THE EFFECT OF UNION COVERAGE ON WORKERS' ECONOMIC SECURITY AND RESILIENCE TO SHOCKS

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Abstract

Labor unions have been widely documented as powerful institutions for workers seeking better compensation and working conditions in their employment. However, there has been relatively little research on whether the benefits that come with union coverage can displace the need for public assistance. In this paper I review the literature on unions, social services, and economic downturns and conduct my own analysis to investigate the differential use of social services among unionized and non-unionized workers. If unions do serve as close substitutes for public assistance programs, then workers in unions should participate in these programs at much lower rates and be more resilient to economic shocks than their non-union counterparts. After controlling for covariates, I find that union coverage is significantly associated with higher wages, lower poverty rates, and lower participation rates in public assistance programs. Moreover, workers covered by union contracts were also better protected against the 2020 economic shock of the coronavirus pandemic, as they were more likely to receive additional compensation for disrupted work schedules.

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1 Introduction

In the wake of the 2020 coronavirus pandemic, the largest economic shock since the 2008 recession, many workers found themselves in precarious financial positions. With businesses shut down to prevent the spread of coronavirus, a substantial portion of workers lacked a stable source of income to sustain themselves and their families, leading many to rely on forms of public assistance such as pandemic unemployment insurance, food stamps, or rent subsidies. An individual's need for supplemental income or other government assistance indicates that their primary source of income is not sufficient for supporting themselves and their families. This is especially true if the public assistance one receives is means-tested or income-based, not universal, as such assistance is necessarily conditioned on a relatively low level of income, on a lack of a job, or other economic insecurity than individuals who do not utilize government assistance.

These are some of the problems that labor unions seek to solve. Unions are democratic organizations of workers, often from the same firm or industry, who collectively bargain with their employers for improved pay, better benefits, and safer working conditions. Unions affect the economy both directly through collective bargaining and indirectly through political activism to promote progressive taxation, legislation, and social protections. Workers who are members of a union periodically pay dues in order to afford legal fees and other costs associated with collectively withholding their labor.

According to the Bureau of Labor Statistics, approximately 15.8 million wage and salary workers in the US - or 11.6% of the labor force - were covered by a union in 2020, 14 million of whom were dues-paying union members (BLS 2022). Of workers covered by union contracts, just under half are women and more than a third are Black, Hispanic, Asian American/Pacific Islander, or other people of color. Black workers have the highest rate of unionization at 13.5%, compared with 12.2% for white workers and 10.2% for Hispanic workers. There is also a stark difference in unionization between the public sector and the private sector. In 2020, the union membership rate for public-sector workers (37%) was over five times that of private-sector workers (7%). The largest share of private-sector unionized workers, approximately 25%, work in education or health services, but substantial portions of the private-sector unionized labor force also work in sectors like construction, transportation, utilities, and manufacturing (McNicholas et al. 2020).

This paper examines economic outcomes for workers in the United States who are covered by union contracts, and compares those outcomes to other US workers who are not covered by union contracts. In particular, this analysis compares the economic resilience and security of covered workers with that of non-covered workers by analyzing (1) differences in incomes and poverty rates, (2) how the two groups differentially utilize government services, and (3) how the two groups were differentially impacted by the 2008 "Great Recession" as well as the more recent COVID-19 pandemic. This could potentially have useful implications for fiscal policy. If covered workers are significantly less likely than non-covered workers to rely on government assistance programs during economic downturns, then policies promoting unionization could reduce the government's fiscal burdens during times of economic crisis. In this context, being "covered" by a union contract can refer to both a worker who is a dues-paying member of a union as well as a worker who does not pay dues but still benefits from a union-negotiated contract. This occurs, at least in part, due to some states' so-called "right-to-work" laws, which enable workers to benefit from union contracts without having to pay dues.

2 Literature Review

2.1 Labor Unions

There exists a plethora of literature examining and highlighting all sorts of effects of union membership, including a consistent association between unions and higher wages. The average difference in pay between union workers and comparable non-union workers - also called the union premium - was around 13% between 2007 and 2017, and was even greater during past times of wider unionization (Bivens et al., 2017). Other research has noted that unions reduce inequality between workers within similar demographic and skill groups (Farber et al. 2021). Additionally, by setting labor standards within and across industries, the presence of strong unions can even raise the wages of non-union workers as well (Rosenfeld, Denice, and Laird 2016). The combination of these effects is associated with reduced aggregate inequality between 13% and 20% for female workers and between 33% and 37% for male workers (McNicholas et al. 2020). Western and Rosen (2011) have found that the decline in unionization rates since the late 1970s accounts for between a fifth and a third of the increase in inequality over the same time period, inequality being measured as the variance in log hourly wages for full-time workers.

Furthermore, researchers have observed a significant association between union presence and reduced discriminatory disparities between workers. In Wisconsin, for example, there was no statistically significant gender pay gap at all between male and female public school teachers until the state government of Wisconsin disempowered collective bargaining in 2011 (Biasi and Sarsons 2022). Additionally, since the incomes of Black and Hispanic workers tend to be lower than those of white workers, the equalization of incomes that comes from union-negotiated contracts benefits these workers more, with Black and Hispanic union workers seeing wage premia of 13.7% and 20.1%, respectively, whereas the average union premium for a white worker is 8.7% (Patten 2016; Gould 2020; McNicholas, Celine et al. 2020; Farber et al. 2021).

Much of the evidence about unions' economic impacts suggests that some of these impacts occur through political mechanisms rather than through direct negotiations with employers. The association in some US states between high unionization rates, low poverty rates, and low inequality has been linked to politically active labor movements that campaign for favorable labor laws and raise workers' expectations for equitable wages and safe working conditions (Milkman and Luce 2017). Moreover, correlations between union membership and certain benefits, such as week-to-week schedule stability, are often stronger in states with higher unionization rates and weaker in states with lower unionization rates (Finnigan and Hale 2017).

2.2 Unions and Social Services

Since workers covered by union-negotiated contracts tend to have higher earnings than non-covered workers, we can infer that covered workers also tend to pay more in taxes and utilize fewer social services. However, very little literature has actually addressed this question. Research over past decades into the relationship between union membership and government balances has focused primarily on the cyclicality of unions and the "government substitution" hypothesis. A seminal paper on this hypothesis by Neumann and Rissman (1984) defined it as the idea that government provision of certain social welfare benefits can act as a substitute for the private provision of those benefits by unions, thereby reducing the relative attractiveness of union membership. By providing welfare payments and passing legislation protecting workers from potential employer exploitation like abuses of at-will employment, the government can make unions seem less appealing or necessary, causing workers to demand unions less. Neumann and Rissman used both cross-sectional and time-series data to correlate public provision of "union-like" services with reduced union membership. Subsequent research, however, has come to alternative conclusions. Moore et al (1989) also used time-series data, but found mixed evidence of a negative welfare effect on union density. A relatively recent re-evaluation of the government substitution hypothesis confirmed the mixed evidence on the subject, attributing it to the use of varying specifications, sample periods, and empirical strategies (Coombs 2008).

If certain union services and similar government services are in fact substitutable, then union members should be seen to utilize public assistance and welfare programs at lower rates. This would be caused by the improved pay and benefits from having a union contract, which also means union workers would be expected to pay more in taxes. Certainly, there is much anecdotal evidence that low-wage workers in non-unionized workplaces such as Walmart have had to seek out public assistance because their wages could not fully cover their living expenses (Sanders 2012). As a result of low wages, it is estimated that over one-third of frontline manufacturing production workers rely on at least one public safety net program, costing federal and state governments over \$10 billion (Jacobs, Perla, and Perry 2016). Policies that increase wages, such as states' minimum wage hikes, have been found to reduce welfare spending, with a 10% increase in the minimum wage being associated with a reduction in participation in the Supplemental Nutrition Assistance Program (SNAP, also referred to as "food stamps") within the range of 2.4% to 3.2% (Reich and West 2015).

