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UNION MEMBERSHIP  
IN THE UNITED STATES:  
THE DECLINE CONTINUES

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ABSTRACT

We use a demand/supply framework to analyze 1) the decline in union membership since 1977 in the United States and 2) the difference in unionization rates between the United States and Canada. We extend earlier work on these problems by analyzing new data for 1991 from the General Social Survey and for 1992 from our own household survey on worker preferences for union representation. When combined with earlier data for 1977 from the Quality of Employment Survey and for 1984 from a survey conducted for the AFL-CIO, we are able to decompose changes in unionization into changes in demand and changes in supply. We also analyze data for 1990 from a survey conducted for the Canadian Federation of Labor on the preferences of Canadian workers for union representation.

We find that virtually all of the decline in union membership in the United States between 1977 and 1991 is due to a decline in worker demand for union representation. There was almost no change over this period in the relative supply of union jobs. Additionally, very little of the decline in unionization in the U.S. can be accounted for by structural shifts in the composition of the labor force. Next, we find that all of the higher unionization rate in the U.S. public sector in 1984 can be accounted for by higher demand for unionization and that there is actually more frustrated demand for union representation in the public sector. Finally, we tentatively conclude that the difference in unionization rates between the U.S. and Canada is accounted for roughly in equal measure by differences in demand and in supply.

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## I. Introduction

The decline of unionization in the private sector in the United States continues unabated. In 1977, 21.7 percent of the private-sector non-agricultural labor force were members of unions or employee associations similar to unions (the private-sector unionization rate). This fell to 15.6 percent by 1984. The private-sector unionization rate fell even further to 11.9 percent by 1991.<sup>1</sup> The picture is quite different in the public sector where the unionization rate stood at 32.7 percent in 1977, increased to 35.8 percent by 1984, and stood at 36.9 percent in 1991. In fact, by 1991 fully 40 percent of union or employee association members in the United States were in the public sector (compared with 25.9 percent in 1977).<sup>2</sup> Overall, 23.8 percent of the non-agricultural labor force were members of unions or employee associations in 1977. This fell to 19.1 percent by 1984, and it fell further to 16.4 percent by 1991.

There is no disagreement about the dimensions of the decline of labor unions. However, there is an ongoing debate about its causes. Earlier work by Farber (1985) and Dickens and Leonard (1985) suggests that shifts in demographic, industrial, and

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<sup>1</sup>These frequencies are based on weighted tabulations of the relevant Current Population Surveys (CPS). The 1977 data come from the May 1977 CPS. The 1984 and 1991 data come from the CPS merged-outgoing-rotation groups files for those two years. Starting in 1977, the CPS asked whether workers were members of a union or an employee association similar to a union. The earlier CPS data on union status (May 1973 through May 1976) asked only about union membership and thus are not directly comparable.

<sup>2</sup>Only 17.6 percent of the workforce were employed in the public sector in 1991 compared with 18.8 percent in 1977.

occupational composition of the labor force away from traditionally heavily unionized types of workers and sectors accounted for less than half of the decline in unionization between the mid-1970's and the mid-1980's. This conclusion is supported by Weiler (1990) and Freeman (1988) who argues (p.79) that ". . . the anti-union management offensive in the private sector is the key to de-unionization in the United States . . . ."

Freeman bases his conclusion on the facts that 1) unionization has grown in the public sector in the U.S. (where management opposition is more restricted) while declining in the private sector and 2) unionization has not declined in Canada (where structural shifts in the labor force similar to those in the U.S. have occurred and where the labor law is structured in a way to make private-sector employer resistance more difficult). However, Freeman ignores other evidence from Canada (e.g., Kumar, 1991) showing that the Canadian public sector is much more heavily unionized than the Canadian private sector and that unionization has grown rapidly in the Canadian public sector while declining somewhat in the Canadian private sector. Thus, it appears that the Canadian experience is not completely at odds with the U.S. experience.<sup>3</sup>

Farber (1987, 1989, 1990) approached the decline of unionization from a different direction. He uses survey data from the 1977 Quality of Employment Survey (QES) and a 1984

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<sup>3</sup>Troy (1992) takes this as evidence that structural shifts in the labor force do account for the decline in unionization in the U.S. This is not supported either by the studies cited above or by our research.

survey conducted for the AFL-CIO (AFL) on nonunion workers' preferences for union membership to investigate changes in the demand for union representation and the supply of nonunion jobs relative to demand. The specific information used are the responses of nonunion workers to a question asking if the worker would vote for or against union representation on their current job if an election was held. He finds that there was a decline in the demand for union representation but that the supply of union jobs relative to demand did not change significantly.

Riddell (1992) has examined the demand for and relative supply of union jobs in both the U.S. and Canada using the same 1984 AFL data for the U.S. as Farber and using survey data for Canada from a 1990 survey conducted for the Canadian Federation of Labor (CFL) on a different aspect of workers' preferences for union representation. However, the U.S. and Canadian data are not directly comparable for at least two reasons. First, the questions asked in the AFL and CFL surveys pose potentially very different issues to the respondents. Second, there is a seven-year time difference between the two surveys. Nonetheless, Riddell concludes based on this evidence that most of the difference between the U.S. and Canada is due to a difference in the supply of union jobs relative to demand and very little is due to difference in the underlying demand for union representation.

In this study we extend this earlier work on the demand for and supply of union representation in several directions. First, we analyze new data for 1991 from the General Social Survey (GSS) on U.S. nonunion workers' preferences for union representation

based on responses to the question of how they would vote in a secret-ballot election. This allows us to examine trends since 1984 in demand and supply in the U.S. Next, we examine briefly the public-private differential in union membership in the U.S. using the 1984 AFL data.<sup>4</sup> Finally, we analyze data from a small-scale household survey that we conducted in the U.S. in 1992 where we asked about worker preferences for union representation using both the AFL-style question on voting in a hypothetical election and the CFL-style question on whether the worker would consider joining a union or professional association in the future. This allows us to evaluate systematic differences in responses to the two questions so that we can compare worker attitudes toward unions in Canada and the U.S. in ways that are more reliable than those used in earlier work.

Our main conclusions are summarized quite easily. First, we find that virtually all of the decline in union membership in the United States between 1977 and 1991 is due to a decline in demand as measured by the fraction of the workforce that either holds a union job or would vote for union representation on their nonunion job. There was virtually no change over this period in the relative supply of union jobs as measured (inversely) by the fraction of the workforce that desires union representation (measured by the vote question) but holds nonunion jobs. Additionally, very little of the decline in unionization in the U.S. can be accounted for by structural shifts in the composition

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<sup>4</sup>Unfortunately, neither the 1977 QES nor the 1991 GSS contain direct information on sector of employment.

of the labor force. Next, we find that all of the higher unionization rate in the U.S. public sector in 1984 can be accounted for by higher demand for unionization and that there is actually *more* frustrated demand for union representation in the public sector. Finally, we tentatively conclude that the difference in unionization rates between the U.S. and Canada is accounted for in equal measure by differences in demand and in supply between the countries.

