

# **Union Certification Regimes and Declining Union Density in the Canadian Business Sector**

---

**Workplace Information and Research Division  
Strategic Policy, Analysis and Workplace Information Directorate  
Labour Program - HRSDC**

**November 2013**

## 1. Introduction

Union density in the Canadian business sector has declined substantially over the last few decades. In 1997, the proportion of employees covered by a collective bargaining agreement was 23.1%; by 2012, it was almost four percentage points lower at 19.2%. The density decline amounts to 415,000 fewer covered workers in 2012 out of a business-sector employee population of 10.8 million.<sup>1</sup>

One important factor possibly explaining the decline is the adoption of a mandatory-vote (MV) regime for the certification of new collective bargaining units. Prior to 1977, all Canadian jurisdictions used a card-check (CC) regime, where a union is automatically certified once a majority (or sometimes a supermajority) of the proposed bargaining unit demonstrates support for the formation of a union. A vote is only necessary if the share of pro-union support lies below this threshold. By 1997, six provinces had adopted an MV regime. However, one of the early adopters (British Columbia) switched back to a CC regime in 1993. By potentially circumventing a vote, a CC regime can reduce the ability of the employer to oppose the union drive and thereby facilitate certification and hence higher union density.

Our principal aim in this study is to quantify the role of the adoption of an MV regime in union-density decline in the Canadian business sector. This is done in two stages. In the first stage, we undertake regression analysis to isolate the “effect” on the change in union density associated with the use an MV regime. Variation over time in the use of an MV regime in certain jurisdictions is used to estimate its effect on the change in

---

<sup>1</sup> These figures are from the Labour Force Survey (LFS), which only commenced tracking union coverage in 1997. Another data source on unionization is the Labour Program’s annual union survey “membership”. Since 1997, the number of unionized workers from this survey is similar to the number employees covered by a collective bargaining agreement in all industries in the LFS. It is impossible to distinguish between the business and non-business sectors using the Labour Program’s annual survey of union membership. The Labour Program time series shows an historical peak (since 1946) in union coverage density in 1992 and 1993 (37.8%), slightly above the previous peak in 1983 (37.6%). By 1997, union density was 35.8%. If we assume that the decline in the union density from 1993 to 1997 was entirely in the business sector, its density would have declined by about 1.5 percentage points over this period. It means further that business-sector union density has probably declined by roughly 5 to 5.5 percentage points from 1993 to 2012 (1 to 1.5 percentage points to 1997 and another 4 after).

union density within those cells. The second stage uses the regression results to simulate path of business-sector union density to the first quarter of 2012 starting from the observed union density in the first quarter of 1997.

Besides examining the role of an MV regime in union density change, we also quantify the effect of structural change in the economy on union density: the role of shifts in the composition of employment in explaining union-density decline. Insofar as the proportion of employment in jurisdictions, industries and occupations that have higher than average union density decreases, there will be a decline in overall union density.

The business sector includes all industries except public administration; education, health and social assistance; religious, grant-making, civic, and similar organizations; and private households (that employ domestic help). The non-business sector largely involves public-sector and, to a much lesser extent, non-profit organizations and some private health care and education establishments. The dynamics of unionization are very different between the business and non-business sectors. Many of the principal factors that are behind the decline the business sector union density—such as the increased use of an MV regime, international competition, deregulation, as discussed in the following section—are simply not relevant to the non-business sector. In fact, compared to the business sector, from 1997 to 2012, union density in the non-business sector declined much less, only from 65.6% to 64.2%. Furthermore, well over half the decline reflecting a shift in employment towards less unionized industries within this broad sector rather than a fall in union density within its component industries.

## **2. Overview of Factors Causing Business-Sector Union Density Decline**

### ***The adoption of a mandatory-vote regime***

As unionized business establishments close and new (non-union) ones open, just maintaining the union-density level constant within an industry would typically require some amount of organizing of new bargaining units. Baldwin and Wu (2006) showed that 40% of all existing Canadian manufacturing plants in 1997 had been born since

1988. Meanwhile, 47% of the manufacturing plants that had been in operation in 1988 were no longer operating in 1997. Greater inflows in non-union workers via new establishments and greater outflows of union workers via the death of union ones require a faster rate of organizing of new bargaining units, just to prevent the union density from falling. As such, legislative change that affects the ease of new bargaining unit certification can significantly affect union density.

