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When Unionization Disappears: State-Level Unionization and Working Poverty in the U.S.

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WHEN UNIONIZATION DISAPPEARS: STATE-LEVEL UNIONIZATION AND WORKING POVERTY IN THE U.S.*

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WHEN UNIONIZATION DISAPPEARS: STATE-LEVEL UNIONIZATION AND WORKING POVERTY IN THE U.S.

ABSTRACT

Although the working poor are a much larger population than the unemployed poor, American poverty research has devoted much more attention to joblessness than to working poverty. Research that does exist on working poverty concentrates on demographics and economic performance and neglects institutions. Building on literatures on comparative institutions, unionization, and states as polities, we examine the influence of a potentially important labor market institution for working poverty: the level of unionization in a state. Using the Luxembourg Income Study (LIS) for the U.S., we estimate: a) multi-level logit models of poverty among employed households in 2010; and b) two-way fixed effects models of working poverty across seven waves of data from 1991 to 2010. Further, we replicate the analyses with the Current Population Survey while controlling for household unionization, and assess unionization's potential influence on selection into employment. Across all models, state-level unionization is robustly significantly negative for working poverty. The effects of unionization are larger than the effects of states' economic performance and social policies. Further, unionization reduces working poverty for both unionized and non-union households and does not appear to discourage employment. We conclude that American poverty research can advance by devoting greater attention to working poverty, and by incorporating insights from the comparative literature on institutions.

WHEN UNIONIZATION DISAPPEARS: STATE-LEVEL UNIONIZATION AND WORKING POVERTY IN THE U.S.

One of the distinctive qualities of American poverty research is the great deal of attention given to joblessness. Poverty scholars in the U.S. have studied the rise of poor African-American jobless neighborhoods (Quillian 2003), and how spatial mismatch worsens inner-city unemployment (Mouw 2000). Much has been written on joblessness among the inner-city poor (Tienda and Stier 1991), young African-American men (Holzer 2009), single mothers, and welfare recipients (Harris 1993). Building on this work, scholars have highlighted the adverse consequences of joblessness and jobless neighborhoods for adolescent development (Brooks-Gunn et al. 1993), marriage among fragile families (Harknett and McLanahan 2004), crime (Sampson 1987), and other social problems (Massey and Shibuya 1995). Scholars have also stressed the need to improve the labor market entry of disadvantaged youth (Blanchflower and Freeman 2000) and the need for job growth to reduce poverty (Blank 2009).

This considerable attention to joblessness has been partly inspired by Wilson's (1996) pioneering studies of concentrated inner-city poverty. Clearly, the extensive scholarship on joblessness has made far-reaching contributions to the social science of poverty, and of course, a job reduces the likelihood of poverty. However, by devoting so much attention to joblessness, the prevailing momentum in American poverty research has led to the impression that unemployment is the central problem. Inadvertently, the concentration on joblessness has cultivated the false perceptions that "most of the poor do not work" (Mead 1993: ix) and that employment is a sufficient solution to poverty.

The problem is that the working poor, not the unemployed poor, are the most typical poor (Blank 1997; Newman 1999). Blank and colleagues (2006) show that 61 percent of officially poor families in the U.S. contain a worker. Moreover, Brady and colleagues (2010) demonstrate

that in 2001, there were more than four times more poor Americans in working poor than unemployed poor households. While the unemployed poor averaged only 3.4 percent of the U.S. population from 1974 to 2004, the working poor averaged 10.4 percent.[1] Despite its prevalence, working poverty has been neglected compared to the voluminous literature on joblessness (Newman 1999; O'Connor 2001; Zuberi 2006).

Recently, a modest literature on U.S. working poverty has begun to emerge. However, the recent literature tends to concentrate on demographics and economic performance (e.g. Blank et al. 2006). For example, working poverty is more common in single mother and single-earner households, and among women, racial minorities, young adults, and the less educated (Blank et al. 2006; Iceland and Kim 2001). Among workers, poverty is less common among full-time, manufacturing, and public sector workers (Hauan et al. 2000; Kalleberg 2007). Research also demonstrates that working poverty follows the business cycle, declining with economic growth and rising with unemployment (Blank et al. 2006; Hall 2006).

Despite these findings, we know little about how institutions shape working poverty in the U.S. Specifically, unionization receives minimal attention in mainstream American poverty research and very little mention in most central texts in the field.[2] This is noteworthy, given the rich comparative literature documenting the role of political and labor market institutions for wages, inequality, and poverty. In countries with high unionization, inequality and poverty are lower and wages are higher. Similarly, U.S. states exhibit meaningful variation in institutions. Indeed, scholars have highlighted U.S. states as polities where struggles and settlements over distribution occur. Therefore, the comparative literature could be applicable to the U.S., and greater state-level unionization may reduce working poverty. The neglect of unionization in studies of working poverty is also unfortunate given the decline of unionization contributed to

increases in earnings inequality (Western and Rosenfeld 2011) and the precariousness of work (Kalleberg 2007). If these changes are associated with working poverty, the precipitous decline of unionization may have worsened working poverty. Yet, because there has been so little research on institutions and working poverty within the U.S., we do not know if unionization is salient nor do we know how unionization's influence compares to demographics and economic performance.

This article uses the Luxembourg Income Study (LIS) for the U.S. 1991-2010 to examine the effect of state-level unionization for individual working poverty. First, we estimate multi-level logit models of poverty among employed households in 2010. Second, we examine working poverty across 1991, 1994, 1997, 2000, 2004, 2007, and 2010 with two-way fixed effects for state and year. Further, we replicate the analyses using the Current Population Survey (2004-2010) while controlling for household unionization, and assess unionization's potential influence on selection into employment. Throughout, we also consider the effects of demographic characteristics, economic performance, and key social policies.

THEORETICAL BACKGROUND

The Case for Skepticism

Despite the benefits of unionization for workers, there are at least four reasons unionization might fail to reduce working poverty. First, unions are exceptionally weak in the contemporary U.S. Unionization has also declined in other affluent democracies, but the U.S. is distinctive for its unusually low levels, which are especially pronounced in some states.[3] Since the early 2000s, unionization has been about 3 percent in North Carolina – a level unprecedented in available data for affluent democracies (Hirsch and Macpherson 2003; Visser 2011). Further,

U.S. unionization has declined more rapidly among the less skilled, who are more vulnerable to working poverty (Blank 2009). This lower union density has plausibly weakened the position of and compromised the effectiveness of unions (Rosenfeld 2006; Wallace et al. 1999). Thus, unions might be simply too weak to affect working poverty.

Second, partly because of this weakness, there is much less variation in unionization across U.S. states than across affluent democracies. In 2010, the range between states (21.1 percent) was much smaller than between rich democracies (>50) (Visser 2011). As a result, Moller and colleagues (2009) find unionization does not have a cross-sectional effect on income inequality in U.S. counties. Because income inequality and poverty are related, studies of the U.S. might fail to show effects of unionization because, "the context of U.S. states provides for a rather conservative test of institutional hypotheses" (Moller et al. 2009: 1085).

Third, even if unions raise the earnings of some workers, these benefits might not reach the bottom of the labor market. Less-skilled, low-paid workers are very unlikely to be unionized or covered by union contracts. Unions and the regulations they establish might only create rents for protected insiders, and might exclude, have little impact upon, or even worsen the labor market for poor workers. Longstanding labor economic theory claims unions have a "crowding effect" where union wage gains lead to cuts in the quantity of union jobs (Kahn 1978; Neumark and Wachter 1995). Accordingly, crowding should increase the supply of non-union workers, which should depress wages for non-union workers and worsen working poverty.

Fourth, the literature implies the aforementioned demographics and economic performance are the dominant sources of working poverty (Blank et al. 2006). Even if unions benefit individual workers, because poverty is a household level variable, demographic characteristics like single parenthood could drown out any unionization effects. Similarly, Moller

and colleagues (2009) find demographics and economic development are more important than state-level institutions for income inequality in U.S. counties. If demographics and economic performance are the dominant influences on U.S. working poverty, unionization might only play a marginal or insignificant role.

The Case for Unionization

Despite these reasons for skepticism, we propose that state-level unionization reduces working poverty. This expectation is theoretically motivated by three literatures: a) comparative institutions; b) unionization and earnings; and c) U.S. states as polities.

First, the comparative institutions literature demonstrates that institutions and power relations between collective actors fundamentally shape inequalities (Brady and Leicht 2008). Institutions and power relations organize the distribution of resources, regulate risks, allocate opportunities and socialize normative expectations (Brady 2009; Tilly 1998). Institutions reduce the likelihood of poverty-inducing events and mitigate the consequences when such events occur (DiPrete 2002). Animating much of the comparative institutions literature is power resources theory (Brady 2009; Hicks 1999; Korpi 1983; Moller et al. 2003; Volscho and Kelly 2012). Power resources theory contends that class-based collective political actors shape the distribution of economic resources (Brady et al. 2009). To make the distribution more egalitarian, the working-class and poor must bond together, form organizations, and politically mobilize in elections and workplaces. While power resources theory has been traditionally used to explain welfare states, it offers a more general model of income distribution (Brady et al. 2009; Korpi 1983). Accordingly, the level of unionization in a state is an important labor market institution, indicating the power resources of labor relative to business and other collective actors.

Consistent with power resources theory, the comparative institutions literature shows that cross-national variation in earnings inequality can be explained by labor market institutions like corporatism and unionization (Blau and Kahn 2002; Koeniger et al. 2007; Kristal 2010). Scholars have also demonstrated that labor market institutions can explain cross-national differences in low-wage work (Doellgast et al. 2009; Gautie and Schmitt 2009), poverty (Brady 2009; Moller et al. 2003; Plasman and Rycx 2001), and working poverty specifically (Brady et al. 2010; Lohmann 2009; Zuberi 2006). Despite these contributions, the comparative literature's insights have rarely been applied to the study of U.S. poverty.

