7789
	Observations	Mean	Standard Deviation	Median
Panel B. Sector-by-province level				
Number of lawsuits	5,184	77.827	287.566	4.000
Amount claimed in lawsuits (as % of labor costs)	5,182	0.470	0.985	0.112
Number of accidents	5,184	129.653	364.732	29.333
Number of workers	5,184	22362.426	55878.927	6085.000
Average salary	5,158	25066.232	18403.877	20076.224
Number of firms	5,184	1945.553	5270.902	421.000

Notes: Panel A shows summary statistics of variables aggregated at the province-by-quarter level and Panel B shows summary statistics of variables aggregated at the sector-by-province-by-quarter. Number of lawsuits is the total number of lawsuits reported during the quarter. Amount claimed in lawsuits (as % of labor costs) is the total amount claimed in lawsuits as a share of total labor costs in a given quarter. Number of accidents is the total number of accidents reported during the quarter. Number of workers is the average number of workers employed during a quarter. Average salary is the average salary during the quarter. Number of firms is the average number of active firms during a quarter.

Table 2: Main results

	(1) Lawsuits	(2) Amount claimed	(3) Accidents	(4) Employment	(5) Average salary	(6) Active firms
Panel A. Province-level results						
Treated	-0.771***	-0.406***	-0.0445	0.0179	0.000267	0.00150
	(0.193)	(0.132)	(0.0305)	(0.0129)	(0.00997)	(0.00592)
Wild bootstrap p	0.0000	0.0110	0.2462	0.1381	0.9820	0.7778
Observations	432	432	432	432	432	432
Number of provinces	24	24	24	24	24	24
Panel B. Sector-by-province-level results						
Treated	-0.710***	-0.455***	-0.0412	0.0275**	0.00341	0.00176
	(0.177)	(0.0985)	(0.0453)	(0.0113)	(0.00838)	(0.00538)
Wild bootstrap p	0.0000	0.0000	0.5776	0.0380	0.7357	0.7688
Observations	5184	5182	5184	5184	5158	5184
Number of provinces	24	24	24	24	24	24
Panel C. Sector-by-province-level results: heterogeneity by litigiousness						
Treated × Low Litigiousness	-0.704***	-0.341***	-0.0276	0.0187	-0.000828	0.00113
	(0.176)	(0.0743)	(0.0313)	(0.0118)	(0.00791)	(0.00596)
Treated × High Litigiousness	-0.727***	-0.800***	-0.0819	0.0537**	0.0161	0.00366
	(0.188)	(0.254)	(0.0956)	(0.0196)	(0.0131)	(0.00841)
Wild bootstrap p (low)	0.0000	0.0020	0.5445	0.1962	0.9610	0.8599
Wild bootstrap p (high)	0.0240	0.0511	0.6777	0.0480	0.2993	0.6847
Observations	5184	5182	5184	5184	5158	5184
Number of provinces	24	24	24	24	24	24

Notes: This table reports OLS estimates of difference-in-differences coefficients from equation (2). Panel A reports results for regressions at the province level, with all specifications including province fixed effects and region-by-time fixed effects. Panels B and C report results for regressions at the sector-by-province level, with all specifications including sector-by-province fixed effects and region-by-time fixed effects. In column 1 the dependent variable is the inverse hyperbolic sine transformation of the total number of lawsuits reported during the quarter. In column 2 the dependent variable is the total amount of money claimed in lawsuits as a percentage of the total wage bill. In column 3 the dependent variable is the inverse hyperbolic sine of total number of accidents reported during the quarter. In column 4 the dependent variable is the inverse hyperbolic sine of the average number of workers reported during a quarter. In column 5 the dependent variable is the natural logarithm of the average salary. In column 6 the dependent variable is the inverse hyperbolic sine of the total number of firms. Treated is a dummy variable equal to 1 for treated provinces in the 6 quarters after the law entered into effect. High Litigiousness is a dummy variable equal to 1 for high litigiousness sectors as defined in panel b of figure 1. Wild bootstrap p is the p-value for the statistical significance of the difference-in-differences coefficient using the Wild Bootstrap that imposes the null from Cameron et al. (2008) with 1000 replications. Wild bootstrap p (interaction) is the p-value for the statistical significance of the interaction term between Treated and High Litigiousness coefficient using the Wild Bootstrap that imposes the null from Cameron et al. (2008) with 1000 replications. In all specifications standard errors are clustered at the province level. * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level.

Workplace Litigiousness and Labor Market Outcomes: Evidence from a Workers' Compensation Reform

Appendix

Maximiliano Lauletta - Damián Vergara[1]

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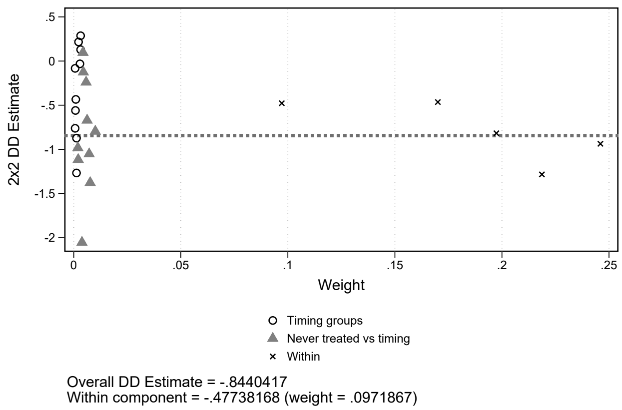
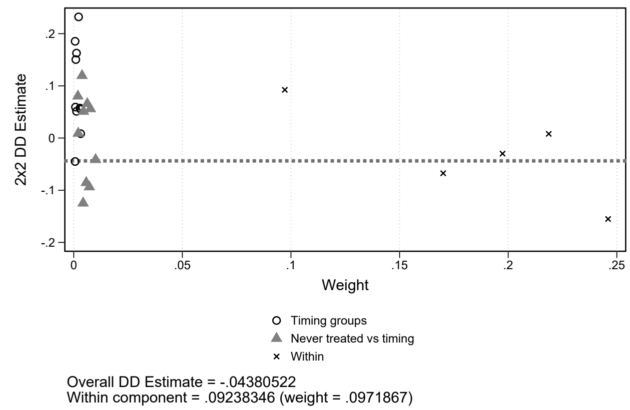
A Goodman-Bacon (2021) decompositions

This section presents decompositions based on Goodman-Bacon (2021). Intuitively, with staggered implementation, the difference-in-differences coefficient constitutes a weighted average of post-pre comparisons between early treated units and never treated units and not-yet-treated units, but also "forbidden comparisons" using early treated units as control for late treated units. The decomposition from Goodman-Bacon (2021) assesses the degree to which each type of comparison drives the results. Reassuringly, in our case, the estimation for the difference-in-differences coefficient relies almost exclusively on comparisons between treated units and never-treated units.