Until Nova Scotia’s adoption of an MV regime in 1977, all labour jurisdictions in Canada used a CC regime. The next jurisdictions to adopt an MV regime were British Columbia (in 1984) and Alberta (in 1988), followed by three other jurisdictions in the mid-1990s: Newfoundland (1994), Ontario (1995) and Manitoba (1997). However, around the same time, in 1993, British Columbia reverted back to a CC regime, but then subsequently readopted an MV regime in 2001 (table 1).

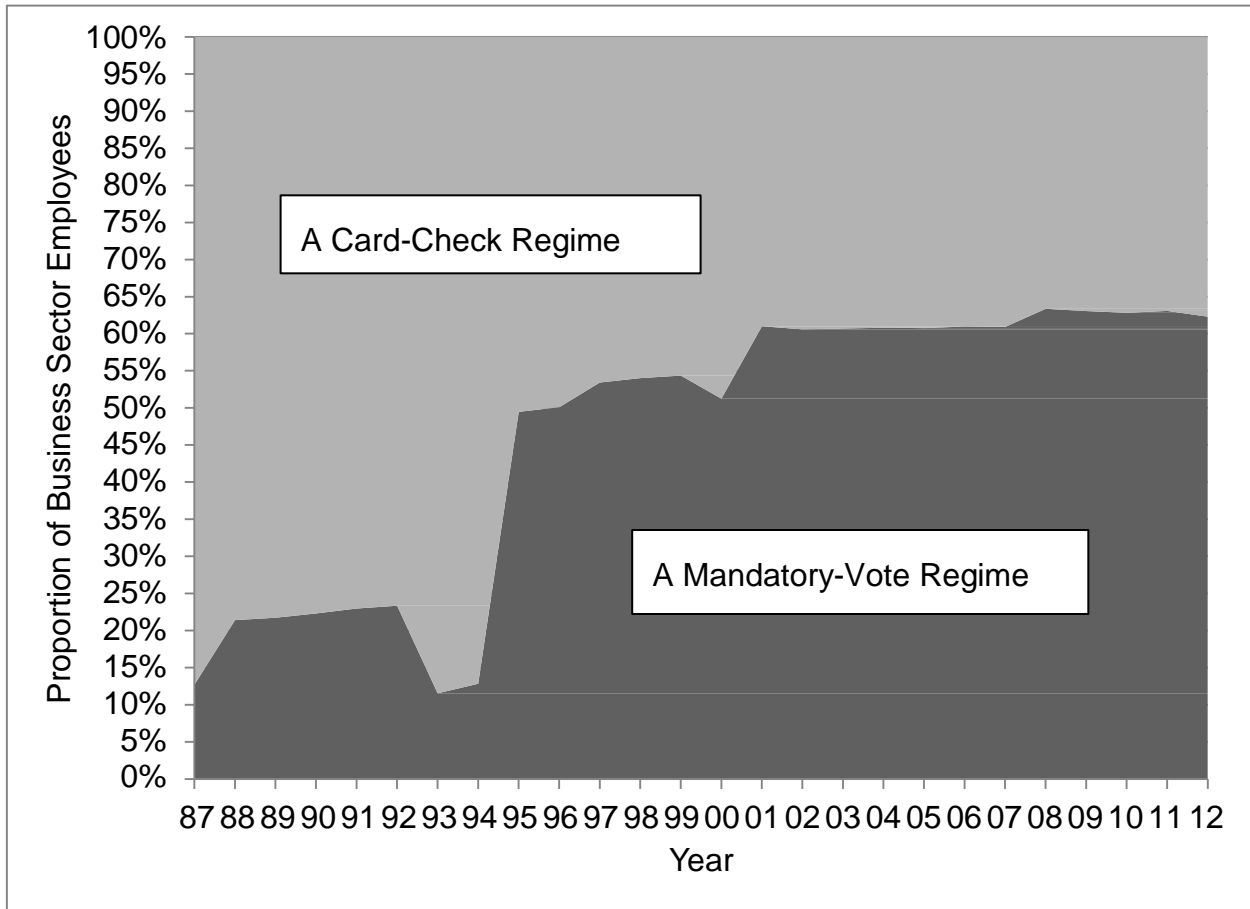
*Table 1: Provinces introducing a Mandatory-Vote Regime*

	First adoption of a mandatory-vote	Subsequent re-adoption of a card-check regime	Re-adoption of a mandatory-vote
Nova Scotia	1977	n.a.	n.a.
British Columbia	1984	1993	2001
Alberta	1988	n.a.	n.a.
Newfoundland	1994	2012	n.a.
Ontario	1995	2005 (construction only)	n.a.
Manitoba	1997	2000	n.a.
Saskatchewan	2008	n.a.	n.a.

