AUTOMATIC CERTIFICATION OR MANDATORY REPRESENTATION VOTES?
HOW THE CHOICE OF UNION RECOGNITION PROCEDURE AFFECTS UNION CERTIFICATION SUCCESS

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Abstract

Union recognition procedures are about to be reformed in the UK. Current legislative reform proposes automatic certification. Business prefers mandatory representation votes. Will the choice of union recognition procedure affect certification success? This paper provides empirical evidence on the impact of the choice of recognition procedure on certification success. Cross-section time-series analysis of nine Canadian jurisdictions over nineteen years is used to identify the effect of mandatory votes/ automatic certification on certification success. The results indicate that mandatory votes reduce certification success rates by 6 to 9 percentage points below what they would have been under automatic certification. This result is robust and significant at the 99 per cent level.

Key Words: certification, union recognition, mandatory representation vote, automatic certification

JEL Classification: J50, J58

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1. Introduction

In the UK, on January 27, 1999, the Employment Relations Bill was introduced in Parliament. This Bill, among other things, proposes to reform union recognition procedures in Britain. It provides for 'automatic certification' - if a majority of employees in a bargaining unit are members of the union then the union is granted bargaining rights and no representation vote is necessary.[1] This legislation is contentious. Business has lobbied against automatic certification preferring instead the U.S. system of 'mandatory representation votes' - where a vote must be held before a union is recognized. Labour has opposed any 'watering down' of the current proposal.[2] Are mandatory representation votes and automatic certification really likely to have significantly different implications for British unions' ability to maintain or expand their membership? In this paper I provide evidence on this issue from what is, to my knowledge, the only country in which these two legislative regimes co-exist - Canada.

In particular, Canada is a federal state consisting of ten provinces. Labour law is primarily the responsibility of the provinces. Unions have been recognized in Canada on the basis of either automatic certification procedures or mandatory representation votes.[3] There is considerable variation over time and across jurisdictions in legislation specifying one of these two forms of union recognition. In this paper I conduct an econometric analysis of cross-section time-series data for nine Canadian provinces over the period from 1978 to 1996 to identify how the choice of union recognition procedure affects union certification success.[4]

This research presents convincing evidence that contributes substantially to an understanding of how different union recognition procedures affect certification success. Previous studies have used either time-series data or cross-section micro data. Because, within single jurisdictions, changes in legislation tend to occur in "bundles", the studies based on time-series analysis are only able to identify the effect of very general changes in labour legislation. The one study based on cross-section micro data is not able to identify the effect of union recognition procedures because of insufficient variation in the data. This is the first study to apply cross-section times-series analysis to this issue, and in doing so is able to successfully identify the effect of union recognition procedures on certification success. There are two reasons for this. First, cross-section time-series analysis incorporates much more variation than either of the other approaches. Second, cross-section time-series data allows variables to be included in the analysis that control for province and year effects as well province-specific time trends - it is not possible to control for all these factors using time-series or cross-section data alone.

The empirical results show that the choice of recognition procedure does have a substantial impact on union certification success. Mandatory vote legislation reduces certification success rates by 6 to 9 percentage points below what they would be under automatic certification. This result is robust and significant at above the 99 percent level.

2. Mandatory Representation Votes and the Canadian Industrial Relations Environment

This section describes the difference between mandatory representation votes and automatic certification procedures in Canada. It also discusses two other features of the industrial relations legal environment in Canada that may affect certification success: *compulsory dues checkoff* and *first agreement arbitration.* Finally it provides an overview of the Canadian industrial relations legal environment and a description of the variation in

legislation over time and across provinces.

2.1. Mandatory representation votes and automatic certification procedures

Mandatory representation votes and automatic certification are two alternative legal procedures for obtaining bargaining rights in Canada. Both procedures involve three stages[5]. First, the union files an application for certification and provides evidence of union support. Second, a hearing is held before the Labour Relations Board involving all interested parties that determines the composition of the bargaining unit, considers any allegations of unfair labour practices and examines the membership evidence. Third, under a system of mandatory representation votes, if there is a minimum level of support for the union (based on the membership evidence filed in the first stage) then a secret ballot is conducted to determine if the union has enough support from the bargaining unit to be certified. Under a system of automatic certification it is not always necessary to hold a vote. If the membership evidence (filed in the first stage) indicates support for the union above a certain threshold the union is certified immediately without a vote. Only if the membership evidence is above some minimum level of support but below the threshold required for automatic certification will a representation vote be held. In either process the application for certification is dismissed if membership evidence is below the minimum level of support.[6]

2.2. Compulsory dues checkoff and first agreement arbitration

In order to identify the effect of the different union recognition procedures on certification success it is important to control for any other elements of the legislative environment that may also affect certification success. Two such elements are: *compulsory dues checkoff* and *first agreement arbitration*.[7]

Compulsory dues checkoff requires that, at the union's request, a clause be included in a collective agreement that obligates the employer to deduct union dues directly from the wages of employees in the bargaining unit (whether or not they are members of the union) and remit these to the union.[8] The ability of an employer to block this type of union security clause (when it is not compulsory) can be a major obstacle to reaching a first agreement. Compulsory dues checkoff provides the incentive for unions to organize new units and maintain representation of existing units. Such clauses provide financial security and an increased ability to represent its members effectively. Unions are likely to increase their supply of services in this environment. Employees may be more likely to support the union if it is perceived that the union will be able to act more effectively on their behalf or if employees who were reluctant to support the union before because of the problem of free riders are more willing to do so now. However some employees may no longer support the union if they had hoped to be free riders. Employers may increase their resistance to unionization perceiving that this type of clause increases union power. Though its expected effect on certification success is ambiguous this type of legislation is generally considered to support the union movement. Martinello and Meng (1992) using 1986 cross-section micro data on Canadian workers in mining and manufacturing find that compulsory dues checkoff significantly increase the probability of certification success.