Sojourner and Pacas (2018) were the first to compare the Net Fiscal Impact (NFI), calculated as taxes paid minus the cost of government benefits received, of union and non-union workers. Between 1994 and 2015, the average American worker had an NFI of \$8,862 in 2015 USD. Disaggregated into union and non-union workers, the former had an NFI of \$11,505 and the latter \$8,399, implying the average unionized worker pays a net of slightly over \$3,000 more into public coffers than the average non-unionized worker. The majority of this net impact is attributable to taxation, with union workers paying on average 28% more than non-union workers in taxes (a difference of \$2,757) while utilizing about 24% less in public benefits (a difference of \$349). Although they had a higher net contribution to government balances, union workers in the sample also enjoyed an average wage bonus of over \$10,000 (a premium of around 20%), more than making up for the increased expenses on taxes. Using regression analysis, the researchers found that union membership was associated with an increase in NFI of between \$540 (obtained using longitudinal estimates) and \$1,290 (obtained using cross-sectional estimates).

2.3 Estimation Techniques

This variation between cross-sectional and longitudinal estimates has been documented in past literature. Cross-sectional analyses interpret the data as though it were from a single splice of time, whereas longitudinal analyses introduce individual-fixed effects to compare changes in individuals' outcomes over time. Freeman (1984) examined how measurement errors over union participation can affect analyses of longitudinal data in determining income effects, and discussed three important findings. First, modest measurement errors and modest rates of workers changing union status, observed in some analyses, can produce a substantial downward bias in longitudinal estimates of the effect of union membership. Measurement errors could arise out of a number of potential survey problems such as response biases or inaccurate responses, but Freeman noted that much measurement error is attributable to simple random errors in measuring who changes union status. Misclassification of union status has a greater impact on longitudinal estimates than on cross-sectional estimates, since the misclassification of a worker's union status in one period produces fewer misclassified observations than misclassification of a worker's union status over multiple periods. Additionally, since longitudinal analysis only takes into consideration the relatively narrow set of within-person variation, misclassification results in a smaller proportion of correct observations, thus further increasing the downward bias.

The second finding is that although longitudinal estimates of wage and nonwage effects tend to be lower than cross-sectional estimates, longitudinal analyses still tend to confirm the significant impact of union membership estimated in cross-sectional analyses. Third, since longitudinal analysis tends to downwardly bias estimates relative to cross-sectional estimates, the two can be thought of as a lower and upper bound for the true effect of union membership. In most studies, estimates of the union premium tend to fall between 15% and 25% when using cross-section data and around 10% when using longitudinal data, with lower estimates from longitudinal data usually resulting from the discussed measurement errors as well as low rates of workers in those datasets (who are followed for several periods as part of survey rotation groups) changing their union status by leaving or joining a unionized workplace (Feldman and Scheffler 1982; Freeman 1984; Lewis 1986; Kornfeld 1993; Wunnava and Peled 1999; Budd and Na 2000; Blanchflower and Bryson 2004; Knepper 2020).

However, there are several reasons why covered workers and non-covered workers may not be directly comparable with regard to participation in government assistance programs. For one, covered workers are likely to have greater job security than noncovered workers and are therefore less likely to be in a situation where they would have to consider participation in public assistance programs. In 2020, the number of union workers in the US declined by 2.2%, but overall wage and salary employment declined by 6.7%, meaning union workers experienced job loss at about a third of the rate of nonunion workers (BLS 2022). Moreover, selection into a union is not random; it is possible that the types of jobs, firms, or industries where unions are more common just happen to provide more stable and secure work. Skill level may also play a role. Workers with skills that are particularly valuable in unionized sectors may select into union jobs, or employers at unionized firms may carefully and selectively hire the most productive applicants to make up for the higher labor costs. Plenty of other individual characteristics, including potentially unobservable variables, could factor into this. A common methodological strategy to account for these potential selection problems in longitudinal data is to control for individual-specific earnings effects. However, this method is heavily vulnerable to measurement error (Hirsch and Schumacher 1998) and it can increase the downward bias of longitudinal data if too many unobserved characteristics are contained within the individual-fixed effect (which, being eliminated through differencing, causes unobserved traits to be omitted) or if a substantial portion of the variation in union status is accounted for by between-person variation rather than within-person variation (Raphael 2000).

2.4 The Impacts of the Great Recession

Properly understanding the relationships between union membership, economic security, and public assistance programs is especially important in the context of downturns in the business cycle. If unions do ensure greater economic security for their workers, then those workers will not be as vulnerable to shocks like the 2008 "Great Recession" or the 2020 coronavirus pandemic. By the same token, workers not protected by a union may be more likely to rely on government programs during recessionary periods.

The 2008 financial crisis was a particularly severe recession, with aggregate output and median household income in the US falling by 6% and 8%, respectively (Kalleberg and von Wachter 2017). An estimated 30 million workers lost their jobs, and total household net worth dropped by over \$10 trillion (Song and von Wachter 2014; Jacobsen and Mather 2010). The especially harsh impacts on workers and their families have been partially attributed to the rising inability of households to smooth income over time, due to a combination of factors such as low savings, reduced post-unemployment incomes, and an inadequate social safety net (Dickens, Triest, and Sederberg 2017).

This is not to say that the social safety net played no role in alleviating distress in the aftermath of the Great Recession. In fact, many programs were even expanded as the crisis began to take its toll on workers. Social Security and Disability Insurance (SSDI) saw the growth rate of its financial awards accelerate from 2007 to 2009 (Mueller, Rothstein, and von Wachter 2016). The 2009 stimulus package extended the maximum duration of unemployment insurance to 99 weeks and increased maximum benefits for programs like food stamps and the earned income tax credit (EITC), costing an estimated \$200 billion (Bitler, Hoynes, and Kuka 2017). Contemporaneous reforms to public assistance also improved access to SNAP and the EITC by simplifying eligibility procedures and expediting the application process; thus most of the increase in expenses for these programs has been attributed to an increase in recipiency rather than an increase in benefits per recipient (Moffitt 2013). The cost of these programs is especially relevant if unions truly do cause workers to utilize public assistance less, because this would mean that social spending might have been lower in a counterfactual recession with higher union membership rates.

The relationship between labor unions and the Great Recession is complex, and must be viewed in the wider context of the decades-long course of union decline in the US. Union membership did decrease in the years after 2008, especially because the recession hit unionized sectors harder (Greenhouse 2011), but this was not some isolated change. Rather, this was a continuation of a trend beginning in the late-twentieth-century with policy changes that have since resulted in a dramatic shift in the balance of power between labor and capital, with private-sector union membership falling from 24.2% in 1973 to 6.6% in 2012 (Kalleberg and von Wachter 2017). Similarly, drops in union militancy and public approval of unions after the 2008 recession were also affected by deeper institutional factors (Milkman 2013).

In general, these institutional factors have tended to play a relatively significant role, compared with business cycle conditions, in determining what happens to unions during times of economic turmoil. According to economic theory, union membership rates should increase during downturns due to unions engaging in concessionary bargaining to accept decreased wages and avoid the layoffs that hit non-unionized workplaces. However, the evidence on the counter-cyclicality of union membership is mixed, and trends in US private-sector unionization rates since 1955 have not been observed to consistently fluctuate in relation to the business cycle (Milkman and Luce 2017). Analyses of OECD countries have instead emphasized particular institutional conditions - such as working-class political parties, centralized collective bargaining, and union-administered unemployment insurance (the "Ghent system") - in maintaining high union membership (Western 1997). Despite the lack of these institutional factors in the US though, union workers in 2008 were still less likely to experience recession-induced job losses than nonunion workers after adjusting for labor market conditions and other relevant covariates (Catron 2013).

