A Submerging Labor Market Institution? Unions and the Non-Wage Aspects of Work (Very Preliminary: Comments Welcome)

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Abstract

Using data from a variety of different sources, we investigate the differences between union and non–union jobs. In general union workers work fewer hours per week, fewer weeks per year, spend more time on vacation and spend more time away from work due to own illness or the illness of a family member. The are also more likely to be offered and to be covered by health insurance, more likely to receive retiree health benefits, more likely to be offered and to be covered by a pension plan, and are more likely to receive dental insurance, long-term disability plans, paid sick leave, maternity leave, and paid vacation time. We also find evidence that there has been a slight decline in the magnitude of the various differentials over time, although the inconsistency in measurement across our different data sets makes this conclusion tentative.

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Our understanding of emerging labor market institutions would be incomplete without an understanding of traditional institutions, including diminishing forms such as the American labor union. Our focus in this paper – the effect of labor unions on a variety of non–wage aspects of work – is a small, yet important aspect of the recent history of American unionism.

The importance of nonwage aspects of jobs to union goals dates back to the origins of the modern labor movement in the U.S. and other countries. For example, in late nineteenth century Britain, according to Sidney and Beatrice Webb, "the prospect of securing support in sickness or unemployment [was] a greater inducement [for young men] to join the union ... than the less obvious advantages to be gained by the trade combination" (Webb 1897). Similarily, in the U.S., to take a prominent example, the American Federation of Labor's resolution that "eight hours shall constitute a legal day's labor from and after May 1st, 1886" was one impetus for the Haymarket Rebellion – an event which to this day is commemorated in much of the world as International Worker's Day.

Using data from a variety databases we investigate the question: How does a "union job" differ from a "non–union" job? In particular, we document and describe reasons for hours differentials. *Inter alia*, we revisit some of the questions about unions and "fringe" benefits addressed for an earlier period by several studies, most comprehensively by Freeman and Medoff (1984).

1 Background

If only a single bit of context is to be highlighted about the role of today's unions, surely it is the decline in union representation. In Figure 1 we display historical data on the percent of the non–agricultural workforce who are members of a labor union. The fraction of workers currently represented by a labor union is at its lowest point since the late 1930s, when union density rapidly increased following the passage of the National Labor Relations

(Wagner) Act in 1935. if one focuses on unionization in the private sector, the decline has been even more pronounced with coverage rates falling below 10 percent in the 1990s.

Admittedly, for many purposes "unionization" is too vague a concept – the the AFL of 1886 and the AFL-CIO of 1999 are vastly different organizations. Yet even if one trains one's attention only on the last twenty or thirty years for which substantial micro data is available, one important question is whether the effect of traditional unionism has clearly changed.

Some evidence on the issues comes from recent work on the causes of recent increases in wage inequality (Levy and Murnane 1992). Unionization has traditionally been an equalizing influence, reducing both inequality *between* groups with different demographic characteristics and inequality *within* demographically homogeneous groups(Bound and Johnson 1992, Katz and Murphy 1992, Autor and Katz 2000). Unions have typically reduced between inequality by raising the pay of those who would receive relatively low wages in absence of union. (Unionization is comparatively rarer among the most highly educated, for example.) Given this wage effect, the decline of union representation would have been expected to to lead to an increase in between inequality. Indeed, the evidence bears this out[1]. A decline in the power of unions to impact wages would imply even greater increases in inequality between "skill" groups. However, the most recent evidence suggests, somewhat surprisingly perhaps, that "union power has not been emasculated" and that the capacity of unions to raise the wages of their members has not declined Blanchflower (1997) In contrast, de-unionization has coincided with an increase in *within* inequality not only because fewer workers are covered, but also because the distribution of wages within the union sector increasingly resembles that of the non-union sector DiNardo and Lemieux (1997). That is, the ability of unions to minimizes differences between demographically similar workers has declined.

Our look at non-wage aspects of work will focus when possible on similar changes in

[1]See DiNardo, Fortin and Lemieux (1996), Card (1992) and Card (1996) for example.

the effect of unionism, hoping to answer the questions – are union and non–union jobs becoming increasingly alike?

2 Union "Employment" Effects

Comparatively little has been written about the union's effect on the hours worked by union members. Neither of Lewis's comprehensive surveys address the issue at any length; the same is true for more broadly focused summaries of research on labor unions(Freeman and Medoff 1984, Hirsch and Addison 1986) although the Freeman and Medoff survey does investigate the cyclical sensitivity of union employment (See Raisan (1979) for a similar focus.) Killingsworth's (1983) extensive survey makes no mention of labor supplied in the presence of unionization. Earle and Pencavel (1990) examine the question with the 1978 Current Population Survey and time–series data. They find conflicting evidence–negative union impacts on hours worked from the time–series evidence, but positive effects from the 1978 cross–section.

The most severe obstacle to such an analysis is the comparatively poor quality of information on hours worked. Indeed, a fuller analysis would incorporate commuting time as well. Unfortunately, we are unaware of any data set that allows for a comparison across time in hours worked of the same quality as say, the wage data in the Current Population Survey (CPS) data.

2.1 The "Economics" of Hours Reductions

Before turning to our empirical analysis , it helpful to motivate why one might see differences in hours worked between the union and non–union sector. Appendix 1 presents a a simple model to motivate the possible "economic logic" of the difference between union and non–union jobs in the amount of hours worked. The model points to the fundamental

fact that the union faces a tradeoff between more members and higher utility per member. As a result of this tradeoff, that union members will more likely feel "constrained" to work fewer hours than they would like to work at the going "wage" despite having higher utility as a union member than as a non–union member.

The magnitude of these effects will depend on the extent to which wage setting processes differs in the union and non–union setting. The more union wage setting resembles wage setting in the "competitive" sector (the smaller the difference between union member utility and the non–union alternative), the smaller the hours differential and the less "constrained". Thus, given the decline in the level of unionization in the U.S. it may be reasonable to expect the differentials to be smaller in the later years of our samples and larger earlier on.

2.2 The Data

The analysis in this section takes its character from the nature of the labor supply information available in the PSID. The PSID is a panel study of 5000 families begun in 1968. Each year, families are reinterviewed when possible, and new members are added as often as necessary to keep the sample approximately representative of the nation as a whole.

The PSID has some unique advantages (and disadvantages) in attempting to measure the effect for union status on hours worked.

The essence of the PSID measurement methodology is to divide the calendar year into different "weeks". The questionnaire divides the year into weeks worked, weeks ill, weeks spent not working because other family members are ill, weeks on vacation (paid or otherwise), weeks unemployed, and weeks out of the labor force. The two largest components for prime-age males are weeks worked and weeks on vacation, whereas the remaining components are negligible for the sample we consider in here.

The main advantage of the PSID relative to the CPS is that the data collection process

involves completing a working calendar for each individual that tallies the total amount of weeks spent at work, on vacation, on unemployment, on strike, and time spent due to the illness of the respondent or relatives of the respondent. Despite some ambiguity in the questions, the weeks measures have the advantage that they are forced to add up to 52. If they do not the interviewer is required to go over the questions until they reconcile. This is important given the well known problems of measurement error in hours data.[2]

In contrast, the CPS includes "paid" vacation part of weeks "worked." This complicates use of the CPS in several ways. Consider a person with two weeks paid vacation (and no unpaid vacation time) – the annual hours estimate is 52 times average hours per week, instead of 50 times average hours per week. Arguably, use of the CPS leads to systematic under reporting of the hours differential if vacation time is more prevalent among union workers.[3]

A main disadvantage of the PSID is that it is not clear how respondents are choosing to answer the question on "average hours per week" – some respondents appear make use the "typical" week as a metric, rather than using a true average. Other problems include the comparatively small size of the sample, the lack of information on non–household heads[4] and the fact that it is a panel so that successive years are not independent. Given our wish to characterize a "typical" worker we do not include the low income SRC subsample in the analysis below.

