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What Do Unions Do for Mothers?
Paid Maternity Leave Use and the Multifaceted Roles of Labor Unions

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Abstract

The authors present a four-fold conceptual framework of union roles for enhancing workers' paid maternity leave use, consisting of availability, awareness, affordability, and assurance. Using a panel data set of working women up to age 31 constructed from the National Longitudinal Survey of Youth 1997, union-represented workers are found to be at least 17 percent more likely to use paid maternity leave than comparable nonunion workers. Additional results suggest that availability, awareness, and affordability contribute to this differential leave-taking. The authors also document a post-leave wage growth penalty for paid leave-takers, but do not find a significant union-nonunion difference.

Facilitating female workers' use of paid maternity leave is frequently a key issue for policymakers and workers in many countries (Donovan 2018). In the United States, then-President Barack Obama's 2015 State of the Union address noted the lack of widespread paid maternity leave policies while President Donald Trump's first proposed budget in May 2017 included a plan to provide six weeks of paid maternity leave via states' unemployment insurance systems. Simply offering a maternity leave policy, however, does not automatically alleviate workers' concerns about income loss or other potential negative consequences of taking a leave. Researchers have shown that organizational decision makers (Lyness et al. 1999; Houston and Marks 2003) as well as policymakers (Baum 2003) can play important roles in improving workers' access to and use of paid maternity leave. A less investigated area, however, is whether and how labor unions affect workers' use of paid maternity leave. We seek to identify the multiple channels through which unions can affect workers' paid maternity leave use, and present empirical evidence on these roles by analyzing panel data on working women up through age 31 from the National Longitudinal Survey of Youth 1997.

In our review of the literature, we did not find any study that systematically investigated the union effect on workers' *paid* maternity leave use.[1] Using Current Population Survey (CPS) data, Boushey, Farrell, and Schmitt (2013) estimate that unionized workers are more likely to take a leave of any kind, and that unionization increases the likelihood that a leave is paid. Leave-taking in the CPS, however, can only be observed if the worker is on leave during the week of the survey. More broadly, several previous studies show that unions improve workers'

[1] We are also unable to find information that allows us to portray the frequency of paid family leave in union contracts, typical leave length, and other provisions. Indeed, a lack of comprehensive and consistent data sources on family leave more generally has resulted in "a confusing and incomplete picture of how family leave is provided and used in the United States" (Gault et al. 2014: 20).

ability to use a range of family-friendly policies such as flextime, job sharing, and unpaid maternity leave. Kramer (2008) found that unionized workers in the United States were more likely than nonunion workers to be aware of the availability of legally-protected unpaid parental leave under the Family and Medical Leave Act (FMLA). Budd and Mumford (2004) showed that British unions tend to enhance the availability and awareness of child care leave, job sharing, and parental leave. Further, Berg et al. (2014) investigated eight unionized U.S. workplaces and found that workers' perceptions of the union effectiveness were positively associated with their access to and their use of flextime and compressed workweek policies. Thus, it seems reasonable to expect that unions improve workers' ability to use paid maternity leave policies, as they do for other types of family-friendly policies.

In considering the union effect on paid maternity leave use, it is important to go beyond a narrow analysis of usage rates. Analyzing the *length* of leave use is also important because a sufficient period of maternity leave is needed to improve the wellbeing of workers as well as their infants (Staehelin, Bertea, and Stutz 2007; Dagher, McGovern, and Dowd 2014). However, most U.S. female workers return to work in a short period of time after giving birth (Klerman, Daley, and Pozniak 2014). In addition, workers who take a long leave can experience negative career outcomes if their supervisors or coworkers interpret a long leave as a signal of low commitment to their work (Glass 2004; Leslie et al. 2012). Thus, in analyzing unions' roles in facilitating workers' paid maternity leave use, it is critical to not only investigate whether and how unions help workers use paid maternity leave, but whether this translates into leave-taking for a sufficient period of time in ways that guard against potential career disadvantages when they return to work. We are unaware of any empirical research directly investigating the union effects on the length of workers' paid maternity leave use, and the protection of workers after returning to work.

We therefore make unique contributions to the literatures on maternity leave use and on what unions do by investigating not only the leave use itself but also the length of leave use—i.e., the number of days a worker is on leave. In addition, we further investigate the role of unions *after* workers' use of (long) paid maternity leave. Specifically, we first assess whether paid maternity leave use and the length of use have negative implications for workers' subsequent wage growth rates after returning to work, and then examine if unions help mitigate such negative wage effects.

Research on Labor Unions and Family Leave

For decades, researchers have sought to uncover the ways in which labor unions affect the employment relationship, employment-related outcomes, organizations, and the economy (Freeman and Medoff 1984; Bennett and Kaufman 2007; Rosenfeld 2014). With respect to employee benefits, the most feasible way for researchers to investigate is whether unionized and nonunion workplaces or workers differ in the presence of a particular benefit such as health insurance or a retirement plan. It is therefore well-documented that U.S. unions bargain for increased health insurance, retirement, and other benefits (Budd 2007). This increase in benefits relative to nonunion workplaces can reflect both of the two economic faces of unionism—monopoly power and collective voice (Freeman and Medoff 1984; Budd 2007). That is, unions can use their bargaining power to increase employee benefits above the competitive market level, and through their collective voice mechanism can prompt the employer to rearrange the total compensation package towards benefits desired by the employees. Both of these channels can result in unionized workplaces being more likely to have paid family or maternity leave; indeed, Milkman and Appelbaum (2004) found that in the state of California, unionized workplaces offer paid leave policies more frequently than nonunion workplaces.

For benefits that are straightforward for employees to understand and use, coverage rates can be a good indicator of union-nonunion differences. But for some types of benefits, including family leave, there may be informational, operational, economic, and normative barriers to actually using those benefits. In such cases, research needs to look beyond coverage rates to better assess whether there are meaningful union-nonunion differences in the utilization of these benefits while simultaneously theorizing additional channels, beyond bargaining for more benefits, in which unions might affect benefit use. Budd and Mumford (2004) and Budd (2007) therefore theorized a "facilitation effect" in which unions can help workers better understand and use benefits to which they are entitled. For non-mandated benefits, such as paid family leave, the monopoly and voice channels can lead to the increased presence and generosity of benefits in unionized workplaces, and a facilitation channel can lead to greater utilization of benefits among unionized workers. For mandated benefits such as unemployment insurance or unpaid family leave under the FMLA, the facilitation channel can result in higher awareness and take-up rates among unionized workers even when there are no differences in coverage rates.

While research on workers' compensation (Hirsch, Macpherson, and DuMond 1997) and unemployment insurance (Budd and McCall 2004) has been able to analyze benefit use because usage can be observed through receipt of a benefits payment, data is more limited on use of family-friendly policies. Rather, the literature analyzing union effects on family-friendly benefit beyond coverage rates has focused on the extent to which unions increase worker awareness of family-friendly policies (Budd and Mumford 2004; Kramer 2008). There is still a need to better understand, beyond facilitating worker awareness, how labor unions affect use of family-friendly policies, particularly paid maternity leave use in the United States. Conceptually, we deepen Budd and Mumford's (2004) framework by more carefully specifying different channels for facilitation. Empirically, we analyze paid maternity leave usage and length as well as potential wage penalties after a leave.

Four Roles of Unions in Enhancing Paid Maternity Leave Use

To capture the diverse ways in which labor unions can help workers use paid maternity leave, we develop a four-part framework consisting of availability, awareness, affordability, and assurance. These four elements reflect the key considerations for whether any worker takes a sufficiently-long leave: 1) the policy needs to be available, 2) if available, the worker needs to be aware of it, 3) given awareness, the worker needs to believe she can afford to take a leave, and 4) even if affordable, the worker needs to have implicit or explicit assurances that potential negative consequences that make the leave unattractive are unlikely. Unions have the potential to positively affect all four of these key steps. This extends Budd and Mumford's (2004) approach by explicitly distinguishing between the union roles in affecting awareness, affordability, and/or assurance, all of which are grouped together under the heading of "facilitation" by Budd and Mumford (2004).

First, labor unions can impact the *availability* of paid maternity leave through the collective bargaining process. As noted in the previous section, unions can exercise their monopoly power or deploy their collective voice (Freeman and Medoff 1984; Budd 2007) to create a higher frequency of leave policies, including paid maternity leave, than found in comparable nonunion workplaces. Moreover, beyond simply negotiating for more leave policies, unions can also negotiate for leave provisions that are more attractive to workers (Grundy, Bell, and Firestein 1999; Labor Project for Working Families 2000).

Second, labor unions can elevate workers' *awareness* of paid maternity leave policies. Using workshops, newsletters, or other channels, unions can be an information facilitator by actively sharing information on existing leave policies with unionized workers, thereby enhancing their knowledge of these policies (Budd and Mumford 2004). Supportive of this union effect on worker awareness, research on the FMLA has shown that unionized workers have better knowledge of the availability of unpaid parental leave via the FMLA than nonunion workers (Budd and Brey 2003; Kramer 2008).

