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Round Up the Usual Suspects:  
The Decline of Unions in the Private Sector, 1973–1998\*

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**Abstract**

After documenting the long decline in private sector unionism over the last 50 years, we examine data on NLRB representation elections to determine if changes in the administration of the NLRA during the 1980s reduced the level of organizing activity and success. While organizing activity sharply declined in 1981 (just before President Reagan's showdown with the air traffic controllers' union, PATCO), we find little evidence that the changes in the administration of the NLRA later in the decade adversely affected the level of union organizing activity. We then present an accounting framework that decomposes the sharp decline in the private-sector union membership rate into components due to 1) differential growth rates in employment between the union and nonunion sectors and 2) changes in the union new organization rate (through NLRB-supervised representation elections). We find that most of the decline in the union membership rate is due to differential employment growth rates and that changes in union organizing activity had relatively little effect. Given that the differential employment growth rates are due largely to broader market and regulatory forces, we conclude that the prospects are dim for a reversal of the downward spiral of labor unions based on increased organizing activity.

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# 1 Introduction

In 1956, one in three private-sector workers were members of labor unions. By 1998, fewer than one in ten were members of unions. In stark contrast, the union membership rate among public-sector workers increased from 12 percent to 39 percent over the same period.

While the increase in public sector unionism appears well-understood, there is substantial disagreement about reasons for the sharp decline in the private-sector union membership rate.<sup>1</sup> Many observers have argued that the legal and political support for organizing new union members in the private sector deteriorated through the 1970s and 1980s. Some focus on the intensified opposition to unions by employers (e.g., Freeman, 1988; Weiler, 1983). Others emphasize changes in the administration of the National Labor Relations Act (NLRA) due to changes in composition of the National Labor Relations Board (NLRB) (Levy, 1985). Others claim that changes in the U.S. economic environment substantially reduced the attractiveness of unions to workers and the acceptability of unions to employers. In this view, the economic environment became increasingly open to foreign competition in product markets and capital became more mobile internationally. Consequently, unions could no longer guarantee their workers higher wages while maintaining reasonable levels of job security.

In this study we contrast two explanations for the decline of union membership in the private sector. The first explanation emphasizes legal and institutional factors affecting union organizing activity. The second is based on differential employment growth rates in the union and nonunion sectors. Our goal is to evaluate the prospects for an increase in organizing activity sufficient to reverse the downward spiral of labor unions.

Although our analysis focuses on the twenty-five years from 1973 using data from the Current Population Survey (CPS), we begin by presenting the facts on the union membership rate over the last century, from 1880 through 1998. After placing the last quarter of the 20th century in the context of the longer historical record, we use recent work by Card

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<sup>1</sup> A wave of legislation at the state level was passed between the late 1950s and the 1970s that permitted and regulated unionization of public sector workers (Farber, 1988). With this legislation in place, public sector workers were able to organize, largely because the political process gives employers neither the tools nor the incentives to resist organization effectively. See Freeman (1986) for an analysis of the growth of labor unions in the public sector.

(1996) to adjust for classification error of union status in the CPS. We then compute an adjusted series on the private sector union membership rate and document its decline from 1973-1998. Section 3 begins an explanation of falling unionization by examining trends in NLRB election activity. Administrative data show that the quantity of organizing activity since 1973 was always small relative to the size of the nonunion workforce but the number of elections declined sharply in late 1981. Although this decline is often linked to President Reagan's showdown with the air traffic controllers' union (PATCO) in August 1981 and the installation of a Republican majority on the NLRB in May 1983, we find little evidence that either event precipitated the downward trend in organizing activity. Section 4 takes an alternative approach by presenting an accounting framework that decomposes the change in the union membership rate into components due to 1) differential growth rates in employment between the union and nonunion sectors or 2) the level of the union new organization rate (through NLRB-supervised representation elections). We find that most of the decline in the union membership rate is due to differential employment growth rates in the union and nonunion sectors, and that it would take extremely large increases in union organizing activity to significantly influence the union membership rate. Finally section 5 offers some rough calculations of the financial resources required to mount an organization effort of sufficient scale. The resources required, particularly on a per-union-member basis, are quite large.

We conclude that the decline in the private-sector union membership rate was due primarily to changes in the economic environment that made union representation of less value to workers and/or more costly to employers. Increased global competitiveness and mobility of capital were likely important contributing factors. The decline in union organizing activity through NLRB-supervised representation elections was a marginal contributor to the decline in the union membership rate. In order to yield a substantial increase in the union membership rate in the long-run, the level of union organizing activity would have to increase by at least an order of magnitude. This would require either a substantial change in the economic environment (perhaps as a result of a partial withdrawal of the United States from the global economy) or a drastic modification of the NLRA (well beyond the modest reforms that have failed to win adequate political support in over the last 25 years). The prospects for either

of these scenarios are dim, and we are forced to conclude that a resurgence of labor unions in the private sector in the foreseeable future is unlikely.

## 2 The Decline in the Union Membership Rate

### 2.1 The Long Historical Record: 1880-1998

Figure 1 contains a plot of union membership rates among non-agricultural employees from 1880–1998.<sup>2</sup> This figure shows a rather remarkable pattern. The union membership rate was less than 5 percent in the early 1880’s, and, with advances and retreats, rose to peaks of 34.2 percent in 1945 and 33.5 percent in 1954. The record since that time has been one of steady decline to a low of 13.3 percent in 1998. Freeman (1998) characterizes the early record (through the early 1950’s) of union growth as a series of discontinuous spurts followed by periods of decline. On that basis the period since 1954 is best characterized as a long decline after the large spurt (or set of spurts) from the mid-1930’s through the mid-1950’s. Freeman’s conclusion is that, in general, unions grow in spurts and not through slow and steady additions to membership over long periods of time.<sup>3</sup> These spurts originate in periods of intense social unrest (the 1930s) and wars (World War II and Korea). But later wars (Vietnam) and periods of social activism (the 1960s) have not resulted in spurts of organization. So, while future union growth may depend on another spurt occurring, we have little guide to what might trigger such an episode of dramatic growth.

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<sup>2</sup> It is no trivial exercise to derive a consistent series on union membership rates over such a long period of time. I use the series developed by Freeman (1998, Table 8A.2) for the period 1880–1995. These data are derived from a variety of sources, described in detail by Freeman. In order to extend the series for the 1995–1998 period, I used predicted values from a regression of Freeman’s union membership series from 1973–1995 on our own series on annual union membership rates from the CPS over the 1973–1995 period. This regression fits very well over the 1973–1995 period ( $R^2 = 0.953$ ). I then use my data on annual union membership rates from 1996–1998 in conjunction with the estimated parameters of this regression model to predict values for “Freeman’s” series from 1996–1998.

<sup>3</sup> There is a large literature investigating the process of union growth. Some contributions include Barnett (1933), Davis (1941), Dunlop (1948), Bernstein (1954), and Ashenfelter and Pencavel (1969).

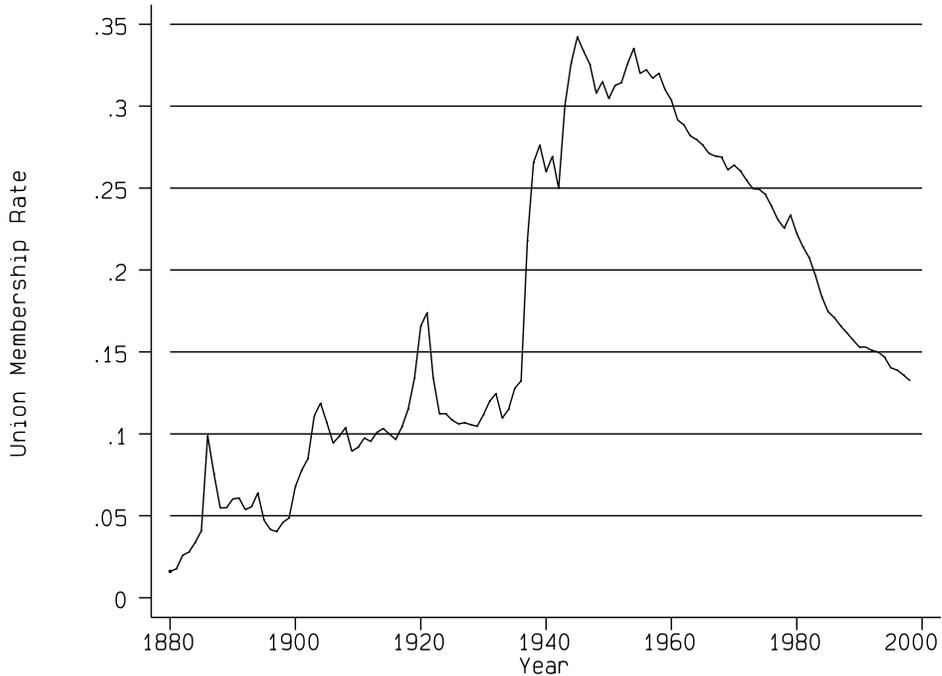


Figure 1: Union Membership Rate, Non-Agricultural Workers, 1880–1998

## 2.2 Union Membership and Coverage in the Private and Public Sectors

Using data from the CPS, we can calculate distinct union membership rates in the private and public sectors over the 1973–1998 period.<sup>4</sup> Figure 2 verifies the well-known fact that union membership rates in the private and public sectors have followed very different paths over the past quarter century. The private and public sector union membership rates were approximately equal in 1974 at about 25 percent and have diverged since. The public-sector union membership rate increased rapidly through 1980 to about 36 percent and has increased only slightly since.<sup>5</sup> In contrast, the private-sector union membership rate declined over the

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<sup>4</sup> These data are derived from the May CPS from 1973–1981 and from the merged outgoing rotation group files of the CPS from 1983–1998.

<sup>5</sup> The increase in the public sector union membership rate early in the period is due largely to new organization following enactment of laws in many states guaranteeing the rights of public-sector employees to unionize. Farber (1988) presents an analysis of the evolution of public sector bargaining laws. In the same volume, Ichniowski (1988), Saltzman (1988), and Freeman and Valletta (1988) present analyses of the effect

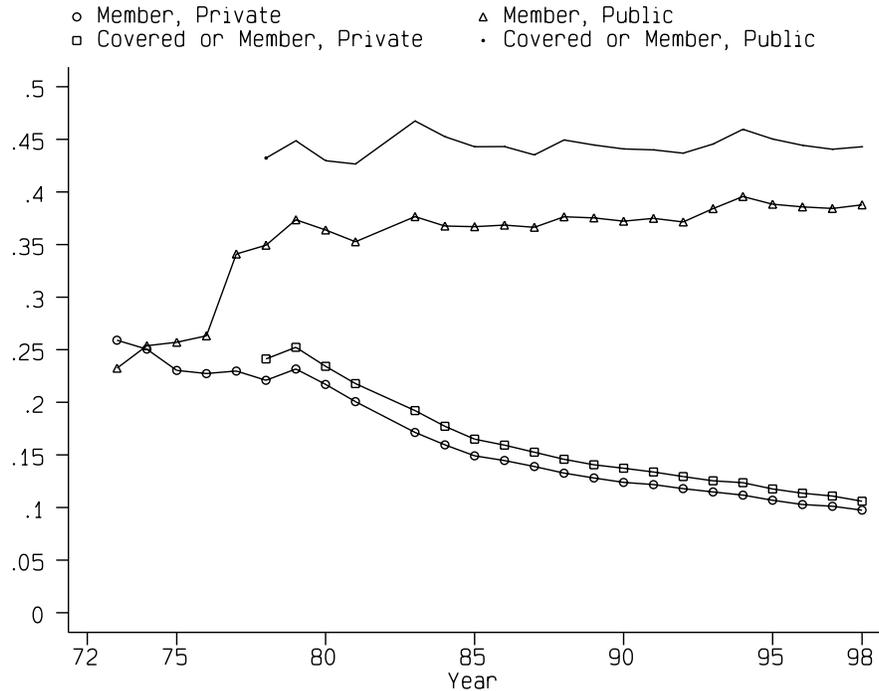


Figure 2: Private and Public Sector Unionization Rates, 1973–1978

entire period to a low of 9.7 percent in 1998, though it appears that the rate of decrease in the membership and coverage rates was largest between 1980 and 1985.