Just as with some of the effects of unions on wages and benefits, the decline in union membership after 2008 was somewhat political in nature. Widespread electoral victories by the Republican party in many states during the 2010 midterms precipitated a wave of austerity measures and direct attacks on public-sector unions (Lafer 2013). Several of these states, including Indiana, Michigan, Ohio, and Wisconsin, introduced legislation designed to weaken collective bargaining and limit unions' abilities to raise funds (Milkman 2013; Milkman and Luce 2017). One example of such legislation is "right-to-work," a policy that prevents unions from requiring workers covered by union-negotiated contracts to pay periodic dues to the union. Through this policy, workers are individually incentivized to freeride on the benefits of unions. Over the longer term, right-to-work laws systematically hollow out unions and incapacitate collective bargaining.

A recent report from Manzo and Bruno (2021) highlights the numerous detrimental state-wide conditions associated with right-to-work laws, including: lower wages (especially for workers in industries deemed "essential" during the COVID-19 pandemic); less health insurance coverage; reduced retirement security; higher on-the-job fatality rates; lower economic productivity per worker; higher consumer debt and delinquency rates; and, crucially, higher rates of households below the poverty line and receiving food stamps. These last two points corroborate previous findings that workers in states with right-to-work laws contribute less in taxes and receive more in public benefits than workers in states with greater collective bargaining rights (Manzo and Bruno 2014).

This means that union membership, on its own, does not tell the whole story. The magnitude of the effect of union membership on utilization of public assistance depends on pertinent labor laws. Right-to-work is just one example. Other new restrictions on unions after 2008 included constraints on strike activity and harsher penalties for violations of labor law (Milkman 2013), increasing the risks associated with collective action. In this way, the 2008 recession did not directly contribute to the subsequent fall in union membership, but its impacts on politics and the labor movement did open up space down the road for further dismantling of collective bargaining.

3 Data

3.1 Overview

The datasets for this analysis come from the nationally representative Current Population Survey (CPS) as accessed through IPUMS (Flood, Sarah et al. 2021). One dataset, the Annual Social and Economic Supplement (ASEC), is a yearly survey that includes variables such as individuals' annual incomes and poverty statuses as well as outcomes detailing whether respondents utilized certain government assistance programs. Specifically, respondents were asked whether or not they were living in public housing; whether or not they were paying lower rent due to a government subsidy; whether or not they were receiving a government subsidy for energy; and whether or not they were receiving food stamps. The other dataset used is the CPS Basic Monthly Survey (BMS). This dataset includes individuals' weekly earnings and importantly asks about certain impacts that the COVID-19 pandemic may have had on individuals' labor outcomes. Starting in May 2020, the BMS began asking respondents several questions about the effects of the pandemic, including whether respondents had "worked remotely for pay" due to COVID- 19 and whether they had "received pay for hours not worked" due to COVID-19. Both datasets contain important demographic variables as well as a variable indicating the respondent's union status. In this paper, "pre-pandemic" refers to the years prior to 2020, and "pandemic" refers to the years 2020 and 2021. All monetary values were adjusted to 2020 USD using Consumer Price Index data compiled by the OECD and retrieved through the FRED database of the Federal Reserve Bank of St. Louis (OECD 2010).

3.2 Annual Social and Economic Supplement

The ASEC dataset contains longitudinal survey data which spans from 2005 to 2021 and features eight separate rotation groups, consisting of approximately two million total observations and 214,328 in-universe observations. Here, "in-universe" refers to individuals who have reported their union status, which is asked about in only two of the eight rotation groups. In each rotation group for the ASEC, households are interviewed once a year across two consecutive years such that each individual can appear a maximum of two times in the dataset. Among the individuals asked about their union status, dues-paying union members make up 11.9% of the sample, and all union-covered workers make up 13.2% of the sample. Additionally, 13.88% of male workers and 12.51% of female workers are union-covered. These rates tend to fluctuate by one or two percentage points depending on the year, steadily decreasing and converging over time (see Figure 1).

Table 1 provides descriptive statistics for the ASEC dataset, presenting the makeups of the entire sample, the sub-sample of covered workers, and the sub-sample of non-covered workers within the categories of age, year, sex, race, education, and region. We see that covered workers tend to be older and fairly well-educated: individuals aged 35 and older consist 65% of the whole sample but 76% of covered workers; 7% of all observations hold master's degrees, compared with 16% of covered workers. This could point to the enhanced ability of covered workers to pursue higher education thanks to the economic security of a union job, but it could also mean that workers with more education are more likely to select into a union job or into a sector where unions are more widespread, or even just that older workers who have had more time to pursue higher education are also more likely to select into a union. This third possibility is especially likely given the breakdown of covered workers within year groups - despite all observations being roughly evenly spread between the year groups, covered workers are over-represented among the earlier years, meaning younger workers and those new to the labor force have had less exposure to unions.

Table 3 compares ASEC data over incomes, poverty rates, and program participation between covered workers and non-covered workers. The difference in the rent subsidy rate was not significant at any level. However, the difference in the public housing rate was significant at the 5% level, and differences in average annual income, the poverty rate, the heat subsidy rate, and the SNAP participation rate were all significant at the 1% level. Further specific details of this information - such as comparisons of growth rates during different time periods - are discussed in the following paragraphs.

Analyzing differences in covered and non-covered workers' income growth rates between the pre-pandemic and pandemic periods could shed light on the two groups' relative resilience to the coronavirus shock. Between 2005 and 2019, mean annual real income (measured in 2020 USD) grew from 35,483.96 to 64,779.78 (+5.9% annually) for union-covered workers, and from 330,079 to 559,633.45 (+7.02% annually) for noncovered workers. Between 2019 and 2021, income grew to 74,451.53 for covered workers (+7.47% annually), and 70,140.80 for non-covered workers (+8.81% annually). While annual household incomes clearly tend to be higher for covered workers, the incomes of non-covered workers have been rising at a faster pace (see Figure 2).

Viewed in isolation, this data may seem to imply that union coverage may have failed to protect workers from recession-related pay cuts, but this explanation does not account for other potential factors. As discussed in the Literature Review section, unions may purposefully negotiate for pay cuts during recessions in order to maintain employment for their members. Other possible explanations could attribute these differences to faster income growth for non-covered workers in upper income quantiles, the fact that many lowwage workers dropped out of the labor force altogether during the coronavirus pandemic (causing the mean incomes of all non-covered workers to appear to rise faster), or some combination of the two. In fact, when the non-covered workers are aggregated into income terciles, we see that incomes did increase the most between 2005 and 2021 for the upper tercile, but income growth for the other two terciles was still greater than that of covered workers (see Figure 3). This could also be explained through the fact that average incomes for non-covered workers in the bottom and middle terciles (\$8,775.92 and \$22,682.27, respectively) were fairly low in 2005 compared to the average covered income (\$35,483.96) so faster growth rates could simply be attributable to modest raises as well as changes to minimum wage laws.

Throughout all seventeen years in the dataset, 2.3% of union-covered workers reported income that placed their households below the federal poverty line, compared with 5.87% of non-covered workers. The average poverty rate for covered workers was 2.36% in the pre-pandemic period and dropped to 1.74% during the pandemic. For non-covered workers, the pre-pandemic poverty rate was 6.05% and dropped to 4.35% in 2020. From 2005 to 2021, covered workers have consistently seen a lower poverty rate than noncovered workers. In the thirteen years after the 2008 recession, the annual poverty rate for non-covered workers has declined substantially but still not converged with the annual poverty rate for covered workers, which has remained relatively constant (see Figure 4).

During the study period, 3.44% of workers covered by union contracts reported living in public housing, compared with 4.02% of workers not covered by union contracts. Overall, 6.91% of respondents reported living in public housing, suggesting that unemployed individuals or individuals outside the labor force utilized public housing at a far greater rate. Between 2005 and 2019, 3.46% of union-covered workers lived in public housing, compared with 3.98% of non-covered workers. In 2020 and 2021, 3.26% of union-covered workers lived in public housing, compared with 4.34% of non-covered workers. As seen in Figure 5, the public housing rates for covered workers and non-covered workers have overlapped substantially, with the former noticeably varying and the latter remaining relatively constant over time.