Third, labor unions can increase workers' *affordability* of using paid maternity leave. While a paid leave may pay the equivalent of a worker's base pay, this may not fully relieve affordability concerns because of the loss of other income sources such as overtime payments, bonuses, and shift differentials. These income sources might be more important for nonunion workers because their hourly wage is lower than otherwise-comparable unionized workers, so then nonunion workers might feel that a leave is less affordable. Moreover, unionized workers are likely to better afford to use maternity leave than nonunion workers because the union wage premium allows them to have accumulated higher savings to draw on during the leave period and to pay off debts more readily after the leave period. In addition, some employers may provide payment during a maternity leave through short-term disability insurance which typically only provides partial wage replacement. Suppose a comparable nonunion and unionized worker each get 60 percent wage replacement; then the otherwise-comparable unionized worker would have a higher dollar amount of wage replacement due to the union wage premium. Moreover, as unions generally bargain for better conditions of benefits, unionized workers are likely to have a higher rate of partial payment than nonunion workers when taking paid leave, and also as unionized workers typically have better healthcare coverage than comparable nonunion workers

(Buchmueller, Dinardo, and Valletta 2002), they may have lower out of pocket expenses during maternity leave. Granted, the opportunity cost of leave-taking might be higher for unionized workers (e.g., shift differentials and other pay premiums are likely greater for unionized workers, and with partial income replacement, the lost income is greater for unionized workers) which could make them less likely to take a leave, but on balance there seem to be more reasons to hypothesize that unionized workers would find a paid leave more affordable than comparable nonunion workers. Thus, for multiple reasons, unionized workers might find it more affordable to use a paid maternity leave policy than otherwise-comparable nonunion workers, and, further, might allow them to afford to take a longer leave than nonunion workers.

Fourth, the advocacy role of labor unions can enhance workers' use of paid maternity leave by providing them with *assurance* when workers are considering a leave and after a leave is completed. Supervisors might discourage eligible employees from using a paid maternity leave, or from taking a long leave. The presence of a formal grievance procedure is expected to reduce the likelihood of this behavior because a supervisor might expect a formal grievance would reveal this inappropriate behavior. And if this behavior does occur, a formal grievance filing would likely remedy this situation. Since formal grievance procedures are nearly universal in U.S. unionized workplaces but much less frequent in nonunion workplaces, this is one way in which unions are likely to enhance workers' leave taking. Another assurance channel is the presence of union stewards who could challenge unsupportive supervisors without filing a formal grievance. Also, unions can have an indirect effect on leave-taking in that when workers participate in meetings, campaigns, and other union activities, they develop communication, advocacy, and problem-solving skills (Wasser and Lamare 2014). In this way, unionized workers might have more confidence than comparable nonunion workers to self-advocate for their needs, including negotiating/communicating with supervisors about their intention to use paid maternity leave. Regarding the leave length as well, as unions provide well-established negotiation processes that assure procedural justice, unionized workers can take a secure position in negotiating the length of maternity leave use, thus making them more likely to use job-protected maternity leave of a desirable length than comparable nonunion workers.

Union advocacy can also provide assurance to workers returning to work *after* leave use. Research shows that workers are likely to be penalized after using family-friendly policies because supervisors may interpret the use as a signal that reveals her level of commitment such that she is less committed to work and more committed to investing in family (Glass 2004; Judiesch and Lyness 1999; Leslie et al. 2012). Thus, despite the importance of using paid maternity leave for a sufficient period, workers might be hesitant to use it due to concerns with potential career disadvantages, such as lower post-leave wage growth. Supervisors in unionized workplaces might be more cautious in penalizing workers' wages after their leave use because the leave users can file grievances if they perceive that their wages are unjustly disadvantaged. Also, because unionized wages are set by collective bargaining and because U.S. unions generally tend to pursue standardized wage levels in the same establishments and jobs (Freeman 1980), arbitrary pay allocations by supervisors can be constrained (Slichter, Healy, and Livernash 1960; Elvira and Saporta 2001; Institute for Women's Policy Research 2015). And indirectly, if unionized workers have greater self-advocacy skills than comparable nonunion workers and/or feel more confident speaking up, then they may feel more comfortable taking a leave because they feel they can challenge perceived penalties or unfairness after the leave.

This four-fold conceptual framework guides our empirical analysis of the union effects on workers' paid maternity leave use. Admittedly, we are not able to directly observe all of the specific roles embedded within our four-part framework, but this framework provides the basis for thinking broadly rather than narrowly about the possible roles that unions may play. In particular, it is important to analyze outcomes *before* and *after* workers' paid maternity leave use. Before use, we examine whether a worker's union status significantly affects her likelihood of leave use and the leave length. After use, we examine whether unionized workers are protected after returning to work. Specifically, we investigate if workers experience lower wage growth when returning to work after a (long) leave, and then test if unionization significantly weakens any negative association between (long) paid maternity use and wage growth. Where possible, we further try to distinguish between different channels through which unions may affect paid maternity leave, though data availability precludes us from completely isolating each effect.

Data

We use panel data on female workers from the National Longitudinal Survey of Youth 1997 (NLSY97) to analyze the empirical relationships among unionization, paid maternity leave use, the length of paid maternity leave use, and wage growth. The NLSY97 is a U.S. nationally-representative longitudinal sample which consists of 8,984 individuals born from 1980 to 1984 who were aged 12 to 17 when first interviewed in 1997. We use data collected in 1997 through 2011 (rounds 1-15) so we have 15 years of panel data to analyze. Round 15 is the last round of the NLSY97 to be collected on an annual basis, so in order to construct consistent measures we do not use data from subsequent rounds. The youngest cohort in the data we analyze starts at age 12 and ends at age 26; the oldest cohort runs from age 17 to 31. These are important childbearing ages, but they do not span the complete range of potential childbearing ages so this should be kept in mind when interpreting the results.[2]

In spite of this focus on younger workers, the NLSY97 data are well-suited for the analyses for several reasons. First, the NLSY97 is a panel data set which allows us to track a worker's work history, including her use of maternity leave and post-leave wage growth. Second, to our knowledge, the NLSY97 provides the most direct measure of paid leave length data with the specific start and end dates of the paid leave throughout all available survey years. Most of the U.S. worker data sets used in previous studies (e.g., Desai and Waite 1991; Klerman and Leibowitz 1994; Berger and Waldfogel 2004; Pronzato 2009) do not provide direct information on the length of maternity leave, which leads researchers to operationalize the length of leave by observing the periods of a full week or more during which respondents did not work. This makes it difficult to observe whether they used an employer-offered leave policy and whether they came back to the same employer after use. In addition, in many data sets (e.g., National Longitudinal Survey of Youth 1979), a short leave is coded as time on the job, not as time out of the job. Because maternity leaves are often short, this reduces the accuracy of information on maternity leave use and length. Therefore, we use the NLSY97 and its direct measure of paid maternity leave length, including only 1 or 2 days of use. Third, the NLSY97 provides detailed information on individual workers' human capital (e.g., education, tenure), work history (e.g., union status, wage), and other key work-related information such as industry and occupation, as well as individual characteristics such as age, marital status, and race.

[2] In the United States in 2011, 60 percent of children were born to mothers who were less than 30 years old, and nearly 75 percent of all first births occurred when the mother was less than 30 years old (U.S. Department of Health and Human Services 2013).

The full NLSY97 data spanning 1997-2011 comprises 134,760 observations of 8,984 individuals. As the primary focus of this study is working female respondents, we first dropped 68,985 observations of 4,599 male respondents from the sample. Among the remaining 65,775 female observations, we further restricted the sample to working female respondents, including those on unpaid and paid maternity leave if they added to their family via birth or adoption, who reported wage and tenure information, thus dropping 24,875 observations. Based on the tenure information, we were able to identify individuals who were working but did not respond to the NSLY survey for a particular year. In this case, we did not drop the year's response but instead imputed missing values by taking an average of the before and after year's values. In this process, 408 observations (1.5 percent of the final sample) were imputed.

Last, to test our hypotheses, we need information on respondents' union status and their paid maternity leave length as well as other information including wages, medical insurance, establishment size, and demographic characteristics. Some respondents did not sufficiently provide such information, which led us to further drop 13,428 observations. Consequently, the final sample includes 27,472 observations consisting of an unbalanced panel of 4,108 female workers across 15 years (1997 to 2011); the unbalanced panel structure is due to some female respondents' intermittent work histories. On average, each individual appears in 8 of the 15 rounds of data.