Figure 2 also contains plots of the union coverage rate (the fraction of workers who are either members of a union or are covered by a collective bargaining agreement on their main job) from 1978–1998.<sup>6</sup> It is interesting to note that the free-rider rate (the fraction of covered workers who are not union members) is much larger in the public sector. The free rider rate in the private sector has been steady at about 8 to 9 percent since 1978. The free rider rate in the public sector was about 17 to 18 percent in the early 1980s and has decreased to 12 to 13 percent since that time. The free-rider rate in the private sector reflects, at least in part, the presence of right-to-work laws in 19 states (in 1976). Based on the CPS data, the

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of public sector bargaining laws on the union status of public sector workers.

<sup>6</sup> There is no information on union coverage available from the CPS prior to 1978. The CPS questions since 1977 (but not on the public-use data file until 1978) first ask if an individual is a union member. If the response is “no”, then the individual is asked if he or she is covered by a collective bargaining agreement on his or her main job.

free-rider rate in the private sector between 1978 and 1998 was 15.0 percent in states with right-to-work laws and 7.5 percent in states without right-to-work laws.<sup>7</sup>

Given the closeness with which the coverage and membership series move and the fact that a consistent series on membership is available since 1973, we proceed using union membership rates for our analysis of the decline in private-sector unionization.

The long time series in figure 1, understates the decline in the private sector union membership rate since 1973 because it combines the public and private sectors. Still, it is clearly the case that, by studying the period since 1973, we are joining the middle of a longer run process. The union membership rate has been declining since at least the early 1960s. Nonetheless, examining the processes affecting the union membership rate since 1973 has important implications for the longer time series.

### 2.3 Adjusting for Classification Error in the CPS

Card (1996) presents evidence of misclassification of self-reported union status of private-sector workers in the CPS. The evidence comes from a 1977 validation survey that was designed to measure the reliability of job data in the CPS (Mellow and Sider, 1983). The survey gathered data on unions status not only from the CPS but also from the respondent's employer. Card (1996) analyzes the pattern of responses and concludes that the data are consistent with a classification error rate (both false negatives and false positives) of about 2.7 percent. In other words, 2.7 percent of individuals who are, in fact, union members report that they are not union members (false negatives). Analogously, 2.7 percent of workers who are not union members report that they are union members (false positives). Given that there are more workers who are not union members than there are workers who are union members, the union membership rate estimated from the CPS will be biased upward. In what follows, we derive a time series on the union membership rate that is adjusted for classification error.

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<sup>7</sup> The free-rider rate in the public sector over the same period was 26.0 percent in states with right-to-work laws and 12.8 percent in states without right-to-work laws. Since right-to-work laws only apply to private-sector workers, this reflects a correlation between the state laws governing public-sector unionization and the existence of right-to-work laws.

Let  $r_t^*$  represent the union membership rate in year  $t$  as measured in the CPS and let  $r_t$  represent the true union membership rate. Denote the misclassification rate by  $\lambda$ . On this basis, the observed union membership rate is

$$r_t^* = (1 - \lambda)r_t + \lambda(1 - r_t) \quad (2.1)$$

$$= r_t + \lambda(1 - 2r_t), \quad (2.2)$$

where the first term in equation 2.1 is the part of the observed union membership rate that comes from actual union members but is biased downward by the classification error and the second term is the part of the observed union membership rate that comes from misclassification of nonunion workers. The bias in the observed union membership rate is

$$r_t^* - r_t = \lambda(1 - 2r_t). \quad (2.3)$$

It is clear that as long as  $r_t < 0.5$ , the observed union membership rate is biased upward and that the size of the bias is negatively related to the true unionization rate. Finally, equation 2.2 can be solved for the actual union membership rate as a function of the observed union membership rate and the misclassification rate. This adjusted union membership rate is

$$r_t = \frac{r_t^* - \lambda}{1 - 2\lambda}. \quad (2.4)$$

Using Card's (1996) estimate of the misclassification rates,  $\lambda = 0.027$ , the observed private-sector union membership rate of 25.9 percent in 1973 translates into an actual union membership rate of 24.5 percent for a bias of 1.4 percentage points. However, the observed private-sector union membership rate of 9.7 percent in 1998 translates into an actual union membership rate of 7.4 percent for a bias of 2.3 percentage points. In the limit, an observed union membership rate of 2.7 percent (the same value as the misclassification rate) would imply an actual union membership rate of zero.

Figure 3 plots the unadjusted and adjusted private-sector union membership rates by year assuming a misclassification rate of 0.027, and it verifies the slightly larger decline in the union membership rate between 1973 and 1998. We use this adjusted union membership rate (equation 2.4) in the remainder of our analysis, but the results are qualitatively identical using the unadjusted rate.

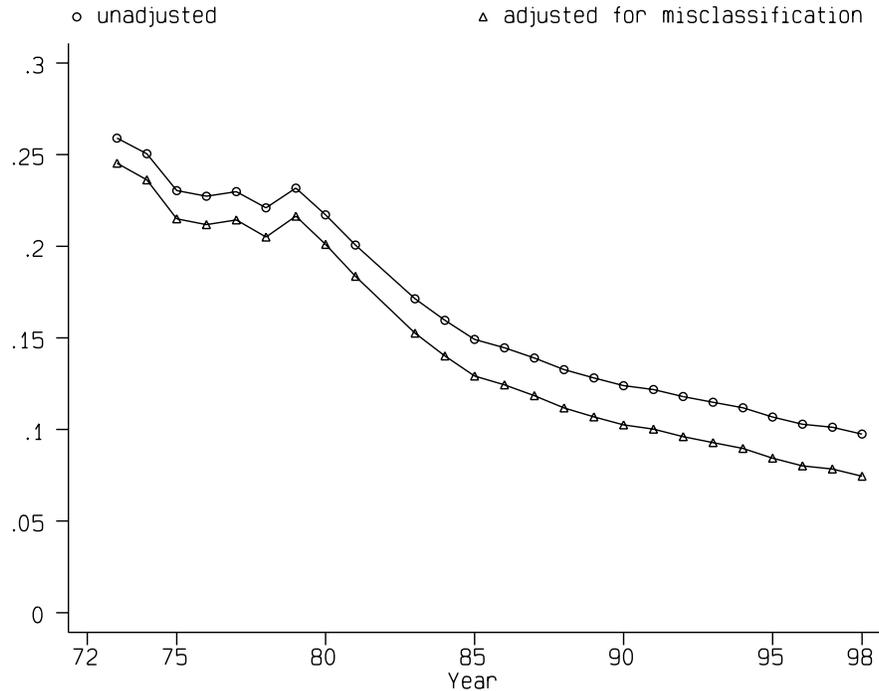


Figure 3: Private Sector Union Membership Rate, Classification Error Adjustment

### 3 The Decline in Union Organizing Activity

The NLRA provides the central mechanism through which jobs become unionized. The NLRA, passed in 1935, guarantees the rights of workers to organize and bargain collectively with their employers. The Act also specifies a procedure for unions to become recognized as the exclusive bargaining agent of workers. The procedure is initiated when a large proportion (at least 30 percent) of workers show interest in union representation by signing authorization cards. The union then petitions the NLRB to conduct a representation election. Employers and unions campaign among workers from the time of the petition until the election. The NLRA also defines a set of unfair labor practices (ULP) that limits the use of threats, dismissals, and coercion to influence the vote or the organizing process, more generally. Violations can be remedied by bringing ULP charges before the NLRB.

In the early post-NLRA years substantial organization happened outside the NLRB election process through the use of “recognition strikes” and “card checks”. The definition of the former is self-evident. Organization through card checks occurred when employers agreed,

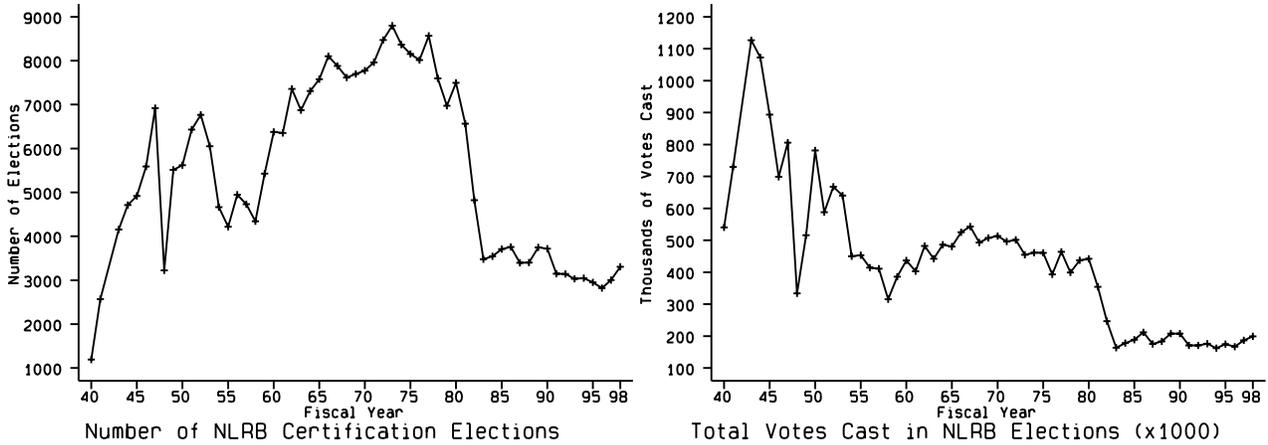


Figure 4: Quantity of NLRB Election Activity, 1940–1998

without an election, to recognize a union and bargain following a strong show of interest by workers through signed authorization cards. While systematic evidence on the quantity of organizing through these mechanisms is difficult to come by, the general perception is that they have become much less important in new organizing.

### 3.1 The Quantity of Election Activity

The left-hand plot of figure 4 presents the number of NLRB-supervised representation elections held each year from 1940–1998. The large spurts of election activity in the early 1940s and early 1950s are clearly evident. Additionally, the number of elections increased rapidly during the 1960s before leveling off in the mid-1970s. This was followed by a sharp decline in the early 1980s. Since 1983, the number of elections has held steady at a relatively low level. The right-hand plot of figure 4 presents the total votes cast in representation elections over the same period. While the spurts are evident in this series, there is a fairly steady decline in the total votes cast from the mid 1940s through the late 1950s.<sup>8</sup> The level of voting was fairly stable through the 1960s and 1970s before dropping precipitously (along with the number of elections) in the early 1980s. The total votes cast has remained steady at a very low level since the mid-1980s.

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<sup>8</sup> The difference in time-series behavior between the elections series and the votes series is reflects the fact that the average election size fell over this period.

