

DURATION AND DISSOLUTION:
THEORY, POLICY AND PRACTICE CONCERNING THE PRESERVATION OF
BARGAINING RELATIONSHIPS

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Given the decline in unionization rates in many countries over the past half century, a great deal of study has been spent on trying to uncover the determinants of these declines. Much of this scholarship in North America has focused on the portions of the unionization process that pertain to the establishment of new bargaining relationships, particularly the certification and first contract stages. This dissertation seeks to move beyond looking at solely the establishment of bargaining relationships to investigate factors that influence their preservation and sustainability. The first chapter undertakes this through an analysis of first contract arbitration (FCA), a policy that is hoped to contribute to the development of lasting bargaining relationships. Using data from nine Canadian provinces, this chapter shows that there are fewer decertifications in the provinces that have an FCA statute than those that do not, which suggests that more bargaining relationships are taking hold in the presence of FCA versus its absence. The second chapter investigates whether employer opposition, as proxied through unfair labor practice filings and FCA applications, affects the duration and dissolution of bargaining relationships beyond the settlement of the first agreement, the farthest point in the process under prior study. This chapter finds that the achievement of a first agreement is no panacea for relationships that begin under turbulent circumstances as relationships that experience early conflict associate with an increased likelihood of dissolution during the representation phase. Additionally, the findings suggest that this “hangover” potentially persists throughout the entire duration of the relationship, suggesting that relationships that experience early conflict may be marred by it. The third and final chapter explores whether third-party interventions, particularly those hypothesized to improve the health of relationships, are effective at preserving bargaining relationships. This chapter finds that agreements settled through third-party intervention, especially mediation, correlate with a better survival experience than dispute resolution mechanisms that take place later in the process. However, it is shown that third-party intervention usage does not induce settlements earlier in the process in subsequent negotiations, a finding one might have expected if the interventions actually improved the health of bargaining relationships.

BIOGRAPHICAL SKETCH

Bradley R. Weinberg was born and raised in Central New York where he attended Marcellus High School and then Hobart College. He graduated magna cum laude from Hobart in 2008 with a Bachelor's Degree in Economics. After Hobart, he traded Geneva, NY for Geneva, Switzerland and went to work at the International Labor Organization (ILO) where he initially served as an intern and then as an Industrial Relations Research Officer in the Social Dialogue Department. Upon his return to the United States, Brad enrolled in the M.S./Ph.D. program at the New York State School of Industrial and Labor Relations at Cornell University. He completed his Master of Science in January 2013 and his Doctor of Philosophy in August 2016. He currently resides in Ottawa, Ontario with his fiancé, Chantal, and his dog, Josie.

To Chantal

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INTRODUCTION

In 2009, Wilma Liebman, then chairwoman of the National Labor Relations Board, delivered a speech to a High-Level Tripartite Meeting on Collective Bargaining at the International Labor Organization in which she deliberated on the state of labor relations in the United States. Focusing on the American system of labor law, she discussed its origination, its subsequent stagnation, and its likelihood for reform. The latter was in reference to the Employee Free Choice Act (EFCA, Bill H.R.1409.IH), a bill first introduced to the U.S. House of Representatives in 2005, that sought to amend the National Labor Relations Act (NLRA) in the following three ways: (1) a card-check mechanism for union certification, (2) first contract arbitration (FCA) for bargaining units unable to obtain a first agreement within certain time limits, and (3) harsher penalties for unfair labor practices committed during organizing drives. In her remarks she stated, “[E]ven in its original form, EFCA does not represent comprehensive labor-law reform. What it represents, rather, is the prospect of an end to the ossification of our law and a logical place to begin, if the aim is to restore the original promise of the National Labor Relations Act” (Liebman, 2009).

The Employee Free Choice Act also represents a logical place to begin this dissertation as it was the initial inspiration for it. While my entrance into the field of industrial and labor relations coincided with its demise due to a Senate filibuster in 2009, I was persuaded by the idea that the absence of a political will to achieve reform did not equate to an absence for its need. Thus, the first chapter of this dissertation was undertaken to bolster the base of research regarding the proposed reforms, which in this case, involved an attempt to investigate first contract arbitration and its goals of fostering lengthy bargaining relationships and deterring misconduct. While EFCA provided the impetus for that chapter, it is through the exploration of “lengthy” bargaining relationships that the overarching theme of this dissertation came to be.

The research question of the first chapter forced me to contend with what constitutes a “lengthy” or “enduring” bargaining relationship and to contemplate the factors or conditions related to the sustainability of bargaining relationships that would allow one to attribute such a label to them. However, in trying to review any existing research on lengthy bargaining relationships, and their possible development, it became quite clear that there was a noticeable lack of empirical study on them. Much of this dearth in research likely stems from a focus, both scholarly and legislatively, on outcomes taking place during the organizing phase of the unionization process, rather than the representation phase when one might study outcomes that pertain to enduring bargaining relationships. Therefore, each of the chapters of this dissertation is connected in that they investigate how theory, policy and/or practice might facilitate the development and the preservation of bargaining relationships, much of which focuses on outcomes that take place during the representation phase of the process, meaning beyond the settlement of the first contract.

The first chapter, “A Quantitative Assessment of the Effect of First Contract Arbitration on Bargaining Relationships”, seeks to examine how first contract arbitration statutes aid in the development of bargaining relationships through its impact on decertifications. It performs this using time-series, cross-sectional analysis with province-year level data from nine Canadian provinces for the period 1970 to 2010. It improves upon extant FCA studies by incorporating the entirety of the industrial relations systems of the provinces that it includes. The vast majority of prior studies only focus on bargaining relationships that either seek access or are granted access to the FCA system, which has been shown to be only a small fraction of the overall number of bargaining relationships (Rose 2006; Johnson 2010). This represents a large shortcoming as it potentially ignores much of the hypothesized effect of these statutes as it is hoped that their mere

presence acts as a deterrent for the misconduct that they seek to address. Thus, this chapter is the first and only study to produce estimates that include any indirect, deterrent effect that may accompany FCA statutes with regard to its goal concerning relationship development. While the use of aggregated data disallows an investigation of the explicit goal of FCA to foster lengthy bargaining relationships, since the duration of individual relationships cannot be observed, it is able to explore whether there are more bargaining relationships taking hold, on aggregate, in the presence of FCA versus in its absence. It also represents the first FCA article to model all of the different types of FCA for a quantitative analysis and to investigate its impact on cultivating bargaining relationships in the presence/absence of card-check certification.

The investigation in Chapter 2, “The Hangover: The Lasting Impact of Early Conflict on the Duration of Bargaining Relationships”, comes quite naturally out of the analysis in the first chapter. The reason that it was hoped that FCA would foster lasting bargaining relationships was because it was assumed that the employer opposition that it was supposed to mitigate was due to the inexperience of the employer in dealing with a union and the concern that collective bargaining might have on his/her organization. It was hoped that by forcing the parties into a “trial marriage” through the imposition of a first contract (or the threat of one), the employer would overcome his/her reservations once under contract. Thus, it was hoped that the first contract would familiarize the parties, normalize collective bargaining and lay the foundation for an enduring bargaining relationship (Weiler 1980). However, as mentioned above, the vast majority of empirical articles on the unionization process examine only through to the achievement of the first contract. While a number of these articles do investigate the influence of employer opposition on the likelihood of success at the certification or first contract stages (or both), the endpoint of analysis at the first contract means that this “trial marriage” hypothesis has

heretofore been inadequately examined. Thus, there is little to no indication of what effect, if any, early conflict might have on the sustainability of bargaining relationships that are able to secure that first contract. This second chapter performs such an inquiry through survival analysis using micro-data on nearly 4,000 bargaining relationships that began in Ontario between 1985 and 2012 including almost 14,000 collective agreements. Specifically, it investigates whether there is a “hangover”, or rather a lasting impact, for relationships that experience conflict during the organizing phase of the unionization process, proxied through unfair labor practice charge and FCA application filings, that impacts their survival experience during the representation phase.

Finally, FCA represents only one form of dispute resolution and, as its name implies, is only available to parties in the first round of bargaining. However, there are numerous other forms of dispute resolution that are available to help relationships overcome a bargaining impasse, none of which face the same restriction to a singular round of bargaining. Some of these dispute resolution mechanisms, namely mediation and conciliation, in which a third-party attempts to facilitate an agreement between the parties but has no power to impose one, is hypothesized to potentially improve the health of bargaining relationships (Devinatz and Budd 1997). However, studies of mediation/conciliation have primarily used the achievement of a settlement during the round in which the intervention is used as the primary outcome of interest. By focusing on the more immediate outcome of the resolution of the current impasse, this literature has thus far neglected the potential effect that these procedures may have on the relationship between the parties and how this might affect future outcomes.

The third and final chapter, “Third-Party Intervention and the Preservation of Bargaining Relationships”, expands the analysis beyond FCA to include all forms of dispute resolution

available to a bargaining relationship and explores their impact on outcomes later than those previously examined by other studies. It seeks to investigate whether dispute resolution mechanisms, and in particular conciliation and mediation, improve the health of relationships, thus contributing to their preservation. It undertakes the analysis in two ways. First, it uses survival analysis on the same micro-data used in Chapter 2 to see how each dispute resolution mechanism correlates with the likelihood of relationship dissolution. Second, it uses dynamic panel models to investigate the state dependence associated with the various stages of the dispute resolution procedure in Ontario to see if the use of third-party intervention pushes the parties to earlier stages of settlement in subsequent rounds of bargaining. Thus, if it is shown that settlements that take place earlier in the process correlate with lower likelihoods of relationship dissolution and that third-party intervention impels the parties to settle agreements at earlier stages in following rounds, then this would provide evidence that third-party intervention does contribute to relationship preservation, potentially in a number of ways.

CHAPTER 1

A QUANTITATIVE ASSESSMENT OF THE EFFECT OF FIRST CONTRACT ARBITRATION ON BARGAINING RELATIONSHIPS

This article investigates first contract arbitration's (FCA) capacity to foster bargaining relationships and deter misconduct by analyzing its effect on decertifications. Using Time-Series Cross Sectional (TSCS) analysis with data from nine Canadian provinces over a four decade period, it shows: (1) FCA correlates with 20 to 37 percent fewer decertifications in provinces that have an FCA provision relative to those that do not; (2) of the various types of FCA, the automatic and fault forms have the most robust effect on decertifications while the mediation-arbitration form may have the largest effect on decertifications; and (3) the effect of FCA is heightened in the presence of card-check certification such that the best results for fostering bargaining relationships may be found in the presence of both policies.

1.1. Introduction

The most recent attempt at labor law reform in the United States, the Employee Free Choice Act (EFCA, Bill H.R.1409.IH), sought to amend the National Labor Relations Act (NLRA) by introducing three changes: (1) a card-check mechanism for union certification, (2) first contract arbitration (FCA), and (3) harsher penalties for violations. The focus of this article is the second of these reforms. By granting access to arbitration in certain first contract situations where the parties are unable to reach a settlement themselves, this amendment was included to address difficulties that newly certified bargaining units experience securing a first collective bargaining agreement. Advocates of FCA claim it will allow newly-certified employees the opportunity to participate in meaningful collective bargaining that will result in a contract, even in the face of a determinedly anti-union employer. Furthermore, proponents hope the presence of a collective agreement will stabilize new bargaining relationships, allowing them to develop and be maintained in the long-term. Opponents of FCA, on the other hand, contend that it will

hinder free collective bargaining and that imposing contracts on parties will not result in long-term bargaining relationships since the agreements were not produced voluntarily.

This study enters the debate on whether FCA can result in the development of bargaining relationships by examining its effect on decertifications. Since EFCA failed to pass the U.S. Senate in 2009 due to a filibuster, there is no FCA in the private sector of the United States and thus, no U.S. data with which to test this relationship. However, FCA has existed in numerous Canadian provinces for decades, as well as the Canadian federal jurisdiction, and this study uses Canadian data to contribute to the FCA debate that is taking place in both countries.

Although there is a moderate amount of research concerning FCA in Canada, there are a number of deficiencies in this area, some of which this study seeks to address. The majority of extant studies restrict their analysis to cases in which the union or employer applies for or receives access to the FCA process. Their results neglect to measure any deterrent effect, in which the parties are compelled to settle the agreement voluntarily out of fear of having one imposed upon them, that FCA might (and is intended to) produce. This is a potentially drastic oversight considering other studies show that the FCA machinery is rarely accessed, suggesting that its effectiveness may rely heavily on the deterrence of employer misconduct (Rose 2006; Johnson 2010). By including the totality of the industrial relations system that falls under provincial labor law, this study accounts for any deterrence of employer misconduct in first contract situations where the FCA machinery is not utilized. Such an approach will hopefully provide a more accurate depiction of the outcomes of FCA since it comprises both the direct and indirect effects of such legislation.

Many of the previous studies also focus on only one province or type of FCA and do not use rigorous statistical analysis to isolate the influence of FCA in the presence of extraneous

factors. This study not only looks at the aggregate effect of FCA on decertifications regardless of the type of FCA, but it is the first to model the different types of FCA for a quantitative analysis. Thus, this is the first study that allows for the comparison of each type of FCA against a base case of a province that lacks an FCA provision. All of this is performed through time-series cross-sectional (TSCS) analysis using Ordinary Least Squares (OLS) estimates and Panel Corrected Standard Errors (PCSEs) on a time-series, provincial-level aggregated dataset of nine Canadian provinces for the period 1970 to 2010.

1.2. Background

Existing empirical studies show that newly certified unions in the United States often have great difficulty securing a first contract (Weiler 1984; Cooke 1985; Pavy 1994; Bronfenbrenner 1994, 1996, 2009; Ferguson 2008). Cumulatively, this vein of research not only highlights that this struggle has persisted for decades, but also that the ability to secure a contract has increasingly deteriorated in recent years. Although the bulk of the first contract literature focuses on the United States, comparable work has been performed on Canada (Solomon 1984, 1985; Forrest 1986; Riddell 2013). Due to the similarity in their industrial relations systems and many shared labor laws, the two countries have faced similar problems in the past (and still do today). While the Canadian studies largely find higher first contract success rates than the U.S. studies, a recent article by Riddell (2013) shows that the first contract success rate has also worsened (in the province of Ontario in this case) in recent years.

This failure to obtain a first contract can occur for a number of reasons, but much of the U.S. literature highlights the effect that employer opposition, measured through unfair labor practice (ULP) charges, has on the achievement of first contracts (Cooke 1985; Bronfenbrenner

1994; Ferguson 2008). Depending upon the study, it is estimated that the filing of a ULP can decrease the chances of obtaining a first contract by as much as 25 to 50 percent. Likewise, the Canadian literature finds a similar correlation between employer misconduct and the reduced likelihood of achieving a first collective agreement (Solomon 1984; Forrest 1986; Bentham 2002; Riddell 2013). While the Canadian studies tend to find a smaller effect of employer ULPs than the American studies, one Canadian study found that actions that would constitute a ULP increased the likelihood of early decertification following the post-certification moratorium or the expiration of an agreement by 46 to 57 percentage points (Bentham 2002).

Many of the unfair labor practice charges in the American context are section 8(a)5 violations of the National Labor Relations Act. Section 8(a)5 places a duty on the employer to bargain in good faith with the union that the employees certify. These violations increased by almost eight times over the period 1955 to 1980, which as mentioned above, occurred within the context of a declining first-contract success rate (Weiler 1984). This duty to bargain in good faith, however, does not mean that a collective agreement must be reached nor does it outlaw “hard bargaining” in which an employer takes strong stances on the issues being negotiated. That being said, it can be very difficult to distinguish between hard bargaining and bad faith bargaining. This combined with the weakness of the penalties for flouting the NLRA means that an employer who is determined to keep his operations nonunion may be able to successfully inhibit a union from reaching a first contract and even rid itself of the union altogether.

An employer may achieve this by using a number of different bargaining strategies to prolong negotiations beyond the one year post-certification moratorium required to decertify a bargaining unit (see Hurd 1996).¹ While some of these strategies may fall within the purview of the law as hard bargaining, the goal of all of them remains to prolong the bargaining process.

¹ In Canada, the post-certification moratorium is either 10 or 12 months depending upon the province.

The longer employers can effectively frustrate the union's attempts to secure a contract, the greater the likelihood that the workers will decertify the union since they will be unable to effectuate the changes in the terms and conditions of employment that led them to organize in the first place. As Paul Weiler noted:

“Even if all workers were able to make a genuinely uncoerced choice about union representation, however, the battle would be only half over. Winning an NLRB-sponsored election gives the union no more than the right to sit across the bargaining table from the employer. Only after the union achieves a first contract will it be established within the plant and will its members truly be able to judge the value of collective bargaining in the day-to-day lives” (Weiler 1984, p. 352).

It is due to this employer resistance to unionization, which one author estimates to be twice as high in first contract negotiations (Rose 2006), and the recognition that a first contract is necessary for the union to establish itself that calls for the first contract arbitration provision in the Employee Free Choice Act emanated in the United States.

Even though the system of industrial relations in Canada is provincial (as opposed to national, like in the U.S), Canadian labor law is largely based upon the NLRA, such that it adheres to the same model of a free system of collective bargaining with the duty to bargain in good faith. Numerous researchers have used Canada as a comparison to the United States due to the similarities in their systems of industrial relations, but also due to the likeness of their economies, labor markets and institutions (Colvin 2006; Kuhn and Riddell 2010). These similarities mean that an analysis of Canadian data may be able to inform the policy of both countries (Johnson 2010).

As previously discussed, employer resistance affects the Canadian system of industrial relations as much as the American system. Research shows that Canadian management shares the same anti-union sentiments as their American counterparts (see Taras 1997 for a review). Furthermore, the same difficulty of differentiating hard bargaining from illegal bad faith

bargaining is present in the Canadian context (Patterson 1990). Thus, amid this background of employer opposition, a number of caustic strikes in the 1970s and 1980s prompted provinces such as British Columbia and Ontario to pass FCA provisions to avoid the cost that such occurrences inflicted not only on the parties involved, but society at large (Weiler 1980; Backhouse 1980). However, unlike in the United States, the provincial jurisdiction of labor law and the parliamentary system in Canada allows for much more experimentation with new and innovative labor laws, such as FCA, such that legislation that is enacted and proven to be effective in one province often spreads to others.

1.3. Theory

The longer employers can effectively frustrate unions' attempts to secure a contract, the greater the likelihood that workers will decertify their unions. Not only will delay possibly deny employees the experience of seeing the value in collective bargaining, but the inability to influence the terms and conditions of work that they may have sought to change through organizing could lead to increased worker frustration and dissatisfaction with the union and, ultimately, decertification. Furthermore, delay allows increased time for employee turnover (whether it is natural or employer-induced), meaning employees who were instrumental in voting the union into the workplace may no longer be part of the bargaining unit. Such a change to the composition of the bargaining unit may make it more susceptible to decertification once the moratorium has expired. This employer opposition may preclude the establishment of a lasting bargaining relationship. However, if FCA is present then workers have an avenue to circumvent such employer opposition and have the ability to secure a collective contract. This will provide workers with a better idea of what it is like to work under a collective bargaining agreement and

this experience, although not a guarantee that the workers won't decertify, should lessen the likelihood of decertification. This assumption holds unless such imposed contracts are, as FCA opponents claim, substantially unsatisfactory that the workers will subsequently decertify anyways. Furthermore, due to the deterrence effect of the FCA provisions, even if the union does not access the FCA process, the employer may still be compelled to settle an agreement out of fear of having one imposed by a third party. Therefore, if the number of decertifications declines following the passage of an FCA provision then this implies that bargaining relationships are taking hold. This would contradict the claims of opponents of FCA since under their pretenses, one would expect an increase or no effect.

Furthermore, by using all of the decertifications of the included provinces, comprising both the cases that access the system of FCA and those that do not, the results of this study will incorporate both the direct effects of such provisions and any indirect, deterrent effects. Johnson (2010) and Riddell (2013) are the only other quantitative studies to undertake such an analysis that may encompass this deterrence effect by also being inclusive of the entirety of the industrial relations systems. Both of those studies investigated different goals and outcomes of FCA though, whereas this study represents the first concerning its effect on bargaining relationships. It is this gap in the literature that the present study seeks to fill.

While this study is performed in the interest of the more general goal of FCA to foster *enduring* bargaining relationships, the use of aggregated data prohibits any direct examination of the length of bargaining relationships. However, the analysis of the effect of FCA provisions on decertifications allows one to see whether it reduces the incidence of *early* decertification and therefore correlates with more bargaining relationships, on aggregate, which implies longer

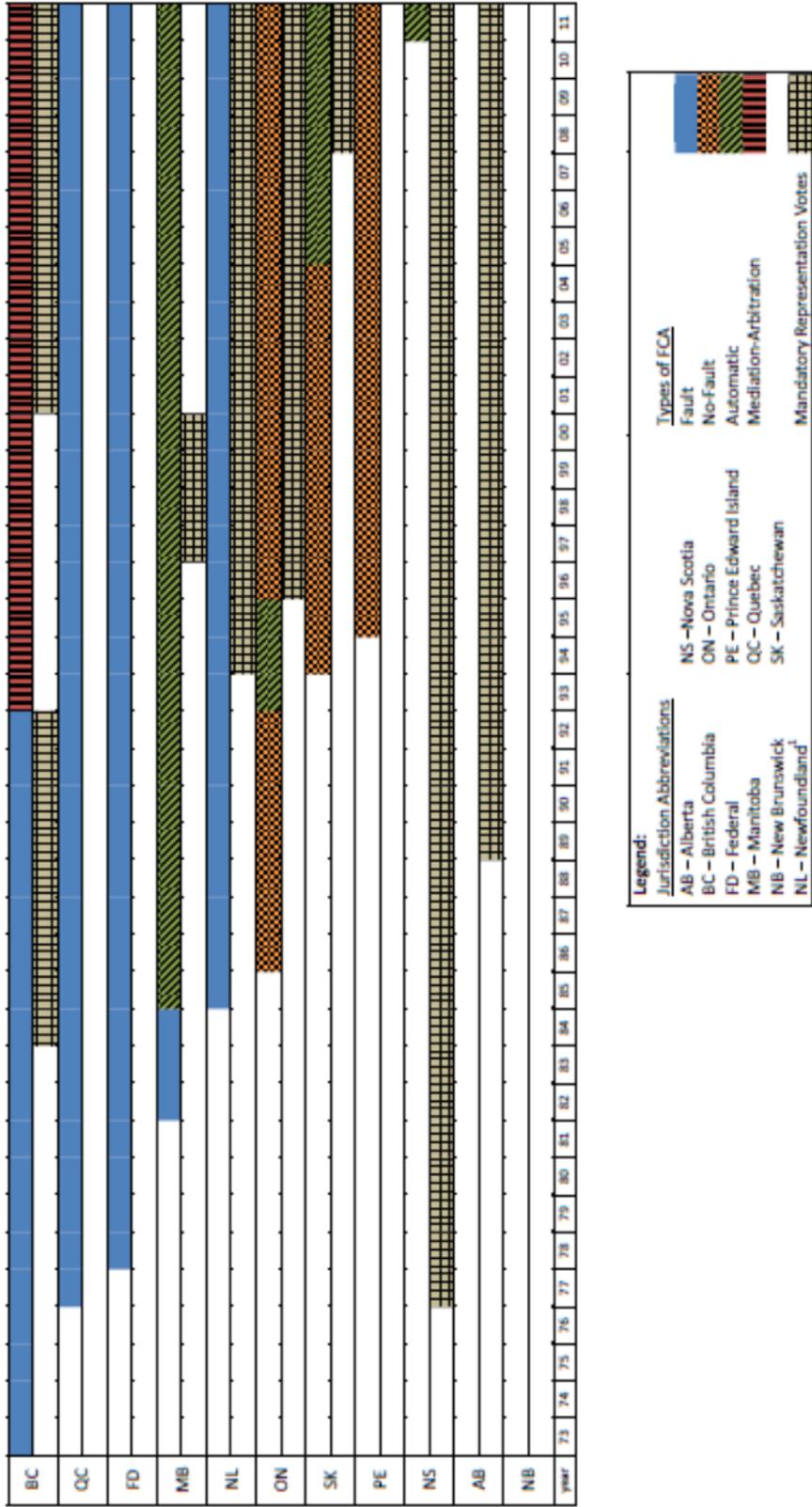
bargaining relationships in its presence versus its absence.² Thus, by performing a multi-jurisdictional quantitative analysis of the effect of FCA on decertifications, as a proxy for bargaining relationships, this study helps us to understand how cultivating lengthy bargaining relationships might be achieved.

1.4. First Contract Arbitration

First contract arbitration, depending upon its form, provides an avenue for workers (or management in some cases) to apply for arbitration of a first agreement under a number of circumstances. Once an application for FCA is accepted, all forms of work stoppages (i.e. strikes or lock-outs) must cease and an arbitrator, or the labor board whose jurisdiction the application falls under, can impose the terms and conditions of the collective agreement that the parties are unable to settle. This imposed agreement may be for a duration of one to three years depending on the jurisdiction. Currently, nine out of the eleven jurisdictions in Canada have FCA provisions in their system of labor law. They include: British Columbia (adopted in 1973), Quebec (1977), the Federal jurisdiction (1978), Manitoba (1982), Newfoundland (1985), Ontario (1986), Saskatchewan (1994), Prince Edward Island (1995) and, most recently, Nova Scotia (2011). The only provinces without FCA provisions are Alberta and New Brunswick.

² Since only newly-certified bargaining units have access to the system of FCA, it is likely that only decertification with regard to such units will be affected by FCA rather than long established bargaining relationships. Due to the aggregated data though, any decertifications taking place with regard to long-term bargaining relationships will be included in the decertification totals. This problem may be marginal, however, as previous research has indicated that decertifications tend to be concentrated in newly-certified bargaining units anyways (see Krislov 1965, Anderson et al. 1980 for the United States; Chafetz and Fraser 1979 for Canada).

Figure 1: Timeline of FCA and Mandatory Representation Vote Legislation in the Canadian Provinces



¹ Newfoundland recently switched back to allowing card-check certification and switched to automatic FCA in June 2012.

1.4.1. Types of FCA

There are four different types of FCA: “fault”, “no fault”, “automatic” and “mediation-intensive/mediation-arbitration”. For a timeline of when the different types of FCA were enacted in the Canadian provinces, see Figure 1 above.

As its name implies, the “fault” or “exceptional remedy” model seeks to establish that one of the parties acted in bad faith and is responsible for the breakdown of bargaining. It is viewed as being accessible only as a remedy for ULPs whose occurrence precludes the possibility of constructive bargaining and settlement to take place. Therefore, this form has the most stringent criteria for access since it must be proven that one party, or both, committed such activity. Additionally, this form typically has a double screen mechanism in which the Minister of Labour refers applications to the Labour Board which subsequently decides whether or not to issue a direction to arbitration.³

The second type of FCA, “no-fault”, places fewer restrictions on access to arbitration. This model recognizes that negotiations may breakdown regardless of bad faith conduct and thus, seeks to move away from the use of arbitration as a punishment against one of the parties. Under this variation, if it is shown that one of the parties violated any one of a set of criteria as set out in the provision, which doesn’t necessarily amount to acting in bad faith, then the Labour Board may provide a direction to arbitration.

The third form, “automatic” FCA, provides the greatest ease of access in that a direction to arbitration may be given if: (1) a statutory-defined minimum amount of time has elapsed since certification and (2) the Labour Board believes that conciliation will not produce a settlement.

There are no criteria that need to be shown to have been violated by either party in order for

³ Although this type of FCA is found in Quebec, it differs slightly in that only the Minister of Labour acts as a single-screen.

arbitration to commence. The EFCA proposed this form of FCA, with the only major difference being that the EFCA provision lacked the screening role performed by the Labour Board. In Canada, the provincial Labour Boards may refuse to direct a case to arbitration, such as if it believes that a settlement can still be produced through conciliation, but under EFCA, an application would move directly to arbitration once the time period had elapsed.

The last type, “mediation-intensive” or “mediation-arbitration” FCA, seeks to use FCA not as a replacement for bargaining, but rather as a facilitator of it. Under this system, an application is accepted if it can be shown that negotiations have broken down and a strike vote has passed. With these criteria met, a mediator is assigned to help the parties settle any outstanding issues in their negotiations for twenty days. If the parties are unable to produce a settlement within this period, the mediator submits a recommendation to the associate chair of the Labour Board. This recommendation can be for further mediation, arbitration or allowing the parties to resort to a work stoppage. Like the no-fault form, the Labour Board adheres to a number of criteria in determining whether or not to give a direction to arbitration under this form of FCA.

