

Can strike action revitalize labour unions? An empirical analysis of the Chilean case

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Abstract

Like in other countries with neoliberal industrial relations (IR) regimes, unionization in Chile declined throughout the 1990s and 2000s. However, in the last decades, this declining trend was interrupted. Between 2007 and 2020, the union density rate increased from 13% to 19%. This rise in union membership is puzzling because no significant pro-labour reform was implemented in this period. Using panel data on Chile's nine main economic industries (1999–2019), in this article the authors show that the rise in strike activity was a fundamental stimulus for the growth of union membership. Additionally, using mediation analysis on individual-level cross-sectional data (2014–2018), the authors explore micro-level mechanisms that can explain the relationship between strike participation and union membership. They find that the workers who are more willing to strike are more likely to unionize because they trust unions more and especially because they are more politicized.

Keywords

industrial conflict, industrial relations, labour revitalization, neoliberalism, unions

Introduction

Since the 1980s, labour unions have been facing hard times (Gumbrell-McCormick and Hyman, 2018). The structural transformation of the economy associated with neoliberal globalization and the compositional change of the labour force (e.g. the rise in the share

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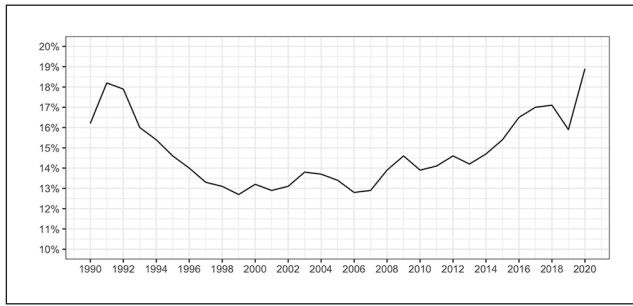


Figure 1. Union density rate in Chile (1990–2020).

of migrant and female workers employed in atypical jobs) severely weakened unions' capacity to increase their membership (Harris and Moffat, 2023; Kollmeyer and Peters, 2019; Schnabel, 2013; Visser, 2019). As a result, in the late 1980s and early 1990s, unionization started to decline in most countries (Kollmeyer and Peters, 2019; Visser, 2019: 21).

Chile was no exception to the rule, and union membership dropped from 18% in 1991 to 13% in 2006. However, in the last decade and half, this trend was interrupted. Starting in 2007, the union membership rate grew slowly but consistently to reach its maximum level (19%) in 2020 (Figure 1). This rise in union membership is puzzling in many respects. In the late 1970s, the neoliberal dictatorship led by Augusto Pinochet (1973–1990) implemented radical free-market policies that resulted in the deindustrialization of the economy, the drop in public-sector employment and the rise of precarious employment. This neoliberal transformation was accompanied by the implementation of a pro-business Labour Code known as the 1979 Labour Plan. The Labour Plan was designed to decentralize collective bargaining, restrict the right to strike and undermine unions' bargaining power by facilitating the formation of multiple (fragmented and small) unions in individual enterprises (Bellido de Luna, 2021; Pérez Ahumada and Ocampo, 2023).

Despite its strongly repressive and anti-union bias, the central aspects of the Labour Plan have not changed since democracy was restored in 1990 (Pérez Ahumada, 2023b). In spite of this, between 2006 and 2019, Chile witnessed a wave of strikes and a renaissance of union mobilization (Observatorio de Huelgas Laborales [OHL], 2020; Pérez Ahumada and Ocampo, 2023). Company and sector-level strikes grew from 186 in 2005 to around 430 in 2019 (OHL, 2021: 8), and general strikes increased from only the one strike recorded between 1990 and 2010 to 12 in the 2011–2019 period, four of which took place between October and December 2019, in the context of Chile's 'social uprising' (OHL, 2020: 25–26; Osorio and Velásquez, 2022). In this period, other indicators of strike activity exhibited similar trends. Figure 2 shows the number of worker days lost to legal (official) strikes and extra-legal (unofficial) strikes in the private sector. The figure shows that, in years of intense mobilization such as 2011 and 2019, this indicator peaked to its maximum values. Figure 2 also indicates that, in the last decade, the rise in workers' mobilization largely occurred through unofficial strikes – that is, in industrial actions that took place outside the statutory collective bargaining process (OHL, 2020).

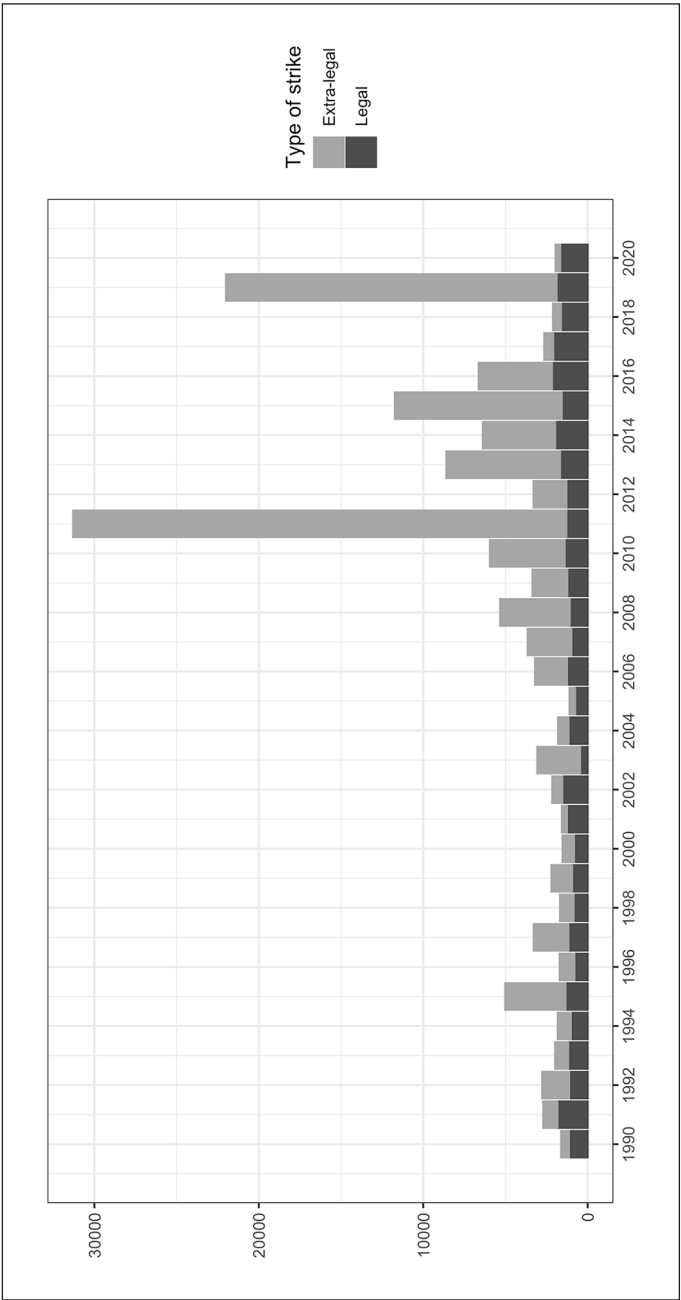


Figure 2. Worker days lost to strikes in Chile (1990–2020).