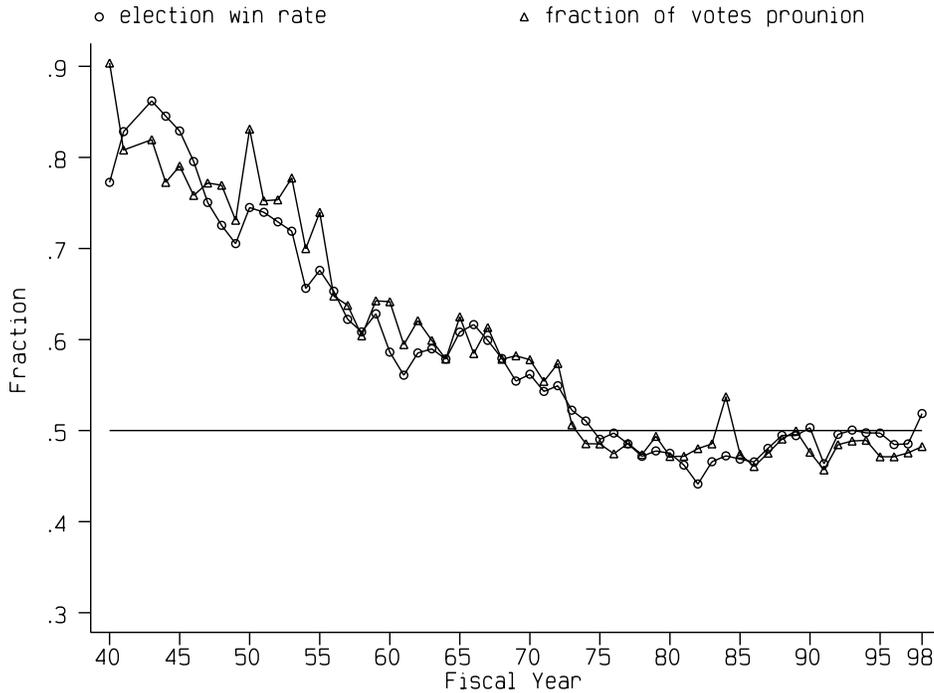


Figure 5: Union Win Rates and Vote Share in NLRB Elections, 1940–1998

Figure 4 strikingly illustrates the sharp decline in union organizing activity in the early 1980s. The number of elections held fell by almost 50 percent from about 8000 in 1980 to about 4400 in 1990. The number of votes eligible to be cast fell from about 512,000 to about 221,00 over the same period, a drop of over 50 percent. We will return to this later in this section when we discuss the role of changes in administration of the NLRA in the decline of union organizing.

### 3.2 Union Success in Elections Held

Even the small number of workers voting in representation elections overstates actual new union organization since unions do not win all elections. The probability of a union win declined between 1940 and 1975. Figure 5 plots the union win rates and pro-union vote

share in representation elections held between 1940 and 1998.<sup>9</sup> In the early 1950s, unions won 72 percent of all representation elections but by the late 1970s the union win rate had dropped to 49 percent. Since the mid-1970's the union win rate has been steady at slightly less than 50 percent.

An additional factor intervening to reduce the effective amount of new organization is the increased difficulty newly-organized workers have had in negotiating a first contract with employers. While there are no systematic data on representative samples of union-won elections, Weiler (1984) analyzes a small number of surveys and finds that the fraction of union wins yielding first contracts fell from 86 percent in 1955 to 63 percent in 1980.<sup>10</sup> Thus, even the already small new-organization rate based on the number of workers in potential bargaining units where unions won elections overstates the number of newly-organized workers.

### 3.3 The New-Organization Rate: Two Definitions

It is clear that union organizing through NLRB elections is small relative to the labor force. In order to measure this more precisely, we define the new-organization rate, denoted  $\psi_t$ , as the product of the election rate ( $e_t$ ) and the union win rate in elections held ( $w_t$ ),

$$\psi_t = e_t w_t. \tag{3.1}$$

The union win rate ( $w_t$ ) is defined as the fraction of workers eligible to vote in representation elections who are in units where the union won the election.<sup>11</sup> The win rate is appropriately computed by dividing the number of eligible voters in union-won elections by the total number of eligible voters that year. However, the number of eligible voters in union-won elections is not available prior to 1973, so we use the pro-union vote share as a proxy when constructing our long time series.

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<sup>9</sup> Farber (1999) presents an analysis of the decline in union success that focuses on the fact that union success fell more sharply in large units than in small units.

<sup>10</sup> See also, Prosten (1978) and Cooke (1985). The NLRA provides that unions have one year from the date of certification as the bargaining agent of the workers to negotiate a contract. If no contract is negotiated in that time, the union is no longer recognized as the bargaining agent.

<sup>11</sup> Lack of data requires that we ignore the fact, noted above, that unions have not been able to negotiate a first-contract in many cases where they have won a representation election.

The definition of the election rate ( $e_t$ ) depends on the purpose for which it is used. Because the pool of potentially-unionizable workers consists of the nonunion workforce, it is reasonable to define  $e_t$  as the fraction of *nonunion* workers in period  $t$  who are eligible to vote in NLRB elections. This measure indicates how intensively unions are organizing potential members.<sup>12</sup> We rely on this definition in most of our analysis.

Alternatively, the election rate might be defined as the ratio of the number of workers eligible to vote in representation elections divided by *union* employment. This alternative measure highlights the extent to which unions “tax” themselves to organize new members. Since unions derive organizing resources from their members, normalizing the level of organizing activity this way helps describe the “tax rate” levied on union members to finance new organization.

The data requirements for computation of the new organization rate by either definition are substantial. Information is required on the number of individuals eligible to vote in representation elections, the number of individuals eligible to vote who were in units where the union won the election, private sector employment, and the fraction of private sector employment unionized. All of these measures can be calculated using micro-level data available since 1973 from the NLRB and the CPS. However, important components are not available prior to 1973. However, in order to provide some evidence on movements in the new-organization rate over the longer time period, we developed an, admittedly imperfect, time-series on the new organization rate that covers the period from 1940–1997. We describe the construction of that series in Appendix I.

When using the micro-data over the 1973-1997 period, we use the NLRB data directly to measure the number of workers who voted in elections and the number in union-won elections. We compute employment levels in the union and nonunion sectors in three stages. First, we use data from the Bureau of Labor Statistics (Series ID LFS11000000) on monthly civilian employment to compute annual employment levels as the average of the monthly values in each year. Second, we compute the fraction of employment in each year that is in the private sector and the fraction that are union members within the private sector. These

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<sup>12</sup> We ignore the fact that not all non-union workers are covered by the NLRA. The most notable group not covered are managers.

fractions are computed using the May CPS from 1973–81 and the merged outgoing rotation group CPS data from 1973–98.<sup>13</sup> Third, employment in the union and nonunion sectors in year  $t$  is then given by

$$U_t = r_t p_t L_t \tag{3.2}$$

$$N_t = (1 - r_t) p_t L_t, \tag{3.3}$$

where  $r_t$  is the adjusted union membership rate,  $p_t$  is the fraction of employment that is in the private sector, and  $L_t$  is total employment. These employment levels are then used in calculating the new-organization rates by the two definitions.

We make no explicit adjustment in our analysis for the fact that certain groups of private-sector workers, managers most importantly, are explicitly exempted from coverage/protection under the NLRA. However, it is clear from exploratory analysis that our results would not be affected in any important way by excluding non-covered workers.

### 3.4 The Decline in the New-Organization Rate

With all of the components of the election rate and the union win rate in place, we calculated the new-organization rate using both the nonunion and union basis for computing the election rate. The top panels in figure 6 contain the nonunion- and union-based new-organization rates over the 1940–1997 period. This long perspective clearly shows the large spurt in organization in the 1940s and the smaller spurt in the early 1950s. But the record since that time is one of steady decline in the new-organization rate. Given that the union membership rate is declining, the union-based new-organization rate (with union, rather than nonunion, employment in the denominator) is substantially higher and does not show as much decline as the nonunion-based rate.

The bottom panels in figure 6 contain the nonunion- and union-based new-organization rates over the 1973–1997 period. The figure plots the approximate series estimated for the entire 1940–1997 period and the more reliable series from the CPS. The two measures covary

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<sup>13</sup> We exclude the unincorporated self-employed from the calculations of the fractions from the CPS. All shares are computed using the CPS final sampling weights.

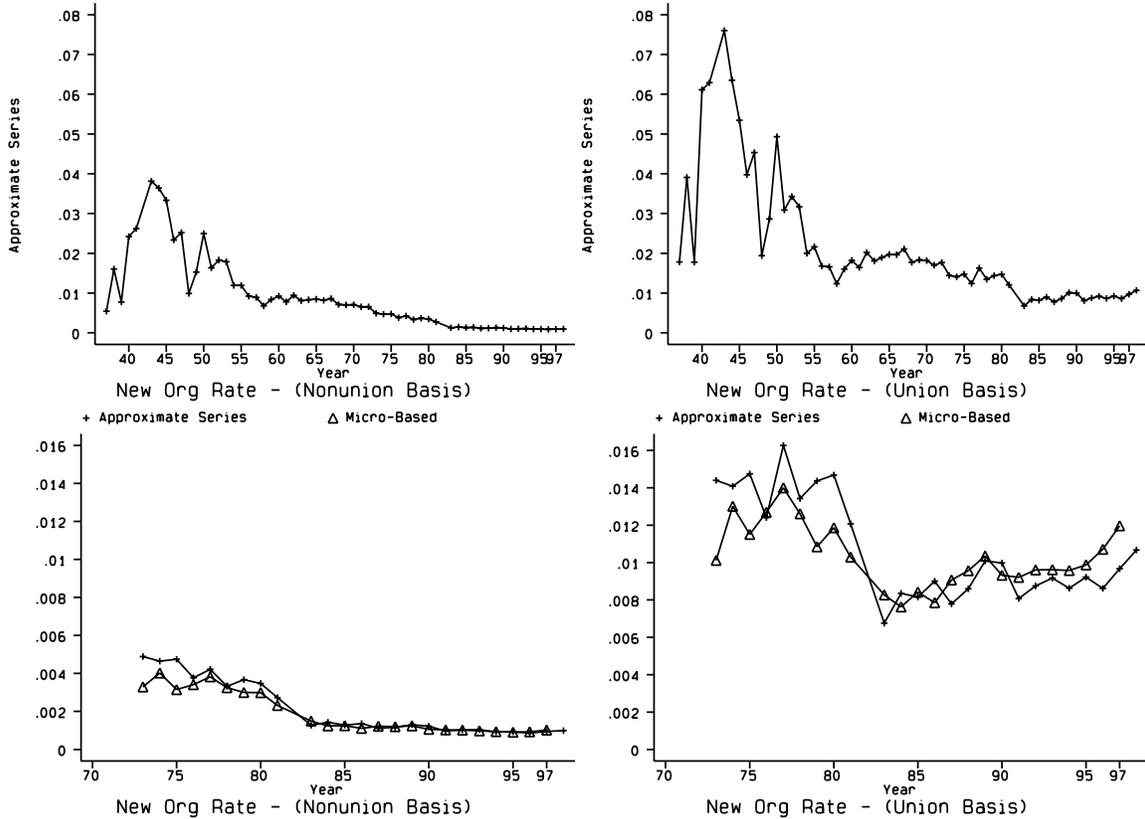


Figure 6: The New-Organization Rate, 1940–1997

closely, offering us greater confidence in the longer times series. Substantively, the nonunion based new-organization rate has been very small since 1973, but it declined substantially in relative terms in the early 1980s from over 0.3 percent in the late 1970s to about 0.1 percent by the late 1980s. Most of this decline happened between 1981 and 1983. Strikingly, union organizing activity was some 40 times higher during the period of union expansion in the 1940s compared to the contemporary period.