Second, an extensive economic and sociological literature shows unions raise wages (Freeman and Medoff 1984; Kalleberg et al. 1981). Cornfield and Fletcher (2001) estimate union members receive a 20 percent wage premium over similar non-union workers. Because wages are a large share of low-income households' economic resources, such wage advantages could lift many households out of poverty. The union-wage premium even applies to low-wage workers with less skill (Eren 2009) or less than a high school education (Maxwell 2007). Though the U.S. poverty literature neglects unionization, scholars of low-wage work have shown powerful effects of unions (Gautie and Schmitt 2009; Newman 1999; Zuberi 2006). The benefits of unionization have been documented for low-wage workers in hospitals (Applebaum et al. 2003), hotels (Bernhardt et al. 2003), call centers (Batt et al. 2003), casinos (Waddoups 2001), and temporary workers in automotive supplier firms, hospitals and public schools (Erickcek et al. 2003). These studies demonstrate how unions pressure management for higher wages, restrict the use of contingent workers whose presence would reduce wages, and regulate working conditions.

Although there are benefits to being a union member, the vast majority of workers near the poverty line are unlikely to be unionized. For state-level unionization to reduce working

poverty, it must have a contextual effect that spills over to non-union low-wage workers.[4] Indeed, the literature has found such spillover effects of unionization for non-union workers. For instance, Zuberi (2006) demonstrates how higher unionization in Vancouver versus Seattle contributes to a significantly better environment for even non-union service workers. The classic explanation – contrary to the aforementioned crowding effects – is that unionization poses a "threat" to non-unionized firms. In order to discourage unionization, proximate firms raise wages preemptively (Freeman and Medoff 1984; Leicht 1989). Leicht and colleagues (1993) demonstrate that the presence of unionization in interdependent industries raises the earnings of the non-union working class. Partly because unions establish contracts that cover non-union workers, unionization also benefits non-union workers, especially in the presence of high union density (Bernhardt et al. 2003; Neumark and Wachter 1995). Non-union firms in states with higher unionization may be forced to pay more, or else risk losing their workers to the better-paid union-firms. Further, unions influence the moral economy by cultivating norms of equity and advocating for the expectation of higher pay for all workers. Western and Rosenfeld (2011) argue that unions encourage labor market norms of equity: a) culturally, by disseminating egalitarian discourses; b) politically, by influencing policy; and c) institutionally, through rules governing labor markets. Accounting for the effect of unions on non-union wages, Western and Rosenfeld (2011) conclude that the decline of unionization in the U.S. explains one-fifth to one-third of the growth in earnings inequality since 1973. The decline of unionization has likely increased working poverty if these effects are not solely due to constraining the top of the earnings distribution.

Third, the comparative institutions and unionization-earnings literature are relevant here partly because of the literature on U.S. states as polities. In recent decades, social and economic

policies have increasingly devolved from the federal to state governments (Cancian and Danziger 2009; Zylan and Soule 2000). As a result, states have become more salient settings for the struggles and settlements over the distribution of resources (Moller 2008). Jenkins and colleagues (2006) contend that class forces and political institutions jointly shape policymaking and distribution in U.S. states in ways that steer states towards more or less egalitarian economic development strategies. Building on the comparative institutions literature, scholars in the states as polities literature highlight subnational variation (Moller et al. 2009). Therefore, even within and net of the policies of federal governments, states-level politics can be independently consequential to inequalities (Moller 2008; Wilkinson and Pickett 2009). States are often the settings where conflicts between business and labor play out in terms of regulating the institutional environment for unions (Jacobs and Dixon 2010; Tope and Jacobs 2009). Moreover, state-level unionization is a key manifestation of state labor movements and the power resources of labor relative to business (Hicks et al. 1978). Therefore, U.S. states are plausible, relevant contexts for the implications of the comparative institutions and unionization-earnings literatures.

Further Questions

If we observe significant negative effects of state-level of unionization for working poverty, four further questions should be addressed. First, given economic performance has been the focus of previous research on working poverty, do the effects of unionization at least rival those of economic performance? If not, one could argue that economic performance should be the paramount strategy to reduce working poverty, perhaps even if the pursuit of economic performance constrains unionization.

Second, does unionization reduce working poverty net of social policy? Any initial association between unionization and working poverty could owe to the fact that unions encourage generous social policies. An extensive literature identifies unionization as a power resource contributing to the expansion of generous social policies (Brady 2009; Hicks 1999; Korpi 1983). In their study of working poverty across 18 affluent democracies, Brady and colleagues (2010) find the initial negative effects of unionization attenuate when controlling for welfare state generosity. While still consistent with power resources theory, unionization might only be indirectly related to working poverty through social policies like Temporary Assistance to Needy Families (TANF) and unemployment insurance (UI).

Third, do the effects of state-level unionization hold net of household unionization and for non-union households? Any effect of state-level unionization could simply be a compositional effect of having more unionized workers in a state. Less clear is whether unionization also has a contextual effect that spills over into the broader workforce and benefits non-union workers. Therefore, it would be valuable to test if unionization reduces working poverty even after controlling for household unionization, and among non-union households.

Finally, is any effect of unionization biased by counterproductively discouraging employment? An alternative theory to power resources theory within the comparative institutions literature, unified theory, contends that unionization accomplishes lower inequality and poverty partly by removing less skilled workers from the workforce and reducing employment (Blau and Kahn 2002). If high levels of unionization raise wages and labor costs, there could be a rigidity tradeoff such that firms are unable or unwilling to employ greater numbers of marginal workers (Magnani and Prentice 2010). Thus, unionization could lead to less employment, despite higher wages and lower poverty among the employed (Walsworth 2010). Indeed, a classic concern has

been that unionization increases spells of unemployment for non-union workers (Kahn and Morimune 1977). Any negative effect of unionization on working poverty might be then biased by a selection effect of unionization on employment.

METHODS

Individual-Level Data

The Luxembourg Income Study (LIS) provides the micro-level data. The LIS is a cross-national archive of nationally representative individual-level datasets. For the U.S., the LIS uses the March Current Population Survey (CPS). The LIS cleans the data and creates a new set of standardized variables. The compelling advantage of the LIS over the underlying CPS is the high quality and significantly improved income measures that comprehensively incorporate taxes and transfers. We utilize the seven most recent waves of the LIS for the U.S.: 1991, 1994, 1997, 2000, 2004, 2007 and 2010. We begin with 1991 because it is the oldest LIS U.S. dataset with a large number of cases per state.[5]

The individual is the unit of analysis. The samples include all individuals in households led by working-aged adults (18-64 years). In sensitivity analyses, the results are consistent if the sample only contains employed adults. We include the 50 U.S. states and the District of Columbia, which is treated as a 51st state. Online Appendix I displays descriptive statistics and sources.

The dependent variable is *working poverty*. One is working poor if s/he resides in a household with less than 50% of the national median household income *and* at least one employed member (Brady et al. 2010; Lohmann 2009; Newman 1999). Thus, poverty is a household-level variable. A household pools its expenses and resources, so if the household is

poor, all members are poor. We calculate household income after taxes and transfers using the standardized LIS variable "DHI." DHI includes cash and noncash income after taxes and transfers (including food stamps, housing allowances, tax credits like the Earned Income Tax Credit [EITC], and near cash benefits). DHI is adjusted for household size by dividing by the square root of household members. The poverty threshold is calculated using all individuals regardless of age or employment in the same LIS year. The sample is reduced to employed households only *after* calculating the threshold.

This poverty measure follows the vast majority of international poverty studies (Brady 2009; Moller et al. 2003; Rainwater and Smeeding 2004). Though this measure is typically called "relative," we utilize the national median, not state-specific medians. Therefore, the threshold is the same in every state and is "absolutely" applied. In the 1991-2010 sample, we utilize the national median within each year, which is temporally relative. However, we also use a "constant" threshold based on the 2010 median adjusted for inflation (Chen and Corak 2008). While the relative measure may be less sensitive to the business cycle and economic development, the constant measure should be responsive. Altogether, the analyses consider a relative threshold applied absolutely across states, a threshold relative to the national median in each year, and a constant threshold based on the inflation adjusted 2010 national median.[6]

We elect to eschew the official U.S. measure of poverty because it has very serious validity and reliability problems (Blank 1997; Brady 2009; Rainwater and Smeeding 2004). Partly because it was established with little scientific basis ~50 years ago, the thresholds for the official measure are widely understood to be too low (i.e. below 40 percent of the median). The definition of income used in the official measure ignores taxes and tax credits, and inconsistently counts transfers. For example, social security pensions count as income in the official measure,

but food stamps, housing subsidies and childcare vouchers do not. Since the 1990s, the EITC has grown into the largest assistance program for families with children – much larger than Temporary Assistance to Needy Families (TANF). Yet, the official measure ignores the EITC. Therefore, over-time comparisons, especially for the working poor, are quite problematic. The official measure also neglects states' taxes and transfers, which further compounds reliability and validity problems. By contrast, the definition of income used here incorporates federal and state taxes and transfers. The LIS measure of income (DHI) includes a much more comprehensive set of income sources than is used in the official measure, which also makes it inappropriate to apply the official poverty threshold to the LIS measure of income.

Our definition of working poverty requires that at least one member of the household is employed. We measure *employment* (reference = no one employed) if there is at least one earner in the household. In sensitivity analyses, we define employment solely as full-time work and included part-time workers with the non-employed. The results are consistent.