1.4.2. The Goals of FCA

Perhaps the facts that (1) no province has ever completely overturned FCA, (2) opponents in many provinces no longer seek to remove it from the law books, and (3) it has become an accepted part of the industrial relations systems of those provinces, provides some evidence that FCA is a success. However, the absence of will to overturn any FCA provisions could also point to its lack of success if opponents believe them to be sufficiently ineffective that it does not warrant expending the effort to have them repealed. Analyzing the success of FCA can be

difficult because there are a number of ways in which success may be measured. For example, the number of first agreements produced in the process, the number of subsequent agreements, the quality of the agreements, and the number of first contract work stoppages ended/evaded could all realistically be used as metrics. However, it seems reasonable to judge the merits of FCA based upon the goals that were envisioned at its outset and whether or not these are met. As one can see from the descriptions of the types of FCA above, different models may encompass slightly different goals, but regardless of the type, there are four goals that are paramount to these provisions. They include: (1) ending first contract work stoppages, (2) allowing newly certified unions to obtain a first contract, (3) familiarizing the parties such that a lasting bargaining relationship may be developed, and (4) deterring misconduct that precludes the settlement of a first agreement and the creation of a bargaining relationship. The following subsections elaborate on the latter two goals respectively since they are the focus of this study and each subsection surveys the FCA literature to assess whether FCA may be judged as a success or failure in light of them.⁴

Fostering a bargaining relationship

An AFL-CIO survey from 1979-1981 showed that employers with no previous union experience were much less likely to sign an initial collective bargaining agreement and to subsequently renew such agreements than employers who had previous experience with unions at other locations of their business (McDonald Memorandum, cited in Weiler 1984, p. 354). Those who designed the first FCA model in B.C. assumed what the above survey showed: that employers were resisting bargaining due to inexperience with unions. It was hoped that if a contract was imposed on a resistant employer then this “trial marriage” would familiarize the

⁴ For an extensive review of all four of the goals of FCA, see Weinberg (2013).

parties with collective bargaining and would provide the groundwork for a lasting bargaining relationship. Despite having this goal at the outset, one of the creators of FCA, Paul Weiler, became skeptical of it a few years after enactment since every case in which a contract was imposed resulted in decertification (Weiler 1980). McDonald's (1987) analysis of the same period led him to conclude that Weiler's "'trial marriage' concept of first contract arbitration generally ended in divorce" (McDonald 1987, p. 21). However, later studies question Weiler's skepticism for various reasons, including the small population from which Weiler drew his conclusions and the shortcomings of the fault form of FCA (McDonald 1987; Sexton 1987a). Indeed, these shortcomings may explain why many provinces subsequently switched to or enacted other forms of FCA.

A number of studies empirically examine whether FCA facilitates the creation of lasting bargaining relationships, but due to the lack of agreement on what constitutes a "lasting" bargaining relationship, the way in which this is measured varies across studies. The evidence suggests that the automatic system found in Manitoba and the mediation-arbitration system in British Columbia are the most successful at fostering bargaining relationships when measured by the number of cases remaining active and/or the magnitude of the decertification rate (Korpesho 1986; Sexton 1987a; Black and Hosea 1994; Slinn and Hurd 2011 for Manitoba; Vipond 2010; Slinn and Hurd 2011 for British Columbia), but this may also be due to the lack of research on other provinces/forms of FCA.⁵ Furthermore, the more recent studies on British Columbia suggest that the mediation-arbitration form of FCA produces better outcomes with regard to this goal than the preceding studies that analyzed the fault system in B.C. (Vipond 2010; Slinn and Hurd 2011 for the mediation arbitration form; Cleveland 1987; O'Brien 2001 for the fault form).

⁵ See Slinn and Hurd (2011) on Ontario and Sexton (1987b) and Marotte and Paré (2002) on Quebec for studies that include/focus on other provinces.

Lastly, one finding that pervades most of these studies is that the bargaining relationship is more likely to be enduring if the initial contract is settled voluntarily by the parties, rather than imposed by the labor board. This is hypothesized to be the case in that if the parties are able to settle the first agreement then it would seem more likely that they would be able to settle subsequent agreements. It is also hypothesized to result in better outcomes since a voluntarily settled agreement is more likely to be accepted by the parties than one that is forced upon them.

Acting as a deterrent

The final goal of FCA provisions is to encourage the voluntary settlement of first agreements by deterring bad faith conduct. Imposed agreements should not be so overly attractive to unions as to induce their reliance on the process, but they must be sufficiently unattractive to management to deter employers from evading their duty to bargain in good faith. This led opponents to complain that FCA will (1) result in overreliance on the procedure, thereby inhibiting free collective bargaining and (2) result in contracts that will be harmful to business (Hoh 2010, p. 52). Neither of these fears are substantiated by evidence. Researchers highlight that while FCA is available to approximately 80 percent of the Canadian workforce, it is very rarely accessed such that the vast majority of first contracts are settled voluntarily (Rose 2006; Johnson 2010). This has led many to conclude that FCA does not inhibit free collective bargaining, but rather encourages it (Friedman and Wozniak 1996; Voos 1997; Johnson 2010).

The evidence also contradicts the second claim in that imposed contracts were initially viewed as too conservative so as not to make collective bargaining attractive enough (McDonald 1987; Patterson 1990; Voos 1997). Furthermore, one study of businesses that had agreements imposed upon them between 2001 and 2007 in Manitoba showed that those businesses had a

higher survival rate than the overall business survival rate at the peak of a boom cycle during the period of analysis (Eisenbrey and Eagan-Van Meter 2010, pp. 2-3). Lastly, employers represent a substantial proportion of the applications for FCA in a number of provinces, which would be counterintuitive if employers actually believed that the process would put their businesses in danger of closure.

The research regarding the infrequency with which the process is accessed and the rarity of imposed contracts provides some preliminary evidence that FCA does not interfere with free collective bargaining nor hinder business, but there is no rigorous statistical analysis of the deterrence effect. Due to the rarity with which parties are granted access to FCA, one might hypothesize that the majority of the impact of FCA provisions arises through deterrence. That being said, the existence of a deterrent effect cannot be separated from the other goals of FCA as the provisions must attain some modicum of achievement of those goals if the threat of FCA is to be credible enough to induce employers to cease resisting unions. Currently, there are only two studies that explicitly attempt to identify and examine the deterrent effect of FCA provisions, but neither does so with regard to the goal of fostering bargaining relationships (Cleveland 1982; Walker 1987). Thus, the identification of a deterrent effect and an analysis of the factors that play a role in its existence and magnitude present a solid area for future research, the findings of which would be a vital contribution to the debate over the effectiveness of FCA.

1.5. The Models

Decertifications may be used as a measure for bargaining relationships, since it is clear that if a union is decertified then a bargaining relationship ceases to exist. Thus, the number of decertifications is used to construct the dependent variable in the following models:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \beta_3 W_{it} + T_t + \alpha_i + \epsilon_{it} \quad (1)$$

$$Y_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 Z_{it} + \beta_3 W_{it} + T_t + \alpha_i + \epsilon_{it} \quad (2)$$

Y_{it} is a variable that proxies for the existence of bargaining relationships by using the log number of decertifications divided by the provincial unionized workforce for province i in year t . This dependent variable is divided by the unionized workforce to scale or weigh the values so that the larger provinces don't over-influence the outcomes of the regressions and the natural log is taken to normalize its distribution.⁶ In the Simple FCA Model of equation (1), X_{it} is a dummy variable that measures the availability of FCA in province i in year t , whereas in the FCA Type Model of equation (2), A_{it} is a vector of variables that measures the availability and the type of FCA that is operating in province i in year t . Thus, the latter model includes dummy variables for each of the fault, no-fault, automatic and mediation-arbitration forms of FCA. Z_{it} is a dummy variable that measures the presence of mandatory representation vote legislation in province i in year t . This variable takes the value 1 when it is statutorily required that unions be certified through a representation vote and the value 0 if unions are able to certify through card-check. The vector W_{it} includes environmental control variables that may influence the number of decertifications that occur in province i in year t . This includes the number of unfair labor practice complaints received, which serves as a proxy for the level of employer opposition towards organized labor.⁷

⁶ There are other potential measures that could be used to scale the data, including the number of certifications granted, which was used by Johnson (2010). It is not entirely clear whether one should be preferred to the other. The unionized workforce was preferred to the number of certifications granted in this study because the number of certifications that are granted in a year can fluctuate rather drastically, whereas the size of the unionized workforce is a much more stable measure. I believe that this stability provides a better year-to-year comparison from which to judge the effect of FCA on decertifications. Nevertheless, I also performed the same regressions in this study using the log number of decertifications divided by the number of certifications granted as the dependent variable, the results of which were largely similar to those presented below, albeit slightly better. These results may be obtained from the author upon request.

⁷ Although often used as a proxy for employer opposition, ULP charges is admittedly an imperfect measure. ULPs may be filed against either the employer or the union and if they are to serve as a proxy for employer resistance then it would be ideal to only include the former. However, only four provinces separately tabulate employer and

It also includes a number of variables that serve to measure the economic environment for organized labor, including the unemployment, employment, inflation, and provincial union density rates.⁸ T_t represents variables that account for unobserved change over time, which depending upon the specification, takes the form of time trend(s), year fixed effects, or both. α_i represents province fixed effects, which are included to account for any unobservable characteristics across the Canadian provinces that are not covered by the other regressors. β_0 and ε_{it} are a constant term and the error term for province i in year t respectively.

With regard to the control variables, there are some interesting theoretical implications for the mandatory representation vote legislation variable. Previous research on mandatory representation vote legislation shows that it adversely affects union certification success by increasing the opportunity and effectiveness of management opposition due to a longer certification process and heightened susceptibility to employer coercion (Johnson 2002, Riddell 2004). Indeed, one study estimated that management resistance was twice as effective in the presence of mandatory vote legislation as in its absence (Riddell 2004). However, there is less research on the effect that mandatory vote laws may have on decertifications. If employer resistance is more frequent and effective under such laws then this may continue into later stages of the process beyond certification and result in more decertifications. Bentham (2002) not only found employer resistance to be more pronounced at latter stages of the process, but also found that the likelihood of early decertification increased by as much as 41 percentage points when a

union ULPs in their annual reports, none of which do it for the entire period under study. Thus, the totality of filed ULPs is used in this study to try to maintain comparability across provinces. This means that ULPs filed against unions, which are mostly duty of fair representation complaints, are included in these totals. This results in some overstatement of the amount of employer opposition. However, using ULPs also likely underestimates employer opposition since it cannot account for employer resistance through legal means or ULPs that are committed by employers, but are never reported by the union (perhaps for strategic reasons).

⁸ For a review of the theoretical implications of the effect of these variables on decertifications, see Anderson et al (1980).

vote was required. Additionally, of the 29 cases of early decertification in her sample, 65 percent of them involved a certification vote. It seems that employers are more able to effectively resist union organizing campaigns in mandatory vote regimes (as is also found by Riddell 2001) and that this resistance continues into the contract campaign when the union is able to successfully overcome such resistance at the certification stage. This legislation could also indicate a period of union weakness in which the political climate is unfavorable towards organized labor, which may embolden employer resistance. Alternatively, decertifications could decrease if mandatory vote legislation leads to weaker bargaining units failing to obtain certification. Thus, only bargaining units with strong employee support would obtain certification, which might also reduce employer opposition in that the certification may be demonstrative of that support. Similarly, if unions are aware that certification is more difficult under mandatory vote legislation, then they might be more strategic in deciding where to spend their resources and organize, which might produce a similar result.

There are a number of shortcomings that must be recognized with these models. The first shortcoming is that a bargaining relationship may end for a variety of reasons, including the closure of the business, a change of ownership, or the abandonment of the unit by the union, and these cannot be accounted for in these models. Nevertheless, all of the articles reviewed, except for one⁹, found that bargaining relationships ended due to decertification more than business closure/changing ownership when examining either the reason for the disposition of applications or the subsequent outcomes beyond the first contract. Secondly, provinces often enact labor law reform packages that affect numerous sections of the labor code. Therefore, the legislative variables may incorporate the effects of other changes to the labor code, the most pertinent of

⁹ This study, Sexton (1987b), found the same number of business closures as decertifications when it examined the reasons for the disposition of FCA applications. However, it also found that the number of decertifications exceeded the number of business closures when it looked at the subsequent outcomes beyond the first contract.

which to this analysis, are those that affect decertification.¹⁰ Unfortunately, the effects of these changes cannot be disentangled in this analysis. This is not always the case though as some provinces have passed reforms of their decertification procedures in bills that did not affect the certification or bargaining process. This will introduce some error into my analysis as singular changes to the decertification procedure will be unaccounted for, but these changes occur less frequently than those that accompany a larger law reform package. Despite these shortcomings, using all of the decertifications from the included provinces to incorporate any deterrent effects of FCA represents a marked improvement over its predecessors and will hopefully give us a better indication of the overall effect that FCA has on fostering bargaining relationships.

1.6. Data and Methodology

The principal data concerning certifications, decertifications, first contract arbitration and unfair labor practices was collected for each of the provinces from the respective provincial labor board *Annual Reports*.^{11,12} When unable to acquire the necessary annual reports, the relevant labor board (or government agency in the case of Quebec) was contacted, many of which

¹⁰ These possibly include changes to the threshold of support needed to induce a decertification election, the window of time for which a decertification application may be filed, and/or the length of the time bar after a successful decertification from which a trade union may reapply for certification. Initially, I intended to incorporate these differences into the analysis, but further research revealed that the variation in decertification procedures across provinces is so minor that their inclusion would likely not affect the results.

¹¹ While some of the provinces report on a calendar year basis, others report by fiscal year, which is problematic in that many of the general statistics used as control variables are reported by calendar year. In order to align the board statistics that reported by fiscal year with the general statistics, the observation year in the dataset pertains to the fiscal year that comprises the majority of the calendar year. For example, the information for the fiscal year April 1, 1995 to March 31, 1996 is entered into the dataset as 1995.

¹² These annual reports include cases in the public sector that fall under provincial labour law. While it could be argued that these cases should be excluded for a number of reasons, including the existence of special legislation pertaining to dispute resolution within that sector and the lesser prevalence of employer opposition in the public sector, this is not possible due to the aggregation of the data. However, previous research on FCA has shown that the influence of such provisions do extend beyond the private sector (Johnson 2010), such that their inclusion may still be warranted. This does potentially harm the applicability to the United States though as the inclusion of the public sector is likely to overstate the effect that FCA might have when compared to only the private sector. Thus, if it were transplanted to the U.S. then the effect may be more muted since the EFCA would have only applied to the U.S. private sector.

responded and provided the missing data that was requested. When the labor board failed to respond or was unable to produce the data in question, Martinello (1996a), a dataset with certification, decertification and FCA statistics from the same labor board *Annual Reports* covering the years 1949-1993, was used to obtain missing data as a last resort. The federal jurisdiction is omitted from the dataset due to the difficulty with obtaining control variable statistics.¹³ Additionally, the smallest Canadian province, Prince Edward Island, and the three territories in Canada are omitted from the dataset due to difficulties with obtaining data, but these four jurisdictions are sparsely populated and account for less than one percent of the overall Canadian population. With these omissions, this data set allows for the investigation of FCA legislation covering approximately 90 percent of the Canadian population for the period 1970 to 2010.

¹³ Since the workers that fall under the federal jurisdiction (less than 10 percent of the overall Canadian workforce) is determined by industry, rather than geographical area, a number of the control variables are not calculated with regard to this jurisdiction. Furthermore, the industries that are covered by the Canada Labour Code, such as banking, telecommunications, airlines and railways, are systematically different than the industries that are covered by provincial labor legislation, which further warrants its exclusion.

All of the data used for control variables are taken from Canadian government sources or other scholarly articles, the former of which include the provincial unemployment rates, employment rates, consumer price indices¹⁴, union density rates¹⁵ and unionized workforce sizes. The data for mandatory representation vote legislation is taken from Johnson (2004), which recounts the changes in this type of legislation through 2001. The data for the FCA dummy variables are taken from Johnson (2010) and Slinn and Hurd (2011) and were cross-checked with the Labor Board annual reports where possible. Any changes in FCA or mandatory vote legislation that occurred since the publication of those articles were added to the data. For these legislative variables, the date that the legislation was enacted is noted and if this comprised the majority of the calendar year in which it was enacted then it was coded as a 1 for that year, otherwise it takes the value 1 in the following year.¹⁶ For a table of summary statistics and correlations of the variables, see Table 1.1 above.

Due to the form of the data and the model outlined above, time-series cross-sectional (TSCS) analysis is used to investigate the effect of FCA on decertifications as a proxy for bargaining relationships. Ordinary least squares is known to produce consistent estimates of parameters in TSCS models, but in the presence of groupwise heteroskedasticity,

¹⁴ The provincial CPI rate was not collected prior to 1978 and thus, as is found in previous studies (see Martinello 1996b), the national CPI rate is used for all of the provinces in the years prior to that date.

¹⁵ The provincial union density rate is derived from two sources: the Corporations and Labour Unions Returns Act (CALURA) survey for the years prior to 1996 and the Labour Force Survey (LFS) from 1997 until 2010. The use of both CALURA and LFS estimates presents a number of problems: (1) the comparability between the two surveys and (2) there is no union density rate for the year 1996 as this was between the termination of CALURA and the start of the LFS. Regarding the former problem, the CALURA data has been revised to make them more comparable to the LFS data, but the CALURA estimates tend to be slightly higher due to survey design and the definition of who constitutes a union employee (see Akyeampong 2004). Regarding the latter problem, rather than omit 1996, I averaged the union density rates from the year before and after 1996 and inserted those as the 1996 values for each of the provinces. The same problems exist for the provincial unionized workforce data as they originate from the same sources.

¹⁶ This discrepancy likely introduces some measurement error into the analysis. When legislation is passed, it may not take effect until the start of the following calendar year, which may be at odds with the statistics provided by annual reports that report on a fiscal year basis. However, as noted above, only some of the observations are based on the fiscal year.

contemporaneous correlation and/or serial correlation, OLS standard errors will be inaccurate (Beck and Katz 1995). The presence of these respective issues can be detected through post-estimation tests based upon the residuals of OLS estimation. The presence of any or all of these three problems necessitates a transformation of the error variance-covariance matrix to produce accurate standard errors. Two methods have historically been used to analyze TSCS data: the Parks (1967) method which uses Feasible Generalized Least Squares (FGLS) estimation and the Beck and Katz (1995) method which uses panel-corrected standard errors (PCSEs). Beck and Katz (1995) show that, compared to their method, FGLS has the potential to vastly understate the variability of estimated coefficients and in turn produce unrealistically small standard errors.¹⁷ Therefore, based on their results, I decided to use the more conservative PCSE method of calculating standard errors to analyze the data.¹⁸ This will hopefully provide a truer indication of whether FCA has a statistically significant effect on decertifications, and by extension, bargaining relationships.

1.7. Results

Table 1.2 presents all of the results for the Simple FCA Model in which the main explanatory variable measures the presence/absence of any type of FCA. OLS estimation and

¹⁷ Beck and Katz (1995) showed that this problem arises when the number of time periods, T , is remotely close to the number of units, N . Using Monte Carlo simulations in which they varied the ratio between T and N , they found that the use of FGLS “may understate variability by between 50% and 300% *in practical research situations*” (Beck and Katz 1995, p. 634). When they set the units and time periods to 10 and 40 respectively, which, excluding missing data, represents approximately the same ratio as the data set used in this study, they found that the FGLS standard errors were 30 percent overconfident and produced 95 percent confidence intervals that contained the true value of the coefficient only 87 percent of the time (Beck and Katz 1995, p. 639). Conversely, simulations on the same variations of N and T using OLS parameters with PCSEs always resulted in standard errors within 10 percent of the true variability of the coefficient and in many cases were only off by a few percent (*Ibid*, p. 641).

¹⁸ Ideally, I would have like to have produced estimates and standard errors using both the Beck and Katz (1995) PCSE method and the Parks (1967) FGLS method to be able to compare the results. Unfortunately, balanced panels are necessary to run FGLS, which due to missing data from a number of provinces, means I am unable to perform such a method. However, based upon the results presented in the Beck and Katz (1995) article, I feel comfortable performing just the PCSE method as it is the more conservative of the two.

post-estimation diagnostic tests indicate that the OLS errors exhibit both groupwise heteroskedasticity and contemporaneous correlation, but no serial correlation. Thus, I calculated the panel corrected standard error (PCSEs) described in the methodology section in order to correct the error structure to produce accurate standard errors. The parameters of the OLS estimation are presented in Table 1.2 and the PCSEs are displayed in the parentheses found below each coefficient.

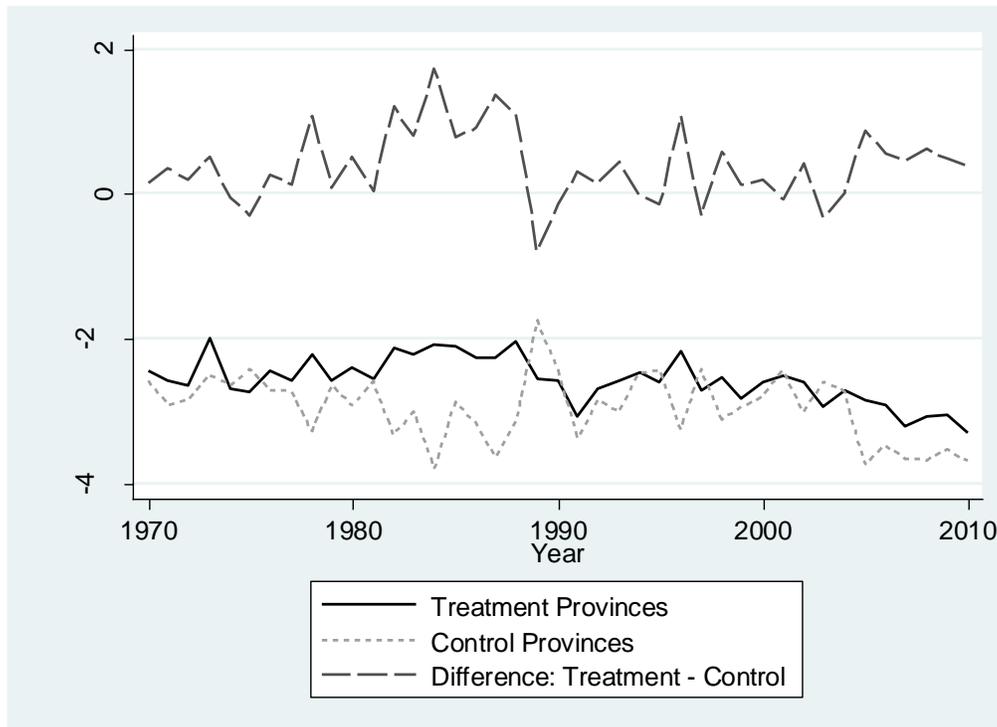
	(1)	(2)	(3)	(4)	(5)
	Common Linear Trend	Common Quadratic Trend	Year Fixed Effects	Province Linear Trends	Province Quadratic Trends
First Contract Arbitration	-0.222* (0.124)	-0.301** (0.124)	-0.288** (0.128)	-0.446*** (0.154)	-0.463*** (0.179)
Mandatory Rep. Vote	0.487*** (0.111)	0.457*** (0.112)	0.513*** (0.123)	0.425*** (0.129)	0.431*** (0.136)
ULPs/Union Workforce	0.261*** (0.093)	0.169* (0.093)	0.211** (0.101)	0.386*** (0.135)	0.339** (0.170)
Unemployment Rate	-0.033 (0.028)	-0.078*** (0.027)	-0.110** (0.044)	-0.175*** (0.063)	-0.181*** (0.069)
Employment Rate	0.001 (0.022)	-0.031 (0.022)	-0.025 (0.033)	-0.056 (0.057)	-0.072 (0.065)
CPI Rate	0.009 (0.013)	-0.011 (0.013)	-0.029 (0.026)	-0.028 (0.027)	-0.054 (0.041)
Union Density Rate	0.035*** (0.013)	0.030** (0.013)	0.036*** (0.014)	0.011 (0.020)	0.015 (0.024)
Constant	-3.347*** (1.299)	-1.172 (1.286)	1.061 (3.617)	1.738 (3.655)	3.345 (3.860)
Province Fixed Effects	Yes***	Yes***	Yes***	Yes***	Yes***
Time Trend	Yes	Yes**	No	No	No
Quadratic Time Trend	No	Yes***	No	No	No
Time Fixed Effects	No	No	Yes***	Yes***	Yes***
Linear Province Trend	No	No	No	Yes***	Yes*
Quadratic Province Trend	No	No	No	No	Yes
Observations	344	344	344	344	344
R-squared	0.483	0.505	0.555	0.582	0.594

Panel corrected standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

The coefficient on the FCA variable is statistically significant in every specification and the significance increases with the specifications that control more flexibly for variation over time. When only a common linear time trend is used, FCA correlates with 20 percent fewer decertifications in the provinces that have a provision than provinces that do not have one. When a common quadratic time trend or year fixed effects are included in specifications (2) and (3), this increases to 26 and 25 percent fewer decertifications respectively. The inclusion of the province-specific time trends in specifications (4) and (5) may be used as a robustness check and their use allows treatment and control provinces to follow different trends (Angrist and Pischke 2009). The change in the magnitude of the estimated effect of FCA exhibited when province-specific time trends are included points towards either imprecision in the estimation of the previous specifications or the conflation of existing trends, either before or after enactment, with the effect of FCA. Figure 2 shows the average values of the dependent variable for the treatment and control provinces respectively and the difference between the two. It shows that the number of decertifications in provinces that enacted FCA was increasing slightly, relative to the control provinces, during the first half of the period under study, which coincides with when many of the FCA provisions were initially enacted. This difference in pre-existing trends is unaccounted for in the absence of the province-specific time trends, which leads the other specifications to underestimate the effect that FCA has on decertifications. Therefore, when the province-specific time trends are included in the estimation, the presence of FCA correlates with approximately 36 to 37 percent fewer decertifications.

Figure 2. Difference in Log Decertifications of Treatment vs. Control Provinces



The expectation that provinces that experience higher levels of decertifications may exhibit a greater propensity to enact FCA and the finding that treatment provinces were experiencing higher levels of decertifications relative to control provinces may call the exogeneity of FCA provisions into question. To test this I employed the same informal test of exogeneity that Johnson (2010) employs in her paper in which a dummy variable for the two years prior to the passage of an FCA provision is included in the specifications for the Simple FCA Model. The results of this test are presented in Table 1.3, which shows that the coefficient on the two year dummy variable is statistically insignificant in all specifications and it is positive in three out of the five regressions.¹⁹ Furthermore, all of the coefficients for the FCA variable remain negative and all are statistically significant, except for one. This provides some evidence,

¹⁹ The negative coefficient on the two years prior to FCA enactment dummy variable in the specifications that include province-specific time trends may seem at odds with above, but since this only controls for the two years prior to enactment, it does not cover the entirety of the pre-existing trends for the provinces.

both through the qualitative results of the test (the directions of the coefficients) and the quantitative results (the statistical significance of the coefficients), that FCA is exogenous. Therefore, it would appear that the introduction of an FCA provision is related to the decrease in decertifications in those provinces that have such provisions and that this relationship is not spurious due to a pre-existing trend of decreasing decertifications.

Table 1.3. Informal Exogeneity Test of FCA Provisions
(Dependent Variable: Log of Decertifications/Provincial Unionized Workforce)

	(1)	(2)	(3)	(4)	(5)
	Common	Common	Year	Province	Province
	Linear	Quadratic	Fixed	Linear	Quadratic
	Trend	Trend	Effects	Trend	Trend
First Contract Arbitration	-0.183	-0.265*	-0.272*	-0.491***	-0.520**
	(0.137)	(0.137)	(0.139)	(0.179)	(0.229)
Two Years Prior	0.156	0.145	0.070	-0.113	-0.105
	(0.190)	(0.187)	(0.196)	(0.211)	(0.234)
Observations	344	344	344	344	344
R-squared	0.484	0.506	0.555	0.583	0.594

Panel corrected standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

However, as Wolfers (2006) highlights, unit-specific time trends may not only pick up pre-existing trends, but also may account for dynamic effects that occur following enactment. If there are dynamic effects that take place after enactment then this will not be covered by the single FCA dummy variable and may result in a biased counterfactual from which the difference is measured. Like Wolfers (2006), I test for this by modeling dummy variables for each two year interval after enactment up to 15 years and one for the average decertifications per unionized workforce for the fifteenth year and beyond. The results of these regressions are found in Table 1.4.