The union-based new-organization rate is clearly much higher than the nonunion-based rate, not surprisingly given the small share of union employment in the private-sector workforce. The union-based series also shows the sharp decline in the early 1980s even more clearly than the nonunion based series.

The sharp decline in the new-organization rate in the early 1980s is due to reduced election activity (figure 4) rather than a decline in union electoral success (figure 5). This is consistent with a simple economic model of union decision-making where unions decide

whether to undertake elections based on 1) the costs of the organizing campaign, 2) the expected probability of winning, and 3) the benefits of winning. Such a model suggests that, when the organizing environment becomes less hospitable to unions (as it likely did in the 1980–83 period), unions contest only those elections where a “reasonable” chance of success remains. The result will be a sharp decline in the election rate but relatively little change in the union win rate.<sup>14</sup>

We turn now to a closer analysis of the post-1973 period in order to investigate the continuing decline of unions in the private sector in general and the decline in new-organization in the early 1980s in particular.

### 3.5 Is Labor Law the Culprit?

How can we explain the sharp decline in the level of election activity in the early 1980s? Some researchers point to the emergence of a hostile legal climate that exposed unions and workers to employer coercion. Labor law is viewed as a key determinant of American union decline in theories of employer opposition. The employer-opposition account was based on three key observations. First, the probability of a pro-union vote declined between 1945 and 1980 (figure 5). Second, even when unions obtained certification, their success in obtaining a first contract fell over time. Third, the number of unfair labor practices charges against employers increased sixfold over this same period (Weiler 1983, 1984).

For many observers, this evidence suggests that employers increasingly adopted illegal tactics to defeat union organizing. Labor law was implicated by failing to protect workers’ rights to a fair certification process.<sup>15</sup> Various links in the chain of this argument have received detailed empirical treatment. The adverse effect of unfair labor practice charges on the probability of a union election victory is modestly supported.<sup>16</sup> There is stronger

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<sup>14</sup> Farber (1999) develops a model of union organizing activity with these implications.

<sup>15</sup> See, for example, Freeman (1988), Weiler (1984), and Weiler (1990)

<sup>16</sup> See Lalonde and Meltzer (1991). Even analyses of the same data have led to dramatically opposed conclusions. Getman, Goldberg, and Herman (1976) used data on employer behavior and individual votes in a sample representation elections to conclude that unfair labor practices had little influence on individual votes. A reanalysis of these same data by Dickens (1983) reached the opposite conclusion. Dickens found that unfair labor practices by employers substantially reduce the probability of a union election victory

evidence that delays incurred by filing objections to the campaign process are associated with a lower probability of union success.<sup>17</sup> This has led to calls for expedited procedures where the representation decision quickly follows the election petition. This could be done either through an “instant election” or “card-check” as is used in Canada (Flanagan, 1987; Weiler, 1990). These options would limit the opportunity of employers to discourage pro-union sentiment through delay or commission of unfair labor practices. The fact that unions have had increased difficulty translating election victories into first contracts has been used to argue that employers are not “bargaining in good faith” as required by the NLRA. This had led some to propose “first-contract arbitration,” a requirement that arbitration be used to decide the terms of a first contract if the parties fail to agree voluntarily (Weiler, 1984).

More recently, a number of legal scholars have claimed that the Reagan-appointed Labor Board of the early 1980s established an “active regulatory constraint” on collective bargaining (Weiler 1990) which “accelerated the decline of unionism” (Gross 1996, 255; see also Levy 1985). Seats on the five-member Labor Board are filled by Presidential nominees, serving five-year terms. Because of the term length, the political complexion of the Board changes slowly. In August 1981, President Reagan made his first two appointments to the Board, John Van de Water and Robert Hunter. The Carter majority served through 1982, and a Reagan majority was finally formed in the middle of 1983 under the new chairman, Donald Dotson.

Critics claim that unions received prejudicial treatment while scrutiny of employer conduct was significantly relaxed under the Dotson Labor Board. Unions faced increased obstacles to contesting elections as representation petitions were increasingly dismissed for failing to specify appropriate bargaining units. Where elections were held, employer conduct was substantially deregulated. Under a line of Dotson Board rulings, employers obtained greater latitude to interrogate union supporters, make misleading campaign statements, speculate about the adverse effects of unionization, and discharge union supporters. In Levy’s (1985, 293) review, “The centerpiece of the Board’s strategy is to uphold elections marred by unfair

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despite having a relatively small effect on any individual’s vote. Flanagan (1987) reviews this literature.

<sup>17</sup> See, for example, Roomkin and Block (1981) and Cooke (1983).

labor practices, while legalizing employer practices which interfere with, restrain or coerce employee free choice in elections.” Beyond the election process, employers’ obligation to engage in good-faith bargaining was weakened, and employer reprisals against strikers were deregulated. During this time, the Board accumulated its largest ever backlog of unprocessed unfair labor practice claims, delaying elections and first-contract bargaining (Gross 1996; Levy 1985). Dotson vacated his chair of the NLRB in December 1987, and a new chairman was named in January 1988. Subsequent Labor Boards, although not as activist as the Dotson Board, affirmed the weakened commitment to collective bargaining established during the mid-1980s.

Like research on employer opposition, legal analysis of Reagan’s first Labor Board often views union organizing activity as an important cause of union decline. Although the link between unfair labor practices and elections has been studied in detail, the impact of the Reagan Labor Board on the quantity of union organizing activity has not been extensively analyzed. A key implication of the legal analysis is that the number of elections contested and the union win-rate would both decline under the first Reagan Board. Although the win rate is the focus of earlier research, the major constraint on new organizing (and the variable showing greatest variation over the last 30 years) is the number of elections contested.

The effect of the political complexion of the NLRA may be difficult to detect because the industrial relations climate was changing in many ways as Reagan nominees were joining the Labor Board. In particular, the air traffic controllers strike of 1981 has been viewed as a key watershed in U.S. labor relations (Northrup and Thornton 1988; Traynor 1997). Following strike action through the summer of 1981, air traffic controllers were fired by President Reagan and nonunion replacements were hired. The strikers’ union, PATCO, lost its representative role, and the hiring of permanent replacements became a highly visible employer strategy for deunionization. Analyses of strike data thus show the increased use of permanent replacements in the 1980s compared to earlier decades (LeRoy 1995; Cramton and Tracy 1998). Traynor (1997) reports that the rate of union wage growth also slowed under the new labor relations regime ushered in by the PATCO strike. Although it chiefly highlighted the role of permanent replacements, the PATCO strike is viewed as initiating a more general employer offensive against labor unions (Shostak and Skocik, 1986). From

this perspective, a shift in employer behavior rather than labor law has driven the decline in organizing activity.

We can try to pinpoint the timing of changes in the trend of union organizing by analyzing monthly counts of certification elections available from the administrative records of the NLRB. If the PATCO strike (August 1981) or the appointment of the Dotson Labor Board (May 1983) influenced organizing activity, this may result in changes in the trend of the election series around the time of these events.

A simple approach fits the election data to a linear spline function with two knots. Such a function effectively models the time series as a continuous function consisting of three connected linear segments. Casual inspection of figure 4 shows that such a function might fit the times series of union organizing between 1973 and 1997 quite well. The knots, at  $\{k_1, k_2\}$ , correspond to the location of the break-points between the first and second segments and between the second and third segments respectively. The knots are parameters that can be estimated by searching over a plane of pairs of monthly time points. Specifying  $k_1 < k_2$  restricts the search to unique pairs of knots.

The location of the knots provides evidence on whether there was a causal relationship between either the PATCO strike or the appointment of the Dotson board and union organizing activity. We expect the spline function to show a slow decline in union organizing until  $k_1$  followed by a sharp decline until  $k_2$  with a slow decline subsequent to  $k_2$ . For example, if the first knot follows shortly after the PATCO strike, one might conclude that Reagan's handling of the PATCO strike had a strong influence on the timing of the steep decline. Alternatively, if the first knot precedes the PATCO strike, it would be hard to argue that Reagan's handling of PATCO caused the decline. Similarly, if the second knot is prior to the installation of the Dotson board, it would be hard to argue that the Dotson board contributed to the steep decline seen in the data. Admittedly, this is a rough test but the two events provide convenient reference points for summarizing the elections time series.

From a Bayesian perspective, each pair of knots represents a different model whose posterior probability can be used to construct a posterior distribution for  $\{k_1, k_2\}$ . Using a monthly time series for the period 1974(1)–1997(12), we examine all models for knots in the range 1981(1)–1985(1). With a uniform prior over the knots, the posterior probability of each

model relative to a common base model is proportional to the Bayes factor.<sup>18</sup> A Bayesian regression assumes the monthly elections counts are conditionally normal, with diffuse prior information at the maximum likelihood estimates. A simple approximation to two times the log Bayes factor for regression model  $i$  (relative to a null model with all coefficients but a constant constrained to zero) is given by the Bayesian Information Coefficient (BIC):

$$\text{BIC}_i = n \log(1 - R_i^2) + p_i \log n, \quad (3.4)$$

where  $p_i$  is the number of model parameters,  $n$  is sample size, and  $R_i^2$  is obtained from the least squares fit (Kass and Raftery 1995). In our analysis, we contrast spline models,  $S$ , with a null model,  $N$ , that fits a linear trend with no change points. BIC statistics for this comparison are given by the difference,  $\text{BIC}_0 - \text{BIC}_S$ , which is positive when model  $S$  has higher posterior probability than 0.

Analysis of the election series is summarized in Figure 7. Our estimates come from a seasonally adjusted series based on the residuals from a least squares fit to a complete set of month dummies. The top two graphs in the figure provide inferences about the location of the spline knots,  $k_1$  and  $k_2$ . Panel (a) shows a contour plot of BIC statistics for the two knots. Because the contours are approximately proportional to the log posterior density of  $\{k_1, k_2\}$ , the plot describes the joint probability distribution of the knots. The best-fitting spline model places knots at July 1981 and February 1982. The figure also shows the location of knots marking the PATCO strike and the formation of the Dotson Labor Board. The best-fitting model finds an inflection in the election series one month before the air-traffic controllers' strike. The second inflection in the series comes more than a year before a Republican majority controls the NLRB.

Panel (b) provides marginal inference about the location of  $k_1$ , and panel (c) plots the observed series of elections and the model fit. The marginal probability distribution of  $k_1$  is obtained by summing over  $k_2$ ,

$$p(k_1 = i) = \sum_{j=i+1}^{1985(1)} p(k_1, k_2 | k_1 = i, k_2 = j), \quad i = 1980(1), \dots, 1985(1). \quad (3.5)$$

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<sup>18</sup> The Bayes factor,  $B_{10}$  summarizes evidence for model 1 compared to base model 0 as the ratio of the marginal likelihoods for the two models. The marginal likelihood is the probability of the data integrating over the model parameters.