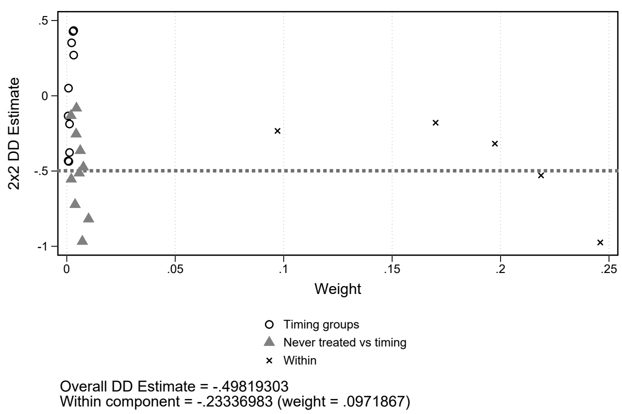
Figure A.I: Goodman-Bacon (2021) decomposition of province-level results



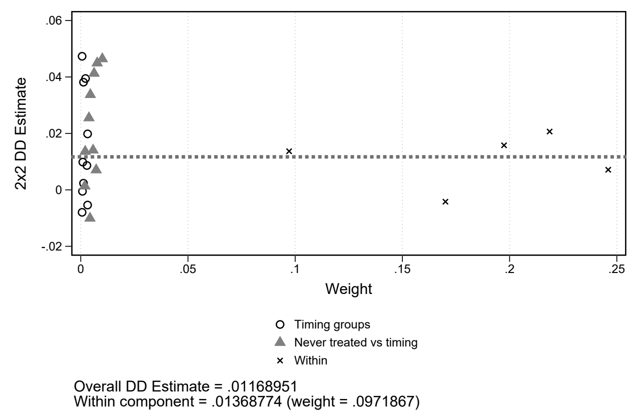
(a) Number of lawsuits (IHS)



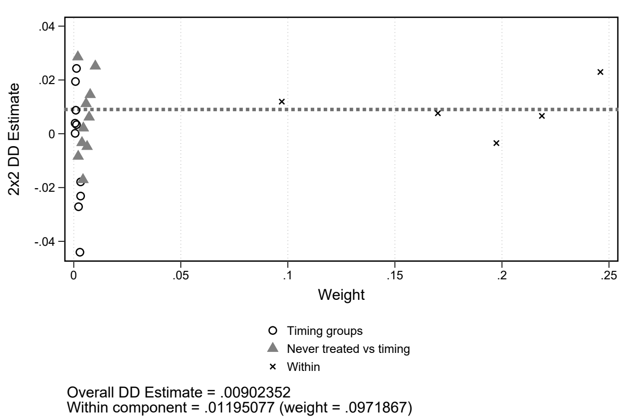
(b) Number of accidents (IHS)



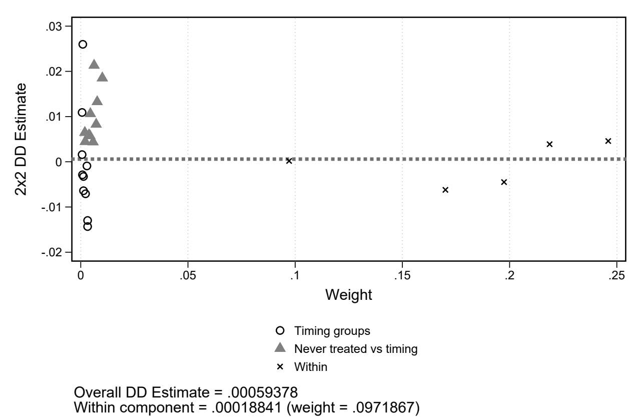
(c) Amount claimed (% of labor costs)



(d) Employment (IHS)



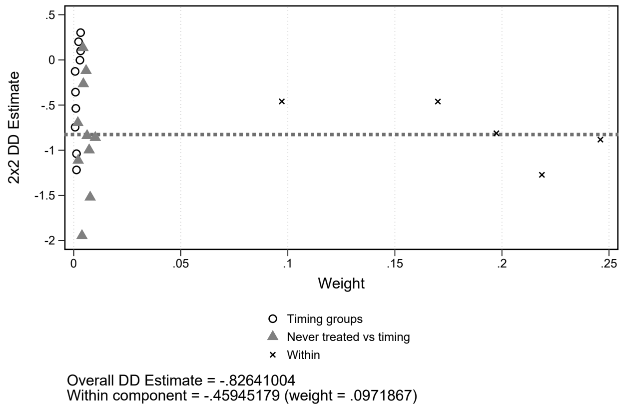
(e) Average salary (log)



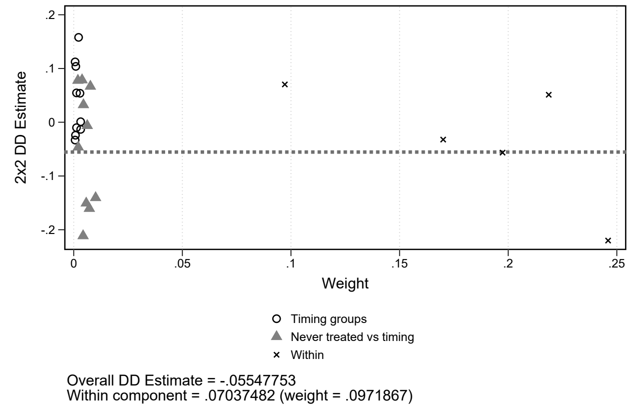
(f) Number of firms (IHS)

Notes: This figure shows the 2x2 difference-in-difference coefficients and weights assigned by the Goodman-Bacon (2021) decomposition for the estimation of equation (2) including time and province fixed effects using different dependent variables. The unit of observation is a province-by-quarter. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the natural logarithm of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms.

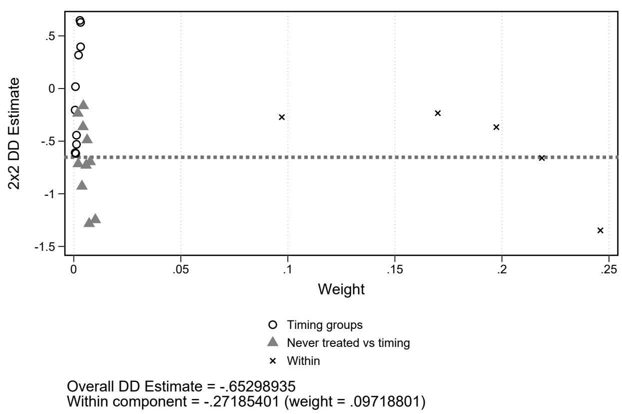
Figure A.II: Goodman-Bacon (2021) decomposition of sector-by-province level results