Table 1.4. Long-Term Effects of First Contract Arbitration*(Dependent Variable: Log Decertifications/Provincial Unionized Workforce)*

	(1)	(2)	(3)	(4)	(5)
	Common	Common	Year	Province	Province
	Linear	Quadratic	Fixed	Linear	Quadratic
	Trend	Trend	Effects	Trends	Trends
Two years Prior	0.166	0.152	0.070	-0.181	-0.176
	(0.188)	(0.185)	(0.195)	(0.216)	(0.243)
Years 1-2	-0.074	-0.129	-0.127	-0.381*	-0.412
	(0.186)	(0.183)	(0.188)	(0.226)	(0.275)
Years 3-4	-0.354*	-0.440**	-0.522***	-0.823***	-0.893***
	(0.191)	(0.189)	(0.196)	(0.241)	(0.303)
Years 5-6	-0.168	-0.244	-0.216	-0.540**	-0.645*
	(0.196)	(0.194)	(0.202)	(0.254)	(0.339)
Years 7-8	-0.429**	-0.496**	-0.489**	-0.862***	-0.993***
	(0.202)	(0.200)	(0.209)	(0.277)	(0.384)
Years 9-10	-0.025	-0.093	-0.109	-0.507*	-0.670
	(0.215)	(0.213)	(0.216)	(0.299)	(0.430)
Years 11-12	-0.037	-0.143	-0.184	-0.602*	-0.797
	(0.222)	(0.220)	(0.223)	(0.351)	(0.512)
Years 13-14	-0.063	-0.196	-0.063	-0.567	-0.769
	(0.220)	(0.221)	(0.226)	(0.372)	(0.557)
Years 15+	-0.091	-0.218	-0.237	-0.899**	-1.141*
	(0.184)	(0.188)	(0.192)	(0.427)	(0.641)
Observations	344	344	344	344	344
R-squared	0.492	0.514	0.564	0.594	0.606

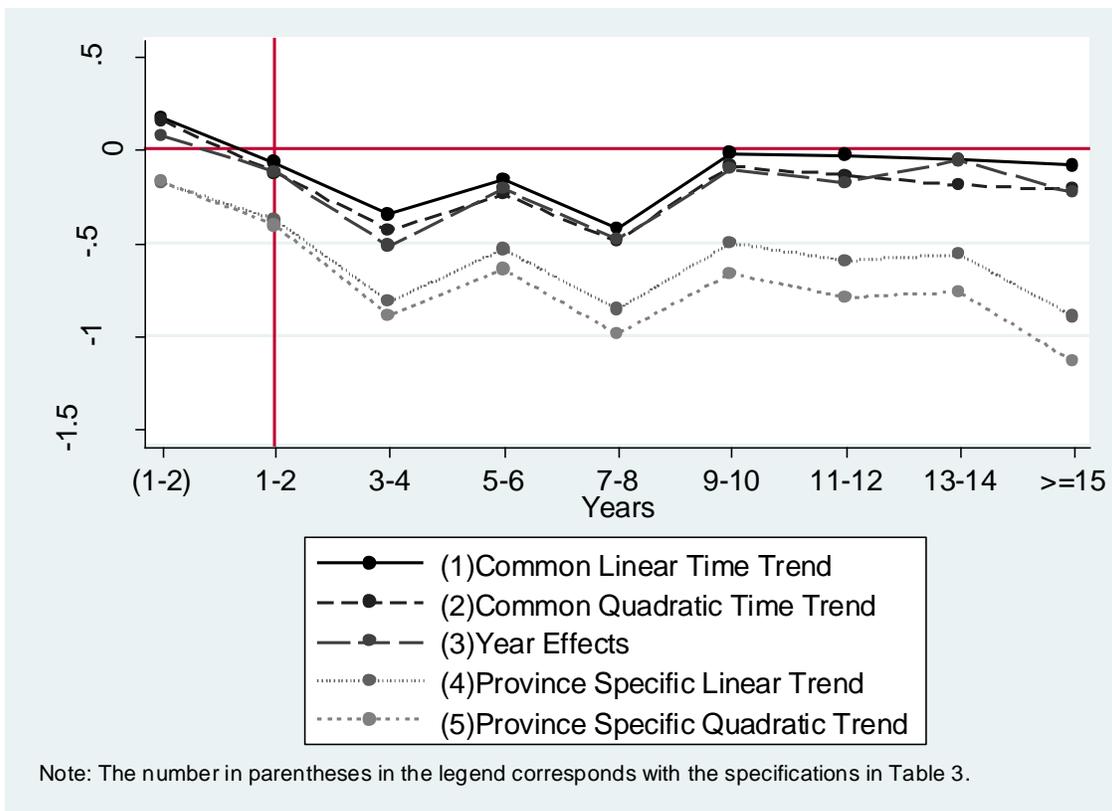
Panel corrected standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

As one can see from Table 1.4 (and the graphical depiction in Figure 3), the coefficients for each of the two-year intervals following enactment are negative. However, the specifications that do not include province-specific time trends revert back towards the level of decertifications that prevailed prior to enactment after one decade. When the province-specific time trends are included in the estimation, the effect of FCA is both larger and more persistent. If the former trend, rather than the latter, is the true trend, the effect of FCA on decertifications may be overstated in Table 1.2. However, I still find a statistically significant effect of FCA on decertifications when the province-specific trends are not included in the specifications, indicating that the effect likely does persist nevertheless. Due to the pre-existing trends of

decertifications and the possible reversion after enactment, specification (1) in Table 1.2 may represent a lower bound while specification (5) in Table 1.2 may represent an upper bound of the effect of FCA on decertifications. Interestingly, regardless of the specification, it appears that FCA does not have a statistically significant effect until a couple of years after enactment. This delayed effect may be due to a number of factors, including the time it takes for the provincial labour board and courts to develop their interpretation of the legislation or the amount of time that it takes for the change in the law to affect the behavior of the parties.

Figure 3. Estimated Long-Term Effects of FCA



Even though FCA has a significant negative effect on the number of decertifications within a province, mandatory representation vote legislation has the greatest effect on decertifications and it is statistically significant at the greater than 1 percent level in all specifications. When province-specific time trends are excluded from estimation, this legislation correlates with 59 to 67 percent more decertifications in the provinces that require a representation vote than those that allow card-check certification. When province-specific trends are included, this legislation correlates with approximately 53 to 54 percent more decertifications. Thus, due to the positive coefficient on this variable, it appears that either the hypotheses that (1) increased managerial resistance under a mandatory vote regime affects subsequent outcomes beyond certification or (2) this legislation indicates a period of union weakness prevails over the hypothesis that decertifications will decrease by making it more difficult for weaker bargaining units to certify. As stated above, this may also account for the easing of decertification restrictions that occasionally accompany such mandatory representation vote laws. Unfortunately, the two effects cannot be disentangled in this analysis and this coefficient should be interpreted as the possible summation of the two effects.

Table 1.5 presents all of the results for the FCA Type Model in which the main explanatory variables measure the presence/absence of each type of FCA. OLS estimation and post-estimation diagnostic tests indicate that the OLS errors exhibit both groupwise heteroskedasticity and contemporaneous correlation, but no serial correlation. Similar to above, the parameters of the OLS estimation are presented in Table 1.5 and the PCSEs are displayed in the parentheses found below each coefficient.

Table 1.5. The Effects of Each Type of First Contract Arbitration on Decertifications
(Dependent Variable: Log of Decertifications/Provincial Unionized Workforce)

	(1)	(2)	(3)	(4)	(5)
	Common	Quadratic	Year	Province	Province
	Linear	Linear	Fixed	Linear	Quadratic
	Trend	Trend	Effects	Trends	Trends
Fault FCA	-0.378** (0.183)	-0.444** (0.183)	-0.414** (0.188)	-0.441* (0.231)	-0.549** (0.261)
No-fault FCA	0.012 (0.154)	-0.138 (0.153)	-0.143 (0.160)	-0.362 (0.237)	-0.341 (0.267)
Automatic FCA	-0.372** (0.168)	-0.402** (0.167)	-0.393** (0.172)	-0.641*** (0.225)	-0.570** (0.291)
Mediation Arbitration FCA	-0.422* (0.244)	-0.703*** (0.262)	-0.808*** (0.304)	-0.665 (0.473)	-0.341 (0.521)
Mandatory Rep. Vote	0.470*** (0.117)	0.414*** (0.119)	0.456*** (0.129)	0.406*** (0.138)	0.459*** (0.154)
ULPs/Union Workforce	0.262*** (0.101)	0.204** (0.099)	0.261** (0.107)	0.416*** (0.139)	0.321* (0.183)
Unemployment Rate	-0.029 (0.029)	-0.080*** (0.029)	-0.139*** (0.052)	-0.172*** (0.063)	-0.174** (0.069)
Employment Rate	0.004 (0.023)	-0.035 (0.023)	-0.045 (0.038)	-0.056 (0.057)	-0.069 (0.065)
CPI Rate	0.009 (0.013)	-0.009 (0.013)	-0.030 (0.026)	-0.025 (0.027)	-0.066 (0.046)
Union Density Rate	0.034** (0.014)	0.027** (0.014)	0.031** (0.015)	0.009 (0.020)	0.016 (0.024)
Constant	-3.543*** (1.348)	-0.933 (1.393)	2.937 (3.941)	1.741 (3.637)	3.387 (3.869)
Province Fixed Effects	Yes***	Yes***	Yes***	Yes***	Yes***
Time Trend	Yes	Yes**	No	Yes	No
Quadratic Time Trend	No	Yes***	No	No	No
Time Fixed Effects	No	No	Yes***	Yes***	Yes***
Linear Province Trend	No	No	No	Yes**	Yes
Quadratic Province Trend	No	No	No	No	Yes
Observations	344	344	344	344	344
R-squared	0.491	0.512	0.563	0.585	0.596

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

The coefficients for the automatic and fault forms of FCA are statistically significant in all of the specifications, while the mediation arbitration form of FCA is significant in the absence of the province-specific time trends. With a common time trend or year fixed effects, the automatic form of FCA correlates with 31 to 33 percent fewer decertifications and this increases to 44 to 47 percent when province-specific time trends are included. Similarly, the fault form of FCA correlates with 31 to 36 percent fewer decertifications in the absence of specific trends and

this increases up to 42 percent fewer decertifications with their inclusion. The mediation-arbitration form of FCA is estimated to have the largest impact on decertifications in the specifications in which a quadratic common time trend or year fixed effects are included (specifications (2) and (3)).²⁰ These coefficients correlate with 51 and 55 percent fewer decertifications respectively in the presence of this type of FCA than in its absence. Somewhat perplexingly, the coefficient for the no-fault form of FCA is statistically insignificant in all of the specifications and is even positive when time is accounted for using only a common time trend.²¹ However, as with the regressions of the Simple FCA Model, mandatory representation vote legislation is estimated to have a large positive impact on decertifications as it correlates with a 50 to 60 percent increase in the number of decertifications depending on the specification, all of which are significant at the greater than 1 percent level.

Lastly, Table 1.6 performs a regime analysis to investigate whether the presence of both FCA and card-check certification augments the effect that these policies have on decertifications. Only specifications (1) and (5) from the Simple FCA Model in Table 1.2 are used in Table 1.6 as these represent the bounds within which the effect of FCA on decertifications seems to be. The difference in this table is that instead of using individual dummy variables to represent the presence/absence of FCA and mandatory vote legislation respectively, these specifications contain dummy variables that indicate the presence of only FCA legislation, the presence of only

²⁰ The decline in the magnitude of the coefficient on the mediation-arbitration form of FCA when province-specific time trends are included is likely due to collinearity between the province-specific time trend for British Columbia and the mediation-arbitration FCA variable since this type of FCA is only found in B.C. from 1993 onwards. This probably erodes some of the explanatory power of that variable. This combined with the high standard errors due to this form of FCA having the least number of observations also likely accounts for the loss of magnitude and significance of this coefficient in the latter two specifications. However, the mediation-arbitration form of FCA is the only type that is singularly identified from one province such that the other types of FCA are unlikely to be afflicted in the same manner. I am grateful to an anonymous reviewer for highlighting this.

²¹ Both Saskatchewan and Ontario, the two provinces in my sample within which the no-fault system of FCA may be found, experienced sharp increases in decertifications following the enactment (or both enactments in the case of Ontario) of this form of FCA. This may partially explain the insignificant findings above, although this is certainly a finding that warrants further investigation in the future.

card-check legislation, or the presence of both types of legislation within each observation.²²

These are set against a base case in which neither FCA nor card-check legislation is present. As one can see, all of the coefficients representing the presence of either or both types of legislation are statistically significant as compared to the base case. Furthermore, the magnitude of the coefficient for the dummy variable in which both card check and FCA are in operation is larger in absolute magnitude than the coefficients in which only one type of provision is in operation. To see whether there is a statistically significant difference between the presence of both pieces of legislation versus the presence of only one, Wald tests were performed. All of the differences are statistically significant except for when time is controlled using only a common time trend in which the difference between a regime with both provisions is statistically insignificant from a regime that only allows card-check certification. Thus, this produces some evidence that the best outcomes with regard to decertifications correlates with a regime that allows for both card-check certifications and first contract arbitration compared to one the has only one provision or neither.

²² I decided to measure card-check certification, rather than mandatory representation vote legislation, in this portion of the analysis since it seemed more intuitive to use two variables that were directionally equivalent if the goal is to investigate whether there are improved outcomes in the presence of both provisions.

Table 1.6. FCA and/or Card Check Regime Analysis
(Dependent Variable: Log Decertifications / Provincial Unionized Workforce)

	(1)	(2)
	Common Linear	Province Quadratic
	Trend	Trends
FCA Regime	-0.442**	-1.036**
<i>(FCA = 1, Card Check = 0)</i>	(0.203)	(0.443)
Card Check Regime	-0.696***	-0.865**
<i>(FCA = 0, Card Check = 1)</i>	(0.207)	(0.366)
FCA & Card Check Regime	-0.843***	-1.362***
<i>(FCA = 1, Card Check = 1)</i>	(0.204)	(0.402)
ULPs/Union Workforce	0.222**	0.258
	(0.087)	(0.174)
Unemployment Rate	-0.034	-0.166**
	(0.027)	(0.068)
Employment Rate	-0.002	-0.057
	(0.022)	(0.064)
CPI Rate	0.008	-0.047
	(0.013)	(0.040)
Union Density Rate	0.032**	0.015
	(0.014)	(0.024)
Constant	-2.438*	3.371
	(1.317)	(3.782)
Province Fixed Effects	Yes	Yes
Time Trend	Yes	No
Time Fixed Effects	No	Yes
Linear Province Trend	No	Yes
Quadratic Province Trend	No	Yes
Observations	344	344
R-squared	0.486	0.597
Wald Tests:		
FCA & Card Check Regime – FCA	-0.400***	-0.326**
Regime		
FCA & Card Check Regime – Card	-0.147	-0.498***
Check Regime		

Notes: The absence of first contract arbitration and card check certification (FCA = 0, Card Check = 0) is the base case for these regressions. The specifications use the same controls as specifications (1) and (5) in Table (1) since those specifications seem to represent the bounds within which the effect of FCA on decertifications seems to be.

Panel corrected standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

1.8 Conclusion

This study joins Johnson (2010) and Riddell (2013) as the only studies to undertake a quantitative analysis that incorporates the whole of the industrial relations system, meaning cases that do and do not access the FCA machinery, to examine the effects of first contract arbitration. Thus, these three studies represent the only ones that account for the possibility of a deterrent effect in the statistical analysis of FCA. Whereas the previous studies investigate the goals of ending work stoppages and securing a first agreement respectively, this study is the first to examine FCA's effect on decertifications, which provides an evaluation of the goal of creating lasting bargaining relationships. This study presents evidence that more bargaining relationships exist under an FCA regime on aggregate due to its effect on decertifications than in provinces that lack such a provision. When the different types of FCA are modeled, the results show that the automatic and fault forms of FCA have the most robust effect on decertifications and this holds across all specifications. Furthermore, the mediation-arbitration form of FCA is shown to result in fewer decertifications, and therefore more bargaining relationships, in a number of the specifications.

Although FCA provisions in many of the Canadian provinces are now accepted parts of the industrial relations framework, the passage of an FCA provision in the province of Nova Scotia in December 2011 and the attempted passage of the Employee Free Choice Act in the United States only a few years ago, shows that this study is germane to current labor law debates in both countries and provides a number of policy implications. The Nova Scotia legislature passed its FCA provision in the presence of mandatory vote legislation, and thus, perhaps saw FCA as more important than card-check certification in the context of snap elections. However, the results of the regime analysis indicate that the presence of both card-check certification and

FCA produce the best outcomes with regard to decertifications, such that if a legislature wants to foster bargaining relationships, it may be prudent to enact both. Furthermore, even though no Canadian province have ever completely overturned an FCA provision, there are a number of provinces that have changed the type of FCA operating within them, the most recent of which was Newfoundland changing to automatic FCA in June 2012. Thus, if research shows that one type of FCA, such as the automatic type in this study, can produce improved outcomes over the other types then it is informative even to those provinces that have already enacted this piece of labor law.

CHAPTER 2

THE HANGOVER: THE LASTING IMPACT OF EARLY CONFLICT ON THE DURATION OF BARGAINING RELATIONSHIPS

With the context of declining unionization rates in numerous countries over previous decades, many articles have focused on the role of employer opposition at the beginning of the unionization process as a potential explanation for this decline. While a number of these studies have shown that employer opposition, often proxied through unfair labor practice (ULP) charges, negatively impacts the likelihood of success at the certification and first contract stages, there is little to no indication of what the long-term impact of such opposition might be for those relationships that are able to conclude a first agreement. This paper undertakes such an investigation by exploring whether relationships that experience early conflict encounter a “hangover” during the representation phase of the process, meaning beyond the settlement of the first agreement, that leads to a higher propensity for dissolution than those relationships founded in more peaceful circumstances. It performs this using survival analysis on data that is the result of a merge between two governmental data sources from the province of Ontario for a nearly three-decade period. Using unfair labor practice charges and first contract arbitration applications as measures of conflict, it finds that not only is there a hangover to a turbulent start to a bargaining relationship, but that the early conflict may mar the relationships such that they exhibit a higher likelihood of dissolution throughout the entire duration of the relationship as compared to relationships that don’t experience early conflict.

2.1 Introduction

Given the downward trajectory of the unionization rate found in many countries over previous decades, much industrial relations scholarship has been spent on trying to uncover the determinants of the decline and the effect of legislative action meant to target it. With much of the focus of this scholarship and legislation on union organizing, it is unsurprising that these studies have concentrated on the initial phases of the process, namely the certification and first contract stages (see, for example, Cooke 1983, 1985; Weiler 1983, 1984; Johnson 2002; Riddell 2013). However, while the importance of such studies cannot be overlooked as they identified bottlenecks in the unionization process where the pursuit of union representation may be extinguished, it is equally important to recognize that these stages are only a portion of a larger unionization process. While obtaining certificates of representation and first contracts do

represent successes, employees do not undertake the sometimes long, arduous procedure of obtaining union representation for solely the achievement of either of them. Rather, employees presumably undertake it to obtain *continued* representation by a union that allows for the *continued* bargaining over their terms and conditions of work. Thus, it is imperative to investigate whether bargaining relationships that are being established are proving to be sustainable.

The main goal of this paper is to investigate the *sustainability* of bargaining relationships, particularly when the relationship is born of conflict. Many of the preceding studies on the earlier stages of the process focus on the deleterious effect of employer opposition. A number of studies have shown that employer opposition that takes place during the certification stage has an impact not only on that stage of the process, but also on the subsequent negotiation and settlement of a first contract (Ferguson 2008; Riddell 2013). This finding that such opposition can influence later stages of the process leads to the question of whether it may also bleed into the representation phase of the unionization process, meaning beyond the settlement of an initial agreement. Do relationships that arise out of organizing rife with conflict experience a “hangover” that leads to a higher propensity for dissolution than those founded in more peaceful circumstances? Or, is the process of collective bargaining transformative enough to move the parties of a nascent bargaining relationship beyond their initial misgivings about the other such that they can overcome a conflictual start and come to accept the relationship? Further, are first agreements the remedy to employer opposition that enables the union to become established and set up the infrastructure that allows the bargaining relationship to endure?

This article seeks to begin answering these questions by merging two governmental datasets from the Canadian province of Ontario for a nearly three-decade period. Data from the

organizing phase, including unfair labor practice (ULP) charge filings and first contract arbitration (FCA) applications, from the Ontario Labour Relations Board allows for the identification of bargaining relationships that experience early conflict, while longitudinal contract data from the Ontario Ministry of Labour allows for the observation of the overall duration of relationships. Using semi-parametric Cox regressions, this study finds that there is a hangover into the representation phase for relationships that experience conflict prior to the settlement of a first contract. The presence of ULP charges correlate with an approximately 27 to 31 percent increase in the likelihood of relationship dissolution while FCA applications associate with an approximately 55 to 60 percent increase in the likelihood of relationship dissolution when pooling together all of the different manners in which relationships might end. Furthermore, it shows that the effect of ULP charges is time-invariant, suggesting that relationships that involve ULP filings during the initial stages of the unionization process are marred by them, leading to a higher likelihood of relationship dissolution throughout its entire duration. Finally, competing risks survival analysis of the different manners in which relationships may end shows that the hangover to a bad start associates with a vastly higher predisposition towards the relationship ending through decertification as compared to the other types of dissolution.

2.2. Background

Research on certification elections and the negotiation of first contracts has long established that these stages represent significant hurdles in the unionization process. Further, much of it has documented that the success of unions at these stages has worsened over the last half century (see for example Weiler 1983, 1984; Ferguson 2008 for the United States; Johnson

2002; Riddell 2013 for Canada). In attempting to explain these trends, many studies highlight the role that employer opposition has played, typically using unfair labor practice charges as a proxy for such opposition. While it is clear that employer opposition impacts these early stages of the process, there is little to no indication of what effect, if any, it might have on outcomes beyond that point. Thus, what might one expect the influence of such employer opposition might be for newly-established bargaining relationships beyond the settlement of the first agreement?

The early theories of a number of seminal scholars in the field of industrial relations may provide us with some indication as to what the influence of early conflict might be on nascent bargaining relationships through their interest on bargaining relationship development. During the post-WWII boom in unionization, when many bargaining relationships were developing and perhaps maturing, these scholars theorized about the conditions that were required for the maturation of relationships to occur. Although not perhaps their main focus, their theorizing pointed towards the hypothesis that relationships may be endangered in their infancy due to the inexperience of the parties in dealing with each other. Each of them seemingly alludes to a trial period during which the parties attempted to come to an acceptable agreement over the role and function that each other would play in the relationship, and that the absence of such an agreement would perhaps be a harbinger for the death of the relationship as it might bring about conflict.

Ross (1948) theorized that an initial “basic power settlement” needed to take place in order for a “political compatibility” to develop between labor and management, the presence of which could contribute to the stability and maturity of the relationship. This political compatibility represents a situation where both sides are able to potentially realize the benefits of

a relationship. For the employer, examples of these benefits include “the union as an agency for supplying qualified workers, imposing industrial discipline, and contributing generally to the management of the enterprise” (*Ibid*, p. 107). The absence of this power settlement, however, could result in conflict that could prevent the establishment of a new bargaining relationship or the continuation of an existing one. Likewise, Dunlop’s (1958) systems theory of industrial relations posited that the parties in a system create a “web of rules” to govern the system and the interactions of those within it. Further, each system is bound together by an ideology, which is composed of the individual ideologies of the parties. When the ideologies of the parties are in congruence, or rather compatible, then this brings stability to the system. However, if the ideologies of the parties are incongruent, then this could bring instability and conflict to the system.

Lester (1958) further theorized that both the union and the relationship are able to mature through the stable predictability that is produced by the continued interactions of the union and management through several rounds of bargaining. It is through such interactions that the parties bridge, at least partially, some of the divide that separates them initially. Furthermore, these subsequent interactions and negotiations may help the parties come to a shared understanding and mutual respect of each other, which may move them past their preconceptions where they may have viewed the other as a threat to their own security. Additionally, the parties are likely to develop shared mechanisms through which they can overcome the conflict inherent in the bargaining process and, as the agreements become more intricate, come to depend on each other for the contract’s administration. These developments subsequently result in bargaining that becomes more routine and less conflictual, which according to both Ross (1948) and Lester (1958) is indicative of a mature bargaining relationship. Thus, the post-war theorists

hypothesized that collective bargaining would become “entrenched” for those relationships that were able to survive this initial period as these trends could transform relationships into ones of mutual respect and cooperation, allowing them to persist over the medium to long-term.

More recently, Paul Weiler adopted a similar assumption as the post-war theorists and in marrying it with the “rogue employer hypothesis” that the misfortunes of unions was in some part due to the opposition of employers at the start of relationships developed first contract arbitration as a policy to both mitigate the harmful impact of employer opposition and to facilitate the development of lasting bargaining relationships. Indeed, in designing the initial first contract arbitration statute in British Columbia, Weiler assumed that the opposition from employers was due to their inexperience in dealing with a union, an anxiety that might be overcome if the parties were forced (either directly or through the threat of arbitration) into a first contract. While the goals of FCA legislation include the prevention of first-contract work stoppages (see Johnson 2010) and the fulfillment of the expectation that workers who choose union representation will be met with a collective agreement (see Riddell 2013), it was also hoped that the impact of the legislation would extend beyond the settlement of the first agreement.

This first agreement was seen as absolutely vital in that it allowed the union to become established in the workplace and to demonstrate the value of collective bargaining and working under a collective agreement to the members of the bargaining unit. Ultimately, Weiler hoped that such a “trial marriage” would lay the foundation for lasting, mature bargaining relationships by familiarizing the parties and normalizing collective bargaining (Weiler 1980). Indeed, in describing this goal, he wrote, “first-contract arbitration attempts to do more than simply settle a past dispute: it also seeks to install the union firmly within the plant and to foster the kind of

relationship that most likely would have arisen had the employer not acted in bad faith” (Weiler 1984, p. 409). Under Weiler’s assumption, one might expect that once the union has a foothold in the workplace and the parties become familiarized, the employer will learn that the union and the collective agreement don’t represent the threats to the organization that he/she may have perceived. This might lead to the employer’s acceptance of the decision of his/her workforce to obtain union representation such that the bargaining relationship would be able to endure. However, it is implicit in the above quote that this assumption hinges on a change in the employer’s attitude and behavior. The initial first contract arbitration statute was meant as a remedy for illegal acts committed by the employer and it was hoped that righting those wrongs would produce the hypothetical relationship “that would have arisen had the employer not acted in bad faith”. The imposition of the agreement, or rather the threat of one, does not change the employer though and so a bargaining relationship may persist only where an opposed employer changes his/her pattern of behavior.

Weiler subsequently abandoned his hope that FCA in British Columbia might foster lasting bargaining relationships as nearly all of the cases in which the labor board imposed an agreement in the first five years of its operation resulted in the bargaining unit’s decertification (Weiler 1980). However, there are a number of reasons why Weiler’s skepticism may have been unwarranted, the first of which being that Weiler was basing his observation on only 12 cases in which an agreement was imposed. Subsequent studies on other provinces that had more accessible forms of FCA or imposed agreements with more favorable terms and conditions were shown to potentially produce better outcomes pertaining to this goal (McDonald 1987; Sexton 1987). Finally, and perhaps most importantly, only a small percentage of first contract negotiations go through the first contract arbitration process and even less so result in an

imposed agreement (Johnson 2010). These cases where the parties were unable to come to an agreement such that it requires the issuance of an arbitration award are very likely to be the worst of the worst. However, for the vast majority of nascent bargaining relationships outside of that process, or even those within it that are able to come to a settlement, the question remains as to whether there is an appreciable difference in the likelihood of the relationship coming to an end for those relationships that experience a turbulent beginning versus those that do not. Thus, perhaps Weiler's initial assumption may hold more widely for those relationships that don't require the imposition of a first agreement by a third party.