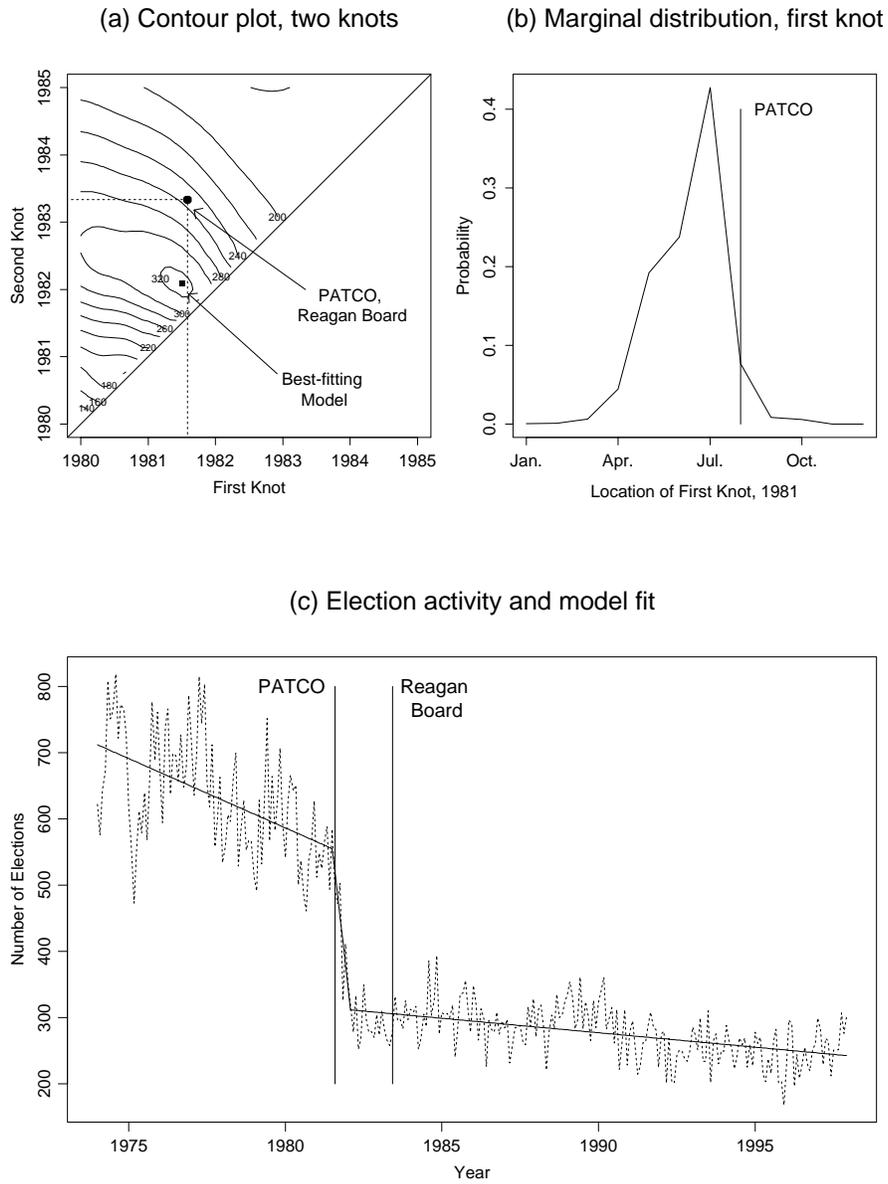


Figure 7: Analysis of spline model of election filings: (a) contour plot of BIC statistics for first and second knot, (b) probability of the first knot, marginalizing over the second knot, (c) deseasonalized election activity and fit of best-fitting spline model.

Although the PATCO strike comes just a month after the best-fit estimate of  $k_1$ , the probability that  $k_1$  is located in the month of the PATCO strike or later is only .09. Although this  $p$ -value fails to achieve a conventional level of significance, we can still be more than 90 percent certain that the break in the election series occurs before the PATCO strike. This model fit illustrates that  $k_1$  and  $k_2$  occur very close in time, providing little evidence for the distinct effects of the air-traffic controllers strike and the Dotson Labor Board on organizing activity.

In fact, our analysis is conservative in determining if the first break occurred before the PATCO strike. A union's decision to contest an election is signaled by filing a petition with the NLRB, but we analyze data on the number of elections held each month, *after* the petition is filed.<sup>19</sup> Any change in the incentives to hold elections would have its immediate effect on the number of filings and only a delayed effect on the number of elections held. Only 2.3 percent of elections closed between fiscal 1976 and fiscal 1979 were held in the same month as filing, while 37 percent of elections closed over the same period were held in the month following filing and 44 percent were held in the second month subsequent to filing. Thus, the median time between filing and election is two months. On this basis, any effect of the PATCO strike in August 1981 would only manifest itself in the election series in September and October of 1981. Our calculations show that the probability that the first break in the time series ( $k_1$ ) occurred in September 1981 or later is only 0.014. Similarly, the probability that the first break occurred in October 1981 or later is only 0.006.

On the basis of our analysis we conclude that the drop in the NLRB election activity was *not* precipitated by Reagan's actions during the PATCO strike. In fact, the decline in election activity pre-dates the PATCO strike by one to three months. While the PATCO strike and President Reagan's first Labor Board may have contributed to a hostile labor relations climate, we find little evidence that these events sharply reduced union organizing activity. Indeed, the sharp decline in organizing activity was already in place before the most visible political offensives against organized labor had begun and had ended before the Dotson Board was in place.

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<sup>19</sup> This is because the data available from the NLRB are missing the filing date for elections closed during 1982, a timing that is particularly unfortunate for our purposes.

## 4 Accounting for the Decline in the Union Membership Rate

Even though institutional change does not coincide with changes in organizing activity, is the decline in organizing responsible for the decline in the union membership rate since the 1970s? In this section, we use a simple accounting framework to decompose the decline in the union membership rate into components due to the level of union organizing and the differential in the rates of employment growth between the union and nonunion sectors.<sup>20</sup>

Define the union membership rate in year  $t$  as  $r_t$ . This is

$$r_t = \frac{U_t}{U_t + N_t} \quad (4.1)$$

where  $U_t$  and  $N_t$  are period  $t$  employment levels in the union and nonunion sectors respectively. We can express the evolution of employment in the two sectors as

$$U_t = (1 + \theta_t)U_{t-1} + \psi_t(1 + \phi_t)N_{t-1} \quad (4.2)$$

$$N_t = (1 + \phi_t)N_{t-1} - \psi_t(1 + \phi_t)N_{t-1}, \quad (4.3)$$

where  $\theta_t$  and  $\phi_t$  are the growth rates between  $t-1$  and  $t$  of union and nonunion employment respectively and  $\psi_t$  is the new-organization rate defined in equation 3.1 (the fraction of (potential) nonunion employment in period  $t$  that unions organized successfully).<sup>21</sup>

These expressions highlight the sources of growth of union and nonunion employment. Growth in the union sector includes growth of employment in unionized establishments at the rate  $\theta_t$  and organization of nonunion workers at the rate  $\psi_t$ . Growth in the nonunion sector includes growth of employment in nonunion establishments plus employment in new establishments (at the composite rate  $\phi_t$ ) net of new organization ( $-\psi_t$ ).<sup>22</sup> In this framework, total employment in period  $t$  is

$$L_t = U_t + N_t \quad (4.4)$$

$$= (1 + \theta_t)U_{t-1} + (1 + \phi_t)N_{t-1} \quad (4.5)$$

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<sup>20</sup> Our framework is similar to that presented by Freeman (1988). Dickens and Leonard (1985) also present a related framework for understanding union decline.

<sup>21</sup> The rate of “deunionization” of existing union jobs through NLRB supervised decertification elections is trivial as a fraction of union employment and is subsumed in the sector-specific employment growth rates.

<sup>22</sup> The assumption is that all new establishments are nonunion and must be organized in order to become union.

and is independent of the quantity of union organizing activity.

Using equations 4.2 and 4.3, the current unionization rate ( $r_t$ ) can be expressed as a function of past employment in the two sectors and the new organization rate (equation 3.1). This is

$$r_t = \frac{(1 + \theta_t)U_{t-1} + \psi_t(1 + \phi_t)N_{t-1}}{(1 + \theta_t)U_{t-1} + (1 + \phi_t)N_{t-1}} \quad (4.6)$$

$$= \frac{(1 + \theta_t)r_{t-1} + \psi_t(1 + \phi_t)(1 - r_{t-1})}{(1 + \theta_t)r_{t-1} + (1 + \phi_t)(1 - r_{t-1})} \quad (4.7)$$

$$= \frac{r_{t-1} + \psi_t(1 + \delta_t)(1 - r_{t-1})}{r_{t-1} + (1 + \delta_t)(1 - r_{t-1})}, \quad (4.8)$$

where  $\delta_t$  is the rate of employment growth in the nonunion sector relative to the rate of employment growth in the union sector defined by

$$1 + \delta_t = \frac{1 + \phi_t}{1 + \theta_t}. \quad (4.9)$$

Equation 4.8 expresses the evolution of the union membership rate as a function of the lagged union membership rate ( $r_{t-1}$ ), employment growth in the nonunion sector relative to the growth in the union sector ( $\delta_t$ ), and the new organization rate ( $\psi_t$ ).<sup>23</sup>

The steady-state union membership rate at any level of new organization and employment growth rates is derived by setting  $r_t = r_{t-1}$  in equation 4.8 and solving for  $r$ . The result is

$$r_{ss} = \psi_t \frac{1 + \delta_t}{\delta_t}. \quad (4.10)$$

where  $r_{ss}$  is the steady state union membership rate. The required new-organization rate for any given steady state is

$$\psi_t = r_{ss} \frac{\delta_t}{1 + \delta_t}. \quad (4.11)$$

If the two sectors grow at the same rate ( $\delta_t = 0$ ), no new organizing is needed to maintain union density. However, if employment in the union sector grows less rapidly than in (or falls relative to) the nonunion sector ( $\delta_t > 0$ ), positive union organizing is required to maintain

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<sup>23</sup> Since all growth rates are small ( $< 0.1$ ), taking the natural logarithm of equation 4.9 implies that it is approximately true that  $\delta_t = \phi_t - \theta_t$ .

the union membership rate. It is also clear that the required new organization rate in a steady state is directly related to the union membership rate.

This framework allows us to measure the relative roles of 1) differential rates of employment growth between the union and nonunion sectors and 2) low levels of new union organization in accounting for the decline in the private-sector union membership rate between 1973 and 1998. We now turn to this analysis.

## 4.1 Measuring the Relative Employment Growth Rates

The union and nonunion employment growth rates ( $\theta_t$  and  $\phi_t$  respectively) are defined implicitly in equations 4.2 and 4.3. Solving these relationships for  $\theta_t$  and  $\phi_t$  yields

$$\theta_t = \frac{U_t - U_{t-1}}{U_{t-1}} - \frac{\psi_t}{(1 - \psi_t)} \frac{N_t}{U_{t-1}} \quad (4.12)$$

and

$$\phi_t = \frac{N_t - N_{t-1}}{N_{t-1}} + \frac{\psi_t}{(1 - \psi_t)} \frac{N_t}{N_{t-1}}. \quad (4.13)$$

These are based on the measured employment growth in each sector adjusted for union organizing (measured by  $\psi_t$ ).<sup>24</sup> If there were no union organizing ( $\psi_t = 0$ ), then  $\theta_t = \frac{U_t - U_{t-1}}{U_{t-1}}$ , which is the measured rate of employment growth in the union sector, and  $\phi_t = \frac{N_t - N_{t-1}}{N_{t-1}}$ , which is the measured rate of employment growth in the nonunion sector. In fact, as we showed above, the union organizing rate has been substantially less than 0.01 per year over the 1973–1998 period, so the organizing adjustment is small.

The upper left-hand panel of figure 8 contains the time series of measured employment growth rates in the union and nonunion sectors between 1973 and 1998. There is a substantial differential in growth rates, with union employment shrinking by an average of 2.9 percent per year and nonunion employment growing at an average of 2.8 percent per year. The growth rate of union employment was much more volatile than the growth rate of nonunion employment. The standard deviation of the union growth rate was 4.9 percentage points

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<sup>24</sup> Measured employment growth in the union sector overstates growth in existing union workplaces because it includes newly-organized workers. Measured employment growth in the nonunion sector understates growth in that sector because some nonunion jobs were organized. The adjustments take account this new organization.