Finally, due to data availability and the desire for some comparability across time we use the years 1972-1992 for the PSID and 1983–1997 for the CPS.

[2]Most recently, see Bound and Krueger (1991).

[3]See Montgomery (1989) who uses the CPS to investigate the probability of employment and usual hours per week. Earle and Pencavel (1990) find positive effects of union status from their 1978 cross-section of weeks worked.

[4]Indeed, we focus on men because most of the detailed information is not available for the "wife" of the household.

2.3 Methodology

One unavoidable fact about the data we analyze in this section is that it is either multimodal (often at 0 and another value) or otherwise distributed "unusually", so that it is difficult to characterize the conditional distribution with conventional techniques. For example, in his study of the the effects of health insurance on hours worked, Olson (1998) finds that conventional parametric methods tend to provide misleading results.

Following Olson (1998), we apply the reweighting techniques from DiNardo et al. (1996) to adjust the union and non–union distribution for differences in worker characteristics. That is, we adjust the average hours of a typical worker relative to some base set of characteristics, specifically the base characteristics of a typical worker in 1992. The complete details of the methods are presented in Appendix B.

2.4 Results

Hours

Our estimates for "average weekly hours" (PSID) and "usual weekly hours" (CPS) are presented in Tables 1a and b. The first column of Table 1a computes the mean hours for non–union members in a given year in the PSID, *if they had the characteristics* of 1992 union workers. The second column computes the mean for union workers in a given year if they had the characteristics of the 1992 union workers; our estimate for 1992 union workers, therefore, is the actual mean (using the appropriate population weights). The format for the CPS results is similar and figures 2a and 2b display the results graphically.

Considering the PSID estimates first, in almost all years, union workers work fewer hours per week and from 1972–1984 this difference is about 3 hours per week. After 1984 the differential begins falling, and by 1992 the situation is reversed and our estimate for non-union workers is actually 1 hour per week higher. However, given the probable sampling error (the standard errors were not adjusted for the uncertainty generated by estimation of

the weights) they are generally not significant or only marginally so at conventional levels.[5]

In table 1b, we present the same estimates using our CPS data although we use a slightly different basis of comparison – 1997 union workers.[6] The estimates for non-union workers (appropriately weighted) hover around 42.2 hours per week and the estimates for union workers are approximately .5 hours per week lower. By comparison with the PSID results, these estimates of usual weekly hours for non-union workers are generally slightly higher, although the differential between the two sectors is much more constant.[7]

The differences between the PSID and CPS estimates could arise from a number of sources. Part of the difference is surely differences in the wording of the questionnaires as well as the comparatively small size of the PSID. Another salient difference is that with both data sets the variability in weekly hours is substantially higher in the non–union sector. To give the reader some sense of the difference, we display the standard deviation of hours from our CPS data in Figure 3. The variability across workers is fairly constant for the non–union sector, although it appears to be increasing in the union sector – this is perhaps consistent with the evidence that union wage setting is growing more like non–union wage setting in that within union sector variance is growing (DiNardo and Lemieux 1997).

In sum, both the PSID and CPS results suggest that hours are lower in the union sector although there are some differences in the levels, differences, and trends between the two sets of numbers.

Time Spent Due to Illness (own or other)

Table 2 reports the average number of weeks not spent working due to illness. In general,

[5]Note that the PSID results for different years are not statistically independent since there is considerable overlap in the individuals across years.

[6]Given that the demographic composition of the union sector changes relatively slowly after 1992, the results using "1992" weights are not significantly different.

[7]Although problems of sample selectivity and limitations of scope prevent us from an extensive analysis here, the comparison between non–union workers and workers is reversed when women are included. This result is also found in the CPS 1978 Cross–Section by Earle and Pencavel (1990).

non–union workers spend slightly less time engaged in such activity – approximately 1 week per year compared to union members who typically spend between 1 and 1.4 weeks due to personal illness or the illness of others. This is also weakly consistent with our evidence on "paid" sick leave (see Table 8.) While the magnitude of the difference varies from year to year, there is no discernable trend.

Time Spent on Vacation

Recall from our earlier discussion that the treatment of paid vacation time as time spent at work makes the use of the CPS problematic for an analysis of union–non–union differences: Indeed, as we show below (see Table 8) there appears to be a difference in the incidence of "paid" vacation time between union and non–union workers. We therefore, consider only the PSID – which records all vacation time whether paid or not. These results are displayed in Table 3 and Figure 4.

Given the relatively small samples, it is noteworthy that the difference between the two groups of workers is fairly constant – union workers typically have 1 week more vacation time than non–union workers and, perhaps surprisingly, the level of vacation time in the two groups is rising over the period 1972–1992 (albeit slowly.)

Hours Constraints

In Table 4, we tabulate the percentage of workers who report that "they would like to work more" and those who "would like to work less" (the worker is also free to choose neither more nor less.) During the sample period two trends are immediately evident for both sets of workers – the percentage of workers who say they would like to work more rises and the percentage of workers of workers who would like to work less falls. Consistent with the previous tables and with the simple model presented above and detailed in Appendix A, union workers generally are more likely to want to work more hours. Similarily, union workers are slightly less likely to want to work less (although the small percentage of workers expressing this view means that the difference between union and non–union workers is not significantly different from zero at conventional levels).

3 Health Insurance, Pensions, and Other Benefits

As suggested by the quote by Sidney and Beatrice Webb in our introduction, labor unions have long played an important role in securing social insurance benefits for workers. In the twentieth century, organized labor was a significant impetus for the growth of pension plans in the 1940s and 1950s (Allen and Clark 1986).

There are several reasons to expect a positive effect of union membership on health insurance, retirement plans, and related benefits. First, in non-union workplaces, where entry and exit are the primary adjustment mechanisms, compensation policies will be tailored to the preferences of "marginal" workers, who tend to be young and mobile and, for those reasons, likely to have a low demand for health and retirement benefits. In contrast, the political processes of unionized workplaces often results in greater weight to be placed on the preferences of older, less mobile workers, who are likely to have a greater demand for such benefits.[8] To the extent that unions play a role in administering benefit programs, they may also lower the actual cost of such programs to employers. In many cases, the union's role involves providing information to employees about the value and tax advantages of non-wage benefits, and thus influencing employee demand. This notion of unions as providing information to employees is consistent with the evidence that union workers are more likely to take up publicly funded benefits, such as workers' compensation and unemployment insurance(Hirsch, Macpherson and Dumond 1997, Budd and McCall 1997). Also worthy of note is the possibility that in repeated bargaining, benefits such as "health insurance" are more difficult for the firm to renege on later – the become part of a non–negotioable "base" as compared to a negotiable "increment."

A number of studies from the 1970s and early 1980s show large union effects on the receipt and quantity of fringe benefits, particularly health insurance and pensions (Freeman 1981, Alpert 1982, Freeman and Medoff 1984, Feldman and Scheffler 1992, Allen and Clark

[8]See Goldstein and Pauly (1976) for a more formal treatment.

1986, Belman and Heywood 1990). In this section we update this research by estimating the relationship between union membership and health insurance and pensions from the 1980s to the mid 1990's using data from several special supplements to the CPS. Both benefits are very important from a policy perspective. There is great concern among health economists and other policy analysts over the decline in health insurance coverage over the past several decades (see, for example,Kronick and Gilmer (1999)). Likewise, the aging of the baby boom cohort combined with questions concerning the long-run viability of Social Security heighten the policy importance of employer-sponsored retirement programs.

In the last part of this section, we present union/non-union differences in the receipt of several other non-wage benefits, using several different data sources. Largely for reasons of both data availability, we focus on the offer or receipt of the various benefits rather than the level or generosity of coverage. Since several studies indicate significantly positive union effects on the latter (Freeman 1981, Freeman and Medoff 1984, Allen and Clark 1986, Buchmueller, DiNardo and Valletta 1999), the estimates we report here can be thought of as lower bounds of sorts.