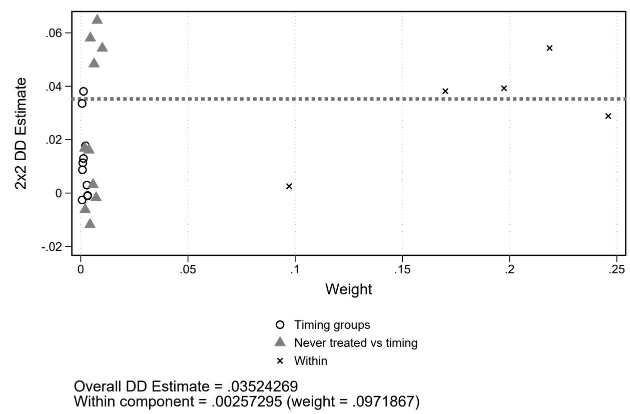
(a) Number of lawsuits (IHS)



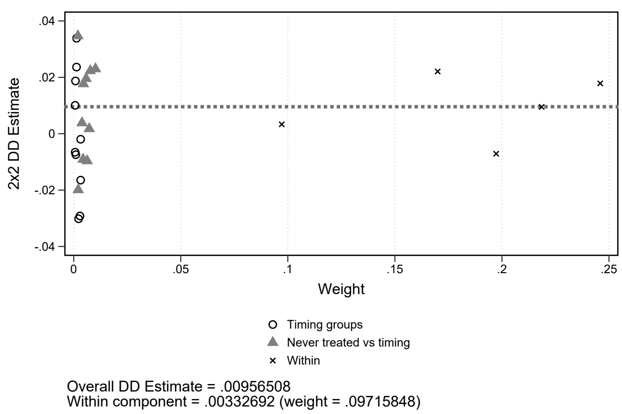
(b) Number of accidents (IHS)



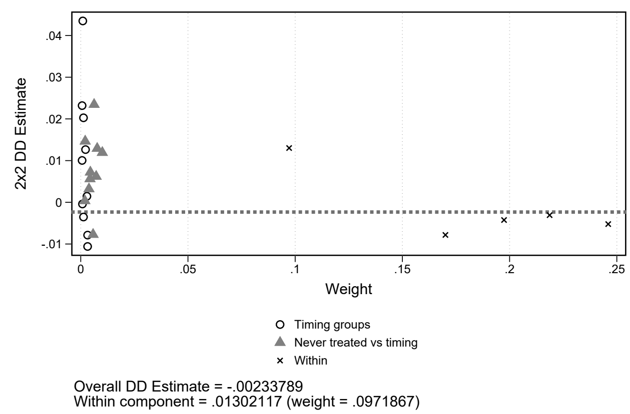
(c) Amount claimed (% of labor costs)



(d) Employment (IHS)



(e) Average salary (log)

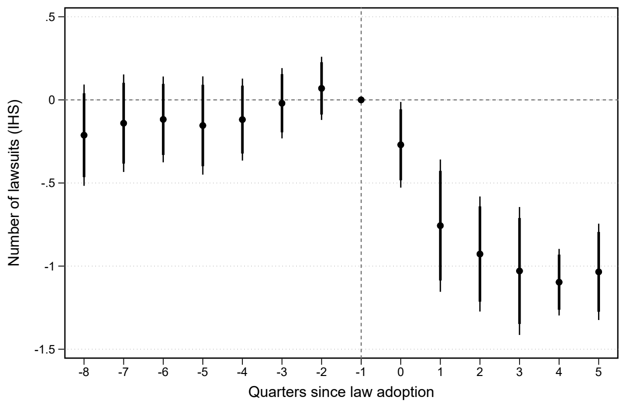


(f) Number of firms (IHS)

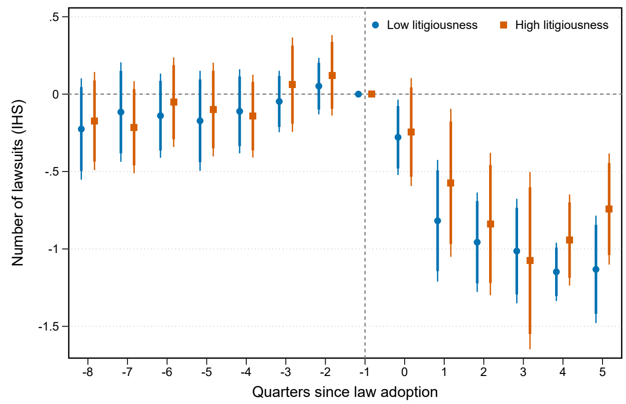
Notes: This figure shows the 2x2 difference-in-difference coefficients and weights assigned by the Goodman-Bacon (2021) decomposition for the estimation of equation (2) including time and province fixed effects using different dependent variables. The unit of observation is a sector-by-province-by-quarter. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the natural logarithm of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms.

B Additional results

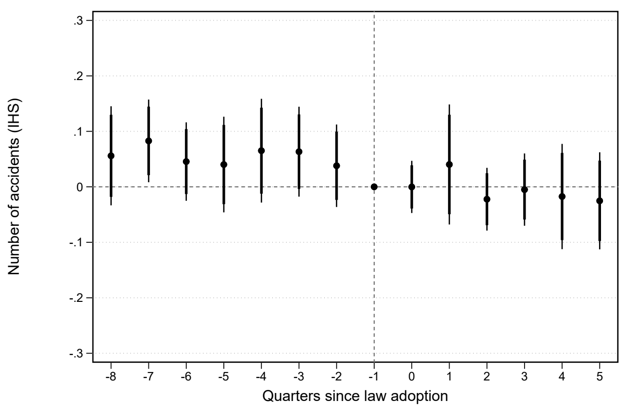
Figure B.I: Sector-by-province level results: Lawsuits and accidents



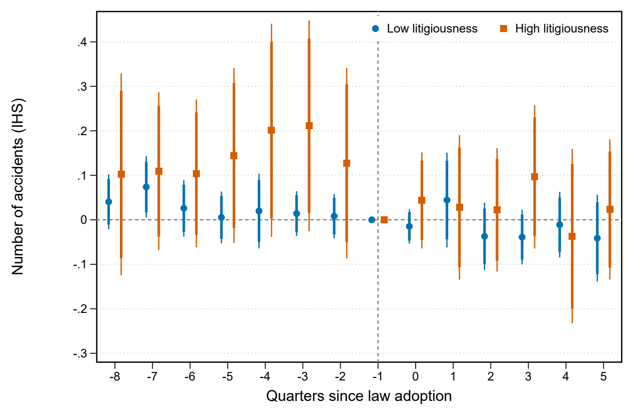
(a) Number of lawsuits (IHS)