In this article, we argue that this rise in strike activity was a fundamental stimulus for the revitalization of labour unions, particularly for the growth of union membership. Although most empirical research focuses on how union density shapes strike patterns (Brandl and Traxler, 2010; Franzosi, 1995; Jansen, 2014), emerging literature has reversed the causal direction of this relationship to study how strike activity can affect union membership (Cregan, 2013; Hodder et al., 2017). Building upon this latter group of investigations, in this article, we use a twofold research strategy to analyse whether the growth in union membership can be explained (at least in part) by the rise of strike activity. First, drawing upon data for Chile's nine main economic industries over a 20-year period (1999–2019), we use regression models for panel data and estimate the effect of strike frequency (average number of strikes), strike size (average number of workers involved in strikes) and strike duration (average number of days lost to strikes) on the union density rate. In line with the argument that strike waves have positive effects on union membership (Cregan, 2013; Franzosi, 1995; Hodder et al., 2017; Kelly, 1998), we find a positive relationship between the number of strikes and the union density rate. Additionally, we find that, although small strikes are associated with reduced union membership, the effect of strike size becomes positive as the number of workers involved in strikes increases.

Second, drawing upon individual-level data from the World Values Survey (WVS), we use mediation analysis to explore the micro-level mechanisms that can explain the relationship between strike participation (measured as willingness to strike) and union membership. We find that workers who are more willing to strike are more likely to unionize because they have more positive attitudes toward labour unions (i.e. they trust unions more) and especially because they are more politicized. We interpret this result as providing support for the argument that strikes politicize workers and strengthen the social norm of union membership (which in turn reinforces workers' pro-union attitudes) (Cregan, 2013; Fantasia, 1988; Hodder et al., 2017; Hyman, 1989).

Building upon this evidence, at the end of the article, we discuss how our findings contribute to the recent literature on strikes, union membership and labour revitalization, understood as the multiple strategies unions implement – from recruiting members to building alliances with other social movements and mobilizing narratives to gain legitimacy – to increase their power and influence in the workplace and in society (Barranco and Molina, 2021; Behrens et al., 2004). We argue that any strategy aiming at revitalizing unions should consider how and in what circumstances unions' use of strikes could contribute to that goal.

Determinants of union density and membership

Industrial relations (IR) scholars have used two approaches to analyse union density rates and its changes over time. The first approach focuses on how union membership rates are shaped by structural, political-economic and compositional factors associated with the configuration of 'post-industrial' labour markets. Within this approach, scholars have demonstrated that the decline in union membership is largely explained by political and economic factors associated with neoliberal globalization, e.g. financialization, increased foreign exports, deindustrialization, drop in public-sector employment, rise in

unemployment, collective bargaining decentralization and labour market deregulation (Harris and Moffat, 2023; Kollmeyer and Peters, 2019; Visser, 2019). These factors coincided with compositional changes of the labour force, such as the increasing share of female and migrant workers who are usually employed in ‘atypical jobs’ and are therefore less likely to unionize (Schnabel, 2013: 260; Visser, 2019). The effect of many of these variables has been found to be contingent on the strength of national institutions that protect trade union rights (Traxler et al., 2001). However, the scholarly literature agrees that, all in all, these factors have negatively affected union density rates (Baccaro and Howell, 2017; Kollmeyer and Peters, 2019; Schnabel, 2013).

The second approach focuses on the factors that affect individual workers’ propensity to unionize. In addition to emphasizing how this propensity is shaped by individual sociodemographic factors such as age, gender, migrant condition and sector of employment (Checchi et al., 2010; Martin and Brady, 2007; Scheuer, 2011; Visser, 2019), scholars have also shown that union membership is contingent upon workers’ attitudes and beliefs. Focusing on workers’ attitudes and beliefs, scholarly researchers have developed two (not mutually exclusive) individual-level explanations (Schnabel and Wagner, 2007: 11).

The first individual-level explanation centres on how union membership is shaped by workers’ *instrumental (economic) motivations*, particularly by their rational calculation of the costs and benefits of unionization, relative to the costs/benefits of remaining non-unionized (Farber and Saks, 1980). Consistent with this explanation, scholars demonstrate that union participation decreases when the act of joining a union is perceived as more costly than beneficial (Visser, 2002), and when the union is not perceived as useful (‘instrumental’) for improving workplace welfare (Charlwood, 2002).

The second individual-level explanation focuses on *non-economic determinants of union membership*. For instance, empirical studies show that union membership is higher among workers who have left-wing or progressive orientations and identities (e.g. workers who have egalitarian attitudes or identify themselves with the working class or with the Left) (Checchi et al., 2010; Scheuer, 2011; Schnabel and Wagner, 2007). From a different perspective, other studies emphasize the importance of social customs (Checchi and Visser, 2005). Understood as accepted and expected patterns of behaviours, social custom theory contends that workers usually join unions because, in workplaces where the union membership norm is strong (e.g. highly unionized workplaces), that social norm will sustain the practice of joining the union (Schnabel and Wagner, 2007; Visser, 2002). In these contexts, workers will become union members because, regardless of whether they believe in the custom, they might suffer from reputation loss if they do not do it (Checchi and Visser, 2005; Schnabel and Wagner, 2007; Visser, 2002).

Industrial conflict, strikes and union membership

Most empirical studies focus on how union density, as a proxy for labour power, shapes industrial conflict (Brandl and Traxler, 2010; Franzosi, 1995; Jansen, 2014). Nevertheless, building upon the literature on the non-economic determinants of union membership, some scholars have paid more attention to the other side of the relationship (i.e. how strikes can shape [stimulate] union membership). For example, both Franzosi (1995:

125) and Kelly (1998: 90–94) find data suggesting that labour unions record important increases in membership during strike waves. Likewise, Checchi and Visser (2005: 12) find a positive relationship between strike participation and union density rates.