Measures

Paid Maternity Leave Use and the Length of Use

The NLSY97 provides information on the start and end dates of an individual's paid leave due to maternity via a question that asks "between [start date/date of last interview] and [stop date], were there any periods of a full week or more during which you took any PAID leave from work [as/with] the current employer because of a pregnancy or the birth of a child?" Paid maternity leave use for each survey year is coded 1 when a respondent's response was "yes" and 0 when the answer was "no." After this question, respondents also provided the start and end dates of their paid maternity leave, including leaves of less than a full week. Using this information, the length of paid maternity leave use was computed as the end date minus the start date of paid maternity leave. In our sample, there were 34 observations from those who responded to the paid maternity leave use question as "yes" but did not provide the length of paid leave information, and hence they were not included in the leave length analysis.

Union Status

This variable was measured as an individual response to the question, "on this job, [are/were] you covered by a contract that was negotiated by a union or employee association?" Union status for each survey year is coded 1 when a respondent's response was "yes" and 0 when the answer was "no."

Wage Growth Rate

One-year wage growth was constructed as the percentage change in the respondents' "hourly rate of pay" between two successive survey years for which the respondent is working for the same employer. For example, if a respondent works for the same employer for four successive survey rounds, we were able to construct three successive one-year growth rates. Any of these growth rates that are observed after taking a paid maternity leave from that employer are post-leave wage growth rates, and we can estimate a post-leave differential by comparing post-leave to other wage growth rate observations. Two-year growth rates were constructed in the same way for each two-year span with the same employer and then converted to an annual rate.

We deflated all wages to 1997 dollars using the Consumer Price Index for All Urban Consumers, so the constructed wage growth rates are real rather than nominal changes.

Paid Leave Availability/Awareness and Medical Insurance Coverage

Respondents answered the following question: "Please look at the following list of benefits which employers sometimes make available to their employees. [At this time/At the time you left], which of the benefits on this list would it [be/have been] possible for you to receive as part of your job with [this employer]?" One of the response options was "Paid maternity or paternity leave." To construct the paid leave availability/awareness variable, a respondent response of "yes" was coded as 1 and "no" was coded as 0. Another response option was "Medical, surgical or hospitalization insurance which covers injuries or major illnesses off the job." When a respondent responded "yes" we coded the medical insurance variable as 1, and when answered "no" it was coded as 0.

Control Variables

In testing the associations among the key variables, we included a number of characteristics of workers and their workplaces. For workers' *demographic characteristics*, we included their race/ethnicity, marital status, age, and education. In addition, we also included workers' *work-related characteristics* such as their total work hours per week and tenure. Furthermore, we also included *workplace characteristics* such as industry, occupation, establishment size, and whether the employer public sector, private sector, or other (non-profit or family business).

Descriptive Statistics

The descriptive statistics of the female worker sample constructed from the NLSY97 are presented in Table 1. Column 1 shows that for all of the observations in our sample, 9.4 percent of female workers were represented by unions. Columns 2 and 3 present the descriptive statistics separately for workers when their main job in a year is one represented by a union or not (nonunion). The data show that in terms of the availability of employer-provided paid maternity leave, 24.3 percent of workers in nonunion job-years reported that this policy is available in their workplaces, but among workers in unionized job-years this percentage increases to 42.6 percent, and this 18.3 percentage-point difference is statistically significant (*t*-statistic = 20.447 [*df* = 27,470], $p < .001$).[3] In terms of paid maternity leave use, 2.2 percent of nonunion worker-years involved a paid maternity leave whereas among workers in unionized job-years, the paid maternity leave use rate was more than twice as large (4.9 percent). This 2.7 percentage-point difference is significant (*t*-statistic = 8.460 [*df* = 27,470], $p < .001$).

Insert Table 1 about here

Note that the full sample pools all observations regardless of whether someone had a need for maternity leave—that is, it is unconditional on pregnancy, birth, or adoption. Columns 4 and 5 in Table 1 show the (conditional) descriptive statistics of female workers when the sample is restricted to those who experienced an addition of family members (e.g., birth, adoption) during that year. In other words, we excluded the observations for each year in which an individual did not experience a birth/adoption event, which leaves 1,936 nonunion and 248 union observations of births/adoptions involving 1,363 and 202 individuals, respectively. In this conditional sample, 28.7 percent of nonunion workers reported that they used paid maternity

[3] As noted later in the paper, two states (California and New Jersey) mandated paid maternity leave during the time frame of our sample. Excluding workers in those states starting with the year after enactment yields similar results. Specifically, we observe a 17.3 percentage point gap in leave availability rates between unionized (40.4 percent) and nonunion (23.1 percent) workers, which is statistically significant ($p < .001$).

leave whereas 51.6 percent of unionized workers reported that they used paid maternity leave. This 22.9 percentage-point difference is significant (t-statistic = 7.427 [df = 2,182], $p < .001$). On average, then, there are significant differences between union and nonunion workers in their use of paid maternity leave, without accounting for potential differences in characteristics.

In columns 6 and 7 of Table 1, the sample is further restricted to those who provided paid leave length information among those who experienced an addition of family members, with the descriptive statistics again reported separately for nonunion and union workers. The results show that, on average, the length of paid maternity leave among nonunion workers is approximately 57 days, whereas the average length among union workers is about 62 days. This small difference is not statistically significant (t-statistic = 1.009 [df = 647], $p = .157$).

Analyzing the Overall Union Effect on Leave Use and Length

Simple comparisons between nonunion workers and union workers in terms of their paid maternity leave use and leave length may over- or under-state the actual union effect if other union-nonunion differences (e.g., industry) are substantially associated with the propensity to use (long) paid maternity leave. Thus, we conducted multivariate analyses and the first set of results is reported in Table 2. Columns 1 and 2 in Table 2 report the marginal effects and their standard errors from probit models with the binary dependent variable of paid maternity leave use (or not), and the independent variables of union status and other control variables.[4] The various control variables are intended to control for other factors besides union status that may affect paid maternity leave use.

Insert Table 2 about here
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[4] The marginal effect for each variable is estimated as the average of each observation's marginal effect for that variable across the sample used in each model.

In Model 1, we start with the restricted sample conditional upon reporting a birth or adoption during the sample year. Holding demographic, work, and workplace characteristics constant, union representation is positively associated with paid maternity leave use (*marginal effect* = .049, $p < .01$).[5] In Model 2, the same specification is estimated on the full sample including those who did not report a birth or adoption. This broader sample allows us to more fully account for the possibility that union status affected whether or not to try to add to one's family. In fact, in these data unionized women are significantly more likely to have a birth or adoption event than nonunion women, even after controlling for age and other factors.[6] In addition, using the full sample allows us to better control for time-constant individual characteristics via robust standard errors or individual fixed effects models in the data analysis. Models 2-4 in Table 2 therefore use the full sample rather than the restricted sample conditional upon a birth or adoption.

Model 2 in Table 2 shows that, when a full sample is used to estimate the probit model, being represented by union is again associated with a significantly higher likelihood of paid maternity leave use (*marginal effect* = .009, $p < .001$). This marginal effect is smaller than the effect conditional upon birth or adoption (Model 1), but this is to be expected because the base rate of leave use in the full sample is smaller. Indeed, as described below, the magnitude of this

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[5] In addition, we conducted a robustness check by restricting the sample further to those who experienced birth/adoption event and reported having paid leave available to them. The results were consistent in that union significantly affects paid maternity leave use (*marginal effect* = .086, SE = .042, $p < .05$).

[6] Holding demographic, work, and workplace characteristics constant, the direct marginal effect of union on birth/adoption is .014 (SE = .005, $p < .01$), which means that compared against nonunion female workers' birth/adoption rate of 7.8 percent (recall column 2 of Table 1), unionized female workers are 18 percent more likely to add family members. In addition, the marginal indirect effect of union on birth/adoption via leave use is .004 (SE = .0009, $p < .001$), meaning that unionized female workers are 5 percent more likely to add family members than nonunionized female workers because they use paid leave more.

effect is large. Overall, the probit results in Models 1 and 2 show evidence consistent with our expectations of a positive union effect on workers' paid maternity leave use.

The estimates from the probit models, however, can be biased if some unobservable individual traits are correlated with paid maternity leave use and unionization. For example, highly motivated individuals might be more likely to be aware of the availability of paid maternity leave and might also be in unionized jobs due to the union wage premium. We address this issue in two ways. First, we estimate a two-stage least squares (TSLS) model and instrument for union status using the set of independent variables and the three-digit industry level union density rate (from Hirsch and MacPherson 1993). This assumes that industry union density is correlated with an individual being unionized, for example because there are more opportunities to be unionized in industries with higher density, but whether or not to take a leave is a personal decision that is not influenced by the industry's union density rate. The Montiel-Pflueger robust weak instrument test result shows that the union density rate is an effective instrument (*effective F-statistic* = 146.122, *5% of worst case bias* = 37.418). The results are presented in Model 3 in Table 2, and the estimate of the union effect on paid maternity leave use is significantly positive ($b = .079$, $p < .05$).