First agreement arbitration allows the first collective agreement between a bargaining agent and an employer to be settled by binding arbitration if a negotiated agreement cannot be reached. The task of negotiating a first agreement is formidable. It involves writing clauses that describe all aspects of the employment relationship, not simply the revision of clauses in an existing agreement. Negotiation takes place in a context where patterns of communication have yet to be established and where the employer is likely to be hostile because it must relinquish some control for the first time. First agreement arbitration ensures that if a union succeeds in obtaining bargaining rights it will be able to effectively exercise those

rights and obtain a first collective agreement. Under such circumstances unions are more willing to organize workers and workers are more likely to support these efforts. However employers may intensify their resistance to the union during the organizing period rather than waiting for the negotiation of the collective agreement. This type of legislation is considered to be supportive of the union movement however its impact on certification success is ambiguous. In a U.S. study, Cooke (1985), found that in a sample of newly organized unions in Indiana in 1979/80 one quarter of these unions failed to negotiate a first agreement by 1982. He finds that a union is more likely to negotiate a first agreement if a national union representative participates in the negotiations, if the bargaining unit is large and cohesive and if the firm already pays relatively high wages. He finds that lengthy delays and difficulties in NLRB[9] procedures for dealing with accusations of 'bargaining in bad faith' discourage achieving a first agreement.

2.3. Canada's industrial relations legal environment

As mentioned the industrial relations legal environment in Canada is decentralized. The federal government has jurisdiction over its own public servants and also over a number of inter-provincial activities such as railways, trucking and shipping. The provincial governments have jurisdiction over all other activities within their geographical area. While there are many similarities in labour legislation across the various jurisdictions there are also significant differences.

Mandatory representation votes, compulsory dues checkoff and first agreement arbitration have been introduced in various Canadian jurisdictions at different points in time. Table 1 provides precise information on when each of these types of labour legislation is in force for each jurisdiction in Canada over the period from 1976 to 1996. Table 2 gives the number of observations (province/year cells) corresponding to each of the eight possible legislative regimes (as defined by the presence of

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mandatory votes, compulsory dues checkoff and first agreement arbitration). It is clear from examining both Table 1 and Table 2 that there is substantial variation in legislation across jurisdictions and over time. Prior to the introduction of mandatory representation votes in Nova Scotia in 1977 all Canadian jurisdictions employed automatic certification for union recognition. Since this time mandatory votes have become more prevalent across Canada. British Columbia introduced them in 1984 and repealed this legislation in 1993. Alberta introduced mandatory vote legislation in 1988. Then in the mid-1990s Newfoundland (1994) and Ontario (1995) introduced mandatory votes. Even so, representation votes are required in less than half of Canadian jurisdictions. Both compulsory dues checkoff and first agreement arbitration have been more common in the sample. Table 2 shows that there are 42 province/year cells when mandatory vote legislation was in place, 79 province/year cells when first agreement arbitration was in place and 105 province/year cells when compulsory dues checkoff was in place. The variation in legislative regimes allows the impact of mandatory representation votes /automatic certification on certification success to be identified.

3. Previous Research

A number of studies suggest that mandatory representation votes reduce certification success. Weiler (1983) argues that mandatory representation votes discourage unionization in the U.S. whereas automatic certification procedures used in Canada support union organizing activity. He claims that the delay between a petition for certification and the election provides the employer with the opportunity to influence the outcome of the election and that unfair labour practices (ULPs) are frequently used to discourage union support because the penalties for doing so are neither timely nor large. Weiler supports his position with descriptive statistics drawn from the U.S. NLRB and Canadian LRB[10] Annual Reports. Cooke (1983) in a cross-section study based on NLRB certification records from 1979 finds that NLRB procedures, particularly the length of the delay between petition

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and election date, have a significant negative impact on certification success. Meltz (1985) and Gunderson and Meltz (1985), in comparative studies of the U.S. and Canada, argue that differences in the legislative environments affect union density and that automatic certification may be the single most important legal factor preventing the erosion of trade unions in Canada. Descriptive statistics are used to support this position. Martinello and Meng (1992) using 1986 cross-section micro data on Canadian workers in mining and manufacturing find that mandatory representation votes have no statistically significant effect on certification success. They suggest that this result may be due to insufficient variation of this variable in their data.

Other studies address the impact of unfair labour practices on certification success - since it is argued that mandatory representation votes provide a greater opportunity for unfair labour practices (ULPs) it is instructive to examine this evidence. Getman et al (1976) look at a sample of 31 hotly contested unionization campaigns in the U.S. in 1972-73 and conclude that employer ULPs do not have a statistically significant impact on the vote. Dickens (1980) using the same data as Getman et al. (1976) and more sophisticated empirical analysis, finds that employer intimidation plays a very significant role in discouraging unionization. Two Canadian studies focus on the impact of ULPs on certification success. Thomason (1992) using micro data from Ontario for the period 1982-1990 (automatic certification prevailed over this time) finds that ULPs significantly reduce the probability of union certification in Ontario but that this reduction is very small when compared to the results of U.S. studies. He attributes this to evidence that the time delay between application and election is much shorter in Ontario (where such delays are measured in days) than in the U.S. (where such delays are measured in months). Riddell (1996) using micro data for British Columbia from 1987-88 (a mandatory representation vote was required at this time) finds that ULPs significantly reduce certification success. He also presents descriptive evidence that certification success in the period (1987-88, 1993-96) when B.C. did not require a

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representation vote was much higher (95-95% success rate) than in 1987-88 when a representation vote was required (77% success rate).

The possibility of employer intimidation is not the only reason that mandatory representation votes may influence unionization. In the context of a union organizing drive peer pressure from fellow workers to sign union membership cards may make it difficult for an employee to express their genuine feelings about the union. The secret ballot held under mandatory representation vote legislation allows the employee the freedom to express their true opinion of the union without fear of reprisal from either the union, other workers or the employer.