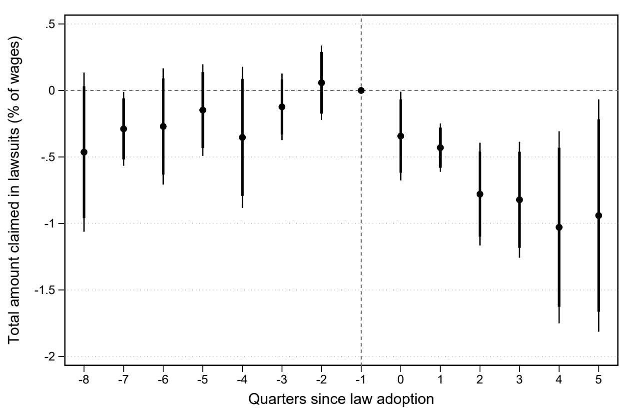
(b) Number of lawsuits (IHS) - Heterogeneity



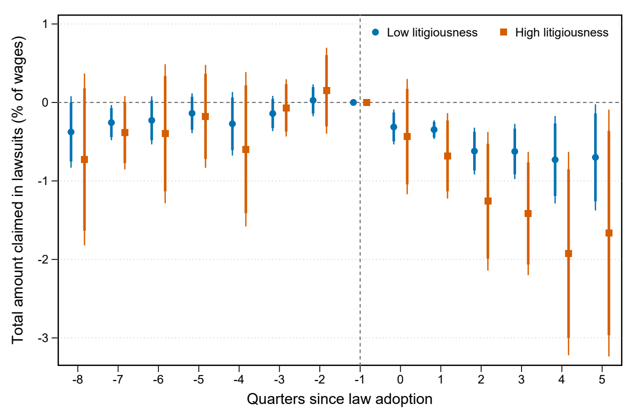
(c) Number of accidents (IHS)



(d) Number of accidents (IHS) - Heterogeneity



(e) Amount claimed (% of labor costs)



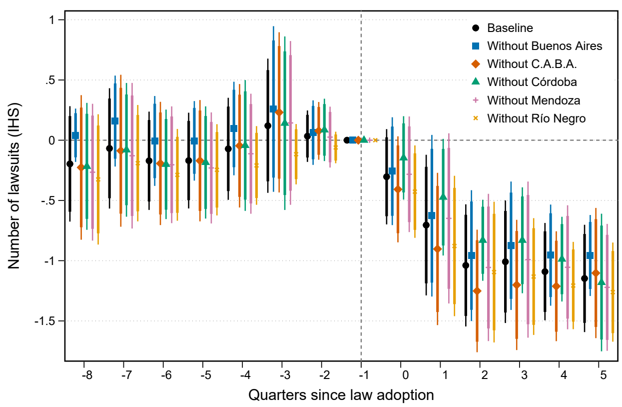
(f) Amount claimed (% of labor costs) - Heterogeneity

Notes: This figure plots the β_k coefficients from equation (1) at the sector-by-province-by-quarter level using different dependent variables. The unit of observation is a sector-by-province-by-quarter. Standard errors are clustered at the province level. Coefficients in orange correspond to the event study for sectors indicated as "high litigiousness" in figure 1: construction, mining, and manufacturing. Coefficients in blue correspond to the event study for the rest of the sectors. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panels (a) and (b) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panels (c) and (d) is the natural logarithm of the total number of accidents reported. The dependent variable in Panels (e) and (f) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary).

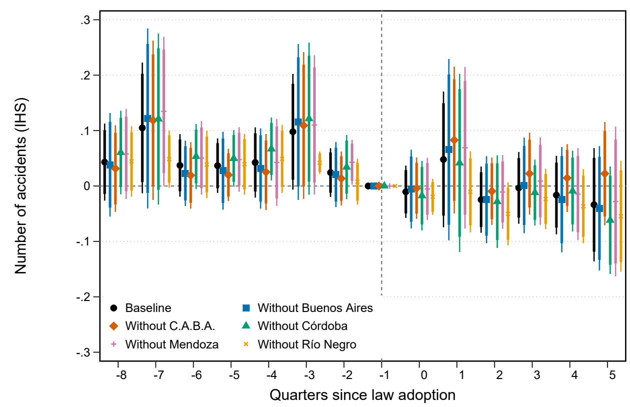
C Leave-one-out regressions

This appendix compares the baseline estimates to leave-one-out alternative specifications, where we sequentially drop one of the 5 treated provinces from the sample and run the event study using the remaining 23 provinces. We first present leave-one-out comparisons for province-level results and then for sector-by-province-level results.

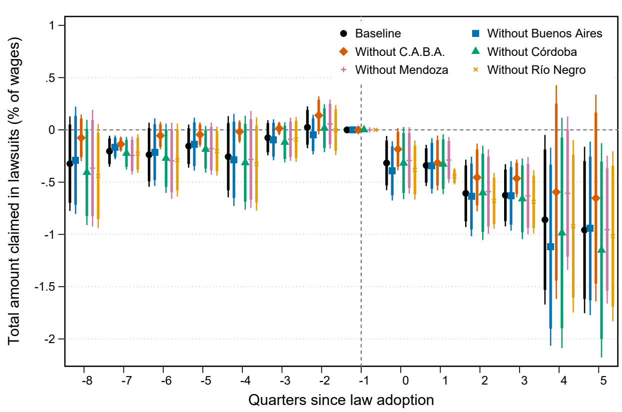
Figure C.I: Leave-one-out regressions: province-level results



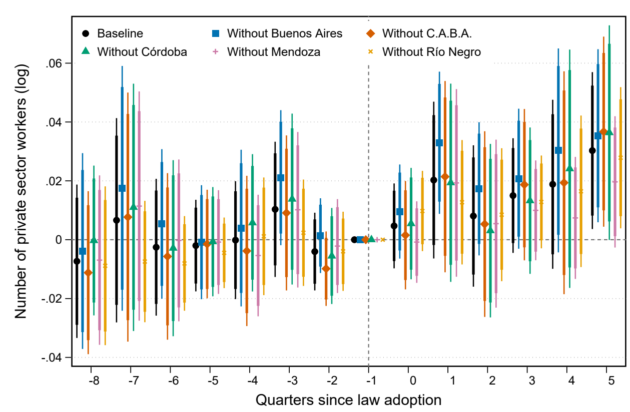
(a) Number of lawsuits (IHS)



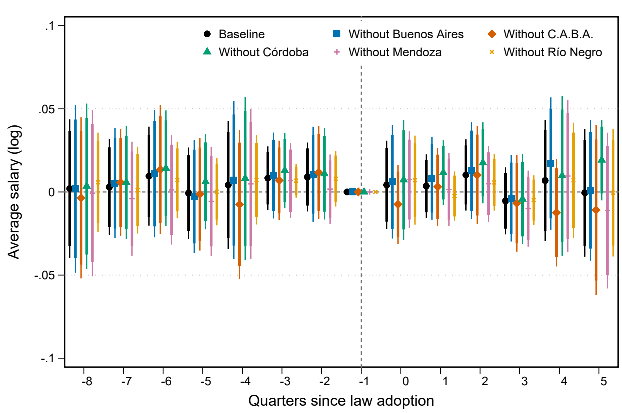
(b) Number of accidents (IHS)