More recently, studies focusing on workplace industrial action find similar results (Cregan, 2013; McCarthy, 2009). Cregan (2013), for example, demonstrates that in workplaces with industrial action (strikes, stop-work meetings, go-slows, etc.) the number of non-members who joined unions was significantly larger than the number of union members who left them. Similar to Cregan's study, Hodder and his collaborators (2017) analysed data for the largest service union in the UK and found that union membership grew in months in which there were national or local strike actions. Union membership growth occurred both in terms of the number of workers who joined the union ('joiners') and in terms of the ratio between joiners and 'leavers'.

These results are consistent with explanations that emphasize non-economic determinants of union membership. On the one hand, they are consistent with the explanation emphasizing that industrial action increases workers' willingness to join unions because it produces particular types of interactions among workers, which create 'cultures of solidarity' (Fantasia, 1988), reaffirm workers' perceptions of injustice against employers (Kelly, 1998) and strengthen workers' political awareness – most notably, their awareness of class opposition (Hyman, 1989; Wright, 1997). On the other hand, they are consistent with the explanation that emphasizes how strikes reinforce the social norm of union membership and, in doing so, workers' pro-union attitudes (Checchi and Visser, 2005: 12). According to this view, strikes produce a social norm that, in strengthening workers' pro-union attitudes, overwhelms their cost-benefit assessment of whether joining or leaving a union would be beneficial (Cregan, 2013; McCarthy, 2009). As a result, this norm increases workers' willingness to join unions or remain union members, even though strikes may increase the cost of membership (Cregan, 2013).

Empirical research also shows that, in periods of strikes, unions mobilize discourses not only to gain support for the strike, but also to interpret its outcomes, e.g. to interpret it as a success or victory (Barranco and Molina, 2021; Fantasia, 1988). In emphasizing unions' framing strategies, scholars suggest that the potential positive effects of strikes on union membership may in part be explained by whether the strike is perceived as a success (Molina and Barranco, 2016). If a strike is interpreted as a defeat, the image of the union can be deteriorated, thereby undermining workers' propensity to unionize.

Size and duration of strikes and their effects on union membership

Industrial conflict is observed in phenomena other than the frequency of strike actions. Industrial conflict can also be conceived in terms of the size of strikes, which is usually measured as the number of workers who join strikes or in terms of the duration of strikes (i.e. the number of days they last) (Campolieti et al., 2005; Franzosi, 1995; Velásquez Orellana et al., 2022). These expressions of industrial conflict do not necessarily follow the same pattern as strike frequency (Campolieti et al., 2005; Franzosi, 1995; Shorter and Tilly, 1971). For instance, union membership has a positive effect on strike frequency and size and a negative effect on strike duration, whereas economic factors such as unemployment or inflation are negatively correlated with strike activity, regardless of

how it is measured (Brandl and Traxler, 2010; Jansen, 2014; Kaufman, 1982; Pérez Ahumada and Ocampo, 2023).

This argument is crucial for analysing the effects of industrial conflict on union membership. In a recent article, Velásquez et al. (2022) find that when workers use more disruptive tactics at the beginning of a strike, the strike tends to be shorter because it is more effective as a strategy to obtain concessions from employers. In other words, longer strikes might indicate a weaker capacity to advance workers' interests. The implication is that when strikes last longer, strikes can be perceived as ineffective, and workers (especially non-strikers) can strengthen their negative views on the union (Smith, 1978). However, it is possible that the relationship between strike duration and union membership is curvilinear. Strikes can start to have a negative effect on workers' opinions and attitudes about unionization only after reaching a point when the strike loses workers' support.

Similar reasoning can be used to explain the relationship between strike size and union membership. Membership numbers are a crucial precondition for worker power and, by extension, for a strike to be successful (Pérez Ahumada, 2023a; Schmalz et al., 2018). This means that there should be a positive relationship between strike size and union membership: the larger the number of workers involved in a strike, the greater its chances of success and the greater its potential positive effect on union membership. Without denying this argument, empirical evidence suggests that the effect of strike size could also be nonlinear. Using historical data on strikes, Biggs (2005) demonstrates that strike waves follow a pattern of power-law distribution of event sizes, i.e. a statistical pattern where small events are very common and large events are rare, although these large events are still more likely than they would be under a 'normal' (bell-curve) distribution. Furthermore, according to this power-law distribution, once strikes achieve a critical mass of workers, their chances to spread further increase at a higher pace. This is because strike waves are caused by endogenous processes of positive feedback, i.e. by processes of interdependence and inspiration that encourage workers to join the strike insofar as they see others doing so (Biggs, 2005: 1697–1698). From a different perspective, Harrison and Stewart (1993: 838) show that once strikes achieve a certain number of workers involved, increases in size reduce the duration of the strike, probably because larger strikes are more effective to achieve workers' demands. The implication is that strikes are effective to advance workers' interests only if they are not 'too small', i.e. only if they are able to achieve a minimum number of workers. This suggests that the effect of strike size on union membership might be positive and nonlinear: such an effect could be stronger as the number of workers involved in strikes increases.

Industrial conflict and growing union membership in Chile

In this article, we test these hypotheses by analysing the case of Chile. This country represents a prototypical example of neoliberal IR. Similar to other cases of 'deregulatory liberalization', such as the United States and the United Kingdom (Thelen, 2014), Chile's economic liberalization was carried out through the displacement of previous institutions created to coordinate market relations (Pérez Ahumada, 2023b). In Chile, institutional displacement took place during Augusto Pinochet's dictatorship, so its effects were more

deeply entrenched than in the rest of Latin America. In the terrain of IR, neoliberal transformation was achieved through the establishment of a new Labour Code, the pro-business 1979 Labour Plan. The Labour Plan decentralized collective bargaining by prohibiting sector-wide agreements and weakened unions' bargaining power through regulations that not only facilitated the formation of multiple (fragmented and small) unions in individual enterprises ('union parallelism'), but also recognized the right of each such union to engage in collective bargaining at the same time with the employer. The Labour Plan also restricted the right to strike, making it lawful to replace striking workers and limiting strike action outside statutory collective bargaining processes (Bellido de Luna, 2021; Durán and Gamonal, 2019).