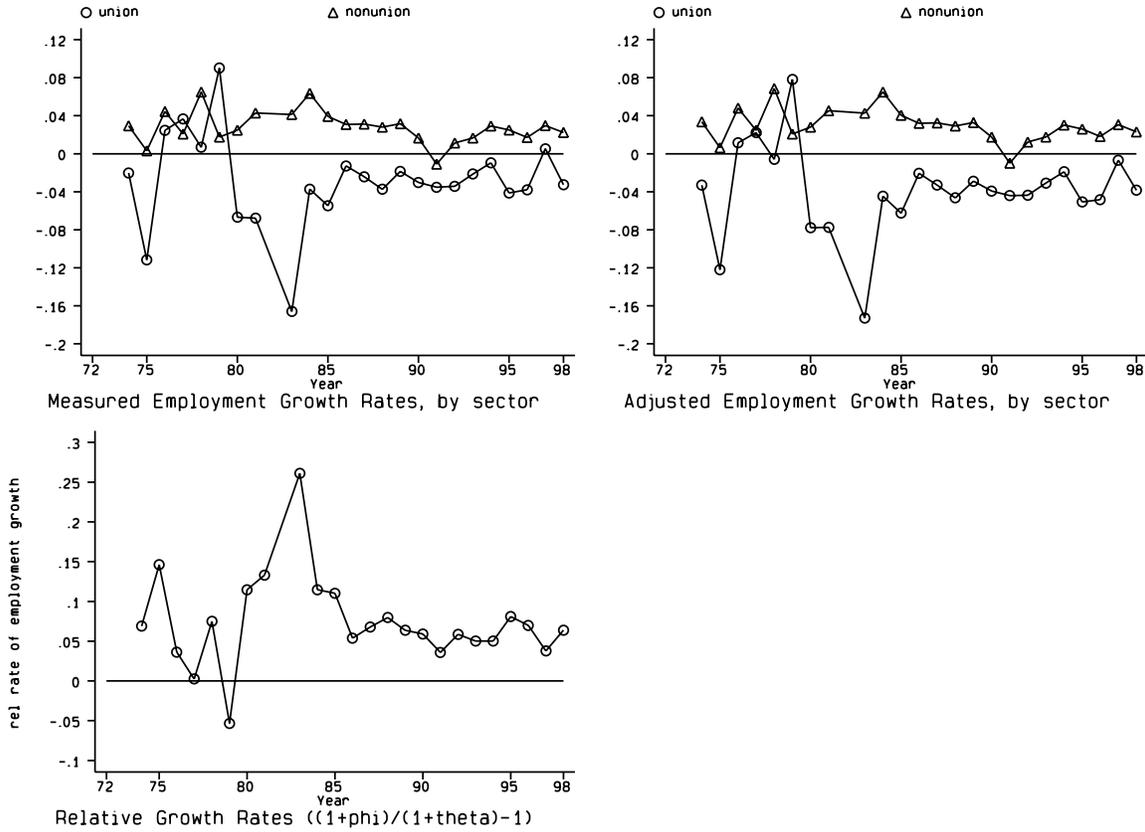


Figure 8: Employment Growth Rates by sector, 1973–1998

while the standard deviation of the nonunion growth rate was only 1.7 percentage points. The relatively high volatility of the union growth rate is due to large fluctuations prior to 1984. Since 1984, both sectors have had comparable variability in growth rates with standard deviations of about 1.5 percentage points.

The upper right-hand panel of figure 8 contains the employment growth rates in the union and nonunion sectors adjusted for union organizing activity ( $\theta$  and  $\phi$ , as defined in equations 4.12 and 4.13). Not surprisingly, given the very low level of new organization shown in figure 6, these adjusted growth rates are very close to the unadjusted growth rates in the upper left-hand panel of figure 8.

The lower left-hand panel of figure 8 contains the relative employment growth rate,  $\delta$ , as defined in equation 4.9 and usefully approximated in most years by the difference in the adjusted employment growth rates ( $\phi - \theta$ ). This plot verifies the consistently higher employment growth rate in the nonunion sector than in the union sector. In fact, there is

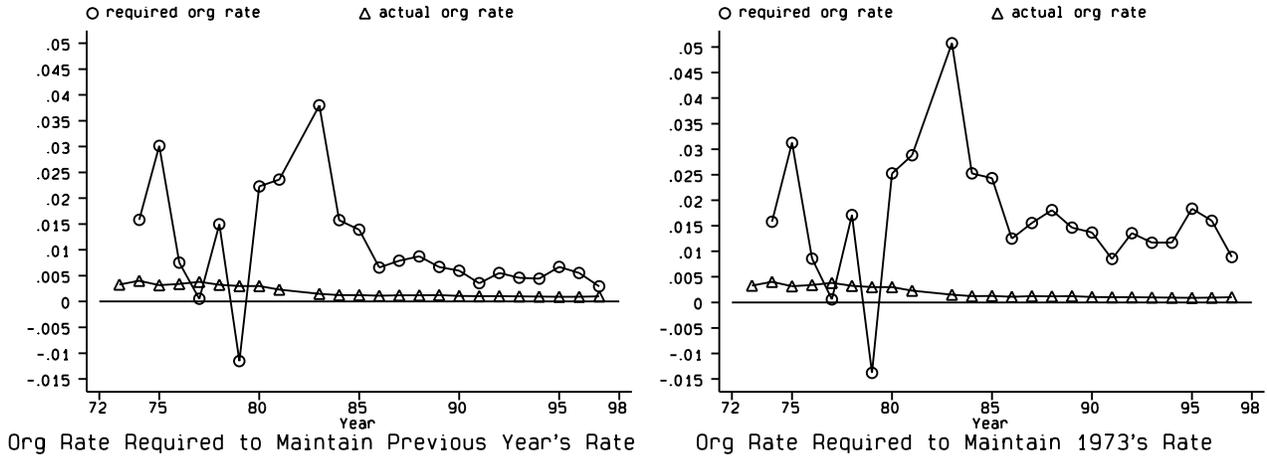


Figure 9: Union Organizing Rate Required in Steady-State

only one year in the sample where the union growth rate exceeded the nonunion growth rate (1979), and there are only four years between 1973 and 1998 where the union growth rate was even positive. In contrast the nonunion employment growth rate was positive in all but one year, 1991.<sup>25</sup> On average, the relative employment growth rate was 0.074 between 1973 and 1998, and it averaged 0.063 since 1985 and 0.056 since 1990. Thus, there is a consistent differential in employment growth rates over the entire period.

## 4.2 The Role of the New-Organization Rate in the Decline of the Union Membership Rate

Given the consistently higher employment growth rates in the nonunion sector relative to the union sector documented in figure 8, it is clear that substantial new union organization would be required to maintain the union membership rate at the level of the previous year. On a year-by-year basis, the quantity of union organizing required to maintain the union membership at the level of the past year is defined in equation 4.11.

The left-hand plot in figure 9 contains the actual union-organizing rate and the rate required to maintain the steady-state year by year (e.g. the rate of organization required in 1974 to maintain the union membership rate at the 1973 level given the 1974 union and

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<sup>25</sup> An extreme example of the difference in employment growth rates is that in 1983 union employment fell by 17.3 percent while nonunion employment grew by 4.3 percent, which implies a value of  $\delta$  of 0.26.

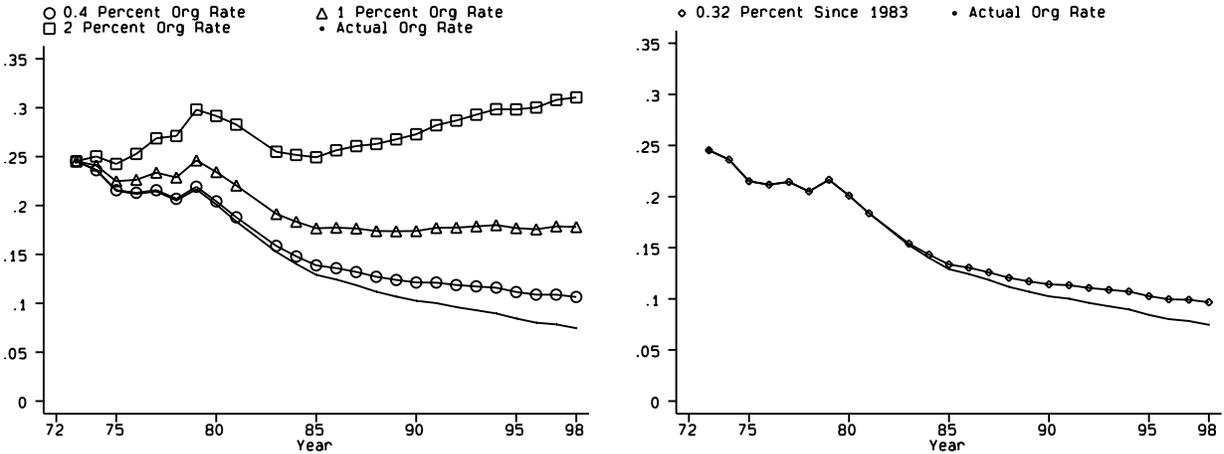


Figure 10: Hypothetical Union Membership Rates at Assumed Levels of Organizing Activity

nonunion employment growth rates and the rate of organization required in 1994 to maintain the union membership rate at the 1993 level given the 1994 union and nonunion employment growth rates). The required organization rate exceeds the actual organization rate in all but two years, and the average difference is substantial. The required organization rate averages 1.0 percent between 1974 and 1997 while the actual organization rate averages only 0.18 percent over the same period. The required union organizing rate falls steadily from the mid-1980s because the union membership rate has been falling, and from equation 4.11, the required organization rate is directly related to the level of the union membership rate.

The right-hand plot in figure 9 contains the actual union-organizing rate and the rate required to maintain the steady-state union membership rate at the 1973 level (24.5 percent) in each year given the union and nonunion employment growth rates prevailing each year. This is computed directly from equation 4.11 assuming that  $r_{ss} = 0.245$ , and, because the actual union membership rate is declining over time, it is higher than the organization rate required to maintain the union membership rate at the previous year's level. It is clear that substantial new organizing is required to maintain the 1973 union membership rate in the face of the large difference in employment growth rates. Over the entire time period unions would need to capture 1.6 percent of the nonunion work force each year.

Figure 10 offers another view of the effect of increasing union organizing activity on the union membership rate, given observed union and nonunion employment growth rates. The left-hand plot shows the predicted union membership rate by year, based on equation

4.8, under various assumptions regarding the level of union organizing activity. The assumed values range from the observed level of union organizing activity to organization of 2.2 percent of the nonunion workforce each year. Three hypothetical levels of the new organization rate are included in the figure: 0.4 percent, 1.0 percent, and 2.2 percent, along with the actual new-organization rate.

The actual organization rate yields the bottom series on the union membership rate. This series starts at 24.5 percent in 1973 and falls to 7.4 percent by 1998. While not shown in the figure, if there had been no organization, as represented in the bottom series in figure 10, the union membership rate would have fallen only an additional 1.7 percentage points by 1998 to 5.7 percent. This illustrates that the total quantity of new union organization since 1973 has had only a minor effect on the union membership rate.

If unions were able to organize 0.4 percent of the nonunion workforce each year (slightly more than double the actual organization rate), the union membership rate would have been 3.2 percentage points higher in 1998 at 10.6 percent. While this is a clear improvement over the actual rate of 7.4 percent, it is still nowhere near the level of union membership that prevailed in the 1970s and it implies that the union membership would have continued to decline through the 1990s.