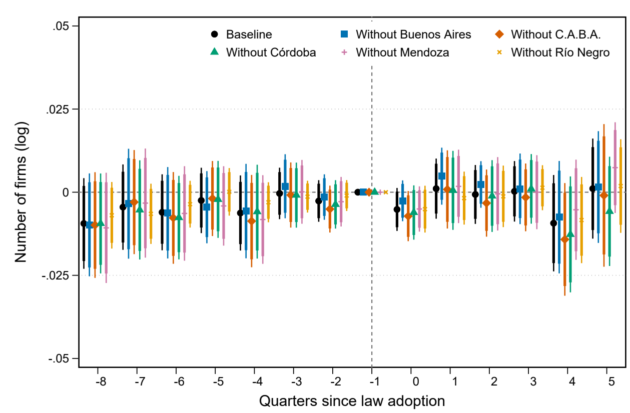
(c) Amount claimed (% of labor costs)



(d) Employment (IHS)



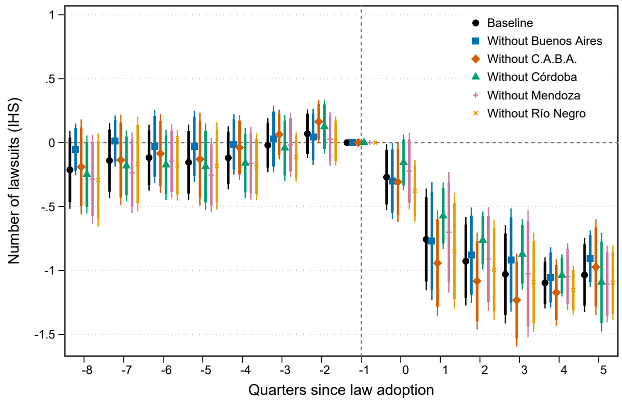
(e) Average salary (log)



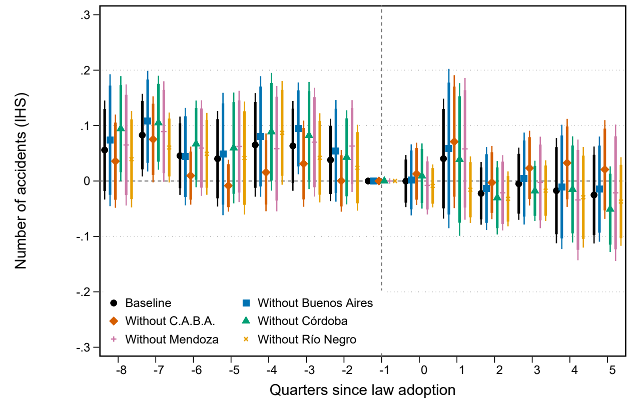
(f) Number of firms (IHS)

Notes: This figure plots the β_k coefficients from equation (1) using different dependent variables. The unit of observation is a province-by-quarter. Standard errors are clustered at the province level. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the inverse hyperbolic sine of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms. Black coefficients correspond to our baseline estimates using the full sample. Blue coefficients correspond to estimates dropping the Province of Buenos Aires. Orange coefficients correspond to estimates dropping the Autonomous City of Buenos Aires (C.A.B.A. stands for *Ciudad Autónoma de Buenos Aires*). Green coefficients correspond to estimates dropping the province of Córdoba. Pink coefficients correspond to estimates dropping the province of Mendoza. Yellow coefficients correspond to estimates dropping the province of Río Negro.

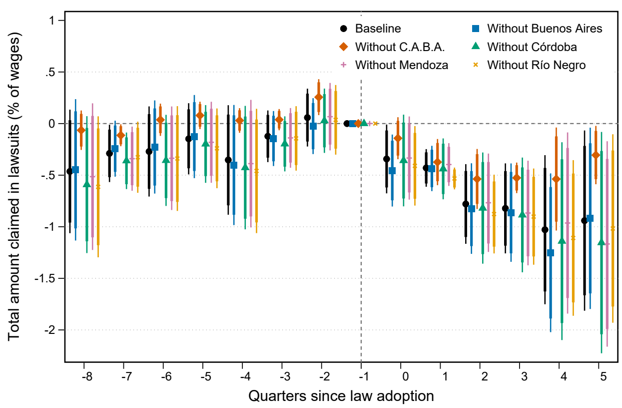
Figure C.II: Leave-one-out regressions: sector-by-province-level results



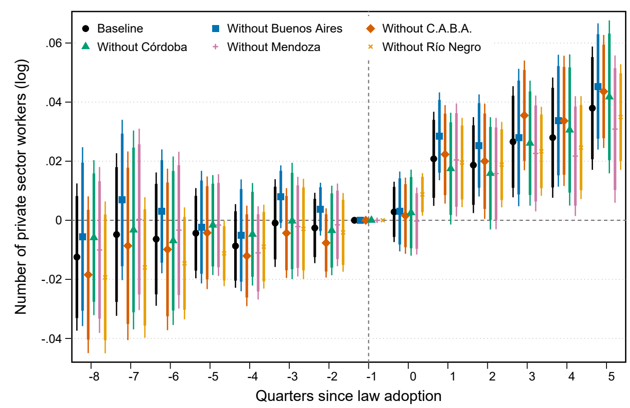
(a) Number of lawsuits (IHS)



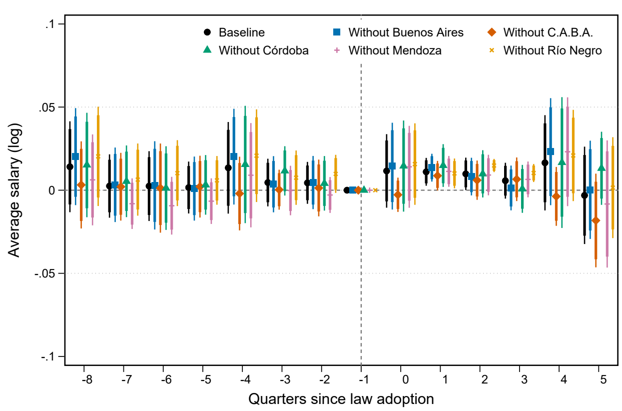
(b) Number of accidents (IHS)



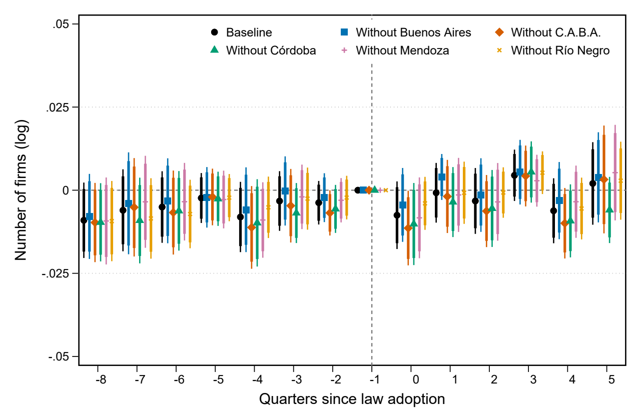
(c) Amount claimed (% of labor costs)