Other studies examine the impact of general changes in labour legislation on certification success and unionization. Three Canadian studies look at the impact of changes in general labour legislation. Kumar and Dow (1986) use aggregate time series data for Canada from 1935 to 1981 to analyze the determinants of union growth. They include a dummy variable that measures the impact of PC1003- the legislation introduced in 1944 that gave Canadian labour collective bargaining rights. They find that this legislation has a significant effect on the growth of union membership. Martinello (1996) uses time-series data from 1951 to 1992 for British Columbia, Saskatchewan and Manitoba. In each province he identifies when major legislative reforms occurred. In his analysis of a single jurisdiction it is impossible to test for the impact of a specific reform because changes in labour legislation are typically 'bundled' together in one legislative package. Martinello controls for business conditions and the political environment. His results show that legislative change has a significant effect on certification success rates in all three provinces and this effect is larger than that of the other variables he defines. Martinello (1999) uses monthly data from 1987 to 1998 for Ontario to estimate the effects of changes in labour legislation and political party in power on certification activity. He finds that both these variables have significant effects on certification activity.

Freeman and Pelletier (1990) examine the impact of industrial relations law on union density in the UK and Ireland. The authors create a law index on a five point scale with a value of one indicating years where the legislation was least favourable to unions and a value of five when it is most favourable. They use aggregate time series data from 1945 to 1986. They conclude that in the long run changes in legal regulations are a major determinant of UK density. They find that most of the decline in union density in the UK in the 1980s is due to the changed legal environment of industrial relations. The results for Ireland are not significant due to insufficient variation in the data.

This paper is the first in this literature to use cross-section time-series analysis and as such is able to offer considerable insight into the effect of union recognition procedures on certification success. The empirical results are based on data for nine Canadian jurisdictions over a nineteen year period. The panel consists of observations where union recognition procedures differ across provinces and where union recognition procedures change over time within a province (as discussed earlier and shown in Tables 1 and 2). All of this information is incorporated into the econometric analysis. The analysis presented in this paper is able to identify the impact of mandatory representation votes on certification success. In contrast, earlier studies have used either pure time-series data or pure cross-section micro data and as a result are not able to identify the impact of specific union recognition procedures. Pure time-series studies (Kumar and Dow (1986), Freeman and Pelletier (1990), and Martinello (1996,1999)) are only able to identify the effect of very general changes in labour laws. In a single jurisdiction the variation in labour law over time is typically not sufficient to identify the effect of a specific law. Reforms to labour laws are usually introduced as a package and union recognition procedures have rarely been repealed. In this type of analysis there are no 'control' groups provided by other jurisdictions where the legislation does not change. Therefore the best that time-series analysis can do is to identify the impact of general changes

in labour laws. Time-series analysis of a single jurisdiction also cannot control for provincial effects. There is one pure cross-section study based on micro data that covers a number of jurisdictions (Martinello and Meng (1992)). This study does not succeed in identifying the impact of mandatory representation votes. In this case, there is not enough variation in the use of different union recognition procedures across jurisdictions in the year they study (1986) to allow identification. Cross-section micro data also cannot control for specific year effects or for slowly changing provincial trends over time.[11] The use of cross-section time-series variation in my study allows the impact of specific labour laws to be identified. The cross-section time-series analysis is also able to include provincial fixed effects, year effects and province-specific time trends in the estimation and therefore we can be more confident that the results have correctly identified the impact of mandatory representation votes on certification success. Some of the previous research focuses on the impact of unfair labour practices on certification success. These studies only provide indirect evidence on the possible effect of mandatory representation votes on certification success. My study presents direct evidence on the effect of mandatory representation votes on certification success.

4. Econometric Approach

The decentralization of Canadian labour law permits the use of cross-section time-series analysis to test for the effect of mandatory representation votes/automatic certification on certification success. The annual data cover nine Canadian jurisdictions over the period from 1978 to 1996. Cross-section time-series analysis makes it easier to identify the impact of mandatory representation votes on certification success. This is more difficult in a single time-series because such legislation is often introduced as part of a package of reforms and once introduced it usually remains in force.

Cross-section time-series analysis can be more efficient than OLS because it incorporates more information and takes into account the error relationships in the data set.[12] A number of possible error relationships may exist. There can be heteroscedasticity across provinces, correlation between provinces, common autocorrelation across provinces and/or province-specific autocorrelation. Greene (1983, LIMDEP 7.0) suggests a number of diagnostic tests to detect the presence of these error relationships.[13] If these diagnostic tests reveal the presence of any of these error relationships FGLS is a more efficient estimation technique than OLS.

4.1. The model

The theoretical model that underlies the analysis is that of Ashenfelter and Pencavel (1969) where unionization is the result of the interaction of the demand for and supply of union services. The demand for union services is the result of cost-benefit analysis by workers. The supply of union services is the result of cost-benefit analysis by union organizers. Many factors can influence these actors' perceptions of the costs and benefits including; employer tactics (themselves influenced by a similar cost-benefit analysis); legislation; overall economic conditions. Structural changes in the overall economy may not shift the individual supply or demand curves but can affect the aggregate outcome due to the changing composition of the economy. A reduced form of this model is estimated, in which I propose that:

$$certification\ success_{i,t} = \beta\ X_{i,t} + \varepsilon_{i,t}$$

Subscript i refers to the jurisdiction, subscript t refers to the time period. The model postulates that the certification success depends on a number of explanatory variables (X) that capture the legal, economic, organizational, and structural components of the environment and an error term (ε).

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4.2. Dependent variables[14]

Two dependent variables are used as measures of certification success. The certification success rate (*certrate*) is defined as the percent of certifications disposed that are granted in the period. Certifications disposed refers to certification applications that are processed over the period.[15] Certification applications that are disposed are either granted, withdrawn or dismissed. Note that the data on the number of certifications granted and the number of certifications disposed refers to the number of bargaining units not to the number of employees that are in the bargaining unit. Endogeneity problems may be associated with the use of this variable. To illustrate, suppose legislation is passed that is favourable to the union movement. Within the Ashenfelter and Pencavel (1969) theoretical framework this alters all the actors' cost-benefit calculus concerning organizing, joining or resisting a union. It is likely that attempts will be made to organize units that were previously considered too costly or difficult to organize. The number of certification applications made (and disposed) will increase. However the marginal applications are for units that likely have a lower propensity to certify and <u>ceteris paribus</u> their success rate is likely to be lower. In this case the coefficient on the legislation variable is biased toward zero and the results from specifications using *certrate* as a dependent variable would underestimate the effect of the explanatory variables on certification success.[16] While it is reasonable to suppose that endogeneity biases these results towards zero from a theoretical perspective it is possible for the bias to go in the other direction.