Following previous research (e.g. Brady et al. 2010; Blank et al. 2006; Lohmann 2009; Rainwater and Smeeding 2004), we incorporate several demographic characteristics of the household. Using married/cohabiting couples as the reference, we include binary variables *single mother*, *single father*, *female head no children*, and *male head no children*. We measure the presence of the non-working-aged with the *# of children*, and binary variables for the presence of a *child under 5* and *over 65* year olds. We assess the household's labor market standing with the characteristics of the lead earner in the household (the person with the greatest earnings, with ties settled by age). Binary indicators for *less than high school* and *college degree or more* (reference = high school degree or some college) measure the lead's educational attainment. With White lead as the reference, we include dummies for *African-American*, *Latino*, and *other race*. We

control for the curvilinear relationship between the lead's age and working poverty with binary variables for *Under 25*, *25-34*, 35-44, and 55-64 (reference=45-54). Also, we include a binary variable for *multiple earners* in the household (reference = one earner). With private-sector full-time employed leads as the reference, we include dummies for *public sector*, and *part-time*. Finally, we include seven indicators for the lead's industry: *agriculture*, *construction*, *wholesale and retail trade*, *transportation*, *FIRE (finance, insurance and real estate)*, *administration*, and *other services* (reference = manufacturing).

State-Level Data

Unionization is the percent of civilian wage and salary employees aged 16 and over that are members of labor unions, measured in the same year (Hirsch and Macpherson 2003).[7] The effects of unionization include both compositional and contextual effects because the LIS does not identify whether respondents are union members. As discussed below, we evaluate this issue in a replication analysis.

For economic performance, we include three variables measured in the current year. *Gross domestic product per capita (GDP PC)* is in real 2010 dollars. *Economic growth* is the annual rate of change in a state's real gross domestic product (GDP). *Unemployment* rate is as a percent of the state's labor force. While GDP PC tracks long-term economic development, economic growth and unemployment assess the short-term business cycle. In addition, GDP PC captures the cost of living and affluence of a state. In additional analyses, we tested the state-level manufacturing share of employment. However, this variable is insignificant and strongly correlated with GDP PC.

Finally, we consider two measures of state policies measured in the current year. *TANF/AFDC maximum* is the maximum monthly benefit in real 2010 dollars for a family of

three for Temporary Assistance for Needy Families (TANF) in 1997-2010 and Aid to Families with Dependent Children (AFDC) in 1991 and 1994.[8] *UI maximum* is the maximum monthly benefit per worker in real 2010 dollars for unemployment insurance.

In sensitivity analyses, we considered two other commonly studied institutions. First, we tested the minimum wage rate (in real 2010 dollars). In 2010, the minimum wage rate correlates positively with unionization (r=.42), but is only weakly negatively associated with working poverty (r=-.19). Also, the minimum wage rate never has a significant effect on working poverty and its inclusion does not alter the unionization effect.[9] Second, we tested the Democratic control of state government measured as the average of the governor being a Democrat, and the proportion of the two houses of the legislature.[10] This variable is not correlated with working poverty, is never significant, and its inclusion does not alter the unionization effect.[11] Further, unionization and Democratic control are likely endogenous to each other (Western 1997). Therefore, we omit the minimum wage rate and Democratic control from the analyses.

Analytic Strategy

The analyses proceed in four stages. The first uses the 2010 LIS across the 51 states, and focuses on variation between states.[12] The second pools the seven LIS waves from 1991 to 2010, also across the 51 states. This stage focuses on over-time variation within states. Third, we replicate the analysis with the Current Population Survey for 2004-2010 (Integrated Public Use Microdata Series [IPUMS] King et al. 2010), while controlling for household unionization (details below). Fourth, we assess if unionization has an effect on employment or the presence of multiple earners, as this may lead to a selection bias (details below).

The first stage examines all individuals in households with at least one employed member and a working-aged lead. Individuals are nested in the 51 states. The clustering of individuals

within states and the inclusion of state-level variables violates the assumptions of the standard logistic regression model. In turn, we estimate multi-level logit models.[13] We estimate random intercept models, which can be expressed as two equations (Raudenbush and Bryk 2002). First, the log odds of working poverty (log (p_{ij}/1-p_{ij})) for the *i*th individual in the *j*th state is represented by eta (η_{ij}) and is a function of state intercepts (β_{0j}), and a set of individual-level fixed coefficients (βX_{ij}):

$$\log (p_{ij}/1-p_{ij}) = \eta_{ij} = \beta_{0j} + \beta X_{ij}$$

Second, each state intercept (β_{0j}) is estimated as a function of an intercept (γ_{00}), a set of state-level variables (γZ_j) and an error term (u_{0j}):

$$\beta_{0j} = \gamma_{00} + \gamma Z_j + u_{0j}$$

The multi-level logit models enable us to test the effects of state-level unionization net of individual/household characteristics and state-level economic performance.

The second stage analyzes the pooled sample of seven LIS waves 1991-2010 across the 51 states. Like the first stage, the sample includes individuals in households with an employed member and a working-aged lead. In this stage, however, individuals are nested in 357 state-years. We employ two-way fixed effects (FE) models by estimating logistic regression models with fixed effects for the 51 states and for the seven years. The log odds of working poverty (log (p_{ijt}/1-p_{ijt})) is represented by Y_{ijt} for individual *i*, in state *j*, and year *t*. Y_{ijt} is a function of a constant (β_0), individual-level characteristics ($\beta_X X_{ijt}$), state-level variables ($\beta_Z Z_{jt}$), state dummies ($\beta_S S_j$), and year dummies ($\beta_W W_t$):

$$\log (p_{ijt}/1-p_{ijt}) = Y_{ijt} = \beta_0 + \beta_X X_{ijt} + \beta_Z Z_{jt} + \beta_S S_j + \beta_W W_t$$

The state and year dummies correct the non-independence of observations within state and year. We also robust cluster the errors by state-year. The state dummies control for any stable

unobserved characteristics with stable effects. There are likely to be stable unobserved characteristics of states – for example, being in the South, right to work laws established prior to 1991, or even stable differences in cost of living – that are correlated with unionization and/or working poverty. Such unobserved characteristics could introduce omitted variable bias, and may account for a significant negative effect of unionization in the multi-level logit models. The state dummies difference out any such stable characteristics, and estimate the effect of unionization on within-state temporal variation in working poverty. The year dummies control for any generic change over time across states (e.g. the 1996 welfare reform).

RESULTS

Multi-Level Logit Models for 2010

Before the multivariate analyses, we describe the patterns in working poverty and unionization in 2010. Figure 1 shows there is a moderate negative correlation between a state's unionization and its rate of working poverty (r=-.39). Southern states Louisiana, Mississippi, and North Carolina have low unionization and high working poverty. By contrast, more unionized states like Alaska, Hawaii, and Washington have less working poverty. That said, even low unionization cannot account for the fact that nearly a fifth of those in employed households are poor in Mississippi and Texas. Also, states like New Hampshire and Wyoming have lower working poverty than would be expected from their moderate unionization. Finally, Figure 1 displays substantial interstate variation in both unionization and working poverty. Union density ranged from 24.3 percent in New York to 3.2 percent in North Carolina. In 2010, 11.3 percent of the employed household sample was poor. However, only 4 percent was working poor in New Hampshire while 19.6 percent was in Mississippi.

[FIGURE 1 ABOUT HERE]

Table 1 presents the multi-level logit models of working poverty. Standardized odds ratios are reported for state-level variables, and odds ratios are reported for individual-level variables.[14] Model 1 only includes the individual-level variables. Consistent with previous research and reflecting the large sample, most variables are significant. The largest positive effects are for less than high school, having an under-25 lead earner, and part-time employment. The largest negative effects are for college or higher and multiple earners. For example, in what is the largest effect at the individual- or state-level, having multiple earners in the household reduces the odds of working poverty by a factor of 5.1.

[TABLE 1 ABOUT HERE]

Model 2 adds state-level unionization, which is significantly negative. For a standard deviation increase in state-level unionization (5.8 percent), the odds of working poverty should decline by a factor of 1.13.

Model 3 adds the three economic performance variables. GDP PC is significantly negative, the unemployment rate is significantly positive, as is, surprisingly economic growth. For a standard deviation increase in GDP PC, the odds of working poverty decline by a factor of 1.06. For a standard deviation increase unemployment or economic growth, the odds of working poverty increase by factors of 1.11 or 1.14. Even with the economic performance controls, unionization remains significantly negative. Moreover, unionization's effect is robust in size, and slightly larger than the effects of GDP PC or unemployment. Economic growth has a comparable effect to unionization, and we discuss its counterintuitive positive effect further below.

Two-Way FE Models for 1991-2010

Figure 2 displays the bivariate associations between the 1991-2010 change in working poverty rates and the change in unionization across the 51 states. These are the differences in levels 1991-2010, which seem an appropriate comparison given the FE models analyze change within states over time. Both relative and constant working poverty declined from 1991 to 2010. 12.3 percent of the employed household sample was relatively poor in 1991 and 11.3 percent was in 2010. Further, constant working poverty declined from 15.9 percent in 1991 to 11.3 percent in 2010. This decline was likely driven by the reduction in lead earners without a high school degree (14.6 percent in 1991 sample to 10 percent in 2010), and the increase in leads with a college degree (25.3 percent in 1991 and 35.3 percent in 2010). Also beneficial were a decline in part-time employment and an increase in lead age. The expansion of the EITC certainly lifted many from working poverty as well. Therefore, a number of changes separate from declining unionization slightly reduced working poverty from 1991 to 2010.

The top panel of Figure 2 shows a modest negative correlation between the change in unionization and the change in relative working poverty (r=-.25). The bottom panel shows a slightly weaker negative correlation between the change in unionization and the change in constant working poverty (r=-.18). With both, working poverty declined substantially in California, South Carolina and Vermont while unionization remained stable or increased. Unionization declined substantially in Hawaii, Michigan and New Jersey, and working poverty increased or failed to decline. However, for both relative and constant working poverty, the correlation is much weaker than in Figure 1. For instance, unionization declined substantially in Indiana and Wisconsin even though working poverty declined in both. Thus, incorporating over-time variation reveals the relationship between unionization and working poverty might be less straightforward than in the cross-sectional analysis of 2010.