With regard to the other form of housing assistance, 1.86% of union-covered workers reported utilizing rent subsidies, compared with 1.9% of non-covered workers. 3.5% of all

respondents reported receiving rent subsidies, again suggesting higher utilization among non-employed individuals. Over the course of the decade, rates of utilization of rent subsidies tended to fluctuate more for covered workers than for non-covered workers (see Figure 6).

From 2005 to 2021, 0.86% of union-covered workers and 1.4% of non-covered workers reported receiving government heat subsidies, compared with 2.7% of all respondents. During the pre-pandemic period, 0.83% of union-covered workers and 1.39% of non-covered workers received heat subsidies. During the pandemic years, heat subsidy utilization rates were 1.14% for covered workers and 1.43% of non-covered workers. Figure 7 compares the rates of heat subsidy utilization over time for the two groups and visually confirms the higher average heat subsidy rate for non-covered workers.

Fourth, with regard to food stamps, 9.67% of all respondents from 2005 to 2021 reported receiving assistance from the Supplemental Nutrition Assistance Program (SNAP). This rate was 2.76% for union-covered workers and 5.63% for non-covered workers. From 2010 to 2019, 2.64% of covered workers and 5.53% of non-covered workers reported utilizing food stamps. Participation rates for both groups increased during the COVID-19 pandemic, with 4.02% of covered workers and 6.47% of non-covered workers reporting utilizing food stamps. The two rates appear to follow similar trends over time, with union-covered workers consistently participating in SNAP at lower rates than their non-covered counterparts (see Figure 8).

3.3 CPS Basic Monthly Survey

The BMS dataset includes nearly 11 million total observations and 1.8 million inuniverse observations spanning from January 2010 to August 2021. In each rotation group for the BMS, households are surveyed for four consecutive months and then re-surveyed during the same four months the following year, for a maximum of eight responses and seven status changes per respondent. Again, only two of the eight rotation groups are asked specifically about their union status. Among the in-universe respondents, unionmember workers make up 11.16% of the sample, and all union-covered workers make up 12.45% of the sample. Additionally, 12.96% of male workers and 11.94% of female workers are union-covered. Just as with the ASEC data, these rates also tend to fluctuate by one or two percentage points depending on the month and year.

Weekly earnings in the dataset were adjusted to January 2020 USD. Overall, unioncovered workers reported average real weekly earnings of \$996.04 compared with \$851.93 for non-covered workers, a statistically significant difference at the 1% level. From January 2010 to March 2020, union-covered workers' mean weekly income grew from \$807.40 to \$1,220.69 (+0.42% monthly), and non-covered workers' mean weekly income grew from \$682.11 to \$1,041.33 (+0.43% monthly). From March 2020 to August 2021, covered workers' weekly income grew from \$1,220.69 to \$1,337.96 (+0.57% monthly), and noncovered workers' weekly income grew from \$1,041.33 to \$1173.39 (+0.75% monthly). As with the ASEC data, mean incomes are generally higher for workers covered by union contracts, but non-covered workers as a whole have seen slightly higher income growth on average over this time frame, especially during the coronavirus pandemic. Again, this does not necessarily mean that union workers were less protected from wage cuts, as it could instead indicate concessionary bargaining, disproportionately high wage growth for high-income workers, or the dropping out of low-income workers from the labor force.

Table 2 presents the descriptive statistics for the BMS dataset. As with the ASEC dataset, we see that the modal covered worker tends to be older, male, white, and fairly well-educated. Covered workers are also slightly less frequent in later years, showing how the decline of unions has persisted throughout the 2010s. Furthermore, covered workers are under-represented in the southern regions as well as the Mountain region while being over-represented in the northeast and along the pacific coast, indicating a potential connection between union coverage and regional political trends.

Although one of the two coronavirus-related variables in the BMS dataset does not show a large magnitude of difference between the two groups of workers, both variables are statistically significant (see Table 4). Due to the pandemic, 22.2% of covered workers and 21.6% of non-covered workers reported working remotely for pay. This difference could mean that covered workers were more likely to go remote due to stronger workplace health protections, but it could also mean that covered workers were more likely to go remote because industries with more union coverage just happened to be industries which were better situated for the transition to remote work. With regard to the other variable: while 19.3% of non-covered workers reported receiving pay for hours not worked due to COVID-19, the proportion of union-covered workers who received such pay was 37.9%, suggesting that unionized employees were substantially more able than other workers to smooth their incomes after the pandemic struck. Again however, this alone does not conclusively identify a causal relationship between union coverage and income stability, as industries with greater union coverage may just happen to be more likely to assist their workers during downturns (possibly in an attempt to retain highly productive workers until the end of remote work).

4 Empirical Strategy

4.1 Pooled Cross-Section Analysis

In this analysis I use Ordinary Least Squares to estimate the differential effects of union coverage status on income, poverty status, participation in various public assistance programs, and certain labor impacts of the COVID-19 pandemic. Since Freeman (1984) describes cross-sectional and longitudinal estimates as upper and lower bounds, I conduct a pooled cross-section OLS regression and a longitudinal OLS regression. The former is a simpler regression equation that takes the form

$$Y_{it} = \alpha + \beta U_{it} + \lambda C_{it} + u_{it} \tag{1}$$

where α is the intercept, Y_{it} is one of the outcome variables for individual *i* at time *t*, U_{it} is a binary variable representing union coverage status, C_{it} refers to various controls, and u_{it} is the error term, which contains unobserved characteristics about the individuals. The outcomes that are used as dependent variables include income, poverty, utilization of the mentioned government welfare programs, and the two aforementioned coronavirus pandemic labor impacts.

Following Sojourner and Pacas (2018) the controls term C_{it} can be partitioned into four separate categories. The first category includes standard wage determinants – educational attainment, marriage status, sex, race, age, foreign-born, part-time work, metropolitan area, occupation, and industry - and can be represented with X_{it} . The second category is family structure, as family size determines a household's needs and can be an important determinant in the receipt of public assistance. This category, represented with F_{it} , includes the number of adults, children aged 0-5, and children aged 6-17 in the family (though the latter is excluded in the actual regression in order to prevent multicollinearity). Last, I control for the varying economic policies and regulations throughout different states and years, such as right-to-work laws, with state- and year-fixed effects S_i and D_t . The expanded equation for the pooled cross-sectional OLS regression is of the form

$$Y_{it} = \alpha + \beta U_{it} + \lambda_1 X_{it} + \lambda_2 F_{it} + \lambda_3 S_i + \lambda_4 D_t + u_{it}$$

$$\tag{2}$$

The identifying assumption of the cross-sectional regression is that by controlling for standard wage determinants, family structure, state policies, and changes over time, the unobserved characteristics contained within u_{it} have no correlation with union coverage. If this is the case, then β represents the change in the dependent variable from changing U_{it} from 0 (non-covered worker) to 1 (union-covered worker).

4.2 Longitudinal Analysis

The identifying assumption explained above may however be unrealistic, as it is entirely possible that unobserved individual characteristics - such as experience or skill could impact selection into a union. Therefore, I also conduct a longitudinal analysis in which the error term from (1) is a linear function of unobserved individual characteristics c_i such that $u_{it} = \gamma c_i + \epsilon_{it}$ and the correlation between U_{it} and ϵ_{it} is zero. This results in a regression equation of the form

$$Y_{it} = \alpha + \beta U_{it} + \lambda_1 X_{it} + \lambda_2 F_{it} + \lambda_3 S_i + \lambda_4 D_t + \gamma c_i + \epsilon_{it}$$
(3)

where union membership of individual i at time t is a determinant of economic outcomes conditional on wage determinants, family structure, and state-year fixed effects. Since c_i is unobserved, differencing can be used to eliminate that term from the regression, giving an equation of the form

$$\Delta_i Y_{it} = \beta \Delta_i U_{it} + \lambda_1 \Delta_i X_{it} + \lambda_2 \Delta_i F_{it} + \lambda_3 \Delta_i S_i + \lambda_4 \Delta_i D_t + \Delta_i \epsilon_{it} \tag{4}$$

where the individual's change in outcomes between times t-1 and t is determined by that individual's change in union membership. This could be equal to -1 (a union-covered worker exits from coverage), 0 (no change in union status), or 1 (a non-covered worker becomes covered by a union. This estimation strategy assumes a certain symmetry for changes in union status, as the expected change in the outcome from joining a union is the same magnitude as the expected change in the outcome from leaving a union. Additionally, it also incorporates the assumption that there is no expected change in economic outcomes associated with remaining covered or remaining non-covered across different study periods.