A new-organization rate of 1 percent per year (more than 5 times the actual organization) would have had a much larger effect. The union membership rate would have been 17.8 percent in 1998, more than double the actual rate in that year. Perhaps more interestingly, a new organization rate of 1 percent per year would have resulted in a stable union membership rate since 1985 of about 17.5 percent. However, to put this in historical context, a new-organization rate of 1 percent has not been seen since 1955, at the tail end of the last spurt of union growth (figure 6). If the union membership could have reached 17.5 percent, as suggested by this counterfactual, a new-organization rate of 1 percent of nonunion employment would translate into a new-organization rate of over 4.7 percent of the union workforce. Even this rate of resource commitment by the union sector is larger than any value observed since 1950 (figure 6). And, at the current rate of union membership of 7.5 percent, the 1 percent nonunion organization rate translates into a new-organization rate of over 12 percent of the union workforce.

Our most optimistic counterfactual is a new-organization rate of 2.2 percent, corresponding to the average new-organization rate over the high-growth 1940-1955 period. This is more than twenty times the actual new-organization rate observed over the 1973-1998 period, and it would have yielded a union membership rate of 31.0 percent by 1998. Sustaining a new-organization rate of 2.2 percent of the nonunion workforce with a union membership rate of 31 percent would require a resource commitment by the union sector sufficient to organize 4.9 percent of the union workforce each year. This is larger than any value seen since 1950. Given the current union membership rate of about 7.5 percent, a new-organization rate of 2.2 percent of nonunion employment translates into a new-organization rate of over 25 percent of the union workforce. This rate of resource commitment by the union sector is three times that observed even at the peak of the 1940s growth spurt (figure 6).

The conclusion we draw from the analysis of the counterfactual organization rates in the left-hand panel of figure 10 is that a sustained dramatic increase in organizing could increase the union membership rate. But the per union member resources required at current low levels of union membership are likely to be prohibitively large.

Our review of union election data showed a sharp drop in union organizing activity in the early 1980s. The new-organization rate was 0.3 percent in 1980 and fell sharply to 0.15 percent in 1983 and 0.12 percent in 1984. The new-organization rate never reached even 0.13 percent subsequently. Earlier, we discussed changes in the administration of the NLRA in the 1980s that may have played some role in this decline. In this context, an interesting counterfactual is to compute union membership rates since 1983 assuming that the new-organization rate held steady at 0.32 percent per year since 1983 rather than falling below 0.13 percent. This counterfactual is presented in the right-hand plot in figure 10.

Holding the new-organization rate at the 0.3 percent level does have some effect on the union membership rate. The actual union membership rate fell from 18.4 percent in 1981 to 7.4 percent in 1998. If the new organization rate had held at 0.3 percent between 1983 and 1998, the union membership rate would have fallen to 9.7 percent. Thus, about 20 percent of the decline in the union membership rate between 1983 and 1998 (2.3 of 11 percentage points) can be accounted for by the drop in the new-organization rate since the early 1980s.

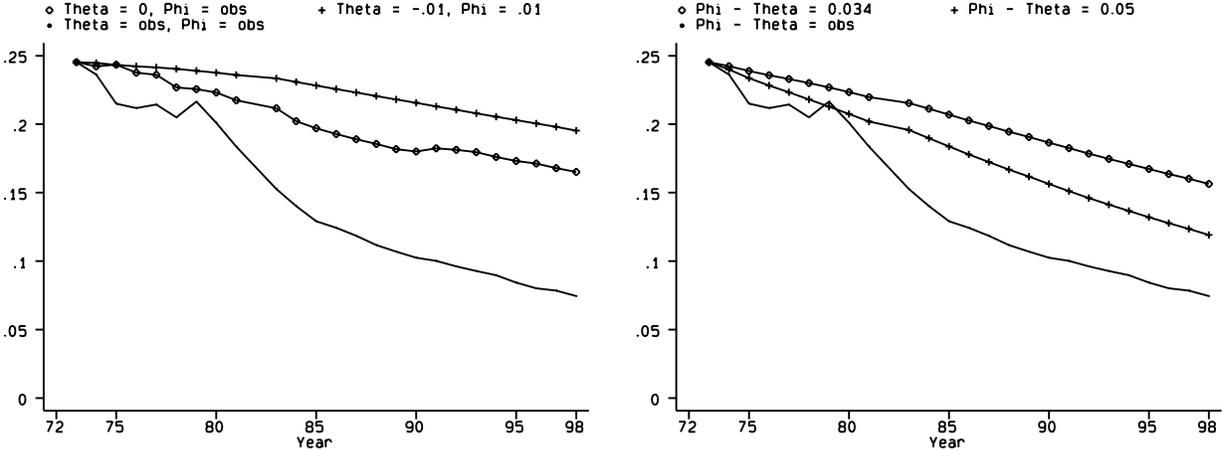


Figure 11: Hypothetical Union Membership Rates at Assumed Levels of Employment Growth

### 4.3 The Role of Differential Employment Growth Rates in the Decline in the Union Membership Rate

It is obvious that differential employment growth rates between the union and nonunion sectors are an important part of the explanation for the decline in the union membership rate. Because employment in the nonunion sector has been growing much more rapidly than in the nonunion sector over the entire period we study, substantial new organization is required in order even to hold the rate of union membership fixed. Note that this is the natural state of affairs in the U.S. institutional setup where new jobs, by and large, are “born” nonunion and must be organized in order to become unionized.<sup>26</sup> Given the robust net employment growth averaging about 2 percent a year since the 1970s, there is a natural depreciation of the union membership rate that can only be counteracted by substantial new organization.

In order to make this clear, the left-hand plot in figure 11 contains the hypothetical evolution of union membership rates assuming, counterfactually, alternative values for the union and nonunion employment growth rates ( $\theta$  and  $\phi$  respectively) but holding the new-organization rate at observed levels. These counterfactuals are computed applying the assumed values for  $\theta$  and  $\phi$  to equation 4.8 by recomputing  $\delta_t$  according to equation 4.9.

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<sup>26</sup> Obviously, the exception to this is that growth of employment in existing union establishments is union at “birth”.

The lowest series is computed using the actual employment growth rates, and it shows the decline in the union membership rate from 24.5 percent to 7.4 percent between 1973 and 1998. The intermediate series is computed under the assumption that the nonunion employment growth rate ( $\phi$ ) is as observed (averaging 0.03 over the sample period) but that the union employment growth rate ( $\theta$ ) was zero in every year rather than its average of -0.039 over the sample period. This shows a much smaller decline in the union membership rate, falling only to 16.5 percent by 1998. The highest series is provided by nonunion employment growing by one percent each year and nonunion employment falling by one percent each year. In this case the union membership rate would have fallen only to 19.5 percent by 1998.

Another way to think about the effect of relative employment growth rates is to hold aggregate employment growth fixed and but to adjust the mix between the union and nonunion sectors. Aggregate employment growth averaged 2 percent over the 1973–1998 period, but we have established that there was a substantial divergence between the employment growth rates in the nonunion and union sectors ( $\phi$  and  $\theta$  respectively). In fact, the difference in growth rates ( $\phi - \theta$ ) averaged 6.8 percentage points over the sample period. It is this divergence in growth rates that is an important contributor to the decline in the union membership rate. In order to illustrate its importance, we recalculated the evolution of the union membership rate assuming that the new-organization rate and the aggregate employment growth rate were as observed in each year but that the difference in growth rates was, in turn, 3.4 percentage points each year (half the average observed value) and 5.0 percentage points each year (about 3/4 of the averaged observed value).

The right-hand plot in figure 11 contains the evolution of union membership rates assuming, counterfactually, smaller differences between the union and nonunion employment growth rates but holding aggregate employment growth rates and the new-organization rate at observed levels. These counterfactuals are computed by noting that the aggregate employment growth rate,  $\gamma$ , is a weighted average of the sector specific employment growth rates defined by

$$\gamma_t = r_t\theta_t + (1 - r_t)\phi_t \tag{4.14}$$

and using the observed values for  $\gamma_t$  and the assumed values for  $\phi - \theta$  to solve for the implied values of  $\phi$  and  $\theta$ . These are then used in equation 4.8 to solve for the union membership

rate in each period.

The lowest series in the right-hand plot in figure 11 is computed using the actual employment growth rates and is identical to that in the left-hand plot. Once again, it shows the decline in the union membership rate from 24.5 percent to 7.4 percent between 1973 and 1998. The highest series is computed under the assumption that the difference between the nonunion and union employment growth rates is 3.4 percentage points (half the observed average). This has a dramatic effect on the union membership series with the union membership rate falling only to 15.6 percent by 1998. The intermediate series is computed under the assumption that the difference between the nonunion and union employment growth rates is 5.0 percentage points (about 3/4 of the observed average). Even this change has a substantial effect with the implied union membership rate falling to 11.9 percent by 1998.

## **5 Prospects for Increased Union Organizing: Where Are the Resources?**

It is clear that without a very substantial increase in union organizing activity (perhaps an order of magnitude increase from the current level of 0.09 percent per year), employment growth in the union sector needs to be almost as large as in the nonunion sector ( $\delta$  close to zero) in order to achieve any meaningful increase in the union membership rate. But the barriers to increasing organization by labor unions in the private sector are enormous. Many workers are skeptical that unions can provide real value in the workplace without sacrificing job security, employers actively resist union organizing efforts, and the NLRA, as currently administered, makes the organization process drawn out, expensive, and uncertain. In this section, we use the sketchy data available to make some crude projections of the costs of increasing new organization.

The union-based new-organization rate we defined in equation 3.1 is computed relative to the size of the union sector. This is the appropriate measure to use when considering the resources required for new organization. We presented the union-based new-organization rate in the right-hand panels of figure 6. Given that union employment is substantially

lower than nonunion employment, the rates computed on a union basis are much larger than those computed on a nonunion basis. And, since the union membership rate declined sharply from about 25 percent in 1973 to about 8 percent in 1998 (figure 3), the gap between the rates computed on a union and nonunion basis has grown over time. Because of the decline in the union membership rate, the time-series behavior of the union-based election and new-organization rates differs substantially from those computed on a nonunion basis. The union-based series actually shows a small increase since the mid-1980s, while the nonunion-based series show a decrease over the same period.

This suggests a reinterpretation of the view that union organizing efforts have declined over time. While this is certainly true in absolute terms, it appears that new organization *per union member* has been roughly constant since the early 1970s. Unions have not cut back on organizing relative to their resources (proportional to their membership). However, since union employment is shrinking, unions would need to increase new organization per union member simply in order to maintain the new-organization rate (per non-union worker) at recent historic levels. In order to return the nonunion-based new-organization rate to the levels enjoyed in the 1970s (0.34 percent), unions would have to sustain a union-based new-organization rate of 3.9 percent at the current union membership rate (8 percent). The investment per union member to achieve such a level of organization activity that has not been seen since the growth spurts of the 1940s and early 1950s. The maximum union-based new-organization rate between 1955 and 1997 was 2.2 percent in 1955.

In order to increase the quantity of organization from its current low level, one of two things must happen, either the cost of organization per unit (per newly organized worker) must decrease or the resources that labor unions devote to organization must increase. The cost of organization depends to a large extent on the legal structure governing organization. As we discussed earlier, the NLRA as currently administered has been criticized for not adequately protecting the rights of workers to organize and for imposing large costs on both the workers and unions involved in organizing. This is why the labor movement has lobbied extensively for labor law reform designed to streamline the organization process and to protect the rights of the workers involved. However, it appears that the prospects for meaningful labor law reform are dim.

