AN EMPIRICAL ASSESSMENT OF THE EMPLOYEE FREE CHOICE ACT: THE ECONOMIC IMPLICATIONS

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Abstract:

The Employee Free Choice Act (EFCA), which is pending before the US Congress, would provide for union representation when an employee majority has signed union authorization cards and would create a system of mandatory arbitration if a collective bargaining agreement is not reached approximately 130 days after a union is newly certified. I critically assess the arguments presented for passing EFCA and consider the likely unintended consequences it will generate, should it be passed. I find that while card checks could be expected to increase union membership as hoped by EFCA proponents, EFCA is unlikely to achieve its main goal of improving social welfare, which should take into account possible consequences not only for union members but for all individuals. In particular, my quantitative analysis indicates that passing EFCA would likely increase the US unemployment rate and decrease US job creation substantially. The precise effect on unemployment will depend on the degree to which EFCA increases union density, but for every 3 percentage points gained in union membership through card checks and mandatory arbitration, the following year's unemployment rate is predicted to increase by 1 percentage point and job creation is predicted to fall by around 1.5 million jobs. Thus, if EFCA passed today and resulted in an increase in unionization from the current rate of about 12% to 15%, then unionized workers would increase from 15.5 to 19.6 million while unemployment a year from now would rise by 1.5 million, to 10.4 million. If EFCA were to increase the percentage of private sector union membership by between 5 and 10 percentage points, as some have suggested, my analysis indicates that unemployment would increase by 2.3 to 5.4 million in the following year and the unemployment rate would increase by 1.5 to 3.5 percentage points in the following year.

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1. INTRODUCTION

The Employee Free Choice Act (EFCA), which is pending before the US Congress, would deeply change labor relations and has the potential to fundamentally alter the landscape of the US economy. As currently drafted, the legislation contains two major provisions, the first of which would provide for union representation when an employee majority has signed union authorization cards and the second of which calls for a system of mandatory arbitration if a collective bargaining agreement is not reached approximately 130 days after a union is newly certified. In addition, the legislation would increase penalties against employers for certain unfair labor practices.

1. THE CARD CHECK. Under EFCA, a union must be certified as a representative of a bargaining unit by the federal National Labor Relations Board (NLRB) and recognized by an employer if a majority of employees sign valid authorization cards. This proposal would eliminate the right employers have under current law to refrain from recognizing a union unless it demonstrates the existence of majority employee support in an election by secret ballot. EFCA does not establish any guidelines or procedures for collecting the authorization cards from workers or for verifying their validity, but specifies that the Board shall develop such rules.

2. MANDATORY INTEREST ARBITRATION. Under EFCA, after any union is newly certified, the parties must commence bargaining within ten days after the employer receives a written bargaining request from any newly-certified union. Thereafter, if the union and employer fail to reach an initial agreement within 90 days after bargaining commences, an additional 30-day period is added for mediation after either party requests mediation by notifying the Federal Mediation and Conciliation Service (FMCS). If an agreement is not reached during this 30-day period, EFCA requires arbitration, resulting in a decision made by the arbiter(s) that would be binding for two years. Each of these periods is subject to extension by mutual agreement. EFCA provides no opportunity for employee ratification of the arbitrator-

imposed terms and conditions, in contrast to the normal employee review and ratification process that typically takes place when conventional labor contracts are tentatively agreed upon by labor and management. Nor does EFCA articulate any time limit by which the arbitral panel must issue its decree, the standards governing the scope of any arbitrator-imposed terms and conditions, the subjects that may or may not be incorporated into any arbitration decision, the standards governing any appeal from arbitration, or how the "arbitration board" shall be selected. (The FMCS is charged with developing regulations governing the referral of disputes to arbitration.)

3. INCREASED PENALTIES. Finally, EFCA would result in the award of triple back pay, plus civil penalties up to $20,000 per violation, for certain employer unfair labor practices committed during a union organizing effort or during negotiations on an initial contract. In addition, the NLRB would be required to seek an injunction against certain alleged unfair labor practices involving union organizing or initial contract disputes. EFCA contains no corresponding provisions pertaining to unions' unfair labor practices during union organizing or initial contract disputes.

Proponents of EFCA provide a variety of arguments as to why the US workforce needs these provisions, especially those pertaining to card checks and arbitrator-imposed initial two-year "contracts." In this paper, I critically assess the arguments for EFCA as well as the unintended consequences it likely will generate, should it be passed. In Section 2, I discuss the impact the proposed legislation would have on the economy at large, based on the empirical literature regarding the impact of unions on certain important economic variables. Section 3 provides the key contributions of the paper. It begins with a review of the Canadian experience with card check and first contract arbitration rules, which are set at the Province level and have changed several times for political reasons over the past few decades. Because Canada offers a natural experiment for quantitative analysis, an empirical study of the relationship between union formation rules and unemployment based on Canadian data provides a window on the most likely effects of passing EFCA in the United States. Section 4 offers my conclusions.

I find that, while card check union certification backed by mandatory two-year "contract" arbitration could be expected to increase union membership as hoped by EFCA proponents, EFCA is unlikely to achieve its main goal of improving social welfare, which should take into account possible consequences not only for union members but for all other individuals, because the proposed rules would likely have detrimental effects on the unemployment rate and job creation. These are two adverse effects that America can ill afford at any time, but especially at this time of recession. The empirical analysis presented in Section 3 provides the quantitative support for this claim. Starting from the finding in the literature that card check systems do lead to an increase in union density in comparison to an election system, I demonstrate empirically that an increase in union density this year would lead to an increase in the unemployment rate and a drop in the job creation rate in the following year. These results are statistically significant and robust to a number of model specification changes. I believe these results would, if anything, be more significant in America given that the card check system here would be paired with mandatory interest arbitration that removes the initial contract from the parties' control. I conclude, as a result, that the costs of passing EFCA as currently designed would outweigh any benefit, even if I ignore the costs of transition and administration which properly belong in any social calculus. Specifically, my analysis predicts that passing EFCA would lead to a 1 percentage point increase in the unemployment rate for every 3 percentage points gained in union membership brought about by a system of card checks and mandatory arbitration.

Supporters of EFCA present three primary arguments as to why the Congress should pass the legislation. First and foremost, advocates claim that the NLRA is not working effectively, which requires the enactment of EFCA to make it easier for unions to organize workers, and which ostensibly will reverse the long decline in unionization.[1] Second, they posit that EFCA is needed to reduce the number of employer unfair labor practices (ULPs) which, according to EFCA's proponents, are primarily responsible for

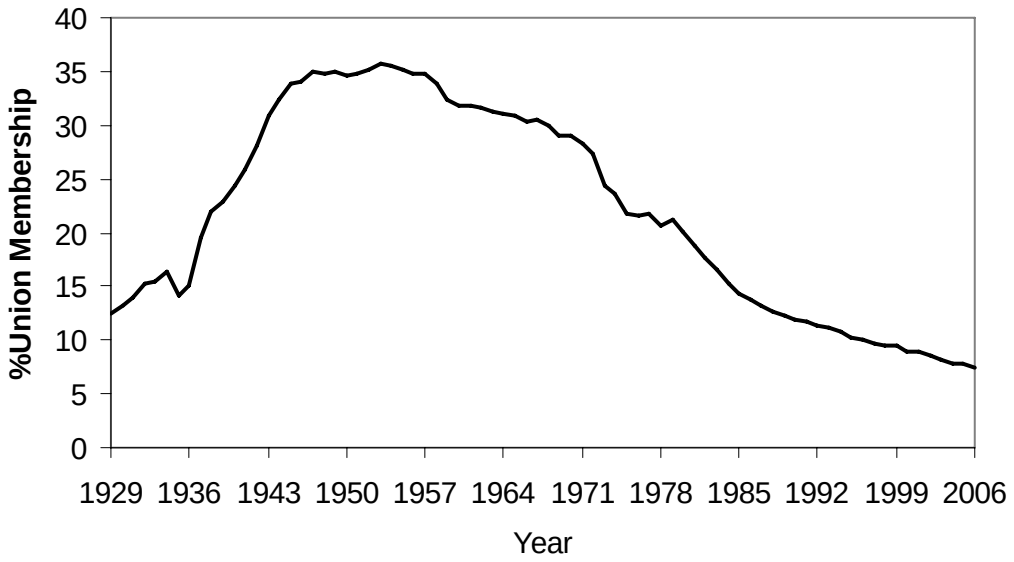
[1] *See* Steven Greenhouse, *Labor Seeks Boost From Pro-Union Measure* N.Y. TIMES, Feb. 23, 2007, at A18; Thomas Frank, *The Tilting Yard; Happy Labor Day; Drop Dead,* WALL ST. J. Sept. 3, 2008, at A21; Mark Weisbrot, *Restore Unions' Right to Organize, Bargain*, THE MIAMI HERALD, Sept. 1, 2008, at A1.

the current low levels of private sector union representation.[2] Finally, proponents argue that, under EFCA, more union and nonunion workers will gain access to better health care, increased wages, and a generally better standard of living, thus improving social welfare.[3]

Before proceeding with the substantive analysis set forth in Sections 2 and 3, it is relevant to point out that existing research – including some studies otherwise favored by unions – appear to contradict the above arguments in support of EFCA.

(i) The Decline in Union Membership. As the chart below clearly shows, the percentage of the private sector US workforce that is unionized has declined steadily from a high of over 35% in the mid-1950's to just over 8% today.

Figure 1: U.S. Private Sector Union Density, 1929-2007



Source: **Hirsch (2008), Data Appendix.**

[2] Michael L. Diamond, *Labor Groups Say the Employee Free Choice Act Would Help Reverse Union Decline*, MCLATCHY-TRIBUNE BUSINESS NEWS, Mar. 19, 2007; Bruce Nisser, *Employee Free Choice Act Restores Basic Freedoms for Workers*, ORLANDO SENTINEL, Aug. 31, 2008, at A19; Anne Williams, *Labor Sees Bright Future*, THE REGISTER GUARD, Sept. 2, 2008.

[3] William M. George, *Employee Free Choice Act; Labor Law Restores Fairness*, PATRIOT NEWS, July 13, 2008, at F 01; Roger Smith, *Pro Business Pro Union*, COX NEWS SERVICE, Sept. 1, 2008.

EFCA supporters contend that the unions' steady decline in the US is the result of employer misconduct that has been improperly permitted under US labor law. Yet, the levels of unionized workers have declined *everywhere* in developed economies, regardless of the labor law regime in effect. For example, Visser analyzed data from 14 developed countries and concludes that private sector unionization across all countries has been strongly declining since the 1970s.[4] A key factor in this trend has been the declining employment in heavily unionized industries – e.g., the US auto industry – which obviously has contributed to enormous decreases in union membership.[5]

Successful union organizing requires an underlying desire by employees to belong to a union, and there is ample evidence that modern employees have an array of likes and dislikes that differ significantly from past generations such that workers have found it less attractive to join unions than they have in previous years. Farber and Krueger, in a 1992 paper, reported that "demand-side factors can account for virtually all of the decline in the union membership rate since 1977."[6] Likewise, in a paper from 2000, Farber and Western conclude that "the decline in the private-sector union membership rate was due primarily to changes in the economic environment that made union representation of less value to workers and/or more costly to employers."[7] Wachter, in his paper discussing how legal and political systems shape attitudes towards unions, comes to a similar conclusion: workers may see less value in joining a union now than in prior decades, without regard to what their employers may say.[8] Even Bronfenbrenner and Hickey –

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[4] Jelle Visser, *Union Membership Statistics in 24 Countries*, MONTHLY LAB. REV., Jan. 2006, at 38.

[5] For example, Epstein reports that for the period of April 2000 to March 2008 attrition alone would have accounted for a loss of 1,786,000 members, even if the unions had won every single recognition and decertification election in the time period. RICHARD EPSTEIN, THE CASE AGAINST THE EMPLOYEE FREE CHOICE ACT (forthcoming, 2009).