## II. A Demand-Supply Framework

Earlier work by Abowd and Farber (1982) and Farber (1983) developed a model of the determination of the union status of workers that allowed for queues for union jobs. In this model, workers might demand union jobs in the sense that they would prefer a union job (or prefer their job to be unionized) without being willing to invest in organizing a union (either on their current job or on another job). This is because the rights to existing union jobs are not owned either by the workers who organize union jobs or by the workers who currently hold union jobs. Outside of a few craft-based unions, employers are free to hire whomever they see fit to fill vacancies in union jobs. While dues and initiation fees are required of union members, these generally are not sufficient to capitalize the flow of benefits of union employment (Raisian, 1983). The result is that there is likely to be excess demand for existing union jobs while there may be equilibrium in the market for new union jobs. The quantity of union jobs available depends on the costs of organization (supply) and benefits of organization to workers

(demand). This model is presented in more detail by Farber (1983, 1990).

The data requirements for measurement of the demand for and supply of union jobs exceed what are normally available. Ordinarily, data are available on the union status of workers. However, while it is reasonable to assume that all union workers prefer union representation, the queuing model suggests that not all nonunion workers prefer to be nonunion.<sup>5</sup> Nonunion workers fall into two categories: 1) those who prefer nonunion employment and 2) those who prefer union employment but are not hired by a union employer. The core analyses in this study rely on four surveys that have specific information on the preferences of nonunion workers that can be used to assign them to one of these two categories.

The total demand for union jobs is measured by the fraction of workers who are either union members or would prefer to have union representation. The supply of union jobs relative to demand is measured by the fraction of workers demanding union representation who are actually union members. If there were no queues for union jobs, this fraction would be one. To the extent that there are nonunion workers who prefer union representation, this fraction will be less than one. A direct measure of the size of the queue for union jobs (and, hence, an inverse measure

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<sup>5</sup>Survey evidence on the preferences for union representation of union members from a number of sources (the 1991 GSS used in this study, the 1992 household survey we conducted and used in this study, the 1980 wave of the National Longitudinal Survey of Young Men, and the 1982 National Longitudinal Survey of Young women) implies that between 80 and 90 percent of union members would vote for union representation in a hypothetical election.



of relative supply) is the fraction of the total workforce that demands union representation but are working in nonunion jobs. If there were no queues this fraction would be zero. We focus on this measure of frustrated demand as our (inverse) measure of supply.

To see this more clearly note that a worker is unionized if and only if he/she demands union representation and is hired by a union employer. A probability statement for the likelihood of worker  $i$  being unionized is

$$(1) \quad \Pr(U_i=1) = \Pr(U_i=1|D_i=1) \cdot \Pr(D_i=1)$$

where  $U_i$  is a dichotomous variable that equals one if worker  $i$  is unionized and is zero otherwise and  $D_i$  is a dummy variable that equals one if worker  $i$  desires union representation and is zero otherwise. The probability that worker  $i$  is not unionized is

$$(2) \quad \Pr(U_i=0) = \Pr(D_i=0) + \Pr(U_i=0|D_i=1) \cdot \Pr(D_i=1).$$

This makes clear the two groups that make up the nonunion sector. The first group does not desire union representation, and the second group desires union representation but does not hold union jobs. Finally, note that we can write the probability that worker  $i$  is unionized as

$$(3) \quad \Pr(U_i=1) = \Pr(D_i=1) - \Pr(D_i=1, U_i=0).$$

The first term represents the demand for union representation, and the second term represents frustrated demand or inverse supply. Thus, the probability that a worker is unionized is equal to the probability that he/she desires union representation minus the probability that the worker desires union representation but is not hired by a union employer.

This demand/supply framework is extremely useful both for

evaluating competing explanations for the decline of unions in the United States and for making the U.S./Canada cross-country comparison. Consider first the U.S. decline. One explanation is that workers are simply less interested in union representation than in the past. This would be reflected directly in  $\Pr(D_i=1)$ . Another explanation is that more vigorous and effective employer resistance to union organizing efforts makes it more difficult for unions to organize new workers, reducing the relative supply of union jobs. This is an increase in frustrated demand,  $\Pr(D_i=1, U_i=0)$ .

These explanations are not mutually exclusive, and increased employer resistance might reduce demand in two ways. First, if employers treat their nonunion employees better in order to forestall unionization, this will reduce demand as measured. Second, if employers (legally or illegally) influence their employees in other ways to oppose union representation, demand will also be reduced. To the extent that this latter behavior is measured as a reduction in demand, it adds some ambiguity to our attribution of changes to demand and supply factors.

Consider a change in unionization from year  $s$  to year  $t$ . The change in the probability of unionization can be written as<sup>6</sup>

$$(4) \quad \Pr(U_t=1) - \Pr(U_s=1) = \left[ \Pr(D_t=1) - \Pr(D_s=1) \right] \\ - \left[ \Pr(D_t=1, U_t=0) - \Pr(D_s=1, U_s=0) \right]$$

The term in the first brackets measures the change in demand

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<sup>6</sup>Note that we suppress the individual  $i$  subscript on these probabilities here and in what follows. Think of these probabilities as representing group averages.

between  $s$  and  $t$ . The term in the second brackets measures the change in frustrated demand or demand in excess of supply.

Now consider the U.S./Canada comparison. One argument for the higher rate of unionization in Canada is that workers in Canada are more favorably disposed toward collective action so that the demand for unionization will be higher in Canada than in the United States (Lipset, 1989). An alternative view (Freeman, 1988; Weiler, 1990) is that the legal framework governing organization and collective bargaining in Canada is more favorable toward unions than that in the United States. It is noted particularly that Canadian unions can organize workers strictly on the basis of the signing of authorization cards and without the secret-ballot election that employers can (and do) request in the United States. To the extent that these legal differences make it more difficult to organize workers in the U.S. relative to Canada, there will be more frustrated demand for union representation in the U.S. than in Canada, but overall demand is likely to be similar.

We can write the U.S./Canada difference in the probability of unionization analogously to equation (4) as

$$(5) \quad \Pr(U_c=1) - \Pr(U_a=1) = \left( \Pr(D_c=1) - \Pr(D_a=1) \right) - \left( \Pr(D_c=1, U_a=0) - \Pr(D_c=1, U_a=0) \right),$$

where the subscript  $c$  refers to Canada and the subscript  $a$  refers to the U.S. The term in the first brackets measures the difference in demand between Canada and the U.S. The term in the second brackets measures the difference in frustrated demand.