This leaves unions the option of devoting more resources to organization. However, the sums required for a meaningful increase in organizing activity are quite large relative to the “taxable” population (unionized workers). Voos (1984a), in an analysis of the costs of union organizing, found that it cost about \$2100 per new member (in 1998 dollars) on the margin to organize workers between 1964 and 1977.<sup>27</sup> It is unfortunate that more recent data are not available, but this estimate is likely to be a lower bound, given that the organizing environment has become more hostile to union organizing since 1977 and it has become harder to find promising targets for organization.

How much will increased organization cost? With private sector employment running at about 110 million workers, there are about 101 million nonunion workers and about 9 million union members. In order to return the nonunion-based new-organization rate to the levels enjoyed in the 1970s (0.34 percent), unions would have to organize 374,000 workers per year—much more than their current organizing effort of 0.09 percent of the nonunion workforce each year (99,000 workers). Our lower-bound estimate of the increase in organizing expenditures is \$575.5 million per year (275,000 workers times \$2,100 per worker). This is about \$64 per union member (\$575.5 million divided by 9 million union members). While this does not appear to be a large amount, increasing the new organization rate to its 1970s level would result in a steady-state union membership rate (equation 4.10) of only 6.4 percent (assuming the 1990s average relative employment growth of  $\delta = 0.056$  prevails).

In order to achieve a steady state with 12.25 percent union membership (half the 1973 rate), a union organizing rate of 0.65 percent per year would be required at current employment growth rates. This implies that 715,000 workers be organized each year for an increase of 616,000 per year over the current level. The marginal cost of this increase would be about \$1.3 billion per year or about \$144 per current union member per year. The present discounted value of this flow, discounted at a 3 percent real rate, is about \$4800 per current union worker.

Currently unions are spending considerably less than this per worker on organizing. Voos

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<sup>27</sup> Voos reports that the marginal cost of organization ranged from \$580 to \$1568 per worker in 1980 dollars, depending on the particular statistical controls used. We used the mid-point of this range and adjusted to 1998 dollars using the CPI-U.

(1984b) examined the organizing expenditures of a sample of unions representing approximately half of the private sector union workforce. Her analysis shows that unions were spending about \$20 per union member per year (expressed in 1998 dollars), representing about 20 percent of total union expenditures, on union organizing in the early 1970s. Using information, provided by Masters (1997), on total expenditures of unions representing 79 percent of private sector union members and Voos's (1984b) finding that about 20 percent of union expenditures were on organizing, our crude estimate of the aggregate amount that unions spent on organizing workers in the private sector is \$265 million (1998 dollars), or about \$29 per union member. Thus, in order to achieve a new-organization rate that is sufficient to achieve a steady state union membership rate of 12.25 percent, our lower-bound estimate is that unions would have to increase expenditures on organizing by 500 percent (\$144/\$29). Given the assumption that current expenditures on organization are 20 percent of total union expenditures, this increase implies that union organizing expenditures would have to be larger than total current union expenditures.

## 6 Caveats and Implications

Throughout this analysis we were motivated to identify policies that might reverse the long-standing slide of private sector unionism. To this end, we separated the relative growth in union employment from the effect of new organizing, and viewed policy as chiefly influencing the organizing process. This approach has two limitations. First, our estimates of the level of organizing activity come from NLRB administrative records so organizing efforts outside the framework of the NLRA are not accounted for. Historically unions did organize substantial numbers of workers outside the NLRB framework through organization strikes and card checks, but these mechanisms declined in importance over time. Some argue that unions may now be moving to organize outside the NLRB procedure (Bronfenbrenner, Friedman, Hurd, Oswald and Seeber 1998, 69–119). Our estimates of current organizing activity would be biased downward as a result. Union membership records might provide information about non-Board organizing activity, but such records are themselves subject to a variety of biases (Bain and Price 1980, 5). In any event, any underestimate of the level of organizing is likely

to be small compared to the massive effect of sectoral differences in employment growth.

Second, we treat sectoral differences in employment growth as a product of structural forces, not policy context. However, the PATCO strike and the Reagan Labor Board may have influenced differential employment growth in at least two ways. Some research indicates that the PATCO strike led to increased use of permanent replacements in the 1980s and this would add to labor shedding in the union sector (Cramton and Tracy 1998). Strike rates are now so low, however, that this effect is again likely to be small. A sequence of NLRB decisions in the early 1980s weakened employers' duty to bargain, specifically in relation to plant relocation and subcontracting (Gross 1996, 258–62; cf. Miscimarra and Schwartz 1997). We know of no research that estimates the effects of these changes in labor law on the level of union employment. Still, it does appear that the costs of shifting production from a union to a nonunion basis are lower in the 1980s and 1990s than in the 1970s.

Overall, this is a very pessimistic analysis from the perspective of the union movement. It is clear that labor unions in the private sector are caught between the proverbial rock and hard place. On one side, employment growth rates are much lower (even negative) in the union sector relative to the nonunion sector. On the other side, unions have not been able to muster a meaningful amount of new-organizing activity. The bleak picture is summarized by our calculation of the steady state union membership rate (equation 4.10) of only 2.1 percent assuming current rates of relative employment growth ( $\delta = 0.05$ ) and new-organization ( $\psi = 0.001$ ).

Notwithstanding recent changes in labor law, the causes of the divergence in employment growth rates between the union and nonunion sectors are fundamentally related to the structure of the U.S. economy. Employment has shifted away from the sectors in which unions were strongest such as manufacturing, transportation, and communications. In manufacturing, the opening of the U.S. economy to global competition undoubtedly has played a role. Capital is extremely mobile, and it is unlikely that owners of capital are willing or able to pay a wage premium that union workers might command. In transportation and communication, there has been substantial deregulation that has made it harder for firms to pass along the union wage premium (e.g., Rose, 1987). This is at least part of the reason why nonunion workers have become less likely to demand union representation (Farber, 1990;

Farber and Krueger, 1993), making it harder to organize. It is also part of the reason why new manufacturing capacity is disproportionately located in regions of the country which have historically not been friendly to labor unions.<sup>28</sup>

From a more general perspective, the relative rate of union employment growth can be viewed as an institutional effect because the U.S. system of labor relations focuses the costs of unionism on union workplaces. This is unusual from a comparative point of view. In Europe, for example, collectively bargained wages are commonly extended to nonunion firms by employer associations or government regulation (Traxler 1994). Consequently, the labor costs of European employers do not depend so strongly on the union status of their employees. The European experience suggests policy instruments are available to equalize labor costs and control differential employment growth across the union and nonunion sectors. Obviously, though, the possibility of adopting European-style contract extensions seems unimaginable—if not bizarre—in the current American context.

Consequently, new union organizing bears a massive burden. The rate of job creation in the U.S. is large (about 2 percent per year), and most new jobs are born nonunion. The current rate of new-organization (0.1 percent of the nonunion workforce) is sufficient to organize only 5 percent of the *new* jobs, let alone organize many existing jobs. The quantity of organizing activity required to make a substantial difference in the steady-state unionization rate is simply staggering, particularly when measured as a fraction of existing union employment. With the current union membership rate of about 8 percent, union-based new organization rates are 11.5 times higher than the nonunion-based organization rates (0.92/0.08), holding the absolute quantity of new organization fixed. We determined earlier that, at current levels of relative employment growth, the new-organization rate would have to increase by over 6 times (from 0.09 percent to 0.65 percent) to yield a steady-state union membership rate of 12.25 percent. But this would require that the unions organize each year new members equal to 7.5 percent of their current membership.

It is hard to conceive of a reform of the NLRA that would yield a such a substantial

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<sup>28</sup> For example, a number of the foreign automobile manufacturers who have built production plants in the U.S. have chosen to locate in the South: BMW in South Carolina, Toyota in Tennessee, Mercedes-Benz in Alabama.

increase in new-organization, even in the short run. Our examination of the 1980s experience shows that marginal changes in the administration of the NLRA had no discernible impact on organizing activity. Suppose that a very substantial change to the NLRA were enacted, such as a move to recognition based on card checks, however politically unlikely this seems. Suppose we assume that this could double new union organization in the short run. Could this be kept up in the long run as unions try to organize less favorable targets over time? This seems to us unlikely. And a doubling of the new-organization rate from its current level, given current relative employment growth rates, will have very little impact on the steady-state union membership rate.

The first-contract problem, which is ignored in our analysis, implies that actual new-organization rates are about one-third lower than our already-low measure, which is based on election wins. If we assume a reform of the NLRA that provides for first-contract arbitration, then we simply get back to the pessimistic picture painted by our analysis.

Historically, American unions have grown during extraordinary periods of social or economic upheaval – most recently during depression and wartime – that resulted in massive new organizing efforts. Absent such upheaval, a resurgence of the labor movement in the private sector must rely on bringing the union and nonunion employment growth rates into rough equality. This can only happen if the union movement is transformed in a way that makes owners of capital indifferent between investing in the union and nonunion sectors. To the extent that unions transfer wealth from owners of capital to workers (a reasonable interpretation of union goals and actions), it is hard to see how this will happen, and it seems inevitable that the union membership rate in the private sector will continue to erode.

## Appendix I - Derivation of the New Organization Rate Series

Total non-agricultural employment is derived from BLS series EEU00000001 and total public-sector employment from BLS Series EEU90000001. These are then used to compute the fraction of total employment in the public sector and total employment in the private sector. Freeman's (1998) historical series on union density (described above) covers both the public sector and the private sector. We use data on the union membership rate in the public sector, available from the CPS since 1973 and read (approximately) from figure 1 of Freeman (1986) for the period from 1956–1972.<sup>29</sup> Freeman's figure shows that approximately 12 percent of public sector workers were union members in 1956, but there are no data available prior to this date. We proceeded making two alternative assumptions: 1) that the public-sector union membership rate was zero prior to 1956 and 2) that the public-sector union membership rate was ten percent prior to 1956. The results are not at all sensitive to these alternatives, and we proceed using the ten-percent assumption. Noting that the overall union density is an employment-weighted average of the public and private sector union densities, the data on public-and private-employment shares, the public-sector union membership rate, and Freeman's union density series were then used to compute a consistent private-sector union membership rate time series covering the 1940-1997 period.

Since 1972, data on NLRB election activity are available electronically at the election level. But prior to this period, we are forced to rely on the published tables in the NLRB annual reports. These tables include information on the number of elections, the total number of workers who vote in elections, on the total number of pro-union votes, and on the number of elections won by unions. However, the tables contain no information is available on the number of workers in units where the unions won elections (the number newly organized). We proceed by using the number of pro-union votes as our consistent measure of the number newly organized.

We then compute two new-organization rate series over the 1940–1997 period. The first

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<sup>29</sup> Freeman's data cover only even years. We interpolate his data to cover the odd years.

is the ratio of the number newly organized divided by private sector nonunion employment. The second is the ratio of the number newly organized divided by private sector union employment. We also compute alternative versions of these series over the 1973–1997 period based on the more appropriate micro-data from the NLRB and the CPS.

We can compare our approximate time series on the new organization rates to the series derived from the micro-data over the 1973-1997 period. The nonunion-based series are very close. The mean of the micro-based series is 0.0019 and the mean of the approximate series is 0.0021. The two series are highly correlated ( $\rho = 0.971$ ). The union-based series are also quite close. The mean of the micro-based series is 0.010 and the mean of the approximate series is 0.011. The two series are fairly highly correlated ( $\rho = 0.789$ ).

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