[FIGURE 2 ABOUT HERE]

Table 2 pools the seven LIS waves from 1991 to 2010 and uses two-way FE models to control for differences between states and generic trends over time. Though there is a significant cross-sectional association between unionization and working poverty in 2010, unobserved stable characteristics of states could explain the significant negative effects in Table 1. We show the effects of unionization with and without the state-level controls. Individual-level variables are included, but not shown. In addition to economic performance, multiple years of data and the two-way FE models enable us to control for two social policies (i.e. TANF/AFDC and UI maximum benefits). It is difficult to control for these policies in the 2010 models because these two are fairly highly correlated with each other and with state-level unionization.[15] Therefore, the two-way FE models better enable us to identify the unique effects of each variable.

[TABLE 2 ABOUT HERE]

Table 2 shows unionization has a significant negative effect before and after controlling for other state-level variables. Also, the effect is significantly negative for both the temporally relative and constant measures of poverty. We interpret the unionization effects with the full set of state-level controls. For a standard deviation increase in unionization, the odds of relative working poverty decline by a factor of 1.24. Thus, the effect is larger in the two-way FE models than in the 2010 models. This larger effect of unionization is mirrored in the constant poverty models. For a standard deviation increase in unionization, the odds of constant working poverty decline by a factor of 1.19.[16]

Two of the economic performance variables have robust significant effects. For a standard deviation increase in unemployment, relative or constant working poverty is expected to increase by a factor of 1.1. Similar to the 2010 models, economic growth has a counterintuitive

positive effect, which partially offsets the business cycle effect of unemployment. For a standard deviation increase in economic growth, the odds of constant or relative working poverty increase by a factor of 1.04. This finding is fairly robust in a variety of sensitivity tests as well.[17] Unlike in the 2010 models, GDP PC is insignificant for both relative and constant working poverty.

Both state policy variables are negatively signed for both dependent variables. However, only the TANF/AFDC maximum benefit has a significant effect, and only for constant working poverty. For a standard deviation increase in the TANF/AFDC maximum, the odds of constant working poverty decline by a factor of 1.09. Thus, constant working poverty has not declined as quickly as it could have because the average TANF/AFDC maximum declined over time.[18]

Though economic performance and policies are relevant, unionization has larger effects than all other state-level variables. Recall unionization has standardized inverse odds ratios of 1.24-1.19. By contrast, the other state-level variables have odds ratios at or below an absolute value of 1.1. Furthermore, the effects of unionization only modestly attenuate when we control for other state-level variables. The standardized odds for unionization decline from .780 to .805 or .820 to .844. This demonstrates that most of unionization's effects are not mediated by the two policy variables – especially as the policy variables are not robustly significant.

To illustrate the effects of unionization, Figure 3 displays a set of counterfactual simulations for relative and constant poverty. For reference, we show the standardized odds from Table 2 at the bottom of Figure 3. We also compare the unionization effects to the effects of the individual-level variables (not shown).

[FIGURE 3 ABOUT HERE]

The mean unionization across states was 14.95 in 1991 and 11.02 in 2010. Figure 3 shows that if unionization remained at 1991 levels in the typical state in 2010, the odds of

relative working poverty would decline by a factor of 1.16. Conversely, and net of all individual- and state-level controls, declining unionization from 1991 to 2010 increased the odds of working poverty by a factor of 1.16-1.12. This effect is comparable to the negative effect of the lead being 25-34 years old or 55-64, instead of 45-54. For the average individual, the mean state-level unionization was 13.5 in 1991-2010. If the mean rose to the maximum (New York in 1991), the odds of working poverty would decline by a factor of 1.8-1.59. This effect is larger than effects of being a single mother household or having an African American lead. If the minimum (North Carolina in 2004) rose to the mean, the odds would decline by 1.48-1.36. This effect is larger than the effects of an additional child or a public sector lead. Finally, if the minimum (North Carolina in 2004) rose to the maximum (New York in 1991), the odds would decline by a factor of 2.7-2.2. This effect is larger than most individual-level variables, and close to the effect of the lead not having a high school degree. The only larger effects are having a college degree (-), a part-time lead (+), and multiple earners in the household (-).

In sum, state-level unionization has a larger effect than economic performance and social policies. On balance, the individual-level effects of education, part-time employment, and having multiple earners are arguably the most important predictors of working poverty. Still, the effects of unionization rival most other individual-level characteristics.

Replication Analysis of U.S. Current Population Survey 2004-2010

Above, we asked whether the effects of state-level unionization hold net of household unionization and for non-union households. Unfortunately, the LIS lacks information on union membership. However, the U.S. LIS data is based on the Current Population Survey, which contains data on union membership. As noted above, the principal advantage of the LIS is the improved measure of household income. We are only able to approximate the LIS income

measures for the years 2004, 2007 and 2010 because the IPUMS CPS only began to provide data on tax credits (especially the EITC) in 2004. Therefore, this replication with the CPS is forced to rely on the 2004, 2007 and 2010 data (individuals nested in 153 state-years).[19] In addition, the CPS only asks the union membership question for one-fourth of the sample (the two outgoing rotation groups). As a result, the CPS samples are much smaller than the LIS samples.

Table 3 includes all individual- and state-level variables included in the LIS models. For purposes of comparison, we first show the LIS results for 2004-2010. In this subsample of years, state-level unionization continues to have a significant negative effect for relative and constant working poverty. Indeed, the effects are slightly larger in 2004-2010 than in 1991-2010.

[TABLE 3 ABOUT HERE]

We then replicate the same models using the CPS. In the CPS models, the effects of state-level unionization are even larger than in the LIS models. For example, the standardized odds for relative is .77 with the CPS (.80 with LIS), and for constant is .72 with the CPS (.81 with LIS). Next, we estimate the effect of state-level unionization while controlling for whether the household has a union member. Unsurprisingly, household unionization has a large significant negative effect. Being in a union household reduces the odds of working poverty by a factor of about 1.9 for relative and constant working poverty. Still, the effects of state-level unionization remain significant and only attenuate a very small amount when we control for household unionization. The standardized odds ratio for state-level unionization is .774 versus .77 using the relative measure, and .727 versus .722 using the constant measure, with the household control.

Then, we drop the unionized households from the sample and estimate the effect of state-level unionization on non-union employed households. After dropping union households, state-level unionization actually has the largest effects of any models in Table 3. For a standard

deviation increase in state-level unionization, relative working poverty in non-union households is expected to decline by a factor of 1.3. Similarly, constant working poverty in non-union households is expected to decline by a factor of 1.4.

Altogether, Table 3 confirms state-level unionization has a contextual effect on the broader workforce that is not simply a compositional effect. The negative effects on working poverty are not confined to unionized workers. Moreover, the benefits of household union membership shown with the CPS do not undermine the salience of state-level unionization. Rather, household union membership represents an additional and complementary way in which unionization reduces working poverty.

Selection Into Employment and Multiple Earners

Because our samples only contain employed households, the effects of unionization on working poverty might conceal a selection effect into employment. If unionization discourages employment, the remaining sample of employed households could be selectively less likely to be poor. The large effect of multiple earners also makes it is worth considering if state-level unionization discourages households from having multiple earners. In both cases, if unionization discourages employment, unionization might counterproductively undercut its equalizing effects on working poverty. Table 4 summarizes analyses predicting employment (among all working-age households) and multiple earners (among employed households). The analyses parallel the multi-level logit models of 2010 and two-way FE models of 1991-2010. Further, the analyses show the effects of unionization without and with state-level controls.

[TABLE 4 ABOUT HERE]

Table 4 shows unionization does not significantly reduce employment. In 2010, it is not remotely significant. In the 1991-2010 pooled sample, it is actually nearly significantly positive.

Thus, there is no evidence of a selection effect such that unionization reduces working poverty by discouraging employment.

Table 4 also shows unionization does not significantly reduce the odds that an employed household contains multiple earners. Indeed, in 2010, unionization is significantly positively associated with multiple earners. This implies unionization might reduce working poverty even further by encouraging this poverty-reducing household characteristic. That said, unionization is not significant in the two-way FE models, so the more cautious interpretation is that it has no effect on multiple earners.

DISCUSSION

American poverty research has devoted far more attention to joblessness than working poverty. This is unfortunate given the working poor are a much larger population than the unemployed poor, because employment does not guarantee an escape from poverty, and because the working poor arguably represent the most typical poor household. This study examines working poverty across the U.S. states from 1991 to 2010 and state-level data on unionization and other factors. Our study utilizes several analytic strategies and exploits variation between states and within states over time. We examine both a relative and a constant measure of poverty. In addition to unionization, we consider demographics, economic performance, and social policies. Further, we examine the effects of state-level unionization net of household union membership and for non-union households, and scrutinize selection into employment. We ultimately demonstrate that state-level unionization is a key institution shaping working poverty. Indeed, unionization is the most important state-level influence on individual working poverty.

We find a similar demographic profile for working poverty as previous research. Most important are if the lead earner lacks a high school degree, has a college degree, or is employed part-time, and whether the household contains multiple earners.

Beyond individual characteristics, economic performance influences working poverty. Though GDP PC fails to have a robust effect, working poverty increases when unemployment and economic growth increase. The effects of growth are counterintuitive as working poverty should decline with economic expansion. It should be noted these effects are fairly robust for both relative and constant measures of poverty (see endnote 17). Plausibly, growth exhibits a positive effect because short-term economic expansions in the 1990s and 2000s mainly occurred through rising affluence for the top shares of the income distribution and stagnation or decline for the bottom half (Blank 2009). Also, recent economic expansions – for example, the post-2001 period – that have featured rising productivity and growth without significant declines in unemployment (Freeman and Rodgers 2005) were less effective at reducing working poverty. Therefore, the positive effects of growth may be partly a byproduct of the period studied. Still, unemployment appears to be the more important aspect of the business cycle.