Second, we estimate an individual fixed effects (FE) model. The FE model allows us to account for individual unobservable heterogeneity by partialing out an individual's time-invariant traits in estimating the effect of union status on paid maternity leave use. Consistent with the probit and TSLS results, the FE model result (Model 4) shows a significant, positive union effect on paid maternity leave use ($b = .013$, $p < .01$). Taken together, the results in the first four columns of Table 2 show that our finding of the significant association between union status and paid maternity leave use does not stem from unobservable differences between union and nonunion workers.

In addition to being statistically significant, the effect sizes in Table 2 are meaningful from a practical perspective, too. When the sample is restricted to those who experienced new family addition (Model 1), the estimate of union effect is .049 which means that, on average, unionized workers' probability of paid maternity leave use is 17 (= 100 × (.049 ÷ .287)) percent higher relative to the nonunion average leave usage rate of 28.7 percent (recall column 4 of Table 1), holding observable worker and job characteristics constant. When the full sample is used (Models 2-4), the smallest estimate of the union effect on paid maternity leave is .009. This means that relative to the average nonunion leave usage rate of 2.2 percent in the full sample (recall column 2 of Table 1), unionized workers are approximately 41 percent more likely to use paid maternity leave. Using the FE estimate of .013, the estimated union effect translates to a 59 percent increase in the likelihood of taking a paid maternity leave.

Models 5 and 6 in Table 2 analyze the effect of unions on the length of paid maternity leave (number of days). We use the logarithm of leave length as the dependent variable because the distribution of the length of leave use is skewed to the right. Similar to the paid maternity leave use models (Models 1-4), we estimate both TSLS and FE models, to partial out the effects of unobserved individual differences. The TSLS result (Model 5 in Table 2) shows that, after instrumenting for the union variable by the three-digit industry level union coverage density rate, the union effect on paid maternity leave length is positive but not significant (b = .673, p > .10). The FE model result (Model 6 in Table 2) also shows that the union effect is not significant (b = -.0002, p > .10). Although not reported in the table, we also conducted an additional analysis using a Cox hazard model and again we did not find a significant union effect on leave length.

Thus, in regard to paid maternity leave length, we do not find evidence of significant union effects in our sample of working women up to age 31.

Empirical Evidence on Availability, Awareness, and Affordability

The results in Models 1 to 4 of Table 2 present evidence supportive of a positive union effect on workers' paid maternity leave use (but not the length of leave), but the specific mechanisms are unclear. In our conceptual framework, unions can help workers use paid maternity leave through four mechanisms: (a) availability: making paid leave available through collective bargaining, (b) awareness: making workers aware of the existence of the policy, (c) affordability: making workers better afford the costs associated with leave use, and (d) assurance: helping workers overcome other barriers and disadvantages of leave-taking. To examine some of these possible mechanisms that underlie the estimated union effect on leave use, we estimate a generalized structural equation model (GSEM).[7] This is essentially a mediation analysis where we analyze whether awareness of paid maternity leave availability or affordability of leave taking (as captured by a worker's wage level or medical insurance coverage) mediates the effect of unionization on paid maternity leave use. If awareness significantly mediates the unionization-leave use relationship, this indicates that this is one channel through which unionization affects paid maternity leave. Similarly, if a worker's wage and/or medical insurance coverage mediate the unionization-leave use relationship, then this suggests that affordability is a pathway through which unionization influences leave use. Before turning to the results, note that the data lack an objective indicator of whether paid maternity leave is available in a particular workplace. Rather, with worker-level survey data, a question on whether paid maternity leave is available implicitly

[7] Instead of conducting a classical Baron and Kenny (1986) mediation analysis, we use GSEM because it has better power to model a jointly-estimated asymptotic covariance structure for more accurate testing.

combines the worker's understanding of availability and awareness. Thus, the NLSY97 does not allow us to distinguish between the availability and awareness channels, except where state legislation mandates paid leave.

As we did in our previous probit analyses, we conduct the GSEM analyses using two samples—one excluding those who did not report the addition of a new family member (Table 3) and the full sample including all working women (Table 4). Model 1 in Table 3 shows that unionization positively affects the leave availability/awareness (b = .281, p < .01) and, in turn, leave availability/awareness positively affects paid maternity leave use (b = 2.936, p < .001). To estimate the marginal indirect effect of unionization on paid maternity leave via leave availability/awareness, we first convert the probit estimates reported in Table 3 to marginal effects, next multiply those two marginal effect estimates, and then test the significance of the resulting estimate using bootstrapped standard errors derived from 20,000 replications. The result shows that the effect of unionization on paid maternity leave usage via the channel of leave availability/awareness is positive and significant (*marginal indirect effect* = .036, p < .001). Thus, unionized workers are 3.6 percentage points more likely to use paid maternity leave than nonunion workers because of the role that unions play in increasing availability and awareness. Relative to nonunion workers' usage rate of 28.7 percent (recall column 4 of Table 1), this availability/awareness mediated union effect translates to a 13 percent increase in leave use. Similarly, when a full sample is used (Model 1 in Table 4), the marginal indirect effect of union on paid maternity leave use via leave availability/awareness is .006 (p < .001). Thus, unionized workers are .6 percentage points more likely to use paid maternity leave than nonunion workers due to their higher level of availability/awareness regarding the leave policy, which translates to a 27 percent increase relative to nonunion workers' usage rate of 2.2 percent (recall column 2 of

Table 1). Thus, both restricted and full samples show supportive evidence of a combined availability-awareness role of unions in affecting maternity leave use, and the combined availability-awareness effect accounts for 33-43 percent of the overall union effect on leave-taking.[8]

Insert Tables 3 and 4 about here

Next, we test whether a worker's wage mediates the effect of unionization on paid maternity leave use using the same GSEM estimation strategy. We use the (natural logarithm of the) worker's hourly wage rate as a measure of affordability. In the restricted sample (Model 2 in Table 3), unionization positively affects a worker's wage (b = .117, p < .001) and, in turn, the wage positively affects paid maternity leave use (b = .349, p < .001). This implies that the marginal indirect effect of unionization on paid maternity leave via union-nonunion wage differentials is positive and significant (*marginal indirect effect* = .011, p < .001). In the full sample (Model 2 in Table 4), the marginal indirect effect is .001 (p < .001). Admittedly, these effect sizes are small, because the union effect on wages is smaller than on some other factors that affect paid leave use (e.g., medical insurance coverage), and also because the effect of higher wages might be dampened by the fact that a higher wage also implies a higher opportunity cost of taking a leave (i.e., while a paid leave may pay the equivalent of a worker's base pay, paid leave-taking may also involve the loss of other income sources such as overtime payments, bonuses, and shift differentials which are likely greater for unionized workers).

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[8] In the birth/adoption sample, the overall effect of unionization on leave-taking is .108 controlling for all of the variables in Table 2 except for leave availability, medical insurance coverage, and wages. The implied effect of the combined availability-awareness role is .036, which is approximately 33 percent of the .108 total effect. In the full sample, the analogous comparison is .006 being nearly 43 percent of the .014 total effect.

To analyze the affordability mechanism further, we test whether a worker's medical insurance coverage mediates the effect of unionization on paid maternity leave use using the same GSEM estimation strategy. We posit that a worker's medical insurance coverage helps her afford the medical expenses stemming from childbirth and childcare. In the restricted sample (Model 3 in Table 3), the effect of unionization on a worker's medical insurance coverage is positive ($b = .306$, $p < .01$) and, in turn, the medical insurance coverage affects paid maternity leave use positively ($b = .600$, $p < .001$). The marginal indirect effect of union on paid maternity leave via medical insurance coverage is .014 ($p < .001$), meaning that unionized workers are approximately 4.9 percent more likely to use paid maternity leave as they can enjoy better medical insurance benefits than nonunion workers' usage rate of 28.7 percent (column 4 in Table 1). In the full sample (Model 3 in Table 4), the marginal indirect effect is .002 ($p < .001$), which means that unionized workers are 9 percent more likely to use paid maternity leave due to a higher likelihood of having medical insurance than comparable nonunion workers with their average usage rate of 2.2 percent (column 2 in Table 1). It might also be the case that unions affect affordability in other ways, such as via household income and savings, but we leave this for future research.

In the above analyses, the mediating mechanisms of paid leave availability and paid leave awareness were combined because the self-reported nature of the questionnaire in the NLSY97 does not allow us to distinguish availability from awareness (that is, we cannot identify situations where a worker is unaware of paid leave that is available to her). But during the time span of our data, two states mandated paid maternity leave (California in 2004; New Jersey in 2009). Accordingly, in the data of the residents in these two states after the year when the program was offered, we consider that those who responded "no" to the paid leave availability question to be unaware of the availability of this policy. We can therefore use this subsample to test the mediating mechanism of awareness, separate from the availability effect.