(d) Employment (IHS)



(e) Average salary (log)



(f) Number of firms (IHS)

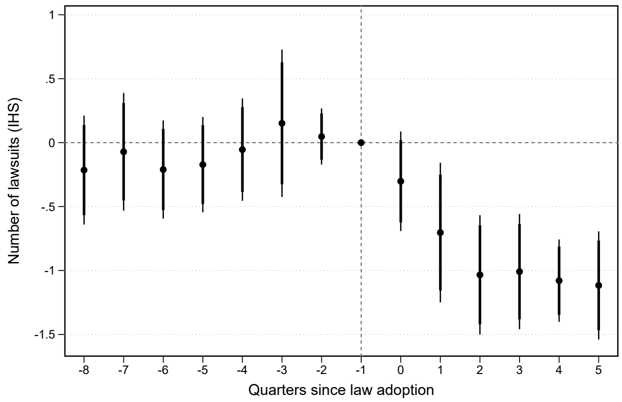
Notes: This figure plots the β_k coefficients from equation (1) using different dependent variables. The unit of observation is a sector-by-province-by-quarter. Standard errors are clustered at the province level. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the inverse hyperbolic sine of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms. Black coefficients correspond to our baseline estimates using the full sample. Blue coefficients correspond to estimates dropping the Province of Buenos Aires. Orange coefficients correspond to estimates dropping the Autonomous City of Buenos Aires (C.A.B.A. stands for *Ciudad Autónoma de Buenos Aires*). Green coefficients correspond to estimates dropping the province of Córdoba. Pink coefficients correspond to estimates dropping the province of Mendoza. Yellow coefficients correspond to estimates dropping the province of Río Negro.

D Stacked event studies

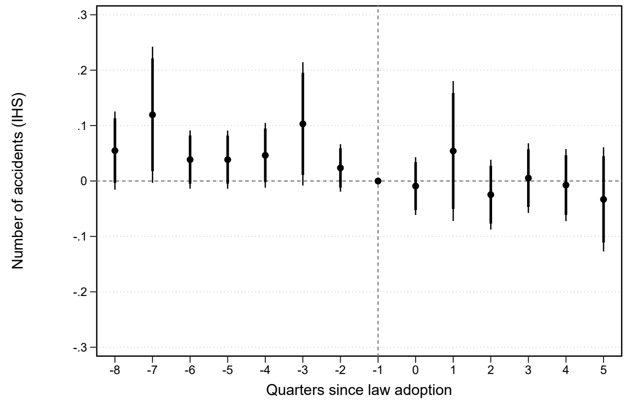
In this subsection we estimate the main event studies of interest using a stacked event study approach (Baker et al., 2022). For each treated province, we define a window of 14 quarters, 8 before the reform and 6 after. We then define an event-specific control group for that province consisting of never treated provinces. This creates a data-set for each specific event. We then stack all the event-specific data-set and estimate event-study regressions quarter-by-region-by-event fixed effects. We include province-by-event fixed effects for the province-level analysis and sector-by-province-by-event fixed effects for the sector-by-province-level analysis. The equation we estimate is given by:

$$Y_{pt} = \alpha_{pe} + \mu_{r(p)te} + \sum_{k=-8}^{5} \beta_k \mathbb{1}\{t = e_p + k\} \times \text{Treated}_p + \varepsilon_{ept}, \tag{D.I}$$

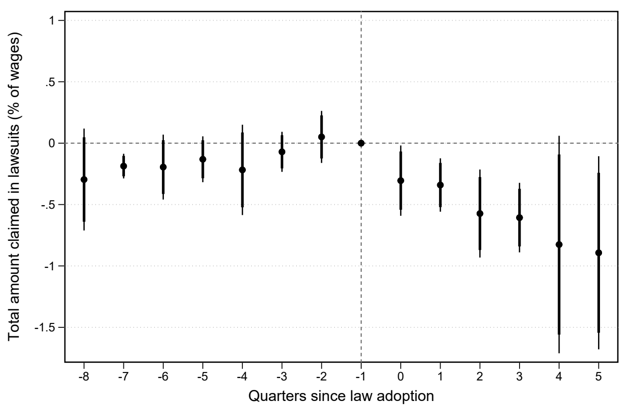
Figure D.I: Stacked event studies: province-level results



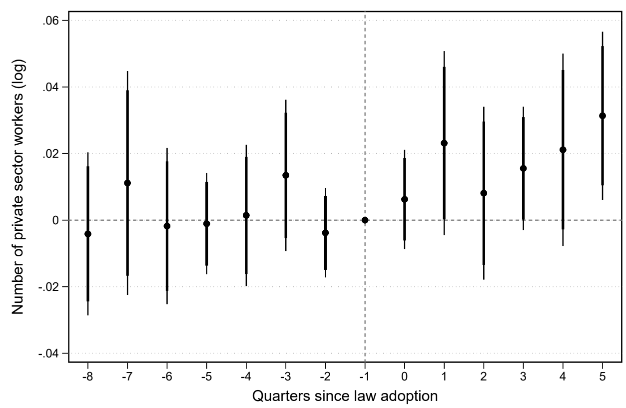
(a) Number of lawsuits (IHS)



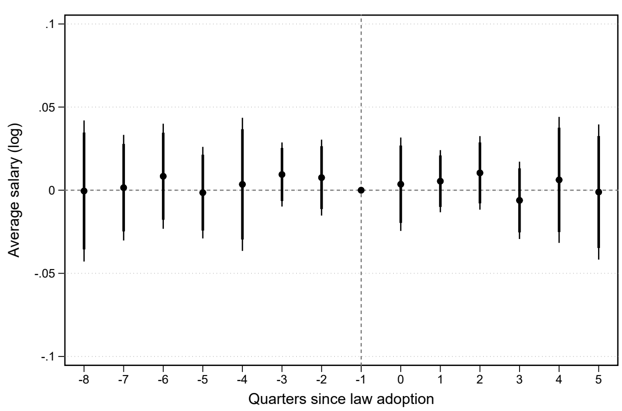
(b) Number of accidents (IHS)