4.3 Limitations

A few limitations could affect this analysis. As stated before, selection into a union is not random, so some variables associated with union membership or coverage may be omitted from the analysis. This introduces a bias in the regressions, as coverage by a union-negotiated contract could be correlated with unobserved characteristics contained within the error term and thus face an endogeneity problem. For example, it is conceivable that the impact of union coverage on income does not occur through direct collective bargaining negotiations with employers but rather through widespread labor activism and structural changes to labor law. Similarly, the leverage unions have in negotiations can be dependent on the state's wider union membership rate, as employers may feel more pressured to accept high wages and benefits in order to compete against other unionized firms. A two-stage least squares regression analysis may be able to get past this limitation through the use of state right-to-work laws or statewide union membership as instrumental variables, although passing the exclusion restriction may be difficult due to the political nature of the mechanism through which either of these factors can affect economic outcomes.

Other limitations could arise from omitted variable bias, due to the lack of control variables in the CPS. Surveyors can only ask a finite number of questions, so some characteristics which respondents were not asked about that could conceivably impact economic outcomes or selection into a union (e.g. union enthusiasm, labor skills, job experience, etc.) are excluded from this analysis. However, all of the factors included in the analysis by Sojourner and Pacas (2018) were available for this analysis as well.

Third, the symmetry assumption from Equation 4 may not hold true. On the one hand, it may be reasonable to expect that the amount of income gained from transitioning into union coverage (the union bonus) would also be the amount of income a worker stands to lose if they transition out of union coverage. On the other hand, it is possible that workers who have experienced economic gains from union coverage may not want to relinquish those gains, even if they plan on transitioning out of union-covered employment. These workers, having had their expectations for pay and working conditions raised, may be less willing to accept pay losses and thus be more likely to seek out relatively highpaying jobs. Moreover, it is also possible that the assumption of no expected change in the outcome variable from no change in union status could be wrong if covered workers are more likely to receive periodic raises or bonuses, in which case workers who remain covered could expect certain gains that workers remaining non-covered might not receive.

5 Results

5.1 Analysis of the ASEC Dataset

Table 5 presents the union effect estimates, along with standard deviations, t-statistics, and observation counts, from the pooled cross-section and longitudinal regression analyses of the ASEC data. Each column in the table represents the regression analysis conducted with different specifications for control variables: in column 1, only standard wage determinants were accounted for; for column 2, family structure variables were added; the regressions for column 3 include state-fixed effects in addition to wage determinants and family structure; column 4 adds year-fixed effects; and column 5 represents the longitudinal analyses, for which individual-fixed effects were included. The latter two columns are of the greatest interest for this analysis as they represent the most thoroughly specified regressions, though it is useful to see how different specifications of control variables can alter the union estimates.

Overall, after accounting for standard wage determinants, family structure, state-fixed effects, and year-fixed effects (but not individual-fixed effects), coverage by a union was significantly associated with an estimated increase in annual income of approximately \$2,715 in 2020 USD. When using the log of income as the dependent variable, the annual union premium was estimated at 12.46%. Union coverage was also significantly associated with a 0.92-percentage-point decrease in the probability of being in poverty, or a 16% reduction from the average poverty rate of 5.87% for non-covered workers. For heat subsidy and food stamp utilization, the two other statistically significant estimates from this dataset, union coverage was associated with a 0.27-percentage-point (19%) reduction in the probability of utilizing heat subsidies, and a 1.02-percentage-point (18%) decrease in the probability of utilizing food stamps. All of the statistically significant union estimates here were significant at the 1% level.

Additionally, it appears that the inclusion of only standard wage determinants tended to slightly underestimate the union effects, though the direction of the changes caused by adding more controls is somewhat ambiguous. Inclusion of the state-fixed effect, for instance, caused the union effect estimate on poverty to decrease slightly in magnitude while increasing the union effect estimate on heat subsidy usage or SNAP participation. Similarly, addition of the year-fixed effect noticeably increased the income-related estimates, but it had a smaller impact on the other estimates and their t-statistics.

In some cases though, adding controls for family structure consistently increased the magnitude of the estimated union effect, as was the case for the poverty and public assistance variables. Since a household's poverty status or use of public assistance is dependent on more than just the income of one resident, it makes sense that not accounting for other household characteristics would have a downward bias on the magnitude of the union effect. For example, we can consider a household in which one parent or guardian is covered by a union contract, and thus likely benefits from a union premium. If that individual has a relatively high number of children under age five in their care, then their income will be spread across a larger number of dependents and the union premium will not be as impactful as it would be for a household with fewer young children, making it more likely that this household will qualify for nutrition assistance. Therefore, not accounting for family structure in this instance would make union coverage appear to be less impactful on the household's financial situation.

Ultimately, however, none of the changes in estimates caused by the addition of more controls appear to have been especially large or significant. In most cases, the change in the union effect estimate is less than one standard deviation. Although it is interesting to hypothesize about how these control variables may have affected the estimates, there is little evidence of a consistent statistically significant change associated with the controls.

The longitudinal analysis yielded substantially different results from the fully controlled cross-sectional analysis. The union effect estimate for income was statistically insignificant; for the log of income, the estimate was statistically significant at the 5% level, though it was a very low union premium of just 2%. Moreover, the estimated union effect on poverty was just half of a percentage point, or an 8.5% decrease in likelihood of poverty from the non-covered average, and only significant at the 10% level. None of the other estimates held any statistical significance, and they were fairly close to zero in magnitude. Altogether, these results were fairly in-line with the main points of Freeman (1984), so it is not surprising that the estimates were relatively low. The longitudinal analysis only took within-person variation into consideration, meaning that we would need to see a large number of individuals in the sample changing their poverty status or public assistance program participation after changing their union status in order to draw some association between union coverage and those economic outcomes. For several reasons (e.g. random error, sampling and reporting issues, delayed union coverage benefits, bureaucratic impediments, time constraints, etc.) this is rather unlikely, thus the downward bias.

5.2 Analysis of the BMS Dataset

Table 6 shows the estimates from the CPS monthly survey dataset. Through crosssectional analysis, union coverage was significantly associated with an increase in weekly income of \$90.25 in January 2020 USD, and the weekly union premium was estimated at 14.72%, both significant at the 1% level. When accounting for standard wage determinants, family structure, and state- and year-fixed effects, covered workers and non-covered workers did not face a significant difference in the likelihood of working remotely due to the coronavirus pandemic. However, union coverage was significantly (5% level) associated with a substantial 6.56-percentage-point (34%) increase in the probability of being paid for hours not worked due to COVID-19. More so than with the regressions on the ASEC data, the effects of changing the control variable specifications here were unclear and indeterminate.

Through longitudinal analysis, union coverage was significantly (1% level) associated with an increase of \$23.56 per week, and a union premium of 4.7%. However, the addition of an individual-fixed effect resulted in statistically insignificant estimates for remote work and extra pay for hours not worked. This likely occurred because of the low probability that an individual in the sample would have reported receiving pay for hours not worked only after transitioning into union-covered employment.