Our plan is to use a measure of demand for union representation among nonunion workers in 1977, 1984, and 1991 in

the U.S. to decompose changes in unionization in the U.S. into changes in demand and changes in relative supply as measured (inversely) by frustrated demand. Similarly, we will use a measure of demand for union representation among nonunion workers in Canada and the United States to decompose changes in unionization into changes in demand and changes in relative supply.

### III. Data

The key information required for our analysis is information on the preferences of nonunion workers for union representation. There have been three surveys designed to be broadly representative of the nonunion U.S. labor force that have this information. These are the 1977 Quality of Employment Survey (QES), a survey conducted in 1984 by Lewis Harris Associates for the AFL-CIO (AFL), and the 1991 General Social Survey (GSS).<sup>7</sup> Additionally, we conducted our own small-scale survey of households in May-June 1992. We refer to this survey as the Farber-Krueger (F-K) survey. The F-K survey was conducted by phone, using a random list of phone numbers chosen to be representative of exchanges in the continental United States. A total of 201 workers responded to our survey.<sup>8</sup>

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<sup>7</sup>See Quinn and Staines (1979), Lewis Harris and Associates (1984), and Davis and Smith (1991) respectively for detailed information on the three surveys.

<sup>8</sup>Nonresponding households were called back at least 4 times to try to elicit a response. The response rate for working phone numbers was 40 percent. This response rate is computed excluding households that did not have an employed individual between age 18 and 65 (191), businesses (59), and disconnected numbers (110).

The measure of preferences of nonunion workers for union representation is based on the responses to similar questions in all four surveys asking whether the worker would vote for union representation on their current job if an election was held. The precise question on the QES and GSS is

If an election were held with secret ballots, would you vote for or against having a union or employee association represent you?

The allowed responses are 1) for and 2) against. The precise question on the AFL and F-K surveys is

If an election were held tomorrow to decide whether your workplace would be unionized or not, do you think you would definitely vote for a union, probably vote for a union, probably vote against a union, or definitely vote against a union?

The allowed responses are 1) definitely vote for a union, 2) probably vote for a union, 3) probably vote against a union, 4) definitely vote against a union, and 5) not sure. For consistency with the QES and GSS, we recode the first two responses as "for" and the third and fourth responses as "against". The fifth response is coded as missing.

Our view is that these two questions are similar enough that the responses can be compared across surveys. This is supported by the fact that the fraction of nonunion workers who give a pro-union response is almost identical on the 1991 GSS (with the first form of the question) and the 1992 F-K survey (with the second form of the question).<sup>9</sup> We interpret the response to

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It includes refusals (141), terminated interviews (4), deaf individuals or non-English speakers (15), answering machines (39), and no answers (99). Further details of the survey are available on request.

<sup>9</sup>This tabulation is at the bottom of table 1.

these questions as indicating the desire of the worker for union representation *assuming that the worker does not have to bear the cost of organization.*

All but the AFL survey were designed to yield representative samples of the employed workforce. The AFL survey departs from representativeness in not including self-employed workers and in systematically undersampling union members. Since we are interested only in workers who are employed by others and in the specific information available for nonunion workers on their preferences for union representation, this is not a problem.<sup>10</sup> Where representative samples of both union and nonunion workers are required, information from the May 1977 Current Population Survey (CPS) and from the Merged Outgoing Rotation Group CPS files for 1984 and 1991 are used.

Samples of workers were derived from the four surveys in an identical fashion. These samples consist of all non-agricultural and non-managerial workers who were not self-employed and for whom complete information was available on the workers' demographic characteristics, industry, occupation, union status, and preference for union representation. The nonunion sample sizes are 663 for the QES, 907 for the AFL survey, 537 for the GSS, and 105 for the F-K survey. The union sample sizes are 298 for the 1977 QES, 231 for the 1984 AFL survey, 117 for the 1991 GSS, and 29 for the 1992 F-K survey. In some of our analysis, we combine the GSS and the and the F-K survey to yield larger

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<sup>10</sup>See Farber (1990) for an analysis of the AFL data that explicitly accounts for the undersampling of union members using a choice-based sampling framework.

samples for the most recent time period.<sup>11</sup>

In addition to augmenting the recent data on worker preferences, there are two key features of the F-K survey that are important for the analysis. First, we collected information on three dimensions of job satisfaction using questions that are identical to those on the 1977 QES. Since the GSS does not contain comparable questions on these aspects of job satisfaction, our survey enables a more recent comparison of trends in job satisfaction and unionization. This may be important given Farber's (1990) finding that the demand of nonunion workers for union representation is strongly inversely related to job satisfaction. Second, we implemented a "split-ballot" experiment in which we asked the AFL question on union status as well as a related -- but different -- question that has been used by Riddell (1992) to study worker demand for union representation in Canada. The order of these two questions was interchanged in half of the surveys. Results of this split-ballot experiment are used later in the analysis of U.S./Canada differences in union membership.

We also created samples from the CPS for the relevant years that use identical selection criteria. These samples, weighted by the CPS sampling weights, are used to derive estimates of the population unionization rate.

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<sup>11</sup>Chi-squared tests fail to reject the hypothesis that the distributions of characteristics are the same in the GSS and the F-K survey for any of the characteristics used in this study. This includes the unionization rate, the measure of nonunion worker demand for union representation, and all demographic characteristics listed in table 1. No p-value is less than 0.27.

Table 1 contains summary statistics for the seven samples on the variables used in the analysis. Due to the large underlying sample sizes, the weighted CPS fractions are precise estimates of the population fractions. The data show a decline in the fraction unionized (union membership) from 25.3 percent in 1977 to 20.6 percent in 1984 to 17.7 percent in 1991. The four smaller samples do not line up uniformly with the CPS unionization rates. The QES unionization rate is significantly higher than that derived from the May 1977 CPS.<sup>12</sup> The AFL survey unionization rate is almost identical to that derived from the 1984 CPS, but this should not be the case given the 10 percent undersampling of union members known to have occurred in the AFL survey. The GSS unionization rate lines up very well with that derived from the 1991 CPS. The unionization rate is insignificantly higher in the F-K survey than in the 1991 CPS (p-value=0.27).

#### IV. Analysis of Change in Union Membership in the United States

Table 2 contains estimates of the coefficients on year dummy variables from linear-probability and logit models of union membership estimated using the 1977, 1984, and 1991 CPS data. The model without controls for labor force experience simply replicates the sample fractions in Table 1, and it shows a 4.3 percentage point drop in the union membership rate between 1977 and 1984. There is a further 2.4 percentage point drop between

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<sup>12</sup>See Farber (1990) for a more detailed discussion of this deviation.