[6] Henry Farber and Alan Krueger, *Union Membership in the United States: The Decline Continues* 32 (NBER Working Paper No. W4216, 1992). They rely on surveys for these findings. Workers were asked three questions on overall job satisfaction, pay satisfaction, and satisfaction with job security. The results showed that between 1977 and 1992 non-union members slightly increased their overall satisfaction and substantially increased their satisfaction with pay and job security. Indeed, there is ample survey evidence to contradict the common union claim that non-union workers are discontented with their present jobs.

[7] Henry Farber and Bruce Western, *Round Up The Usual Suspects: The Decline of Unions in The Private Sector, 1973-1998*, 2 (Princeton University Industrial Relations Section Working Paper No. 437, 2000), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=229810.

[8] Michael Wachter, *Labor Unions: A Corporatist Institution in a Competitive World*, 155 U. PA. L. REV. 581 (2007)

who analyze the factors that influence union election outcomes in a 2004 paper[9] – conclude that "American unions themselves must shoulder a good portion of the responsibilities for their organization failures."[10]

(ii) Alleged Employer Unfair Labor Practices. EFCA proponents also argue that automatic union certification – whenever an employee majority signs authorization cards – means there will be no conventional union organizing campaign and employers therefore will have no time to engage in unfair labor practices ("ULPs"). Unions claim these employer ULPs have improperly dampened union support among employees.[11] The findings in a 1985 study by Cooke call those claims in question. Cooke conducted an empirical analysis of campaign-related employer ULPs (defined generally as violations of section 8(a)(1) of the National Labor Relations Act, among other provisions).[12] He found that, from the time unions produced a card showing of employee support (used to support an NLRB election petition) to the end of the union organizing campaign, the estimated effect of improper employer opposition was "insignificant and seem[ed] to have little impact on reducing the likelihood of a union victory". This finding is corroborated by a more recent study by Ferguson (2008), who concludes that during the union campaign "the effect of ULP charges were not statistically significant."[13] This research casts doubt on the EFCA premise that unlawful employer conduct during post-petition conventional

[9] Bronfenbrenner & Hickey, *Changing to Organize: A National Assessment of Union Organizing Strategies, in* REBUILDING LABOR: ORGANIZING AND ORGANIZERS IN THE NEW UNION MOVEMENT 20 (R. Milkman & K Voss eds., 2004). Bronfenbrenner and Hickey conclude that for each additional tactic used by employers, such as hiring management consultants or using paid or free media to argue against unionization during an election, the probability of a union victory decreases by 13%, while for every union tactic, such as strategic targeting[9] and escalating pressure tactics in the workplace,[9] the probability of a union victory increases by 34%. On average, the authors find that employers use about 7.2 tactics per election while unions use 2.6 tactics, which implies that overall union and employer tactics tend to cancel each other out. These findings are especially interesting because the Bronfenbrenner and Hickey study reflects a bias in favor of unions and is not constructed in a way that is as objective as would normally be desired. For instance, the authors base their results mainly on a survey of lead organizers for some 412 elections with 50 or more eligible voters. In compiling their data on employer and union tactics Bronfenbrenner and Hickey seem to rely exclusively on the responses of the lead organizers, which ignore the views of other participants and could offer a potentially biased view of the events.

[10] Bronfenbrenner and Hickey, *supra* note 9, at 54.

[11] Many people dispute the claims raised by EFCA proponents concerning alleged employer unfair labor practices, and the alleged inadequacy of existing law to effectively adjudicate and remedy any such unfair labor practices. *See for example*, US Chamber of Commerce, "The Union Representation Process Under the National Labor Relations Act: Maintaining Employee Free Choice for over 70 Years", *available at* http://www.uschamber.com/assets/labor/unionrhetoric_nlra.pdf, Nov. 25, 2008.

[12] William Cooke, *The Rising Toll of Discrimination Against Union Activists*, 24 INDUS. REL. 421 (1985).

[13] John-Paul Ferguson, *The Eyes of the Needles: A Sequential Model of Union Organizing Drives, 1999-2004*, 62 INDUS. & LAB. REL. REV. 1, 14 (2008).

union organizing has been responsible for preventing unions from winning NLRB-sponsored secret ballot representation elections.

(iii) Increased Union Membership and Social Welfare. The EFCA provisions for arbitrator-imposed terms, after approximately 130 days from the commencement of bargaining, are presented with the hope that more union representation will translate into more contracts which, in turn, is supposed to improve social welfare. Compulsory arbitration under EFCA would have a significant effect on the means by which wages, benefits and other employer obligations and restrictions are established. Even if a voluntary agreement were reached during the 130-day period for bargaining prescribed by EFCA, the terms of such an agreement would be profoundly affected by compulsory arbitration. In a classic theoretical paper, Farber and Katz conclude that "the presence of any arbitration procedure determines the environment within which the parties negotiate, and consequently, directly affects the terms of the negotiated agreement."[14] Under the EFCA, then, parties would bargain in the shadow of the law (the anticipated arbitral decree). Indeed, the mere fact that arbitration awaits as a backstop changes the calculus that the firms would go through during negotiations. If a union expects a more favorable arrangement through arbitration than it is currently being offered by the employer, union organizers would have a strong incentive to refuse all terms proffered by the firm, no matter whether they are reasonable or not. And likewise for the employer: if company representatives anticipate favorable treatment from the arbitrator, they will reject all offers from the union, regardless of their merit. Arbitration thus distorts the a priori true valuation of a bargaining agreement by both sides. Moreover, even if the two parties do reach an agreement on a contract prior to the arbitration deadline, the presence of the arbitration outlet nonetheless creates distorted valuations that could mean the agreed contract is inefficient relative to a benchmark contract reached under competitive conditions.

More generally, EFCA proponents argue that existing data shows that union-represented employees in various respects receive higher wages and better benefits than their unrepresented counterparts. But this datum is at best a partial measure of nationwide

[14] Henry Farber and Harry Katz, *Interest Arbitration, Outcomes, and the Incentive to Bargain*, 33 INDUS. & LAB. REL. REV. 55, 55-63 (1979).

employee welfare. To get a complete picture of employee welfare, we need to examine not just the direct impact of unions on wages and benefits for some workers at a given point in time, but also on the indirect effects over time of *all* workers—a topic I cover in the next section.

2. POTENTIAL UNINTENDED CONSEQUENCES OF EFCA

As just discussed, proponents of EFCA point to evidence that unions raise wages and improve benefits for the workers they represent. At a broader level, unions also affect wage differentials and distribution across workers and across industries; they can affect firm level employment growth, and under some circumstances can even affect a firm's incentives to invest in research and development (R&D). Broader still, unions can impact unemployment levels, output growth, and investment. All of these effects, both today and tomorrow, need to be considered before we can answer the social benefit and welfare questions regarding passage of EFCA. In this section I therefore present a brief review of the empirical literature on how unions affect the economy.

The most immediate benefit workers can expect from joining a union is higher wages. Blanchflower, in a survey of US studies on wage differentials, concludes that union members earn on average about 15% more that their nonunion counterparts.[15] Bookending this figure, Filer et al. place the union-nonunion differential at 8%-12% while Bratsberg and Ragan find that it reached 22% in the mid 1970s.[16] While these studies present average differentials, it is important to understand that the union wage markup is not the same among all sectors of the economy or even among all unionized workers. Moreover, higher wages for union workers tends to compress the overall distribution of wages, such that the presence of unions significantly reduces the wage

[15] David Blanchflower, *The Role and Influence of Trade Unions in the OECD*, 22 (London School of Economics, Center for Economic Performance Discussion Paper no. 310, 1996); David Blanchflower, *Changes over Time in Union Relative Wage Effects in Great Britain and the United States*, 4 (NBER Technical Report Working Paper No. 6100, 1997).

[16] RANDEL FILER ET AL., THE ECONOMICS OF WORK AND PAY (Harper Collins 6th ed. 1996); Bernt Bratsberg and James Ragan, *Changes in the Union Wage Premium by Industry*, 56, 80 INDUS. & LAB. REL. REV. 65 (2002).

differential between industries, between firms in the same industry, and also between workers within a firm.[17]

Not surprisingly, there is a cost to higher union wages. First, employers' profits tend to be lower. Karier concludes that for monopoly firms, a union's share of profits might be as high as 47%.[18] The cost, however, reaches well beyond what employers pay in higher wages. As firms must spend more for their unionized workforce, they tend to cut back in other areas. In particular, the overall cost of higher union wages can lead to fewer unionized positions. This process could arise by a shift of work patterns within unionized firms, or by having nonunionized firms achieve higher market shares. As a result, cutting unionized jobs directly impacts employment growth within unionized firms.

In the mid 1990s a number of studies considered the employment growth difference between unionized and nonunionized firms. Bronars et al. find that a 10% increase in the unionization rate leads to a 0.5-1.1% decrease in employment growth rates.[19] Lalonde et al. find a much larger impact. These authors analyze a matched dataset of NLRB elections and US Census Bureau's Longitudinal Research Datafile and conclude that by the second year after union elections, plant output (measured as the total value of product shipments in unionized plants) decreases by 9.6%.[20]

Unions also have an effect on the work hours their members record when compared to nonmembers. In a summary of 16 prior studies, Lewis notes that union members work about 1.8% fewer hours than their nonunionized counterparts.[21] This conclusion is corroborated by Blanchflower, who puts the difference in work hours at 1-2 hours per week.[22] Lalonde et al. find a larger effect, estimating that during the second year after union elections, work hours decrease by 11% in the plants where the union was

[17] Richard Freeman, *Unionism and the Dispersion of Wages*, 34 INDUS. & LAB. REL. REV. 3 (1980).
[18] Thomas Karier, *New Evidence on the Effect of Unions and Imports on Monopoly Power*, 10 JOURNAL OF POST KEYNESIAN ECONOMICS 414, 422 (1988).
[19] Stephen Bronars et al., *The Effects of Unions of Firms Behavior: An Empirical Analysis Using Firm-level Data*, 33 INDUS. REL. 426, 444 (1994).
[20] Robert Lalonde et al., *Using Longitudinal Data on Establishments to Analyze the Effects of Union Organizing Campaigns in the United States* 41/42 ANNALES D'ECONOMY ET DE STATISTIQUE 155, 170 (1996).
[21] H. GREG LEWIS, UNION RELATIVE WAGE EFFECTS: A SURVEY (University of Chicago Press 1986).
[22] David Blanchflower, *Changes over Time in Union Relative Wage Effects in Great Britain and the United States*, (NBER Technical Report Working Paper No. 6100, 1997), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=44588.

successful.[23] While there is consensus on the decline in hours, a 1992 survey by Belman of 17 studies in the literature reaches no robust conclusion on whether the productivity level (that is, output for a given hour worked) is higher or lower for unionized shops as compared to non-unionized shops.[24]

Turning from firm-specific effects to broader macro-economic effects, I consider the empirical studies that have analyzed unemployment, labor supply, and investment. Many of these studies are based on a single cross-section of data for highly diverse OECD countries at a given point in time.[25] This quantitative approach creates a number of issues. For example, one or two outliers (that is, nations with atypical experiences) can alter the results substantially. More fundamentally, a single cross-section of data does not allow researchers to carefully control for unobserved country-specific factors, such as historical or institutional issues, that may play an important role in shaping the analysis. Another problem with the cross sectional studies is that many of them do not attempt to control for the fact that some institutional arrangements in the labor market may be endogenous. For example, cross sectional analysis cannot clearly determine whether high unemployment is a consequence or a cause of high union density, in the sense that workers may have higher incentives to seek union protection as a means of reducing layoffs when unemployment levels are high.[26]

With these caveats in mind, an early paper by Rees finds that employers' reallocation of labor, from union sectors to nonunion sectors, in turn leads to deadweight losses in the gross domestic product (GDP).[27] In other words, as union labor becomes more expensive and firms substitute away from it, the result can be an increase in allocative inefficiencies that in turn lowers national production. Economists have calculated the GDP loss as ranging from 0.14% (per Rees[28]) to 0.40% (according to a 1984 study by Freeman and

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[23] Robert Lalonde et al., *supra* note 20, at 169.
[24] Dale Belman, *Unions, the Quality of Labor Relations, and Firm Performance*, *in* UNIONS AND ECONOMIC COMPETITIVENESS (L. Mishel and P.B. Voss, eds., 1992).
[25] TOKE T. AIDT & ZAFIRIS TZANNATOS, UNIONS AND COLLECTIVE BARGAINING: ECONOMIC EFFECTS IN A GLOBAL ENVIRONMENT, 95-98 The World Bank (2002).
[26] *See* David Blanchflower et al., *Unemployment and the Demand for Unions* (NBER Working Paper No. W3251, 1990).
[27] Albert Rees, *The Effects of Unions on Resource Allocation*, 6 J. L. & ECON. 69, 71 (1963).
[28] "Under certain conventional assumptions, it can be shown that the loss of real output is approximately equal to one-half the product of the wage effect and the employment effect", Id at 70. This loss in output is computed as a cross sectional estimate that is dependent on the premium of union wages over non union wages as well as the relative employment of unionized and non unionized labor. Reese's computations are based on estimates from 1957 and therefore should not be considered representative of today's conditions.