Alternatively, perhaps the institution of collective bargaining may not be (or rather, may no longer be) transformative enough to salvage a relationship that has been marred by conflict. As mentioned above, it has already been shown that employer opposition can negatively impact the likelihood of success at the certification and first contract stages of the process (see Cooke 1983, Bronfenbrenner 1997, Riddell 2001, Ferguson 2008 for the certification stage; see Cooke 1985, Bronfenbrenner 1994, Bentham 2002, Ferguson 2008 and Riddell 2013 for the first contract stage). Perhaps, the negative influence of employer opposition will continue into or have a similar effect on the representation phase of the process. However, despite the theorizing of the above scholars, there has been very little empirical investigation into the representation phase of the unionization process and thus, there is little to no empirical evidence that this may be the case. One might expect that the decertification literature may provide some indication as to how employer opposition may influence relationships beyond the settlement of the first agreement. However, many of the decertification studies only focus on the outcome of the election and, therefore, disregard when in the process the decertification takes place (see for

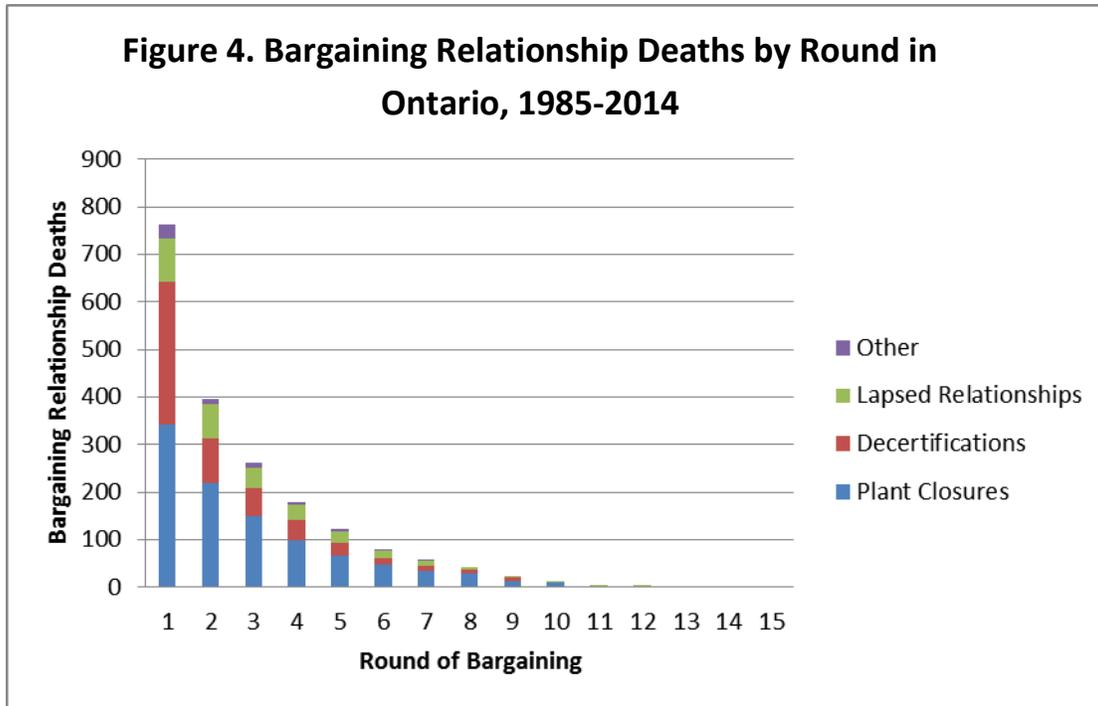
example, Anderson et al. 1982²³; Dickens et al. 1987; Meyer and Bain 1994). Thus, what may have precipitated the decertification could be the conflict that was experienced at the beginning of the relationship or it could be something much later in the process.

To my knowledge, there is only one empirical study that attempts to investigate the impact of early employer opposition beyond the settlement of the first agreement, but this only examines the process through the term of that initial agreement. Using survey evidence of approximately 400 bargaining relationships that achieved certification during the period 1991-93 across eight Canadian provinces, Bentham (2002) finds that the occurrence of “actions commonly recognized as unfair labour practices” during the organizing phase correlates with a 46 to 57 percent increase in the likelihood of “early decertification”.²⁴ Somewhat curiously though, she doesn’t find any statistically significant correlation between actual filed ULP charges and the likelihood of early decertification. While this discrepancy is perplexing, the former finding provides the only indication that perhaps there is a hangover for relationships that experience a turbulent beginning. Even with this finding though, the influence of employer opposition at the beginning of the process has only been investigated from the certification election through to the conclusion of the first agreement and it has only been investigated for relationships that have ended through decertification. As one can see from Figure 4 below, this may provide only a partial glimpse into the impact of early employer opposition as there are

²³ Anderson et al. (1982) does investigate the opposition of employers, although only during the decertification campaign, and controls for the number of years in which the bargaining unit has been represented. However, they don’t relate the two and attempt to investigate the influence of early conflict on the likelihood of the unit decertifying.

²⁴ Bentham defines “early decertification” as a decertification that takes place within the first two open periods during which an application for decertification or a union raid may take place; the first period is the two to three months preceding the anniversary of the certification and the second period is the two to three months preceding the expiration of the first agreement.

many bargaining relationships continuing to come to an end in subsequent rounds of bargaining and doing so in a variety of manners.



This article, therefore, seeks to answer the question of whether or not there is a “hangover” from a conflictual start to a bargaining relationship that persists beyond the settlement of the first agreement. One hypothesis to this question may be yes; perhaps the institution of collective bargaining is not transformative enough to salvage a relationship that has been marred by conflict. Or rather, perhaps in line with the “rogue employer hypothesis”, opposed employers will always be opposed employers and a collective agreement will not change their desire to operate union-free. Thus, we might expect a hangover that will increase the likelihood of the relationship ending. Alternatively, perhaps as was assumed by the post-war theorists and was hoped for by Weiler, the institution of collective bargaining is sufficiently transformative to move the parties past initial misgivings that they may have about each other such that the relationship may be salvaged, despite early conflict, once they enter the

representation phase. In seeking to answer this question, this article is the first to investigate the influence of employer opposition at the start of relationships beyond the first agreement, when numerous relationships continue to end, and it is the first to account for the variety of manners in which they might end. Furthermore, it investigates not only if there is a hangover, but also examines how persistent the effect is, the findings of which has both theoretical and policy implications.

2.3 Data and Methodology

The data used in this study is the result of a merge between the Ontario Ministry of Labour's *Collective Bargaining Information Services (CBIS) Database* and the Ontario Labour Relations Board's *Reports*. The former data source is used to track bargaining relationships through the number of completed rounds of bargaining in the province of Ontario. This dataset records information on the characteristics of both the agreement and the bargaining unit, including the size and location of the bargaining unit; the ratification, enactment, and expiration dates of the agreements; the parties to the agreements; the type of agreements; and the sector, industry, region and jurisdiction that the agreements fall under. The dataset also records the date and manner in which the relationship was terminated if it took place prior to 2015. The latter data source was used to obtain information on the experience of relationships prior to the settlement of the first agreement. Each monthly report contains an index that lists all of the cases disposed of by the Board in the prior month, in addition to other information depending on the type of case. For successful certification cases, this includes the application year; disposition month and year; the parties to the certification; the location; the proposed size of the unit; the number of units; the existence of objectors/intervenors; a brief description of the unit; and if a

representation vote was required, the results of the vote.²⁵ Information on ULP and FCA case filings between a union and an employer (in which either party could be the applicant or the respondent) were also collected. There is less information for these case filings, but they still include the outcome of the filing, the disposition month/year, the application year, the parties to the filing, and the existence of an intervenor/objector.

Since my interest is focused on the population of newly-formed bargaining relationships in the province of Ontario, the *CBIS Database* was ultimately determinative of the relationships to be included in the study. As mentioned above, the Ontario Ministry of Labour records the type of agreement that is settled in the database, which includes the identification of the first agreement in the relationship. However not all of the relationships found in the database begin with a “first agreement”. According to an analyst at the Ministry of Labour, a relationship may begin with a “renewal agreement” when there is no record of the previous agreements settled within that relationship. Since my analysis requires that I observe the duration of the bargaining relationship, I decided to drop all relationships in which the first agreement recorded in the database is not identified by the Ontario Ministry of Labour as a “first agreement”. This omission further led to the choice of 1985 as the beginning of the time frame for analysis since the period 1982-1984 accounts for a vast number of the relationships in the dataset that begin with an agreement labeled as a “renewal agreement”. The fact that approximately 65 percent of such relationships are recorded prior to 1985, leads to the assumptions that (1) the database was likely created during that period since many existing relationships seem to have been added to the database during that time and (2) that the database should account for all, or at the very least

²⁵ The certification applications that were either dismissed or withdrawn is also listed in the indices, but there is much less information, especially when withdrawn, accompanying these case filings.

the vast majority, of relationships beginning after 1984.²⁶ The year 2012 is used as the final year from which to analyze nascent bargaining relationships due to a change in the system used by the Ministry of Labour to maintain the database. Whereas prior to 2012, the agreements within a relationship were linked across changes in the parties, the post-2012 system recorded the agreement as being part of a new relationship when there was a change in either party in the relationship.

The *CBIS Database* contains information on all relationships operating in the province, warranting a number of further omissions before the data can be analyzed. The factors and processes that influence the duration of bargaining relationships across the provincial and federal jurisdictions and the public and private sectors are likely to vary greatly, calling their comparability into question. Therefore, the focus of this study will be solely on private sector bargaining relationships and omits any relationships either under the federal jurisdiction or in the public sector. Additionally, all bargaining relationships in the construction industry are omitted from the analysis since many of those relationships are not comparable to those within other industries as they tend to arise and disappear with the acceptance and completion of construction projects. Following these omissions, and a few others²⁷, there were 4,076 private-sector relationships remaining from which I attempted to find a matching certificate from the OLRB *Reports*.²⁸

²⁶ The percentage of instances per year after 1984 in which a bargaining relationship is recorded as beginning with a renewal agreement averages only 7 percent and has a range of 3 to 17 percent. During the period from 1985 to 2012, the average number of bargaining relationships started each year was approximately 325.

²⁷ There are 19 bargaining relationships in which the public sector dummy variable varies across the bargaining relationship. The switch in sectors is likely due to data entry error or privatization. These relationships were also omitted from the estimation found below. There were also 4 bargaining relationships in which the number of employees in the bargaining unit was listed as 0 at some point during the relationships. These relationships were also dropped due to the missing data point.

²⁸ This doesn't include relationships in which the union was voluntarily recognized by the employer as there would be no certification in the OLRB records to match those relationships. However, those are valid relationships and therefore, are included in the analysis performed below.

The main criteria used for finding a match between a first agreement and a certification were the dyad of the employer and union names. In the *CBIS Database*, the Ministry of Labour tried to link many of the first agreements to the certifications by including the case file number given to the certification by the OLRB. Unfortunately, with the change in their system, only the file number for the most recent certification in a relationship is recorded. This means that any relationship in which a union displacement took place, the initial certification file number was overwritten. However, for those relationships that did not experience displacements, the OLRB file number was used in conjunction with the names of the parties to identify matches. Subsequent rounds of the merge incorporated further information, such as the location and the disposition month/year, to identify matches for those relationships that either did not have an OLRB certification file number or had a file number that matched to a later certification due to a displacement. As a result, I was able to successfully merge 3,386 of the certificates to a relationship, which represents just over 83 percent of the private-sector relationships that remained following the above omissions. This, combined with the inclusion of relationships that were voluntarily recognized by the employer, leaves us with a sample of 3,860 relationships to use in the analysis below, which includes just over 14,000 collective agreements. Unfortunately, there is no file number that can be used to facilitate the matching of ULPs and FCA applications to relationships. The matching of ULPs is further complicated in that there is no way of telling to which relationship the ULPs merge onto when there are multiple relationships that involve the same parties. However, since the *CBIS Database* is a census of bargaining relationships, I can identify where this may be the case. In discussions with the librarian at the Ontario Workplace Tribunals Library (OWTL), I was told that ULP filings tended to pertain to newly certified bargaining units. Using that assumption and the desire to model

only the conflict taking place leading up to the settlement of the first agreement, ULPs were matched onto any relationships with the same parties listed and where the disposition date of the ULP was found to take place during the period between a year prior to the certification/disposition date and the ratification date of the first agreement. This resulted in the matching of 834 relationships with unfair labor practice charges, which represents approximately 22 percent of the relationships included in the analysis.²⁹ The merging of FCA applications is slightly more straightforward in that these applications generally match onto first agreements at the start of the relationship.³⁰ This merge resulted in the matching of at least one first contract arbitration application onto 113 relationships in the *CBIS Database*, representing just shy of 3 percent of the relationships.

With the focus of this study being the effect of early conflict on the time spent in a bargaining relationship and the probability of a transition out of that relationship, the appropriate method for such an investigation is survival analysis, also known as event history or duration analysis. There are a number of reasons why survival analysis is preferred to traditional regression techniques. The first of which is it is better able to handle observations that are right-censored. In the context of this study, this involves bargaining relationships that did not experience dissolution by the conclusion of the period of observation. The second reason is that traditional regression methods consider independent variables to be fixed, which obviates the inclusion of time-varying independent variables. Since bargaining relationships are fluid given

²⁹ As previously stated, it is not possible in some cases to identify which relationships the ULP matches onto when there are multiple relationships with the same parties, but by noting where this may be the case, I can investigate how the matching of ULPs influences the results of the estimation. The merging of ULPs where there was no possible conflict (i.e. where the match was unique) resulted in the matching of 718 relationships with one or more ULP charges, which represents approximately 19 percent of the relationships in the sample. All of the analysis performed below was also carried out with this restricted matching of ULPs, which resulted in estimates of the effect of ULPs that were three to five percentage points higher than those displayed below. These estimates are available from the author upon request.

³⁰ The reason that I say generally is because it appears that there are a few instances where access to FCA was applied for during the negotiation of the first agreement following a union displacement.

the influence that subsequent events may have on them, it is important that the method used for analysis be able to account for the dynamic changes that take place throughout the duration of the relationships. Thus, given the bargaining round-level data used in this study, duration analysis allows for the inclusion of variables that change with each round of bargaining, such as the size of the bargaining unit, and is able to estimate how such changes influence the likelihood of dissolution (Box-Steffensmeier and Jones 1997).

This study adopts the assumption that the failure of bargaining relationships occurs as part of a continuous process, meaning that the termination of a relationship may take place at any point in time.³¹ This approach assumes that two units cannot experience the event of interest at the same exact time, which means that there can be no “ties”. Despite using a finely discretized unit of analysis time in this study (days), the legal structure surrounding bargaining relationships and the inability to exit a relationship, at least in certain manners, until after the completion of a collective agreement means there are a number of ties in the dataset. The presence of ties can result in biased estimates using certain methods, but Prentice and Farewell (1986) state that “[a]s a rule of thumb the bias is not likely to be severe if not more than 5 percent of the subjects ‘at risk’ fail an any specific failure time” (p. 44). In this data, the number of subjects that failed at the same recorded time as a percentage of the total number of relationships at risk never exceeds 0.9 percent.

³¹ This is as opposed to a discrete-time approach in which either (1) it is assumed that the failure process takes place only during discrete points in time or (2) if the process is assumed to be continuous, but it is interval censored such that the event is known to have occurred within some interval of time, but the exact timing of the event is unknown. At first glance, one might think that an argument can be made for using the discrete-time approach with bargaining rounds used as the units of analysis time, especially since decertification applications may only be made in the “open periods” of a contract. However, this only applies to the application for decertification whereas the actual decertification may take place at any point in time after such an application. Thus, the continuous-time approach may be preferable to the discrete-time approach, especially since the manners in which relationships may fail, especially outside of decertification, fit a continuous process better than a discrete one.

Within the continuous-time approach to duration analysis, there are a number of estimators from which one can choose. The choice largely deals with how one wants to treat the baseline hazard rate, or rather how one wants to model the influence of time on the process, known as duration dependence. Given an a priori reason to believe the influence of time on the hazard rate follows a certain distribution, one may parameterize the baseline hazard to follow that shape and produce estimates using maximum likelihood estimation. However, absent such reasons, one can treat the baseline hazard as a nuisance parameter that is cancelled out and can produce semi-parametric estimates using partial likelihood estimation. While the former method is more efficient and therefore produces more precise estimates, an incorrect parameterization that provides a poor fit to the data can adversely affect the estimated regression coefficients. While the loss of efficiency represents a disadvantage, using partial likelihood estimation may be viewed as preferable in this case due to the exploratory nature of the analysis and the avoidance of the possible adverse effects that incorrect assumptions may have on the estimated regression coefficients (Cleves et al. 2004). Furthermore, partial likelihood estimation has been shown to be asymptotically efficient such that this shortcoming may be mitigated when using larger sample sizes (Yamaguchi 1991).

The semi-parametric Cox proportional hazards regression model (Cox 1974) is used for estimation as this allows for (1) the investigation of what characteristics of the bargaining unit and negotiations influence the duration and dissolution of bargaining relationships and (2) the exploration of how the hazard faced by bargaining relationships evolves over time, without assuming the form that it takes. The dependent variable in such a model is the hazard rate, which in the continuous time context is given by

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t + \Delta t > T > t | T > t)}{\Delta t}$$

This is the estimate of the risk of experiencing the event of interest during a unit of analysis time, given that it has not experienced the event in any of the previous units of analysis time. The Cox model is given by

$$h(t|\mathbf{X}_j) = h_0(t)\exp(\mathbf{X}_j\boldsymbol{\beta}_x)$$

where the hazard rate for subject j is determined by the baseline hazard, $h_0(t)$, multiplied by the exponentiation of a vector of covariates, \mathbf{X}_j , and a vector of estimated regression coefficients, $\boldsymbol{\beta}_x$.

For a list of summary statistics for the vector of covariates used in the estimation, see Table 2.1.

Variable:	Mean	St. Dev.	Minimum	Maximum
ULP Charges (General)	0.2154	0.4111	0	1
FCA Application	0.0249	0.1557	0	1
Bargaining Unit Size	62.5822	172.2629	1	4996
Log Bargaining Unit Size	3.2112	1.2348	0	7.5495
Log Bargaining Unit Size(t)	3.2245	1.3055	0	8.5164
Work Stoppage	0.0415	0.1995	0	1
Conservative Government	0.3435	0.4749	0	1
NDP Government	0.1300	0.3364	0	1
Liberal Government (Base)	0.5265	0.4993	0	1
Pre-OLRA 1986 (Base)	0.0841	0.2775	0	1
OLRA 1986	0.3588	0.7497	0	1
OLRA 1993	0.2108	0.4079	0	1
OLRA 1995	0.1815	0.3854	0	1
OLRA 2000	0.1649	0.3711	0	1
Primary	0.0069	0.0829	0	1
Manufacturing	0.3863	0.4869	0	1
Transportation	0.0617	0.2406	0	1
Trade	0.1652	0.3714	0	1
Education	0.0094	0.0965	0	1
Health	0.0301	0.1710	0	1
Other Services	0.3403	0.4738	0	1

As stated above, the baseline hazard is conditioned out of the estimation. Negative (positive) regression coefficients produced by this correspond with a decrease (increase) in the hazard rate, but are difficult to interpret beyond this. However, exponentiating the regression coefficient transforms it into a hazard ratio, which allows for an easier interpretation of the magnitude of the

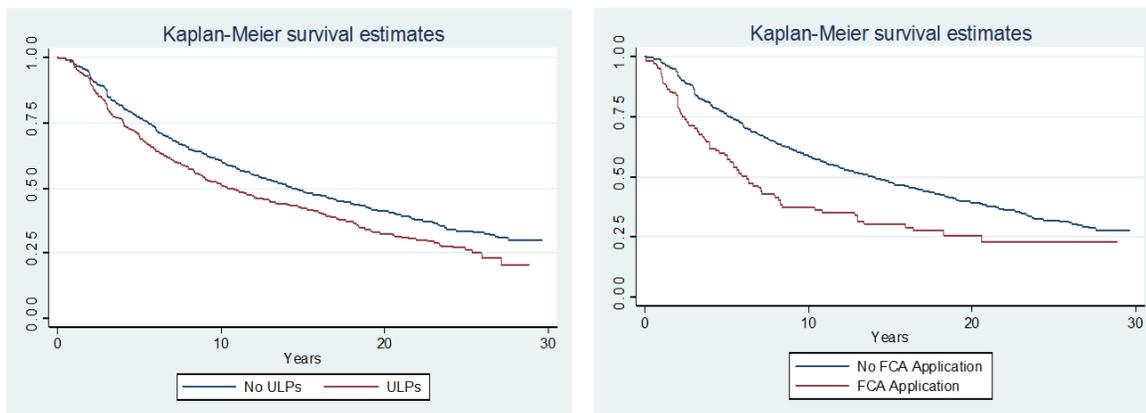
effect. These hazard ratios can be interpreted as the percentage difference in the hazard due to a one unit change in the value of the covariate. A hazard ratio above (below) 1 corresponds with an increase (decrease) in the hazard of the event, and therefore an expected decrease (increase) in the duration, whereas a ratio of 1 indicates no influence on the hazard due to the corresponding covariate.

One of the key assumptions of the Cox model is the proportional hazards (PH) assumption which states that the influence of a covariate is proportional and constant with respect to time. As with any estimation, it is important to investigate whether the assumptions underlying the model are violated, but the PH assumption that the influence of a covariate is time-invariant is of particular theoretical interest to this paper. If the explanatory variables used to model the conflict at the beginning of the relationship are shown to violate the proportional hazards assumption, then this may provide some evidence towards the transformative nature of collective bargaining in that parties are able to overcome the turbulent start to their relationship (assuming that the effect of the variable is waning). On the other hand, if the covariates for ULP charges and FCA applications are shown to not violate this assumption, then this would provide evidence towards the hypothesis that relationships that experience conflict at their outset are marred by it, such that the hangover of a bad start may always predispose them to a higher likelihood of dissolution. It is through a test of whether or not the covariates violate the proportional hazards assumption that this study investigates how persistent the hangover, if there is one, might be.

2.4 Results

The figures below offer some initial exploratory analysis by displaying the unconditional survival function estimates for private-sector bargaining relationships in Ontario stratified by the presence of ULP charge and FCA application filings respectively. The Kaplan-Meier survival function estimates the probability of survival beyond each time period, or conversely, the probability of failure up to each time period. This unconditional probability of survival is the product of the conditional probability for time period t and the conditional probabilities of all time periods that preceded it. These nonparametric estimates make no assumption about the form that either of these functions takes or how they are influenced by covariates (Cleves et al., 2004). Such estimates essentially treat all relationships as if they are homogenous, except for the variable upon which they are stratified.

Figures 5, 6: Nonparametric Survival Function Estimates



As one can see from the survival estimates, the relationships that are affected by unfair labor practice charge filings and the relationships in which an application for FCA are filed both exhibit worse survival experiences than relationships that lack either of those incidences. Log rank tests of the equivalence of the survival curves confirm that the survival experiences for relationships with ULP charge and FCA applications filings are significantly different than their counterparts without them. To illustrate, the median estimated duration for a relationship with

ULP charge filings is 3,799 days (or 10.40 years), which compares to an estimated median duration of 5,257 days (or 14.39 years) for relationships without such filings – a difference of 1,458 days (3.99 years). Similarly, the median estimated duration for a relationship that files an application for access to FCA is 2,268 days (or 6.21 years), which compares to an estimated median duration of 5,112 days (or 14.00 years) for relationships that never seek access to the FCA system – a difference of 2,844 days (7.79 years).

While the nonparametric estimates provide us with some initial indication of a hangover, they do so without controlling for other factors. Table 2.2 below presents the estimates produced by the Cox regressions for the influence of the presence of ULP charge filings prior to the settlement of the first agreement and applications for first contract arbitration on the likelihood of dissolution of bargaining relationships, while controlling for the log of the initial size of the bargaining unit. The columns in the table further differ by the inclusion of various fixed effects that control for time-invariant characteristics of industries, unions and regions pertaining to the relationships. Column (4) includes cohort effects which control for the macroeconomic environment during the year in which the relationship started and ensures that the duration of relationships is independent of their entry and censoring time (Woolridge 2001). As one can see from the table, while there are some slight variations in the estimates depending upon the inclusion of the various fixed effects, the findings are quite robust. The presence of ULP charge and FCA application filings significantly associate with an increased likelihood of relationship dissolution. The filing of any ULP charges prior to the settlement of the first agreement associates with a 27 to 31 percent increase in the likelihood of dissolution. The filing of an application for access to FCA associates with a 55-60 percent increase in the likelihood of

dissolution. Thus, it appears that there is at least an initial hangover for relationships that begin amidst conflict as measured by the presence of ULP and FCA filings.

Table 2.2. Cox Regression Estimates for Private-Sector Bargaining Relationships in Ontario, 1985-2012

Variables:	(1)	(2)	(3)	(4)	(5)
ULP Charge(s)	0.2417*** (0.0541) [1.2734]	0.2687*** (0.0561) [1.3083]	0.2689*** (0.0564) [1.3085]	0.2649*** (0.0565) [1.3033]	0.3065*** (0.0870) [1.3587]
FCA Application	0.4737*** (0.1295) [1.6059]	0.4436*** (0.1303) [1.5582]	0.4389*** (0.1306) [1.5510]	0.4753*** (0.1347) [1.6085]	0.4705*** (0.1224) [1.6008]
Log Bargaining Unit Size	-0.1226*** (0.0190) [0.8846]	-0.1636*** (0.0212) [0.8491]	-0.1714*** (0.0215) [0.8425]	-0.1770*** (0.0217) [0.8378]	-0.1770*** (0.0218) [0.8378]
ULP Charge(s)*time					0.0000 (0.0000) [1.0000]
Industry Effects	Yes	Yes	Yes	Yes	Yes
Union Effects	No	Yes	Yes	Yes	Yes
Region Effects	No	No	Yes	Yes	Yes
Cohort Effects	No	No	No	Yes	Yes
Observations	14034	14034	14034	14034	14034
Relationships	3860	3860	3860	3860	3860
Deaths	1947	1947	1947	1947	1947

Notes: Robust standard errors clustered at the relationship level are presented in the parentheses below the regression coefficient. The hazard rate is presented in the brackets. Log bargaining unit size is the log of the size of the bargaining unit listed for the first agreement in the relationship. Industry dummies representing primary, manufacturing, transportation, trade, education, health and other services are included in all of the specifications. Regional effects are based on the Ministry of Labour's economic region codes. The hazard ratio is the exponentiation of the corresponding coefficient. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

The control variable for the log of the initial size of the bargaining unit is shown to significantly correlate with a decrease in the likelihood of dissolution. Depending upon the specification, each one percent increase in the initial size of the bargaining unit associates with an approximate 12 to 16 percent decrease in the likelihood of dissolution. The size of the bargaining unit has been found to negatively correlate with the likelihood of winning a certification election (see Heneman and Sandver 1983 for a review; Cooke 1983; Ferguson 2008), but positively correlate with the likelihood of achieving a first agreement (see Bain 1981 for a review; Cooke 1985) and defeating a decertification attempt (Krislov 1956; Chafetz and

Fraser 1979; Anderson et al. 1979; Elliot and Hawkins 1982; Ahlburg and Dworkin 1984; Dickens et al. 1987; Meyer and Bain 1994). Thus, it appears that these findings are largely in line with the findings of other studies that larger bargaining units are more successful than smaller units in outcomes beyond certification. This suggests that unions should perhaps attempt to organize larger bargaining units as those relationships may prove more durable.

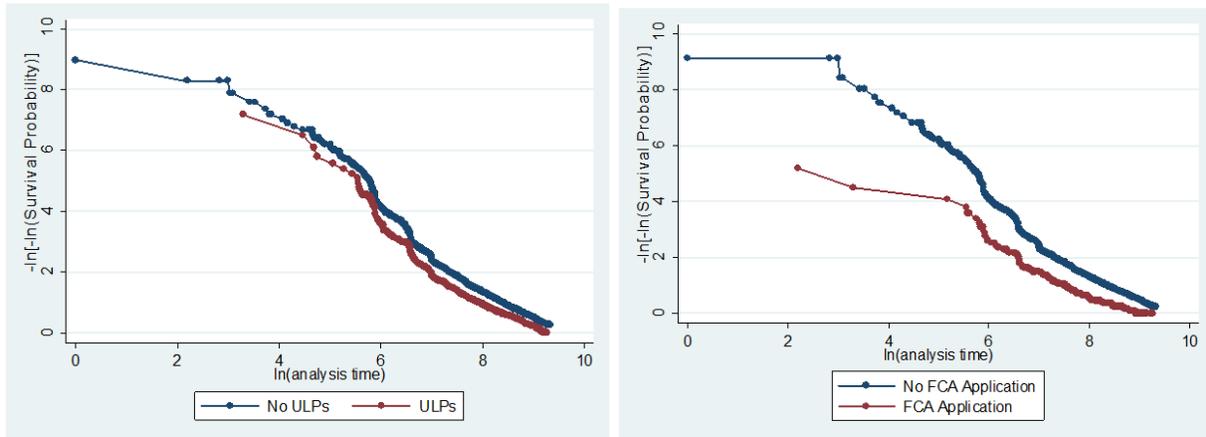
Variables:	Chi-Square	P-value
ULP(s)	0.25	0.6196
FCA Application	4.92	0.0266
Log Bargaining Unit Size	5.63	0.0176
Global Test	161	0.9940

Notes: A P-value of less than .05 indicates a violation of the PH assumption. This test was performed for specification (4) of Table 2, but omits the output of the test for the fixed effects included in the specification. The global test assesses whether the proportional hazards assumption is violated for the overall model.