1984 and 1991. The central point to note is that when controls for labor force structure (sex, marital status, race, age, education, region, industry, occupation, and public sector) are introduced, the differences in unionization rate by year fall somewhat. About 35 percent of the 4.8 point decline in unionization between 1977 and 1984 can be accounted for by structural changes in the labor force. However, only about 7.3 percent of the 2.9 point drop in unionization between 1984 and 1991 is accounted for by structural changes. Overall, about 25 percent of the 7.7 point overall decline between 1977 and 1991 can be accounted for by structural changes in the labor force.

The demand for unionization among nonunion workers fell between 1977 and 1984 but remained relatively steady between 1984 and 1991. Table 3 contains estimates of the coefficients on year dummy variables from linear-probability and logit models of nonunion-worker demand for union representation estimated using the 1977 QES, 1984 AFL, and the 1991/92 GSS/F-K data. The model without controls for labor force experience verifies a significant 5.5 percentage point drop in nonunion worker demand between 1977 and 1984 ( $p$ -value=0.012), and it shows an insignificant 0.9 percentage point increase between 1984 and 1991 ( $p$ -value=0.358). Demand remains significantly lower (by 4.7 percentage points) in 1991 than in 1977 ( $p$ -value=0.039).

The results change slightly after controlling for labor force structure.<sup>13</sup> The structural variables account for about 20

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<sup>13</sup>The labor force structure variables are the same as those used in the analysis of union membership with one exception. No control for public sector is included because the QES and GSS do not have direct information on sector. See the note to table 3

percent of the decline in demand among nonunion workers between 1977 and 1984. However, the insignificant increase we found between 1984 and 1991 is now estimated to be an insignificant decrease. The overall decrease between 1977 and 1991, which was estimated to be 4.7 percentage points actually increases to 6.6 percentage points after labor force structure is accounted for (p-value=0.007). Overall, we conclude that little if any of the decline in the demand for union representation among nonunion workers can be accounted for by shifts in labor force structure.

With these estimates in hand, we are ready to apportion the decline in unionization to changes in demand and supply. Table 4 contains the levels of key quantities in 1977, 1984, and 1991 along with computations of changes from 1977 to 1984, 1984 to 1991, and 1977 to 1991. The first row summarizes the changes in the probability of union membership while the second row summarizes the change in nonunion-worker demand for union representation. These are the quantities summarized in table 1 and analyzed in tables 2 and 3. The third row of the table uses these quantities to compute frustrated demand,  $\Pr(D=1,U=0)$ , which is defined in terms of the measured quantities as

$$(6) \quad \Pr(D_1=1,U_1=0) = \Pr(D_1=1|U_1=0) \cdot \Pr(U_1=0).$$

Frustrated demand seems to have remained fairly constant at about 28 percent of the workforce. Finally, the fourth row of the table contains estimates of overall demand for union representation computed as the sum of union membership plus frustrated demand. This is

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for a more detailed list of variables.

$$(7) \quad \Pr(D=1) = \Pr(U=1) + \Pr(D=1, U=0).$$

Total demand has fallen sharply. Fully 54 percent of the workforce demanded union representation in 1977, and this fell to 46 percent by 1991.

As is clear from equation (4) the change in union membership is the difference between the change in overall demand and the change in frustrated demand. By definition, the change in union membership in the first row of table 4 is fully accounted for by the change in overall demand in the fourth row and the change in frustrated demand (inverse supply) in the third row.

The results of this decomposition are quite striking. All of the 7.6 percentage point drop in the unionization rate between 1977 and 1991 is accounted for by a drop in overall demand for union representation. Since demand fell 8.5 percentage points, relative supply actually increased slightly (though insignificantly). Virtually all of the drop in demand seems to have occurred by 1984 (7.25 points of the 8.45 point overall decline). It is interesting that this drop in demand was offset by a significant 2.56 point reduction in frustrated demand between 1977 and 1984. Thus, the relative supply of union jobs actually increased between 1977 and 1984, and the unionization rate would have been even lower in 1984 without this supply increase. Between 1984 and 1991 demand fell insignificantly, but frustrated demand did increase slightly and significantly. Thus, there does seem to have been a small reduction in relative supply between 1984 and 1991.

Overall, virtually all of the decline in unionization between 1977 and 1991 seems to be due to decline in demand for

union representation. There is no evidence that any significant part of the decline in unionization is due to increased employer resistance other than the sort of resistance that would be reflected in lower demand for unionization by workers.<sup>14</sup>

#### V. Job Satisfaction and Nonunion Workers' Demand for Unionization

Based on our decomposition, understanding the determinants of nonunion workers' demand for union representation is critical for explaining the decline in union membership in the U.S. Farber (1990) presents evidence showing that various aspects of job satisfaction are key determinants of workers reported desire for union representation. Workers were asked three questions on job satisfaction in the QES, AFL, and F-K surveys: one question concerned overall job satisfaction, another concerned satisfaction with pay, and the third concerned satisfaction with job security. There were minor (and probably inconsequential) differences in the wording of the satisfaction questions between the QES and AFL surveys, but the F-K questions are identical to the QES questions.

Table 5 summarizes and extends Farber's main findings. In each year, nonunion workers are less likely to report that they would vote for a union if they are satisfied with their job overall, satisfied with their pay, or satisfied with their job

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<sup>14</sup>For example, higher wages or better working conditions offered by employers hoping to avoid unionization or fear of job loss by workers as a result of unionization would be reflected in lower demand as measured by our "vote" question. However, resistance in the form of harassment during an organizing campaign is not very likely to influence the responses to the anonymous survey question we rely on.

security. The difference in the proportion who say they would vote for a union between satisfied and unsatisfied workers is quite sizable, and Farber (1990) finds that the gap is not diminished if demographic, industry, and occupation variables are held constant in a probit model.

Farber (1990) further finds that the 1977-1984 decline in demand for union representation could be accounted for almost entirely by an increase in nonunion workers' job satisfaction, particularly with regard to pay and job security. We extend this evidence through 1992 using the F-K survey.

Table 6 presents evidence on trends in worker satisfaction between 1977 and 1992. The overall level of satisfaction has increased slightly for nonunion workers. The 1992 union sample is extremely small, but the results indicate that the overall level of satisfaction for union workers is not terribly different from that for nonunion workers. Different trends between union and nonunion workers emerge when workers are asked to focus specifically on their satisfaction with pay or job security. Between 1977 and 1984 there was a substantial increase in nonunion workers' reported satisfaction with pay and job security. No similar trend is visible for union workers in these years. The F-K survey indicates that nonunion workers report about an equal level of satisfaction in 1984 and 1992, providing further evidence that nonunion workers are reporting higher levels of satisfaction.

Farber (1990) presents evidence that the increase in reported satisfaction can account for the entire decline in for union representation among nonunion workers between 1977 and

1984. Note that this is consistent with the finding in Table 6 that the level of satisfaction remained roughly constant between 1984 and 1992 and our earlier finding of hardly any change in the proportion of nonunion workers who desire union representation over this same period.