3.1 Health Insurance

Table 5 presents estimates of union/non-union differences in health insurance benefits for four different periods: 1983, 1988, 1993, 1997. The data are from various supplements to the CPS. The 1983 data is the most limited, providing information only on whether or not the responding worker received health insurance coverage through his employer. For later years, it is possible to distinguish between whether or not a workers' employer offers health benefits to any workers and whether or not the worker himself is covered. [9] The third column in the table reports unadjusted union/nonunion differences for these outcomes-i.e.,

[9]Conditional on firm offers, coverage depends on whether or not a worker is eligible for benefits and take-up conditional on eligibility. See Buchmueller et al. (1999) for estimates of union/non-union differences on these intermediate outcomes.

the difference between the figures in the first two columns. The adjusted differences in the fourth column are the coefficients on an indicator variable for union membership from a linear probability models that also include individual characteristics and industry dummy variables. [10] The fifth column adds controls for firm size. This is our preferred specification, as both health insurance coverage and union membership are positively related to firm size. The column 4 specification is reported because we would like to trace union effects over the entire period and information on firm size was not available in the 1997 data.

In each year, the percentage of union workers with health insurance is substantially higher than the corresponding figure for non-union workers and for both groups, the percent covered fell over time. Since the decline between 1983 and 1997 was greater for union workers (10.3 percentage points vs. 5.1 percentage points) the union/non-union difference also fell. A comparison of the figures for 1988 and 1997 suggest that for both sectors, the decline in coverage was not driven by a cut-back in employer offers, but rather in the percentage of workers in insurance-providing firms that are covered, a result that has been documented in other studies (Cooper and Schone 1997, Farber and Levy 2000).

Differences in worker and firm characteristics account for roughly half of the union/non-union difference in health insurance coverage. When the regression controls for firm size, the adjusted difference falls from 15 percentage points in 1983 to 9.7 percentage points in 1988, before increasing to 13.2 percentage points in 1993.

One interesting pattern in Table 5 is that, for all years, the union effect on coverage is greater than the effect on offers. Unreported regressions reveal that this is due to the fact that within firms where insurance is available there are positive union effects on both the probability of being eligible for coverage and take-up among eligible workers. These two effects have opposing time trends-the union effect on eligibility declines between 1988

[10] Using some of the same data we use here, Even and Macpherson (1993) show that estimates of union/non-union differences in health insurance and pension receipt are fairly robust to alternative econometric specification. We use linear probability models for their ease of interpretation.

and 1997, while the take-up effect grows. The higher rate of take-up for union workers is partly explained by the fact that union workers tend to face lower employee contributions for their coverage and are offered plans with more generous benefits (Buchmueller et al. 1999).

An aspect of employer-provided health insurance that has received somewhat less attention from researchers, but is of increasing policy importance, is retiree health benefits. Since non-group health insurance is typically quite expensive, and in some cases not available at any price for older workers, retiree health benefits make it possible for many workers to retire before age 65 without suffering a loss of insurance coverage. Also there are substantial gaps in the coverage offered by Medicare-i.e., no coverage for prescription drugs-health insurance from a former employer that supplements Medicare provides significant benefits for retirees over age 65.

The 1993 CPS Benefit Supplement and a 1988 supplement focusing on retiree health benefits provide information on whether current workers will be eligible for employer-sponsored health insurance when they retire. Union/non-union differences estimated using these data are reported in Table 6. For each year, the sample is limited to workers between the ages of 45 and 64 whose employer offers health insurance to active employees. [11]

The figures in the first panel of Table 6 show that in 1988, there was a 10 percentage point difference in eligibility for retiree between union and non-union workers (74 percent versus 64 percent). Controlling for worker characteristics and firm industry produces an adjusted difference of roughly half this magnitude. The union/non-union difference increased between 1988 and 1993 because of an increase in the percentage of union workers with promises of health insurance coverage after retirement and a decline among non-union workers. Adjusting for all observable (including firm size) results in a 12.8 percentage point

[11] It is important to keep the second sample selection criterion in mind when interpreting the reported union effects. The union effect for all workers combines this effect with the effect on employer offers documented in Table 5.

difference in 1993.

To summarize, the data from several CPS supplements show significant, though declining, union effects on health insurance coverage. This trend is consistent with the notion of declining union bargaining power. However, other results suggest a slightly more complicated story in which union efforts are increasingly focused not merely on getting employers to offer health insurance, but rather on the scope and quality of the benefits that are offered.

3.2 Pensions

Table 7 presents our results on union/non-union differences in pension plans. The data are from the same CPS supplements used in the health insurance analysis and the layout of Table 7 is the same as Table 5. As with the health insurance analysis, we examine two outcomes: whether or not a pension is offered by the worker's firm, and, if so, whether or not he or she is covered.

For all years, the union/non-union differences for pensions are larger than those for health insurance. In 1983, union workers were nearly twice as likely to participate in an employer-sponsored pension plan: 76.6 percent vs. 38.8 percent. This result is due mainly to a large difference in whether or not the worker's firm offered a pension plan at all (84.3 percent versus 49.4 percent), though there is also a positive union/non-union difference in coverage conditional on firm offers (.909 vs. .784, figures not shown). Holding constant worker and firm characteristics (including establishment size), in 1983 union workers were 23.4 percentage points more likely to participate in a pension plan.

Over time, the coverage rates for the two groups move in opposite directions, generally falling for union workers and increasing steadily for non-union workers. In 1993, the adjusted union/non-union difference was 19.6 percentage points according to our preferred specification and 26.9 percentage points when we do not control for firm size. The more

restricted specification implies a slightly smaller, though still rather large union effect of 23.5 percentage points in 1997.

3.3 Other Fringe Benefits

3.3.1 The National Organizational Survey Data

In this section, we examine union effects on a vareity of other benefits using data are from the 1993 CPS Benefit Supplement and two other surveys conducted in the 1990s- the 1996 Medical Expenditure Panel Survey (MEPS). The and the 1991 National Organization Survey (NOS). Of the three data sets we use in this section, only one is not well–known to labor and health economists, so a few words are in order.

The 1991 National Organizations Study (NOS) was designed for research on organizational behavior.[12] The sample was drawn in the following way. Employed respondents to the 1991 General Social Survey (GSS), a nationally representative survey of US adults were asked to provide the names of their employers. These organizations were then contacted and their representatives were asked about a number of organization characteristics and policies, including whether the organization provided a number of non–wage employee benefits. While previous researchers using the NOS have treated the organization as the unit of observation[13], the public use file contains both organization–level variables and the individual–level variables from the GSS, including whether or not each respondent is a union member. We treat the combined GSS/NOS as an individual–level data set and relate an individual's union status to whether her employer offers the various benefits. One weakness of this approach is that we cannot identify cases where an respondent's employer offers a benefit but that particular employee is not eligible.

[12]See Kalleberg, Knoke, Mardsen and Spaeth (1994) for an overview of the objectives of the NOS and Spaeth and O'Rourke (1994) for details on its design and implementation.

[13]For example, see Knoke (1994) Knoke and Ishio (1994) and Huffman (1999).

3.3.2 Results

Table 8 presents regression-adjusted union effects on the receipt of several other fringe benefits. The econometric specification varies slightly across these data sets due to differences in data availability, though in all cases is fairly comparable to our preferred specification for the health insurance and pension regressions.

The top panel presents results for three types of insurance-dental, life and long-term disability. In each case, as throughout this table, the the outcome is dichotomous. The results here are similar to what we find for health insurance and pension benefits. For all three types of insurance, the adjusted union/non-union difference is statistically significant. The difference is largest for dental insurance (16.5 percentage points) and smallest for life insurance (4.5 percentage points). In the case of long-term disability, our two data sources provide fairly similar estimates-9 percentage points for the 1991 NOS and 6 percentage points for the 1996 MEPS. [14]

The estimated union effects on the various types of paid leave are generally smaller. All three of the surveys have information on paid sick leave. The largest, and only statistically significant, union effect comes from the 1993 CPS Benefit Supplement. The estimate from the NOS is of a comparable magnitude but, because of a much smaller sample size, is not statistically significant.