As stated in the previous section, the proportional hazards assumption that the effect of covariates is time-invariant is of particular interest for this paper as it suggests how persistent the hangover might be. There are a number of different ways in which violations of the proportional hazards assumption may be examined. One is a test of whether the scaled Schoenfeld residuals from the Cox estimation vary with time. If the residuals are shown to vary with time, or rather have a non-zero slope, then this is evidence against the assumption. Under the null hypothesis of zero slope, Table 2.3 displays the results of a statistical test for whether the individual covariates and the model as a whole exhibit a violation. As one can see, the influence of ULP charges is shown not to violate the assumption and the global test of the overall model fails to reject the hypothesis of no violation of the assumption. However, the FCA application and the initial size of the bargaining unit covariates are shown to violate the assumption, indicating that their effects do vary with time. A second check of the proportional hazards assumption was performed using

the log-log survival plots for the ULP and FCA variables, shown in Figures 7 and 8. If the curves in these graphs are parallel then it suggests that the proportional hazards assumption is met.

Figures 7, 8: Checks of the Proportional Hazard Assumption - Log-Log Survival Plots



It is clear that the curve representing the relationships that file an application for first contract arbitration is converging towards the other curve, indicating a violation of the assumption.³²

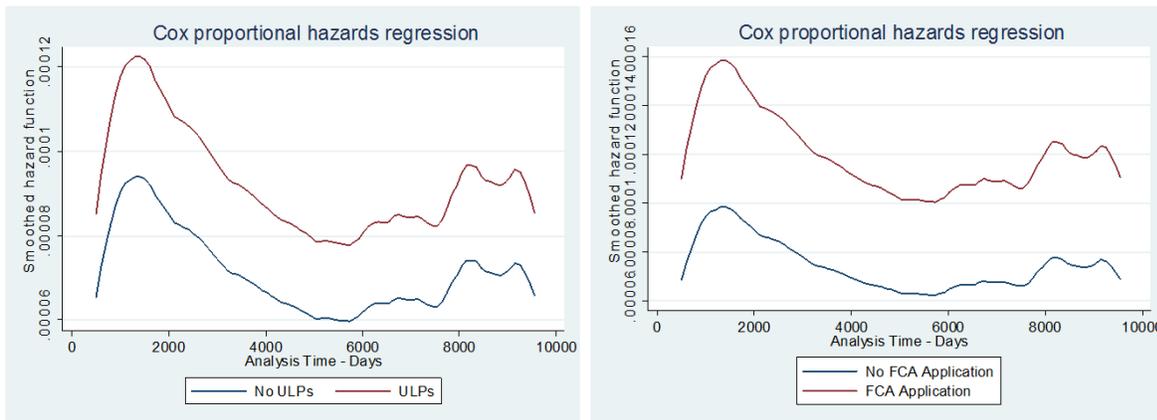
However, the test is less clear for the presence/absence of ULP charge filings in that the curves are largely parallel throughout the log of analysis time, but with some visible deviations. Given the inconclusiveness of the above two tests with regard to ULP filings, I performed one more check of the assumption by including an interaction of the ULP charge(s) covariate with analysis time, which is shown in column (5) of Table 2.2. The inclusion of the interaction increases the estimate of the association of the ULP charge(s) covariate to approximately a 36 percent greater likelihood of relationship dissolution, but the interaction itself is statistically insignificant.

Taking the three tests together, it appears that effect of the ULP covariate is time-invariant, indicating that those relationships that involve a ULP charge experience a statistically significant

³² According to Allison (2010), when a covariate violates the proportional hazards assumption, the estimate represents an “average” effect for that covariate throughout the period of analysis. Thus, the estimate on the first contract arbitration covariate can be thought of as the average association of this covariate for private-sector bargaining relationships in Ontario from 1985-2012.

likelihood of dissolution throughout the entire duration of the relationship as compared to relationships that don't involve ULP filings at their outset. Thus, while it seems quite clear from the Cox regression estimates in Table 2.2 that there is a hangover induced by a turbulent start to a bargaining relationship, how lasting the association of that bad start might be may depend on the measure that is used as a proxy for conflict.

Figures 9, 10: Post-Estimation Hazard Curves



Figures 9 and 10 provide the conditional baseline hazard rate after conditioning on the covariates included in the regression estimates and the effect of both ULP and FCA applications filings. These post-estimation figures show (1) the duration dependence after conditioning on the covariates or rather how the baseline hazard rate changes over time based upon either unobserved or omitted heterogeneity and (2) the hazard rate that a hypothetical relationship with all of the covariates set to the mean faces over time, except for the variables upon which they are stratified. As one can see, it shows that the risk of dissolution is increasing through the first 1500 days (nearly four years) of relationships, before beginning to decline. The shape of the hazard, after conditioning on the covariates, shows (1) clearly the presence of ULP charge/FCA application filings do not explain all of the risk of dissolution that relationships face early on and therefore, (2) it appears that all relationships, regardless of the level of conflict, or rather those used here to measure conflict, may go through somewhat of a “trial period”. Judging by these

graphs, it appears that the trial period extends beyond the first contract. This may provide some evidence towards the hypothesizing of the Post-WWII theorists that all relationships may go through a period where there is a heightened risk of dissolution, perhaps due to the inexperience of the parties in dealing with each other.

Table 2.4 presents a number of robustness checks to investigate the sensitivity of the estimates in Table 2.2 and to assess alternate explanations for the effect of early conflict, or rather the hangover, on the representation phase. Column (1) investigates whether it is events that take place after the settlement of the first agreement that accounts for the influence of the ULP and FCA covariates. Indeed, one might assume that if an employer is willing to commit acts that necessitate the filing of ULP charges or FCA applications during the organizing phase then that same employer may be willing to take actions against the union during the representation phase. Thus, this specification includes a binary variable for the incidence of a work stoppage during any round of bargaining and it allows the log size of the bargaining unit to vary throughout the duration of the relationship. Strike incidence has been shown to significantly increase the probability of decertification, which was possibly attributed to “income lost during a strike, increased elasticity of substitution between nonunion and union labor, or the belief that strikes are consumption ‘bads’” (Ahlburg and Dworkin 1984, p. 27). The coefficient on the work stoppage variable is statistically significant and displays an association of a 31 percent increase in the likelihood of dissolution for relationships that experience a work stoppage during a round of bargaining as compared to those the relationships that don’t experience a work stoppage during that same round. Allowing the bargaining unit size to change throughout the duration of the relationship may control for the shifting of work out of the bargaining unit. This change decreases the association of the likelihood of dissolution for a relationship by an

additional four percentage points as compared to the time-invariant variable such that a one percent increase in the size of the bargaining unit, at any time in the relationship, correlates with an approximate 20 percent decrease in the relationship's dissolution. The inclusion of these two variables though have no impact on the ULP charge(s) estimate and reduces the estimate for the risk of dissolution associated with an FCA application by only six percentage points as compared to column (4) in Table 2.2.

The next three columns investigate whether the external environment may influence the estimates of conflict by controlling for the political, legal and economic environments respectively. Column (2) examines the political environment through the inclusion of dummy variables for when the Progressive Conservative (PC) party or the New Democratic Party (NDP) form the government in power. Column (3) controls for the four major revisions to the Ontario Labour Relations Act during the period of analysis. It has been shown that both the political party in power and the legislation that it enacts affects the certification, decertification and ULP filing activity within Ontario (Martinello 2000). The coefficients controlling for whether a PC or NDP-led government is in power associates with a greater likelihood that relationships will come to an end, as compared to a Liberal-led government, with the former party correlating with an approximate 43 percent increase and the latter a 64 percent increase. While the increase in the likelihood of dissolution may have been expected for the period when the more business-friendly Progressive Conservative party is in control of the government, the coefficient for the more labor-friendly NDP-led government is contrary to what might be expected. One possible explanation for this finding is that unions may have been able to organize bargaining units that they would have not otherwise been able to under a less amenable provincial government and

perhaps the viability of those bargaining units was not sufficient enough to endure beyond the period of NDP leadership. This explanation may be bolstered by the facts that there was a large

Table 2.4. Robustness Tests					
Variables:	(1)	(2)	(3)	(4)	(5)
ULP Charge(s)	0.2614*** (0.0566) [1.2987]	0.2595*** (0.0566) [1.2963]	0.2659*** (0.0565) [1.3046]	0.2651*** (0.0565) [1.3036]	0.2575*** (0.0566) [1.2937]
FCA Application	0.4319** (0.1337) [1.5402]	0.4843*** (0.1346) [1.6231]	0.4781*** (0.1347) [1.6130]	0.4772*** (0.1348) [1.6115]	0.4523*** (0.1339) [1.5720]
Log Bargaining Unit Size	-0.2259*** (0.0200) [0.7978]	-0.1756*** (0.0217) [0.8389]	-0.1782*** (0.0217) [0.8368]	-0.1772*** (0.0217) [0.8376]	-0.2265*** (0.0200) [0.7973]
Work Stoppage	0.2712** (0.0894) [1.3116]				0.2812** (0.0897) [1.3247]
Conservative Government		0.3550*** (0.0796) [1.4262]			0.3992*** (0.0794) [1.4906]
NDP Government		0.4925*** (0.1291) [1.6364]			0.5271*** (0.1287) [1.6941]
OLRA '86 Regime			0.0844 (0.1651) [1.0881]		0.0832 (0.1719) [1.0867]
OLRA '93 Regime			0.1189 (0.4109) [1.1262]		0.1297 (0.3988) [1.1385]
OLRA '95 Regime			0.0505 (0.4463) [1.0518]		0.0922 (0.4343) [1.0966]
OLRA '00 Regime			0.5847 (0.5462) [1.7943]		0.7335 (0.5320) [2.0823]
Unemployment Rate				-0.0130 (0.0150) [0.9871]	-0.0376* (0.0150) [0.9631]
Observations	14032	14034	14034	14030	14028
Relationships	3860	3860	3860	3860	3860
Deaths	1947	1947	1947	1947	1947

Notes: Robust standard errors clustered at the relationship level are presented in the parentheses below the regression coefficient. The hazard rate is presented in the brackets. The hazard ratio is the exponentiation of the corresponding coefficient. Log bargaining unit size is the log of the size of the bargaining unit listed for the first agreement in the relationship in columns (2)-(4), but it is allowed to vary with each collective agreement in columns (1) and (5). All specifications include the industry, union, region and cohort effects included in Table 2. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

spike in organizing (both in certification applications and certificates) during the 1991/92 fiscal year, the first full fiscal year that the NDP was in control of the provincial government, and that the NDP government was displaced by the anti-union Mike Harris Conservative government. Indeed, Martinello (2000) showed that the Harris PC government correlated with a statistically significant increase in decertification activity. Relationships that began under the NDP-led government may have faced a very different environment when it came time to negotiate a second or third agreement under the Harris Conservatives. Thus, the influence of the successive Harris Conservative government could potentially contaminate the estimate of the likelihood of failure for the relationships that began during the prior period with the NDP-led government. However, controlling for the political party in power has virtually no impact on the association of the ULP charge and FCA application filing covariates with relationship dissolution as compared to the estimates in Table 2.2.

Controlling for changes to the legal environment has a similar effect (or rather lack thereof) on the main variables of interest, although it appears that the changes to the legal environment themselves have no significant correlation with the likelihood of relationship dissolution. Interestingly, it appears that it is the political party in power, and not the legislation that it enacts, that seems to influence the duration and dissolution of bargaining relationships during the representation phase. Column (4) attempts to control for the economic environment by including the provincial unemployment rate, which itself appears to have an insignificant impact on the likelihood of dissolution. Again, it produces a largely similar outcome of no impact on the main variables of interest. Finally, column (5) includes all of the controls of the previous four specifications and results in largely the same story, except that now the provincial unemployment rate significantly associates with a decrease in the likelihood of dissolution. A

one percent increase in the provincial unemployment rate correlates with an almost 4 percent decrease in the likelihood of dissolution. Thus, the impact of early conflict, as proxied by ULP charge and FCA applications filings, on the duration of bargaining relationships appears to be quite robust, regardless of the environment external to the bargaining relationships or subsequent events for which the model is able to control.

Table 2.5: Cox Regression Estimates by Type of Relationship Dissolution

Variables:	Decertifications	Plant Closures	Lapsed Relationships
ULP Charge(s)	0.5834*** (0.1006) [1.7922]	0.1453+ (0.0777) [1.1564]	0.1495 (0.1546) [1.1613]
FCA Application	1.0254*** (0.1804) [2.7881]	-0.0928 (0.2215) [0.9114]	0.1415 (0.3978) [1.1521]
Log Bargaining Unit Size	-0.2296*** (0.0391) [0.7949]	-0.1337*** (0.0298) [0.8749]	-0.2899*** (0.0587) [0.7484]
Observations	14034	14034	14034
Relationships	3860	3860	3860
Deaths	565	1011	305

Notes: Robust standard errors clustered at the relationship level are presented in the parentheses below the regression coefficient. The hazard rate is presented in the brackets. The hazard ratio is the exponentiation of the corresponding coefficient. All specifications include the industry, union, region and cohort effects included in Table 2. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

Finally, the previous estimates pooled together all of the manners in which relationships might end. However, as was shown in Figure 4, there are a variety of ways in which relationships can terminate and the effect of conflict may differ across them. Table 2.5 performs a competing risks analysis that looks at how the covariate estimates differ based upon whether the relationship ended through decertification, plant closure, or if it was recorded by the Ministry of Labour as having lapsed.³³ As one can see the presence of ULP charges and FCA applications significantly correlates with the likelihood of decertification and the magnitude of the estimates

³³ The *CBIS Database* is survey-based and relies on the reporting of the parties to the agreements for the information that it contains. A relationship is designated as “lapsed” by the Ministry of Labour after several years of inactivity in which it has not heard from either of the parties.

is vastly higher than the pooled estimates. The presence of a ULP charge filing correlates with a nearly 80 percent increase in the likelihood of decertification, while an FCA application associates with an almost 280 percent increase in the likelihood of decertification. As for the other manners in which a relationship might end, only a ULP charge filing associates with a marginally significant increase in the likelihood of a plant closure, with it estimated to correlate with a 15 percent increase. Whereas it is clear in the case of a decertification that it is an attempt to get out of the bargaining relationship, the reasons for a plant closure or a relationship becoming listed as lapsed by the Ministry of Labour may occur for a variety of reasons, some of which may have little or nothing to do with the bargaining relationship itself. This may explain the decreased magnitude and significance when looking at the association of early conflict with these other manners in which a relationship might end.

2.5 Conclusion

Using data that allows for both the identification of relationships that experience early conflict and the observation of the total duration of relationships, this study finds that there is a hangover to a turbulent start to a bargaining relationship and that it may persist well into the representation phase of the unionization process. However, conflict is a difficult concept to operationalize and so how persistent the hangover might be may depend on how conflict is measured, or rather proxied. The results of the proportional hazards tests indicate that the effect of ULP filings doesn't vary with time, which is suggestive of the "rogue employer hypothesis" that either opposed employers remain opposed or that relationships are marred by the conflict that occurs at their outset. Thus, it appears that relationships that experience ULP filings prior to the settlement of the first agreement face a higher risk of dissolution throughout the entire

relationship as compared to those relationships that are absent any ULP filings during that portion of the process. While it does appear that the influence of FCA applications is time-varying, perhaps being suggestive of the “trial marriage hypothesis” that those relationships are perhaps able to salvage the relationship and endure, it seems more likely that the relationships that have to resort to the filing of an FCA application may be so conflictual that the association appears to diminish with time simply due to the dissolution of those relationships. This is certainly something that I hope to assess in future research. There is also a great disparity in the association of conflict across the different types of dissolution. The hangover to a bad start to a bargaining relationship correlates with a greatly increased risk of the relationship ending through decertification, whereas the association may be minor to nonexistent with regard to the other manners in which a relationship might end.

While the focus of this study is the influence of early conflict on the duration of bargaining relationships, it may also lend some empirical evidence to the hypothesizing about bargaining relationship development espoused by the aforementioned post-WWII theorists. As the post-estimation baseline hazard curves show, it appears that the beginning of relationships is a hazardous period, regardless of the variables used to proxy for conflict in this study. This could be due to omitted variables that also represent conflict at the beginning of relationships or it could be due to the duration dependence of relationships. If it is the latter, this heightened hazard may indicate that all relationships go through somewhat of a trial period where the relationship is more precarious early on in the life-cycle rather than later, perhaps due to the inexperience of the parties and the need to settle the role and the function that each will play in the relationship.

This investigation into whether there is a hangover for bargaining relationships that begin amidst conflict is vital for a number of reasons. From a theoretical perspective, collective bargaining has historically been viewed as a potentially transformative process in which the parties come to an understanding of the role and function that each holds in the relationship. Further, bargaining may result in the development of joint machinery and a shared responsibility for the maintenance of both the relationship itself and the collective agreement. A finding that bargaining relationships that experience conflict from their outset due to the opposition of one of the parties experience a much higher propensity of dissolution may temper these notions. Indeed, given the decreased relevance of unions as exhibited by declines in the unionization rate in many countries and the findings of the research investigating the growth of management opposition to unionization, the capacity for collective bargaining to produce the mature, lasting relationships that Paul Weiler and the post-war theorists predicted may have diminished. From a policy perspective, much of the recent legislative reform, both actual and proposed, has focused on improving the outcomes of unions through the organizing phase. However, employees presumably do not organize to solely achieve certification or a first agreement, but rather do so for the continued ability to influence the terms and conditions of their employment. While legislative reforms targeted to improve the achievement of certification and first agreements may help unions get their foot in the door, the impact and focus of such legislation must surely be reconsidered if that door is subsequently slammed shut.

CHAPTER 3

THIRD-PARTY INTERVENTION AND THE PRESERVATION OF BARGAINING RELATIONSHIPS

This article examines the various forms of third-party dispute resolution available to bargaining relationships in Ontario to investigate whether these mechanisms improve the health of relationships and contribute to their preservation. It performs this in two manners: (1) using survival analysis to see how each mechanism correlates with the likelihood of relationship dissolution and (2) using dynamic panel models to observe the state dependence of such procedures. Whereas the former's connection with relationship preservation is self-evident, the latter is undertaken to see if third-party intervention pushes the parties to settle subsequent agreements earlier in the dispute resolution process – a finding that would reveal another aspect of relationship preservation if those earlier interventions are shown to correlate with lower likelihoods of dissolution. While the survival analysis does indeed show that the earlier interventions of conciliation and mediation do associate with lower hazards of dissolution than a work stoppage, the dynamic panel model estimates do not indicate that third-party intervention induces voluntary settlements in subsequent rounds of bargaining. In fact, it appears that parties may come to rely on their usage, a finding contrary to what one might expect, especially for those interventions hypothesized to potentially improve the health of a relationship.

3.1. Introduction

In the field of industrial relations there is a longstanding adage that mediation is the most widely used, but the least researched form of third-party dispute resolution (Devinatz and Budd 1997). While this adage may not hold outside of industrial relations given the proliferation of studies on mediation in other areas of conflict research (see for example Wall and Lynn 1993 for a review), it is perhaps still the case within it. Much of the industrial relations literature on dispute resolution has concentrated on strikes and compulsory arbitration. Strikes inflict costs on the parties for continued disagreement that pushes the parties to compromise to achieve a settlement whereas arbitration imposes the settlement on the parties through a ruling issued by a third party. The goal of both of these is indisputably the resolution of the dispute through settlement. This has led to a focus on settlements as the primary outcome of dispute resolution mechanisms, but depending on which procedure is in operation, settlement may not be the only or even the paramount goal.

With regard to third-party dispute resolution (of which strikes would be excluded), arbitration is often conceptualized as a procedure that exhibits low third-party control over the process, but high third-party control over the outcome. This is in contrast to mediation, the process by which a third party attempts to facilitate an agreement but does not have the power to impose one, which is seen as a procedure having high third-party control over the process, but low third-party control over the outcome (Lewicki et al. 1992). While this distinction may not be quite as clear cut as the typology suggests, it indicates that while the resolution of an impasse remains a goal of mediation, it is not the only one. With its focus on the bargaining process, rather than the outcome, through bringing the parties together to facilitate a settlement, mediation has been viewed as a means to foster healthy bargaining relationships (Devinatz and Budd 1997). However, and this is perhaps an effect of the preponderance of studies on work stoppages and arbitration, the mediation literature in industrial relations has focused on settlements as the primary measurement of outcomes rather than this goal of improving relationships. This is in spite of numerous studies of mediation in other contexts, such as marital divorce, parental custody, and other legal disputes, that have shown that mediation can improve the relationship between disputing parties (Wall and Lynn 1993).

This study undertakes an investigation of this alternative goal by exploring whether dispute resolution procedures, and mediation in particular, improves the health of bargaining relationships and, therefore, contributes to their preservation. The examination of this research question will be undertaken in two ways. First, it will utilize survival analysis to see how the various manners in which bargaining disputes may be settled correlate with the likelihood of relationship dissolution. This will seek to establish whether certain forms of dispute resolution, particularly those that are thought to improve the relationship, correlate with a lesser likelihood

of relationship dissolution, compared to the other impasse procedures available and compared to voluntarily-settled agreements. Second, it will use a criterion that is pervasive in the literature examining the effectiveness of dispute resolution procedures: their ability to induce voluntary settlements. This will be investigated in the same manner as which the narcotic effect, or rather state dependence, of impasse procedures has been tested involving compulsory arbitration in the public sector and strike incidence in the private sector. If earlier stages of settlement are shown to correlate with better relationship survival, then showing that previous use of third-party intervention shifts the parties back to earlier stages of the process in current negotiations, through a negative state dependence, would also be evidence of a form of relationship preservation.

Using microdata of private sector bargaining relationships in Ontario during the period 1985 to 2012, this study finds mixed results for whether or not dispute resolution procedures improve the health of bargaining relationships and, therefore, contribute to their preservation. The survival analysis does produce some interesting evidence in that it shows that mediated agreements correlate with a lower likelihood of relationship dissolution than agreements settled through either conciliation or work stoppages. Further, mediated agreements correlate with a similar or only slightly higher likelihood of dissolution as compared to agreements directly negotiated by the parties of a relationship without the assistance of a third party. However, the analysis of the usage of third-party dispute resolution procedures over time using dynamic panel data models indicate that they do not induce voluntary settlements, or even push settlements to earlier stages in the process, the result that one might expect given the notion that certain dispute resolution procedures may improve the health of bargaining relationships.

3.2. Literature Review

Given the principle of free collective bargaining underlying North American industrial relations, directly-negotiated, voluntary agreements settled between the parties in a bargaining relationship are traditionally seen as preferable to those produced with the involvement of a third party. Voluntary agreements, the product of the joint decision making of the parties, are thought to have a higher likelihood of acceptance and endurance than agreements that involve a third party, particularly those in which the agreement is imposed (McCormack 1991). This is because the parties themselves are more likely to understand their own needs and wants, and therefore, produce the compromises that can best fit their particular situation than can someone external to the relationship (McCormack, 1991; Farber and Katz 1979). However, collective bargaining is an inherently conflictual process and so third-party intervention is often available as a means to help parties overcome their disputes when an impasse is reached. Given the aforementioned preference for voluntary agreements, it is generally believed that the influence of third parties should be minimized in the collective bargaining process whenever possible and should encourage the settlement of voluntary agreements. Further, the concern that the parties to a bargaining relationship may come to rely on third-party dispute resolution procedures when they have access to them, diminishing their ability to resolve their own disputes, has led to much scholarly attention on the effect that such procedures may have on the bargaining process and bargaining relationships. This is particularly true in the public sector where in many jurisdictions the services provided by a number of occupations have been deemed essential such that the right to strike has been replaced by a third-party dispute resolution mechanism. Much of this scholarship has focused on trying to uncover whether the presence of an impasse resolution procedure, arbitration in particular, disincentives compromise, known as the “chilling effect”,

and if they induce a reliance on the procedure over time, known as the “narcotic effect”. The chilling effect has been examined in a number of studies by investigating either (1) the probability of settlement or the settlement rate within a given round of bargaining or (2) the amount of compromise or the number of issues settled within a round of bargaining. Meanwhile, the narcotic effect has been examined by observing how the measures of the probability of settlement/settlement rate changed across rounds of bargaining (Anderson 1981). Given the research questions outlined above, this section largely focuses on the narcotic effect when discussing the usage of dispute resolution procedures.

Interestingly, none of the studies that investigate the narcotic effect of impasse procedures examine whether or not they influence the mortality of the relationships. This is perhaps not surprising for the studies that investigate the state dependence of compulsory arbitration since all of these studies draw upon public sector relationships where relationship dissolution is much less prevalent than in the private sector. However, for the studies that examine strike incidence, this is perhaps somewhat surprising since work stoppages are highly conflictual occurrences that one might think may endanger the viability of a bargaining relationship. To my knowledge, the only state dependence study that mentions how the population changes over time is Campolieti et al. (2005). They cite that smaller bargaining units tended to drop out of their sample over time, the cause of which they do not mention, but one would presume it is due to relationships ending. Since their focus is strike incidence and duration though, rather than relationship dissolution, there is no investigation as to whether the disappearance of relationships is due to the conflict that necessitates dispute resolution, or rather strikes in the context of their study. Even outside of this state dependence literature, there has been very little investigation into how dispute resolution mechanisms associate with relationship

dissolution. Strike incidence has been shown to significantly increase the probability of decertification (Ahlburg and Dworkin 1984), but this is only one manner in which a relationship may end. Further, there doesn't appear to be any studies that examine how conciliation, mediation or arbitration associates with the likelihood that a relationship will dissolve.

This article represents the first to investigate how the various dispute resolution procedures, particularly those that involve a third party, correlate with bargaining relationship dissolution. Due to the use of data on private-sector relationships in the province of Ontario, this study may have little to say about arbitration as it is rarely used in the private sector (less than 1 percent of the agreements settled during the period of analysis were settled through arbitration). In contrast, the other forms of third-party intervention offered in Ontario, conciliation and mediation, are utilized quite frequently (representing the manner of settlement in 26 and 20 percent of the agreements during the period of analysis respectively). Historically, the distinction between these two interventions is defined by how actively the third-party participates in the process. In conciliation, the conciliator plays a passive role whose mere purpose is to bring the two sides back to the bargaining table to continue negotiations, whereas in mediation, the mediator plays a more active role of facilitating the negotiations by suggesting compromises and settlements. However, in practice there is often little difference between the two such that the terms may be used interchangeably (Rehmus 1965; Devinatz and Budd 1997). In speaking with the Ministry of Labour's Dispute Resolution Services, this was corroborated as it was stated that there was no functional difference between the practice of conciliation and mediation. However, they do represent different stages within the Ontario dispute resolution procedure, which means that while their practice may not be differentiable, they do take place in slightly different contexts and may represent varied levels of conflict.

Ontario has a compulsory conciliation requirement in which a conciliation officer is appointed to assist the parties to come to agreement if either of the parties requests it. This is generally the first step in the dispute resolution process in the private sector of Ontario and it must be undertaken in order to enter into a legal strike/lockout position. There is no obligation for how intensely the parties participate in conciliation; the parties are required to be present for at least one meeting once they enter this stage, but they can withdraw following it. If conciliation is unsuccessful then this begins a countdown upon which at its expiration, either party may commence a work stoppage. Following conciliation, a mediator is appointed to assist the parties but he/she is only used if both parties voluntarily agree to participate in mediation. If it is used following conciliation³⁴, then it takes place within the context of the aforementioned countdown that enables the parties to undertake a work stoppage. Given that mediation is voluntary, though, means that not all of the relationships that proceed to the terminal step in the procedure use mediation as an intermediate step. Regardless of whether the parties undertake mediation, once the countdown following conciliation has expired, then the parties may enter into a work stoppage, representing the terminal step in the procedure. Thus, one might expect that as relationships move into later stages of the dispute resolution procedure, representing potentially higher levels of conflict, then these subsequent procedures may increasingly correlate with relationship dissolution. However, the effectiveness of the procedures with regard to the preservation of bargaining relationships may be moderated by the context in which they are situated (mandatory vs. voluntary, legal vs. illegal strike positions). This is essentially an empirical question that this study seeks to investigate below.

³⁴ Parties may undertake mediation on their own volition, such that it can take place and effectuate an agreement without either of the other two stages. However, it was stated that while this was a possibility, it was rare in practice and that the process generally follows the order outlined above. Other procedures, such as fact-finding or arbitration, may also be undertaken if voluntarily agreed to by both of the parties, but these other procedures are rare in this setting.