5.3 Discussion and Recommendations for Future Research

Taken all together, the results from the pooled cross-sectional regressions indicate considerable economic benefits from coverage by a union contract. After controlling for covariates, workers covered by union contracts are seen to earn more in wages than workers without union coverage. Covered workers are also less likely to be in poverty, utilize heating assistance, utilize food stamps, and receive additional compensation for hours not worked during the coronavirus pandemic. Although this still does not definitively establish a causal link between union coverage and enhanced economic security, the results provide strong evidence that collective bargaining is a valuable tool for ensuring workers' financial stability during economic shocks and downturns.

The cross-sectional estimates of the union premium appear to closely match estimates in other literature. For instance, the union premium estimate of 13% from Bivens et al (2017) is neatly bounded by the ASEC estimate of 12.46% and the BMS estimate of 14.72%. The longitudinal estimates were much lower than these, which was not unexpected due to the reasons outlined in the above review of estimation techniques, though the BMS estimate of 4.7% was more than twice the magnitude of the ASEC estimate of 2%. This was most likely the result of the larger number of status changes for respondents in the BMS. The use of eight survey periods rather than only two presents more opportunities for within-person variation in union status, and thus reduces the downward bias of longitudinal estimates.

These results also indicate that there may be some truth to the government substitution hypothesis. The cross-sectional estimates of the union premium - 12.5% for annual income and 14.7% for weekly income - are certainly large enough in theory to lift a household out of poverty. According to the Center on Budget and Policy Priorities, the average SNAP benefit for a household in 2019 and 2020 was approximately \$240, or \$2,880 annualized (CBPP 2022). With an estimated annual union bonus of \$2,715, the expected income gains of union coverage almost equal the average value of food assistance. Additionally, due to the numerous documented barriers to SNAP participation such as misinformation, a lengthy and difficult application process, social stigma, and lack of awareness (Avila et al. 2021), some individuals may prefer the relative simplicity and ease of economic gains through union coverage, even if they can expect a slightly lower bonus.

An increased proportion of workers being covered by union-negotiated contracts is also likely to have important general equilibrium effects. Extrapolating on the ASEC estimated annual union bonus of \$2,715 and the BMS estimated weekly bonus of \$90 (an annualized bonus of over \$4,500), a 1% increase in the rate of union coverage (or an increase of 158,000 workers (BLS 2021)) is associated with total annual income gains between \$429 and \$739 million USD, assuming that the increased size of the covered labor force does not itself cause the average union bonus to rise. This may have implications for price levels, as the money for businesses' additional labor expenses attributable to unions comes from what would otherwise be profit or capital income, whereas the revenue used by governments for public assistance may come from sources other than capital income, such as sales taxes. As such, it is possible that an increasing proportion of workers substituting union coverage in place of public assistance may produce a general inflationary effect, and this would be worth looking into in more depth.

Higher union coverage rates could also negatively impact employment or wages through altering firms' decisions, but there is mixed evidence on this. Some individual firms facing potential unionization may raise wages or hire new workers to decrease the likelihood of a pro-union vote, though this "threat effect" has also been associated with reduced employment and output in the aggregate (Taschereau-Dumouchel 2020). The strength of unions has been positively correlated with small but significant decreases in employment and increases in unemployment (Montgomery 1989), but depending on the model of general equilibrium being used unions can be associated with either high or low wages and unemployment (Gersbach and Schniewind 2011).

Furthermore, as previously discussed, unions' strength is closely associated with wider union membership as well as with institutional conditions and political support for workers. Union coverage may yield premia greater than 12% or \$2,700 in states where labor unions have more bargaining leverage. By the same token, individuals in states with right-to-work laws may receive fewer benefits from union coverage because of structural hostility to organized labor. A more in-depth analysis of union coverage and associated benefits within various states would help to contribute a greater understanding of the mechanisms through which unions affect both covered and non-covered workers, and this could be another interesting topic for future research.

Last, both of the estimated union effects on the housing-related variables were near-

zero and statistically insignificant, even after accounting for family structure. As Figures 5 and 6 show, there is noticeable overlap in public housing and rent subsidy utilization between covered and non-covered workers. In some years, covered workers had even higher participation in these programs than non-covered workers. Given the premium that covered workers receive, this is rather surprising. Some conceivable explanations could be that housing costs are just so high as to nearly nullify the union premium in metropolitan areas with greater union density, or that the cost of living in general is so high that the union premium is often absorbed by non-housing-related expenses, but without further research on unions and housing this is just speculation.

6 Conclusion

Workers covered by union-negotiated contracts earn between 2% and 15% more than workers not covered by such contracts. Union coverage is also associated with a 16% reduction in the likelihood of poverty, a 19% reduction in the likelihood of heat subsidy utilization, an 18% reduction in SNAP participation, and a 34% increase in the likelihood of receiving extra pay for hours not worked due to the COVID-19 pandemic. At such a time as a global pandemic and in the aftermath of a multi-decade erosion of the social safety net, unions present a powerful option for ensuring the material well-being of workers. Lacking collective bargaining power, workers have little say over their labor contracts and are generally more economically insecure than they would be with the protection of a labor union. Further research is recommended in order to better understand the causal economic and political mechanisms that lead to enhanced economic outcomes for union-covered workers.

Tables

Table 1

	All	Covered	Non-Covered
Age			
18-24	0.14	0.05	0.13
25-34	0.21	0.19	0.23
35-44	0.23	0.25	0.23
45-54	0.23	0.30	0.23
55+	0.19	0.22	0.17
Year			
2005-2008	0.25	0.28	0.25
2009-2012	0.25	0.26	0.24
2013-2016	0.24	0.23	0.24
2017-2021	0.26	0.23	0.27
Sex			
Male	0.48	0.53	0.50
Female	0.52	0.47	0.50
Race			
White	0.78	0.81	0.83
Black	0.12	0.11	0.09
American Indian	0.01	0.01	0.01
Asian	0.06	0.04	0.05
Hawaiian/Pacific Islander	0.01	0.01	0.00
Education			
High School Diploma or Less	0.41	0.31	0.36
Some College, No Degree	0.19	0.17	0.19
Bachelor's Degree	0.19	0.22	0.23
Associate's Degree	0.10	0.11	0.11
Master's Degree	0.07	0.16	0.08
Professional Degree	0.01	0.01	0.01
Doctorate Degree	0.01	0.02	0.02
Region			
New England	0.09	0.12	0.10
Middle Atlantic	0.09	0.15	0.08
East North Central	0.11	0.14	0.11
West North Central	0.10	0.10	0.12
South Atlantic	0.18	0.12	0.19
East South Central	0.05	0.04	0.06
West South Central	0.10	0.04	0.10
Mountain	0.11	0.08	0.11
Pacific	0.16	0.21	0.13
Observations	2,015,000	28,285	186,043

Source: CPS ASEC as accessed through IPUMS.

Table 2

	All	Covered	Non-Covered
Age			
18-24	0.13	0.05	0.13
25-34	0.21	0.20	0.24
35-44	0.21	0.24	0.23
45-54	0.22	0.28	0.23
55+	0.24	0.23	0.18
Year			
2010-2013	0.37	0.38	0.36
2014-2017	0.35	0.35	0.36
2018-2021	0.28	0.27	0.29
Sex			
Male	0.49	0.53	0.50
Female	0.51	0.47	0.50
Race			
White	0.80	0.80	0.82
Black	0.11	0.11	0.10
American Indian	0.01	0.01	0.01
Asian	0.05	0.05	0.06
Hawaiian/Pacific Islander	0.00	0.01	0.00
Education			
High School Diploma or Less	0.39	0.28	0.35
Some College, No Degree	0.19	0.16	0.19
Bachelor's Degree	0.21	0.23	0.24
Associate's Degree	0.10	0.12	0.11
Master's Degree	0.08	0.17	0.09
Professional Degree	0.01	0.01	0.02
Doctorate Degree	0.02	0.02	0.02
Region			
New England	0.09	0.11	0.09
Middle Atlantic	0.09	0.15	0.08
East North Central	0.11	0.13	0.11
West North Central	0.10	0.10	0.11
South Atlantic	0.18	0.12	0.19
East South Central	0.06	0.04	0.06
West South Central	0.10	0.05	0.10
Mountain	0.11	0.09	0.12
Pacific	0.15	0.22	0.13
Observations	10,957,528	219,109	1,540,417

Source: CPS BMS as accessed through IPUMS.