A critical question is: Why did the proportion of nonunion workers who claim to be satisfied with their pay and job security increase between 1977 and 1984? The increase in reported satisfaction with pay is particularly surprising in view of the fact that real wages were stagnant in this period. These are issues that we leave for further examination.

#### VI. Why is the Unionization Rate Higher in the Public Sector?

As we noted in the introduction, the unionization rate is much higher in the public sector than in the private sector. Perhaps more importantly, the public-sector unionization rate has been increasing slowly over the same period that the private sector unionization rate has been falling dramatically. Freeman (1988) and others have argued that this divergence is due to more overt employer resistance in the private sector facilitated by a regulatory structure (the National Labor Relations Act as currently administered) that is less hospitable to union organizing than the regulatory structures prevailing in the public sector (state laws). This is a key part of the basis for the view that reform of the legal structure in the private sector would go a long way toward improving the fortunes of unions in that sector.

In this section we use the data from the 1984 AFL survey and

the 1984 CPS to decompose the public-private differential into differences in 1) overall demand for union representation and 2) frustrated demand. Unfortunately, there is no direct information on sector of employment in the 1977 QES or the 1991 GSS, and our 1992 F-K survey has too small a sample of workers in the public sector to yield meaningful results. Thus, we are restricted to the 1984 cross-section.

The view that the sectoral difference in unionization rates is due to differences in employer resistance suggests that there is more frustrated demand in the private sector and no sectoral difference in overall demand. Table 7 contains the decomposition of the public-private difference in unionization.

Based on weighted tabulations from the 1984 CPS, the unionization rate is over twice as high in the public sector as in the private sector (35.5% versus 15.6%). Using the responses to the vote question on the 1984 AFL survey, we also find that there is substantially more demand for union representation among nonunion workers in the public sector than in the private sector (43.6% would vote for union representation in the public sector versus 28.8% in the private sector). On this basis, overall demand for union representation is much higher in the public sector. Fully 63.6 percent of workers in the public sector prefer union representation compared with only 39.9 percent in the private sector. What is even more striking is that the level of frustrated demand is slightly but significantly higher in the public sector (p-value of 3.8 percentage point difference = 0.01).

This simple analysis does not support the attribution of the

relatively high unionization rate in the public sector to strong employer resistance in the private sector. The results suggest that *all* of the 19.9 percentage point difference in unionization is due to an even larger difference in worker demand for union representation that is actually offset by a higher level of frustrated demand for union representation (lower relative supply of union jobs) in the public sector.

While there is evidence that the union-nonunion wage differential is somewhat smaller in the public-sector than in the private sector (Lewis, 1988), it may not be surprising that workers in the public sector are more likely to demand union representation. Unions in the public sector play a different role in some important dimensions than unions in the private sector. First, the interest of public sector unions in lobbying for funding and legislative support is clear and of real benefit to public sector workers. Second, unions in the public sector replace (or augment) a civil service system that provides wage structures not far different from the sort that unions typically provide. We are thinking specifically of standardization of wages and the attaching of wages to jobs rather than to specific individuals. Thus, public sector workers have a choice between an administered wage system set by the government (the Civil Service) and an administered wage system set through the collective bargaining process. In contrast, private sector workers typically have a choice between a more individualized market-oriented wage system and an administered wage system set through the collective bargaining process. When viewed in this light, it seems plausible that public sector workers would be



more likely to opt for an administered wage system where they have some control (union) while private sector workers would be more likely to opt for a more individualized system (nonunion). It may simply be that public and private sector workers have different alternatives.

#### VII. U.S.-Canada Comparison

Often cited evidence against a demand-side explanation of the low unionization rate in the U.S. comes from a comparison between the U.S. and Canada (e.g., Weiler (1990) and Freeman (1989)). The argument relies on the facts that 1) the unionization rate has fallen dramatically in the United States at the same time that it has grown or remained stable in Canada and 2) the U.S. legal environment is less favorable than the Canadian legal environment to union organization.<sup>15</sup> Since the legal environment fundamentally affects the supply of union jobs, these facts are used to justify a supply-side explanation for the low U.S. unionization rate.

In an interesting recent paper, Riddell (1992) investigates U.S.-Canadian differences in supply and demand directly using information on U.S. and Canadian workers' responses to questions concerning their preferences for unions. The Canadian data were collected from a survey sponsored by the Canadian Federation of

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<sup>15</sup>As noted in the introduction, the presumption that the private-sector unionization rate in Canada grew over the last fifteen years is open to some question. Kumar (1991) finds that the union membership rate fell by 2 points between 1977 and 1988 in Canada, while the union rate among government workers in Canada increased in this period.

Labor (CFL). Riddell compares the 1990 CFL survey to the 1984 AFL survey. Columns 1 and 2 of Table 8 present Riddell's main results. For the nonunion sample, Riddell finds that Canadian workers are slightly less likely than American workers to say they desire union representation. Following Farber (1990), Riddell focuses on the ease of obtaining a union job given that a worker desires a union job ( $\Pr(U=1|D=1)$ ) as a measure of relative supply. Primarily because the union rate is much higher in Canada than in the U.S., Riddell finds that there is far more frustrated union demand (less relative supply) in the U.S. than in Canada. He interprets this as providing support for a supply-side explanation of the divergence between Canadian and U.S. union rates.

Notice that Riddell's estimate of the union rate is 48 percent for Canada. In contrast, the Canadian Labor Market Activity Survey for 1990 indicates a union rate of 36.2 percent. This prompted us to re-analyze the CFL data (see column 3 of Table 8). Our estimates are similar, but not identical, to Riddell's. As far as we can tell, the reason for the extremely high union rate in Canada based on the CFL survey is that union and "professional association" members are included together. When they are separated, 17 percent of the CFL sample is a member of a professional association and 35 percent is a member of a union.<sup>16</sup> Since many professional associations bear little resemblance to unions, we use the LMAS estimate of 36.2 percent

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<sup>16</sup>These do not sum to the total fraction that belong either to a union or professional association because some workers report belonging to both.

for the Canadian union membership rate in our calculations later in this section.

A key variable to compare between Canada and the U.S. is the fraction of nonunion members who desire a union.<sup>17</sup> Riddell finds that 30 percent of nonunion Canadian workers desire union representation, compared to 36 percent of nonunion American workers. Calculations based on Riddell's tabulations, contained in the first two columns of table 8, show that of the 26 point difference between Canadian and U.S., 14 points are due to a difference in total demand and 12 points are due to a difference in supply (frustrated demand).