In the NOS, the employers of union members are 6 percentage points more likely to offer some type of maternity leave. Unfortunately, the data set provides no further details on the nature of that coverage-i.e., paid vs. unpaid, or length of time. There is a similarly sized union effect on vacation coverage from the 1996 MEPS. This is consistent with our previous evidence from the PSID. Union workers are more likely than non-union workers to have *any* paid vacation.

The last panel presents union/non-union differences in dependent care benefits from

[14]Given differences in survey design, we are reluctant to interpret differences across these sources as reflecting time trends.

the NOS. Those results indicate no significant difference in the percentage of union and non-union workers receiving employer-sponsored child care or elder care benefits. Given the unfortunately vague way in which these last two outcomes are defined – child care benefits could include anything from subsidized on-site day care to Section 125 benefit programs that allow employees to pay childcare expenses with their money on a pre-tax basis – we are reluctant to read too much into these results.

4 Conclusions

Consistent with other research we find generally significant union effects on the large variety of non–wage aspects of work that we can measure. For a worker with the attributes of a typical union member, a union job offers more vacation, fewer hours per week, the greater likelihood of dental, health, maternity, retirement, and pension benefits, *inter alia.* There is also some evidence that there has been a slight decline in the magnitude of the various differentials over time, although though the inconsistency in measurement across our different data sets makes this conclusion tentative.

As with the substantial literature on unionization and wage inequality, the fundamental question is whether the effects we have identified can be properly treated as "causal." Autor and Katz (2000) argue that much of statistical association between declining unionization and increased inequality may reflect the fact that declining unionization is epiphenomenal to other changes in the labor market such as changes in technology and trade. On the other hand, Blau and Kahn (2000), observe that the impacts of unionization are much the same whether measured within countries over time, or across countries subject to with similar global influences, but with "small differences" in unionization; this suggests that the statistical association between declining unionization and negative labor market outcomes is not primarily epiphenomenal, but represents a causal relationship.

A Appendix: A Simple Model

In this appendix we present a simple theoretical model of hours determination in a unionized setting. Our point of departure is the work of Pencavel and MaCurdy (1986) and Brown and Ashenfelter (1986) and the class of models sometimes referred to as "contract curve" models (hereafter CC models) as an alternative to the standard "labor demand" models of union behavior. In the labor demand model, the effect of unions is similar to that of the minimum wage. The union raises the wage above the competitive level leading to a decrease in employment (assuming hours per worker fixed.) In the basic CC model, however, the union is aware that its wage demands affect employment and takes that effect into account when formulating its bargaining stance. In Brown and Ashenfelter (1986) for example, the union's optimal choice for the level of employment maximizes firm profits, and any resulting rents are divided between the union and the owners of the firm. As in implicit contract models, this process implies that the wage no longer plays the allocative role it does in the simple textbook model and that it is not possible to consider hours worked as the outcome solely of individual preferences interacting with a fixed wage rate.

Johnson (1990) develops a variant of the basic CC model where hours of worker are not fixed, and where the union negotiates over both wages, employment levels, and hours worked per worker. As it is hard to rationalize hours of work decisions by union members as labor supply responses to higher wages[15], this model provides a potentially useful framework for understanding the differences between hours worked in a unionized environment and a non–union environment.

Profits to a firm are given by a revenue function $V(\cdot)$ which depends on total man-hours and labor costs which are some (average) wage rate times total man-hours employed.[16]

[15]Treating the hours a differential typically results in labor supply elasticity estimates that are much larger than found in other studies. See DiNardo (1992), for example.

[16]A fuller analysis might treat labor as a quasi–fixed factor as in Oi (1962) so that firms might prefer fewer workers and greater hours per work. However, our simplifying assumption suffice for characterizing differences between union and non–union workers.

$$\pi = V(f(hN)) - whN \tag{1}$$

- where: π = profits
- h = hours per worker
- N = numbers of workers
- w = average wage rate.

The union has preferences over individual worker utility as well as the total number of employed members:

$$R = (U(wh, -h) - U_a)^{\beta} N \tag{2}$$

It will be convenient to specify a specific (Stone–Geary) utility function with utility increasing in earnings and decreasing in the number of hours worked.

$$U(wh, -h) = (wh)^{\theta}(T - c - h)^{1-\theta} \tag{3}$$

where:

- $R(\cdot)$ is the union objective function.
- T=total hours
- c=committed leisure.
- β=parameter of union preferences
- θ=parameter of individual preferences
- U_a =non-union utility

Equation 1 defines profits for employers, 2 defines union utility, and 3 is a simple characterization of individual preferences.

When $\beta = 0$ this model is a standard competitive model and as $\beta \to \infty$ the union cares more about wages and hours per worker. If unions and firms negotiate over w,N, and h, the observed values of h, and N for a given contract should satisfy the following conditions.

$$\frac{\partial \pi}{\partial h}|_{\pi=\pi_0} = \frac{\partial R}{\partial h}|_{R=R_0} \tag{4}$$

$$\frac{\partial \pi}{\partial N}|_{\pi=\pi_0} = \frac{\partial R}{\partial N}|_{R=R_0} \tag{5}$$

These two equations imply:

$$(V'f' - w)N = \beta(U(wh, -h) - U_a)^{\beta-1} N(U_1 w - U_2) \tag{6}$$

$$(V'f' - w)h = (U(wh, -h) - U_a)^{\beta} \tag{7}$$

Together (6) and (7) imply that:

$$\frac{U_2}{U_1} = w\{1 - [U_a \mu/(U_1 \beta h)]\} \text{ where:} \mu = (U(wh, -h) - U_a)/U_a \tag{8}$$

or to write it in a more intuitive way:

$$U_2/U_1 = w\left\{1 - \frac{\mu}{(1+\mu)\beta E}\right\} \tag{9}$$

- where: E= elasticity of utility with respect to income.

Recall that in the absence of a union, a utility maximizing individual worker would set:

$$U_2/U_1 = w \tag{10}$$

The condition that $\mu > 0$, (unions place some emphasis on hours and wages, and union workers are better off than their non-union worker counterparts), union workers would prefer to work more hours at the actual "wage rate." The intuition of this result should be clear. In this model, the firm is indifferent between combinations of N and h that yield the same amount of labor. By contrast, the union faces a tradeoff between more members and higher utility per member.

Several implications which we can compare with the data include:

1. Union work hours will generally be less than non–union hours.[17]

2. In addition to working less, union workers will be more likely to report being constrained and desiring to work more hours at the union "wage" rate.

3. The more union wage setting resembles wage setting in the "competitive" sector (the smaller the difference between union member utility and the non–union alternative), the smaller the hours differential and the less "constrained".

Given the decline in the level of unionization in the U.S. it may be reasonable to expect the differentials to be smaller in the later years of our samples and larger earlier on.

B Appendix: Statistical Methods for Reweighting

Let the conditional distribution of hours in year i and sector j be given by $f^{i,j}(h|X = x_b)$, let x_b denote the characteristics of our base sample, and $x_{i,j}$ the characteristics of the sample which we wish to reweight to have the same distribution of characteristics as the base sample. We are interested in computing the counterfactual distribution:

$$\int h \cdot f^{i,j}(h|X = x_b)dx$$

[17] This is not true for all possible utility functions; the key is that the worker's utility–constant "income effect" of the higher wage should not be too large.

by means of a reweighting of the actual distribution:

$$\int \theta h \cdot f^{i,j}(h|X = x_{i,j})dx$$

where θ is the appropriate weight and $f^{i,j}(\cdot)$ is the distribution given the structure of hours in year i. The counterfactual distribution yields the distribution of hours that would have obtained in year i for sector j had the distribution of relevant characteristics in the population had been x_b instead of $x_{i,j}$. We can use this distribution to characterize the counterfactual mean (or any other moment of the distribution).