	Non-Covered	Covered	Difference
Adjusted Annual Household Income	45,416.99	49,858.09	4,441.10***
	(57, 494.49)	(43,013.11)	(356.11)
Poverty Rate	0.059	0.023	-0.036***
	(0.235)	(0.150)	(0.001)
Public Housing Rate	0.040	0.034	-0.006**
	(0.196)	(0.182)	(0.003)
Rent Subsidy Rate	0.019	0.019	-0.000
	(0.136)	(0.135)	(0.002)
Heat Subsidy Rate	0.014	0.009	-0.005***
	(0.117)	(0.092)	(0.001)
Food Stamp Utilization Rate	0.056	0.028	-0.029***
	(0.231)	(0.164)	(0.001)
Observations	186,043	28,285	214,328

Table 3

Source: CPS ASEC as accessed through IPUMS.

Table	4
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	Non-Covered	Covered	Difference
Adjusted Weekly Earnings	851.93	996.04	144.11***
	(640.90)	(565.62)	(1.44)
Worked Remotely Due to COVID-19	0.216	0.222	0.006**
	(0.411)	(0.416)	(0.003)
Paid for Hours Not Worked Due to COVID-19	0.193	0.379	0.186***
	(0.394)	(0.485)	(0.015)
Observations	1,540,417	219,109	1,759,526

Source: CPS BMS as accessed through IPUMS.

		Co	ontrols Inclue	ded	
	(1)	(2)	(2)	(4)	(5)
	$\begin{pmatrix} 1 \\ X \end{pmatrix}$	(2) X+F	(3) X+F+S	(4) X+F+S+D	(5) Indiv FE
ASEC Dataset					
Income	2420.77^{***}	2364.82^{***}	2213.33***	2715.10^{***}	-515.56
	(414.23)	(414.51)	(414.19)	(408.52)	(719.45)
	5.84	5.71	5.34	6.65	-0.72
	209990	209990	209990	209990	209990
Log of Income	0.1210***	0.1178***	0.1141***	0.1246***	0.020**
	(0.0056)	(0.0056)	(0.0056)	(0.0055)	(0.009)
	21.62	21.16	20.29	22.84	2.13
	209970	209970	209970	209970	209970
Poverty Status	-0.0083***	-0.0096***	-0.0091***	-0.0092***	-0.005*
	(0.0015)	(0.0015)	(0.0015)	(0.0015)	(0.003)
	-5.49	-6.38	-5.97	-6.02	-1.84
	209990	209990	209990	209990	209990
Public Housing	-0.0002	-0.0004	-0.0003	-0.0004	-0.002
_	(0.0029)	(0.0029)	(0.0029)	(0.0029)	(0.007)
	-0.05	-0.15	-0.12	-0.14	-0.28
	63306	63306	63306	63306	63306
Rent Subsidy	-0.0014	-0.0015	-0.0017	-0.0017	0.000
	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.005)
	-0.63	-0.69	-0.77	-0.79	0.00
	60851	60851	60851	60851	60851
Heat Subsidy	-0.0015*	-0.0017*	-0.0027***	-0.0027***	0.000
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.002)
	-1.69	-1.92	-3.13	-3.06	0.11
	209990	209990	209990	209990	209990
SNAP	-0.0100***	-0.0102***	-0.0109***	-0.0102***	-0.003
	(0.0016)	(0.0016)	(0.0016)	(0.0016)	(0.003)
	-6.23	-6.41	-6.82	-6.42	-1.09
	209990	209990	209990	209990	209990
	Source: C	PS ASEC as	accessed the	rough IPUMS	

Table 5

ource: CPS ASEC as accessed through IPUMS.

		Controls Included				
	(1)	(2)	(3)	(4)	(5)	
	X	X+F	X+F+S	X+F+S+D	Indiv FE	
BMS Dataset						
Weekly Earnings	89.48***	88.59***	87.49***	90.25***	23.69***	-
	(1.44)	(1.44)	(1.44)	(1.41)	(2.39)	
	62.24	61.69	60.65	64.06	9.92	
	1698485	1698485	1698485	1698485	1698485	
Log of Earnings	0.1479***	0.1458***	0.1437***	0.1472^{***}	0.047***	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.003)	
	86.52	85.53	83.86	87.69	15.29	
	1698485	1698485	1698485	1698485	1698485	
Remote Work	0.0030	0.0022	0.0003	-0.0018	-0.008	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.015)	
	0.88	0.63	0.08	-0.54	-0.57	
	158203	158203	158203	158203	158203	
Extra Pay	0.0661**	0.0656**	0.0710**	0.0656**	0.038	
	(0.02)	(0.02)	(0.02)	(0.02)	(0.221)	
	3.02	3.00	3.23	3.00	0.17	
	7313	7313	7313	7313	7313	

Table 6

Source: CPS BMS as accessed through IPUMS.

Figures





Figure 2



Figure 3



Figure 4



Figure 5



Figure 6







Figure 8



References

- [Avila et al., 2021] Avila, M., Burns, K., Bolcic-Jankovic, D., Cluggish, S., Greenhalgh, E., Lemmerman, J., McAleer, E., Minc, L., Searles, R., and Siller, L. (2021). Barriers to SNAP. https://projectbread.org/research/barriers-to-snap.
- [Biasi and Sarsons, 2022] Biasi, B. and Sarsons, H. (2022). Flexible Wages, Bargaining, and the Gender Gap. *The Quarterly Journal of Economics*, 137(1):215–266.
- [Bitler et al., 2017] Bitler, M., Hoynes, H., and Kuka, E. (2017). Child Poverty, the Great Recession, and the Social Safety Net in the United States. *Journal of Policy Analysis and Management*, 36(2):358–389.
- [Bivens et al., 2017] Bivens, J., Engdahl, L., Gould, E., Kroeger, T., McNicholas, C., Mishel, L., Mokhiber, Z., Shierholz, H., von Wilpert, M., Wilson, V., and Zipperer, B. (2017). How today's unions help working people: Giving workers the power to improve their jobs and unrig the economy.
- [Blanchflower and Bryson, 2004] Blanchflower, D. and Bryson, A. (2004). What Effect Do Unions Have on Wages Now and Would Freeman and Medoff Be Surprised? *Journal of Labor Research*, 25:383–414.
- [BLS, 2021] BLS (2021). Union Membership Summary 2020. https://www.bls.gov/news.release/archives/union2_01222021.htm.
- [BLS, 2022] BLS (2022). Union Members Summary 2021. https://www.bls.gov/news.release/union2.nr0.htm.
- [Budd and Na, 2000] Budd, J. and Na, I.-G. (2000). The Union Membership Wage Premium for Employees Covered by Collective Bargaining Agreements. *Journal of Labor Economics*, 18(4):783–807.
- [Catron, 2013] Catron, P. (2013). Immigrant Unionization through the Great Recession. American Sociological Review, 78(2):315–332.
- [CBPP, 2022] CBPP (2022). A Quick Guide to SNAP Eligibility and Benefits. https://www.cbpp.org/research/food-assistance/a-quick-guide-to-snap-eligibility-andbenefits.
- [Coombs, 2008] Coombs, C. K. (2008). The Decline in American Trade Union Membership and the "Government Substitution" Hypothesis: A Review of the Econometric Literature. *Journal* of Labor Research, 29(2):99–113.
- [Dickens et al., 2017] Dickens, W. T., Triest, R. K., and Sederberg, R. B. (2017). The Changing Consequences of Unemployment for Household Finances. RSF: The Russell Sage Foundation Journal of the Social Sciences, 3(3):202–221.
- [Farber et al., 2021] Farber, H. S., Herbst, D., Kuziemko, I., and Naidu, S. (2021). Unions and Inequality over the Twentieth Century: New Evidence from Survey Data*. *The Quarterly Journal of Economics*, 136(3):1325–1385.
- [Feldman and Scheffler, 1982] Feldman, R. and Scheffler, R. (1982). The Union Impact on Hospital Wages and Fringe Benefits. *Industrial & labor relations review*, 35:196–206.
- [Finnigan and Hale, 2017] Finnigan, R. and Hale, J. (2017). Work Variability and Unionization in the Great Recession. https://poverty.ucdavis.edu/research-paper/work-variabilityand-unionization-great-recession.