Medloff).[29] In today's terms, a reduction in GDP of 0.40% would translate into a loss of $57 billion in national output.[30]

Several studies consider the link between unions and technological change. Keefe concludes that although there is no direct union effect on the diffusion of advanced technologies in manufacturing plants, unionized plants possess more of the characteristics that affect technology usage.[31] For instance, plant size, shift work, and training are related to unionism and to an increased likelihood of using advanced technologies. However, as Keefe points out, these characteristics may be independent of union status. In contrast, unionized firms tend to invest less on capital and R&D than nonunionized firms, likely because they have fewer resources to devote to such investments due to the reduced profits noted above. Acs and Audretsch, Connolly et al., and other scholars, conclude that unionization reduces spending on R&D.[32] Hirsch concludes that nonunion firms invest roughly 10% more that union firms.[33] At the firm level, Connolly et al. find that higher unionization reduces the return to R&D and thereby reduces firms' investment in R&D.[34] Because R&D is a pivotal input in the innovation process, with less invested in R&D unionized firms can be expected to contribute less to advancing technology.

In their study of the impact of unions on general capital investment, Odgers and Betts analyze a panel dataset of 18 Canadian industries over a twenty-year period (1967-1987) to determine the impact of union density on the net investment rate controlling for a number of factors including the fraction of days lost to strikes, changes in output, and the user cost of capital.[35] They conclude that the presence of unions appears to reduce investment when the percentage of unionized firms in the industry is between zero and about 50 percent, but the effect plateaus above this level. Their results suggest that an

[29] ROBERT FREEMAN AND J. L. MEDOFF, WHAT DO UNIONS DO? (1984).
[30] As noted previously, these losses in output are guideline estimates and are not representative of current conditions.
[31] Jeffery Keefe, *Do Unions Hinder Technological change? in* UNIONS AND ECONOMIC COMPETITIVENESS (L. Mishel and P.B. Voss, eds., 1992).
[32] Zoltan Acs and David. B. Audretsch, *Innovation in Large and Small Firms: An Empirical Analysis*, 78 AM. ECON. REV. 678 (1988); Robert Connolly et. al., *Union Rent-Seeking, Tangible Capital, and Market Value of the Firm*, 68 REV. OF ECON. & STAT. 567 (1986).
[33] Barry Hirsch, *Innovative Activity, Productivity Growth and Firm Performance: Are Labor Unions a Spur or Deterrent? in* ADVANCES IN APPLIED MICROECONOMICS (A. N. Link and V. K. Smith, eds., 1990).
[34] Robert Connolly et al., *supra* note 32, at 575.
[35] Cameron Odgers and Julian Betts, *Do Unions Reduce Investment? Evidence from Canada*, 51 INDUS. & LAB. REL. REV. 18 (1997).

industry moving from no unions to the mean level of unionization is predicted to see a net investment and gross investment loss of 66-74% and 18-25%, respectively.[36]

While the results on innovation and general capital investment are clear, the literature offers conflicting results with respect to the impact of union density on inflation, employment and unemployment. Freeman finds that union density has no statistically significant effect on either employment or unemployment.[37] At the other end of the spectrum, studies by Scarpetta and by Nickell and Layard find that higher unemployment is associated with higher rates of unionization.[38] By analyzing annual data from a group of OECD countries for the period 1983-1993, Scarpetta shows that a 1 percentage point increase in unionization leads to a 10 to 13 percentage point increase in the unemployment rate.[39]

A far clearer picture emerges from the literature that considers bargaining coverage—defined as the proportion of workers covered by collective bargaining agreements—instead of union density—the proportion of workers that actually belong to a union.[40] Note that unlike the US, in Europe union bargaining coverage is considerably higher than union density. In other words, much like Americans in "right-to-work" states, European workers do not have to belong to a union in order to be bound by union contracts; it is enough that their employer or kind of work is covered by a local union. Given the difference in the two measures, studies that include European countries may well find very different effects. And this is, in fact, the case. For example, an OECD study published in 1997 using data from 1980-1994 finds that a 1 percentage point increase in bargaining coverage unambiguously increases unemployment rates by 7.5 percentage

[36] *Id.* at 29.
[37] Robert Freeman, *Labour Market Institutions and Economic Performance*, 3 ECON. POL'Y 64 (1988). Freeman's paper analyzes pooled data across 7 OECD countries that exhibit significant differences in their labor market institutions and economic performance, which may explain the inconclusive results.
[38] Stefano Scarpetta, *Assessing the Role of Labor Market Policies and Institutional Settings on Unemployment: A Cross-Country Study*, 26 OECD ECON. STUD. 43 (1996); Stephen Nickell and R. Layard, *Labor Market Institutions and Economic Performance, in* HANDBOOK OF LABOR ECONOMICS (O. Ashenfelter and S. Card, eds. 1999).
[39] In contrast to Freeman, Scarpetta controls for institutional differences across countries by including indices of both centralization and coordination in wage bargaining as well as measures of trade restrictions and exposure to foreign competition.
[40] In many countries, union density can be considerably different than bargaining coverage. Areas with right to work laws, for example, have nonunion workers bound by union contracts.

points, a result that is supported by Nickell and Layard as well as by Jackman.[41] The OECD study also concludes that inflation and real earnings growth both increase as a result of higher bargaining coverage.

Nickell provides analysis that moves beyond the single-cross section approach by using two cross-sections periods for 20 OECD countries, one for 1983-88 and another for 1989-94.[42] He studies the impact of a number of labor measures, including union density and a union coverage index, on unemployment and labor supply. In his model,[43] Nickell controls for the degree of employment protection,[44] the percent of employment income that unemployment benefits replace, the duration of unemployment benefits, a measure of active labor market policies, a measure of bargaining coordination between unions and employers, and the total tax rate on labor. The only control that Nickell includes in his analysis to account for macro-economic differences across countries, however, is the annual change in the inflation rate. Nickell finds that greater union density, and especially higher union coverage, tends to raise unemployment, although this effect is mitigated when unions and employers can coordinate their bargaining activities.[45] The effect of union density on the supply of labor (measured as the ratio of employment to population) is less clear—all the coefficients on union density have a negative sign but most of them are not statistically significant.

The overall picture painted by the extant literature, then, is a mixed one. Unionization can raise worker wages, but may reduce unionized jobs and tends to lower GDP. Greater bargaining coverage maintains real earnings growth, but increases unemployment and inflation. These mixed results do not attend to the differences, if any, across legal regimes, and none of them deal with the heightened level of government intervention posed by compulsory interest arbitrations. As a matter of basic economic theory, the

[41] OECD, EMPLOYMENT OUTLOOK 1997 at 76; Nickell and Layard, *supra* note 38; Richard Jackman, *Mass Unemployment: International Experience and Lessons for Policy*, (London School of Economics, Center for Economic Performance Discussion Paper No. 152, 1993).
[42] Stephen Nickell, *Unemployment and Labor Market Rigidities: Europe versus North America*, 11 J. ECON. PERSPECTIVES 55 (1997).
[43] The model includes random effects.
[44] The employment protection index (between 1and 20) is based on the strength of the country's legislation regarding hiring and firing employees.
[45] Coordination is a measure of the wage bargaining structure, e.g. whether wages are bargained at a national or industry level.

studies in the literature therefore suggest, but in all likelihood underestimate, negative unintended consequences from passing EFCA.

The costs should be carefully weighed against any purported benefits of passing the Act, all of which appear to benefit some groups at the expense of others. There is no coherent theoretical argument that explains how the higher costs, greater legal uncertainty, and expanded government intervention entailed in EFCA would improve overall social welfare. Thus the existing literature is informative and provocative, but it is not specific enough to define the full impact of passing EFCA. In order to examine that issue in more detail I turn next to studies on the Canadian experience, which have particular relevance to EFCA.

3. THE CANADIAN EXPERIENCE

The Canadian labor legislation experience offers an extraordinarily rich field for evaluating the potential impact of EFCA on the US labor force and economy for two reasons. First, for the last three decades union certification procedures in Canada have undergone significant changes over time and across provinces, driven by political considerations rather than economic ones. As a result, Canada provides excellent data with which to measure the potential economic consequences of the key proposed changes in EFCA. Second, the remarkable similarities in industrial structure and the economic integration between the US and Canada allow us to use the Canadian experience as natural experiment for the US economy.

Unlike the United States where labor law is determined at the federal level, most employers in Canada are regulated by provincial labor legislation. In Canada, industries subject to federal regulation include employees of the federal government, airlines, inter-provincial transportation, banking, telecommunications, grain production, fisheries and uranium processing, while all others are regulated at the provincial level[46]. Until 1976 all

[46] One might be concerned that estimating the effect of unions on macroeconomic factors may be biased by the presence of federally regulated industries within provinces. In particular, the federally regulated unions in Canada all switched to allow for first contract arbitration in 1978; this was the only change that occurred during the period of analysis. Because the results in this paper are driven by changes in union density over time and across provinces, the only way for the federally regulated unions to affect the findings would be for some bias in the change in variables from 1978 - 1979. However, we have a total of 22 years of data. It therefore seems unlikely that one of 21 years of

provinces employed a card check regime for union certification. Subsequent to 1976, several Canadian provinces began to experiment with regimes that required unions to win secret ballot elections, as is currently the case in the US. British Columbia alone changed its union certification procedure three times in the period 1976-2008: beginning with card checks from 1976-1984, moving to mandatory elections in 1984-1993, then back to card checks from 1993-2001, and finally settling on the voting system in 2001. As of 2006, half of the Canadian provinces use mandatory voting regimes, accounting for roughly 68% of the Canadian labor force, while the remaining half of the provinces covering 32% of the labor force rely on card check systems.[47]

The effect of shifting between card check and mandatory voting regimes was first examined quantitatively in Johnson's 2002 study of Canadian provinces between 1977 and 1997.[48] She showed that a mandatory voting rule had a significant impact in terms of reducing the success of union certification as compared to card checks. A number of studies followed Johnson and have confirmed her results at various levels. For instance, Riddell found that the success of union recognition efforts decreased by almost 19% when British Columbia switched from card checks to mandatory voting and then increased by the same amount when the province switched back to card checks.[49] Similarly, Slinn showed that Ontario's switch from card checks to mandatory voting in 1995 produced a significant drop in the success of union certification.[50]

What is clear from these studies is that a card check system brings a higher success rate for unionization and thereby results in higher levels of union density. In fact, Johnson has suggested that between 17% and 24% of the difference in union density between the United States and Canada can be explained by the fact that mandatory voting is more

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differences would create a substantial bias. Moreover, to the extent that the federal change did not affect union density, but did affect other variables included, then the year fixed effect for that one year included in the models here should be sufficient to capture the change. I therefore conclude that bias from the federally regulated unions, if any, would be de minimus.