Consider calculating θ when we wish to reweight the 1972 distribution of hours of non–union members so that they have the same distribution of characteristics as union workers in 1992.

We derive the appropriate weight by noting that the distribution of hours worked among union workers in 1992 is given by:

$$\int f^{92,U=1}(h|X = x_b)dx \equiv \int f^{92}(h|X)g(X|U = 1, t = 1992)dx$$

where the term $g(X|U = 1, t = 1992)$ denotes the multivariate distribution of X in the union sector in 1992.

The appropriate counterfactual distribution is given by:

$$\int f^{72,U=0}(h|X = x_b)dx \equiv \int f^{72,U=0}(h|X)g(X|U = 1, t = 1992)dx$$

where the term $f^{72,U=0}$ denotes the structure of hours (i.e. the relationship between hours and characteristics) in the non-union sector in 1972.

The actual distribution of hours in the non–union sector in 1972 is given by:

$$\int f^{72,U=0}(h|X)dx \equiv \int f^{72,U=0}(h|X)g(X|U=0,t=1972)dx$$

We merely need to solve for the value of θ such that:

$$\int f^{72,U=0}(h|X=x_b)dx = \int \theta f^{72,U=0}(h|X)g(X|U=0,t=1972)dx$$

A simple application of Bayes law shows that

$$\begin{aligned}\theta &\propto \frac{Pr[(U=1,t=1992)|X]}{Pr[(U=0,t=1972)|X]} \\ &= \frac{Pr[(U=1,t=1992)|X]}{1-Pr[(U=1,t=1992)|X]}\end{aligned}$$

We then compute the sequence of these counterfactual means, say $\int h \cdot f^{72,j}(h|X = x_{1992,U=1})dx$, $\int h \cdot f^{73,j}(h|X = x_{92,U=1})dx$, $\int h \cdot f^{74,j}(h|X = x_{92,U=1})dx$, $\ldots \int h \cdot f^{92,j}(h|X = x_{92,U=1})dx$, for both union and non–union sectors.

Holding X constant allows us to make a sensible *ceteris paribus* comparison – comparing the "same" individuals through time we look at changes in the "structure of hours." One advantage relative to a standard regression framework is that if there is significant "treatment effect heterogeneity" the analysis holds constant the comparison group so that the relative "strength" of the union effect over time can be easily gleaned from the estimates.

As a practical matter, we compute the probabilities in the above expression using a logit pooling the 1992 union member sample with the 1972 non-union member sample and we use a complete set of race dummies, school dummies, marital status dummies and SMSA dummies, and a cubic in age as explanatory variables for the PSID data. When we use the CPS data we use 5 education categories, 5 age categories, an SMSA dummy, 3

regional dummies, marital status, and three race categories.

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Table 1a: Mean Average Hours Per Week
For Men with Characteristics of 1992 Union Workers
PSID Data
(Standard Errors in Parenthesis)

Year	Non-Union	Union	Difference
1972	45.16	41.95	3.20
	(0.29)	(0.43)	(0.52)
1973	45.43	42.61	2.81
	(0.27)	(0.41)	(0.49)
1974	45.09	41.82	3.26
	(0.26)	(0.34)	(0.43)
1975	44.89	38.82	6.07
	(0.29)	(0.43)	(0.52)
1976	44.67	40.70	3.97
	(0.28)	(0.38)	(0.47)
1977	44.57	39.60	4.98
	(0.27)	(0.44)	(0.51)
1978	44.39	41.54	2.85
	(0.26)	(0.31)	(0.40)
1979	44.17	41.20	2.97
	(0.26)	(0.34)	(0.43)
1980	44.02	40.21	3.81
	(0.26)	(0.37)	(0.45)
1981	44.00	41.27	2.73
	(0.25)	(0.37)	(0.45)
1982	44.31	40.52	3.79
	(0.23)	(0.41)	(0.47)
1983	44.04	40.32	3.72
	(0.23)	(0.39)	(0.46)
1984	43.71	40.73	2.98
	(0.23)	(0.41)	(0.47)
1985	42.99	41.39	1.60
	(0.27)	(0.37)	(0.46)
1986	42.54	42.65	-0.10
	(0.27)	(0.25)	(0.37)
1987	42.57	42.20	0.38
	(0.27)	(0.33)	(0.43)
1988	42.71	41.75	0.96
	(0.26)	(0.36)	(0.45)
1989	42.56	41.44	1.11
	(0.25)	(0.43)	(0.50)
1990	42.31	42.92	-0.61
	(0.25)	(0.35)	(0.43)
1991	41.98	42.68	-0.70
	(0.25)	(0.37)	(0.45)
1992	41.86	42.92	-1.06
	(0.25)	(0.41)	(0.48)

Note: For description of counterfactual weights see text.

Table 1b: Mean Average Hours Per Week
For Men with Characteristics of 1997 Union Workers
CPS Data
(Standard Errors in Parenthesis)

Year	Non-Union	Union	Difference
1983	41.33	40.50	0.83
	(0.04)	(0.04)	(0.06)
1984	41.67	41.03	0.64
	(0.03)	(0.05)	(0.06)
1985	41.82	41.15	0.66
	(0.03)	(0.05)	(0.06)
1986	41.81	41.21	0.60
	(0.03)	(0.05)	(0.06)
1987	42.02	41.37	0.65
	(0.03)	(0.05)	(0.06)
1988	42.05	41.46	0.58
	(0.04)	(0.05)	(0.07)
1989	42.21	41.57	0.63
	(0.04)	(0.06)	(0.07)
1990	42.19	41.47	0.71
	(0.03)	(0.05)	(0.06)
1991	41.88	41.28	0.60
	(0.04)	(0.06)	(0.07)
1992	41.84	41.41	0.43
	(0.04)	(0.06)	(0.07)
1993	41.94	41.61	0.34
	(0.04)	(0.06)	(0.07)
1994	42.15	41.56	0.59
	(0.04)	(0.07)	(0.08)
1995	42.20	41.89	0.32
	(0.04)	(0.07)	(0.08)
1996	42.33	41.76	0.57
	(0.04)	(0.07)	(0.08)
1997	42.30	41.84	0.45
	(0.04)	(0.07)	(0.08)

Note: For description of counterfactual weights see text

Table 2: Mean Weeks Not Working Due to Illness
For Men with Characteristics of 1992 Union Workers
PSID Data
(Standard Errors in Parenthesis)

Year	Non-Union	Union	Difference
1972	0.92	1.23	-0.31
	(0.06)	(0.11)	(0.12)
1973	0.96	1.06	-0.10
	(0.06)	(0.10)	(0.11)
1974	0.83	1.18	-0.35
	(0.05)	(0.12)	(0.13)
1975	1.12	1.23	-0.11
	(0.07)	(0.08)	(0.10)
1976	1.07	1.36	-0.29
	(0.06)	(0.09)	(0.10)
1977	1.06	1.37	-0.31
	(0.05)	(0.09)	(0.10)
1978	1.15	1.27	-0.12
	(0.06)	(0.09)	(0.10)
1979	1.22	1.24	-0.02
	(0.06)	(0.08)	(0.10)
1980	1.12	1.32	-0.20
	(0.05)	(0.09)	(0.10)
1981	1.15	1.32	-0.17
	(0.05)	(0.09)	(0.10)
1982	1.13	1.26	-0.14
	(0.05)	(0.09)	(0.11)
1983	1.15	1.43	-0.29
	(0.05)	(0.11)	(0.12)
1984	1.17	1.56	-0.39
	(0.05)	(0.13)	(0.14)
1985	1.26	1.22	0.04
	(0.07)	(0.09)	(0.11)
1986	1.09	1.34	-0.25
	(0.06)	(0.12)	(0.13)
1987	1.08	1.33	-0.25
	(0.06)	(0.10)	(0.11)
1988	1.05	1.30	-0.25
	(0.05)	(0.11)	(0.12)
1989	1.02	1.27	-0.25
	(0.05)	(0.10)	(0.12)
1990	1.05	1.18	-0.13
	(0.05)	(0.12)	(0.13)
1991	1.10	1.43	-0.34
	(0.05)	(0.15)	(0.16)
1992	1.15	1.21	-0.06
	(0.05)	(0.14)	(0.15)