In an attempt to reduce the endogeneity problem, specifications are also estimated using another definition of certification success. The certification success proportion (*certprop*) is defined as the percent of *business establishments* in a province that are granted certification within the period. Results based on specifications that use *certprop* as the dependent variable are not as open to the criticism concerning endogeneity because it is unlikely that the number of firms in a province is affected by the type of

labour legislation examined in this paper.

4.3. Explanatory variables

The explanatory variables used in this study are similar to those used in other studies of union density and certification success. The variables attempt to capture the effects of legislation, business conditions, organizational environment and structural factors. In addition specifications are estimated that include fixed effects that attempt to take into account omitted variables.

The legislation variables are the three discussed earlier; mandatory representation votes (*mandvote*); compulsory dues checkoff (*checkoff*); and first agreement arbitration (*firstarb*). Each of these variables is assigned the value one in periods and jurisdictions when such legislation is in effect and zero when it is not.[17]

Many studies include a variety of variables that capture business conditions when modeling certification success. In this study I use the following measures for economic conditions: the unemployment rate (linear (*uerate*) and quadratic (*uerate2*)) and its proportionate rate of change (*duerate*); the provincial inflation rate (*pdot*) and its rate of change (*dpdot*). While there is general agreement that cyclical conditions should be taken into account results of earlier studies do not present a consistent picture of how these cyclical variables affect certification success or union density. A priori it is not possible to sign the coefficients on the cyclical variables.

The organizational environment is captured by provincial union density (*density*). It is hypothesized that as union density increases certification success increases because unions become an accepted part of the employment relationship and because unions have the financial resources to expand. However as union density increases fewer workers remain to be organized and it is likely that at some point the unorganized workers who

remain are those that are the most difficult and costly to organize. At this point union density becomes negatively related to certification success. Specifications are estimated with density included linearly and /or quadratically (*density2)*.

Finally <u>structural factors</u> may affect certification success. Traditionally the easiest workers to organize are full-time males in the manufacturing sector. The more difficult workers to organize are part-time women in the service sector. Three variables are included to capture structural factors: the percent of those employed that are part-time (*partime*); the percent of those employed that are female (*female*); and an industry mix variable (*mix*). The industry mix variable for each province in a particular year is created by multiplying the employment share of each industry in that year by the national union density of that industry in 1976 and then summing over all the industries and multiplying by 100.[18] This indicates what union density would have been in province, i, in year, t, given the current employment mix in the province and assuming that 1976 national unionization rates prevail. <u>A priori</u> the coefficients on *partime* and *female* are expected to be negative while the coefficient on *mix* is expected to be positive.

4.4. Fixed effects

Provincial fixed effects, year fixed effects and province specific time trends are included in some specifications to capture omitted variables. The provincial dummies take into account provincial characteristics that are constant over time that are not in captured by the observable explanatory variables described above.[19] The year dummies incorporate aspects of national business conditions not captured by the unemployment rate and inflation rate measures. Province specific time trends capture any slowly-changing trends in social attitudes towards unions at a provincial level attributing only 'sudden' changes in certification success to changes in legislation. Province-specific quadratic time trends are also used in some specifications.

5. Results

Table 3 presents estimation results from two specifications where *certrate* is the dependent variable. Specification #1 includes legislation variables (*mandvote, firstarb, checkoff*), environment variables (*mix, female, partime, density, uerate, pdot*), and province dummies as explanatory variables. Specification #2 adds province-specific time trends. Columns 1 and 2 present OLS estimates of these specifications.[20] Diagnostic tests on the error structures of both specifications show that heteroscedasticity exists across provinces; correlation exists among the provinces at a point in time; and there is province-specific first-order autocorrelation. FGLS corrects for these problems and provides more efficient estimates than OLS. The FGLS estimates for the two specifications are presented in columns 3 and 4 of Table 3.

Results on the legislation variables are similar across specifications and estimation techniques. In all specifications the coefficient on *mandvote* is negative and significant at at least the 99% level. The evidence suggests that mandatory representation vote legislation reduces certification success rates by 6 to 9 percentage points from what they would have been under automatic certification. Since the mean value of *certrate* for the sample is 69% this represents a large reduction of between 9 to 13 per cent in the certification success rate when mandatory vote legislation is in force. The coefficients on first agreement arbitration and compulsory dues checkoff are never significantly different from zero.

Results on the environment variables are mixed. The coefficients on the cyclical variables are similar across all the estimates: the unemployment rate is always negative and significant; the inflation rate is never significantly different from zero. Higher unemployment rates thus reduce certification success rates. Coefficients that describe structural factors vary across the results. The industry mix coefficient is positive and significant in Specification #1. It may be that this coefficient is not significant in

Specification #2 because the province-specific time trends introduced in this specification capture most of the variation in this variable. The sign on the industry mix coefficient confirms prior expectations. The coefficients on percent female, per cent part-time, and provincial union density are usually not significantly different from zero.

The empirical results from the *certrate* regression indicate that mandatory vote legislation has a strong, negative impact on certification success rates. As noted earlier it is possible that these results are biased by the presence of endogeneity. In order to address this concern the same specifications are estimated again, this time using *certprop* as the dependent variable. These results are presented in Table 4. Columns 1 and 2 present the OLS results. Diagnostic tests indicate that FGLS can improve the efficiency of Specification #1 by correcting for heteroscedasticity across provinces; correlation between provinces; and province-specific first-order autocorrelation. These FGLS results are presented in column 3. Diagnostic tests indicate that FGLS can improve the efficiency of Specification #2 by correcting for heteroscedasticity across provinces and correlation between provinces. These FGLS results are presented column 4.