[47] *See* Canadian Department of Human Resources and Skills Development, *Trade Union Application for Certification*, *available at* http://www.hrsdc.gc.ca/eng/lp/spila/clli/irlc/07trade_union_application_for_certification.shtml. Tables 1 and 2 in the Appendix provide a summary of labor statistics and provincial labor laws.

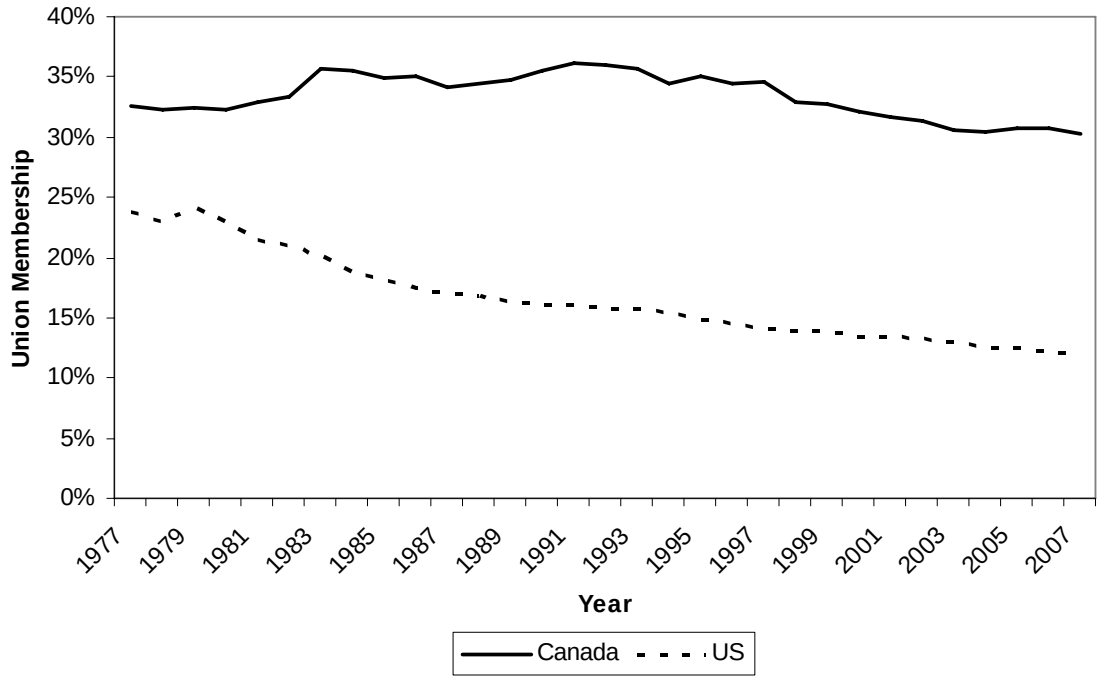
[48] Susan Johnson, *The Impact of Mandatory Votes on the Canada-U.S. Union Density Gap: A Note*, 43 INDUS. REL. 356 (2004).

[49] Chris Riddell, *Union Certification Success under Voting Versus Card-Check Procedures: Evidence from British Columbia, 1978-1998*, 57 INDUS. & LAB. REL. REV. 493 (2004).

[50] Sara Slinn, *The Effect of Compulsory Certification Votes on Certification Applications in Ontario: An Empirical Analysis*, 10 CANADIAN L. & EMP. J. 399 (2003).

prevalent in the US than in Canada.[51] As of 2007, the Canadian union density was 30.3% in comparison to 12.1 % in the United States.

Figure 2: U.S. and Canada Aggregate Union Density, 1977-2007[52]



Along with the frequent changes in provincial certification procedures, the requirement of first contract arbitration has also varied by province over time. By 1994, seven provinces had introduced first agreement arbitration that applied to all negotiation efforts.[53]

The high degree of variation and the fact that the changes in unionization policy were dictated by changes in political party influence[54] mean that Canadian data offer a natural

[51] Susan Johnson, *supra* note 48 at 361.
[52] Canadian data compiled from Statistics Canada, US data complied from Barry Hirsch, *Sluggish Institutions in a Dynamic World: Can Unions and Industrial Competition Coexist?*, 22 J. ECON. PERSPECTIVES 349 (2008), *available at* http://www.unionstats.com/.
[53] Although Canadian provinces experienced a number of shifts to and from first contract arbitration, in our data there was not enough statistical variation in first contract arbitration to determine whether it had a stable and robust effect on economic variables.
[54] Almost all of the labor law changes occurred immediately after a political party change in the government. *See* British Columbia General Assembly Debates of Bill 28 (1984) *available at*

experiment for empirical analysis. The data vary both across provinces and over time, allowing the analysis to control for particular provincial effects as well as time effects in order to isolate the impact of the rule changes. That is, the dataset is rich enough to enable clean estimation of the effect of moving from a mandatory voting system to card checks. I first establish that Canada is similar enough to the US to provide a meaningful basis for analysis. I then turn to my empirical analysis and results.

i) Canada as a Blueprint for the US

I start by considering the industrial composition of US and Canada. In both countries, the services sector accounts for the largest share of employment (81.8 and 76.3 in US and Canada, respectively). Table 1 presents the shares of the labor force in various industrial sectors in 2007 for the Unites States and Canada.[55]

Table 1: Full-Time Employment by Industry, 2007

	United States	Canada	Absolute Difference
Services	81.8%	76.3%	5.5
Trade	15.2%	15.9%	0.7
Transportation and warehousing	3.3%	4.9%	1.6
Financial activities and leasing	6.1%	6.3%	0.2
Professional, scientific and technical	5.8%	6.7%	0.9
Business, building and other support	7.4%	4.2%	3.2
Educational services	2.1%	7.0%	4.9
Health care and social assistance	11.0%	10.9%	0.1
Information, culture and recreation	3.5%	4.6%	1.1
Accommodation and food services	7.2%	6.3%	0.9
Public admin. and Gov. enterprises	15.5%	5.1%	10.4
Other services	4.6%	4.3%	0.3
Manufacturing	10.5%	12.1%	1.6
Construction	5.8%	6.7%	0.9
Agriculture, Forestry, Fishing, Mining, Utilities	1.9%	4.8%	2.9

Except for public administration and government enterprises, Canada and the US exhibit a very similar composition of labor. Public administration and government enterprises, accounting for 15.5% in the US and 5.1% in Canada, include homeland

http://www.leg.bc.ca/HANSARD/hansindx/33rd2nd/33_02_index_L.htm; Felice Martinello, *Mr. Harris, Mr. Rae and Union Activity in Ontario*, 26 CANADIAN PUB. POL'Y 17(2000). *See also*, Sara Slinn *supra* note 50.

[55] Matthew Nagowski, *Economic Similarities Between Maine and neighboring Canadian Provinces*, Federal Reserve Bank of Boston, New England Public Policy Center, *available at* http://www.bos.frb.org/economic/neppc/memos/2007/nagowski030107.pdf.

security, postal services, defense, space administration, veteran affairs, police forces and other emergency services, justice, various state government services and independent agencies (e.g., Social Security Administration). The increased security elements in the US emerge as the likely drivers of the discrepancy.

In addition to similar industrial compositions, the US and Canada also share similar stances on openness to international markets. Both countries participate in the World Trade Organization and NAFTA and also have in place the bilateral US-Canada Free Trade Agreement of 1989. These agreements prohibit the imposition of minimum export prices, prevent export taxes, and restrict the imposition of supply restrictions.[56] For 2007, the volume of trade (exports plus imports) as a percentage of GDP was 57% for Canada and 22% for the US.

An important additional similarity between the United States and Canada lies in the structure of union and collective bargaining coverage. As noted earlier, union density and bargaining coverage can diverge substantially if union benefits extend to all industry workers, whether members of the union or not. In Canada and the US, however, spillover coverage of this sort is much less prevalent, as evidenced in Table 2.[57]

Table 2: Comparative Collective Bargaining Structures

Country	1980		1994	
	Union Density	Bargaining Coverage	Union Density	Bargaining Coverage
United States	22%	26%	16%	18%
Canada	36%	37%	38%	38%
Germany	36%	91%	29%	92%

The many similarities between the two nations clearly establish Canada as a suitable case study for analyzing the potential effects of passing EFCA in the US. I turn next to the empirical analysis examining the effects of card check and increased union density in the Canadian provinces on a number of economic variables.

[56] *See* Ian F. Fergusson, *United States-Canada Trade and Economic Relationship: Prospects and Challenges*. CRS Report for Congress, RL33087, 2008 *available at* http://www.nationalaglawcenter.org/assets/crs/RL33087.pdf.
[57] Aidt & Tzannatos, *supra* note 25, at 82.

ii) The Empirical Approach and the Data

My empirical approach follows the methodology of Odgers and Betts, but also borrows from Johnson's original study. In particular, I construct a panel dataset of Canadian provinces over the twenty-two year period 1976-1997, which I employ to study the impact of union density on a number of economic outcomes. Johnson's study provides a good framework for understanding the legislative conditions under which union recognition took place in Canada. Her empirical examination began after 1976, the last year for which all Canadian provinces subscribed to a card check regime, and ran until 1997, when about 60 percent of Canadian unions were recognized via card check. I structure my dataset on the same 22-year time frame across all 10 Canadian provinces.[58]

This approach offers a number of advantages. First, I can exploit both the cross-sectional and the time-series dimensions of the data to identify the impact of union density on the economic variables. In addition, I can control for unobserved, time-invariant, province-specific factors that may have had an impact on economic outcomes. Furthermore, I can control for unobserved, time-specific, province-invariant factors that may have affected the outcomes of interest. Finally, I can use time lagged union density measures as a means of correcting for the so-called "simultaneity problem", so that causality can be determined as opposed to identifying simple correlations only.

While the Canadian dataset is quite rich, it does have its limitations. For example, out of ten provinces that experienced changes in labor institutions (i.e., card check vs. mandatory voting) between 1976 and 1997, only three had enough variation in the card check rules themselves over time to allow for the reasonable estimation of any direct effects.[59] I therefore rely on an indirect approach for assessing the impact of card checks on the economy. That is, following the findings in the literature,[60] I assume that the card check process increases union density as compared to current secret ballot and negotiated first-contract system, a link that is clearly established in the empirical literature on the

[58] Ideally I would have extended the dataset to later years but no data was available after 1997.
[59] The three provinces were Alberta, British Columbia and Newfoundland. Susan Johnson, *supra* note 48, provided detailed information about the existence of card check and mandatory votes across all Canadian provinces between 1977 and 1997. The construction of dummy variables to directly test the effects of legislative conditions proved weak because of a lack of variability in the data. In contrast, union density during the same period proved to be a very effective measure.
[60] *See*, *supra* note 54, *supra* note 50; Susan Johnson, *supra* note 48, and Chris Riddell, *Union Certification Success under Voting Versus Card-Check Procedure: Evidence from British Columbia, 1978-1998*, 57 INDUS. & LAB. REL. REV. 493 (2004).

Canadian unionization changes. I then examine the impact of higher union density (that results from moving to a card check and mandatory arbitration system) on a number of economic outcomes.

The dataset contains year-province observations, each of which is supplemented with a number of key variables. First are the dependent variables which are tested for a unionization effect: unemployment rates (*UERATE)*, employment to population ratios (*EMP_POP*), and provincial net investment levels, the latter of which is constructed from the provincial investment level (*INVMNT*) less provincial non-residential capital depreciation rates (*DEPRECIATION*) divided by provincial net capital stocks (*CSTOCK*). Next is the primary explanatory variable, which captures changes between card check and mandatory voting regimes: union density (*UDENSITY*). Finally, control variables are added, meant to capture outside factors that could have an impact on the dependent variables: GDP (*OUTPUT*), consumer price indices (*CPI*), and population levels (*POPULATION*). All economic data were obtained through Statistics Canada's online site.[61]

iii) Results: Unions and Unemployment

In order to study the impact of union density on unemployment, I estimate equation (1) below:

$$UNEMP_{i,t} = \alpha_i + \gamma_t + \delta UDENS_{i,t-1} + \beta X_{i,t-k} + \varepsilon_{i,t} \qquad (1)$$

In this model, $UNEMP_{i,t}$ is the unemployment rate in province i and year t, α_i is an unobservable, province-specific, time-invariant factor that may have an impact on the unemployment rate in that province, γ_t is a time-specific, province-invariant factor that may have an impact on the unemployment rate in *all* provinces, $X_{i,t-k}$ is a vector of lagged, observable, province-specific factors that may help shape the unemployment rate in each province and time period (described below), and $\varepsilon_{i,t}$ is a province- and time-specific error term. The parameter δ and the vector β are the parameters to be estimated, and the focus is on δ, as capturing the effect of union density on unemployment.