As already noted, the central aspects of the Labour Plan have not changed since democracy was restored in 1990. Several reforms implemented by centre-left administrations certainly revoked the most repressive aspects of the legislation (e.g. they legalized national confederations and facilitated the formation of unions within companies). Nevertheless, these reforms did not substantially strengthen the right to strike or establish a sectoral bargaining system (although not prohibited, sectoral bargaining remained voluntary for employers) (Pérez Ahumada, 2023a). Additionally, they did not eliminate the regulations that undermine unions' bargaining power by promoting the formation of small, fragmented, company-level unions (Bellido de Luna, 2021).

The persistence of this institutional framework has had major consequences for IR in Chile. Despite the increase in union membership, in the last decade, fewer than 10% of workers were covered by some form of collective agreement (Durán and Gamonal, 2019). Likewise, union organization is characterized by extremely high levels of fragmentation. Between 2010 and 2019, there were around 11,000 active unions in Chile, which had, on average, just over 90 members each (Pérez Ahumada and Ocampo, 2023).

However, between 2006 and 2019, Chile witnessed a wave of strikes and a renaissance of union mobilization (OHL, 2020; Velásquez Orellana et al., 2022). Recent research indicates that this resurgence of labour activism may have had important effects on the Chilean labour movement. Scholars have recently suggested that the rise in industrial conflict increased workers' political awareness (Pérez et al., 2025), politicized the nature of strikes, i.e. led to a significant rise in the number of 'political' (non-economic) strikes (Medel et al., 2023; OHL, 2020), and helped improve Chilean workers' trust in labour unions (Pérez Ahumada and Godoy, 2025).

All in all, this evidence is consistent with the hypothesis that strikes can have positive effects on union membership because they strengthen working-class consciousness, build solidarity among workers and improve workers' perceptions about labour unions (Fantasia, 1988; Hertel-Fernandez et al., 2021; Hodder et al., 2017; Hyman, 1989; Luxemburg, 1906). The laws regulating strikes in Chile indicate that in this country strikes might be more likely to produce this hypothesized effect than in other countries. Unlike in other countries, official strikes in Chile can only take place within the margins of the collective bargaining process (particularly, after the parties involved fail to reach an agreement) (Pérez Ahumada, 2023a). At this stage, no worker can join the union – they can only do it *before* the bargaining process begins. This means that, if found, increases in union membership cannot be attributable to unorganized workers joining the union for instrumental reasons only (for example, joining the union right after the strike

announcement to receive financial support from the union's strike fund without the risk of being accused of strikebreaking). In line with this reasoning, Pérez et al. (2025) have recently argued that the politicization of Chilean workers during the 2006–2019 strike wave is crucial for understanding the rise in union membership.

In this article, we use sector-level panel data and individual-level cross-sectional data to test this argument empirically. Based on the evidence on strikes and union membership shown above, we pose the following three hypotheses:

H1: There is a positive relationship between the number of strikes and union membership.

H2: There is a curvilinear relationship between strike duration and union membership. As strike duration increases, so does union membership, but only up to certain point. After that point, an increase in duration will lead to a decline in union membership.

H3: There is a positive nonlinear relationship between strike size and union membership. The positive effect of strike size on union membership will be larger as the number of strikers increases.

Data and methods

Industry-level analysis

We collected data on strikes and unions for Chile's main economic industries from 1999 to 2019. Due to data availability, we analysed nine main economic activities, as defined by the International Standard Industrial Classification of All Economic Activities, Revisions 2 to 4 (United Nations, 2008): 1. Agriculture, forestry and fishing; 2. Mining and quarrying; 3. Manufacturing; 4. Electricity, gas, steam, air conditioning and water supply; 5. Construction; 6. Wholesale and retail trade and accommodation and food service activities; 7. Transport, storage and communication; 8. Financial, insurance and real estate activities; and 9. Social, professional and other services (art, entertainment, domestic services, etc.). Based on this classification, we obtained 189 observations per variable ($t = 21 \times n = 9$). In Chile, public employees are excluded from the right to form unions. Therefore, our data only included information for the private sector.

The dependent variable is the (sectoral) union density rate, measured as the percentage of workers – wage-earners and self-employed – belonging to trade unions (data obtained from the Chilean government's Labour Directorate Statistical Yearbook [Dirección del Trabajo, 2021] and from the National Survey of Employment [Instituto Nacional de Estadísticas, 2023]).

The main independent variable, strike action, was measured through three different indicators: (1) *strike frequency*, i.e. the average number of strikes per industry/year; (2) *strike duration*, measured as the arithmetic average number of workdays lost in strikes per industry/year; and (3) *strike size*, measured as the average number of workers involved in strikes per industry/year. These variables were obtained from the Observatory of Labour Strikes' (OHL) dataset. Based on the coding of news from 18 national and

Table 1. Descriptive statistics for industry-level variables ($N = 189$).

Variables	Mean	SD	Min.	Max.
Unionization rate	22.886	15.118	4.622	69.878
Number of strikes	23.074	18.255	0	73
Strike duration	8.884	4.873	0	31
Strike size	325.582	474.987	0	3,000
Percentage of females	25.754	17.359	2.055	64.218
Average age	40.539	18.087	36.265	45.700
Percentage of self-employment	22.004	12.172	0.183	45.394
Percentage of skilled workers	24.302	18.997	1.217	76.758
Firm size (percentage of workers employed in firms with 50 or more employees)	44.974	17.006	21.000	87.976
Percentage of full-time workers	88.526	76.670	66.183	99.475
Percentage of open-ended contracts	64.232	17.188	29.068	89.158

regional newspapers, the OHL data include any form of industrial action (e.g. firm-level or sector-level disruptive actions) registered in the media (OHL, 2020). Then, the data are merged with official data from Chile's Labour Directorate, which results in a dataset that gathers information on official and unofficial strikes.

The statistical analyses included several controls that account for structural attributes of economic industries (Schnabel, 2013; Visser, 2019): (1) Female share of employment; (2) Average age of the employed population (wage-earners and self-employed); (3) Share of self-employment; (4) Share of skilled workers, measured as the percentage of workers employed in the occupational groups 2 (Professional) and 3 (Technicians and associate professionals), as defined in the International Standard Classification of Occupations (ILO, 2016); (5) Firm size, measured as the percentage of workers employed in firms with 50 or more employees; (6) Share of full-time workers; and (7) Share of workers with open-ended contracts.

All these variables were obtained from the National Employment Survey (October–December quarter of each year). When data were missing (e.g. data on firm size and open-ended contracts were missing for the 1999–2009 period), we used estimates from the National Socioeconomic Characterization Survey (CASEN), a government household survey that provides nationally representative estimates of the Chilean population.