For the studies that examine the usage of dispute resolution procedures over time, much of the theory underlying the existence of a narcotic effect under compulsory arbitration regimes stems from the existence of learning effects by the negotiators in a relationship. Initially, this resulted in the hypothesis that the use of arbitration in one round will result in increased use in future rounds as the parties learn that disputes can be settled easily and at less cost through the imposition of an arbitration award than either through a work stoppage (if available) or the trouble of difficult collective bargaining. This assumes that the contract awarded by the arbitrator, often thought to be the difference between the two final offers in conventional arbitration, is acceptable to the parties (Anderson 1981). Other models of arbitration and other explanations for the existence of the narcotic effect have also been postulated. Farber and Katz (1979) developed a model of arbitration in which the parties are assumed to be risk averse and therefore are induced to voluntarily settle agreements due to the uncertainty surrounding an arbitrator's award. However, as parties continue to use arbitration, and therefore learn about the process and the arbitrator, the uncertainty concerning arbitration may be reduced such that usage of the procedure may increase over time. "Face-saving" or a principle-agent problem have also been proffered as potential explanations for why there might be an increase in the use of arbitration over time (Stevens 1966; McCall 1990). In this case, it is hypothesized that negotiators will increasingly use arbitration for political reasons as it allows them to place the blame of a bad bargain on the arbitrator. While all of the aforementioned predict an increase in usage over time, the half-life effect predicts that usage rates will decline. This hypothesis is also as a result of learning, but without the assumption that the arbitration awards are acceptable. Essentially, if the parties are unhappy with the outcome of arbitration then this can be viewed as an additional cost imposed on the parties that may be avoided through direct negotiations. It

may also be that bargaining pairs are willing to try a new dispute resolution procedure after its enactment, but may become disenchanted with its outcomes such that the usage rate declines over time (Anderson and Kochan 1977; Butler and Ehrenberg 1981).

The findings of the empirical literature investigating the existence of the narcotic effect regarding compulsory arbitration are as varied as its theoretical underpinnings. Kochan and Baderschneider (1978) found an increase in impasse rates under an arbitration regime among police and firefighter bargaining units in New York State from 1968-1976 while Anderson and Kochan (1977) produced a similar finding for bargaining units in the Canadian federal service from 1968-1975. However, Butler and Ehrenberg (1981) dispute the findings of Kochan and Baderschneider (1978), of which their critique would also apply to Anderson and Kochan (1977), due to the omission of controls for unobservable heterogeneity across bargaining units. Butler and Ehrenberg (1981) argue that there may be different predispositions towards the use of arbitration across bargaining units and that by not controlling for them, one cannot distinguish whether the increased impasse over time is due to prior impasses or the greater propensity for impasse in all rounds that might exist amongst bargaining units. Upon controlling for unobserved heterogeneity in the data used by Kochan and Baderschneider (1978), Butler and Ehrenberg (1981) find that there was an increase in impasses in the initial years after the terminal step in New York was changed from fact-finding to arbitration, but that there was a negative probability of impasse in the current round based on previous experience at the end of the period of analysis.

Subsequent studies have produced findings that corroborate both to an extent. Another reexamination of the above New York firefighter and police data by Chelius and Exejit (1985) produced findings of an increase in impasse in the years immediately following the statutory change, but no effect of prior impasses on current impasse in the later periods of the data. They

found a similar trend when they examined data from Iowa, Indiana and Pennsylvania. Using the same approach as Butler and Ehrenberg (1981), Currie (1989) found a positive narcotic effect for teachers in British Columbia from 1947-1981, while Bognanno and Champlin (1997) found a negative narcotic effect for public sector workers in Minnesota from 1973-1980. Finally, Kochan et al. (2010) compared New York State police and firefighter bargaining unit data from 1995-2007 against the data under the arbitration terminal step used in Kochan and Baderschneider (1978). They find a greatly reduced usage rate of arbitration among bargaining units in the later period, pointing towards a negative or no narcotic effect.

The reasoning and methods behind the investigation of a narcotic effect within compulsory arbitration statutes have been extended to other forms of dispute resolution, namely the incidence of strikes. Similarly, it is thought to be through learning effects that strikes in the past are expected to influence the probability of strikes in the present. Mauro (1982) postulated that strikes are the result of miscalculation between the bargaining pairs and that strikes allow them to gain information that may be used to avoid such costly errors in the future, resulting in a negative state dependence. Mauro's findings corroborate his hypothesis in that he finds that the incidence of a strike in the prior round of negotiations significantly decreases the likelihood of a strike in the current round for a sample of 14 relationships in the U.S. private sector over approximately three decades beginning in the mid-20th century. While Schnell and Gramm (1987) caution against drawing conclusions based upon Mauro's use of fixed effects in nonlinear models, these authors use Butler and Ehrenberg's (1981) first-differenced instrumental variables approach to investigate the same hypothesis of a negative narcotic effect, or a "teetotaler effect" as they term it, for strikes due to learning. They find evidence to support their teetotaler hypothesis as a strike in either of the prior two rounds of negotiations negatively correlate with a

strike in the current round for a sample of 147 bargaining units in U.S. manufacturing industries from 1971-1981. Using the same estimation techniques, Campolieti et al. (2005) also find evidence of a teetotaler effect for bargaining units in the private sector of Ontario for 1984-1992.

Whereas one might expect that the state dependence of strikes might always be theorized to be negative due to the high costs that a work stoppage imposes on the parties, this is not borne out by the empirical studies, even if the findings are less varied than those pertaining to compulsory arbitration. Swidinsky and Vanderkamp (1982) found that an index for how far in the dispute resolution procedure the negotiations in the previous round went was positively associated with the likelihood of a strike in the current round of negotiations for a sample of bargaining units in the Canadian manufacturing industry from 1967-1975. They initially hypothesize that this variable tests whether a bargaining relationship between union and management can become increasingly strained over time resulting in the incidence of a strike. Schnell and Gramm (1987) are critical of these findings in that they state “there is no theoretical foundation for the conjecture that bargaining relations tend to deteriorate over time” and that the findings are produced void of any controls for unobserved heterogeneity. While the latter critique may be valid, there a number of theoretical reasons that may be given for the deterioration of bargaining relations. Fox (1974) theorized about the patterns of labor-management relationships where antagonizing actions by the parties can set the relationship on a low-trust dynamic that would likely result in conflict. Reder and Neumann (1980), whom Schnell and Gramm (1987) even cite, theorized that bargaining relationships develop “bargaining protocols” to guide their continued bargaining activity, but they state that not every relationships is successful at establishing them and this may jeopardize the relationship’s viability. Walton et al.’s (1994) development of the escape strategy in which the employers seeks to end the

bargaining relationship provides another possible explanation for worsening bargaining relations over time. While these theories don't obviate the fact that Swidinsky and Vanderkamp's (1982) finding may be spurious due to unobserved heterogeneity, they do provide some reasoning for why a narcotic effect could hypothetically exist pertaining to work stoppages. Finally, there are number of studies that find that prior strike experience doesn't predict the probability of current strike experience. Chelius and Exejit (1985) found no significant narcotic effect pertaining to strikes in their data of teacher bargaining units in Pennsylvania from 1971-1980. Similarly, Campolieti (2015) estimates no significant state dependence for Canadian contract data from 1978-2008 across a variety of econometric techniques, leading him to conclude that strikes are "isolated or myopic events" (p. 8).

While the evidence of the existence of a narcotic effect with regard to either arbitration or strikes is mixed, the literature for those two dispute resolution procedures is relatively more developed than for other procedures, such as the intermediate stages of mediation and/or conciliation, simply due to the number of extant studies. This is somewhat surprising given the call for action by Butler and Ehrenberg (1981) in their concluding sentences in which they state that the methods outlined in their article can and should be used for investigating the narcotic effect with respect to any of the dispute resolution procedures. This combined with the recognition that mediation may improve the health of the relationship, implying that it might affect subsequent interactions, compounds the surprise that no one has heeded their call. Reasons why mediation and conciliation may have eluded such an investigation thus far may be due to their placement in the middle of the dispute resolution system or due to the fact that participation by the parties in the procedure is often voluntary, especially in the private sector (Devinatz and Budd 1997).

Some of the aforementioned studies that look at the narcotic effect of a dispute resolution procedure terminating in arbitration attempt to incorporate these intermediate steps into their analysis through variations in their dependent variables and this may provide some insight into a way forward. Anderson and Kochan (1977) used two dependent variables in their study, a binary variable for going to impasse and a categorical variable for the stage in the procedure in which the agreement was settled. Kochan and Baderschneider (1978) and Anderson (1982) incorporate a third dependent binary variable into their study that indicated if the round of negotiation proceeded to the final step in the process. Chelius and Exejit (1985) also checked the robustness of their findings by varying their definition of impasse to include mediation in some specifications and exclude it in others. The estimates in these articles that investigate whether a narcotic effect exists when mediation and other intermediate steps are included as an impasse must incorporate the state dependence of the intermediate steps in the process, if they exist, but they don't attempt to disentangle them. Further, none of the articles account for the possible influence of unobserved heterogeneity such that one cannot rule out the possibility that their estimates are spurious. This study, as will be described in greater detail below, will attempt to disentangle the state dependence of the various steps in the impasse resolution procedure for bargaining units in the private sector of Ontario using the techniques in the studies above that account for unobserved heterogeneity, but will perform this on a variety of different dependent variables that measure if the current round of negotiations goes as far in the procedure as previous rounds. It is through a comparison of these estimates of previous impasse experience, in which different steps are considered as an impasse, that it will seek to make inferences about the narcotic effect of the different steps, particularly the intermediate steps that

have heretofore not thoroughly been investigated and are theorized to potentially influence future outcomes.

While the above recounts the literature used to investigate the narcotic/teetotaler effect pertaining to strikes, which represents the terminal step in the procedure for the data used below, it is reasonable to ask what we might expect to find with regard to mediation and conciliation given that their state dependence has not been adequately investigated. It seems highly likely that learning effects may also play a role in whether or not there is state dependence with regard to the intermediate stages. While they focused on the achievement of the settlement through mediation, Kochan and Jick (1978) did find that settlements tended to be concentrated among jurisdictions that likely had little experience with impasse resolution procedures. This leads them to suggest that the use of the procedure may lessen as the parties gain experience with it and perhaps discover its shortcomings, which would be indicative of a negative state dependence - a teetotaler or half-life effect. Gerhart and Drotning (1985) also suggest that it may be the acquisition of bargaining experience that leads to a decline in the use of mediation/conciliation as “two highly sophisticated negotiators need no impasse procedure at all[, t]hey can be their own mediators and factfinders” (p. 170). Finally, if mediation/conciliation actually do foster healthy relationships and are successful at not only settling the current impasse, but possibly preventing future ones as is predicted in the mediation literature outside of industrial relations (Wall and Lynn 1993), then this might lead us to observe a decrease in their usage over time.

It also seems plausible that some of the theories underlying a positive state dependence for the other procedures outlined above may be potentially applied to mediation and conciliation. Bargaining pairs could lose their ability to fashion their own agreements with continued use of such procedures. Indeed, Gerhart and Drotning (1985) present some anecdotal evidence to

support such a hypothesis. The face-saving/principle agent problem identified above could also be at play as the negotiators, for reasons of ineptitude or politics, can place the blame of a bad bargain on the mediator/conciliator (Devinatz and Budd 1997). The cost of the procedures, at least relative to the terminal step of a work stoppage, could potentially result in a positive state dependence too. Anderson and Kochan (1977) found that mediation/conciliation was more effective at producing a settlement when a strike was the terminal step, rather than arbitration, which they liken to the difference in cost between the two final steps. With the high costs that a work stoppage imposes on the parties, bargaining pairs may be unwilling to go to the terminal step in successive negotiations, but may come to rely on the less-costly intermediate steps. Finally, how effective the parties find the procedure may have implications for any investigation of state dependence. If parties find the procedure to be effective, then it seems plausible that this may foster continued use of it. However, what the effect might be if the parties find the procedure to be ineffective is ambiguous, partially due to their being situated in the middle of the dispute resolution procedure. Parties who are dissatisfied with the outcomes at the intermediate stage could potentially settle at the earlier or later stages in future negotiations, possibly leading to a finding of positive, negative, or no state dependence (if there is no identifiable trend either way).

3.3. Data

The data used in this study is from the Ontario Ministry of Labour's *Collective Bargaining Information Services* (CBIS) database and the Ontario Labour Relations Board's *Monthly Reports*. The former data source tracks bargaining relationships through the number of completed rounds of bargaining in the province of Ontario, while the latter data source was used

to collect information on the experience of bargaining relationships prior to the settlement of the first agreement. The first portion of the analysis on relationship dissolution involves a merge of the information in the two datasets, whereas the latter portion on dispute resolution varies between usage of the merged data and the CBIS data only.³⁵ Due to the focus on the duration and dissolution of bargaining relationships in the first portion of the analysis, only relationships that are observed from their origin can be included. This results in the use of the merged Ontario Ministry of Labour (OML)/Ontario Labour Relations Board (OLRB) sample of 3,857 private sector relationships that started during the period 1985-2012 in the province of Ontario, which includes just over 14,000 collective agreements, in this first portion of the analysis.³⁶ Since the focus of the second portion of the analysis shifts from the duration and dissolution of bargaining relationships to the usage of dispute resolution procedures over time, it is no longer necessary to exclude the relationships whose origin are unobserved. Thus, the latter portion of the analysis performs estimation using (1) the merged OML/OLRB sample used in the first portion of the analysis and (2) the larger OML CBIS dataset of relationships during the time frame, including those already in existence at the start of the period, which comprises 9,764 private sector relationships and approximately 48,000 collective agreements.

The main variables of interest in this study are a series of binary variables representing the manner in which the agreements are settled. These include if the agreements were settled through first contract arbitration, arbitration, mediation, conciliation or after having experienced a work stoppage. An agreement that is directly negotiated between the parties without the assistance of a third-party is treated as the base case for the manner of settlement. Since these

³⁵ A more detailed description of each dataset, the process of the merge and the omissions made to analyze the data may be found in chapter 2.

³⁶ Since this sample excludes relationships that were already in existence at the beginning of the timeframe for analysis, it can be thought of as a flow sample.

variables may also be viewed as proxies for conflict in the relationship, it is hypothesized that they will likely correlate with an increased risk of dissolution. Further, it is expected that those modes that are associated with higher levels of conflict and take place later in the process (FCA, arbitration, work stoppages) will be greater in magnitude than those associated with lower levels that take place earlier (conciliation or mediation). As mentioned above, how the manner in which agreements are settled correlates with relationship dissolution has yet to be examined. Next, these variables and their lags are used to construct the dependent variables (detailed in the next section) to investigate the state dependence of the dispute resolution procedures in the second portion of the analysis.

Dummy variables for the incidence of unfair labor practice (ULP) charge filings and first contract arbitration (FCA) application filings within a relationship are included as independent variables. These two variables indicate whether a relationship began under turbulent circumstances where the employer may have opposed the decision of his/her workforce to unionize. Similar to the manner of settlement variables, these two variables represent conflict (that which takes place prior to the first agreement) and investigate whether there is an impact beyond the settlement of the first agreement into the representation phase of the process. As proxies for conflict, it is expected that they will positively correlate with relationship dissolution.

The log size of the bargaining unit is included as a control variable and this is one of the few variables that has been investigated with regard to a type of relationship dissolution. It has been found that the size of the bargaining unit is positively associated with winning a decertification election, although this finding is for units already facing a decertification election and says nothing of the influence that size may have on the risk of getting to that point (Krislov 1956; Chafetz and Fraser 1979; Anderson et al. 1979; Elliot and Hawkins 1982; Ahlburg and

Dworkin 1984; Dickens et al. 1987; Meyer and Bain 1994). The reasons given for this correlation are numerous, most of which focus on the relevance of the bargaining unit to the union. A larger bargaining unit is theorized to be more important to the union as it is a greater source of membership, and therefore union dues, and servicing larger units is more cost effective for unions due to economies of scale. Thus, unions are more willing to support larger units and to provide resources to fight a decertification campaign, while smaller units are more likely to be (or rather feel) neglected (Chafetz and Fraser 1979). Larger bargaining units are also much more likely to be affiliated with a national union and a union federation and it can draw upon the resources and expertise from such affiliations (Meyer and Bain 1994). Furthermore, larger bargaining units are less likely to be afflicted by turnover, be it natural or employer-induced, such that the composition of the unit, involving workers that voted the union into the workplace, is less likely to be altered. Finally, bargaining units that represent a high percentage of the employer's workforce are likely to have greater bargaining power and a large bargaining unit is more likely to be in such a position than a small bargaining unit (although this assertion is more tenuous than the others since this could be mediated by a number of other factors, such as skill) (Bain 1981). Thus, it is hypothesized that the log size of the bargaining unit will be negatively correlated with the hazard of relationship dissolution. However, bargaining unit size has been shown to positively correlate with going to impasse and strike incidence (Anderson and Kochan 1977; Swidinsky and Vanderkamp 1982; Campolieti et al 2005), so it hypothesized that this variable will positively correlate with the usage of the dispute resolution procedures.

The dynamics of the size of the bargaining unit is incorporated as a control through the inclusion of the percent change in the size of the bargaining unit from the prior round of negotiation to the current round. According to Campolieti et al. (2005), which uses data very

similar to that used in this study, this variable “provide[s] a firm-specific measure of changing circumstances, which may also capture some business cycle effects” (p. 612). Thus, this variable may proxy for the economic state of the firm and the movement of labor into or out of the bargaining unit within the company. A decrease in the size of the bargaining unit could indicate that the health of the firm is diminishing or it could be that the firm is shifting resources elsewhere, perhaps to escape the bargaining relationship. Thus, it is hypothesized that this variable will have a negative correlation with the likelihood of relationship dissolution. The length of the prior contract has also been shown to influence the likelihood of strike incidence (Card 1988; Campolieti et al. 2005). Thus, using a one-year agreement as the base case, dummy variables for two-year agreements and agreements of greater than two years duration are included in the second portion of the analysis.³⁷ It has been shown that strike incidence is greater following longer contracts so it is hypothesized that these variables will positively correlate with greater usage of dispute resolution procedures. Finally, the last bargaining unit characteristic included as a control is the employment status of the workers in the bargaining unit. Using a base case of a bargaining unit with only full-time employees, binary variables for part-time bargaining units, full-/part-time mixed units, and bargaining units in which part-time workers are not specifically excluded are incorporated. These variables may proxy for solidarity within bargaining units as part-time only or full-time only units may have more unified interests. Campolieti et al. (2005) hypothesized that this would result in a greater likelihood that those bargaining units would strike. However, part-time workers may be less attached to their job,

³⁷ Since agreements don’t strictly adhere to year lengths and can include fractions of a year, the construction of these dummy variables for the prior contract length is as follows: the one-year dummy variable includes all agreements less than 18 months in duration; the two-year dummy variable includes all agreements greater than 18 months but less than 30 months in duration; and the greater than two years dummy is all agreements greater than 30 months in duration.

which means that bargaining units including part-time employees may experience higher turnover and be at a greater risk of relationship dissolution.

The remainder of the independent variables investigates the impact of various aspects of the external environment. The political environment is examined through the inclusion dummy variables for when the Progressive Conservative (PC) party and the New Democratic Party (NDP) form the government in power. This variable is a proxy for the favorability of the climate in the province towards organized labor. It has been shown that the party in power, through its enactment of legislation, appointments to the Labour Relations Board, and its rhetoric either highlighting the positives or negatives of organized labor, can affect the certification and decertification activity within a province (Martinello 2000). Thus, using the Liberal Party as the base case, it is hypothesized that a PC government will correlate with an increase in the risk of dissolution due to the party's close(r) ties to the business community, while it is expected that an NDP government will correlate with a reduced risk due to that parties' ties to the Canadian labor movement.

The legal environment is examined using dummy variables for the four substantial revisions made to the Ontario Labour Relations Act (OLRA) during the period of study, taking place in 1986, 1993, 1995, and 2000 respectively. The bargaining relationships are classified based upon the legal regime in which the relationships began. Thus, if the relationship began under the OLRA 1993, then it is coded as belonging to the OLRA 1993 legal regime, even if it persists beyond the OLRA revision in 1995. This seems to be a rather intuitive approach as many of the policy changes, such as mandatory representation vote legislation and first contract arbitration, deal with the early stages of the unionization process. By making these legal regime variables time-invariant, it essentially treats the relationships as belonging to a cohort based upon

the legal regime in which it was started and investigates its long-term impact. Using the labor policy environment that preceded the first major revisions of the OLRA as a base case, the 1986 revision introduced no-fault first contract arbitration (FCA). No-fault FCA granted newly-certified unions the opportunity to have the Ontario Labour Relations Board or a private arbitrator impose the first collective agreement if the parties were unable to settle it on their own due to the violation of one of a given set of criteria. The next major revision in 1993 made numerous changes to the policy environment, including shifting from no-fault FCA to automatic FCA. Under the latter, access to arbitration no longer depends on a violation, but rather is granted based upon the passage of time since certification and the Board's belief that conciliation can no longer progress bargaining. It also introduced anti-temporary replacement legislation limiting the use of temporary replacement workers during work stoppages and expanded the OLRB's powers to consolidate smaller bargaining units. The revisions to the OLRA in 1995 returned much of the policy environment back to what prevailed prior to the 1993 revision. However, it also implemented a mandatory vote provision requiring that all bargaining units outside of the construction industry win a ballot election to achieve certification (see Riddell 2013 for a more detailed discussion of these legislative changes through to the 1995 revision). The final revision to the OLRA in 2000 extended the amount of time in which a decertification application could be filed from 2 to 3 months and required that the employer post information on the decertification procedure. The legal revisions that were more favorable to labor (OLRAs 1986/1993) may associate with a reduction in the risk of dissolution if they are successful at assisting the union and the unit in establishing itself in the workplace. However, they could correlate with an increase in the risk of dissolution if the more favorable policies help to prop up weaker bargaining units that would otherwise be unable to persist (and therefore don't beyond

the reach of these provisions). Thus, the hypothesized direction of these variables is ambiguous with regard to relationship dissolution. First contract arbitration and the anti-temporary replacement legislation are the only statutory changes that affect the dispute resolution procedure in Ontario during this period of analysis. However, neither of those changes are expected to have a drastic impact on the estimation of dispute resolution usage as FCA can only be accessed once (although its use could foster a dependence on other procedures), while the anti-temporary replacement legislation was only in effect for two years before being repealed. The stability of the dispute resolution process in this study should perhaps be viewed as an asset though as Farber and Katz (1979) highlight that changes to the dispute resolution procedure have an effect on negotiated settlements that make the investigation of any such changes difficult to assess.

The last external covariate is meant to control for the economic environment. The provincial unemployment rate is included in the model³⁸, but the direction of this variable is ambiguous based upon both theory and the findings of previous empirical studies. On the one hand, an increase in unemployment could associate with a decrease in the risk of dissolution if workers' desire for the job security that is provided by a collective agreement is elevated when jobs are scarcer. Indeed, this is the explanation provided by Cooke (1985) for the statistically significant correlation between unemployment and the achievement of the first contract that he finds in one of his models. On the other hand, a decrease in unemployment, and therefore a reduction in the reserve pool of labor, could associate with a decrease in risk if unions have more bargaining power and are better able to extract gains when the economic conditions are in favor of labor. It is perhaps for this reason that Jelf and Dworkin (1997) find that the only identifiable

³⁸ The ideal level of measurement for unemployment would be the industry since that is the level that best approximates the market in which these relationships operate. Due to the long period of study, however, a number of industrial reclassifications made it difficult to provide accurate estimates of the unemployment rate at that level.

trend across their review of decertification studies is that the threat of decertification is lessened when macroeconomic factors, such as low unemployment and high wages, favor employees.

Finally, dummy variables for the union, industry, region, year and cohort are included in various specifications used in the analyses below to control for any specific effects pertaining to these characteristics of the bargaining relationships. The industry dummies are based on the one-digit SIC 1980 codes, while the region dummies are based on the economic regions specified in the CBIS database. Finally, the inclusion of the cohort effects serves two purposes: (1) they provide a control for the macroeconomic environment for the year in which the relationship started and (2) they ensure that the duration of the relationship is independent of the entry and censoring time (Wooldridge 2001). Table 3.1 below provides summary statistics for the variables used in the analysis.

Table 3.1. Summary Statistics

	Merged Dataset (OML/OLRB)		Full Dataset (OML only)			Merged Dataset (OML/OLRB)		Full Dataset (OML only)	
	Mean	Std. Dev.	Mean	Std. Dev.		Mean	Std. Dev.	Mean	Std. Dev.
<i>Manner of Settlement</i>					<i>Government in Power</i>				
Work Stoppage	0.0416	0.1996	0.0426	0.2019	Conservative Party	0.3686	0.4824	0.3149	0.4644
Arbitration	0.0038	0.0614	0.0020	0.0451	New Democratic Party	0.1781	0.3826	0.2130	0.4095
First Contract Arbitration	0.0071	0.0837	0.0022	0.0471	Liberal Party (base)	0.4533	0.4978	0.4721	0.4992
Mediation	0.2237	0.4168	0.2063	0.4047					
Conciliation	0.2967	0.4568	0.2619	0.4397	<i>Union</i>				
Direct Bargaining (base)	0.4271	0.4947	0.4848	0.4998	CUPE	0.0294	0.1689	0.0223	0.1475
					UFCW	0.1417	0.3488	0.0991	0.2988
Unfair Labor Practice Filing	0.2147	0.4106			SEIU	0.0352	0.1844	0.0240	0.1529
First Contract Arbitration Application	0.0249	0.1558			CAW	0.1317	0.3382	0.1011	0.3014
Bargaining Unit Size	62.6134	172.3395	97.7210	517.4933	OPSE	0.0063	0.0790	0.0035	0.0587
Log Bargaining Unit Size	3.2244	1.3061	3.3678	1.4409	LIUNA	0.1130	0.3167	0.0555	0.2289
Change of Employment	1.3849	57.8229	-1.8206	133.4931	ONA	0.0020	0.0446	0.0008	0.0277
					IBT	0.1012	0.3016	0.1001	0.3002
<i>Prior Contract Length</i>					CEP	0.0488	0.2154	0.0439	0.2048
1 Year (base)	0.0796	0.2707	0.1028	0.3037	USW	0.1328	0.3394	0.1434	0.3505
2 Years	0.2080	0.4059	0.3418	0.4743	CLAC	0.0087	0.0929	0.0068	0.0821
2+ Years	0.4371	0.4960	0.4418	0.4966	HERE	0.0159	0.1251	0.0199	0.1398
Missing/Unknown	0.2753	0.4467	0.1136	0.3173	RWDSU	0.0185	0.1349	0.0236	0.1517
					GCU	0.0121	0.1091	0.0260	0.1591
<i>Type of Unit</i>					IUOE	0.0165	0.1273	0.0219	0.1463
Full-Time (base)	0.1460	0.3531	0.1693	0.3750	IBEW	0.0068	0.0825	0.0094	0.0963
Part-Time	0.0168	0.1284	0.0161	0.1258	Other Union (base)	0.1793	0.3836	0.2990	0.4578
Full-Time/Part-Time Mix	0.1501	0.3571	0.1205	0.3255					
Part-Time Not Excluded	0.6871	0.4636	0.6941	0.4608	<i>Industry</i>				
					Primary	0.0069	0.0829	0.0190	0.1366
<i>Legal</i>					Manufacturing	0.3860	0.4868	0.5198	0.4996
pre-1986 OLRA (base)	0.0835	0.2767			Transportation	0.0617	0.2406	0.0443	0.2058
1986 OLRA	0.3591	0.4798			Trade	0.1655	0.3716	0.1494	0.3564
1993 OLRA	0.2110	0.4081			Education	0.0094	0.0966	0.0062	0.0784
1995 OLRA	0.1814	0.3853			Health	0.0299	0.1703	0.0121	0.1092
2000 OLRA	0.1650	0.3712			Other Services	0.3406	0.4739	0.2492	0.4326
Provincial Unemployment Rate	7.5576	1.5261	7.5245	1.6629					

Notes: The union abbreviations are as follows: Canadian Union of Public Employees (CUPE), United Food & Commercial Workers Union (UFCW), Service Employees International Union (SEIU), Canadian Autoworkers (CAW), Ontario Public Service Employees Union (OPSE), Laborers International Union of North America (LIUNA), Ontario Nurses Association (ONA), International Brotherhood of Teamsters (IBT), Communications, Energy and Paperworkers Union (CEP), United Steelworkers (USW), Christian Labour Association of Canada (CLAC), Hotel Employees and Restaurant Employees Union (HERE), Retail, Wholesale & Department Store Union (RWDSU), Graphic Communications International Union (GCU), International Union of Operating Engineers (IUOE), International Brotherhood of Electrical Workers (IBEW). Summary statistics for the year of settlement and the cohort effects are not listed, but can be obtained from the author.