State-level social policies also matter to working poverty. Though UI maximum benefits are not significant, constant working poverty is lower in states with higher TANF/AFDC maximum benefits. As social policy is also a key feature of a state's institutional context, these effects can be viewed as supportive of institutional explanations of inequality (Brady 2009; Brady et al. 2009; Korpi 1983; Lohmann 2009; Moller et al. 2003).

Despite the relevance of policies and economic performance, unionization has the largest effect of the state-level variables. In the two-way FE models, a standard deviation increase in unionization reduces the odds of working poverty by a factor of 1.24-1.19. The effects of state-

level unionization are robust even controlling for household unionization or dropping union households from the sample. In addition, the effects of unionization on poverty among the employed are not biased by a selection effect on employment or multiple earners. Finally, the effects of unionization are actually larger and even more significant when we control for unobserved state characteristics and generic temporal change in two-way FE models.

We proposed that our study could build on three literatures, and our findings reinforce those literatures. Consistent with the unionization-earnings literature, and despite plausible reasons for skepticism, we show that unions clearly benefit working poor households. Consistent with the states as polities literature, U.S. states are salient settings for struggles and settlements over the distribution of resources. The relative power of collective actors in states and the institutions they enact matter net of nation-wide trends, and may become even more consequential with increasing devolution. Consistent with the comparative institutions literature, we affirm that institutions and power relations between collective actors are fundamental causes of inequalities (Brady et al. 2009). More specifically, we endorse a broad version of power resources theory, which contends that unionization matters to distribution independently of social policy (Brady 2009; Korpi 1983; Volscho and Kelly 2012).

There are a number of plausible reasons why state-level unionization reduces working poverty. Unions organize the distribution of resources by raising wages and benefits, and regulate risks by enforcing safety regulations and increasing job security. They also allocate opportunities by expanding and protecting quality employment (e.g. in the public sector), and socialize normative expectations by encouraging equity.[20] Unions reduce the likelihood of poverty-inducing events like downward job mobility, pay cuts, and injuries. Further, unions mitigate the consequences when such events occur by elevating the pay of other household

members and by insuring against loss through the cumulative advantages of better pay before such events. Though we control for maximum AFDC/TANF and UI benefits, unionization likely also increases other forms of public benefits.

Beyond such unobserved theoretical mechanisms, Table 5 provides some concrete empirical evidence on how unionization reduces working poverty. To do so, we examined the effects of state-level unionization on the two principal components of household income among employed households: labor income and state transfers (in real 2010 dollars).[21] Specifically, we show the separate effects of unionization for the bottom and top halves of the income distribution as the bottom half is the group "at risk" of working poverty. Table 5 shows unionization significantly increases labor income and state transfers in the bottom half of the distribution. However, unionization is insignificant for both outcomes in the top half of the distribution. Therefore, unionization lifts households out of working poverty by raising the earnings and transfers of households in the bottom half of the distribution while having no effect on earnings and transfers in the top half of the distribution.

[TABLE 5 ABOUT HERE]

A reasonable question is whether unionization benefits all segments of the working poor. Unionization might only benefit traditionally unionized or protected insiders like men, Whites, and public sector or manufacturing workers. Such groups are already less likely to be working poor, and thus, unionization might fail to benefit certain disadvantaged groups. Online Appendix III summarizes analyses of the effects of overall state-level unionization decomposed by demographic groups and industries/sectors. We find unionization significantly reduces working poverty among adult women and men, and among households with low-educated, African-American and Latino lead earners. However, unionization's effect for single mother households

is only significant for constant working poverty. Unionization also significantly reduces working poverty among households where the lead is employed in the private, public (relative: $p<.10$, constant: $p<.05$), manufacturing, and non-manufacturing sectors.[22] Ultimately, unionization appears to reduce working poverty for a broad variety of demographic groups and sectors.

From 1991 to 2010, working poverty declined modestly in the average state and in the U.S. (see Figure 2). This decline is perhaps surprising given earnings inequality grew substantially over this period. As mentioned above, the decline was most likely driven by increased education and the expansion of the EITC. Because the decline in working poverty coincided with declining unionization, one could conclude that declining unionization was not particularly problematic for working poverty. A more appropriate interpretation however is that working poverty would have declined much more rapidly if unionization had remained stable or increased. Our counterfactual comparisons (see Figure 3) suggest the decline in unionization increased working poverty. Net of all individual- and state-level controls, declining unionization from 1991 to 2010 increased the odds of working poverty by a factor of 1.16-1.12. Therefore, the decline of unionization hindered the decline in working poverty.

Our results suggest several policy implications. First, institutions and laws affecting unionization also effectively are social policies for working poverty (Newman 1999). A political-institutional environment discouraging unionization is thus likely to worsen working poverty. Scholars have shown that legal permissiveness to employer opposition, cumbersome union election rules, and broader political-economic changes present barriers to labor mobilization (Cornfield and Fletcher 2001; Jacobs and Dixon 2010; Tope and Jacobs 2009; Western 1997). Our study implies that such factors have under the surface increased working poverty. Second, there have been a series of recent political efforts to weaken public-sector unionization. Though

these efforts are often justified in terms of economic competitiveness and fiscal necessity, our results suggest they may be counterproductive. If any economic or job growth actually occurs because of deunionization, the job growth is more likely to be in low wage work. Even if deunionization reduces public sector costs, the resulting greater working poverty may lower tax revenue as well. Third, because unionization is more salient than economic performance, states will be much less effective in reducing working poverty if they prioritize economic development over, or by undercutting, unionization.

In addition to the points raised above, future research can extend the present study in several ways. First, because American poverty research has devoted so much more attention to joblessness, there is certainly a need for further research on working poverty. Second, scholars can utilize this research design to examine variation in working poverty across other spatial units like cities and counties. Third, given the differences in working poverty across industries (see Table 1), and because unionization scholars often study industries, it would be valuable to more deeply interrogate industry differences and industries within regions and states. While appendices III and IV show initial analyses across broad sectors, more fine-grained comparisons would be useful.

We conclude by underlining one final implication of this study. Most of American poverty research continues to concentrate solely on the U.S. In turn, the field has evolved rather separately and without a full dialogue with international poverty research. One consequence is that American poverty research has tended to neglect the institutions that have been widely studied in the comparative literature. Instead, American poverty research has tended to focus on joblessness, and economic performance as the key contextual factor shaping poverty. By embracing the comparative literature on institutions and power resources, this study shows the

applicability of recent international poverty research and demonstrates the salience of political and labor market institutions. Even while studying the U.S., poverty scholars can learn much from international research on labor markets, inequality and poverty. Whereas we show institutions shape working poverty, scholars should explore how other, more well-studied aspects of America's very high poverty – single mother poverty, jobless poverty, concentrated inner city poverty – are also shaped by institutions and power relations between collective actors.

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Table 1. Multi-Level Logit Models of Working Poverty on Individual- and State-Level Variables in 51 States in 2010 (N=162,564): Standardized Odds Ratios for State-Level Variables and Odds Ratios for Individual-Level Variables (Z-Scores).

	Model 1	***Model 2***	***Model 3***
Unionization		.882**	.892**
		(-2.78)	(-3.05)
GDP PC			.940*
			(-2.16)
Economic Growth			1.142***
			(4.20)
Unemployment			1.109**
			(2.80)
Single Mother	2.095***	2.095***	2.096***
	(28.71)	(28.71)	(28.73)
Single Father	1.371***	1.371***	1.373***
	(8.14)	(8.15)	(8.20)
Female Head No Children	1.773***	1.774***	1.776***
	(14.46)	(14.46)	(14.50)
Male Head No Children	1.511***	1.511***	1.513***
	(10.09)	(10.10)	(10.13)
# of Children in HH	1.351***	1.351***	1.351***
	(36.55)	(36.56)	(36.56)
Child Under 5	1.375***	1.375***	1.375***
	(13.41)	(13.40)	(13.41)
Over 65 in HH	.631***	.631***	.631***
	(-11.04)	(-11.03)	(-11.04)
Less Than H.S.	2.844***	2.843***	2.843***
	(41.01)	(41.00)	(41.00)
College or More	.305***	.305***	.305***
	(-39.23)	(-39.24)	(-39.26)
African-American	1.657***	1.654***	1.655***
	(16.55)	(16.51)	(16.52)
Latino	2.036***	2.035***	2.033***
	(27.33)	(27.33)	(27.30)
Other Race	1.771***	1.775***	1.783***
	(15.93)	(16.02)	(16.18)
Under 25	2.722***	2.721***	2.724***
	(26.25)	(26.24)	(26.27)

Table 1 Continued…

25-34	1.029	1.029	1.029
	(1.00)	(.98)	(.99)
35-44	.824***	.824***	.824***
	(-7.04)	(-7.04)	(-7.04)
55-64	.800***	.800***	.800***
	(-5.91)	(-5.91)	(-5.91)
Multiple Earners	.198***	.198***	.198***
	(-79.56)	(-79.55)	(-79.54)
Public Sector	.640***	.639***	.640***
	(-11.88)	(-11.90)	(-11.86)
Part-Time	4.831***	4.832***	4.830***
	(77.46)	(77.47)	(77.45)
Agriculture	1.289***	1.289***	1.290***
	(3.70)	(3.69)	(3.71)
Construction	.969	.969	.970
	(-.82)	(-.82)	(-.79)
Wholesale & Retail Trade	1.614***	1.614***	1.615***
	(16.07)	(16.08)	(16.11)
Transportation	.750***	.750***	.751***
	(-5.77)	(-5.75)	(-5.74)
FIRE	1.112**	1.112**	1.113**
	(2.92)	(2.93)	(2.95)
Administration	1.101**	1.102**	1.102**
	(2.80)	(2.82)	(2.84)
Other Services	1.758***	1.758***	1.759***
	(13.43)	(13.43)	(13.45)

*** p< .001 ** p< .01 * p< .05

Notes: Constants not shown. References: Married Couple, H.S. degree/Some College, White, No Child Under 5, Lead Earner 45-54, No Over 65 Member, Single-Earner HH, Private, Full-Time, and Manufacturing Sector. Odds ratios between .999 and 1.0 rounded to .999, and odds between 1.0 and 1.001 rounded to 1.001.