Table 1 summarizes the descriptive statistics for the variables used in this industry-level analysis.

Estimation strategy

Standard regression techniques are not suitable for panel data because they assume that observations are independent from each other and that errors are uncorrelated (Angrist and Pischke, 2009). To address this problem, we use fixed-effect (FE) models. FE models allow for estimating effects from observational data by adjusting for unmeasured, unit-specific, and time-invariant confounders (Angrist and Pischke, 2009; Imai and Kim, 2019).

Furthermore, an FE model's emphasis on within-unit change is coherent with this research goal of studying how, within industries, changes in industrial conflict shape union membership over time. Thus, the estimates from the models can be interpreted as average changes in union membership rate when the predictors (the variables measuring strike activity) change one unit over time.

Panel data analysis like ours can suffer from endogeneity bias arising from reverse causation (Wooldridge, 2013). In our case, this can occur because industrial conflict can affect and be affected by union membership. Scholars have identified several strategies to deal with reverse causation, such as using instrumental variables or lagged independent variables (Halaby, 2004). Due to the lack of suitable instruments, in this article, we address this issue by lagging the main independent variables by one year (see e.g. Kollmeyer and Peters, 2019). Our logic is simple: lagging our indicators of strike activity by one year can allow us to analyse how industrial conflict affects union membership, ruling out the possibility that the causal arrow goes the other way. Recent research has discussed the effectiveness of this strategy (Bellemare et al., 2017). However, the empirical literature on strikes suggests that reverse causality between strikes and union membership can be contemporaneous only, and that the causal effect of strikes on union membership may operate with a temporal lag (Franzosi, 1995; Pérez Ahumada and Ocampo, 2023).

Finally, our statistical models account for two other potential problems arising from panel data. First, the statistical models included a linear time-trend variable ($t = 1, 2, 3, \dots, n$) to address the potential problem of spurious relationships – which can emerge in panel data if the independent and dependent variables move together over time but are not causally linked (Wooldridge, 2013: 367–369). Including time allowed us to capture the effect of variables that were not measured directly but that change over time. Second, models based on panel data violate the assumption of independent and identically distributed errors (Wooldridge, 2013). To deal with this problem, we used the 'Arellano' estimator included in the *plm* package in R (Millo, 2017: 6–7). We specified industry as the clustering dimension and estimated standard errors that are robust against heteroscedasticity and serial correlation.

Individual-level mediation analysis

To explore the micro-level mechanisms that can explain the relationship between strike and union membership, we use a subsample of the WVS, waves 6 (2014) and 7 (2018), representative of the employed Chilean population ($N = 1065$). Using the KHB package in Stata, we performed the method of mediation analysis developed by Breen, Karlson and Holm (2013). The KHB method allowed us to quantify how much of the relationship between strike (measured as individual willingness to strike) and union membership is explained by different variables theorized as mediators.

The dependent variable of this analysis is union membership: 1 = yes, 0 = no. The main independent variable is willingness to strike, measured through an ordinal scale: 1 = I would never join a strike; 2 = I might join a strike; and 3 = I have joined a strike. This variable is probably not the best measure of strike participation because it combines factual data (whether the respondents joined a strike) with hypothetical reasoning

(whether they ‘might’ or ‘would never’ join a strike). Therefore, we focus our analysis mostly on those who did join a strike, relative to those who did not. Following prior research (Martin and Brady, 2007; Scheuer, 2011; Schnabel, 2013), our statistical models included the following controls: gender, age, marital status, educational level, sector of employment, employment status. Our models also controlled for year of survey (reference category: 2014).

Building on traditional mediation analysis (Baron and Kenny, 1986), we performed our analysis in three steps. First, we estimated several regression models – OLS, ordinal logistic or logistic models, depending on the dependent variable’s measurement level – to test whether there was a statistically significant relationship between willingness to strike and the variables theorized as mediators. Following prior research (see above), we analysed four potential mediators:

1. Trust in unions: ordinal variable ranging from 1 (Do not trust at all) to 4 (Trust completely).
2. Working-class class identity: dichotomous variable coded 1 = the respondent identifies themselves as working or lower-class and 0 = any other option.
3. Politicization level: 0 to 6 interval scale that measures the respondents’ answer to the questions: (1) How important is politics in your life? (0 = Not important at all to 3 = Very important); and (2) How interested would you say you are in politics? (0 = Not interested at all to 3 = Very interested). Pearson’s correlation between the items was $r = 0.48$, and Cronbach’s alpha was $= 0.65$. This latter coefficient is not very high, probably because of the low number of items used to calculate it.
4. Left-wing identification: dichotomous variable coded 1 = the respondents scored between 1 and 4 on the original 1 to 10 scale, and 0 = they did not. We recoded this variable as a dummy because our main interest was on identifying the mediating effect of left-wing identity. Creating a dummy variable also enabled us to keep around 25 of the sample respondents who did not identify with the left/right continuum.

Some of these variables are certainly not the best measurements. For example, trust in unions is only an indirect measure for individuals’ attitudes toward unions. In the absence of a better measurement, we use this variable because it has been proven to be a good proxy to measure workers’ pro-union behaviour (Hadziabdic and Frangi, 2022). These limitations aside, analysing these potential mediators allowed us to establish to what extent the relationship between willingness to strike and union membership is explained by the fact that those who are more willing to strike are more likely to have pro-union attitudes (as measured by trust in unions), to identify with the working class, to be more politicized, or to have stronger left-leaning orientations.

The descriptive statistics of all these variables are shown in Table A1, Appendix.

In the second step, we fitted logistic regression models to see whether there was a significant relationship between willingness to strike and union membership and between the hypothesized mediators and union membership. In this step, we also

Table 2. Determinants of union membership in Chile’s main economic industries (1999–2019).

	Model 1	Model 2	Model3
Number of strikes _(t-1)	1.449*** (0.379)		
Strike duration _(t-1)		-0.123 (0.451)	
Strike duration ² _(t-1)		-0.123 (0.206)	
Strike size _(t-1)			-1.735* (0.866)
Strike size ² _(t-1)			0.377† (0.192)
Controls included?	Yes	Yes	Yes
Observations	189	189	189
Adjusted R ²	0.42	0.39	0.41

Asterisks denote statistical significance based on two-tailed tests: ****p* < 0.001; ***p* < 0.01; **p* < 0.05; †*p* < 0.1.

checked if the size of the coefficients for willingness to strike was reduced after including the mediators.