3.4. Methods

3.4.1. Dispute Resolution Procedures and Relationship Dissolution

Since this study aims to investigate how the various dispute resolution procedures associate with the likelihood of relationship dissolution, an event occurrence, the first portion of the analysis uses survival analysis. Within survival analysis, there are two forms of estimation, the choice of which often depends on how one views the process that is being studied. If it is believed that the event of interest occurs as part of a continuous process, meaning that the event of interest can take place at any point in time, then the continuous-time approach should be adopted. However, if the event of interest can only occur at discrete points in time or if the exact timing of the event of interest is unknown, but is known to have taken place within an interval of time, then the discrete-time approach should be undertaken (Singer and Willett 2003). Given the different manners in which relationships may come to an end, the choice between the two approaches is not entirely clear within this context. There is a conceptual argument to be made that the dissolution of relationships may be better represented through the discrete approach as some forms of dissolution are more likely to take place at the conclusion of a contract, such as decertifications and voluntary terminations since applications for them can only be made during the “open periods” of a contract. However, this only applies to the application whereas the actual decertification or termination may take place at any point in time after such an application. Further, events that may change the nature of the bargaining relationships, such as a work stoppage or perhaps contentious bargaining itself, coincide with rounds of negotiation, which may further undergird the use of the discrete approach. Conversely, business closures may take place at any time, perhaps pointing towards the continuous approach, but even this is not without caveats as in the case where the parties signed a closure agreement. This would make the closure

appear in the data as having taken place at the end of a contract. Due to these difficulties, it was decided that both approaches would be explored.

The continuous-time approach is undertaken first using the Cox regression model (Cox 1974), which allows one to investigate the influence of covariates without imposing a specific distribution on the baseline hazard function. Thus, this model doesn't estimate the influence of time, or rather duration dependence, on the likelihood of relationship dissolution, but treats it as a nuisance parameter that is cancelled out of estimation (Cleves et al. 2004). This avoids the possibly adverse effects that imposing the wrong baseline hazard may have on the estimated coefficients. The Cox model is given by

$$h(t|\mathbf{X}_j) = h_0(t)\exp(\mathbf{X}(t)_j\boldsymbol{\beta}_x)$$

where the hazard rate for subject j is determined by the baseline hazard, $h_0(t)$, multiplied by the exponentiation of a vector of covariates, $\mathbf{X}(t)$, and a vector of estimated regression coefficients, $\boldsymbol{\beta}_x$. The study then shifts to the discrete-time approach and uses the logistic regression function in estimation, which is given by

$$h_{ij} = 1/[1 + \exp(-\alpha_j - \boldsymbol{\beta}'\mathbf{X}_{ij})]$$

or in logit form

$$\log\left(\frac{h_{ij}}{1 - h_{ij}}\right) = \alpha_j + \boldsymbol{\beta}'\mathbf{X}_{ij}$$

where h_{ij} is the discrete-time hazard rate, α_j is a constant or vector of constants, x_{ij} is a vector of covariates and $\boldsymbol{\beta}$ is a vector of regression coefficients. Switching to the discrete-time approach may be an improvement over the continuous-time approach if the discrete intervals represent a good approximation of the underlying process and if little information is lost by switching (Box-Steffensmeier and Jones 1997). While the former will be investigated below through a variation in the units of analysis time, the latter requirement would seem to be met since the independent

variables largely vary at the bargaining round (for unit characteristics) and year (for the external environment), leading to little loss of information by the switch.

Another advantage within the discrete-time approach is that the influence of time may be easily and flexibly estimated through the inclusion of a vector of dummy variables representing each of the discrete-time periods. As stated above, there is perhaps some conceptual appeal to using the rounds of bargaining as the unit of analysis time, but given that the duration of contracts are determined by the parties, this poses a problem in that the interval length won't be uniform across relationships. Thus, when rounds of bargaining are used as the unit of analysis, the study follows Allison's (2010) advice and directly controls for interval length by including it as an independent variable. The other problem with using the bargaining round as the unit of analysis time is that contracts are relatively long in duration (the average contract duration in the data is approximately 2.5 years), which means if the underlying process is truly continuous, then the discrete-time approach with widely-spaced intervals may be inappropriate. To see how sensitive the estimation is to the use of bargaining rounds as the unit of analysis time, the study also undertakes the analysis using years as the unit of analysis time. Finally, similar to the discussion above concerning the effect of unobserved heterogeneity on the usage of arbitration or strike incidence, unobserved heterogeneity may also influence the likelihood of relationship dissolution. If unobserved heterogeneity, often referred to as "frailty" in the survival literature, is not controlled for in the estimation then this might bias the coefficients of the other independent variables, leading to spurious conclusions. Thus, a random effect that is assumed to be normally distributed with variance σ^2 is included in some of the specifications to test for the presence of unobserved heterogeneity and to investigate how this influences the estimated coefficients.

3.4.2. Dispute Resolution Procedure State Dependence

The second portion of the analysis uses dynamic panel data models to investigate whether or not there is state dependence with respect to the various forms of dispute resolution procedures, meaning whether current usage is predicted by prior usage. The basic model to be estimated in a dynamic model is given by

$$y_{it} = \phi_1 y_{it-1} + \dots + \phi_p y_{it-p} + \beta' X_{it} + \alpha_i + \varepsilon_{it}$$

where y_{it} is a binary dependent variable that indicates the use of a dispute resolution procedure for unit i in bargaining round t , the $y_{it-1}, \dots, y_{it-p}$ represent lagged dependent variables from the previous rounds of negotiation, the $\phi_1 \dots \phi_p$ are estimated coefficients on the lagged dependent variables, X_{it} is a vector of covariates, β is a vector of estimated regression coefficients, α_i is a fixed or random effect meant to control for unobserved heterogeneity, and ε_{it} is the error term. Positive estimates on the lagged dependent variable coefficients would indicate that there is positive state dependence whereas negative coefficients would indicate negative state dependence. If the α_i are treated as fixed effects, allowing them to be correlated with the regressors, and estimation is performed using dummy variables for each individual then the above model produces inconsistent estimates as the first demeaned lagged dependent variable will be correlated with the demeaned error term. Similarly, inconsistent estimates are produced if the estimation is performed through first-differencing as the differenced lagged dependent variable is correlated with the differenced error term (Cameron and Trivedi 2009). However, Anderson and Hsiao (1981) show that consistent estimates may be produced using instrumental variable estimation in which the twice lagged dependent variable is used as an instrument for the differenced lagged dependent variable since the former is uncorrelated with the differenced error term. This panel data fixed effect linear probability model is the same method as that which was used in a number of the articles mentioned in the literature review with regard to impasse (Butler

and Ehrenberg 1981) and strike incidence (Schnell and Gramm 1987; Campolieti et al. 2005; Campolieti 2015).

Where this study differs from its predecessors is through the variation in how the dependent variable of dispute resolution procedure usage is defined. Whilst all of the studies in the literature review describe the various stages of the dispute resolution procedure, the majority of them investigate only one dependent variable, usually a binary variable that encompasses all of the procedures (so impasse vs. no impasse) or the terminal step (usually strikes in the private sector or arbitration/fact-finding in the public sector). Those that do vary their dependent variables don't attempt to control for unobserved heterogeneity such that their findings may be spurious. By controlling for both unobserved heterogeneity and varying the definition of the dependent variable, this study attempts to disentangle the state dependence for the various dispute resolution procedures. Essentially, each of the dependent variables will examine the state dependence that is associated with going to a certain stage in the process, given that they went at least as far in the process in prior round(s) of negotiation. Thus, the first dependent variable that will be investigated is the state dependence of the terminal step in the dispute resolution procedure in the private sector of Ontario: the strike. Next, the dependent variable will be defined as a binary variable for if the negotiation went to impasse, or rather used any type of third-party intervention, versus no impasse in which the agreement was settled through voluntary, direct negotiations. It is through a comparison of these two estimates, where the former is analogous to a baseline, that the state dependence of the intermediate procedures will initially be investigated. For example, if it is found that there is negative state dependence for the incidence of a strike, then it can be inferred that if the estimate for the state dependence on the impasse dependent variable is positive (or more negative) then the state dependence for the

intermediate procedures are positive (or negative). Finally, since the CBIS database notes how each of the agreements are settled, a dependent variable that denotes if the negotiations went to mediation or beyond (thus omitting settlements in conciliation) is created to attempt to disentangle the state dependence that is associated with each of the intermediate procedures. However, as stated above, since relationships may not move through the same sequence of stages, caution may need to be exercised in interpreting the findings of this last dependent variable. Thus, the most informative comparison may be between the estimates for the state dependence of a strike versus the state dependence of impasse, even if the latter one conflates the state dependence among conciliation, mediation and strikes.

As shown in Campolieti (2015), there are a number of models that can be used for estimating state dependence, which may serve as robustness checks for one's preferred technique. Following his lead, this study subsequently estimates the Arellano and Bond (1991) fixed effects model, which uses generalized method of moments (GMM) and is more efficient than the Anderson and Hsiao (1981) estimator (Cameron and Trivedi 2009). Lastly, the study employs a dynamic random effects probit model as a final robustness check. Whereas in fixed effects estimation the problem of the unobserved heterogeneity being correlated with the lagged dependent variable is overcome through first differencing, this is not possible with a nonlinear random effects model. This is known as the initial conditions problem and it occurs where the process is unobserved from its inception, which is the case when existing relationships at the start of my period of analysis are included in the estimation. This study uses the Wooldridge (2005) correction for the initial conditions problem in which the estimation is popularly implemented by conditioning on the initial values of the dependent variable and the within means of the time-varying explanatory variables. However, Rabe-Hesketh and Skrondal (2013)

show through Monte Carlo simulations that this can result in biased estimates if the initial period is included in the estimation of the within means of the time-varying variables and if the panels are unbalanced (of which they are in this data). Thus, in implementing the Wooldridge (2005) correction, I follow their advice and include the initial values of the time-varying covariates as regressors in the estimation, which alleviates the bias. While there are also other methods for correcting the initial conditions problem, Arulampum and Stewart (2009) found the difference among the various methods to be negligible in their investigations using employment data and Monte Carlo simulations. Likewise, Campolieti (2015) produced similar estimates across the two random effects probit models he estimated for strike incidence. Thus, given those results, only the dynamic random effects probit model with the Wooldridge (2005) correction is employed.

Table 3.2. Survival Analysis Estimates of Bargaining Relationship Dissolution

Time:	Continuous	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete
Model:	Cox	Logit	Logit	Logit	Logit	Logit	Logit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Manner of Settlement [Direct Bargain]</i>							
Work Stoppage	1.4582*** (3.98)	1.6040*** (4.06)	1.4186** (3.00)	1.4261** (2.51)	1.5347*** (4.49)	1.5381*** (4.46)	1.8513*** (3.69)
First Contract Arb.	2.7152*** (6.28)	3.2285*** (5.02)	2.3538*** (3.65)	2.5129** (3.22)	3.3548*** (8.13)	4.0891*** (9.00)	8.3759*** (5.40)
Arbitration	2.0161+ (1.74)	2.0353 (1.46)	1.9937 (1.44)	2.1836 (1.42)	1.9282 (1.57)	1.9349 (1.59)	1.6195 (0.75)
Mediation	1.1164+ (1.78)	1.1261+ (1.64)	1.0921 (1.23)	1.1057 (1.22)	1.1353* (2.04)	1.1345* (2.01)	1.1718+ (1.65)
Conciliation	1.3401*** (5.51)	1.4021*** (5.39)	1.3891*** (5.25)	1.4072*** (4.73)	1.3101*** (5.00)	1.3130*** (5.05)	1.2519** (2.72)
ULP Filing	1.3018*** (4.80)	1.3487*** (4.59)	1.3431*** (4.80)	1.5163*** (3.74)	1.3063*** (4.65)	1.3020*** (4.65)	1.6812*** (3.97)
FCA Application	1.3749* (2.39)	1.4603* (2.21)	1.4833* (2.49)	1.8715* (2.52)	1.3719* (2.28)	1.3453* (2.14)	2.1745* (2.55)
Log Unit Size	0.7945*** (11.36)	0.7727*** (10.52)	0.7744*** (10.71)	0.7050*** (5.73)	0.7911*** (11.26)	0.7926*** (11.26)	0.6492*** (8.00)
ΔEmployment	0.9980*** (4.24)	0.9978** (3.26)	0.9975** (3.43)	0.9977*** (3.05)	0.9983** (3.35)	0.9983*** (3.54)	0.9991 (1.25)
<i>Type of Unit [Full-Time]</i>							
Part-Time	1.1604 (0.84)	1.2087 (0.88)	1.1444 (0.65)	1.1858 (0.60)	1.1701 (0.86)	1.1343 (0.70)	1.2851 (0.66)
Full/Part-Time Mix	1.1198 (1.24)	1.1824 (1.57)	1.1826 (1.63)	1.2233 (1.50)	1.1091 (1.10)	1.1096 (1.12)	1.1323 (0.72)
Part-Time Not Excluded	1.1256 (1.75)	1.1278 (1.53)	1.1348 (1.63)	1.2054+ (1.77)	1.1081 (1.47)	1.1160 (1.59)	1.1567 (1.11)
<i>Government in Power [Liberal]</i>							
Conservative Party	1.1045+ (1.68)	1.2424*** (3.64)	1.1638* (2.32)	1.1611* (2.02)	1.1399* (2.44)	0.9066 (1.44)	0.9381 (0.72)
New Democratic Party	1.6973*** (5.10)	1.9999*** (6.88)	1.4151** (3.08)	1.4475** (2.85)	0.9670 (0.33)	0.6802** (3.08)	0.6719* (2.57)
<i>Legal Regimes [pre-1986 OLRA]</i>							
1986 OLRA	1.0975 (0.55)	1.1202 (0.60)	1.1170 (0.63)	1.1767 (0.61)	1.0882 (0.48)	1.0965 (0.55)	1.2041 (0.49)
1993 OLRA	1.1816 (0.43)	1.1855 (0.39)	1.1430 (0.33)	1.3323 (0.54)	1.1547 (0.35)	1.1355 (0.33)	1.7212 (0.73)
1995 OLRA	1.2378 (0.50)	1.2439 (0.46)	1.1401 (0.29)	1.3180 (0.46)	1.1392 (0.30)	1.1116 (0.25)	1.6414 (0.59)
2000 OLRA	2.2325 (1.54)	2.6412 (1.62)	2.3422 (1.47)	3.6491 (1.52)	2.1034 (1.36)	1.9608 (1.26)	6.7950 (1.63)
Unemployment Rate	0.8985*** (5.27)	0.8793*** (5.65)	0.9123*** (3.85)	0.9009*** (3.68)	1.0260 (1.13)	1.0489* (2.04)	1.0450 (1.58)
Interval Length		1.0004*** (4.63)	1.0004*** (5.40)	1.0005*** (6.31)			
Round Dummies	No	No	Yes***	Yes	No	No	No
Year Dummies	No	No	No	No	No	Yes***	Yes***
Heterogeneity Distribution	No	No	No	Yes**	No	No	Yes***
All Coefficients = 0	549.41***	475.41***	599.76***	429.31***	544.13***	711.08***	352.12***
Log-Likelihood	-14611.811	-5350.901	-5286.726	-5284.015	-7545.894	-7446.018	-7348.498
Observations	14017	14017	14009	14009	40487	40459	40457
Bargaining Relationships	3857	3857	3857	3857	3857	3857	3857
Relationship Dissolutions	1946	1946	1946	1946	1946	1946	1946

Notes: All specifications include controls for the industry, union, region and cohort. Specification 1 presents hazard ratios while the remaining columns present odds ratios. The absolute values of t-statistics are presented in the parentheses. Robust standard errors (not pictured) are clustered at the relationship level. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

3.5. Results

3.5.1. Dispute Resolution Procedure and Relationship Dissolution

Table 3.2 above presents the estimates of the survival analysis used to investigate how the different manners of dispute resolution associate with the likelihood of relationship dissolution. The first column of estimates assumes a continuous-time process and uses a Cox regression model to investigate the influence of the covariates. The estimates reported in this column are the exponentiated regression coefficients, known as hazard rate ratios, which can be interpreted as the percentage difference in the likelihood of the event of interest given a one unit change in the value of the covariate. Thus, within this context, a risk ratio above (below) 1 corresponds with an increase (decrease) in the hazard of dissolution, and therefore a decrease (increase) in the duration of the relationship, whereas a ratio of 1 indicates no influence on the hazard of dissolution due to the corresponding covariate. The remaining columns in Table 3.2 transition to the discrete-time approach using a logit model with either bargaining rounds (specifications 2-4) or years (specifications 5-7) as the unit of analysis time. These columns also report exponentiated coefficients, which can be interpreted in a similar manner as the hazard ratios in column 1, but these figures represent odds ratios. Further, within the different measures of duration, the specifications differ based upon the inclusion of dummy variables to control for duration dependence and a heterogeneity distribution to control for unobserved heterogeneity.

As one can see from the table, the variables that control for the manner in which an agreement is settled largely exhibit what was hypothesized above. Those dispute resolution procedures that take place later in the process, and therefore would likely involve higher levels of conflict, associate with a greater likelihood of relationship dissolution as compared to the base case of a directly-negotiated agreement. In terms of the terminal steps of the process, the

incidence of a work stoppage statistically significantly correlates with a nearly 46 percent increase in the likelihood of relationship dissolution for the round of bargaining/contract settlement in which it occurs, whereas the use of arbitration correlates with an approximate 102 percent increase in the likelihood of dissolution. This latter estimate, however, is only marginally statistically significant, which probably is related to the rarity with which arbitration is used in the private sector. An agreement that is imposed through first contact arbitration (FCA) associates with a 172 percent increase in the likelihood of dissolution, an estimate that is statistically significant at the 5 percent level. With regard to the intermediate steps, both mediation and conciliation associate with a lesser likelihood of relationship dissolution than those stages already mentioned, but they don't adhere to the trend in which successive stages of the process correlate with an increasing hazard of dissolution. Conciliation, generally the first step in the process, statistically significantly associates with a 34 percent increase in the likelihood that the relationship will come to an end during the interval produced by that round of bargaining. This contrasts rather markedly with the marginally significant estimate of a nearly 12 percent increase in the likelihood of dissolution that associates with an agreement settled through mediation. The finding that mediation is more effective than conciliation at preserving the bargaining relationship is interesting, especially since the two, as practiced by the Ministry of Labour, are largely equivalent. The difference in these estimates could potentially be due to the circumstances through which the parties access them (i.e. voluntary vs. mandatory, in a legal work stoppage position vs. not in a legal position) – a point that will be discussed further below.

There are a number of control variables for the characteristics of bargaining relationships that exhibit statistically significant associations with the likelihood of relationship dissolution. The presence of ULP charge and FCA application filings prior to the settlement of the first

agreement, signifying bargaining relationships that experience turbulent beginnings, associate with approximately 30 and 37 percent increases in the likelihood of dissolution as compared to bargaining relationships that are absent either of these occurrences, both of which are statistically significant at the 0.1 percent and 5 percent levels respectively. The size of the bargaining unit and subsequent changes to that size indicate that larger bargaining units have better survival experiences than smaller units. A 1 percent increase in the size of the bargaining unit associates with an approximate 21 percent decrease in the hazard of dissolution, whereas for each additional 1 percent increase in the size of the bargaining unit from the prior round, the likelihood of dissolution correlates with a declines of a further 0.2 percent. Although the union affiliation dummy variables are omitted from the table, there are a number of unions that significantly correlate with the likelihood of dissolution. The Canadian Union of Public Employees, the United Food and Commercial Workers, the Laborers International Union of North America, and the Communications, Energy & Paperworkers' Union associate with a lesser likelihood of dissolution, whereas the United Steelworkers associate with a greater likelihood. Finally, it appears that the type of unit has no significant association with the likelihood of relationship dissolution.

The factors that are meant to control for the external environment also produce some interesting findings with regard to relationship dissolution. Compared to a Liberal-led government, both Conservative-led and New Democratic Party-led governments correlate with an increase in relationship dissolution. The former associates with a marginally significant 10 percent increase in the likelihood of dissolution, whereas the latter associates with a highly statistically significant 70 percent increase. This is in contrast to the legal regime variables that indicate that the changes to the Ontario Labour Relations Act during the period of analysis

appear to have no statistically significant impact on the hazard of relationship dissolution. Since much of the changes enacted have to do with the start of relationships (e.g. mandatory representation vote legislation, first contract arbitration), these variables were treated as cohort effects. The inclusion of cohort effects based upon the year in which the relationships started leads to possible concerns about collinearity between the two. However, correlation coefficients among the independent variables, including the vectors of dummy variables included, indicated that there wasn't unacceptably high correlations among them. Lastly, the provincial unemployment rate, used to proxy for the economic environment, is highly statistically significant indicating that a 1 percent increase in the rate correlates with a 10 percent decrease in the likelihood of dissolution.

Moving from the continuous-time approach in specification (1) to the discrete-time approach in specification (2) in which the bargaining rounds are used as the unit of analysis time, one can see that each of the covariates generally produce coefficients that are qualitatively similar to the prior ones, in terms of direction and statistical significance, but that they tend to differ quantitatively as the magnitude of the estimates are somewhat larger. Specification (2) doesn't control for either duration dependence or unobserved heterogeneity though, which were two reasons given above for undertaking the discrete-time approach. Specification (3) adds bargaining rounds dummy variables to flexibly control for duration dependence³⁹, while specification (4) additionally controls for unobserved heterogeneity by introducing a random effect. Wald tests of the joint significance of the bargaining round dummy variables indicate that

³⁹ In order to estimate a covariate in the discrete-time approach using a logit model, there needs to be events and nonevents within that cell. In later rounds of bargaining, there are drastically less relationships due to the failure of relationships in prior rounds and/or due to censoring. Thus, the specifications that seek to control for the baseline hazard include dummy variables for each of the first nine rounds of bargaining and then dummy variables for rounds 10-12 and rounds 13-15. While there are relationships in the data that successfully complete up to 20 rounds of bargaining, there are no relationships that experience dissolution beyond round 15.

there is statistically significant duration dependence in specification (3), but this disappears in specification (4) when unobserved heterogeneity is controlled. A chi squared test of the heterogeneity distribution term does indicate that the random effect is statistically significant, which implies that estimates produced without its inclusion may be biased. Thus, within the discrete-time approach using bargaining rounds, specification (4) should be viewed as the preferred one. While the estimates are sensitive to the inclusion of the bargaining round dummy variables and the random effect, the conclusions that can be drawn across them (and the continuous-time estimates) remain largely the same. However, there are a couple of differences worth noting, the most important of which to this study is the loss of significance for the coefficient for agreements that are settled through mediation. This suggests that an agreement that is settled through mediation has a statistically indistinguishable association with the likelihood of relationship dissolution as one that it is settled directly by the parties without the aid of a third-party. Also, the variables that indicate when a bargaining relationship begins under turbulent circumstances are much larger when accounting for unobserved heterogeneity as the occurrence of ULP charge and FCA application filings associate with increases of approximately 52 and 87 percent respectively in the hazard of dissolution.

The final three columns in Table 2 are meant as a check on how sensitive the estimates are to the use of bargaining rounds as the unit of analysis time. These three specifications mimic the prior three with the stepwise inclusion of controls for the baseline hazard and unobserved heterogeneity, except that bargaining rounds are replaced by years as the unit of analysis time. Since the influence of duration dependence and unobserved heterogeneity is shown to be statistically significant, the final column is used as the preferred specification with respect to these three. As one can see, these estimates are quite different than their predecessors in a

number of respects, which may suggest that they are sensitive to the manner in which analysis time is defined.⁴⁰ In terms of the manners in which agreements may be settled, the conclusions remain largely the same as in the prior estimates, but the associations for agreements settled through work stoppages, first contract arbitration and mediation are larger, while those for arbitration and conciliation are smaller. The level of significance increases for all of those that increased in magnitude, including the coefficient for mediation which is now marginally significant at the 10 percent level, while the level decreased for those that diminished in magnitude. The variables meant to proxy for a turbulent start to the relationship both further increase in magnitude, but remain at the same level of significance. The switch also has a varied effect on the variables that control for the size and the change in the size of the bargaining units. The coefficient on the size of the bargaining unit increases in magnitude such that it now correlates with a 35 percent decrease in the hazard of dissolution, whereas the change in the unit size variable decreased in magnitude (symmetric about 1) and loses its significance.

One other difference among these estimates is that the transition to years allows for the control variables for the political and economic environments, which vary annually, to do so within contracts. This results in drastically different estimates with regard to these two covariates. Whereas before the presence of a Conservative or NDP-led government associated with a statistically significant increase in the likelihood of relationship dissolution as compared to a Liberal-led government, the estimates using years as the unit of analysis time indicate that a

⁴⁰ Since the data is structured based upon settled agreements that can span multiple years, the transition to using years as the unit of analysis time requires that the observations be split (i.e. a three year contract becomes three observations – hence the increase in the sample size). This is not without its shortcomings, though, as agreements can span any duration, meaning a decision has to be made concerning agreements that include fractions of a year. It was decided that if an agreement was settled in a given year of a relationship that the bargaining round-level time-varying covariates would take the values of the subsequent agreement. For example, if the parties to a relationship settled two and a half year agreements in its first two rounds of bargaining then the values of the bargaining round covariates would take the values of the latter agreement in year 3. Thus, the difference in the estimates across the use of bargaining rounds and years may partially reflect this difference in addition to those listed in the text.

Conservative government doesn't have a statistically significant association with relationship dissolution and an NDP-led government associates with a statistically significant decrease in the likelihood of relationship dissolution. In terms of the economic environment, the estimates for the provincial unemployment rate change from one that is statistically significantly associated with a decrease in the hazard of dissolution under bargaining rounds to one that is positive, although statistically insignificant, with years as the unit of analysis time. Thus, while the use of years as the unit of analysis time slightly decreases the confidence with which one can say that third-party intervention preserves bargaining relationships due to the increased magnitude with which some of the various methods of settlement associate with relationship dissolution, it still shows that there are better chances at survival for those that settle earlier in the process. It also shows that mediation, in this context, produces outcomes that according to some estimates appears to be comparable to voluntarily-settled agreements.

3.5.2. Dispute Resolution Procedure State Dependence

Table 3.3 provides the estimates of the fixed effects linear probability models using the instrumental variable method suggested by Anderson and Hsiao (1981) to investigate the state dependence of the various dispute resolution procedures in operation in the private sector of Ontario. Due to the first-differencing used in this portion of the analysis, any time-invariant covariates are dropped. The first three columns in Table 3 use only the relationships that were included in the survival analysis performed above. However, since the overall duration of the relationship doesn't need to be observed to perform this analysis, the latter three columns use all of the available private-sector relationships from the CBIS database, including those already in

existence in 1985 and those that enter the dataset with a “renewal agreement”.⁴¹ Within these groupings, the specifications differ based upon how the dependent variable is defined.

Specifications (1) and (4) use the incidence of a work stoppage as the dependent variable.

Specifications (2) and (5) use the incidence of an impasse as the dependent variable, which is defined as the use of any dispute resolution mechanism and therefore includes all agreements

that were not settled voluntarily by the parties. Specifications (3) and (6) define the dependent variable as those agreements that are settled by either a work stoppage or mediation.