When certprop rather than *certrate* is used as the dependent variable, *mandvote* continues to be negative and significant at the 99% level in all specifications. *Firstarb* is never significantly different from zero. *Checkoff* is negative and significant in the FGLS result for Specification #2. Coefficients on cyclical variables perform similarly in all specifications. The coefficient on the unemployment rate is always negative and significant. The coefficient on the inflation rate is always positive and significant. The structural variables present fairly consistent results. *Female* is always significant and negative as expected. *Partime* and *density* are never significantly different from zero. *Mix* is negative and significant in the FGLS estimation of Specification #1 otherwise it is not significantly different from zero.

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The results from the certification proportion regressions suggest that endogeneity is not causing the strong negative relationship between mandatory representation votes and certification success rates. The *certprop* regressions for all specifications find that a significant, negative relationship still exists between mandatory representation votes and this measure of certification success.

6. Conclusions

The results presented in this paper provide valuable information concerning the impact of two different types of union recognition procedures on certification success. The empirical results indicate that the choice of mandatory representation votes or automatic certification has a significant impact on certification success in Canada. Mandatory vote legislation reduces certification success rates by 6 to 9 percentage points from what they would be under automatic certification. This result is robust and significant at at least the 99% level.

In contrast to earlier studies that only succeed in identifying the effects of very general changes in labour legislation the current paper is able to identify the effect of specific union recognition procedures on certification success. Identification is made possible by the use, for the first time in this literature, of cross-section time-series analysis. This approach is a considerable improvement over the time-series or cross-section analysis adopted in previous studies. First, cross-section time-series analysis incorporates much more variation than either of the other approaches. Second, cross-section time-series analysis allows variables to be included in the analysis that control for province and year effects as well province-specific time trends - it is not possible to control for all these factors using time-series or cross-section data alone.

The automatic recognition procedure outlined in the <u>Employment Relations Bill</u> in the United Kingdom differs in some respects from similar

procedures in Canada. Nevertheless the essential feature of automatic certification - namely that it permits certification based on membership evidence gathered by the union and does not require a vote - remains the same in the proposed U. legislation as in Canada. The empirical results for Canada provide evidence that unions are more likely to succeed in obtaining recognition under automatic certification than under mandatory representation votes. The results also contribute to an understanding of the political dynamics involved when introducing union recognition procedures: labour is likely to support automatic certification while business is likely to support mandatory representation votes. This has certainly been the case in the political lobbying in the recent introduction of new union recognition procedures in the UK.

Notes

1. The legislation applies only to firms with more than twenty employees. It also provides that if 10% of the bargaining unit are union members the union can force a representation vote. Under these circumstances the union is recognized if a majority of the employees that vote support the union and this represents at least 40% support of the bargaining unit.

2. The pressure placed on the government concerning this legislation was reported in the press. For some examples see: Webster, Philip,"Unions face tougher task to qualify for recognition", The Times November 16, 1998, pp.1. and Webster, Philip,"Passions flare over Lords Reform," The Times November 25, 1998. pp.1 Sherman, Jill "Unions cry foul," The Times November 25, 1998, pp. 11.

3. An employer may also voluntarily recognize a union. Only a very small proportion of unions are voluntarily recognized.

4. All of the results presented in this paper exclude Prince Edward Island and the federal sector. PEI is a very small province with a population of approximately 100,000. Certification data are not readily available for this province. The federal sector is omitted because data are not available that properly measure the explanatory variables for this sector.

5. This description is a generalization of the certification process as it occurs across the many Canadian jurisdictions while details of exact procedures differ across the jurisdictions all certification procedures contain these common elements.

6. Membership evidence usually consists of signed membership cards. Support deemed sufficient for automatic certification varies across

jurisdictions and has ranged from 50% of the bargaining unit to 65%. In some jurisdictions a union can be automatically certified without sufficient membership support if the Labour Relations Board believes that unfair labour practices by the employer prevent the true wishes of the employees in the bargaining unit from being expressed and that in fact a majority of employees do support the union. If a representation vote is held bargaining rights are granted if a majority of those voting (or of the bargaining unit, depending on the time period and jurisdiction) support the union.

7. It is also true that legislation that extends coverage to previously unorganized sectors of the economy affects certification success. Over the period from 1978 to 1996 there have been two changes in coverage in Canada. In 1988 British Columbia passed legislation granting teachers collective bargaining rights. In that year teachers' associations were certified. Fortunately the data on certifications granted allowed the certifications associated with this change in coverage to be eliminated from the data. For more details please see the data appendix. From January 1, 1993 to November 10, 1995 Ontario extended coverage to a group of previously unorganized workers (some groups of professionals and domestic workers employed in private homes). When this legislation was revoked all units that had been certified under the earlier legislation were decertified. I have not controlled for this change in the analysis. Results based on a sample for the period from 1978 to 1992 do not differ qualitatively from those over the longer period.

8. Usually employees in the bargaining unit who do not want to support the union for religious reasons may petition to have an amount of money equivalent to union dues deducted from their paycheque and then remitted to a charity rather than to the union.

9. NLRB stands for the National Labour Relations Board. This is an administrative body in the U.S. that is responsibility of overseeing various facets of the collective bargaining relationship.

10. LRB stands for Labour Relations Board. Labour Relations Boards (or their equivalent) exist in all Canadian jurisdictions and are responsible for administering the collective bargaining relationship.

11. Cross-section micro data for a single jurisdiction also cannot control for provincial effects. This is the case for the Thomason (1992) and Riddell (1996) ULP studies but this is not the case for Martinello and Meng (1992).

12. This econometric approach assumes that the coefficients on the variables are constant across jurisdictions. An alternative estimation technique, Seemingly Unrelated Regression allows the coefficients to differ across jurisdictions. Concerns about sufficient degrees of freedom led to the choice of the first technique.