Finally, in the third step, we used the KHB method to estimate how much of the relationship between willingness to strike and union membership is explained by the variables identified as mediators.

It is important to emphasize that this analysis is not meant to demonstrate that willingness to strike *causes* union membership. We are aware that our cross-sectional data do not allow us to establish causal relationships, nor do they rule out the possibility of reverse causation (which probably exists). It is not our goal to establish causal relationships. Instead, we use the KHB method to explore potential mechanisms that may underlie the association found in our industry-level analysis.

All data and codes used in this article are available in the OSF repository.¹

Results

Industry-level analysis

In Table 2, we present three FE regression models estimating the relationship between strike activity and union density. In all models, the independent variables of interest were converted to z-scores to facilitate comparison.

In model 1, we estimated the effect of the number of strikes and found that when the number of strikes increases, union density grows. Net of the other variables included in the model, an increase of one standard deviation unit in the number of strikes leads to an average growth of 1.5 percentage points in the union density rate. According to our data (see Table 1), this means that if the number of strike events in a given year rose to one standard deviation above the mean, i.e. from 23 (mean) to 38 strikes (SD = 18), in the following year, the expected average growth in the union density would be 1.5

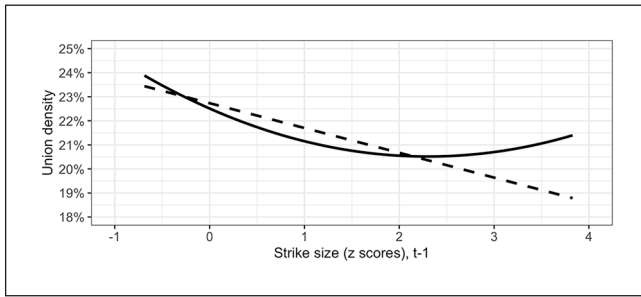


Figure 3. Effect of strike size on union density.

percentage points. This coefficient is statistically significant (p -value < 0.001), which is consistent with H1.

In model 2, we estimated the effect of strike duration on union density. To test our hypothesis, we fitted a model that included the linear and quadratic coefficients for strike duration. Both coefficients are negative, suggesting that longer strikes could lead to a decline in union membership, and that this negative effect could become more pronounced as the duration of the strikes is longer. However, the coefficients are not statistically significant, which means that H2 cannot be accepted.

Finally, in model 3, we fitted a quadratic model to estimate effect of strike size. The linear coefficient is negative and statistically significant (p -value < 0.05), whereas the quadratic term is positive and statistically significant (p -value < 0.1). This suggests that strike size has a negative effect on union density, but this effect declines as the number of workers involved in strikes increases. Figure 3 illustrates this relationship. Using the *ggeffects* package in R (Lüdtke, 2021), we calculated the effect of strike size on union density in its linear form (dashed line) and in its quadratic form (solid line), holding all other variables from the model constant at their means. The solid line in the figure shows that the negative effect of strike size becomes smaller as the number of strikers increases. Furthermore, the solid line indicates that when the number of strikers is high, i.e. when it is around 2.5 standard deviation units (equivalent to around 1500 workers), its effect on union density becomes positive. This means that H3 should be only partially accepted.

Individual-level mediation analysis

We began our mediation analysis by examining the relationship between willingness to strike and each of the variables theorized as mediators. As expected, we found a positive, statistically significant relationship between willingness to strike and each mediator (see Table A2, Appendix). This suggests that the workers who are more willing to strike are more likely to join unions because they are more likely to trust unions, to identify with the working class, to be more politicized and to have stronger left-wing orientations.

To test this hypothesis further, in a second step, we examined whether there was a significant and positive relationship between each potential mediator and union membership. Our results suggest that only trust in unions and politicization have positive and

Table 3. Logistic regressions estimating union membership in Chile (2014 and 2018).

	Model 1	Model 2	Model 3	Model 4
Willingness to strike (ref.: would never join)				
Might join	0.302 [†] (0.179)	0.266 (0.181)	0.247 (0.180)	0.218 (0.182)
Have joined	0.559** (0.211)	0.529* (0.215)	0.416 [†] (0.218)	0.399 [†] (0.222)
Trust in unions (not much)		0.655* (0.279)		0.631* (0.280)
Trust in unions (somewhat)		0.450 (0.280)		0.364 (0.282)
Trust in unions (a lot)		0.712* (0.347)		0.626 [†] (0.350)
Politicization			0.142** (0.051)	0.142** (0.052)
Controls included?	Yes	Yes	Yes	Yes
Constant	-1.928** (0.554)	-2.475** (0.610)	-2.124** (0.561)	-2.618** (0.612)
AIC	1055.786	1054.859	1050.063	1049.453
BIC	1110.464	1124.450	1109.712	1124.013
Log likelihood	-516.893	-513.430	-513.032	-509.726
Deviance	1033.786	1026.859	1026.063	1019.453
Num. obs.	1065	1065	1065	1065

Asterisks denote statistical significance based on two-tailed tests: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; [†] $p < 0.1$.

significant effects on union membership (see Table A3, Appendix). This implies that, among the four variables theorized as mediators, only trust in unions and politicization can account for the relationship between strike participation and union membership.

Based on this finding, in our final step, we analysed not only if there was a significant relationship between willingness to strike and union membership, but also how much of this relationship is explained (mediated) by trust in unions and politicization. The results of this analysis are presented in Tables 3 and 4.

Model 1 in Table 3 shows a significant relationship between willingness to strike and union membership. Our calculation of the predicted probabilities indicates that the probability of union membership is 6% higher for those who have joined a strike, relative to those who would never join a strike (15% for the former vs 9% for the latter). This difference is statistically significant (p -value < 0.01). Similarly, using the coefficients from model 2, we found that the probability of union membership for those who have a lot of trust in unions is 5% higher than the probability of those who have no trust (11% vs 6%; p -value < 0.05). Likewise, using the coefficients from model 3, we found that moving from 0 to 6 points in the scale of politicization is associated with an increase in the probability of unionizing, from 7 to 15% (p -value < 0.01).

Table 3 also presents a fourth model (model 4), in which the two mediators are included together. When compared to the coefficients from the model without

Table 4. KHB analysis of mediation.