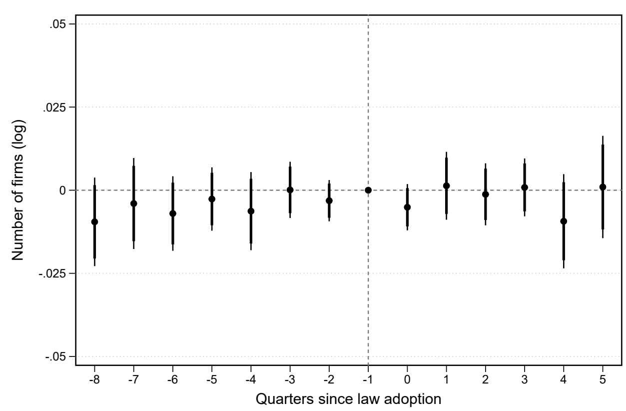
(c) Amount claimed (% of labor costs)



(d) Employment (IHS)



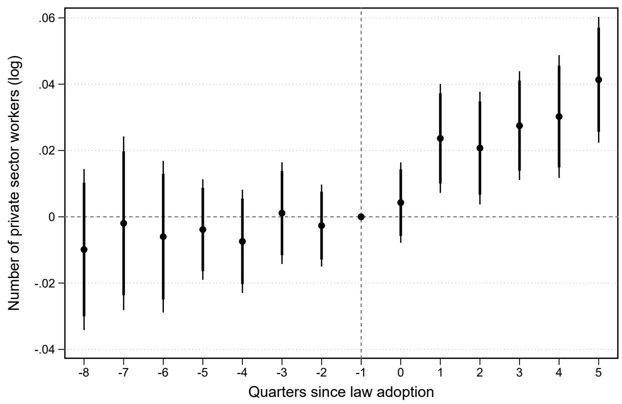
(e) Average salary (log)



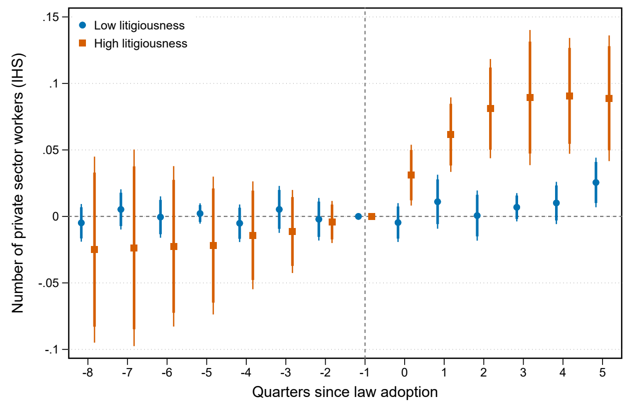
(f) Number of firms (IHS)

Notes: This figure plots the β_k coefficients from equation (D.I) using different dependent variables. The unit of observation is a province-by-quarter. Standard errors are clustered at the province level. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panel (a) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panel (b) is the inverse hyperbolic sine of the total number of accidents reported. The dependent variable in Panel (c) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary). The dependent variable in Panel (d) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panel (e) is the natural logarithm of the average salary. The dependent variable in Panel (f) is the inverse hyperbolic sine of the total number of firms.

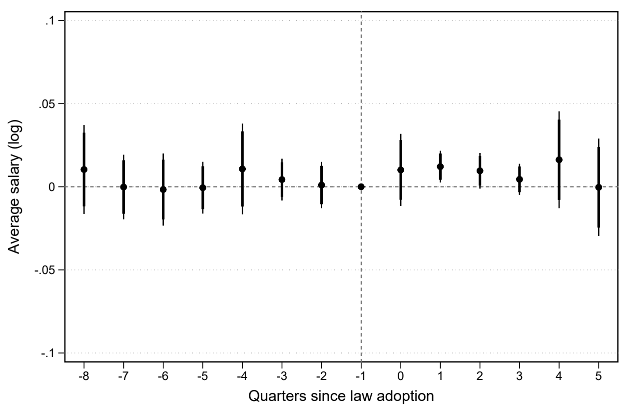
Figure D.II: Stacked event studies: sector-by-province level results - labor market outcomes



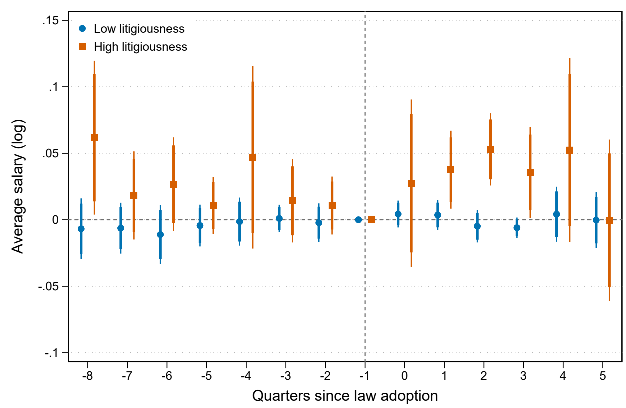
(a) Employment (IHS)



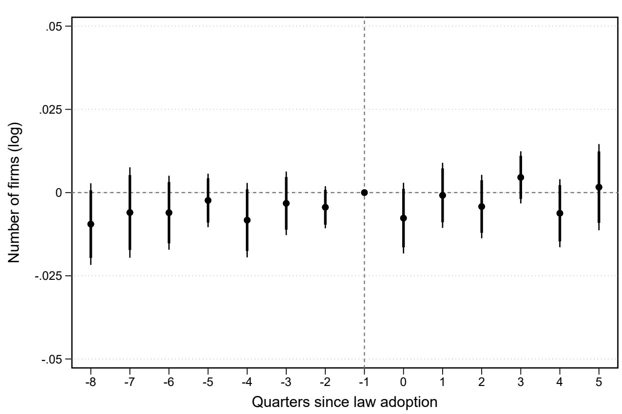
(b) Employment (IHS) - Heterogeneity



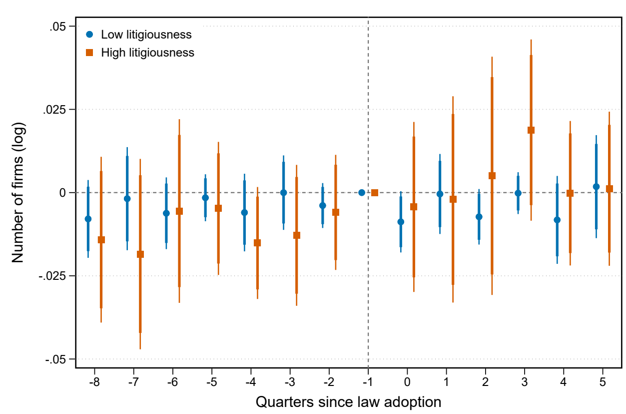
(c) Average salary (log)