Table 2. Two-Way Fixed Effects Logit Model of Working Poverty on Individual- and State-Level Variables in 51 States 1991-2010 (N=957,105): Standardized Odds Ratios and (Z-Scores).

	Relative		***Constant***	
	Model 1	***Model 2***	***Model 3***	***Model 4***
Unionization	.780***	.805***	.820***	.844***
	(-4.61)	(-4.46)	(-3.76)	(-3.67)
GDP PC		1.017		1.017
		(.33)		(.36)
Economic Growth		1.042**		1.041**
		(3.04)		(2.90)
Unemployment Rate		1.095***		1.099***
		(4.09)		(4.26)
TANF/AFDC Maximum		.921		.917*
		(-1.85)		(-2.23)
UI Maximum		.960		.960
		(-1.68)		(-1.71)

*** p< .001 ** p< .01 * p< .05

Notes: Constants not shown. All models control for individual-level variables in Table 1 and fixed effects for state and year (not shown).

Table 3. Replication Analysis of LIS and Current Population Survey in 51 States 2004-2010, Controlling for or Omitting Unionized Households: Standardized Odds Ratios for State-Level Unionization and Odds Ratios for Unionized HH and (Z-Scores).

	LIS Relative	***CPS Relative***			***LIS Constant***	***CPS Constant***		
State-Level Unionization	.804** (-2.69)	.770* (-2.46)	.774* (-2.43)	.748** (-2.64)	.809** (-2.67)	.722** (-3.00)	.727** (-2.97)	.698** (-3.20)
Unionized HH			.517*** (-4.92)				.515*** (-4.86)	
Sample	Employed	Employed		Non-Union Employed	Employed	Employed		Non-Union Employed
N	505,486	129,692		116,219	505,486	129,692		116,219

*** p< .001 ** p< .01 * p< .05

Notes: All models control for individual-level and state-level variables included in Table 2 models 2 and 4 (not shown).

Table 4. Selection Models of Employment and Multiple Earners on Individual- and State-Level Variables in 51 States: Odds Ratios and (Z-scores).

	Multi-Level Logit of Employment in 2010		***Two-Way Fixed Effects Logit of Employment 1991-2010***		***Multi-Level Logit of Multiple Earners in 2010***		***Two-Way Fixed Effects Logit of Multiple Earners 1991-2010***	
Unionization	.999	1.003	1.020	1.020	1.015*	1.019**	.996	.995
	(-.06)	(.32)	(1.62)	(1.67)	(2.02)	(3.29)	(-.60)	(-.83)
Economic Growth		.991		1.005		.988		.996
		(-.41)		(.81)		(-.76)		(-1.22)
GDP PC		1.001		1.001		1.001		.999
		(1.08)		(.03)		(1.20)		(-.42)
Unemployment		.925***		.954**		.910***		.974**
		(-3.63)		(-3.29)		(-5.99)		(-3.29)
TANF/AFDC Maximum				.999***				.999
				(-4.05)				(-1.94)
UI Maximum				1.001				1.001*
				(1.13)				(2.16)
N	181,550		1,050,340		141,842		830,430	

*** p< .001 ** p< .01 * p< .05

Notes: The samples for the employment models are HHs headed by working-aged adults. The samples for the multiple earners models are employed HHs headed by working-aged adults with multiple working aged-adults present. The models for multiple earners contain the individual-level variables from Table 1 (and the two-way FEs). By definition, the models for employment omit multiple earners, part-time employment, and the industry dummies (because the LIS data only contains information on current employment). Because of very limited variation, we also omit over 65 in HH from the employment models. Odds ratios between .999 and 1.0 rounded to .999, and odds between 1.0 and 1.001 rounded to 1.001.

Table 5. Two-Way Fixed Effects OLS Models of Household Labor Income, Household State Transfers and Household Tax Rate on Individual- and State-Level Variables in 51 States 1991-2010: Coefficients and (T-Scores).

Dependent Variable	***Unionization Coefficient***
Below Median Equivalized Income (N=433,224)	
Real HH Labor Income in 2010 dollars (equivalized)	89.608***
	(7.47)
Real HH Transfers in 2010 dollars (equivalized)	233.865***
	(15.15)
At/Above Median Equivalized Income (N=523,881)	
Real HH Labor Income in 2010 Dollars (logged & equivalized)	-.001
	(-1.35)
Real HH Transfers in 2010 Dollars (logged & equivalized)	.0003
	(.22)

*** p< .001 ** p< .01 * p< .05

Notes: Each cell represents a separate model. All models control for individual-level variables in Table 1, state-level variables in Table 2, and fixed effects for state and year (not shown). The dependent variables are not logged in the below median samples as the unlogged versions are not skewed.

Online Appendix I. Descriptive Statistics and Sources for Tables 1, 2 and 4 and Online Appendix II: Means and Standard Deviations in Parentheses.

	2010	***1991-2010***	***Sources***
Relative Poverty	.113 (.317)	.116 (.321)	LIS http://www.lisdatacenter.org/
Constant Poverty	--	.125 (.331)	LIS
Unionization	11.980 (5.762)	13.486 (6.422)	Hirsch and Macpherson (2011) http://www.unionstats.com/
GDP PC	48464.03 (15117.40)	43479.48 (13696.04)	BEA http://www.bea.gov/regional/index.htm
Economic Growth	3.000 (1.836)	3.066 (2.661)	BEA http://www.bea.gov/regional/index.htm
Unemployment Rate	9.145 (.2.106)	5.969 (2.152)	BLS http://www.bls.gov/lau/tables.htm
TANF/AFDC Maximum	--	534.874 (214.005)	House of Representatives http://www.gpoaccess.gov/wmprints/green/index.html; Urban Institute http://anfdata.urban.org/wrd/WRDWelcome.cfm
UI Maximum	--	392.067 (85.639)	DOL http://www.ows.doleta.gov/unemploy/statelaws.asp
Single Mom HH	.105 (.306)	.093 (.291)	LIS
Single Dad HH	.046 (.209)	.042 (.200)	LIS
Female Head No Kid HH	.070 (.255)	.068 (.252)	LIS
Male Head No Kid HH	.069 (.253)	.069 (.253)	LIS
# of Children in HH	1.443 (1.350)	1.428 (1.357)	LIS
Child Under 5	.276 (.447)	.275 (.446)	LIS
Over 65 in HH	.070 (.254)	.064 (.244)	LIS
Less Than H.S.	.100 (.300)	.119 (.323)	LIS
College or More	.353 (.478)	.306 (.461)	LIS
African-American	.103 (.305)	.097 (.296)	LIS
Latino	.181 (.385)	.163 (.369)	LIS
Other Race	.091 (.288)	.067 (.249)	LIS
Under 25	.047 (.211)	.058 (.233)	LIS

Online Appendix I continued…

25-34	.219	.241	LIS
	(.413)	(.428)	
35-44	.317	.338	LIS
	(.465)	(.473)	
55-64	.140	.110	LIS
	(.347)	(.313)	
Multiple	.668	.694	LIS
Earners	(.471)	(.461)	
Public Sector	.159	.160	LIS
	(.366)	(.366)	
Part-Time	.180	.192	LIS
	(.384)	(.395)	
Agriculture	.017	.021	LIS
	(.128)	(.142)	
Construction	.080	.083	LIS
	(.271)	(.276)	
Wholesale &	.173	.157	LIS
Retail Trade	(.379)	(.363)	
Transportation	.058	.064	LIS
	(.234)	(.245)	
FIRE	.146	.132	LIS
	(.354)	(.339)	
Administration	.258	.231	LIS
	(.437)	(.421)	
Other Services	.056	.048	LIS
	(.230)	(.213)	
			LIS
	162,564	957,105	

Online Appendix II: Sensitivity Analyses of Unionization Effects with Poverty Defined at Various Percents of Median: Two-Way Fixed Effects Logit Models in 51 States 1991-2010 (N=957,105).

Poverty Line	***Unionization Odds Ratios & Z-Scores***	
% of Median	***Relative***	***Constant***
10%	.954	.946
	(-1.61)	(-1.92)
20%	.973	.963
	(-1.32)	(-1.84)
30%	.981	.973*
	(-1.55)	(-2.32)
40%	.983	.977**
	(-1.85)	(-2.60)
60%	.976 ***	.978**
	(-3.50)	(-3.12)
70%	.978 **	.977**
	(-3.47)	(-3.35)
80%	.969 ***	.972***
	(-4.91)	(-4.44)
90%	.970 ***	.973***
	(-4.96)	(-4.14)

*** p< .001 ** p< .01 * p< .05

Notes: Each cell represents a separate model. All models control for individual- and state-level variables in Table 2 (models 2 and 4) and fixed effects for state and year (not shown).

Online Appendix III. Decomposition of State-Level Unionization Effects by Demographic Groups and Sectors: Two-Way Fixed Effects Logit Models in 51 States 1991-2010.