One potential problem with Riddell's comparison of union demand among nonunion workers is that he compares Canadian data from the 1990 CFL survey to U.S. data from the much earlier 1984 AFL-CIO survey. Therefore, it is difficult to separate out temporal differences from true cross-country differences. Additionally, our re-analysis of the CFL data suggests that 33 percent of nonunion workers desire union membership in Canada.<sup>18</sup> In order to address these problems, the third and fourth column

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<sup>17</sup>Unfortunately, the question on workers' desires for union representation was only asked of individuals who were not members of either a union or a professional association. If the nonunion/nonassociation sample is representative of the professional association sample, estimates of  $\text{pr}(D=1|U=0)$  will not be affected. There were 64 workers in the CFL sample who were not union members but were professional association members. This is about one-fourth the number of workers (270) who were not members of either unions or professional associations.

<sup>18</sup>It is interesting that our tabulation of the AFL data, shown in Table 1, yields the same 33 percent share of nonunion workers desiring union representation.

of table 8 contain our tabulations of the 1990 CFL survey and the 1991/92 GSS/F-K surveys. Since demand for unionism remained relatively constant between 1984 and 1991 in the U.S. and because our tabulations of the CFL survey are very close to Riddell's, neither problem turns out to be of much consequence.

Perhaps more importantly, the Canada-US comparison is imperfect because Canadian workers were asked a considerably different question regarding their desire for unions than their American counterparts. The key question from the CFL questionnaire is:

Thinking about your own needs, and your current employment situation and expectations, would you say that it is very likely, somewhat likely, not very likely, or not likely at all that you would consider joining or associating yourself with a union or a professional association in the future?

Recall that the exact wording of the AFL question is:

If an election were held tomorrow to decide whether your workplace would be unionized or not, do you think you would definitely vote for a union, probably vote for a union, probably vote against a union, or definitely vote against a union?

The CFL question is broader than the AFL question, encompassing both unions and employee associations. In addition, the commitment on employees' part is vague in the CFL question; workers are asked whether they would "consider joining or associating" themselves with a union. Finally, the CFL question pertains to the current job or a future job, whereas the AFL question is focused on considering how an individual would vote if an election were held tomorrow. We suspect that these considerations are likely to bias the estimate of  $\Pr(D=1|U=0)$  upwards in the CFL survey.

The AFL question makes little sense in the Canadian labor market where union representation is decided by card signings, not elections. The Canadian question does make sense in the U.S. context, however.

Here we investigate how the Canada-U.S. comparison is affected by the different questions used in the two nations' surveys. Specifically, in our survey (the F-K survey) we asked each respondent the CFL question as well as the AFL question. Furthermore, in order to examine whether the ordering of the questions influences our conclusions, we randomly selected half of the questionnaires and reversed the order in which the CFL and AFL questions were asked. We separated the AFL and CFL questions with questions on demographic and employment-related outcomes.<sup>19</sup> Table 9 presents basic results for nonmanagerial, non-selfemployed workers from our survey. The sample used to create this table includes all observations, regardless of the order in which they were asked the CFL and AFL questions.<sup>20</sup> The results indicate that nonunion workers are more likely to answer the CFL question favorably than the AFL question (41 percent vs. 35 percent), but the difference is not statistically significant (p-value=0.373).

As the following table makes clear, the order of the AFL and

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<sup>19</sup>A copy of our questionnaire is available on request.

<sup>20</sup>The tabulations of the two questions have different numbers of observations because of missing responses. The nonresponse rate is greater for the AFL-style question than the CFL-style question: 16 percent of the sample failed to answer the AFL question, whereas 6.4 percent of the sample failed to answer the CFL question.

CFL questions has a dramatic impact on the responses to the CFL question but no discernible effect on the responses to the AFL question.

Percent Responding Favorably to Union Representation

Question	AFL question asked first	CFL question asked first	Absolute t-ratio for difference
CFL	.550	.263	3.268
AFL	.358	.346	.131

Workers are much more likely to respond favorably to the vague CFL question on future union membership if it follows the more focused AFL question on how workers would vote in an hypothetical election held tomorrow. The AFL question, however, is notably robust to the order in which it is asked. When asked of American workers, the gap between the CFL-style question and the AFL-style question is +20 points or -9 points, depending on the order of the CFL question.

This finding raises some question about the validity of responses to the CFL survey. If the CFL questionnaire is more like the version of our survey in which the CFL-style question is asked first, then somewhat fewer workers seem to respond favorably to the CFL-style question than they would to an AFL-style question. In other words, for a given proportion of workers desiring unions based on the CFL question, we would expect a higher fraction to respond favorably to unions if they were asked the AFL question. This would tend to diminish the cross-country difference in the relative size of the queue of workers seeking union jobs. On the other hand, the CFL

questionnaire asks four questions concerning general views towards unions before asking the question on workers' likelihood of joining a union. This may lead the CFL questionnaire to behave like the case in which the CFL question is asked second, and would suggest an even larger gap in frustrated union demand between the U.S. and Canada than Riddell estimates.

The following cross-tabulation shows that there is considerable disagreement between individuals' responses to the AFL and the CFL questions.

		CFL Question:	
		No	Yes
AFL Question	No	51	15
	Yes	9	27

The majority of individuals give the same answer to the two questions.<sup>21</sup> However, nearly one-quarter of workers answer the AFL and CFL questions differently (24/102). If the CFL question is asked first, responses on the off-diagonals tend to be cases in which workers respond positively to the CFL-style question but negatively to the AFL-style question; if the AFL question is asked first, the opposite is the case.

We have searched for various factors that might be associated with the difference between individuals' responses to the AFL and CFL questions. Specifically, we estimated exploratory

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<sup>21</sup>A chi-squared test of the hypothesis that the responses to the AFL and CFL questions are independent of each other overwhelmingly rejects the null of independence (p-value<.00001).

regressions using as the dependent variable the difference between the AFL and CFL union preference variables (-1, 0, 1). The only right hand side variables that significantly affected this difference was the order in which the questions were asked and the respondent's gender. Men were relatively more likely to answer the AFL question unfavorably and the CFL question favorably. A worker's industry, occupation, region, marital status, age, and education have little power in explaining the difference between the AFL and CFL variables.

Issues of noncomparability in questionnaire design aside, we can decompose the Canadian-U.S. union gap using the supply and demand framework outlined in section II and presented in equation (5). In 1990, the difference in union density between Canada and the U.S. was 18.5 points (=36.2%-17.7%) using the tabulations from the LMAS in Canada and the CPS in the United States.

If we take our CFL estimate of  $\Pr(D=1|U=0)$  at face value, then  $\Pr(D_c=1, U_c=0) = .33(1-.362) = .211$ . The corresponding figure for the U.S. based on the 1991/2 GSS-F-K survey is  $\Pr(D_A=1, U_A=0) = .340(1-.177) = .280$ . Therefore, about 7 points of the 18.5 point gap in union density between the U.S. and Canada is attributable to differences in frustrated demand, perhaps due to the differences in the legal environment between the countries. The remaining 11.5 points is attributable to greater worker demand for unions in Canada than the U.S. In other words, 38 percent of the Canada-U.S. gap in union density is attributable to supply-side differences between the countries, and 62 percent is attributable to demand-side differences.