(d) Average salary (log) - Heterogeneity



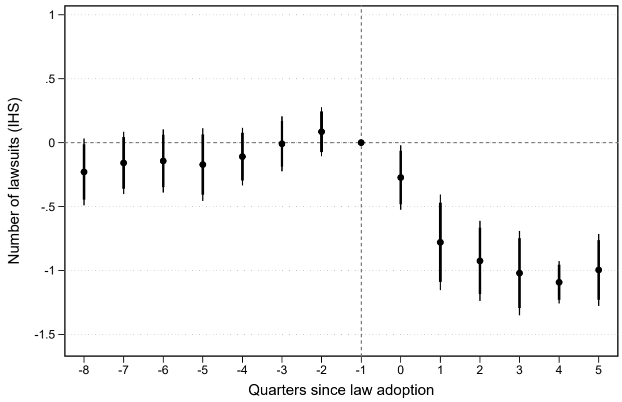
(e) Number of firms (IHS)



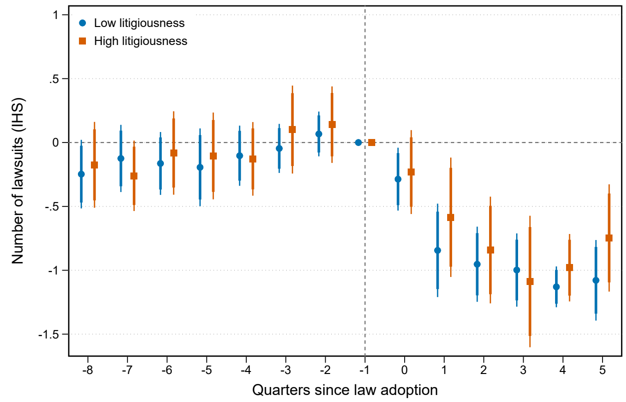
(f) Number of firms (IHS) - Heterogeneity

Notes: This figure plots the β_k coefficients from equation (D.I) at the sector-by-province-by-quarter level using different dependent variables. The unit of observation is a sector-by-province-by-quarter. Standard errors are clustered at the province level. Coefficients in orange correspond to the event study for sectors indicated as "high litigiousness" in figure 1: construction, mining, and manufacturing. Coefficients in blue correspond to the event study for the rest of the sectors. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panels (a) and (b) is the inverse hyperbolic sine of the total number of workers. The dependent variable in Panels (c) and (d) is the natural logarithm of the average salary. The dependent variable in Panels (e) and (f) is the inverse hyperbolic sine of the total number of firms.

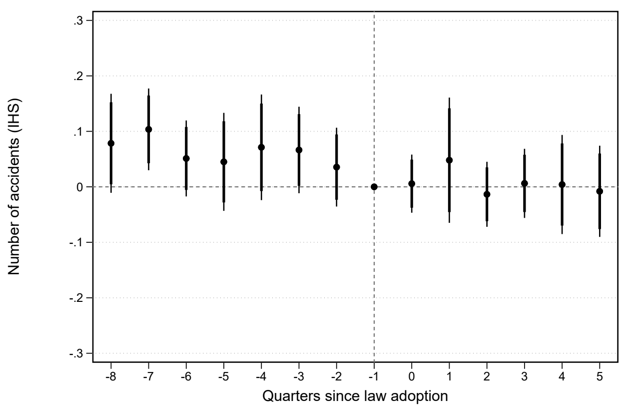
Figure D.III: Stacked event studies: sector-by-province level results - lawsuits and accidents



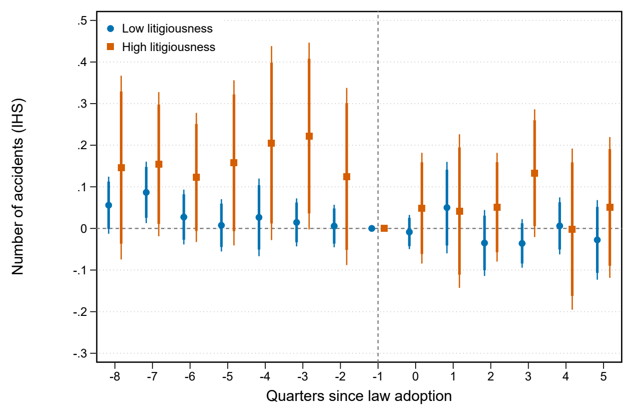
(a) Number of lawsuits (IHS)



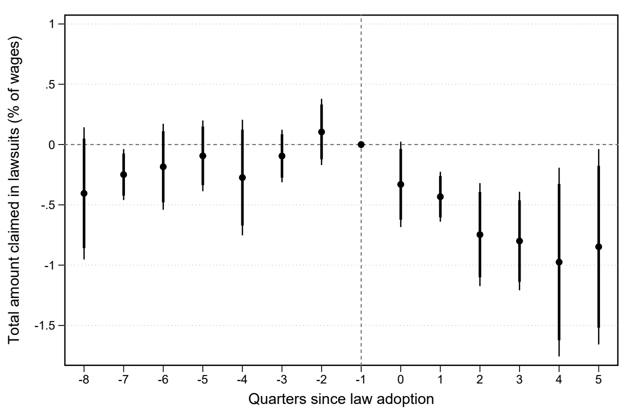
(b) Number of lawsuits (IHS) - Heterogeneity



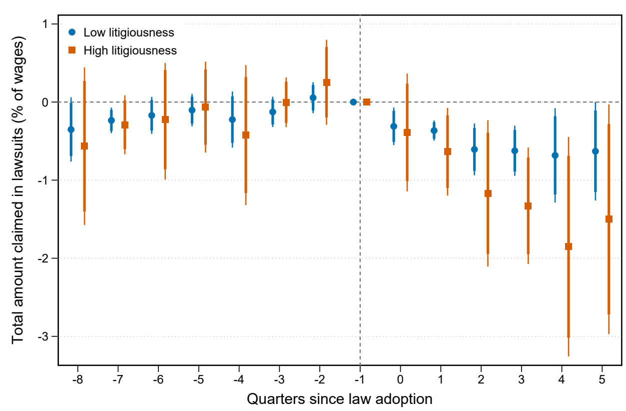
(c) Number of accidents (IHS)



(d) Number of accidents (IHS) - Heterogeneity



(e) Amount claimed (% of labor costs)



(f) Amount claimed (% of labor costs) - Heterogeneity

Notes: This figure plots the β_k coefficients from equation (D.I) at the sector-by-province-by-quarter level using different dependent variables. The unit of observation is a sector-by-province-by-quarter. Standard errors are clustered at the province level. Coefficients in orange correspond to the event study for sectors indicated as "high litigiousness" in figure 1: construction, mining, and manufacturing. Coefficients in blue correspond to the event study for the rest of the sectors. Thick vertical bars represent 90% confidence intervals and thin vertical bars represent 95% confidence intervals. The dependent variable in Panels (a) and (b) is the inverse hyperbolic sine transformation of the total number of lawsuits reported. The dependent variable in Panels (c) and (d) is the inverse hyperbolic sine of the total number of accidents reported. The dependent variable in Panels (e) and (f) is the amount claimed in lawsuits as a share of labor costs (total employment times average salary).