Mediation due to. . .	Difference in coefficients (SE in parentheses)	% mediation
I might join a strike		
. . . trust in unions (none)	-0.026 (0.024)	-8.27
. . . trust in unions (somewhat)	0.052 (0.042)	16.47
. . . trust in unions (a lot)	0.011 (0.014)	3.56
. . . politicization	0.061 (0.027)	19.37
Total		31.13
I have joined a strike		
. . . trust in unions (none)	-0.087 (0.047)	-15.46
. . . trust in unions (somewhat)	0.050 (0.042)	8.9
. . . trust in unions (a lot)	0.060 (0.037)	10.63
. . . politicization	0.144 (0.056)	25.49
Total		29.56

the mediators (model 1), in model 4, the statistical significance of the coefficients for willingness to strike is reduced ('have joined strikes') or even disappears ('might join strikes'). Our computation of the predicted probabilities also suggests that the size of these coefficients is reduced. For example, in model 4, the difference in the probability of union membership between those who have joined strikes and those would never join strikes is 3 percentage points, i.e. half of the 6% difference found in model 1. This means that the differences in the probability of unionization between those who are more and less willing to strike can be attributed to differences in their pro-union attitudes (as measured by trust in unions) and in their level of politicization.

This conclusion is further reinforced when we look at the results from the KHB mediation analysis, presented in Table 4. The second column of Table 4 shows each mediator's estimated contribution to the indirect (mediated) 'effect' of willingness to strike on union membership, along with their standard errors. This indirect effect is calculated as the difference between the estimated 'total effect' of willingness to strike – i.e. the effect derived from the model without the mediators (model 1) – and the estimated 'direct effect' obtained from the model with the mediators (model 4). To facilitate comparisons across models, the coefficients are rescaled in the KHB method (Kohler et al., 2011: 429–430). Based on these rescaled coefficients, the third column expresses the mediators' contributions in percentages.

Table 4 shows that trust in unions and politicization account together for around 30% of the relationship between willingness to strike and union membership (see the 'Total' row for each category of willingness to strike). This means that workers who might join or have joined a strike are more likely to unionize because they are more politicized and trust labour unions more than their counterparts who would never join a strike. However, Table 4 also shows that politicization is more important than trust in unions in explaining differences in the probability of union membership. For example, if we focus on the difference between those who have joined a strike and those who would never join a strike (reference category), the results from Table 4 indicate that this difference can be explained

more effectively by strikers' higher levels of politicization (25% of mediation) than by their higher trust in labour unions (in this latter case, the percentage of mediation for having 'a lot' of trust in unions is only 11%).²

Discussion and conclusion

Union density rates have declined in most countries (Kollmeyer and Peters, 2019; Visser, 2019). In contrast to this trend, union membership in Chile increased in the last decade and a half. To explain this phenomenon, in this article, we reversed the causal relationship emphasized in most studies and, using industry-level data, showed that the rise in the number of strikes observed between 2006 and 2019 has been a significant stimulus for the growth in union membership. Thus, our findings provide support for the argument that strikes are not only a defensive strategy, but also a strategy that can have revitalizing effects for labour unions (Hertel-Fernandez et al., 2021; Hyman, 1989). To use the Marxist terminology, strikes remain of vital importance not only as an expression of workers' collective resistance to capitalists' power, but also as a strategy to build collective power (Hyman, 1989; Pérez et al., 2025; Wright, 1997). In line with Luxemburg's (1906) classical analysis of strikes, our findings indicate that strike action can shape unions' power, as much as unions' strength shapes the patterns of strike action.

Our analysis of the duration and size of strikes provided us with a more detailed understanding of the conditions in which strikes can have these positive effects on union membership. In relation to strike duration, recent research argues that the temporal length of strikes reflects their effectiveness: shorter strikes reflect the fact that the union has more capacity to advance workers' interests successfully (Velásquez Orellana et al., 2022). Consistent with this idea, we found a negative effect of strike duration on union membership. However, the lack of statistical significance suggests that strike duration might not have substantial effects on workers' decisions of not joining (or leaving) a union. This does not mean that strike effectiveness is unimportant for explaining changes in union membership. Research indicates that strikes' positive effects on union participation are more likely to occur when unions effectively mobilize discourses to enhance the perception of strike outcomes as successful (Molina and Barranco, 2016). Further research should investigate how the interpretation of a strike as a victory/defeat affects workers' propensity to unionize.

As for strike size, our statistical analysis suggested that small strikes can have negative effects on membership and that such an effect becomes positive as the number of workers involved in strikes increases. The implication is that strikes do not *always* stimulate union membership. Strikes are successful as a strategy to recruit members only when they are large. This is consistent with recent research that indicates that large-scale strikes have potential 'multiplier' individual-level effects (Hertel-Fernandez et al., 2021). According to Hertel-Fernandez et al. (2021), these multiplier effects occur because large strikes reinforce pro-union attitudes on the population that does not participate in the strike but has direct contact with the strikers. Future studies should investigate further the specific mechanisms that explain how and why large strikes are more effective in increasing membership than small strikes.

Building upon these industry-level findings, in this article, we used mediation analysis to explore the individual-level mechanisms that can explain why strikes have positive effects on union membership. We found that workers who are more willing to strike are more likely to unionize because they have more positive attitudes toward labour unions (i.e. they trust unions more) and because they are more politicized. This provides support for the argument that strike participation is a stimulus for union membership because it strengthens strikers' positive attitudes toward unions (Checchi and Visser, 2005; Cregan, 2013; McCarthy, 2009) and their political awareness (Hyman, 1989; Luxemburg, 1906). That said, our analysis suggested that the relationship between willingness to strike and unionization is explained more effectively by differences in the level of politicization between strikers and non-strikers than by differences in their attitudes toward unions. The implication is that the politicizing effects of strikes might be more important than their effects on workers' attitudes about unions in explaining why strikes stimulate union membership. As stated above, our measurement of attitudes toward unions is certainly not the best. Further research should clarify if our findings remain valid after using more fine-grained measures of union attitudes and behaviours.

In contrast to what we observed for politicization and trust in unions, we found no evidence suggesting that working-class identification mediates the relationship between willingness to strike and union membership. We interpret this finding as reflecting the comparatively high levels of working-class identification observed in the country. In Chile, working-class identities are strong: during the last decade, nearly 70% of salaried workers identified with the working class (Pérez Ahumada and Andrade, 2023). These levels of working-class identification are higher than what is usually found in other countries (see e.g. Curtis, 2016). In contexts like this, it is possible that working-class identity is not a mechanism that connects strike participation to unionization, not because it is irrelevant, but rather because it is *already* strong before workers join a strike.