As we have emphasized, the estimate of  $\Pr(D=1|U=0)$  based on



the CFL question may not be directly comparable to the estimate based on the AFL question. Ignoring question order, we find that the average response to the CFL question is about 6 points higher than the average response to the AFL question in our survey of U.S. workers. As a rough gauge of the sensitivity of the supply-demand decomposition, we have recalculated the decomposition assuming the  $\Pr(D=1|U=0)$  is 6 points lower for Canada (i.e., using .27 instead of .33). In this scenario, we find that 58 percent of the Canada-US gap in union density is due to supply-side differences and 42 percent is due to demand-side differences. This small change reverses the relative importance of supply and demand factors.

To sum up, our exploration leaves us somewhat skeptical of the plausibility of the Canadian-U.S. comparison. The placement and wording of the CFL question seem to have a substantial effect on workers' responses. Nevertheless, the most careful literal interpretation of our results suggest that both supply and demand-side factors contribute to the higher union density in Canada than in the U.S. Past analyses that attribute the entire divergence between the Canadian and U.S. union rates to supply-side factors may be misleading.

#### VIII. Summary and Conclusion

Our analysis of the decline in unionization in the U.S. and comparisons with Canada relies on a demand-supply framework. We measure total worker demand for unions as the sum of union members and nonunion members who say they would vote for a union if a hypothetical election were held at their workplace. We measure supply inversely as frustrated demand (nonunion workers

who would vote for union representation). Using this framework, we reach a number of conclusions.

First, we dismiss the argument that industrial and demographic shifts account for the decline in unionization in the U.S. Only about one-quarter of the decline in the union membership rate can be accounted for by these factors. Second, we find that a decline in demand-side factors can account for virtually all of the decline in the union membership rate since 1977. Virtually none of the decline seems to be due to changes in the relative supply of union jobs as measured by frustrated demand.

The reasons for the decline in workers' demand for union representation need to be investigated further, but our brief analysis suggests that nonunion workers are more likely to report being satisfied with their jobs in 1984 and 1992 than in 1977. This, in turn, can account for much of the decline in the demand for union representation. Another possibility is that demand for union representation has declined because the services unions provide are no longer perceived as valuable by nonunion workers, or that unions have not been able to convince workers of the value of union representation, perhaps because of poor public relations. The potential causes of a decline in demand, as well as the reasons for the increase in reported work satisfaction, are worthy topics of further research.

Next, we use our framework to investigate the 20 point differential in union membership between the public and private sectors. Our results are very clear. All of the all of the higher unionization rate in the U.S. public sector in 1984 can be

accounted for by higher demand for unionization and that there is actually *more* frustrated demand for union representation in the public sector. These findings are inconsistent with recent work that has attributed the relatively high public-sector unionization rate to more employer resistance to unionization in the private sector.

Finally, we apply our demand-supply framework to try to explain the nearly 20 point differential in union membership between Canada and the U.S. Although our split-ballot survey casts some doubt on the comparability of different opinion questions regarding demand for union representation across countries, our best estimate is that approximately half of the Canada-U.S. gap in the union membership rate is due to supply-side factors and half is due to demand-side factors. This conclusion is at odds with several recent studies that have concluded that the entire Canada-U.S. union gap is a result of supply-side factors.

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Table 1  
Sample Fractions

Variable	1977		1984		1991		1992
	QES	CPS	AFL	CPS	GSS	CPS	F-K
Union Member	.310	.253	.203	.206	.179	.177	.216
Female	.387	.443	.468	.472	.520	.483	.537
Married	.649	.620	.639	.585	.543	.569	.537
Married Female	.176	.242	.274	.254	.266	.259	.269
Nonwhite	.118	.119	.118	.136	.164	.151	.164
South	.350	.312	.308	.342	.330	.342	.299
Industry:							
manufacturing	.305	.273	.223	.238	.208	.205	.157
construction	.053	.056	.141	.057	.058	.052	.060
trans., comm.	.084	.067	.092	.077	.075	.076	.082
public util.							
trade	.158	.195	.138	.218	.171	.219	.179
finance, insur	.044	.049	.060	.056	.063	.057	.067
real estate							
services	.356	.360	.346	.354	.425	.391	.455
Occupation:							
blue collar	.437	.388	.389	.342	.273	.315	.253
clerical	.176	.209	.215	.198	.202	.197	.172
service	.139	.166	.115	.159	.165	.163	.112
prof, tech	.207	.168	.213	.179	.242	.199	.284
sales	.041	.069	.068	.122	.118	.126	.179
Education:							
<12	.224	.283	.120	.188	.135	.156	.082
=12	.372	.401	.365	.430	.335	.413	.358
13-15	.220	.160	.234	.200	.283	.224	.261
>=16	.184	.156	.281	.182	.247	.207	.299
Age							
<=24	.198	.262	.181	.229	.125	.181	.127
25-34	.310	.259	.341	.298	.301	.294	.276
35-44	.201	.178	.229	.212	.318	.256	.343
45-54	.168	.167	.151	.142	.135	.159	.142
>=55	.123	.134	.098	.119	.121	.110	.112
Nonunion Workers Preferences:							
Pro-union Vote	.386		.331		.337		.352
Sample size:	961	51624	1138	153043	654	153001	134

Note: The CPS data are from May for 1977 and from the merged outgoing rotation group file for 1984 and 1991. The CPS fractions are weighted by the CPS final sample weights. All variables are dummy variables.

TABLE 2  
 Linear Probability and Logit Models of Probability of Unionization  
 1977, 1984, 1991 CPS  
 Selected Parameters

Variable	(1) OLS	(2) OLS	(3) Logit	(4) Logit
1984 Dummy	-.0478 (.0017)	-.0314 (.0016)	-.271 (.0100)	-.227 (.0113)
1991 Dummy	-.0765 (.0017)	-.0580 (.0015)	-.457 (.0101)	-.442 (.0115)
Labor Force Struc.	NO	YES	NO	YES
R-squared	.0059	.181		
Log-Likelihood n = 357668			-182660.2	-148454.3

Note: The base year is 1977. Self-employed workers, managers, and agricultural workers are deleted from the analysis. Labor Force Structure includes a set of 21 variables representing main effects for sex, marital status, the interaction of sex and marital status, race, region (2 categories) age (5 categories), education (4 categories), public sector, industry (6 categories), and occupation (5 categories). The numbers in parentheses are standard errors.