[61] Detailed descriptions of variables are included in the Appendix.

The analysis begins with a base regression of unemployment on union density and then replaces union density with lagged union density to avoid simultaneity problems.[62] To this basic specification a number of controls are introduced: time fixed effects, output, lagged output (denoted by a 1 or a 2 in the table below), the first difference of output (denoted by an *fd* in the table below), lags of the first difference of output, and a lag of the inflation rate. It is this final and most complete specification with the full set of controls that Table 3 presents below.[63] The model is estimated with OLS, random effects (RE), and fixed effects (FE).[64]

Table 3. Regression Results, Unemployment Rate

	OLS	RE	FE
udensity_1	0.29792**	0.33442**	0.35317**
output_fd_1	-0.00016**	-0.00008**	-0.00007*
output_fd_2	-0.00006	-0.00007*	-0.00007*
cpi_rate_1	-0.8920**	-0.15774	-0.13597
Constant	1.3526	0.8861	-1.6031
R-squared	0.5558	0.5274	0.5231

Notes: All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.
* Indicates significance at the 95% level; ** Indicates significance at the 99% level.

The results as shown in Table 3 are quite consistent across all specifications: higher union density today is associated with higher unemployment tomorrow and the effect is highly statistically significant under each estimation method. For example, looking at the first row, a one percentage point increase in lagged union density raises the unemployment rate by 0.30 percentage points (pooled OLS) or 0.35 percentage points (fixed effects).[65] To put this effect into perspective, raising union density today by one standard deviation (7.28 percentage points) would raise the unemployment rate next year

[62] That is, to capture a causal relationship between union density and unemployment, as opposed to a simple correlation.
[63] The results for the other specifications are presented in the Appendix.
[64] Because I analyze a time series panel dataset, I correct for serial correlation and heteroskedasticity by employing Newey-West standard error correction for OLS and fixed effects models and by correcting for intra-group correlation in random effects models. I use these error term corrections in all reported regressions.
[65] I tested numerous specifications, varying the controls included in the regression. While the precise effect of union density on unemployment varies by specification (within a range of 0.21 to 0.39%), all of the estimated effects are positive and statistically significant. Following the model developed in Nickell, *supra* note 42, I also tested the effects of lagged union density on the log of the unemployment rate. This estimation revealed qualitatively similar results thereby adding further stability and robustness to the relationship between union density and unemployment developed above. The results of models explaining log unemployment are included in the Appendix.

by about 2.20 percentage points (i.e., 7.28 x 0.30). This is a substantial effect considering that, in the full Canadian panel, the median unemployment rate is 10.10, the 25th-percentile rate is 7.75 and the 75th-percentile rate is 12.95.

On the basis of these results, I conclude that a card check system which increases union membership would also lead to a considerably higher unemployment rate. Translating these results to the US, in order to determine how much the US unemployment rate would rise in response to passage of EFCA, we first need to evaluate by how much union density can reasonably be expected to rise. A few EFCA proponents have predicted specific anticipated increases in union membership. For example, Sheldon Friedman, research coordinator for the AFL-CIO, stated that EFCA "could spur an increase in U.S. union density of nearly 5 percentage points and perhaps much more."[66] Andy Stern, the president of the SEIU, estimates that the passage of EFCA will increase union membership by 1.5 million each year for the next 10-15 years.[67] Carter and Lotke, in a 2007 paper, estimated that EFCA would increase union density by approximately 10 percent.[68] And Peter D. Hart Research Associates released survey results in 2005 that claimed 53 percent of all non-managerial workers would definitely or probably vote in favor of union representation in their workplace.[69] Using these estimates as a starting point, I consider a range of potential increases for union density and then use the Canadian data regression estimates to calculate the predicted response in the US unemployment rate.

In particular, if card checks and a mandatory contract arbitration system were to increase union density by 5 percentage points, to 17.1 percent (the Friedman prediction), the US unemployment rate is predicted to increase in the following year by 1.49 to 1.77 percentage points over current levels – an increase of 2.28 million to 2.71 million unemployed workers. If union density were to increase by 10 percentage points to 22.1

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[66] Sheldon Friedman, *The Limits of NLRB Certification and its Alternatives*, Labor and Employment Relations Association: Proceedings of the 58th Annual Meeting 2006, at 190. *Available at* http://www.press.uillinois.edu/journals/lera/proceedings2006/friedman.html.

[67] David Nason, *Unions' Collect Call to Obama: America in Transition*, THE AUSTRALIAN, Nov. 15, 2008 at 27.

[68] Alex Carter and Eric Lotke, *The Employee Free Choice Act Impact on Health Care and Pension Benefits*, Institute for America's Future, April 2007. *Available at* http://www.ourfuture.org/files/z_historic/EFCA/UnitedStatesofAmerica.pdf

[69] Peter D. Hart Research Associates, *Labor Day 2005: The State of Working America*, August 2005. The survey included 809 "workers" and was conducted on behalf of the AFL-CIO. The report does not indicate how many of the non-managerial workers already belong to a union, nor does it offer any information on the representativeness of the sample.

percent (the Carter and Lotke prediction), in the following year the US unemployment rate would increase by 2.97 to 3.53 percentage points over current levels – an increase of 4.56 million to 5.42 million unemployed workers. Predicted increases in the unemployment rate are progressively higher should the passage of EFCA lead to union densities equivalent to prior decades.

If the passage of EFCA were to increase union membership by 1.5 million each year for the next 10 years (the Stern prediction), then unemployment is predicted to rise by between 5.3 and 6.2 million, with union density settling at just under 23% in 2018. Assuming all other factors remain constant, the effect of this increase in union membership would be to raise the unemployment rate by between 8.6 and 9.2% by 2018.[70]

iv) Results: Unions and the Employment Rate

In the second set of regressions, I consider whether union rule changes have an impact on the employment rate.[71] Specifically, I study the impact of union density, increasing as a result of moving to a card check system or contract arbitration, on the fraction of the population that is employed.[72] For this I estimate equation (2) below:

$$\frac{EMP_{i,t}}{POP_{i,t}} = \alpha_i + \gamma_t + \lambda UDENS_{i,t-1} + \theta X_{i,t-k} + \eta_{i,t} \qquad (2)$$

In this model, $\frac{EMP_{i,t}}{POP_{i,t}}$ is the employment-to-population ratio in Canadian province i and year t. The parameters α_i, γ_t, and $UDENS_{i,t-1}$ are defined just as they were in equation (1), and $\eta_{i,t}$ is a province- and time-specific error term. λ and the vector θ are the parameters to be estimated, with λ providing the estimated effect of union density on the employment rate.

[70] See the Table 9 in the appendix for details on this computation.
[71] Note that the unemployment rate measures the percentage of workers who consider themselves in the labor force who are actively seeking work. The employment rate, on the other hand, captures the percentage of all people in a given area who are employed. Thus, the denominator for the employment rate includes those in the labor force (employed and unemployed) plus those out of the labor force (such as retired persons, stay-at-home parents, and adult students).
[72] This approach follows Nickell, *supra* note 42.

Just as with the unemployment analysis, a number of variations on equation (2) are estimated, starting with a base regression of the employment to population ratio on union density. Union density is then replaced with lagged union density, fixed time effects are added, as are controls for the output to population ratio, the lagged output to population ratio, the first difference of the output to population ratio, and lags of the first difference of the output to population ratio. The model is again estimated by OLS, random effects, and fixed effects.

Table 4. Regression Results, Employment/Population Ratio

	OLS	RE	FE
udensity_1	-0.22700**	-0.20485**	-0.17251**
output_pop_1	553.77**	510.72**	385.20**
output_pop_fd_1	-306.85	-51.309	31.983
output_pop_fd_2	-474.3	136.97	-49.275
Constant	38.302**	37.493**	40.365**
R-squared	0.851	0.8473	0.8395

Notes: All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.
* Indicates significance at the 95% level; ** Indicates significance at the 99% level.

In all cases presented in Table 4, the coefficient on lagged union density (row one) is negative and highly statistically significant.[73] An increase of one percentage point in lagged union density reduces the employment to population ratio by about 0.23 percentage points (OLS) or by 0.17 percentage points (fixed effects).[74] Thus, if EFCA were to raise the union density today by 5 percentage points, the employment rate would decrease by 0.86 to 1.14 percentage points next year, for a net loss of between 0.55 and 0.95 million jobs. If EFCA were to raise the union density today by 10 percentage points, the employment rate would decrease by 1.72 to 2.27 percentage points next year, for a net loss of between 1.81 and 2.61 million jobs.

In order to gauge the full impact of the decline in the employment rate on the economy, I estimate a number of regressions of Canadian provincial output on the lagged

[73] The only specifications in which this was not the case occurred when I ran random and fixed effects regressions of *EMP_POP* on union density and lagged union density respectively without any additional controls.
[74] The effect of lagged union density on the employment to population ratio varied from +0.22% to -0.45% across all models tested. Out of 21 models, 17 produce negative and significant coefficients for lagged union density and only two of the equations give positive significant coefficients. All models with time fixed effects, time and province fixed effects, and pooled OLS produce significant and negative effects of lagged union density on employment to population ratio.

employment to population ratio (results presented in an appendix). For example, in a fixed-effects model of log output on the lagged employment-population ratio plus time fixed effects and the lagged capital stock, a decline in the employment rate of one percentage point is associated with a statistically significant decline of nominal output of 1.5 percentage points tomorrow. The decline is statistically significant and varies from 1.5 to 5.9 percentage points for a one percentage point drop in employment rate (per the pooled OLS model). This effect is considerably larger than the Freeman and Medoff output effect of 0.40 percentage points reported above.

I conclude on the basis of these results that a card check and mandatory contract arbitration system which raise union membership – such as those detailed in EFCA are expected to do – would lead to a reduction in the US employment rate and a subsequent reduction in US industry output. Just as with the unemployment rate estimates reported above, predicted decreases in the employment rate get progressively higher for larger gains in union membership.

v) Results: Unions and Investment

As a final test of the impact of moving to a card check system on the economy, I consider investment. Specifically, I analyze the impact of union density on the net investment rate, defined as gross investment minus depreciation as a fraction of the capital stock. For this I estimate equation (3):

$$\frac{INV_{i,t} - DEP_{i,t}}{CSTOCK_{i,t}} = \alpha_i + \gamma_t + \mu UDENS_{i,t-1} + \sigma X_{i,t-k} + \psi_{i,t} \qquad (3)$$

In this model, $\frac{INV_{i,t} - DEP_{i,t}}{CSTOCK_{i,t}}$ is the net investment rate in Canadian province i and year t. The parameters α_i, γ_t, and $UDENS_{i,t-1}$ are defined as in equations (1) and (2), and $\psi_{i,t}$ is a province- and time-specific error term. Here, μ and the vector σ are the parameters to be estimated and the focus is on μ, as the estimated effect of union density on the net investment rate.

I follow the same approach as before, starting with a simple regression of the net investment rate on union density, then replacing contemporaneous union density with

lagged union density, and finally including time fixed effects. In addition, similar to Odgers and Betts, I estimate a model of the net investment rate on lagged union density, lagged union density squared (to capture any nonlinearities in the relationship), the lags of the first difference of output (normalized by the net capital stock), and fixed time effects. Recall that since both a linear and a squared term of the union density are included, the effect of (lagged) union density on the net investment rate is given by $\mu + 2\sigma UDENS$. In other words, the impact depends on the point of the density distribution at which the effect is evaluated.