13. These diagnostic statistics are described in Tables 3 and 4 where they are presented with the estimation results.

14. For specific information concerning the sources of the data and descriptive statistics for all the variables used in the paper please see the data appendix.

15. Certification applications disposed is approximately equal to the certification applications filed in the period.

16. Another form of endogeneity also exists in this analysis. Chaison and Rose (1995) present empirical evidence that union density affects legislation. If legislation affects certification success and certification success affects union density and union density affects the degree of

political success and political success affects legislation then the relationship is endogenous. This type of reverse causation is not likely to be important since the stock of union members affects political success and certification success is a flow that in any one period has a negligible effect on the stock.

17. In years when the legislation is introduced the variable is defined as the proportion of the year that the legislation is in effect.

18. Eleven industry groups are used. These are based on definitions from Labour Force, Statistics Canada and include: agriculture; forestry; fishing and trapping; mines quarries and oil wells; manufacturing; construction; transportation, communication and other utilities; trade; finances; service industries; and public administration.

19. New Brunswick is the omitted province dummy. New Brunswick is the only jurisdiction that over the period from 1978-1996 did not have any of the legislation discussed in this paper in force.

20. Other specifications were also estimated. These specifications included (national) year dummies, quadratic province-specific time trends and various forms of the environment variables (as described in the paper). The year dummies were usually not significant either individually or when tested as a group. This is also true for specifications that included the other forms of the environment variables. In any specification that included the legislation variables and the province dummies the coefficient on *mandvote* was always negative and significant.

21. All of the detailed information on British Columbia and Alberta comes from Martinello (1996a).

22. I would like to thank John Baldwin and Bob Gibson at Statistics Canada for kindly providing this data.

23. In fact data continued to be collected until 1996 but has not yet been made publically available.

Table 1. Mandatory Representation Votes, Compulsory Dues Checkoff and First Agreement Arbitration in Canada 1976-1997*

Jurisdiction	Mandatory Vote	Checkoff	First Agreement
Federal		84:7	78:4
Newfoundland	94:2	85:6	85:6
PEI			not yet proclaimed**
Nova Scotia	77:5		
New Brunswick			
Quebec		77:12	77:12
Ontario	95:11	80:6	86:5
Manitoba	97:2	72:11	82:2
Saskatchewan		72:5	94:6
Alberta	88:11		
British Columbia	84:6 to 93:1	77:9	73:11

*The numbers in the cells of the table indicate the year:month the legislation is introduced. In almost all jurisdictions the legislation remains in force until the end of 1996. The one exception is mandatory vote legislation in B.C. that was repealed in January, 1993.

**Legislation to introduce First Agreement Arbitration was passed in PEI on May 19, 1994. It comes into force on proclamation. It is not yet in force.

Sources:
Labour Legislation in Canada, 1949-50. Ottawa: Department of Supply and Services,

Labour Legislation of the Past Decade: A Review of Developments in Canadian Labour Legislation for the 1951-1960 period. Ottawa: Dept. Of Supply and Services, 1961.

Department of Labour, Legislation Research Branch, Recent Legislation and Administrative Developments. Ottawa: Department of Supply and Services, 1961, 1962, 1963, 1964, 1965, 1966.

Labour Canada, Legislative Research Branch, Developments in the Enactment and Administration of Labour Law in Canada. Ottawa: Ministry of Supply and Services, 1966-67, 1967-68, 1968-69, 1969-70, 1970-71.

Labour Canada, Legislative Review. Ottawa: Department of Supply and Services, volumes 1 through 22, covering the period from 1973 to 1989-9. HRDC, Highlights of Major Developments in Labour Legislation. This covers the period from 1990 to 1998 and is available from the HRDC website: http://labour-travail.hrdc-drhc.gc.ca/policy

Table 2. Sample Variation in Legislative Environments 1978 to 1996

Legislative Environment			Number of Observations
Mandvote	Firstarb	Checkoff	
no	no	no	38
yes	no	no	28
no	yes	no	0
no	no	yes	26
yes	yes	no	0
no	yes	yes	65
yes	no	yes	0
yes	yes	yes	14
Total			171

Table 3. Results - Certification Success Rate (*certrate*) (1978-1996)

Variables	#1 -OLS	#2 - OLS	#1 - FGLS	#2 - FGLS
mandvote	-7.79 (1.84)**	-5.76 (2.15)**	-9.22 (.941)**	-8.79 (1.07)**
checkoff	-.66 (3.12)	-1.82 (4.17)	-.40 (2.34)	-2.42 (2.36)
firstarb	.87 (2.20)	-2.83 (2.85)	-.41 (1.44)	-3.16 (1.70)
mix	3.51 (1.24)**	2.57 (1.64)	2.48 (0.78)**	1.06 (.841)
female	-.04 (0.52)	.10 (0.86)	-.25 (0.26)	-.04 (.038)
partime	1.38 (0.81)	0.76 (0.92)	1.00(0.40) *	.56 (0.51)
density	.10 (0.33)	-.06 (0.46)	0.36 (0.19)	0.08 (0.25)
uerate	-1.19 (0.35)**	-1.18 (0.45)**	-1.15 (0.14)**	-1.24 (0.21)**
pdot	.33 (0.26)	.25 (0.29)	.10 (0.10)	.06 (0.16)
bc	3.32 (4.33)	8.97 (8.70)	3.40 (2.70)	7.50 (4.78)
alta	-3.48 (4.38)	-.46 (8.26)	-3.43 (2.99)	-5.51 (5.81)
sask	30.41 (9.15)**	21.54 (15.95)	25.03 (5.71)**	8.83 (8.62)
man	13.40 (5.10)**	10.16 (9.05)	12.34 (3.25)**	5.14 (5.82)
ont	-.73 (3.66)	-4.21 (6.56)	.29 (2.62)	-6.08 (4.80)
que	11.91 (3.62)**	13.41 (6.72)*	10.71 (2.69)**	12.36 (4.44)**
ns	18.35 (3.01)**	13.96 (5.19)**	20.51 (1.66)**	16.44 (2.96)**
nfld	7.86 (5.93)	4.86 (8.52)	5.37 (3.96)	5.37 (7.34)
bctime		-.18 (0.48)		-.25 (0.26)
altime		-.68 (0.46)		-.59 (0.33)
satime		.47 (0.53)		.58 (0.31)
matime		.45 (0.46)		.42 (0.32)
ontime		.36 (0.45)		.32 (0.27)
qutime		.12 (0.50)		-.06 (0.25)
nbtime		-.14 (0.52)		-.31 (0.31)
nstime		.06 (0.50)		-.07 (0.26)
nftime		.43 (0.67)		.31 (0.40)
constant	-52.78 (44.71)	-14.22 (63.82)	-13.95 (28.24)	40.62 (31.04)
Diagnostic Statistics (FGLS specification was chosen based on a significance of at least 95%)				
Wald Statistic: Null hypothesis is that of homoscedastic errors across provinces.			135.13**	130.39**
Likelihood Ratio Statistic: Null hypothesis is that there is no correlation between the errors terms of the provinces at a point in time.			75.53**	76.61**
Autocorrelation Statistic: Null hypothesis is that there is common first-order autocorrelation across provinces.			.1152	.1878
Autocorrelation Statistic: Null hypothesis is that there is province-specific first-order autocorrelation . (There are nine test statistics - only those that are significant at at least the 95 per cent level are reported.)			6.71* 5.75*	6.92*