- [Flood et al., 2021] Flood, S., King, M., Rodgers, R., Ruggles, S., Warren, J. R., and Westberry, M. (2021). Integrated Public Use Microdata Series, Current Population Survey: Version 9.0.
- [Freeman, 1984] Freeman, R. B. (1984). Longitudinal Analyses of the Effects of Trade Unions. Journal of Labor Economics, 2(1):1–26.
- [Gersbach and Schniewind, 2011] Gersbach, H. and Schniewind, A. (2011). COLLECTIVE BARGAINING, AWARENESS OF GENERAL EQUILIBRIUM EFFECTS, AND UNEM-PLOYMENT. International Economic Review, 52(3):693–712.
- [Gould, 2020] Gould, E. (2020). State of Working America Wages 2019: A story of slow, uneven, and unequal wage growth over the last 40 years. https://www.epi.org/publication/swa-wages-2019/.
- [Greenhouse, 2011] Greenhouse, S. (2011). Union Membership in U.S. Fell to a 70-Year Low Last Year. *The New York Times*.
- [Hirsch and Schumacher, 1998] Hirsch, B. T. and Schumacher, E. J. (1998). Unions, Wages, and Skills. *Journal of Human Resources*, 33(1):201–219.
- [Jacobs, Ken et al., 2016] Jacobs, Ken, Perla, Zohar, and Perry, Ian Eve (2016). Producing Poverty: The Public Cost of Low-Wage Production Jobs in Manufacturing.
- [Jacobsen and Mather, 2010] Jacobsen, L. A. and Mather, M. (2010). U.S. Economic and Social Trends Since 2000. *Population bulletin*, page 20.
- [Kalleberg and von Wachter, 2017] Kalleberg, A. L. and von Wachter, T. M. (2017). The U.S. Labor Market During and After the Great Recession: Continuities and Transformations. *The Russell Sage Foundation journal of the social sciences : RSF*, 3(3):1–19.
- [Knepper, 2020] Knepper, M. (2020). From the Fringe to the Fore: Labor Unions and Employee Compensation. *The Review of Economics and Statistics*, 102(1):98–112.
- [Kornfeld, 1993] Kornfeld, R. (1993). The Effects of Union Membership on Wages and Employee Benefits: The Case of Australia. *ILR Review*, 47(1):114–128.
- [Lafer, 2013] Lafer, G. (2013). The Legislative Attack on American Wages and Labor Standards, 2011–2012.
- [Lewis, 1986] Lewis, G. H. (1986). Chapter 20 Union relative wage effects. In Handbook of Labor Economics, volume 2, pages 1139–1181. Elsevier.
- [Manzo and Bruno, 2014] Manzo, F. and Bruno, R. (2014). FREE-RIDER STATES. page 32.
- [Manzo IV and Bruno, 2021] Manzo IV, F. and Bruno, R. (2021). Promoting Good Jobs and a Stronger Economy. https://illinoisepi.files.wordpress.com/2020/05/ilepi-pmcr-promotinggood-jobs-and-a-stronger-economy-final.pdf.
- [McNicholas, Celine et al., 2020] McNicholas, Celine, Rhinehart, Lynn, Poydock, Margaret, Shierholz, Heidi, and Perez, Daniel (2020). Why unions are good for workers—especially in a crisis like COVID-19: 12 policies that would boost worker rights, safety, and wages.
- [Milkman, 2013] Milkman, R. (2013). Back to the Future? US Labour in the New Gilded Age. British Journal of Industrial Relations, 51(4):645–665.
- [Milkman and Luce, 2017] Milkman, R. and Luce, S. (2017). Labor Unions and the Great Recession. RSF: The Russell Sage Foundation Journal of the Social Sciences, 3(3):145–165.

- [Moffitt, 2013] Moffitt, R. A. (2013). The Great Recession and the Social Safety Net. The ANNALS of the American Academy of Political and Social Science, 650(1):143–166.
- [Montgomery, 1989] Montgomery, E. (1989). Employment and Unemployment Effects of Unions. *Journal of Labor Economics*, 7(2):170–190.
- [Moore et al., 1989] Moore, W. J., Newman, R. J., and Scott, L. C. (1989). Welfare Expenditures and the Decline of Unions. *The Review of Economics and Statistics*, 71(3):538–542.
- [Mueller et al., 2016] Mueller, A. I., Rothstein, J., and von Wachter, T. M. (2016). Unemployment Insurance and Disability Insurance in the Great Recession. *Journal of Labor Economics*, 34(S1):S445–S475.
- [Neumann and Rissman, 1984] Neumann, G. R. and Rissman, E. R. (1984). Where Have All the Union Members Gone? *Journal of Labor Economics*.
- [NRTW, 2021] NRTW (2021). Right to Work Frequently-Asked Questions. https://www.nrtw.org/right-to-work-frequently-asked-questions/.
- [OECD, 2010] OECD (2010). Consumer Price Index: All Items for the United States. https://fred.stlouisfed.org/series/USACPIALLMINMEI.
- [Patten, 2016] Patten, E. (2016). Racial, gender wage gaps persist in U.S. despite some progress.
- [Raphael, 2000] Raphael, S. (2000). Estimating the Union Earnings Effect Using a Sample of Displaced Workers. *Industrial and Labor Relations Review*, 53(3):503–521.
- [Reich and West, 2015] Reich, M. and West, R. (2015). The Effects of Minimum Wages on Food Stamp Enrollment and Expenditures. *Industrial Relations: A Journal of Economy and Society*, 54(4):668–694.
- [Rosenfeld et al., 2016] Rosenfeld, J., Denice, P., and Laird, J. (2016). Union decline lowers wages of nonunion workers.
- [Sanders, Katie, 2012] Sanders, Katie (2012).PolitiFact Alan Grayson says _ Medicaid, Walmart employees food than other more on stamps companies. https://www.politifact.com/factchecks/2012/dec/06/alan-grayson/alan-grayson-says-morewalmart-employees-medicaid-/.
- [Sojourner and Pacas, 2018] Sojourner, A. and Pacas, J. (2018). The Relationship between Union Membership and Net Fiscal Impact. Technical Report 2018-015, Human Capital and Economic Opportunity Working Group.
- [Song and von Wachter, 2014] Song, J. and von Wachter, T. M. (2014). Long-Term Nonemployment and Job Displacement. page 74.
- [Taschereau-Dumouchel, 2020] Taschereau-Dumouchel, M. (2020). The Union Threat. SSRN Scholarly Paper 2567359, Social Science Research Network, Rochester, NY.
- [Western, 1997] Western, B. (1997). Between Class and Market: Postwar Unionization in the Capitalist Democracies. Princeton University Press.
- [Western and Rosenfeld, 2011] Western, B. and Rosenfeld, J. (2011). Unions, Norms, and the Rise in U.S. Wage Inequality. *American Sociological Review*, 76(4):513–537.
- [Wunnava and Peled, 1999] Wunnava, P. and Peled, N. (1999). Union Wage Premiums by Gender and Race: Evidence from PSID 1980-1992. *Journal of Labor Research*, 20:415–423.