In the subsample of the residents in the two states and also those who experienced family addition (Model 1 in Table 5), unionization affects a worker's leave awareness positively (b = .856, $p < .01$) and, in turn, leave awareness positively affects paid maternity leave use (b = 3.205, $p < .001$). The marginal indirect effect of unionization on paid maternity leave via leave awareness is .086 ($p < .001$). Thus, unionized workers are 8.6 percentage points more likely to use paid maternity leave than nonunion workers because unions help raise awareness of the policy. Considering that nonunion workers' average usage rate in the two states is 33 percent, the 8.6 percentage points of union effect translates to a 26 percent increase of leave use. Similarly, when we do not restrict the two states' residents by family addition condition (Model 2 in Table 5), unionization effect on awareness is positive (b = .269, $p < .01$) and, in turn, leave awareness effect on paid maternity leave use positive (b = 1.889, $p < .001$). The marginal indirect effect of union on paid maternity leave via leave awareness is .010 ($p < .001$), meaning that relative to nonunion workers' usage rate of 3.1 percent, unionized workers are 32 percent more likely to use paid maternity leave because of union's positive effect on awareness.

Insert Table 5 about here

Union Roles after Leave Use

Previous studies have shown that some workers experience unfair treatment not only because they are unable to use family-friendly policies such as paid maternity leave, but also because they are disadvantaged when they return to work *after* usage (e.g., Glass 2004). If there is empirical support for unions helping workers in this regard, this supports the assurance role of helping workers avoid or remedy being penalized by the paid maternity leave use via various labor union advocacy mechanisms. To examine this post-leave effect, we first investigate whether workers indeed experience wage growth penalties when they return to work after (long) paid maternity leave use. Recall that for each worker, we have multiple within-employer wage growth spells, and for workers who took one or more leaves, we have some spells with leaves and some without. Consequently, we can include an individual fixed effect in the regression to control for individual heterogeneity. We report the FE models in Tables 6-8.[9] Identification of the effects of interest relies on within-individual variation which might be a low power situation. Omitting the fixed effects strengthens the union effect on wage growth, but the key interactions remain insignificant.

Insert Tables 6, 7, and 8 about here

Table 6 shows the association between paid maternity leave use and wage growth. Model 1 shows that paid maternity leave use is significantly and negatively related to one-year wage growth rate (b = -.031, $p < .01$), indicating that the use of paid maternity leave is associated with 3.1 percentage point lower wage growth rate during the first year after usage. This means that the average post-leave wage growth for leave takers, while still with the same employer from which they took a paid leave, is 45 percent lower than non-leave takers' average one-year wage growth of 6.9 percent (recall column 2 in Table 1). To further examine the effects of paid maternity leave use on wage growth rate, we test the same model using the annualized two-year wage growth rate as the dependent variable. As Model 3 of Table 6 shows, the coefficient of paid maternity leave use is negative and significant (b = -.018, $p < .05$). Hence, the use of paid

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[9] In the FE models, time invariant variables such as race are dropped. In addition, tenure and age increase at the same rate so only age was retained in these specifications.

maternity leave is associated with 1.8 percent point lower wage growth rate during two years after usage, meaning that the leave takers experience 29 percentage lower annual wage growth rate than non-leave takers' average two-year wage growth of 6.3 percent for two years after leave use (column 2 in Table 1).

Table 7 shows the association between the length of paid maternity leave use and wage growth. To ease the interpretation of the effect sizes, we divided the leave length variable by 10 (i.e., the unit is 10 days, not 1 day). The results show that the length of paid maternity leave use is significantly negatively related to one-year wage growth (b = -.004, p < .05, Model 1), indicating that an additional 10 days use of paid maternity leave is associated with .4 percentage point lower wage growth rate for the first year after leave use. To further examine the effects of paid maternity leave length on wage growth rate, we test the same model using the two-year wage growth rate as the dependent variable. The coefficient of paid maternity leave length is significantly negative and the effect size (b = -.004, p < .01) is the same as the 1-year wage growth. Thus, an additional 10 days use of paid maternity leave is associated with .4 percent point lower annual wage growth rate for 2 years after leave use.

These results constrain the effects of leave length on wage growth to be linear. However, it is possible that the effects are discrete in that the length below a certain number of days is regarded as legitimate but a longer leave is a negative signal that results in a wage penalty. To examine this possibility, we create three dummy variables based on the length of paid maternity leave use—less than 6 weeks leave, 6-to-12 weeks leave, and more than 12 weeks leave—and estimated the same model as we did for the continuous variable of leave length. Model 1 in Table 8 shows that workers who used paid maternity leave for 6-to-12 weeks experienced 4 percentage point lower one-year wage growth than non-users (b = -.040, p < .05), and those who used paid maternity leave for more than 12 weeks experienced 6.6 percentage point lower wage growth rate than non-users (*b* = -.066, $p < .05$). In addition, the annual two-year wage growth rate model (Model 3 in Table 8) shows that workers who used paid maternity leave for 6-to-12 weeks experienced 3.4 percentage point lower wage growth than non-users (*b* = -.034, $p < .01$). Also, workers who used paid maternity leave for more than 12 weeks experienced 3.5 percent point lower annual wage growth than non-users for two years (*b* = -.035, $p < .05$). In both one-year and two-year wage growth models, the estimated effect of paid maternity leave shorter than 6 weeks is smaller than the other estimates and is not statistically significant.

Taken together, working mothers, on average, do seem to experience a post-leave wage growth penalty with the same employer after they use paid maternity leave, especially when the leave is longer than six weeks. We next examine whether unionization meaningfully weakens this negative consequence of (long) maternity leave use, by including the interaction term of paid maternity leave use and unionization in our regression analysis. As presented in Models 2 and 4 of Table 6, the interaction terms are not statistically significant in both models, suggesting that unionization does not significantly ameliorate the one-year/two-year wage growth penalty after paid maternity leave use. We also test whether unionization helps reduce wage penalties associated with different leave lengths (Models 2 and 4 in Tables 7 and 8), and we do not find significant effects in this regard. One exception is Model 2 in Table 8 in which unionization does attenuate the negative effect of 6-12 weeks use on 1-year wage growth (*b* = -.080, $p < .10$), but this effect become insignificant when we consider 2-year wage growth (Model 4 in Table 8). In these data, then, we do not find evidence of a significant union effect on the post-leave experience of leave-takers in terms of lessening a wage penalty. Unions may provide assurance to leave-takers in various ways, but the results here do not uncover support for an advocacy role that buffers post-leave wage penalties.

It is important to note that using our data, we cannot empirically identify the underlying reasons for what we are labeling a wage penalty. It might stem from discrimination toward leave-takers, in which case there could be important roles for unions to play in countering these penalties. But there could be other explanations. For example, it is possible that mothers who do not experience complications during or soon after childbirth take shorter leaves and find it easier to maintain their pre-childbirth levels of work commitment and performance, but mothers who have complicated births and/or newborns with health challenges take longer leaves and find it more difficult to maintain their pre-childbirth levels of work commitment and performance. In this case, wage differences might be related to performance differences that are correlated with but not necessarily caused by leave length. In such cases, there is perhaps less of a role for unions to play in alleviating these differences. Caution is also warranted because we do not observe whether paid and unpaid leaves are combined into longer leaves. If these are positively correlated, then our results might be overstating the effect of paid leave length on wage growth.

Do Unions Reduce Quits for Pregnancy and Family Reasons?

It is also possible that when unions enhance paid maternity leave use, this helps mothers avoid quitting for pregnancy or family reasons. The NLSY97 includes a variable indicating whether an employee “quit for pregnancy or family reasons.” Coding this variable as 1 if the answer is “yes” and 0 if the answer is “no,” we can then conduct supplementary analyses of the effect of unions on quits using the sample of those who experienced a family addition (that is, the sample summarized in columns 4 and 5 of Table 1).

First, a probit model with the quit for pregnancy or family reasons variable as the dependent variable and a full set of controls shows that unionization has a significant direct and negative effect on employee quits (*marginal effect* = -.047, SE = .025, p = .058). Next, to investigate whether the union effect on paid leave use influences mothers' quit propensity, we estimate a GSEM similar to those in Table 3. The results show that unionization affects a worker's paid leave use positively (b = .355, SE = .093, p < .001) and, in turn, paid leave use negatively affects quitting for family reasons (b = -.523, SE = .113, p < .001). The marginal indirect effect is -.007 (SE = .002, p < .001), which indicates that unions have a significant negative effect on quitting via paid maternity leave use. The detailed results are available upon request.