The numbers in brackets are standard errors. **significant at at least the 99 per cent level * significant at at least the 95 per cent level

Table 4: Results - Certification Proportion (*certprop*) 1978-1996

Variable	#1 - OLS	#2 - OLS	#1 - FGLS	#2 - FGLS
mandvote	-.087 (.020)**	-.144 (.023)**	-.054 (.020)**	-.14 (.018)**-.
checkoff	-.013 (.040)	-.044 (.044)	-.017 (.024)	-.063 (.030)*
firstarb	.055 (.030)	.017 (.030)	.029 (.015)	-.005 (.018)
mix	-.007 (.020)	-.019 (.017)	-.018 (.009)*	-.014 (.011)
female	-.028 (.007)**	-.031 (.009)**	-.022 (.004)**	-.021 (.005)**
partime	.013 (.010)	.018 (.010)	.008 (.005)	.007(.006)
density	.003 (.004)	.004 (.005)	.003 (.003)	-.002 (.003)
uerate	-.009 (.005)**	-.015 (.005)**	-.016 (.003)**	-.017 (.003)**
pdot	.012 (.003)**	.010 (.003)**	.006 (.002)**	.006 (.002)**
bc	.128 (.060)*	.305 (.091)**	.136 (.060)*	.411 (.066)**
alta	.003 (.060)	-.143 (.087)	-.070 (.044)	-.192 (.066)**
sask	-.037 (.119)	.139 (.167)	-.113 (.073)	-.054 (..110)
man	-.071 (.066)	-.085 (.095)	-.097 (.041)*	-.066 (.060)
ont	.072 (.048)	.069 (.069)	.048 (.032)	.038 (.043)
que	.272 (.047)**	.617 (.071)**	.276 (.068)**	.646 (.056)**
ns	.202 (.039)**	.202 (.054)**	.164 (.036)**	.168 (.041) **
nfld	.161 (.077)*	.224 (.089)*	.215 (.052)**	.211 (.061.)**
bctime		-.008 (.005)		-.012 (.003)**
altime		.011 (.005)*		.011 (.004)**
satime		.002 (.005)		.001 (.004)
matime		.002 (..005)		.004 (.003)
ontime		.004 (..005)		.005 (.003)
qutime		-.022 (.005)**		-.021 (.004)**
nbtime		.003 (.005)		-.0003 (.003)
nstime		.006 (.005)		.005 (.004)
nftime		.006 (.007)		.009 (.005)*
constant	1.31 (.582)*	1.75 (.669)**	1.59 (.344)**	1.61 (.440)**
Diagnostic Statistics: FGLS specification was chosen based on significance of at least the 95% level.				
Wald Statistic: Null hypothesis is that there are homoscedastic errors across provinces.			267.41**	150.03**
Likelihood Ratio Statistic: Null hypothesis is that there is no correlation between the error terms of the provinces at a point in time.			59.23**	52.06*
Autocorrelation Statistic: Null hypothesis is that there is common first-order autocorrelation across the provinces.			2.59	.342
Autocorrelation Statistic: Null hypothesis is that there is at least one province with province-specific first-order autocorrelation. (There are 9 test statistics only those that are significant at at least the 5% level are reported.)			12.96** 11.66** 10.07** 5.54*	

The numbers in brackets are standard errors.
**significant at at least the 99 per cent level
* significant at at least the 95 per cent level.

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Appendix

Data Appendix

The data are annual and cover the period from 1978 to 1996. The data set begins in 1978 because data on the number of business enterprises by province are only available from 1978. Nine Canadian provinces are represented in the data. Prince Edward Island is omitted because no certification data are readily available for this province. (P.E.I. is a very small province with a total population of approximately 100,000.) Descriptive statistics for all of the variables used in the study are presented in Table A1.

Dependent Variables

The certification success rate (*certrate*) is defined as the percentage of disposed certification applications that are granted. The data on certifications granted and certifications disposed come from Martinello (1996a). This publication provides information on all jurisdictions except P.E.I. Data are available from as early as 1951, for some jurisdictions, to 1993 or 1994. Professor Martinello kindly provided updated figures until 1996. The data are compiled from the Annual Reports of the private sector Labour Relations Boards (LRBs) of the various jurisdictions and include information on certifications in the public and private sector as well as the construction industry. Note that the data used for this paper do not allow us to distinguish between certifications granted to unions organizing new bargaining units and those grated to unions organizing existing bargaining units through raids or displacements. Such information is available only on a very limited basis in the Annual Reports.