Dependent Variable:	OML/OLRB Data			OML Data		
	Work Stoppage	Impasse	Work Stoppage & Mediation	Work Stoppage	Impasse	Work Stoppage & Mediation
Dep. Var. _(t-1)	-0.0297 (1.43)	0.0674*** (3.66)	0.0840*** (4.03)	-0.0056 (0.58)	0.0952*** (11.04)	0.0972*** (9.95)
Log Unit Size	0.01980* (2.03)	0.0344+ (1.82)	0.0316+ (1.88)	0.0113** (3.17)	0.0550*** (6.79)	0.0391*** (5.50)
ΔEmployment	0.0000 (0.31)	0.0000 (0.18)	0.0003** (3.26)	0.0000 (0.67)	-0.0000 (1.03)	-0.0000 (0.90)
<i>Type of Unit [Full-Time]</i>						
Part-Time	0.0373 (0.99)	0.0782 (0.52)	-0.0792 (1.09)	0.0183 (0.45)	0.0901 (1.13)	0.0447 (0.67)
Full /Part-Time Mix	0.0499+ (1.86)	-0.0256 (0.59)	-0.0121 (0.31)	0.0206+ (1.85)	0.0047 (0.20)	0.0048 (0.24)
Part-Time Not Excluded	0.0013 (0.07)	-0.0462 (1.42)	-0.0209 (0.70)	-0.0133 (1.50)	-0.0053 (0.31)	-0.0075 (0.48)
<i>Prior Contract Length [1 Year]</i>						
2 Years	0.0171+ (1.71)	-0.0402+ (1.67)	0.0093 (0.44)	0.0001 (0.03)	-0.0222* (2.03)	-0.0142 (1.56)
2+ Years	-0.0097 (0.94)	-0.0143 (0.56)	0.0060 (0.27)	-0.0133* (2.59)	0.0018 (0.15)	0.0010 (0.10)
<i>Government in Power [Liberal]</i>						
Conservative Party	0.0128 (0.60)	-0.0496 (0.80)	-0.0545 (0.98)	0.0024 (0.25)	-0.0345+ (1.73)	-0.0312+ (1.76)
New Democratic Party	0.0376 (1.37)	-0.0298 (0.46)	-0.0080 (0.13)	0.0042 (0.40)	-0.0532* (2.45)	-0.0149 (0.73)
Unemployment Rate	0.0601 (0.52)	0.4229 (1.45)	1.3482*** (5.41)	-0.0188** (3.00)	0.0103 (0.75)	-0.0037 (0.34)
Constant	-0.0016 (0.22)	-0.0062 (0.33)	-0.0114 (0.75)	0.0009 (0.30)	0.0242** (3.16)	0.0001 (0.01)
All Coefficients = 0	76.49**	94.28**	100806.61***	151.59***	352.30***	340.86***
Observations	7348	7348	7348	36267	36267	36267
Relationships	2120	2120	2120	7165	7165	7165
Mean of DV	0.0312	0.5490	0.2433	0.0375	0.5040	0.2456

Notes: All specifications include controls for the year and region. The absolute values of t-statistics are presented in the parentheses. Robust standard errors (not pictured) are clustered at the relationship level. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

⁴¹ A relationship can begin with a “renewal agreement” when the Ministry of Labor has no record of the prior agreements within that relationship. See Chapter 2 for a more in depth description.

When the estimation is restricted to only those relationships that were used in the survival analysis, the lag of the dependent variable for the incidence of a strike indicates that there is no statistically significant state dependence. In terms of the control variables included in the estimation, only the log size of the bargaining unit is shown to associate with an increase in the probability of the incidence of a strike at the conventional 5 percent level. Bargaining units that include both part-time and full-time employees and agreements that are two years in length are also correlated with an increase in strike probability, but they are only marginally significant at the 10 percent level.

When the dependent variable is extended to include all forms of dispute resolution though, the lag of this impasse dependent variable is both positive and highly statistically significant. If the parties to a relationship went to impasse in the prior round of bargaining, then this estimate suggests that the probability that the parties will go to impasse in the current round is 0.07 higher. Thus, there does appear to be a positive state dependence to the use of dispute resolution procedures, but given the difference between these two estimates, one would infer that the dependence would be driven by the intermediate stages. When the dependent variable is redefined to only include work stoppages and mediation, essentially omitting conciliation which is generally the first step in the dispute resolution procedure, the lag of this dependent variable is also highly statistically significant and positive. In fact, it is larger in magnitude than the prior estimate for impasse, suggesting that it is potentially the mediation stage that is driving this estimate. This suggests that if the prior round of bargaining went to mediation or a work stoppage, then the probability that the parties will go at least that far in the process in the current round increases by 0.08. When the number of relationships used in the estimation is expanded to

include all relationships in the private sector that were in existence at the start of the period of analysis in specifications (4)-(6), the same conclusions can be drawn.

Table 3.4. Alternative Estimators for Investigating Dispute Resolution Procedure State Dependence

Dependent Variable:	OML/OLRB Data			OML Data		
	Work Stoppage	Impasse	Work Stoppage & Mediation	Work Stoppage	Impasse	Work Stoppage & Mediation
A. Arellano and Bond GMM Estimator						
Dep. Var. _(t-1)	-0.0127 (0.74)	0.0661** (3.39)	0.1127*** (5.25)	-0.0046 (0.85)	0.0898*** (10.08)	0.1207*** (12.14)
Observations	7348	7348	7348	36267	36267	36267
Relationships	2120	2120	2120	7165	7165	7165
Mean of DV	0.0342	0.5604	0.2504	0.0402	0.5130	0.2467
B. Wooldridge Dynamic Random Effects Probit Estimator						
Dep. Var. _(t-1)	-0.0180 (0.14)	0.3102*** (8.17)	0.4182*** (9.53)	-0.2065*** (3.67)	0.3684*** (21.44)	0.4138*** (20.83)
Average Probability	-0.0012	0.1010	0.1130	-0.0136	0.1207	0.1116
Log-Likelihood	-1396.536	-6173.3382	-5016.210	-6432.858	-25034.037	-20326.143
Observations	10159	10159	10159	42611	42611	42611
Relationships	2811	2811	2811	8378	8378	8378
Mean of DV	0.0342	0.5604	0.2504	0.0403	0.5130	0.2467

Notes: Only coefficients for the lagged dependent variable reported, but each specification contains the same independent variables as those listed in Table 3. Panel A contains year and region controls while Panel B contains region controls. The absolute values of t-statistics are presented in the parentheses. Robust standard errors (not pictured) are clustered at the relationship level.

*** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

Table 3.4 above provides further robustness checks for these results by employing two other estimators: the Arellano and Bond (1991) general method of moments fixed effects linear probability model (panel A) and a dynamic panel random effects probit estimator that uses the Wooldridge (2005) method to correct for the initial conditions problem (panel B). The former produces very similar estimates as those that were found using the Anderson and Hsiao (1981) estimator, although the estimate on the dependent variable for going at least as far as the mediation stage is somewhat larger in magnitude. Consistent estimation using this estimator assumes that there is no serial correlation among the error terms, but specification tests indicate that there is serial correlation for the mediation/work stoppage dependent variable in both sets of

data and for the impasse dependent variable using the larger OML data. However, this problem is alleviated when a second lag of the dependent variable is included, the result of which also produces estimates that are close to the Anderson and Hsiao (1981) estimates when two lags are included.

The random effects dynamic probit model using the Wooldridge method to correct for the initial conditions problem also produces largely similar results to the other estimators discussed above.⁴² However, this estimator indicates a statistically significant negative state dependence for work stoppages when using the larger OML-only CBIS data. While the average probability of having a work stoppage in the current round given having had one in the prior round is approximately double in size than those produced by the other estimators, it is a quite small decrease of 0.01. The average probabilities estimated for the impasse dependent variable are also larger for this estimator than those using the fixed effects linear probability models. The difference in the results of the fixed effects linear probability models and the random effects dynamic probit model may lie in the number of rounds that are required to estimate them. Since the second lag of the dependent variable is used to instrument for the difference between the first and second lags of the dependent variable in the fixed effects models employed, this necessitates that a bargaining relationship has completed at least a minimum of three rounds of bargaining to be included in the estimation. This is in contrast to the random effects dynamic probit that solely uses the lagged dependent variable, meaning that only relationships that don't complete more than one round of bargaining are omitted from analysis. Thus, if the use of dispute resolution procedures is higher at the beginning of relationships, then this might be driving these slight

⁴² There was convergence problems for these estimates when year dummy variables were included, which resulted in their being dropped from the estimation. However, the linear probability models were also estimated without the year dummies and it was found that those estimates were robust to their exclusion. These estimates can be obtained from the author by request.

discrepancies. Even so, the estimates appear to be quite robust to the estimator employed as they all produce largely the same conclusions.

Finally, many of the state dependence articles on arbitration and strikes incorporate further lags of the dependent variable to see if additional bargaining rounds in the history of a unit predict current usage of the dispute resolution procedure under investigation. Table 3.5 below includes such an analysis by including a second lag of the various dependent variables that were examined in this study. The results of the estimation for work stoppages indicates that if the bargaining unit had a work stoppage two bargaining rounds ago, then this associates with an increased probability of a work stoppage in the current round of 0.04, but this is only marginally significant at the 10 percent level. Furthermore, this finding does not hold when using the expanded dataset so it appears that it should probably be viewed with some caution.

Interestingly, both the first and second lags of the work stoppage/mediation variables are positive and statistically significant for both the merged OML/OLRB data and the expanded OML data.

These estimates indicate that if the bargaining unit went at least as far as mediation in both of the prior two rounds of negotiation then these associates with an increased probability of 0.28 and 0.25 for the two datasets respectively. Both of the lagged dependent variables for going to impasse using the larger OML data are also statistically significant, indicating that if the unit went to impasse in each of the prior two rounds then this associates with an increased probability of 0.16 in the current round of bargaining. Thus, it appears that there may be some evidence that the positive state dependence of the intermediate stages of the dispute resolution procedure in the private sector of Ontario extends beyond the influence of only the prior round of negotiation.

Table 3.5. Fixed Effects Linear Probability Estimates of Dispute Resolution Procedure State Dependence With 2 Lags

Dependent Variable:	OML/OLRB Data			OML Data		
	Work Stoppage	Impasse	Work Stoppage & Mediation	Work Stoppage	Impasse	Work Stoppage & Mediation
Dep. Var. _{-(t-1)}	-0.0176 (0.69)	0.0772** (2.80)	0.1864*** (6.35)	-0.0039 (0.33)	0.1277*** (11.420)	0.1808*** (14.52)
Dep. Var. _{-(t-2)}	0.0407 ⁺ (1.86)	0.0078 (0.37)	0.0911*** (4.14)	0.0077 (0.74)	0.0325*** (3.59)	0.0654*** (6.52)
All Coefficients = 0	47.30	68.42*	14309.27***	101.21***	345.42***	380.97***
Observations	5228	5228	5228	29205	29205	29205
Relationships	1595	1595	1595	6065	6065	6065
Mean of DV	0.0289	0.5354	0.2297	0.0337	0.4981	0.2425

Notes: Only coefficients for the lagged dependent variable reported, but each specification contains the same independent variables as those listed in Table 3. The absolute values of t-statistics are presented in the parentheses. Robust standard errors (not pictured) are clustered at the relationship level. *** Statistically significant at .001 level; ** at .01 level; * at .05 level; + at .10 level.

3.6. Discussion and Conclusion

This study was undertaken with the goal of investigating whether or not dispute resolution procedures, and in particular those that are hypothesized to potentially improve the relationship between the parties of a bargaining relationship, are successful at preserving those relationships. This initially involved examining how the dispute resolution procedures associated with the likelihood that the relationships would come to an end during the interval, or rather the contract, that followed a round of bargaining. It was hypothesized that each successive stage of the dispute resolution procedure would correlate with an increase in the hazard of dissolution as more conflictual relationships would progress to the later stages of the procedure. Interestingly, while it was found that the terminal step of a work stoppage did correlate with a greater likelihood of dissolution than the first step of conciliation, the intermediate step of mediation was found to correlate with the best survival experience among the dispute resolution procedures. In fact, by some estimates, depending upon how the unit of analysis time was defined, the likelihood of relationship dissolution for an agreement that was settled through mediation was statistically insignificantly distinguishable from a contract that was directly negotiated by the parties. This finding that mediation associates with a better survival

experience than conciliation is somewhat surprising as the practice of conciliation and mediation are practically identical. While the assertion that mediation (and perhaps also conciliation if there truly is no practical difference) may improve the health of bargaining relationship has been made within the field of industrial relations, it was heretofore untested. This finding perhaps provides some evidence that mediation does improve the health of relationships.

This finding may need to be tempered slightly though as it may point to the influence of the context in which relationships undertake either of these procedures, a point that has been made in other studies on dispute resolution. For example, it has been found that mediation is more effective at producing settlements when the terminal step of the impasse procedure is a work stoppage rather than arbitration (Anderson and Kochan 1977) or arbitration rather than fact-finding (Kochan and Jick 1978). The fact that mediation in the private sector of Ontario generally occurs contemporaneously with a countdown to a legal strike position for the parties may add to the costs of failing to achieve a settlement in mediation as it may result in the parties progressing to a work stoppage. This same pressure is absent during conciliation as the countdown towards a legal strike position only begins upon the decision that conciliation can no longer progress the parties in bargaining, meaning after that stage. Likewise, the voluntary nature of mediation means that there may be a selection effect into the procedure by mature parties who understand its value, which may produce results that overstate the true effectiveness of mediation. Indeed, mediation has been shown to be more effective in contexts in which the parties have a greater desire for a settlement and when both sides buy into it (Wall and Lynn 1993), each of which would seemingly fit into this context. These same arguments can potentially be made with regard to conciliation and how the estimates of the effectiveness of that procedure may be understated here. Not only does it lack the added costs/pressure that may

accompany failure as is found with mediation, but it can also be accessed by the parties if only one of them requests it, rather than both, meaning that participation of one party may be forced. Lastly, since conciliation is mandatory in order to get into a legal strike position, some parties may undertake it only for that end result, which may lessen its effectiveness. While these estimates are important as they are the first to examine the effectiveness of dispute resolution procedures in preserving relationships, the above highlight the caution that should be made in trying to generalize these findings outside of the private sector of Ontario. This also highlights the need for future research to investigate how these dispute resolution procedures associate with relationship dissolution in other contexts (i.e. the public sector) or other jurisdictions (i.e. provinces, states or countries).

The second stage of the analysis involved an examination of the use of dispute resolution procedures over time as it was hypothesized that if the dispute resolution procedures actually did improve the health of relationships, then this might manifest itself as a decrease in their usage. This shifting of the parties towards settlements earlier in the procedure could also be thought of as a form of bargaining relationship preservation, especially if those earlier stages, as was shown in the first part of the analysis, associated with a lesser likelihood of dissolution. This hypothesis, however, doesn't appear to be supported by the estimates. While the incidence of a work stoppage in the prior round of bargaining was generally shown to have no association with the likelihood of a work stoppage in the current round, when the dependent variable was changed to include all of the dispute resolution procedures, it was shown that the incidence of impasse in the prior round of bargaining statistically significantly correlated with an increase in impasse in the current round. A comparison of the coefficients produced by these two dependent variables leads one to infer that the estimate for the previous incidence of impasse is likely being driven by

the intermediate conciliation and mediation stages of the process. When the dependent variable is defined such that it only includes mediation and work stoppages, essentially omitting settlements that occur during the conciliation stage, then this produces estimates that are similar, albeit slightly larger, than those found using the dependent variable with all of the procedures. This implies that it may actually be the mediation stage that is likely producing the findings of a positive state dependency. These findings are robust across a number of different estimators and a variation in the sample of data used in estimation. Furthermore, there is evidence that multiple prior rounds of bargaining may influence the outcomes in the current round such that the likelihood of impasse, when defined with either the inclusion or exclusion of conciliation, is compounded when impasse occurred in the prior two rounds of bargaining.

This continued use of impasse resolution procedures may indicate that there is a narcotic effect among bargaining units that use them. There were a number of suggestions provided above for why one might find a positive state dependency for mediation. It could be that negotiators are using mediators in a “face-saving” manner to absolve themselves of poor bargains or through learning effects in which the parties find mediation to be effective and are satisfied with its outcomes, leading them to return to it. Unfortunately, given the administrative data that is used here, this study cannot assess whether it is either of these explanations that are driving the estimates. Given what we know about the dispute resolution procedure in the private sector of Ontario though, the relative costs of the procedures certainly seem like a plausible explanation for the different estimates. The fact that mediation generally takes place immediately prior to the work stoppage stage, in the midst of a countdown to a legal strike position, may result in a trend in which the parties push the negotiations to the furthest low-cost stage, but are unwilling to bear the relatively higher costs of a work stoppage. It is important to

note, though, that these estimates could also be indicative of unobserved differences between bargaining units, although all of the estimates regarding impasse procedure usage above attempted to control for such unobserved heterogeneity. If this unobserved heterogeneity is not sufficiently controlled for then these results may potentially identify relationships that are more generally conflictual or those that are more mature such that they understand the value of using mediation as a tool to achieve settlement.

However, given the results across the varied dependent variables, which suggest that the mediation stage may be the procedure that is driving the positive state dependency, one may ask what the implications are of such a finding. Is a positive state dependency on the intermediate stages of the process harmful in some manner? The concern about the externalities that work stoppages and arbitration may harm the public would seem to be lessened, if non-existent, for mediation. It may be harmful if the intermediate stages actually push the parties further into the dispute resolution process. Nevertheless, it is worth highlighting that while many of the estimates that are produced above are statistically significant, the magnitudes of the coefficients are not tremendously large. Depending upon whether conciliation is included in the definition of impasse, the association of impasse in the prior round of bargaining to the current round is an increase in probability that ranges from 0.06 to 0.12. There is some evidence though that more than the immediately prior round of negotiations may influence the likelihood of impasse in the current round. When the outcomes of the prior two rounds of negotiations are included in estimation, the compounding increase in the probability of impasse in the current round given impasse in the prior two rounds ranges from 0.16 to 0.28. Future research should attempt to further investigate the effects that such dependence might have on the bargaining process to

determine whether this represents an unacceptable increase in the usage of dispute resolution procedures that warrants potential policy action.

In the first of a series of decadal reviews of the mediation literature, it was highlighted that while research established that mediation was effective in the short-run, the same could not be said for the long-run and therefore this was identified as a fruitful area for future research (Wall and Lynn 1993). In that review, the authors note that while a number of studies show that the current relationship is improved by mediation, studies using evidence from community justice centers, divorce programs and international conflict indicate that mediation doesn't improve the relationship in the long-run. Thus, mediation was described as "a weak elixir for improving a dispute hostile enough to merit intervention by a third party" but that "[h]aving parties interact over and settle issues – with the assistance of a third party – does not automatically make them fond of each other" (*Ibid*, p. 177). By focusing on the intermediate stages of the dispute resolution procedure for bargaining relationships in the private sector of Ontario, this study has essentially taken steps to try to assess the long-run effectiveness of mediation, the findings of which must be said to be mixed. While prior studies of mediation in industrial relations examined the short-term effectiveness of mediation by focusing on the achievement of settlements, this study focused on the later outcomes of whether the relationships survive through the term of that agreed settlement and if it affects the negotiations of subsequent settlements. The results indicate that mediation is effective at preserving relationships in the former aspect as it associates with a likelihood of relationship dissolution that is lower than the other dispute resolution procedures and potentially comparable to voluntarily negotiated agreements, but it is less effective in the latter aspect as it appears that mediation does not induce voluntary settlements in subsequent rounds of bargaining. In sum, it appears that mediation in

the labor relations context may be the “weak elixir” that treats conflict, allowing the relationships to achieve a settlement and endure through that agreement, but that its remedy subsides by the time a new round of negotiations begins.

CONCLUSION

In the introduction, Wilma Liebman was quoted as having referred to the Employee Free Choice Act as a place to start if we are to restore the original promise of the National Labor Relations Act. That original promise, as stated in its opening, includes “encouraging the practice and procedure of collective bargaining and by protecting the exercise by workers of full freedom of association, self-organization, and designation of representatives of their own choosing” (NLRA, 29 U.S.C. §§ 151-169). Likewise, similar principles can be found in the legislation governing industrial relations in each of the Canadian provinces. For example, the Ontario Labour Relations Act, in its current form, states that one of the main purposes of the act is to “facilitate collective bargaining between employers and trade unions that are the freely-designated representatives of the employees” (LRA, S.O. 1995, c. 1, Sched. A). Thus, given the stated goal of enabling the practice of collective bargaining in the statutes governing North American industrial relations, there should be a strong interest in the duration and the preservation of bargaining relationships that provide employees with the continued ability to collectively bargain to influence their terms and conditions of work. Whether through an assessment of policy, theory or practice, each of the chapters that comprise this dissertation sought to investigate the development and the endurance of bargaining relationships and each of them produced findings that have implications for policymakers, practitioners and academics.

The multi-jurisdictional time-series cross-sectional analysis employed in Chapter 1 to investigate the capacity of FCA to foster bargaining relationships through its impact on decertifications shows that FCA correlates with 20 to 37 percent fewer decertifications in the provinces that have a statute as compared to the provinces that lack one. Being the first to account for the different models of FCA, it also shows that the impact of these statutes varies

depending on the type of FCA that is in operation. Through the inclusion of the entirety of the provincial industrial relations systems in the analysis, it is the first study with regard to this goal of fostering bargaining relationships to produce estimates that incorporate any indirect, deterrent effect that is hypothesized to accompany FCA statutes. This chapter also investigates the impact of FCA in the presence of card-check certification to examine how outcomes may differ under labor law regimes that include both, only one, or neither of these two policies. Indeed, the analysis seems to indicate that the best results for cultivating bargaining relationships takes place when both first contract arbitration and card-check certification are used in conjunction. Not only do these findings have implications for the United States should an EFCA-esque labor law reform proposal resurface in the future, but also for the Canadian provinces that have yet to enact an FCA provision or for those that are looking to potentially switch to a different type.

The findings of the first chapter provide an indication that there are more bargaining relationships, on aggregate, in the presence of FCA than in its absence, suggesting that in general it helps to cultivate bargaining relationships. However, due to the direction that was taken in the subsequent chapters of this dissertation, the primary goal of whether FCA fosters *lengthy* bargaining relationships is still unanswered. Fortunately, this provides me with a logical next step in my research agenda. The Ontario micro-data that was used in the latter two chapters should permit such an analysis. It would allow me to address the shortcomings of being unable to observe the duration of individual bargaining relationships and to separate out the dissolutions affecting nascent relationships from those affecting long-established ones. This goal could be assessed using the quasi-experimental pre-test/post-test research design identified by Riddell (2013) in his paper examining the achievement of first contracts in the province of Ontario under different types of FCA. Whereas the outcome measured in that study was a binary variable for

the achievement of a first contract, changing the dependent variable to be the achievement of a contract in a later round of bargaining, depending on how one wants to define a lasting bargaining relationship, could provide a test for whether the different forms of FCA in Ontario are/were successful at fostering *enduring* bargaining relationships. Furthermore, through the combination of the merged OLRB FCA application filings and the OML's identification of imposed first agreements, it may be possible to explore the differing effects of FCA. By modeling the relationships that (1) seek access to the FCA system and have an agreement imposed, (2) seek access to the system but settle out of it, and (3) never seek access to the system, the direct and indirect effects (both within the FCA system and the larger industrial relations arena) may be identified. This partitioning of the effects of FCA could be performed with regard to both of the goals of achieving a first agreement and fostering a lasting bargaining relationship. Thus, such an analysis could be instrumental in identifying, and possibly quantifying, any deterrence effect that accompanies FCA.

A comparison of the different types of FCA, like the one proposed above within Ontario, is a worthwhile endeavor in and of itself as provinces have changed between types in the past and will presumably continue to do so in the future. However, it would also be informative to investigate the impact of FCA by comparing its presence to its absence, both for the benefit of those provinces that have yet to enact such legislation and for other countries, such as the United States. Given the most recent changes to provincial labor law, it appears a study could potentially be designed that would accomplish both. The Atlantic provinces may provide a laboratory for such a natural experiment in that one can find a province that switched from having no FCA statute to having one (Nova Scotia), a province that switched between different types of FCA (Newfoundland), and a province that has never enacted FCA and may act as a

control (New Brunswick), all in recent years. The accessibility of the bargaining-unit level data necessary for such a study still needs to be explored, but if one could obtain it then the estimates produced by such a difference-in-difference-in-differences research design could greatly contribute to our understanding of the impact of first contract arbitration.

The second chapter of this dissertation provides evidence that the impact of employer opposition at the beginning of the unionization process can have potentially long-term effects for the sustainability of bargaining relationships. It showed that conflict, as proxied through unfair labor practice charge and FCA application filings, during the organizing phase can impact the viability of bargaining relationships through a higher likelihood of relationship dissolution, particularly through decertification, even for those that are able to achieve a first agreement. Furthermore, it investigates the persistence of the effect, which provides some indication that perhaps relationships that are born of conflict may be marred by it such that it predisposes them to a higher likelihood of dissolution throughout their entire duration as compared to relationships founded in more peaceful circumstances. These findings dampen the notion historically assumed in the field of industrial relations that the parties will learn to live with each other once they enter into a relationship. Similarly, it appears to cast doubt on the “trial marriage” hypothesis of FCA proponents in that one of the proxies for conflict, FCA application filings, is shown to associate with a statistically significantly higher propensity for dissolution than relationships that don’t apply for access to that system. Instead, it seems as though it may point towards the “rogue employer” hypothesis, espoused in prior studies on employer opposition, that perhaps opposed employers will always remain opposed and that being subject to a collective agreement will not change their desire to operate union-free.

While these findings may seem at odds with those of the first chapter since they are largely produced using data on bargaining relationships that developed under the purview of an FCA statute and show that those relationships that seek access to FCA exhibit a higher propensity for dissolution, it is important to highlight the differences between the two. Chapter 1 is performed using data from nine jurisdictions and includes all of the different forms of FCA within Canada, whereas Chapter 2 is performed only using data from one jurisdiction, albeit with multiple types of FCA throughout its history. As is shown in Chapter 1, there may be wide variation in outcomes across the different types of FCA. Further, there may also be differing effects across jurisdictions. Indeed, of the different types of FCA, the no-fault form is shown to perform the worst with regard to fostering relationships as it is the only one estimated to have no significant impact on decertifications. This no-fault form of FCA is the predominant one during the period of analysis in Ontario and so we might have expected the findings to be less favorable with regard to fostering bargaining relationships using data solely from that province. However, the findings of Chapter 2 may indicate that FCA alone is not sufficient to counteract the employer opposition that it is meant to target, at least not in Ontario. This may suggest that harsher penalties for flouting the law, the least discussed of the reforms proposed in EFCA, may contribute to ensuring that the type of employer opposition that may endanger the viability of bargaining relationships, and that which precipitates the filing of ULP charges and/or FCA applications, is further muted.

In many respects, the research question that is investigated in Chapter 2 is reminiscent of the concept of imprinting, of which there is a large literature in organizational studies. Imprinting involves the examination of how a “sensitive period”, often taking place when the units of analysis are founded, impacts the experience of the units later in their life course.

Analogously, Chapter 2 examines how the early experience of bargaining relationships persists beyond the initial organizing phase, or the founding phase in this context, into the later representation phase. The results that bargaining relationships that experience early conflict exhibit worse survival experiences beyond the settlement of the first contract suggests that those relationships are perhaps imprinted by this experience. Not only does the concept of imprinting provide a possible theoretical lens through which to view the findings of Chapter 2, it also potentially provides another avenue for future research. While the sensitive period that is hypothesized to impact later experience is generally thought of as occurring during the founding or early stages of the life cycle, Marquis and Tilcsik (2013) argue that this doesn't have to be the case. In fact, there can be multiple sensitive periods throughout a life cycle, each of which may leave their own imprint. Given their fluidity, bargaining relationships may be an interesting context in which to explore whether there are multiple sensitive periods that influence later experience, such as when one of the parties change, through either a union displacement or successor employer, or the occurrence of a lengthy work stoppage. Such a study could both simultaneously contribute to the imprinting literature and enhance our understanding of the duration and dissolution of bargaining relationships throughout their life course.

The final chapter shifts to a more general focus on the entire set of dispute resolution mechanisms available to bargaining relationships in the province of Ontario. By moving beyond the more immediate outcome of the achievement of a settlement when a bargaining impasse has been reached, it seeks to examine how successful these mechanisms are at preserving the relationships. This question emanates from the notion that certain dispute resolution procedures may potentially improve the health of relationships – a finding that has been shown in other contexts, but not in industrial relations. The results in this chapter show that settlements during

the initial stages of conciliation and mediation do associate with lower likelihoods of relationship dissolution than the terminal stage of a work stoppage. This was hypothesized to be the case since it was assumed that the more conflictual relationships would be driven towards later stages in the process. Interestingly, though, it finds that mediation associates with the best survival experience, despite taking place later in the process than conciliation, and that agreements settled through mediation are comparable, by some estimates, to voluntarily-settled agreements with regard to sustaining the bargaining relationship until the next round of bargaining. It also hypothesizes that if the dispute resolution procedures improve the health of bargaining relationships then their usage might associate with the settlement of subsequent agreements earlier in the process. In this respect, the dynamic panel model estimates used to investigate this hypothesis indicate that the various dispute resolution procedures are not successful at shifting the parties to settle at earlier stages. In fact, the results seem to indicate that parties that use third-party interventions may increasingly use them as past usage significantly positively associates with current usage. However, absent the negative externalities that accompany dispute resolution mechanisms like compulsory arbitration or work stoppages, it is reasonable to ask whether a reliance on conciliation/mediation is harmful in some manner. If the answer is no, then perhaps this suggests that policymakers should make mediation more readily available to the parties, or perhaps even mandatory, or that the parties should more readily seek out the assistance of a mediator at impasse. That being said, the results in this chapter may be highly context-specific to the private sector of Ontario such that their generalizability to other jurisdictions with different dispute resolution processes may be questionable. Thus, future research should be undertaken within different jurisdictions to see if dispute resolution procedures, and in particular mediation, play a role in preserving bargaining relationships.

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