Conclusion

We have presented a conceptual framework of unions' roles for enhancing workers' paid maternity leave use, and empirically analyzed the overall union effect and some elements of this framework. Analyzing panel data of U.S. female workers from the NLSY97, we find that workers are significantly more likely to use paid maternity leave when they are unionized. This effect is not only statistically significant, but is large in a practical sense, too. Indeed, relative to the leave usage rate of nonunion workers, comparable unionized workers are at least 17 percent more likely to use paid maternity leave. In addition, the evidence further suggests that 33-43 percent of this differential is due to what we have labeled as a union role in promoting availability and awareness, and another portion is due to what we have labeled as a union role of improving affordability.

We also hypothesized that unions would help workers use paid maternity leave longer than nonunion workers, as unions can promote setting a longer period of leave-taking through collective bargaining and also help union workers perceive that they are more protected from unfair treatment from employers, but we did not find statistically significant results in support of this hypothesis. This could reflect a situation in which unions are missing an opportunity to facilitate longer leaves, or a situation in which unions are trying but falling short of demonstrating to workers that they provide helpful protections or other useful assistance. In such cases, this finding would point to an area where perhaps unions could do better in the future in helping workers fully benefit from paid maternity leave. Alternatively, if nonunion workers are satisfied with their length of leave, then this could be another explanation for not finding a significant difference.

From an empirical standpoint, our data may have limited statistical power to detect the union effect on leave length due to the limited sample size. To test the effect, we had to restrict the sample to those who reported leave length which means that the union effect is being estimated from only 119 incidents of paid leave among 101 unionized mothers (recall column 7 of Table 1). Another empirical possibility is that our results are limited by the age range in our data. Chung et al. (2017) find that the career penalties from motherhood are lowest for women who give birth before age 25 or after age 35. So unions might not play a strong role in shaping leave length decisions among these women, but mothers less than 25 years old comprise a large part of our sample.

In addition to what we showed regarding unions' roles in helping workers take a paid maternity leave, our results also showed that workers, on average, experience a penalty in wage growth when returning to the same employer after a leave. While numerous news reports highlight the short length of U.S. workers' maternity leave—for instance, "Should you take a shorter maternity leave? More and more moms are taking less time off" (2013 Parents.com report) and "Two weeks after baby? More new moms cut maternity leave short" (Feb 2016 NBC News)—and while Blau and Kahn (2013) raise possible problems of long leaves, little direct research evidence exists regarding whether the length of leave matters in terms of female workers' careers. To our knowledge, this is the first study that rigorously investigates the career consequences of paid maternity leave length in terms of wage growth. Specifically, we showed that workers' wage growth slows after taking a paid maternity leave longer than 6 weeks. We found this pattern while controlling for a variety of other wage determinants. We further examined the union role in mitigating this negative effect of leave length on workers' wage growth. We looked at this union role as what we have labeled as an assurance role—promoting workers' assurance of leaving-taking by countering potential adverse consequences—but did not find empirical support for it. Future research may benefit from examining other factors, such as the adoption of other family-friendly organizational practices and a work team's family-friendly climate, that can also reduce potential penalties stemming from a lengthy maternity leave.

Moreover, our findings have implications for the role of unions specifically for female workers. Our analysis revealed that the length of paid maternity leave use adversely affects the wage growth of leave users after returning to work, and unions do not appear to significantly alleviate this pattern of diminished wage growth. Unionization can diminish the gender wage gap because of unions' tendency to establish a standardized wage structure that uniformly applies to union workers covered by the same collective bargaining agreement (Berg and Piszczek 2014; Elvira and Saporta 2001). Our findings, however, indicate that this tendency of wage homogenization does not protect a specific sub-group of female workers—those who return to work after paid maternity leave use (i.e., leave users), especially those taking leaves longer than 6 weeks. This suggests that unions can further assist women by protecting them from experiencing career disadvantages due to the (long) use of paid maternity leave. At a broad level, then, our results are consistent with other research that concludes that unions help with gender equality and family-friendly issues, but there is still more that they could and should be doing (Berg and Piszczek 2014).

Although our study provides new insights into what unions do for female workers, its limitations should be acknowledged. The NLSY data relies on self-reported measures by workers, so we do not know whether employer-provided paid parental leave is available to each worker, making it difficult to disentangle awareness from availability. Where there is a leave policy, we do not have any objective information on compensation, leave length, and other provisions specified in human resource practices or collective agreement. We do not know, therefore, whether workers are taking all of the leaves to which they are entitled or package paid and unpaid leave together. If they return to work before they have exhausted their leave, we do not know why. We also cannot observe manager's attitudes and attributions which the literature has identified as an important determinant of leave-taking (Glass 2004; Judiesch and Lyness 1999; Leslie et al. 2012). Future research on the roles of unions in contexts in which the researcher can observe these factors would be useful.

In addition, we are only able to examine wage growth trends as a potential negative work experience after maternity leave use, to exclusion of other possible penalties such as lower promotion opportunities. Union advocacy roles for helping female workers facing additional negative career outcomes could be a meaningful topic for future research. Given that the motherhood penalty on careers is not age-invariant (Chung et al. 2017), the NLSY's limitation of being skewed toward younger workers should also be remembered, and different results might be found for older mothers. Another limitation is that although we measured leave length as the length of paid leave only because of our specific focus on paid leave effects, mothers may combine it with other forms of leave such as unpaid leave. Hence, it is possible that we did not find significant union effects on leave length and on weakening the negative leave length–wage relation because the length of paid maternity leave shown in our data is shorter than the length of (combined) leave actually used by mothers in our sample.

Despite the limitations, we believe that our study makes an important contribution to the union and work-family literatures by providing a novel picture of what unions do for mothers. Looking ahead, qualitative research that is able to directly observe the various roles that unions may be playing could further deepen our understanding. Moreover, our finding that unionized women are more likely to have a birth or adoption than nonunion women merits additional investigation. Lastly, researchers should analyze the dynamics of other types of family-friendly policies, as we have started for paid maternity leave.

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Table 1. Descriptive Statistics of Working Female Sample from the NLSY97, 1997-2011

	Full sample			Birth/Adoption sample		Paid leave length sample	
Variables	All (1)	Nonunion (2)	Union (3)	Nonunion (4)	Union (5)	Nonunion (6)	Union (7)
Union (1 = represented by a union, 0 = nonunion)	.094 (.292)	.000 (.000)	1.000 (.000)	.000 (.000)	1.000 (.000)	.000 (.000)	1.000 (.000)
Paid leave availability (1 = available, 0 = unavailable)	.260 (.439)	.243 (.429)	.426 (.495)	.395 (.489)	.609 (.489)	1.000 (.000)	1.000 (.000)
Paid leave use (1 = use, 0 = no use)	.025 (.156)	.022 (.148)	.049 (.217)	.287 (.452)	.516 (.501)	1.000 (.000)	1.000 (.000)
Length of paid leave (days)	1.374 (10.785)	1.222 (10.165)	2.830 (15.455)	15.710 (33.180)	29.520 (41.350)	57.387 (40.392)	61.513 (39.924)
Child birth/adoption	.079 (.271)	.078 (.268)	.096 (.294)	1.000 (.000)	1.000 (.000)	1.000 (.000)	1.000 (.000)
1-year wage growth rate (%)	.070 (.311)	.069 (.311)	.085 (.309)	.042 (.287)	.047 (.271)	.061 (.271)	.075 (.314)
2-year annualized wage growth rate (%)	.065 (.180)	.063 (.178)	.084 (.190)	.050 (.168)	.064 (.170)	.050 (.165)	.073 (.179)
Hourly wage (1997 dollars)	10.994 (27.912)	10.790 (28.005)	12.945 (26.923)	10.440 (21.490)	12.100 (8.029)	11.640 (5.829)	14.265 (7.190)
Medical insurance coverage	.494 (.500)	.469 (.499)	.743 (.437)	.518 (.500)	.742 (.438)	.804 (.398)	.891 (.313)
Race (Black, non-Hispanic)	.252 (.434)	.243 (.429)	.336 (.472)	.301 (.459)	.363 (.482)	.243 (.430)	.286 (.454)
Race (Hispanic or Latino)	.210 (.407)	.208 (.406)	.228 (.419)	.246 (.431)	.194 (.396)	.230 (.421)	.227 (.421)
Race (Mixed race)	.008 (.091)	.008 (.089)	.011 (.103)	.012 (.111)	.008 (.090)	.013 (.114)	.008 (.092)
Race (non-black, non-Hispanic)	.530 (.499)	.541 (.498)	.426 (.495)	.441 (.497)	.435 (.497)	.513 (.500)	.479 (.502)
Marital status (Never married)	.750 (.433)	.752 (.432)	.731 (.444)	.542 (.498)	.488 (.501)	.411 (.493)	.395 (.491)
Marital status (Married)	.207 (.405)	.204 (.403)	.234 (.423)	.416 (.493)	.480 (.501)	.551 (.498)	.571 (.497)
Marital status (Legally separated)	.014 (.119)	.014 (.118)	.017 (.128)	.019 (.135)	.012 (.110)	.021 (.143)	.008 (.092)
Marital status (Divorced)	.027 (.163)	.028 (.166)	.019 (.136)	.023 (.151)	.020 (.141)	.017 (.129)	.025 (.157)
Marital status (Widowed)	.001 (.029)	.001 (.030)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Age (years)	22.564 (3.863)	22.477 (3.863)	23.406 (3.759)	23.220 (3.430)	24.010 (3.355)	24.621 (3.188)	25.052 (3.206)
Education (grade)	13.144 (2.461)	13.076 (2.408)	13.801 (2.841)	12.680 (2.363)	13.650 (2.781)	13.621 (2.530)	14.269 (2.860)
Tenure (years)	1.978 (1.977)	1.941 (1.961)	2.334 (2.087)	2.160 (2.037)	2.949 (2.418)	3.193 (2.229)	3.871 (2.502)
Weekly hours	31.469 (12.812)	31.059 (12.846)	35.414 (11.777)	33.020 (11.140)	35.320 (10.000)	37.132 (9.431)	37.319 (9.488)
Establishment size	.418	.394	.651	.397	.653	.500	.672