As for the non-moderating effect of left-wing orientations, our evidence is less consistent. We found a significant, positive relationship between willingness to strike and left-wing identification. However, we did not find that left-wing orientation mediates the relationship between willingness to strike and union membership. Two factors can explain this finding. First, although the number of political strikes has grown in Chile (Medel et al., 2023), most strikes – 70% in 2018 – continue to be based on economic demands (OHL, 2020: 18). In other words, most workers go on strike for economic, not political, reasons. Second, the 2006–2019 strike wave coincided with a rise in popular mobilization and, perhaps more importantly, with a sharp deterioration of citizens' trust in political institutions (most notably, political parties) (Araujo et al., 2023). Moreover, in this period, the separation between traditional centre-of-left parties and social movements (including the labour movement), which started in the 1990s, reached its maximum levels (Pérez Ahumada, 2023a).

The divorce between centre-left parties and unions affected unions' capacity to influence the policymaking process and increased workers' political disidentification (Pérez Ahumada, 2023a). However, it allowed unions to adopt more confrontational strategies and opened the door for the reconstruction of alliances with more left-leaning parties and organizations. During the 2005–2019 strike wave, these alliances provided support for successful mobilizations at the sectoral and national levels (Manky, 2018). Nevertheless,

the fact that left-wing identification does not seem to mediate the relationship between willingness to strike and union membership suggests that the reconstruction of these alliances is not yet strong enough to change the pattern of political disidentification among Chilean workers.

All in all, our industry- and individual-level data show that strikes can have positive effects on union membership. In the last decades, scholars and activists have discussed the strategies unions should adopt to revitalize their power (Frege and Kelly, 2004; Gumbrell-McCormick and Hyman, 2018). Our study contributes to this debate by suggesting that strikes can stimulate a basic component of union power (membership) even when the legislation does not effectively protect unions' right to organize. As already noted, this does not mean that strikes will *always* have positive effects for unions. Our data show that when strikes are small, they can affect union membership negatively. However, we believe that scholars and activist should devote more attention to strikes' influence on union organization. Unions' capacity to increase membership is a crucial indicator of associational power (Pérez Ahumada, 2023a; Schmalz et al., 2018). Therefore, any strategy aiming at revitalizing unions should include consideration of how and in what circumstances the use of the strike could contribute to that goal.

To conclude, it is worth emphasizing that our individual-level analysis is based on cross-sectional data that do not allow us to establish causal effects. Further studies using longitudinal data are needed to confirm the existence of the causal relationships suggested in this article.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Notes

1. See: https://osf.io/z8hr2/?view_only=65d83778593d494ca4a1f8c9c0803bdf
2. The negative sign for having 'no trust' in unions could indicate a suppressor effect, i.e. a case in which the inclusion of a third variable increases the magnitude of the relationship between the independent and the dependent variables.

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Appendix

Table A1. Descriptive statistics for individual-level variables (N = 1065).

Variables	Mean	SD	Percentage
Unionized (1 = yes)			20.0
Willingness to strike			
1. I would never join a strike			50.4
2. I might join a strike			32.7
3. I have joined a strike			16.9
Gender (1 = female)			0.42
Age	43.2	12.2	
Married or living in partner (1 = yes; 0 = other)			0.68
Educational level			
1. Primary or no education			8.0
2. Secondary level of education			61.4
3. Incomplete or complete tertiary education			30.6
Sector of employment (1 = private; 0 = public)			0.87
Employment status (1 = self-employed; 0 = wage earner)			0.06
Trust in unions			
1. Do not trust at all			15.3
2. Do not trust very much			35.8
3. Trust somewhat			40.0
4. Trust completely			8.9
Working-class identity (1 = yes; 0 = no)			0.35
Politicization (0 to 6 scale)	2.05	1.59	
Left-wing identification (1 = yes)			0.27

Table A2. Regression models predicting the theorized mediators.

	Trust in unions ^a	Working-class identity ^b	Politicization ^c	Left-wing identification ^b
<i>Willingness to strike (ref.: would never join)</i>				
Might join	0.657** (0.131)	0.064 (0.165)	0.434** (0.105)	0.702** (0.165)
Have joined	0.977** (0.168)	0.735** (0.200)	1.019** (0.130)	1.275** (0.190)
Controls included?	Yes	Yes	Yes	Yes
<i>Thresholds</i>				
1. None not much	-1.484** (0.384)			
2. Not much somewhat	0.351 (0.382)			
3. Somewhat a lot	2.723** (0.393)			
Constant		-1.355** (0.483)	1.251** (0.306)	-1.930** (0.477)
AIC	2591.158	1181.351		1207.652
BIC	2655.778	1236.029		1262.330
Log likelihood	-1282.579	-579.675		-592.826
Deviance	2565.158	1159.351		1185.652
Adj. R^2			0.114	
Num. obs.	1065	1065	1065	1065

Asterisks denote statistical significance based on two-tailed tests: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; $\dagger p < 0.1$.

^aOrdinal logistic regression model.

^bLogistic regression models.

^cOLS regression model.

Table A3. Logistic regression models predicting union membership (theorized mediators included separately in models 2 through 5).

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Willingness to strike (ref.: would never join)</i>					
Might join	0.302 [†] (0.179)	0.266 (0.181)	0.303 [†] (0.179)	0.247 (0.180)	0.281 (0.180)
Have joined	0.559** (0.211)	0.529* (0.215)	0.571** (0.212)	0.416 [†] (0.218)	0.510* (0.216)
Controls included?	Yes	Yes	Yes	Yes	Yes
<i>Trust in unions (ref.: none)</i>					
Not much		0.655* (0.279)			
Somewhat		0.450 (0.280)			
A lot		0.712* (0.347)			
Working-class identity			−0.083 (0.182)		
Politicization				0.142** (0.051)	
Left-wing identification					0.189 (0.175)
Constant	−1.928*** (0.554)	−2.475*** (0.610)	−1.906*** (0.556)	−2.124*** (0.561)	−1.952*** (0.555)
AIC	1055.786	1054.859	1057.577	1050.063	1056.634
BIC	1110.464	1124.450	1117.226	1109.712	1116.283
Log likelihood	−516.893	−513.430	−516.789	−513.032	−516.317
Deviance	1033.786	1026.859	1033.577	1026.063	1032.634
Num. obs.	1065	1065	1065	1065	1065

Asterisks denote statistical significance based on two-tailed tests: ****p* < 0.001; ***p* < 0.01; **p* < 0.05; [†]*p* < 0.1.