Special Notes on British Columbia and Alberta[21]

In 1988 legislation was passed in British Columbia that extended

bargaining rights to teachers. The teachers responded by certifying the professional association that had functioned as their union. This change in coverage accounted for 75 certifications granted and disposed in 1988. Since this paper is not addressing the impact of changes in coverage on certification success the 1988 numbers for certifications filed, granted and disposed in B.C. in 1988 have been reduced by 75 to eliminate the impact on certification success of this legislative change.

Data for certifications disposed and certifications granted in 1986 and 1987 are not available in Alberta due to computer problems at the Labour Relations Board. These numbers are created using the same procedure as Martinello (1996a). Since the average ratio of certifications filed to certifications disposed is approximately one, certifications disposed is set equal to certifications filed for these two years. Certifications granted is obtained by multiplying certifications filed in 1986 and 1987 by the average of the ratio of certifications granted to certifications filed in 1989 and 1990. This later period is used because a judicial ruling in 1984 that was later overturned meant that certification behaviour over the earlier period (1984, 1985) was highly unusual. Unfortunately it is not possible to adjust the data to eliminate the effect of the ruling. 1988 is not used because the computer problems meant that the data in 1988 only covers four months of the year.

Certification proportion (*certprop*) is defined as the percentage of firms where certifications are granted. The data on number of firms are provided by the Business and Labour market Analysis Division, Statistics Canada from its Longitudinal Employment Analysis Program (LEAP).[22] The LEAP system is a longitudinal micro-database on businesses in the Canadian economy constructed through a record linkage of administrative data from Revenue Canada and Employment and Immigration Canada and Statistics Canada survey data. Only businesses that have paid employees in Canada are considered. The term business includes all businesses or organizations which during a reference year have remitted social security and tax

deductions on behalf of these employees to Revenue Canada. Establishment data are only available from 1978. Almost all the LRB Annual Reports cover a 12 month period. However occasionally a LRB Report covers as short a period as 4 months or as long a period as 15 months. This is not an issue in the construction of the *certrate* variable since both the numerator and denominator of this variable are defined for the same period of time. For *certprop* it is necessary to annualize certifications granted using the information on the length of time (in months) the Annual Report covers. This information is available in Martinello (1996a).

Legislation Variables

Mandatory representation votes (*mandvote*), compulsory dues checkoff (*checkoff*) and first agreement arbitration (*firstarb*) are captured using dummy variables. In each case the variable is equal to zero if the legislation is not in force in the period. It is equal to one when it is in force. It is equal to the fraction of the year that it is in force in the year it is introduced (months in force/12).

The data for this variable are compiled from the sources listed in Table 1. Where possible the data are cross-checked against information available in other studies (e.g. Gunderson et al (1989) and Martinello (1996a).)

Economic Environment

The unemployment rate (*uerate*) for each province is the relevant series from the Labour Force Survey, Annual Averages database on CANSIM. (Series numbers: D987851, D987569, D987287, D987005, D986723, D986441, D986159, D985877, D985313).

The inflation rate for each province (*pdot*) is calculated from the CPI- All Items for its largest city (1986=100). Again the source of this information is

the CANSIM database (Series numbers: P818800, P818600, P818200, P817800, P817000, P816400, P816600, P816000)

Employment and Industry Mix

The industry mix variable (*mix*) is described in the paper. The base weights for the measure are the national unionization rates for each industry in 1976. The Corporation and Labour Unions Returns Act (CALURA) provides unionization rates for eleven industry groups in 1976. The 'employment rate' for each industry, in each year, for each province is calculated using data on employment that correspond to each of eleven industry groups of the unionization data and data on total employment in the province. This data, as well as the data necessary to construct the percent of employment that is part-time (*partime*) and the percent of employment that is female (*female)* are from the <u>Labour Force Survey, Annual Averages</u> and were accessed through the CANSIM database. (Series numbers: (total employment) D987714, D987342, D987150, D986868, D986586, D986304, D986022, D985740, D985176; (employment by industry) D987751-D987765, D987469-D987583, D987469-D987483, D987187-D987201, D986905-D986919, D986624-D986637, D986341- D986355, D986059-D986073, D985777-D985791, D985213-D985227; (female employment) D987732, D987450, D987168, D986886, D986604, D986322, D986040, D985758, D985194; (part-time employment) D987797, D987515, D987233, D986951, D986669, D986387, D986105, D985823, D985259.)

Union Saturation

The union density concept used in the empirical analysis is defined as:

$$density = \frac{union\ members}{paid\ labour\ force} \times 100$$

The series on union membership comes from the <u>Corporation and Labour Unions Return Act</u> (CALURA)**.** This was discontinued in 1992[23]. For the period from 1993 to 1996 a trend is fitted a trend to the existing density

series and this is used to provide the data for 1993 to 1996. The CALURA series itself is not entirely consistent because of a revision in 1983. It also does not cover all union members because only unions with 100 or more members were required to report. Despite its limitations this is the best data available on union membership in Canada over this period.

I have defined potential union members as the "paid labour force". The paid labour force is equal to the total labour force minus those who are self-employed. Again the data are from the LFS. Annual Averages on the CANSIM database.(Series numbers: (labour force) D987677, D987395, D987113, D986831, D986549, D986267, D985985, D985703, D985139; (self-employment) D987769, D987487, D987205, D986923, D986641, D986359, D986077, D985795, D985231)

Table A1: Descriptive Statistics (1978-1996)

Variable	Observations	Mean	Std. Dev.	Min	Max
certrate	171	69.04	10.84	39.53	97.65
certprop	171	.25	.15	.05	.79
disprop	171	.36	.20	.08	1.08
mandvote	171	.23	.42	0	1
checkoff	171	.61	.49	0	1
firstarb	171	.45	.49	0	1
mix	171	28.74	2.38	22.34	33.20
female	171	42.37	2.75	34.26	46.21
partime	171	16.90	3.04	8.57	23.29
density	171	31.26	4.97	21.20	45.40
uerate	171	10.51	3.71	3.80	20.80
pdot	171	5.02	3.19	-1.46	13.26