Note: For Description of counterfactual weights see text

Table 3: Mean Vacation Time in Weeks
For Men with Characteristics of 1992 Union Workers
PSID Data
(Standard Errors in Parenthesis)

Year	Non-Union	Union	Difference
1972	1.71	2.17	-0.46
	(0.06)	(0.09)	(0.11)
1973	1.71	2.18	-0.47
	(0.06)	(0.09)	(0.11)
1974	1.77	2.16	-0.39
	(0.06)	(0.09)	(0.11)
1975	1.93	2.37	-0.44
	(0.06)	(0.09)	(0.11)
1976	1.94	2.42	-0.48
	(0.05)	(0.09)	(0.11)
1977	1.99	2.49	-0.50
	(0.05)	(0.10)	(0.11)
1978	1.97	2.55	-0.58
	(0.05)	(0.10)	(0.11)
1979	1.99	2.44	-0.46
	(0.05)	(0.10)	(0.11)
1980	2.03	2.53	-0.50
	(0.05)	(0.10)	(0.11)
1981	2.09	2.46	-0.38
	(0.05)	(0.10)	(0.11)
1982	2.10	2.51	-0.41
	(0.05)	(0.11)	(0.12)
1983	2.09	2.69	-0.59
	(0.05)	(0.12)	(0.13)
1984	2.14	2.56	-0.43
	(0.05)	(0.12)	(0.13)
1985	2.34	2.88	-0.54
	(0.07)	(0.10)	(0.12)
1986	2.35	2.98	-0.63
	(0.07)	(0.12)	(0.13)
1987	2.34	2.96	-0.62
	(0.07)	(0.12)	(0.13)
1988	2.36	2.91	-0.56
	(0.06)	(0.12)	(0.14)
1989	2.40	2.93	-0.53
	(0.06)	(0.12)	(0.14)
1990	2.36	2.87	-0.51
	(0.06)	(0.12)	(0.13)
1991	2.39	2.80	-0.41
	(0.06)	(0.12)	(0.13)
1992	2.31	3.27	-0.96
	(0.05)	(0.15)	(0.15)

Note: For description of counterfactual weights see text

Table 4: Percent Saying "Would like to work more" or "Would like to work less" for Men with Characteristics of 1992 Union Workers (Standard Errors in Parenthesis)

	Would Like to Work More			Would Like to Work Less		
Year	Non-Union	Union	Difference	Non-Union	Union	Difference
1972	0.17	0.24	-0.06	0.08	0.06	0.03
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1973	0.15	0.26	-0.11	0.10	0.07	0.03
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1974	0.15	0.25	-0.10	0.08	0.07	0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1975	0.17	0.34	-0.16	0.07	0.09	-0.02
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1976	0.25	0.36	-0.12	0.05	0.06	-0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1977	0.24	0.37	-0.13	0.08	0.10	-0.02
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1978	0.18	0.30	-0.12	0.09	0.18	-0.08
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
1979	0.20	0.34	-0.15	0.06	0.12	-0.05
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1980	0.22	0.34	-0.12	0.07	0.06	0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1981	0.28	0.36	-0.08	0.03	0.06	-0.02
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1982	0.26	0.39	-0.12	0.04	0.05	-0.01
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1983	0.30	0.39	-0.08	0.05	0.03	0.02
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1984	0.27	0.33	-0.05	0.06	0.08	-0.02
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
1985	0.27	0.30	-0.03	0.05	0.03	0.02
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1986	0.31	0.31	-0.00	0.03	0.04	-0.01
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1987	0.31	0.31	0.00	0.04	0.02	0.02
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1988	0.29	0.32	-0.03	0.05	0.02	0.03
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1989	0.30	0.34	-0.05	0.05	0.02	0.03
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1990	0.32	0.31	0.01	0.04	0.02	0.02
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1991	0.32	0.35	-0.02	0.04	0.03	0.01
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)
1992	0.31	0.34	-0.03	0.04	0.03	0.01
	(0.01)	(0.02)	(0.02)	(0.00)	(0.01)	(0.01)

Note: For description of counterfactual weights see text.

Table 5: Union/Nonunion Differences in Health Insurance Availability and Coverage, CPS Benefits Supplement Data (Standard Errors in Parenthesis)

			Panel A: 1983 (N=15,637)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Covered	.929	.655	.274	.211	.151
			(.009)	(.009)	(.008)
			Panel B: 1988 (N=15,254)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.938	.816	.122	.095	.039
			(.008)	(.009)	(.009)
Covered	.890	.668	.222	.152	.097
			(.010)	(.010)	(.010)
			Panel C: 1993 (N=15,179)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.946	.792	.154	.141	.078
			(.010)	(.009)	(.009)
Covered	.870	.624	.246	.194	.132
			(.012)	(.011)	(.011)
			Panel D: 1997 (N=8,144)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.928	.816	.112	.100	N/A
			(.013)	(.013)	
Covered	.835	.620	.215	.175	N/A
			(.016)	(.016)	

Note: All estimates were obtained using the survey supplement weights. Standard errors are in parentheses. The estimates in the fourth column are the union coefficients from linear probability models that also control for education (4 category dummies), age, age squared, female, whether married, female by married, race/ethnicity (dummy variables for black and hispanic), a dummy variable for msa residency, 3 region dummies, and 8 major industry dummies. The adjusted differences in the final column are based on a specification that also includes 5 establishment size dummies (10-24, 25-49, 50-99, and 100-249, 250+; <10 is the omitted category; 4 dummies in 1983).
N/A = not available

Table 6:Union/Nonunion Differences in Retiree Health Benefits, CPS Benefits Supplement Data (Standard Errors in Parenthesis)

Panel A: 1988 Retiree Health Insurance Supplement (N=1098)

			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Retiree Coverage	.740	.639	.101 (.031)	.045 (.034)	N/A

Panel B: 1993 Benefits Supplement (N=1806)

			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Retiree Coverage	.766	.598	.167 (.026)	.146 (.029)	.128 (.028)

Note: All estimates were obtained using the survey supplement weights. Standard errors are in parentheses. The estimates in the fourth column are the union coefficients from linear probability models that also control for education (4 category dummies), age, age squared, female, whether married, female by married, race/ethnicity (dummy variables for black and hispanic), a dummy variable for msa residency, 3 region dummies, and 8 major industry dummies. The adjusted differences in the final column are based on a specification that also includes 5 establishment size dummies (10-24, 25-49, 50-99, and 100-249, 250+; <10 is the omitted category; 4 dummies in 1983).
N/A = not available

Table 7: Union/Nonunion Differences in Pension Availability and Coverage, CPS Benefits Supplement Data (Standard Errors in Parenthesis)

			Panel A: 1983 (N=15,637)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.843	.494	.349	.310	.227
			(.009)	(.009)	(.009)
Covered	.766	.388	.378	.303	.236
			(.009)	(.009)	(.009)
			Panel B: 1988 (N=15,254)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.868	.536	.333	.302	.212
			(.011)	(.011)	(.010)
Covered	.772	.415	.358	.281	.212
			(.011)	(.011)	(.011)
			Panel C: 1993 (N=15,179)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.862	.586	.275	.268	.172
			(.012)	(.012)	(.011)
Covered	.750	.432	.318	.269	.196
			(.012)	(.012)	(.011)
			Panel D: 1997 (N=8,371)		
			Difference (union-nonunion)		
	Union	Nonunion	Unadjusted	Adjusted	Adjusted (size)
Available	.820	.578	.242	.227	N/A
			(.017)	(.016)	
Covered	.719	.438	.281	.236	N/A
			(.017)	(.016)	