(1 = more than 50 workers, 0 = less than 50 workers)	(.493)	(.489)	(.477)	(.489)	(.477)	(.500)	(.471)
Employer type – Public sector	.117 (.322)	.087 (.281)	.413 (.493)	.077 (.267)	.440 (.497)	.092 (.290)	.471 (.501)
Employer type – Private sector	.800 (.400)	.830 (.376)	.512 (.500)	.842 (.364)	.492 (.501)	.749 (.434)	.462 (.501)
Employer type – Other sectors (e.g., non-profit)	.083 (.275)	.084 (.277)	.075 (.263)	.081 (.272)	.069 (.253)	.158 (.366)	.067 (.251)
Number of individuals[a]	4,108	4,075	1,132	1,363	202	435	101
Number of observations[a]	27,472	24,885	2,587	1,936	248	530	119

Notes: Each cell reports the relevant sample mean and standard deviation across all rounds of data.

[a] The number of individuals and observations for 1-year wage growth, and 2-year wage growth are less than the number presented in this row.

Table 2. Union Effects on Paid Maternity Leave Use and Length

	Leave use				Leave length	
	Model 1 Probit[a]	Model 2 Probit	Model 3 TSLS[b]	Model 4 FE model	Model 5 TSLS[b]	Model 6 FE model
Union	.049**	.009***	.079*	.013**	.673	-.0002
	(.019)	(.003)	(.038)	(.004)	(.550)	(.481)
Age	.001	.00004	-.0001	-.001**	.003	.194*
	(.002)	(.0003)	(.0003)	(.000)	(.015)	(.086)
Education	.002	-.001*	-.0009*	-.0003	.031	.116
	(.003)	(.0004)	(.0004)	(.001)	(.022)	(.156)
Tenure	.018***	.002***	.004***	.006***	-.003	-.197†
	(.004)	(.0004)	(.001)	(.001)	(.019)	(.102)
Weekly hours	.002*	-.0002†	-.0002**	-.0002†	.001	-.040*
	(.001)	(.0001)	(.0001)	(.0001)	(.004)	(.017)
Establishment size	.007	-.003	-.007*	-.006*	.053	-.252
	(.013)	(.002)	(.003)	(.002)	(.072)	(.325)
Employer type -	-.079**	-.009**	-.028**	-.010	-.445	-.880
Public sector	(.026)	(.004)	(.010)	(.006)	(.299)	(1.093)
Employer type -	-.063**	-.009**	-.012**	-.008	.155	-.013
Private sector	(.022)	(.003)	(.004)	(.005)	(.112)	(.625)
Leave availability	.430***	.105***	.101***	.110***	---	---
/awareness	(.013)	(.006)	(.004)	(.003)		
Medical	-.079***	-.033***	-.023***	-.021***	-.213*	1.173**
insurance	(.019)	(.004)	(.003)	(.003)	(.101)	(.419)
Ln(wage)	.021	-.001	-.004*	-.002	.119	-1.044*
	(.016)	(.002)	(.002)	(.003)	(.147)	(.487)
R-squared	.610[c]	.344[c]	.075	.078	.020	.291
Model χ^2 statistic[d]	586.24***	72.86***	761.50***	54.44***	62.13*	1.44†
N. Observations	2,178	27,369	27,472	27,472	649	649

Notes: ****p* <.001, ***p* <.01, **p* <.05, †*p* <.10 (two-tailed tests). Robust standard errors in parentheses. The Probit model estimates are the estimated marginal effects. Race, marital status, industry, and occupation fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

[a] Model 1 is from a restricted birth/adoption sample that excludes workers who did not experience the addition of family members.

[b] Two Stage Least Squares. Union variable is instrumented by the set of independent variables plus the three-digit industry level union coverage density rate.

[c] Pseudo R-squared is reported.

[d] Probit and TSLS models are Wald chi-square statistics, and FE models are F-statistics.

Table 3. Generalized Structural Equation Model: The Impact of Union Status on Paid Maternity Leave Use Through Availability/Awareness and Affordability – Birth/Adoption Sample

	Model 1		Model 2		Model 3	
	Leave availability/ awareness	Leave use	Ln(wage) (Affordability)	Leave use	Medical insurance (Affordability)	Leave use
Union	.281** (.102)	.344* (.136)	.117*** (.029)	.348*** (.103)	.306** (.111)	.337** (.103)
Leave availability/ awareness	---	2.936*** (.146)	---	---	---	---
Ln(wage)	---	---	---	.349*** (.078)	---	---
Medical insurance	---	---	---	---	---	.600*** (.076)
Age	.003** (.102)	.005 (.017)	.024*** (.003)	-.001 (.012)	.050*** (.012)	-.002 (.012)
Education	.059*** (.016)	.012 (.022)	.043*** (.005)	.035* (.017)	.088*** (.017)	.038* (.017)
Tenure	.145*** (.017)	.126*** (.027)	.025*** (.005)	.159*** (.018)	.101*** (.019)	.154*** (.018)
Weekly hours	.028*** (.003)	.005 (.005)	.001 (.001)	.023*** (.003)	.052*** (.004)	.014*** (.003)
Establishment size	.325*** (.062)	-.005 (.093)	.087*** (.019)	.202** (.066)	.537*** (.067)	.144* (.066)
Employer type - Public sector	-.404** (.146)	-.567** (.187)	-.113** (.042)	-.565*** (.148)	-.111 (.157)	-.579*** (.145)
Employer type - Private sector	-.247*** (.121)	-.440** (.156)	.060 (.041)	-.425*** (.120)	-.100 (.137)	-.389*** (.117)
Marginal indirect effects[a]						
Union → Mediating mechanism → Leave use	.036 (.013)***		.011 (.004)***		.014 (.005)***	
Log likelihood	-1729.102		-2332.2217		-2099.4068	
N. Observations	2,184		2,184		2,184	

Notes: ****p* < .001, ***p* < .01, **p* < .05 (two-tailed tests). Robust standard errors in parentheses. Race, marital status, industry, and occupation fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

[a] Marginal indirect effects are estimated by multiplying the first marginal path (model 1: union effect on availability/awareness, model 2: union effect on ln(wage), model 3: union effect on medical insurance) and the second marginal path estimate (model 1: availability/awareness effect on leave use, model 2: ln(wage) on leave use, and model 3: medical insurance effect on leave use). Bootstrapped standard errors, derived from 20,000 replications, are reported.