Table 5. Regression Results, Net Investment Rate

	OLS	RE	FE
udensity_1	-0.19050	-0.20437	-0.19145
udensity_1_sq	0.22139	0.24055	0.32838
output_fd_stock_1	0.14695*	0.11349	0.08547
output_fd_stock_2	0.13047*	0.10876	0.09006
constant	0.0530*	0.05626	0.03883
R-squared	0.2637	0.2608	0.1118

Notes: All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.
* Indicates significance at the 95% level; ** Indicates significance at the 99% level.

Unlike the other two models, in the net investment regressions none of the results are significant at the 5 percent level, although some of the coefficients are nearly significant at 10 percent. The coefficient on lagged union density in the pooled OLS model is –0.19 and the coefficient on lagged union density squared is 0.22, implying that, at the 25th percentile of union density (i.e., 0.31), the impact on the net investment rate of increasing union density by one unit is –0.054 (i.e., -0.19 + 2 x 0.22 x 0.31). At the median of union density (i.e., 0.34), the impact on the net investment rate is –0.04 and at the 75th percentile of union density (i.e., 0.38), it is –0.02. The impact of lagged union density becomes positive only at a union density of 0.43, which is roughly the 90th percentile of the distribution of density in the Canadian data set. However, as noted, none of these effects are statistically different from zero.

Because these results are not statistically significant, I do not estimate their implications for the US.

4. CONCLUSION

In this paper I have evaluated the arguments presented for passing EFCA and considered the likely unintended consequences it will generate, should it be passed. My primary analysis constituted a quantitative assessment of the link between union density and unemployment.

Proponents of EFCA argue that the Act will reverse the downward trend in union membership and thus bolster worker wages and overall social welfare. While I concur that union membership is likely to increase, especially as a result of a switch to card checks from the current system of secret ballot elections, I find that EFCA is unlikely to achieve its primary goal of improving overall social welfare. Any potential increase in some union-represented employee wages and benefits would be offset by other likely effects, including a reduction in jobs overall and an increase in the unemployment rate. These latter two impacts affect the economy as a whole and thus would overwhelm any anticipated wage and benefit increases among the subset of workers that gain union status. The following table summarizes the potential effects that my empirical analysis of Canadian data predicts EFCA could have on the US unemployment and employment rates.

Table 6. Predicted effects of EFCA

Potential 2008 union density (%)	Difference between 2008 and 2007[75] union density (%)	Predicted increase in unemployment rate in 2009 (%)	Predicted increase in unemployment in 2009 (millions)	Predicted decrease in employment ratio in 2009 (%)	Predicted decrease in employment in 2009 (millions)
22.1	10.0	2.97 - 3.53	4.56 - 5.42	1.72 - 2.27	1.81 - 2.61
17.1	5.0	1.49 - 1.77	2.28 - 2.71	0.86 - 1.14	0.55 - 0.95

Notes: 1) Predicted increases in unemployment computed using regression coefficients of 0.297-0.353 (see Table 3)
2) Predicted decreases in employment to population ratios computed using coefficients of -0.172 to -0.227 (see Table 4). Explanations of computations are provided in the Appendix.
3) All relevant statistics are from the U.S. Department of Labor, Bureau of Labor Statistics.

[75] 2007 US union density was 12.1%

I conclude that the unintended consequences of passing EFCA are likely to be significant. Increased unemployment and reduced labor supply are very high prices to pay during any time, but especially during a recession. The empirical results presented in this paper therefore recommend against passing EFCA.

REFERENCES

Acs, Z. J., and D. B. Audretsch. 1988. "Innovation in Large and Small Firms: An Empirical Analysis." *The American Economic Review* 78(4): 678-690.

Aidt, T. and Z. Tzannatos. 2002. *Unions and Collective Bargaining*: *Economic Effects in a Global Environment*. Washington DC: The World Bank.

Baldwin, Robert E. 2003. The Decline of US Labor Unions and the Role of International Trade. Washington,D.C.: Institute for International Economics.

Belman, D. 1992. "Unions, the Quality of Labor Relations, and Firm Performance." In L. Mishel and P.B. Voss, eds., *Unions and Economic Competitiveness*. New York: M. E. Sharpe.

Blanchflower, D. G. 1996. "Product Market Competition, Wages and Productivity: International Evidence form Establishment-Level Data." *Annals d'Economy et de Statistique* 41/42 (June); 219-54.

Blanchflower, D.G. 1996b. "The Role and Influence of Trade Unions in the OECD." London School of Economics, Center for Economic Performance Discussion Paper no. 310. London, UK.

Blanchflower, D. G. 1997. "Changes over Time in Union Relative Wage Effects in Great Britain and the United States." Technical Report Working Paper no. 6100., National Bureau of Economic Research, Cambridge, Mass.

Blanchflower, D., R. Crouchley, S. Estrin, and A. Oswald 1990. "Unemployment and the Demand for Unions," NBER Working Paper No. W 3251.

Bratsberg, B., and James Ragan. 2002."Changes in the Union Wage Premium by Industry." *Industrial and Labor Relations Review* 56(1) (April):65-83.

Bronars, S. G., D. Deere and J. Tracy. 1994. "The Effects of Unions of Firms Behavior: An Empirical Analysis Using Firm-level Data." *Industrial Relation* 33(4):426-51.

Bronfenbrenner, K. 2001. "Uneasy Terrain: The Impact of Capital Mobility on Workers, Wages, and Union Organizing." Report prepared for the U.S. Trade Deficit Review Commission, Washington. Available at http://digitalcommons.ilr.cornell.edu/reports/3/.

Bronfenbrenner, K. & Hickey, R. 2004. "Changing to Organize: A National Assessment of Union Organizing Strategies." In R. Milkman & K. Voss (Eds.), *Rebuilding labor: Organizing and organizers in the new union movement* (pp. 17-60). Ithaca, NY: Cornell University Press/ILR Press.

Canadian Department of Human Resources and Skills Development, "Trade Union Application for Certification", available at http://www.hrsdc.gc.ca/eng/lp/spila/clli/irlc/07trade_union_application_for_certification.shtml.

Carter, Alex and Eric Lotke, "The Employee Free Choice Act Impact on Health Care and Pension Benefits" *Institute for America's Future*, April 2007. Available at http://www.ourfuture.org/files/z_historic/EFCA/UnitedStatesofAmerica.pdf.

Connolly, R.A., B. T. Hirsch, and M. Hirschey. 1986. "Union Rent-Seeking, Tangible Capital, and Market Value of the Firm." *Review of Economics and Statistics* 68(4):567-77.

Cooke, W.1985. "The Rising Toll of Discrimination Against Union Activists." *Industrial Relations* 24(3): 421-42.

Diamond, Michael L. "Labor Groups Say the Employee Free Choice Act Would Help Reverse Union Decline" *McLatchy-Tribune Business News*, Mar. 19, 2007.

Epstein, Richard. (Forthcoming, 2009). *The Case Against the Employee Free Choice Act.*

Farber, H. and Harry Katz. 1979. "Interest Arbitration, Outcomes, and the Incentive to Bargain." *Industrial and Labor Relations Review* 33(1): 55-63

Farber, H. and Alan Krueger.1992."Union Membership in the United States: The Decline Continues." NBER Working Paper, No. W4216.Available at SSRN: http://ssrn.com/abstract=227061.

Farber, H. and Bruce Western. 2000. "Round Up The Usual Suspects: The Decline of Unions in The Private Sector, 1973-1998." Princeton University Industrial Relations Section Working Paper, No. 437.

Ferguson, J. P. (2008) "The Eyes of the Needles: A Sequential Model of Union Organizing Drives, 1999-2004." *Industrial & Labor Relations Review* 62(1): Article 1.

Fergusson, I. F. 2008. "United States-Canada Trade and Economic Relationship: Prospects and Challenges." CRS Report for Congress, RL33087.

Filer, R. K., D. S. Hamermesh and A. E. Rees. 1996. *The Economics of Work and Pay*. 6th Ed. New York: HarperCollins College Publishers.

Frank, Thomas. "The Tilting Yard; Happy Labor Day; Drop Dead" *Wall Street Journal*, Sept. 3, 2008, at A21.

Freeman, R. B. and J. L. Medoff, 1984. *What do Unions Do?* New York: Basic Books.

Freeman, R. B. 1980. "Unionism and the Dispersion of Wages." *Industrial and Labor Relations Review* 34(1):3-23.

Freeman. R. B. 1988. "Labour Market Institutions and Economic Performance." *Economic Policy* 3:64-78.

Friedman, Sheldon. "The Limits of NLRB Certification and its Alternatives" *Labor and Employment Relations Association: Proceedings of the 58th Annual Meeting 2006*, 190-192. Available at http://www.press.uillinois.edu/journals/lera/proceedings2006/friedman.html.

George, William M. "Employee Free Choice Act; Labor Law Restores Fairness" PATRIOT NEWS, July 13, 2008, at F 01

Greenhouse, Steven. “Labor Seeks Boost From Pro-Union Measure” *New York Times*, Feb. 23, 2007, at A18.

Peter D. Hart Research Associates, “Labor Day 2005: The State of Working America” August 2005. Available at http://www.aflcio.org/aboutus/laborday/upload/ld2005_report.pdf.

Hirsch, B.T. 1990. “Innovative Activity, Productivity Growth and Firm Performance: Are Labor Unions a Spur or Deterrent?” In A. N. Link and V. K. Smith, eds., *Advances in Applied Microeconomics*. Greenwich Conn.

Hirsch, B. T. 2008. “Sluggish Institutions in a Dynamic World: Can Unions and Industrial Competition Coexist?” *Journal of Economic Perspectives* 22(1):153-176.

Jackman, R. 1993. “Mass Unemployment: International Experience and Lessons for Policy.” London School of Economics, Center for Economic Performance Discussion Paper No. 152. London, UK.

Johnson, Susan. 2002. “Check Card or Mandatory Representation Vote? How the Type of Union Recognition Procedure Affects Union Certification Success” *The Economic Journal*, 112: 344-361.

Johnson, Susan. 2004. “The Impact of Mandatory Votes on the Canada-U.S. Union Density Gap: A Note” *Industrial Relations* 43(2): 356-363.

Karier, T. 1998. “New Evidence on the Effect of Unions and Imports on Monopoly Power.” *Journal of Post Keynesian Economics* 10(3):414-27.

Keefe, J. H. 1992. “Do Unions Hinder Technological change?” In L. Mishel and P.B. Voss, eds., *Unions and Economic Competiveness*. New York: M. E. Sharpe.

Lalonde, R. J., G. Marschke and K. Troske. 1996. “Using Longitudinal Data on Establishments to Analyze the Effects of Union Organizing Campaigns in the United States.” *Annales d’Economy et de Statistique* 41/42:1555-86.

Lewis, H.G. 1986. *Union relative Wage Effects: A Survey.* Chicago: University of Chicago Press.

Martinello, Felice. 2000. “Mr. Harris, Mr. Rae and Union Activity in Ontario.” *Canadian Public Policy* 26(1): 17-33.

Nagowski, Matthew. “Economic Similarities Between Maine and Neighboring Canadian Provinces”, Federal Reserve Bank of Boston, New England Public Policy Center, available at http://www.bos.frb.org/economic/neppc/memos/2007/nagowski030107.pdf.

Nason, David. “Unions’ Collect Call to Obama: America in Transition” *The Australian*, Nov. 15, 2008 at 27.

Neumann and Rissman. 1984.”Where Have All the Union Members Gone?” *Journal of Labor Economics* 2(2), Essays in Honor of Melvin W. Reder (April): 175-192.

Nickell, S. 1997. "Unemployment and Labor Market Rigidities: Europe versus North America," *Journal of Economic Perspectives*, 11(3):55-74.

Nickell, S. J., and R. Layard. 1999. "Labor Market Institution and Economic Performance." In O. Ashenfelter and S. Card, eds., *Handbook of Labor Economics, Vol. 3C.* Amsterdam; Oxford: North Holland.