TABLE 3

Linear Probability and Logit Models of  
Probability that Non-Union Worker Desires Union Representation

1977 QES, 1984 AFL, 1991/92 GSS/F-K

Selected Parameters

Variable	(1) OLS	(2) OLS	(3) Logit	(4) Logit
1984 Dummy	-.0554 (.0244)	-.0438 (.0244)	-.241 (.107)	-.205 (.115)
1991/92 Dummy	-.0466 (.0264)	-.0661 (.0266)	-.202 (.115)	-.308 (.126)
Labor Force Struc.	NO	YES	NO	YES
R-squared	.0612	.0808		
Log-Likelihood n = 2212			-1429.3	-1432.0

Note: The base year is 1977. Self-employed workers, managers, and agricultural workers are deleted from the analysis. Labor Force Structure includes a set of 21 variables representing main effects for sex, marital status, the interaction of sex and marital status, race, region (2 categories) age (5 categories), education (4 categories), industry (6 categories), and occupation (5 categories). The numbers in parentheses are standard errors.



Table 4  
Analysis of Change in Union Membership

Probabilities  
(standard errors)

	Level 1977	Level 1984	Level 1991	Change 77 to 84	Change 84 to 91	Change 77 to 91
Pr(U=1)	.253 (.0019)	.206 (.0010)	.177 (.0010)	-.047 (.0022)	-.029 (.0014)	-.076 (.0022)
Pr(D=1 U=0)	.386 (.0189)	.331 (.0156)	.340 (.0187)	-.055 (.0245)	.009 (.0244)	-.046 (.0266)
Pr(D=1,U=0)	.288 (.0048)	.263 (.0032)	.280 (.0033)	-.0256 (.00582)	.0170 (.0046)	-.0085 (.0059)
Pr(D=1)	.541 (.0142)	.469 (.0124)	.457 (.0154)	-.0725 (.0188)	-.0120 (.0198)	-.0845 (.0209)

Sources and Definitions:

Pr(U=1): The probability that a worker is a union member. Computed from weighted tabulations of the CPS. Table 1. The standard errors are sampling errors computed as the square root of  $p(1-p)/n$ .

Pr(D=1|U=0): The probability that a nonunion worker demands union representation. Computed from tabulations of the "vote" question on the 1977 QES, 1984 AFL survey, 1991/92 GSS and F-K surveys. Table 1. The standard errors are sampling errors computed as the square root of  $p(1-p)/n$ .

Pr(D=1,U=0): The probability that a worker demands union representation but is not employed on a union job (frustrated demand). Computed as  $Pr(D=1|U=0) \cdot Pr(U=0)$  from this table. The standard errors are computed by the "delta" method.

Pr(D=1): The probability that a worker demands union representation. This is the sum of the probability that a worker is a union member and the probability that a worker desires union representation but is not employed on a union job (union membership plus frustrated demand). Formally, this is  $Pr(U=1) + Pr(D=1,U=0)$  and is computed from this table. The standard errors are computed by the "delta" method.

Table 5

Fraction of Nonunion Workers who would Vote for Union Representation  
 Broken Down by Year and Job satisfaction

	1977 (n=663)		1984 (n=865)		1992 (n=125)	
	Satisfied?		Satisfied?		Satisfied?	
	No	Yes	No	Yes	No	Yes
Satisfaction with:						
Overall job	.671	.342	.615	.289	.455	.333
Pay	.522	.291	.511	.259	.520	.291
Job Security	.533	.331	.485	.295	.500	.330

Notes: Data set for 1977 is QES, data set for 1984 is AFL-CIO survey, and data set for 1992 is Farber-Krueger survey.

Table 6  
Job Satisfaction by Union Status

	Nonunion Workers			Union Workers		
	1977	1984	1992	1977	1984	1992
Fraction satisfied with:						
Overall	.867	.894	.903	.879	.853	.903
Pay	.587	.745	.758	.748	.770	.871
Job Security	.729	.850	.880	.762	.783	.774
n	663	865	125	298	217	31

Notes: Data set for 1977 is QES, data set for 1984 is AFL-CIO survey, and data set for 1992 is Farber-Krueger survey.

Table 7

## Analysis of Difference in Union Membership

1984 Public - Private Comparison

Probabilities  
(standard errors)

	Level Private	Level Public	Public - Private
Pr(U=1)	.156 (.001)	.355 (.0027)	.199 (.0029)
Pr(D=1 U=0)	.288 (.017)	.436 (.031)	.148 (.035)
Pr(D=1,U=0)	.243 (.0026)	.281 (.011)	.038 (.0115)
Pr(D=1)	.399 (.0141)	.636 (.0203)	.235 (.0247)

## Sources and Definitions:

Pr(U=1): The probability that a worker is a union member. Computed from weighted tabulations of the 1984 CPS MOGRG file. The standard errors are sampling errors computed as the square root of  $p(1-p)/n$ .

Pr(D=1|U=0): The probability that a nonunion worker demands union representation. Computed from tabulations of the "vote" question on the 1984 AFL survey. The standard errors are sampling errors computed as the square root of  $p(1-p)/n$ .

Pr(D=1,U=0): The probability that a worker demands union representation but is not employed on a union job (frustrated demand). Computed as  $Pr(D=1|U=0) \cdot Pr(U=0)$  from this table. The standard errors are computed by the "delta" method.

Pr(D=1): The probability that a worker demands union representation. This is the sum of the probability that a worker is a union member and the probability that a worker desires union representation but is not employed on a union job (union membership plus frustrated demand). Formally, this is  $Pr(U=1) + Pr(D=1,U=0)$  and is computed from this table. The standard errors are computed by the "delta" method.

Table 8

## Canada-U.S. Comparison of Union Preferences

Riddell's Results based on 1990 CFL and 1984 AFL Surveys

	Riddell Estimates		Farber-Krueger Estimates	
	1990 CFL (1)	1984 AFL (2)	1990 CFL (3)	1991/2 GSS/F-K (4)
Number of observations				
Union	250	196	242	146
Nonunion	267	694	270	642
Total	517	890	512	788
Pr(U=1)	.48	.22	.47	.19
Pr(D=1)	.64	.50	.65	.46
Pr(D=1 U=0)	.30	.36	.33	.34
Pr(U=1 D=1)	.76	.44	.74	.40
Pr(D=1,U=0)	.16	.28	.18	.27

Source: Columns 1 and 2 are from Table 3 of Riddell (1992). Columns 3 and 4 are authors' calculations.

Table 9

## Farber-Krueger Union Preference Survey

	Question Style	
	CFL	AFL
Number of observations		
Union	31	29
Nonunion	117	105
Total	148	134
Prob(U=1)	.199	.199
Prob(D=1)	.534	.493
Prob(D=1 U=0)	.410	.352
Prob (D=1, U=0)	.328	.282
Prob(U=1 D=1)	.377	.414

Note: Sample consists of nonmanagerial, non-selfemployed workers who reported union status.