	Unionization Odds Ratios & Z-Scores		***N***
Demographic Groups	***Relative***	***Constant***	
Adult Female Individuals	.960***	.967***	323,963
	(-5.04)	(-4.25)	
Adult Male Individuals	.963***	.972**	311,675
	(-4.35)	(-3.43)	
Single Mother HHs	.976	.967*	89,113
	(-1.48)	(-2.03)	
Low-Educated Lead HHs	.937***	.944***	113,603
	(-3.98)	(-3.48)	
African-American Lead HHs	.950**	.935***	92,548
	(-2.58)	(-3.74)	
Latino Lead HHs	.939***	.943***	155,779
	(-4.03)	(-3.65)	
Industries			
Private Sector	.965***	.975**	804,440
	(-4.12)	(-3.14)	
Public Sector	.955	.942*	154,105
	(-1.82)	(-2.47)	
Private Non-Manufacturing	.968***	.977**	356,723
	(-3.93)	(-2.81)	
Private Manufacturing	.959*	.961*	200,416
	(-2.36)	(-2.36)	

*** p< .001 ** p< .01 * p< .05

Notes: Each cell represents a separate model. All models control for individual- and state-level variables in Table 2 (models 2 and 4) and fixed effects for state and year (not shown), with the exception that some control variables are omitted by definition in some models (e.g. the sample of single mother households omits the controls for other family structures).

Online Appendix IV. Decomposition of Sector-Specific State-Level Unionization Effects and Sector-Specific Samples: Two-Way Fixed Effects Logit Models in 51 States 1991-2010.

	Sector-Specific Unionization Odds Ratios & Z-Scores		***N***
	Relative	***Constant***	
Private Sector	.963***	.972**	804,440
	(-4.21)	(-3.23)	
Public Sector	.995	.998	154,105
	(-.53)	(-.19)	
Private Non-Manufacturing	.977	.984	356,723
	(-1.70)	(-1.23)	
Private Manufacturing	.978**	.980**	87,262
	(-3.14)	(-3.27)	

*** p< .001 ** p< .01 * p< .05

Notes: Each cell represents a separate model. All models control for individual- and state-level variables in Table 2 (models 2 and 4) and fixed effects for state and year (not shown), with the exception that some control variables are omitted by definition in some models (e.g. the sample of manufacturing leads omits the controls for other industries)

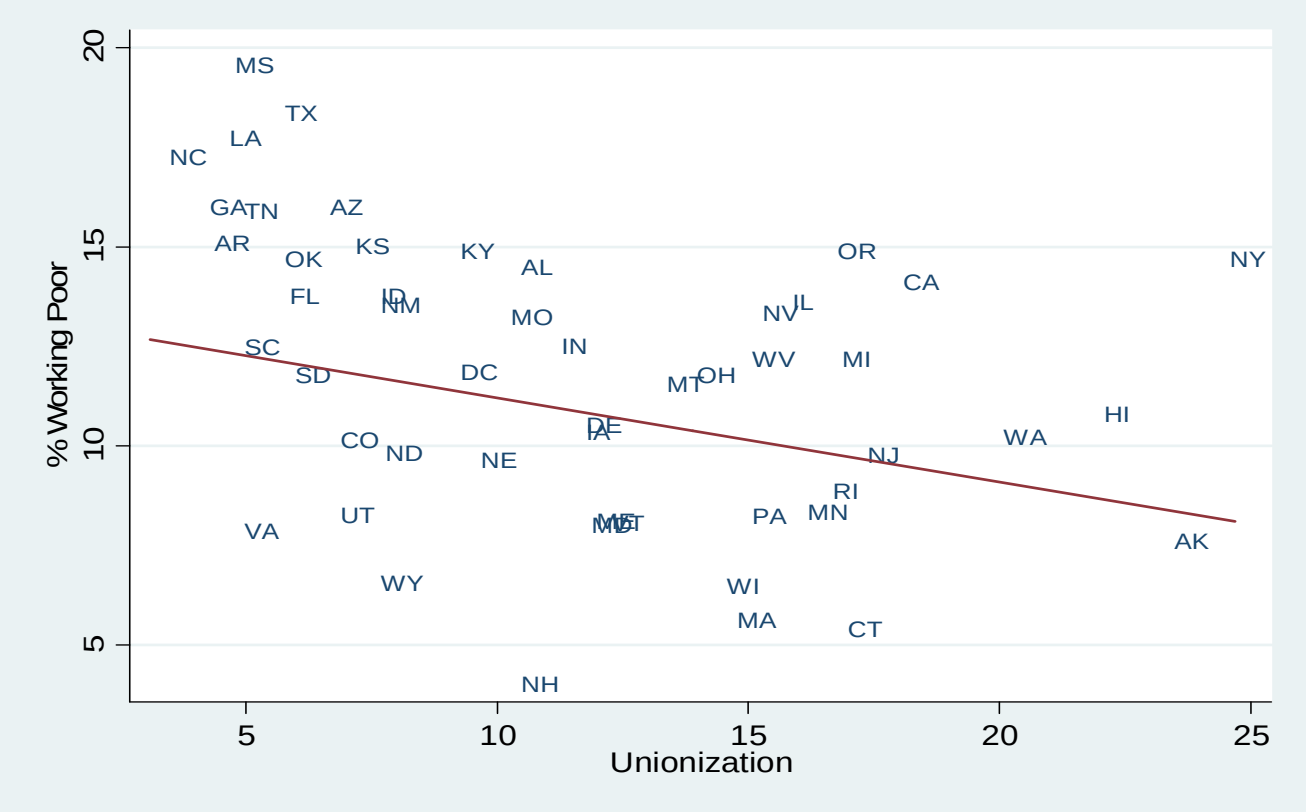

Figure 1. Bivariate Association Between Working Poverty Rate and Unionization Across 51 States (r=-.39)

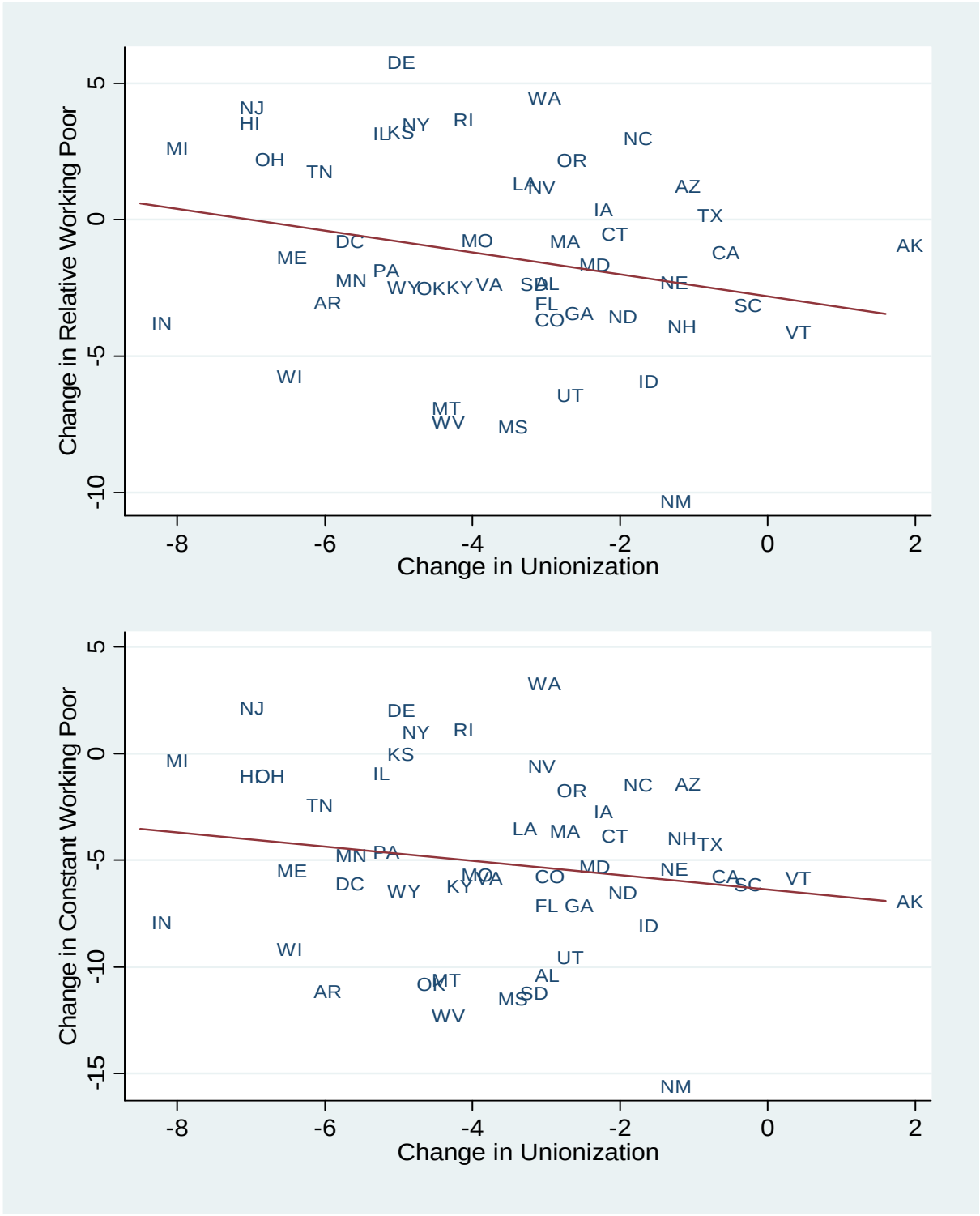

Figure 2. Bivariate Associations Between 1991-2010 Change in Working Poverty Rates and 1991-2010 Change in Unionization Across 51 States: Top Panel Relative (r=-.25), Bottom Panel Constant (r=-.18).