Nisser, Bruce. "Employee Free Choice Act Restores Basic Freedoms for Workers" *Orlando Sentinel*, Aug. 31, 2008, at A19.

OECD. 1997. *Employment Outlook*. Paris: OECD.

Odgers, C. and J. Betts. 1997. "Do Unions Reduce Investment? Evidence from Canada," *Industrial and Labor Relations Review* 51 (1):18-36.

Rees, A. 1963. "The Effects of Unions on Resource Allocation." *Journal of Law and Economics* 6:69-78.

Riddell, Chris. 2004. "Union Certification Success under Voting Versus Card-Check Procedures: Evidence from British Columbia, 1978-1998" *Industrial and Labor Relations Review* 57(4), Article 1.

Scarpetta, S. 1996. "Assessing the Role of Labmy Market Policies and Institutional Settings on Unemployment: A Cross-Country Study." *OECD Economic Studies* 26:43-89.

Slaughter, M. 2007. "Globalization and Declining Unionization in the United States." *Industrial Relations* 46(2): 329-346.

Slinn, Sara. 2003."The effect of Compulsory Certification Votes on Certification Applications in Ontario: An Empirical Analysis." *Canadian Labor and Employment Law Journal* 10(3): 399-429.

Slinn, Sara. 2004. "An Empirical Analysis of the Effects of the Change from Card-Check to Mandatory Vote Certification" *Canadian Labor & Employment Law Journal* 11, pp.259-302.

Smith, Roger. "Pro Business Pro Union" *Cox News Service*, Sept. 1, 2008.

Visser, Jelle. 2006. Union Membership Statistics in 24 Countries, *Monthly Labor Review*, January 38-49

Wachter, Michael. 2007. Labor Unions: A Corporatist Institution in a Competitive World, 155 U. PA. L. REV. 581.

Weisbrot, Mark. "Restore Unions' Right to Organize, Bargain" *The Miami Herald*, Sept. 1, 2008, at A1.

Wilson, J. Justin. 2007. Union Math, Union Myths: An Analysis of Government Data on Employees Fired During Union Organizing Campaigns, Center for Union Facts, June, available at www.unionfacts.com/downloads/Union_Math_Union_Myths.pdf.

Williams, Anne. "Labor Sees Bright Future" *The Register Guard*, Sept. 2, 2008.

US Chamber of Commerce, “The Union Representation Process Under the National Labor Relations Act: Maintaining Employee Free Choice for over 70 Years”, available at http://www.uschamber.com/assets/labor/unionrhetoric_nlra.pdf.

APPENDIX

1) Description of selected variables constructed from Statistics Canada data.

uerate Provincial unemployment rate measured in percent from 1976 to 1997.

lnuerate The natural log of *uerate* as described above.

emp_pop Ratio of provincial employment to provincial population from 1976 to 1997.

nrmlnetinv Normalized net investment as defined in Odgers and Betts (1997) as (investment – depreciation)/net capital stock for each province, from 1976 to 1997. Each of investment, depreciation (geometric), and end of year net capital stock (geometric) are measured in chained 2002 Canadian dollars.

udensity Union density measured as the percentage of the provincial labor force that is unionized. This data was available from 1976 to 1995. Data for 1996 and 1997 was generated by linearly extrapolating the original data.

udensity_sq The square of (*udensity*/100).

output_fd The first difference of provincial output. Provincial GDP or *output* from 1981 to 1997 was measured in chained 2002 Canadian dollars.

cpi_rate The rate of increase in the provincial consumer price index. Provincial CPI was available from 1979 to 1997 (2002 = 100).

output_pop The ratio of provincial GDP to provincial population from 1981 to 1997.

output_pop_fd The first difference of *output_pop* as defined above.

output_fd_stock The first difference of provincial output or *output_fd* divided by the provincial net capital stock

log_output The natural log of *output* as described above.

Table 7 Summary Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
uerate	220	10.55182	3.713402	3.8	20.2
lnuerate	220	2.290951	0.372446	1.335001	3.005683
emp_pop	220	42.31913	5.121867	28.22409	51.6459
nrmlnetinv	220	0.017612	0.019484	-0.01796	0.104044
udensity	220	35.45093	7.284613	22.1	58.76083
udensity_sq	220	0.130959	0.058042	0.048841	0.345284
output_fd	160	1831.844	4287.287	-13219	20276
cpi_rate	180	4.288887	2.95227	-1.27021	12.35521
output_pop	170	0.02595	0.006014	0.016293	0.045235

output_pop_fd	160	0.000352	0.000783	-0.00231	0.002586
output_fd_stock	160	0.017843	0.022351	-0.05049	0.088106
log_output	170	10.48278	1.375549	7.655391	12.85117

2) Variation of labor legislation across Canadian provinces

Table 8

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

Data from Susan Johnson, *Card Check or Mandatory Representation Vote? How the Type of Union Recognition Procedure Affects Union Certification Success*, 112 ECON J. 344, 349 (2002).
Each observation represents the Year: Month of adopting either mandatory voting (thereby eliminating card check) or first agreement arbitration.

3) Results of empirical estimation for all models and specifications

Table 9

Dependent Variable	Unemployment rate		
	OLS	RE	FE
udensity	0.33007**	0.38182**	0.38704**
constant	-1.1493	-2.9840**	-3.1690*
R-squared	0.4192	0.4192	0.4192
udensity_1	0.32844**	0.37467**	0.37929**
constant	-0.9175	-2.5502	-2.7133
R-squared	0.4127	0.4127	0.4127
With time fixed effects			
udensity_1	0.31101**	0.22341**	0.21434**
constant	-1.3691	-0.9024	1.6954
R-squared	0.4927	0.4802	0.4768
udensity_1	0.29035**	0.32450**	0.33001**
output	-0.00001**	-0.00001	-0.00001
constant	0.3896	-2.022	0.7394

R-squared	0.5479	0.5459	0.5429
udensity_1	0.29301**	0.35269**	0.36686**
output_1	-0.00001**	-0.00001	-0.00001
constant	2.1	-2.2598	-2.539
R-squared	0.5425	0.5396	0.5387
udensity_1	0.30033**	0.35600**	0.36696**
output_fd	-0.00018**	-0.00007	-0.00007
constant	0.852	-0.827	-3.16
R-squared	0.5157	0.5007	0.4994
udensity_1	0.29925**	0.34551**	0.35350**
output_fd_1	-0.00016**	-0.00008**	-0.00007*
output_fd_2	-0.00011**	-0.00007**	-0.00007*
constant	0.7046	-0.5523	-2.321
R-squared	0.5331	0.5187	0.5175
udensity_1	0.29198**	0.34753**	0.35989**
output_1	-0.00001**	0	0.00001
output_fd_1	-0.00008	-0.00007*	-0.00007*
output_fd_2	-0.00005	-0.00007**	-0.00008**
constant	2.2243	-0.7273	-1.1427
R-squared	0.5221	0.5115	0.4303
udensity_1	0.29792**	0.33442**	0.35317**
output_fd_1	-0.00016**	-0.00008**	-0.00007*
output_fd_2	-0.00006	-0.00007*	-0.00007*
cpi_rate_1	-0.8920**	-0.15774	-0.13597
constant	1.3526	0.8861	-1.6031
R-squared	0.5558	0.5274	0.5231

** Indicates significance at the 99% level
* Indicates significance at the 95% level
All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.

Table 10

Dependent Variable	Log unemployment rate		
	OLS	RE	FE
udensity	0.03023**	0.03698**	0.03788**
constant	1.2192	0.97992**	1.0426**
R-squared	0.3496	0.3496	0.3496
udensity_1	0.02944**	0.03502**	0.03577**
constant	1.2663	1.0693**	-2.7133**
R-squared	0.3425	0.3425	0.3425
With time fixed effects			

udensity_1	0.02702**	0.01402**	0.01210**
constant	1.1973**	1.5705**	1.6703**
R-squared	0.4443	0.4004	0.3819
udensity_1	0.02336**	0.02184**	0.02114**
output	-0.000008**	-0.000001	-0.000002
constant	1.4749	1.4369**	1.6298
R-squared	0.4887	0.4781	0.4580
udensity_1	0.02303**	0.02617**	0.02705**
output_1	-0.000008**	-0.000001	-0.000001
constant	1.6708	1.3794	1.3614
R-squared	0.4806	0.4793	0.4769
udensity_1	0.02307**	0.02480**	0.02506**
output_fd_1	-0.000016**	-0.00001**	-0.00001**
output_fd_2	-0.000012*	-0.00001**	-0.00001**
constant	1.5705	1.5196**	1.4002**
R-squared	0.4970	0.4886	0.4880
udensity_1	0.02259**	0.02500**	0.02572**
output_1	-0.0000001**	0	0.000007
output_fd_1	-0.000011*	-0.00001**	-0.00001*
output_fd_2	-0.00008	-0.000001**	-0.00001**
constant	1.7071	-0.7273	1.5108
R-squared	0.5079	0.4763	0.3845
udensity_1	0.02292**	0.02451**	0.02496**
output_fd_1	-0.000016**	-0.00001**	-0.00001**
output_fd_2	-0.00007	-0.00007*	-0.00007*
cpi_rate_1	0.10304**	-0.03958**	0.03807**
constant	1.6521	1.5191**	1.5003
R-squared	0.5359	0.5132	0.5110

** Indicates significance at the 99% level
* Indicates significance at the 95% level
All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.

Table 11

Dependent Variable	Employment/Population Ratio		
	OLS	RE	FE
udensity	-0.35980**	0.24790**	0.28338**
constant	55.074**	33.531**	32.273**
R-squared	0.2619	0.2619	0.2619
udensity_1	-0.36950**	0.19298**	0.22605**
constant	55.532**	35.669**	34.501**

R-squared	0.2781	0.2781	0.2781
With time fixed effects			
udensity_1	-0.44004**	-0.03504	-0.01892
constant	55.112**	45.396**	41.763**
R-squared	0.4518	0.1519	0.1216
udensity_1	-0.21484**	-0.17318**	-0.13549**
output_pop	577.98**	423.041**	322.42**
constant	31.418**	38.342**	39.835**
R-squared	0.8452	0.8392	0.8191
udensity_1	-0.22352**	-0.20450**	-0.17870**
output_pop_1	564.48**	436.59**	354.66**
constant	36.609**	37.585**	40.835**
R-squared	0.8532	0.8489	0.8383
udensity_1	-0.45250**	-0.19287**	-0.16403**
output_pop_fd	-410.48	-73.012	-74.192
constant	61.630**	47.391**	50.370**
R-squared	0.5223	0.4571	0.4271
udensity_1	-0.45034**	-0.27274**	-0.16288**
output_pop_fd_1	247.4	277.62*	270.83*
output_pop_fd_2	-350.18	163.46	181.39
constant	60.04**	54.320**	49.713**
R-squared	0.5248	0.5035	0.4385
udensity_1	-0.22700**	-0.20485**	-0.17251**
output_pop_1	553.77**	510.72**	385.20**
output_pop_fd_1	-306.85	-51.309	31.983
output_pop_fd_2	-474.3	136.97	-49.275
constant	38.302**	37.493**	40.365**
R-squared	0.851	0.8473	0.8395

** Indicates significance at the 99% level
* Indicates significance at the 95% level
All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.