Note: All estimates were obtained using the survey supplement weights. Standard errors are in parentheses. The estimates in the fourth column are the union coefficients from linear probability models that also control for education (4 category dummies), age, age squared, female, whether married, female by married, race/ethnicity (dummy variables for black and hispanic), a dummy variable for msa residency, 3 region dummies, and 8 major industry dummies. The adjusted differences in the final column are based on a specification that also includes 5 establishment size dummies (10-24, 25-49, 50-99, and 100-249, 250+; <10 is the omitted category; 4 dummies in 1983).
N/A = not available

Table 8: Union Effects of Fringe Benefits Other Than Health Insurance in the 1990s (Standard Errors in Parenthesis)

Outcome	Data Set	Adjusted Union - Nonunion
Other Insurance		
- Dental	1991 NOS	0.165
		(.045)
- Life	1991 NOS	0.047
		(0.037)
- Long-term Disability	1991 NOS	0.092
		(0.045)
Pension/Retirement Plan		
- Offered	1991 NOS	0.187
		(0.041)
	1993 CPS Benefit Suppl.	0.172
		(0.011)
	1996 MEPS	0.197
		(0.017)
Leave		
- Paid Sick Leave	1991 NOS	0.052
		(0.042)
	1996 MEPS	0.014
		(0.018)
- Maternity Leave	1991 NOS	0.065
		(0.037)
- Paid Vacation	1996 MEPS	0.062
		(0.017)
Dependent Care		
- Child Care Benefits	1991 NOS	-0.021
		(0.040)
- Elder Care Benefits	1991 NOS	-0.023
		(0.041)

Notes: See data appendix for details on the various data sets. Estimated union/non-union differences are based on linear probability models. All regressions control for the following: age (and age squared), years of education (and education squared), and indicator variables for gender, marital status (married/not married), gender x marital status, firm size (5 categories), geographic region (4 categories) and race/ethnicity. The NOS and CPS regressions also control for industry. The CPS and MEPS regression controls for whether the individual lives in an MSA. The NOS sample sizes range from 636 to 650, depending on the outcome.

Figure 1: Percent of Workforce Unionized 1900-1997

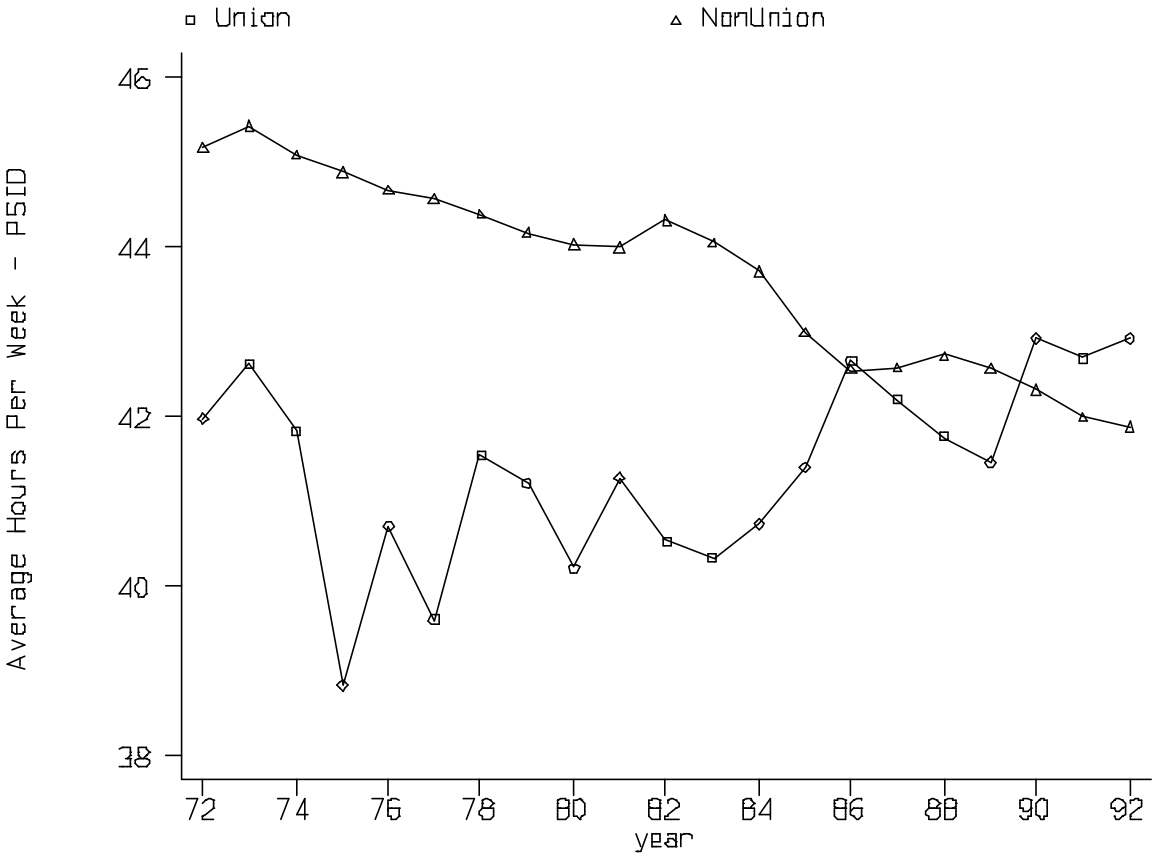

Figure 2a: Average Hours per Week for Men with Characteristics of 1992 Union Workers
PSID Data