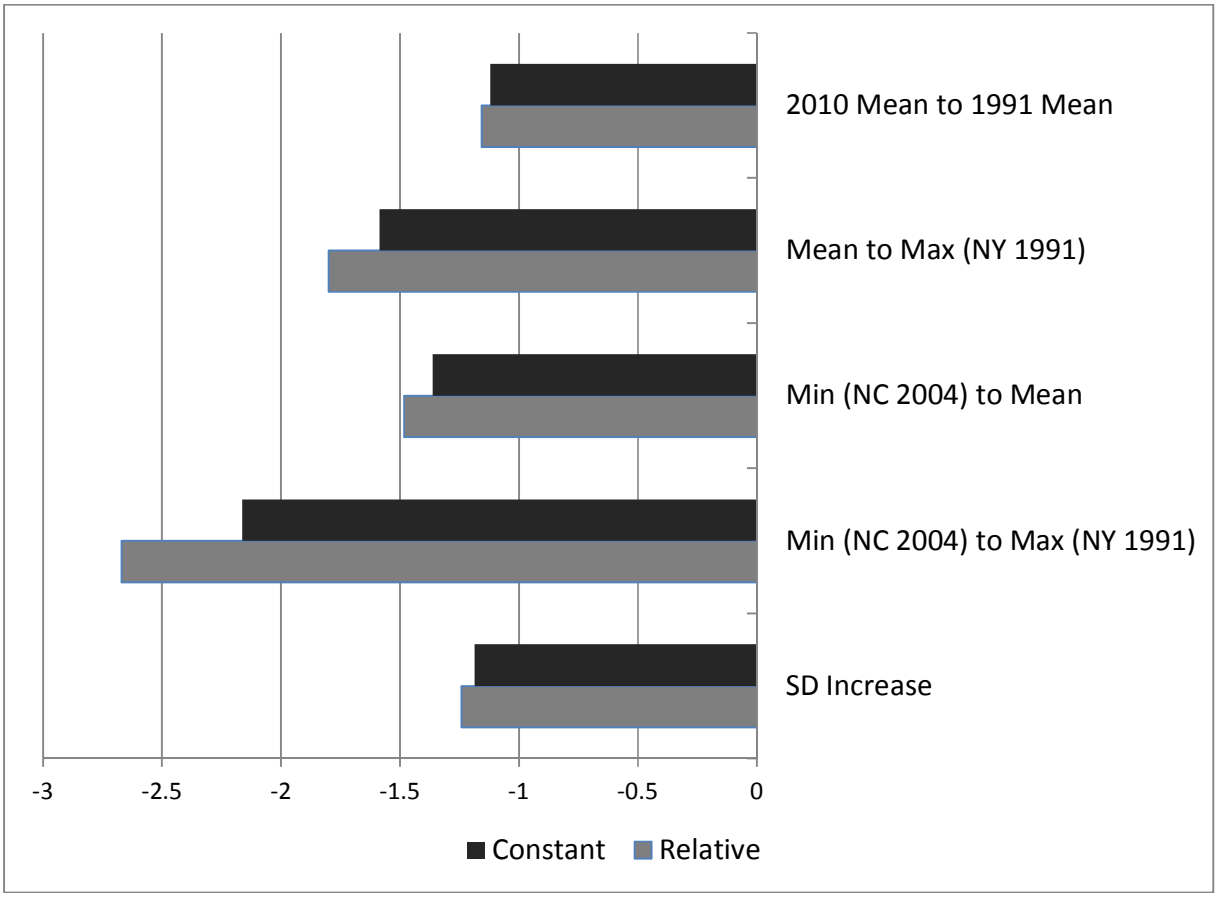

Figure 3. Reduced Odds of Being Working Poor with Counterfactual Values of State-Level Unionization (estimates based on models 2 and 4 in Table 2).

ENDNOTES

[1] In our sample below, about three-quarters of working-aged poor households contain a worker.

[2] The subject index of Blank and colleagues (2006) *Working and Poor* includes only one mention of unions (p.374), which discusses the declining receipt of unemployment insurance. Wilson (1996: 28) briefly acknowledges declining unionization for less-skilled workers. Blank (1997) only mentions unions (p.67) while noting technology and globalization contributed to the decline of union jobs. Cancian and Danziger (2009) mention teacher unions and unions' historic resistance to healthcare reform. The only other mention is Blank's (2009: 77) brief discussion of how the decline of unions is worse among less-skilled workers. There is no reference to unionization or labor unions in the extensive indexes of Danziger and Haveman (2001), Danziger and colleagues (1994), Jencks and Peterson (1991), or in O'Connor's (2001) history of American poverty research.

[3] The decline was even more rapid in countries like Australia, Germany, and New Zealand which fell from ~50 percent in the 1970s to ~20 percent by 2011. Still, unionization remained relatively stable near 30 percent in other liberal market economies like Canada and the United Kingdom (Visser 2011).

[4] This reflects an older argument in the labor market segmentation literature that unionization unites workers and raises earnings of non-members (Gordon 1972).

[5] The 1991 dataset has more than 155,000 cases, and the 1994-2010 datasets all have more than 128,000. By contrast, the preceding 1986 dataset includes fewer than 32,000. Because large states are a substantial share of the sample, the 1986 dataset might not be representative for midsized and smaller states.

[6] Online Appendix II displays sensitivity analyses varying the thresholds from 10 to 90 percent of the median (with 1991-2010 models). The number of employed households below the lower thresholds is very small in many state-years. As a result, unionization becomes less significant at the lower thresholds. Still, unionization is always negatively signed, often near significant, and becomes significant above 40 percent for relative and 20 percent for constant.

[7] In other analyses, we lagged unionization one year. The results were consistent, in part because unionization correlates >.98 with the value in the preceding year.

[8] The maximum AFDC/TANF plus food stamp benefits could be preferable. However, the state-level correlation between the two measures is >.95, which suggests little loss of information.

[9] In 2010, the z-score is -.33. For 1991-2010, the z-score for relative poverty is 1.24 and for constant is .95. We suspect the lack of significance is partly because there is little interstate variation in minimum wages. The coefficient of variation for the minimum wage in 2010 is only .05. By contrast, the coefficient of variation for unionization is .49, and all other state-level variables are greater than .23.

[10] This variable is lagged one year. For Nebraska, we used the Democratic proportion of congressional representatives as a proxy for the non-partisan state legislature. For D.C., we imputed Democratic control of the governor and state legislature.

[11] The correlation with relative working poverty is -.04 in 2010, and -.01 in 1991-2010. In 2010, Democratic control has a z-score of 1.01. For 1991-2010, Democratic control has a z-score of .05 for relative and -.22 for constant.

[12] There may be concern that the 2010 time point occurs in the Great Recession. However, in analyses available upon request, we replicated the cross-sectional analysis for each of the seven years and the results were consistent.

[13] Specifically, we estimate xtlogit in Stata with adaptive quadrature and 30 integration points (Rabe-Hesketh and Skrondal 2008).

[14] Standardized odds multiply the coefficient by the standard deviation of the independent variable and then exponentiate. We interpret the magnitude of odds less than one in terms of inverse odds (-1/odds).

[15] In 2010, state-level unionization correlates .67 with TANF maximum benefit and .50 with UI maximum, while TANF maximum and UI maximum correlate .44.

[16] As a robustness check, we dropped one year at a time. Across the 14 models, unionization was always significantly negative for both relative and constant poverty. We also dropped one state at a time, and unionization was always significantly negative across the 102 models for relative and constant poverty.

[17] Economic growth remains significantly positive if we drop any of the 51 states and remains fairly robustly significant if we drop any years ($p<.05$ dropping any of 1994-2007; $p<.10$ for relative dropping 1991; $p=.15$ for constant dropping 1991; $p=.10$ for constant dropping 2010). Economic growth is robustly significant if we remove GDP PC. Economic growth is only near significant if both unemployment and GDP PC or unemployment are dropped in the 1991-2010 models. Yet, it remains significant under all conditions in the 2010 models. Economic growth is only modestly correlated with other state-level variables ($r < .30$).

[18] Across the 51 states, the mean TANF/AFDC maximum fell from $610.96 in 1991 to $437.21 in 2010 (in real 2010 dollars).

[19] We can approximate the LIS measure of household income for 2004 to 2010, and find similar levels of working poverty with the CPS as with the LIS. However, we are unable to exactly recreate the LIS income measure because of small differences in the calculation of taxes and the

inclusion of some near-cash transfers. Further, because the LIS cleans and creates a new set of standardized variables, we cannot exactly replicate the individual-level controls. As a result, the effects of independent variables are somewhat different. Prior to the 2004 CPS, we are simply unable to make the data comparable.

[20] Some may suspect a spurious correlation between unionization and poverty because states with large public sectors might have higher unionization and lower poverty. However, this is unlikely for several reasons. First, the models control for public employment at the individual-level and the effects of state-level unionization are net of this individual control. Therefore, public employment would have to have a contextual effect on non-public sector workers, and this contextual effect would have to cancel out the unionization effect. Second, the models control for two key social policies and state fixed effects, and we also tested minimum wages and Democratic party control of state government. It is unlikely that public sector size has a direct effect on working poverty net of all these state characteristics. Third, public employment is better thought of as a mechanism between unionization and working poverty, as unionization likely increases public employment and boosts and protects the compensation of public employees. Finally, even if large public sectors provided services that boost the capability of the poor and near poor, this would most likely manifest through greater employment. Because we already control for part-time employment, and unionization has no effect on employment or multiple earners, this probably cannot explain the effect of unionization on working poverty.

[21] An alternative approach would examine pre-fisc income or pre-fisc working poverty. We prefer this approach because labor income (i.e. earnings) and transfers are more concrete and precise. In other analyses, we also found consistent results for the unionization effects in the entire distribution, and below the 90^{th}, 80^{th}, and 70^{th} percentile of the median equivalized income.

[22] As a further step, Online Appendix IV summarizes analyses decomposing both unionization and the sample by major industry/sectors (e.g. public sector unionization predicting public sector working poverty). Online Appendix IV should be read with caution as the cell sizes are often quite small (e.g. D.C. had zero unionization in manufacturing in 2007 and 2010). Still, Online Appendix IV shows that sector-specific unionization has a significant negative effect in the private and manufacturing sectors, however the effects are not significant in the public and non-manufacturing sectors.