Table 12

Dependent Variable	Net Investment		
	OLS	RE	FE
udensity	-0.07501**	-0.08843**	-0.12518**
constant	0.0442**	0.0490**	0.06199
R-squared	0.0786	0.0786	0.0786
udensity_1	-0.07408**	-0.09066**	-0.13761**

constant	0.04318	0.04904**	0.06562
R-squared	0.0776	0.0776	0.0776
udensity_1	-0.02155	-0.02329	-0.02808
output_fd	0	0	0
constant	0.01994**	0.0208	0.0227
R-squared	0.0205	0.0194	0.0166
udensity_1	-0.01212	-0.00533	0.02669
output_fd_1	0	0	0
output_fd_2	0**	0**	0**
constant	0.01459*	0.01202	0.00021
R-squared	0.1082	0.1071	0.0758
udensity_1	-0.19783	-0.21949	-0.32159
udensity_1_sq	0.22908	0.25643	0.43218
output_fd_stock_1	0.13929**	0.11827	0.09967
output_fd_stock_2	0.13419**	0.12304**	0.1142
constant	0.04775	0.05247	0.0659
R-squared	0.1271	0.1263	0.0658
With time fixed effects			
udensity_1	-0.04788**	-0.01328	0.12434*
constant	0.04066	0.02355	-0.01491
R-squared	0.2832	0.2677	0.0679
udensity_1	-0.19050	-0.20437	-0.19145
udensity_1_sq	0.22139	0.24055	0.32838
output_fd_stock_1	0.14695*	0.11349	0.08547
output_fd_stock_2	0.13047*	0.10876	0.09006
constant	0.0530*	0.05626	0.03883
R-squared	0.2637	0.2608	0.1118

** Indicates significance at the 99% level
* Indicates significance at the 95% level
All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.

Table 13

Dependent Variable	Log output		
	OLS	RE	FE
rnetstock02_1	0.000011**	0.000013**	0.000012**
emp_pop_1	0.05880**	0.01689**	0.01543**
constant	6.8848**	9.6478**	9.7182**
R-squared	0.8157	0.6527	0.6164

** Indicates significance at the 99% level
* Indicates significance at the 95% level

All three models were estimated with time fixed effects, while the FE model was estimated with province fixed effects in addition to time fixed effects.

Table 14

Potential 2008 union density (%)	Difference between 2008 and 2007[76] union density (%)	Predicted increase in unemployment rate in 2009 (%)	Predicted increase in unemployment in 2009 (millions)	Predicted decrease in employment ratio in 2009 (%)	Predicted decrease in employment in 2009 (millions)
22.1	10.0	2.97 - 3.53	4.56 - 5.42	1.72 - 2.27	1.81 - 2.61
17.1	5.0	1.49 - 1.77	2.28 - 2.71	0.86 - 1.14	0.55 - 0.95

The table above summarizes the predicted effects for EFCA obtained by applying the results of the regression analysis presented in Tables 3 and 5 of the appendix.

The first column in Table 8 presents two hypothetical union densities 10% and 5% above the 2007 union density respectively. These levels have been chosen on the basis of predictions made in other studies on the degree to which union density may rise in the United States as a consequence of the passage of EFCA.

The second column is the difference between 2007 union density and the potential union density.

On the basis of the analysis in Table 3 of the appendix, the relationship between lagged union density and current unemployment rate is estimated to be such that if there is a 1 percentage point increase in lagged union density, we would expect to see an increase in the unemployment rate of 0.297 to 0.353 percentage points.

By multiplying the hypothetical increases in lagged union density reported in the second column (measured in percentage points) with the estimated effect on unemployment rates of 0.297 – 0.353 we obtain predicted levels of unemployment. These are reported in the third column.

The absolute effect of an unemployment rate of *u*% unemployment in terms of jobs is the size of the labor force multiplied with u/100. The BLS estimates of the labor force in Jan 2009 were 153,716,000. Multiplying this labor force by the estimated unemployment rate gives us the number of jobless workers. These figures are reported in the fourth column.

On the basis of the analysis in Table 5 of the appendix, the relationship between lagged union density and the employment to population ratio is estimated to be such that if there is a 1 percentage point increase in lagged union density, we would expect to see a reduction in the employment to population ratio of 0.172 to 0.227 percentage points.

By multiplying the hypothetical increases in lagged union density that are reported in the second column (measured in percentage points) with the estimated effect on employment

[76] 2007 US union density was 12.1%

to population ratios of -0.172 to -0.227 we obtain predicted levels of the *decrease* in employment to population ratio. These are reported in the fifth column.

In 2008, the BLS estimated the employment level to be 145,362,000 and the July 1, 2008 population to be 304,059,724. Thus the employment to population ratio in 2007 was approximately 0.4847.

Since we have computed the drop in the employment to population ratio for each hypothetical level of union density, we can also compute the new employment to population ratio. The BLS reported U.S. population on Jan 1, 2009 to be 305,529,237. By multiplying this figure with the new predicted employment to population ratio, we can compute the new level of employment. Subtracting the new employment level from the 2008 employment level gives the reduction in employment due to increases in union density. These figures are reported in the sixth column.

Table 15

Year	2007	2008	2009	2010	2011	2012
Growth rate of labor force (%)	0.9	0.9	0.9	0.6	0.6	0.6
Unionized Emp ('000)	15670	16098	17598	19098	20598	22098
Wage and Salary Workers ('000)	129767	129377	129377	129377	129377	129377
Union Density (%)	12.08	12.44	13.48	14.54	15.59	16.63
Predicted unemployment (LB) ('000)	7078.0	8924.0	9211.8	9750.6	10306.6	10862.8
Predicted unemployment (UB) ('000)	7078.0	8924.0	9243.9	9874.0	10524.6	11175.3
Y-O-Y increase in unemployment (LB) ('000)			287.8	538.8	556.0	556.2
Y-O-Y increase in unemployment (UB) ('000)			319.9	630.1	650.6	650.7
Cumulative unemployed (LB)			287.8	826.6	1382.6	1938.8
Cumulative unemployed (UB)			319.9	950.0	1600.6	2251.3
Year	2013	2014	2015	2016	2017	2018
Growth rate of labor force (%)	0.6	0.6	0.6	0.6	0.6	0.6
Unionized Emp ('000)	23598	25098	26598	28098	29598	31098
Wage and Salary Workers ('000)	129377	129377	129377	129377	129377	129377
Union Density (%)	17.65	18.66	19.66	20.64	21.61	22.57
Predicted unemployment (LB) ('000)	11419.1	11975.5	12532.0	13088.7	13645.5	14202.4
Predicted unemployment (UB) ('000)	11826.0	12476.9	13127.8	13778.8	14430.0	15081.2
Y-O-Y increase in unemployment (LB) ('000)	556.3	556.4	556.5	556.7	556.8	556.9
Y-O-Y increase in unemployment (UB) ('000)	650.8	650.9	650.9	651.0	651.1	651.2
Cumulative unemployed (LB)	2495.1	3051.5	3608.0	4164.7	4721.5	5278.4
Cumulative unemployed (UB)	2902.0	3552.9	4203.8	4854.8	5506.0	6157.2

LB represents lower bound estimates, UB represents upper bound estimates. Predictions for labor force growth are from the Bureau of Labor Statistics, *available at* http://www.bls.gov/opub/ted/2007/jan/wk1/art02.htm

One estimate of the increased rate of unionization due to EFCA has been offered by Andy Stern, the president of SEIU (Service Employees International Union), is that the passage of EFCA will increase union membership by 1.5 million members per year for the next 10-15 years

Using Stern's estimate as given, we can combine our prior results to compute the cumulative effect of increased union density on both unemployment rates and unemployment levels over a ten year horizon using data published by the Bureau of Labor Statistics.

The growth rate in the labor force is predicted to be 0.9% in between 2007 and 2009 and 0.6% from 2010 until 2019.[77] Thus, given the labor supply in 2007, we can compute the size of the labor force in each subsequent year until 2019. Assuming that EFCA is passed so that its effects are felt in 2009 onward, we are interested in the 10 year horizon from 2009 to 2018. The labor supply in each year can then be expressed as

$$LS_t = LS_{t-1}(1 + x_t)$$

Where x = growth rate of the labor supply, LS = labor supply, t = year

Similarly, the size of the unionized labor force in each year can be expressed as

$$ULS_t = ULS_{t-1} + 1.5 \times 10^6$$

The level of unionized employment in 2008 was 16.1 million, thus as per Stern's prediction, it will rise by 1.5 million each year. In 2019, therefore, unionized employment will stand at 30.1 million.

Union density, as defined by the Bureau of Labor Statistics, is the percentage of the workforce that received wages or salaries that belongs to a union. If we assume that the number of wage and salaried workers in the economy grows at the same rate as the labor force as a whole, we may express the wage and salary work force as

$$LS^{wage}{}_t = LS^{wage}{}_{t-1}(1 + x_t)$$

[77] Estimates from the Bureau of Labor Statistics *available at* http://www.bls.gov/opub/ted/2007/jan/wk1/art02.htm

Where x = growth rate of the labor supply, LS^{wage} = wage and salary labor force, t = year

Union density (UD) in year t is given by

$$UD_t = \frac{ULS_t}{LS_t^{wage}} \times 100$$

Having computed union density, we are in a position to use the results from our prior econometric study to establish the contribution of each years increase in union labor on the unemployment rate. In precise terms we have that

$$u_t = \alpha(UD_{t-1} - UD_{t-2})$$

Where u_t = unemployment rate in year t

UD_{t-1} = union density in year t-1

UD_{t-2} = union density in year t-2

α = coefficient from the regression analysis ranges from (0.297 – 0.353)

Through the computation above, we have figures that estimate the effect of a 1.5 million member increase in the unionized labor force on the unemployment rate each year for the 10 years between 2009 and 2018.

Given our estimates for the labor force, we can translate the unemployment rates computed above into unemployment levels since

$$Unemployment_t = LS_t \times u_t$$

Thus we have a series of union densities, unemployment rates, and unemployment levels associated with an annual increase in union membership of 1.5 million. A graph of union density and the lower bound estimates on unemployment between 2007 and 2018 is shown below.

Overall, the cumulative effect of 1.5 million additional union members per year for 10 years will increase unemployment between 5.3 and 6.2 million with union density settling at just under 23%. Assuming all other factors as constant, the effect of this increase in union membership will push the unemployment rate up to between 8.6 and 9.2%.

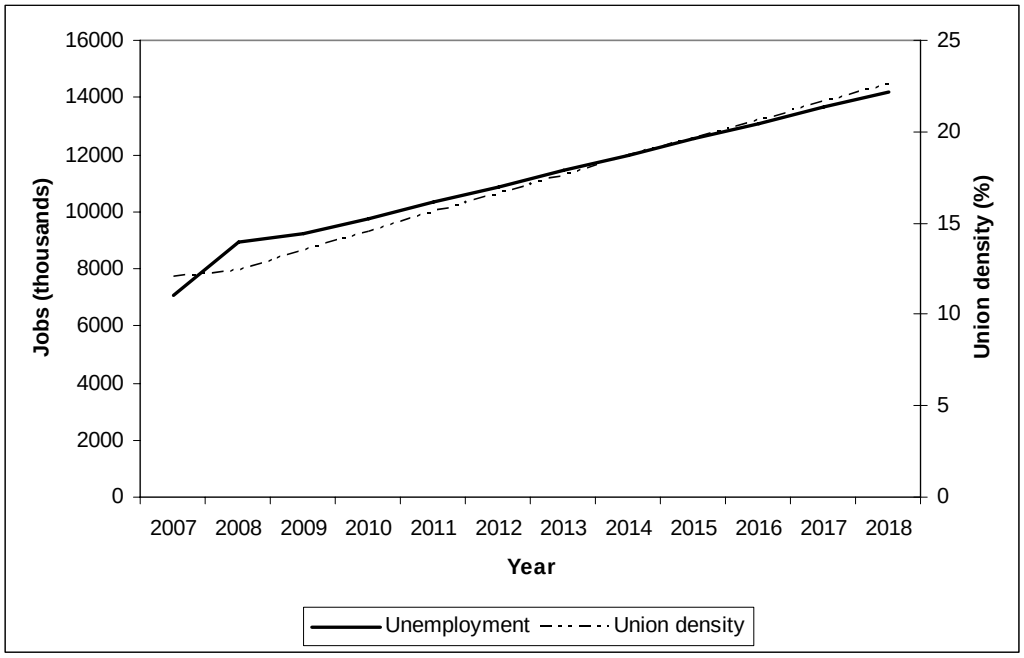

Figure 3
Note: 2007 and 2008 are actual values for both unemployment and union density.