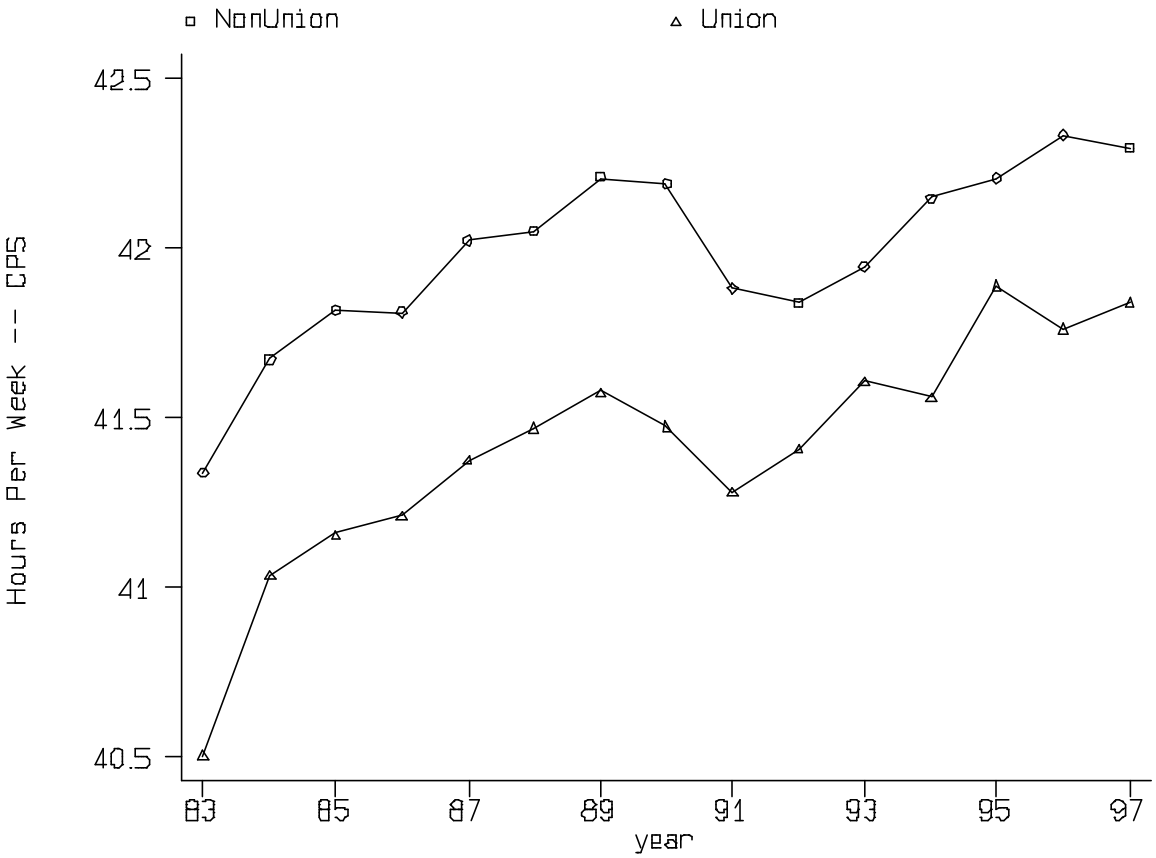

Figure 2b: Average Hours Per Week for Men With Characteristics of 1997 Union Workers
CPS Data

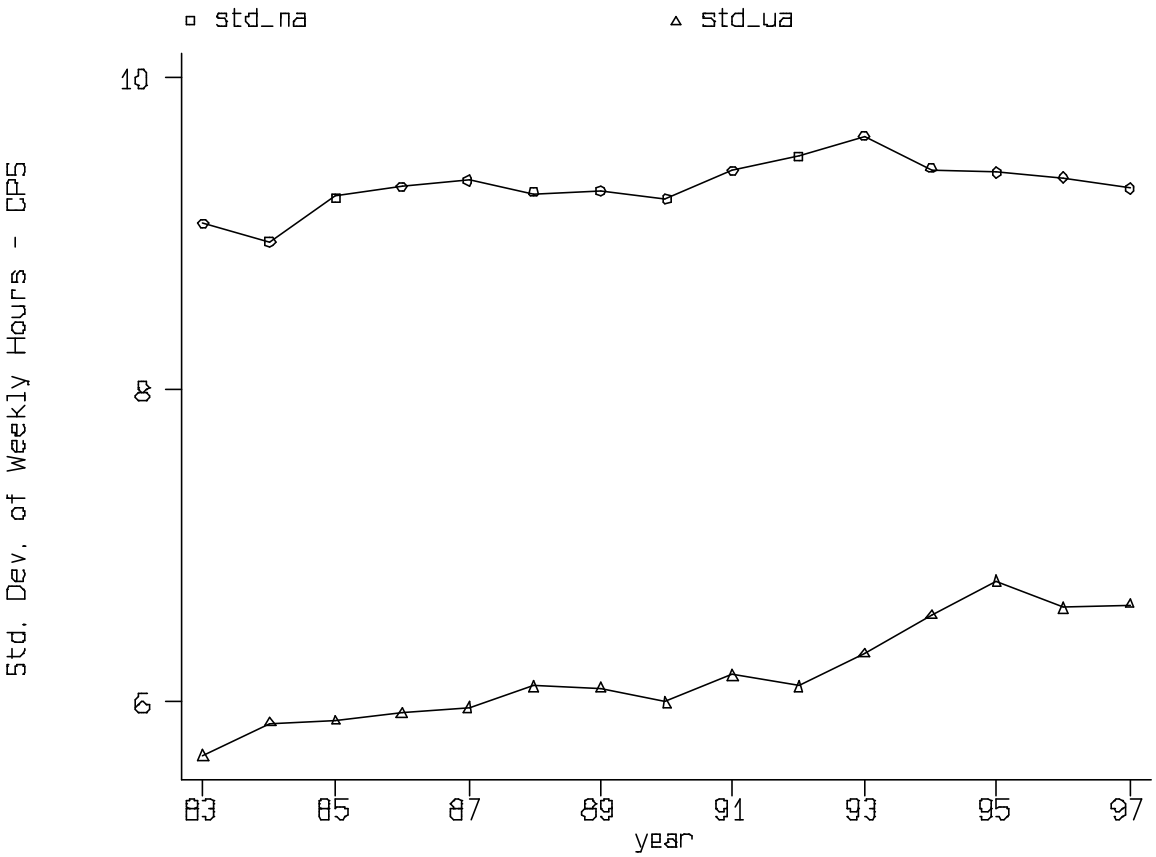

Figure 3: Std. Deviation of Hours Per Week for Men With Characteristics of 1997 Union Workers -- CPS Data

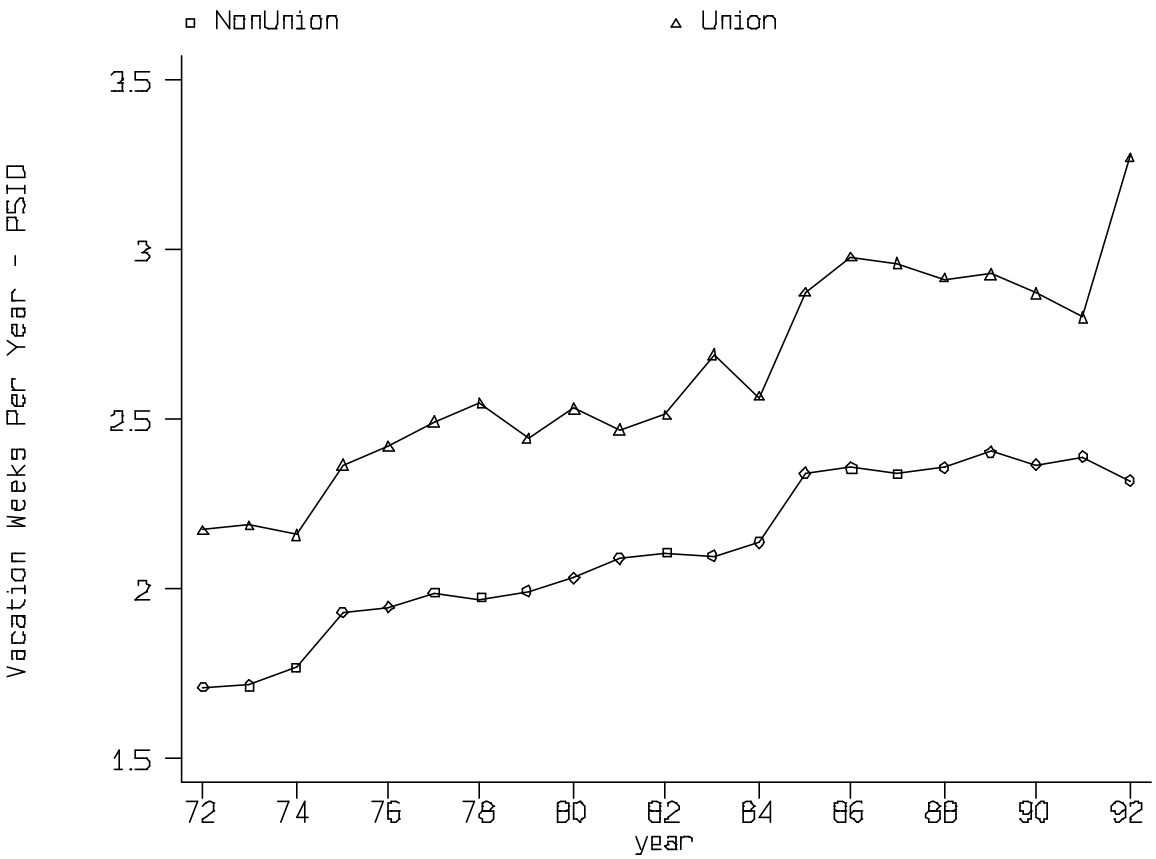

Figure 4: Average Weeks for Men With Characteristics of 1992 Union Workers
PSID Data