Table 4. Generalized Structural Equation Model: The Impact of Union Status on Paid Maternity Leave Use Through Availability/Awareness and Affordability – Full Sample

	Model 1		Model 2		Model 3	
	Leave availability/ awareness	Leave use	Ln(wage) (Affordability)	Leave use	Medical insurance (Affordability)	Leave use
Union	.256*** (.032)	.186** (.061)	.133*** (.010)	.255*** (.054)	.507*** (.036)	.238*** (.053)
Leave availability/ awareness	---	2.111*** (.109)	---	---	---	---
Ln(wage)	---	---	---	.120*** (.029)	---	---
Medical insurance	---	---	---	---	---	.366*** (.048)
Age	.027*** (.003)	-.005 (.008)	.024*** (.001)	.004 (.006)	.048*** (.003)	.001 (.006)
Education	.033*** (.005)	-.032*** (.009)	.044*** (.002)	-.016* (.008)	.057*** (.005)	-.016* (.008)
Tenure	.076*** (.005)	.048*** (.009)	.023*** (.002)	.068*** (.007)	.080*** (.006)	.066*** (.007)
Weekly hours	.037*** (.001)	-.011*** (.003)	.002*** (.000)	.010*** (.001)	.056*** (.001)	.005** (.002)
Establishment size	.442*** (.019)	-.130** (.044)	.086*** (.006)	.084* (.037)	.527*** (.019)	.044 (.037)
Employer type - Public sector	-.282*** (.043)	-.199* (.085)	-.061*** (.014)	-.294*** (.074)	-.195*** (.043)	-.278*** (.073)
Employer type - Private sector	-.136*** (.035)	-.209** (.072)	.091*** (.013)	-.246*** (.059)	-.078* (.036)	-.232*** (.059)
Marginal indirect effects[a]						
Union → Mediating mechanism → Leave use	.006 (.001)***		.001 (.0002)***		.002 (.0004)***	
Log likelihood	-14315.122		-20337.273		-15181.981	
N. Observations	27,472		27,472		27,472	

Notes: ***$p < .001$, **$p < .01$, *$p < .05$ (two-tailed tests). Robust standard errors in parentheses. Race, marital status, industry, and occupation fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

[a] Marginal indirect effects are estimated by multiplying the first marginal path (model 1: union effect on availability/awareness, model 2: union effect on ln(wage), model 3: union effect on medical insurance) and the second marginal path estimate (model 1: availability/awareness effect on leave use, model 2: ln(wage) on leave use, and model 3: medical insurance effect on leave use). Bootstrapped standard errors, derived from 20,000 replications, are reported.

Table 5. Generalized Structural Equation Model: The Impact of Union Status on Paid Maternity Leave Use Through Awareness – Sample of Residents in Paid-Leave-Offering States

	Model 1[a]		Model 2[b]	
	Leave awareness	Leave use	Leave awareness	Leave use
Union	.856**	.727†	.269**	.320*
	(.267)	(.375)	(.083)	(.140)
Paid leave awareness	---	3.205***	---	1.889***
		(.454)		(.267)
Ln(wage)	---	---	---	---
Medical insurance	---	---	---	---
Age	-.004	.007	.001	-.004
	(.045)	(.060)	(.011)	(.024)
Education	.028	.164*	.027*	-.022
	(.053)	(.072)	(.012)	(.019)
Tenure	.253***	.177*	.088***	.064**
	(.051)	(.080)	(.012)	(.022)
Weekly hours	.045***	.013	.033***	-.004
	(.011)	(.015)	(.003)	(.005)
Establishment size	.192	-.169	.298***	-.268*
	(.187)	(.277)	(.054)	(.117)
Employer type - Public sector	-1.091*	-.859†	-.252*	-.462*
	(.482)	(.522)	(.114)	(.209)
Employer type - Private sector	-.287	-.435	-.127	-.076
	(.339)	(.426)	(.094)	(.182)
Marginal Indirect Effects[c]				
Union → Leave awareness → Leave use	.086 (.027)***		.010 (.003)***	
Log likelihood	-184.9316		-1934.1193	
N. Observations	265		2,858	

Notes: ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$ (two-tailed tests). Robust standard errors in parentheses. Race, marital status, industry, and occupation fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

[a] Birth/adoption sample excluding those who did not report the addition of new family members.

[b] Full sample.

[c] Marginal indirect effects are estimated by multiplying the first marginal path (union effect on awareness) and the second marginal path estimate (awareness effect on leave use). Bootstrapped standard errors, derived from 20,000 replications, are reported.

Table 6. Regression Analysis of Leave Use and Union Status on Wage Growth

	1-year wage growth		2-year wage growth	
	Model 1	Model 2	Model 3	Model 4
Leave use	-.031**	-.029**	-.018*	-.017*
	(.011)	(.011)	(.008)	(.008)
Union	.015	.017	.010	.012
	(.011)	(.012)	(.009)	(.009)
Leave use × Union	---	-.015	---	-.010
		(.027)		(.018)
Age	-.010***	-.010***	-.009***	-.009***
	(.001)	(.001)	(.001)	(.001)
Education	.005*	.005*	.003*	.003*
	(.002)	(.002)	(.002)	(.002)
Weekly hours	-.001***	-.001***	-.000	-.000
	(.000)	(.000)	(.000)	(.000)
Establishment size	.010	.010	.003	.003
	(.007)	(.007)	(.006)	(.006)
Employer type - Public sector	.018	.018	.024†	.025†
	(.017)	(.017)	(.014)	(.014)
Employer type - Private sector	.039**	.039**	.017	.017
	(.014)	(.014)	(.012)	(.012)
Leave availability/awareness	.014†	.014†	.005	.005
	(.008)	(.008)	(.006)	(.006)
Medical insurance	.049***	.049***	.043***	.043***
	(.008)	(.008)	(.006)	(.006)
R-squared	.016***	.016***	.034***	.034***
N. Observations	18,473	18,473	11,337	11,337
N. Individuals	3,852	3,852	3,361	3,361

Notes: ****p* < .001, ***p* < .01, **p* < .05, †*p* < .10 (two-tailed tests). Standard errors in parentheses. Marital status, industry, occupation, and individual fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

Table 7. Regression Analysis of Leave Length and Union Status on Wage Growth

	1-year wage growth		2-year wage growth	
	Model 1	Model 2	Model 3	Model 4
Leave length	-.004*	-.004†	-.004**	-.003**
	(.002)	(.002)	(.001)	(.001)
Union	.015	.017	.010	.011
	(.011)	(.012)	(.009)	(.009)
Leave length × Union	---	-.003	---	-.001
		(.004)		(.003)
Age	-.010***	-.010***	-.009***	-.009***
	(.001)	(.001)	(.001)	(.001)
Education	.005*	.005*	.003†	.003†
	(.002)	(.002)	(.002)	(.002)
Weekly hours	-.001***	-.001***	-.000	-.000
	(.000)	(.000)	(.000)	(.000)
Establishment size	.010	.010	.003	.003
	(.007)	(.007)	(.006)	(.006)
Leave availability/awareness	.018	.018	.024†	.024†
	(.017)	(.017)	(.014)	(.014)
Medical insurance	.039**	.039**	.017	.017
	(.014)	(.014)	(.012)	(.012)
Employer type - Public sector	.014†	.014†	.005	.005
	(.008)	(.008)	(.006)	(.006)
Employer type - Private sector	.049***	.049***	.043***	.043***
	(.008)	(.008)	(.006)	(.006)
R-squared	.016***	.016***	.034***	.034***
N. Observations	18,473	18,473	11,337	11,337
N. Individuals	3,852	3,852	3,361	3,361

Notes: ****p* < .001, ***p* < .01, **p* < .05, †*p* < .10 (two-tailed tests). Standard errors in parentheses. Marital status, industry, occupation, employer type (private, public, and other sectors) and individual fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.

Table 8. Regression Analysis of Different Leave Lengths and Union Status on Wage Growth

	1-year wage growth		2-year wage growth	
	Model 1	Model 2	Model 3	Model 4
Less than 6 weeks leave	-.021 (.019)	-.025 (.021)	-.003 (.013)	-.002 (.014)
6-12 weeks leave	-.040* (.017)	-.028 (.018)	-.034** (.011)	-.029* (.012)
More than 12 weeks leave	-.066* (.026)	-.072* (.030)	-.035* (.018)	-.039† (.020)
Union	.015 (.011)	.017 (.012)	.010 (.009)	.012 (.009)
Less than 6 weeks leave ×Union	---	.023 (.045)	---	-.004 (.029)
6-12 weeks leave × Union	---	-.080† (.045)	---	-.032 (.030)
More than 12 weeks leave × Union	---	.021 (.056)	---	.009 (.036)
Age	-.010*** (.001)	-.010*** (.001)	-.009*** (.001)	-.009*** (.001)
Education	.005* (.002)	.005* (.002)	.003† (.002)	.003† (.002)
Weekly hours	-.001*** (.000)	-.001*** (.000)	-.000 (.000)	-.000 (.000)
Establishment size	.010 (.007)	.010 (.007)	.003 (.006)	.003 (.006)
Leave availability/awareness	.016* (.008)	.016* (.008)	.006 (.006)	.006 (.006)
Medical insurance	.049*** (.008)	.049*** (.008)	.043*** (.006)	.043*** (.006)
Employer type - Public sector	.018 (.017)	.018 (.017)	.024† (.014)	.024† (.014)
Employer type - Private sector	.039** (.014)	.039** (.014)	.017 (.012)	.017 (.012)
R-squared	.016***	.016***	.035***	.035***
N. Observations	18,473	18,473	11,337	11,337
N. Individuals	3,852	3,852	3,361	3,361

Notes: ****p* < .001, ***p* < .01, **p* < .05, †*p* < .10 (two-tailed tests). Standard errors in parentheses. The unit of the length of leave variable is 10 days. Marital status, industry, occupation and individual fixed effects are included in the analyses. Industry is measured with 13 categorical variables, and occupation is measured with 11 categorical variables, according to the Census classification codes.