Note: Years refer to the legislation’s coming into force. Jurisdictions not listed have had a card-check regime since the first passage of laws regulating union certification.

Ontario’s adoption of an MV regime in 1995 dramatically increased the proportion of business-sector employees in Canada with this regime (figure 1) from about 13% to 49%. By 1997, the first year of available data for the analysis in section 4 below, 53% of employees were under an MV regime. From 2008 to 2011, it was about 63% of employees, but with Newfoundland’s re-adoption of a CC regime in 2012, 62% of employees in the Canadian business sector were under an MV regime in that year.

Figure 1: Distribution of Business-Sector Employees by Union Certification Regime, 1987 to 2012



There is some jurisdictional variation in rules of the CC and MV regimes. Under a CC regime in the federal labour jurisdiction and Quebec, automatic certification occurs where the proportion of the prospective bargaining unit members supporting a union exceeds 50%. During its periods of use in Saskatchewan and British Columbia, the thresholds were, respectively, more than 50% and 55% or more. For the construction industry in Ontario, it is currently 55% or more. For New Brunswick, the threshold is more than 60%, but the government labour relations board is able to certify, at its discretion, if the share is more than 50%. Generally then, the threshold for automatic certification has ranged from 50% to 55%. The main exceptions are two more recent re-adoptions of an MV regime in Manitoba where the threshold is 65% or more and in Newfoundland where it is more than 65%.

Minimums for a vote in the CC and the MV regimes range from 35% to 45%. And unlike many US jurisdictions, there are usually strict limits on when a vote may be held after the submission of application for certification. For example, in British Columbia, a vote must be held within 10 days after initial application to the labour relations board to form a bargaining unit, or if conducted by mail, subject to determination by the labour relations board.<sup>2</sup>

Under a CC regime, there is a smaller window of opportunity for management to oppose a union bid due to the addition of time between the application for certification with the labour relations board and the vote itself (Weiler 1983; Meltz 1985; Thomason 1994). In fact, management may only learn about a successful union certification attempt after the application for certification is made, as a *fait accompli*. Furthermore, with a secret ballot, the influence of peer pressure from pro-union workers to sign a union certification card would also diminish. But in judging the importance of this, we need to also take account of peer pressure from workers against the formation of a union.

Riddell (2004) found that the certification win rate for union organizing in the private sector fell from just over 93% to about 74% after the adoption of an MV regime in British Columbia in 1984. Following the re-introduction of a CC regime 1993, win rates almost returned to their pre-1984 level. Using multivariate analysis, Riddell was able to show more rigorously that the change in certification regime can account for virtually the entire drop in certification wins for unions.

Nonetheless, his time series of win rates showed no systematic decline in the public sector with the introduction of an MV regime. Presumably, public-sector managers are much less likely to actively oppose a bid for union certification, with the possible exception of those in publicly-owned business firms. Presumably also, peer pressure has minimal effects on certification success under a CC regime, whether anti- or pro-

---

<sup>2</sup> Usually, where there is a vote, certification occurs where a majority of votes cast are in favour of forming a union. However, in Saskatchewan, which has an MV regime, a majority of employees entitled to vote must cast a ballot for the results to be considered valid. Furthermore, in New Brunswick and Quebec, each of which have a CC regime, the result of a representation vote is also determined by a majority of those who are entitled to vote.

unionization, as the secret balloting of an MV regime would likely have negated any such effect and thereby altered the win rate. If true, this inference about peer pressure in the public sector raises doubt about its importance in the private sector.

Three other Canadian studies have also shown that the introduction of an MV regime reduces certification success (Johnson, 2002; Martinello, 2000; Slinn, 2003), the first for Canada as a whole and the two others for Ontario. The three studies, each of which included both the private and public sectors in the analysis, found about a 10 percentage point drop in the certification win rate (from an initial rate of 65% to 75%).

Because it lowers the likelihood of successful certification, the introduction of an MV regime can also reduce the number of certification attempts. Riddell (2004) found that certification attempts fell by about 50% in B.C. with the introduction of mandatory voting. However, no multivariate analysis was used to try to determine whether the 50% drop was entirely attributable to the MV regime. Similarly, Martinello (2000) found that monthly certification attempts decreased by 19% with the introduction of an MV regime in Ontario, after controlling for other factors. Unlike Riddell, Martinello included the public sector in her study.

### ***Structural change***

Relative union density across jurisdictional, industrial and occupational categories exhibits a fairly high degree of persistence over time. Those categories that have higher union density tend to stay so. For example, when comparing the union-density ranking for 12 business sectors between 1997 and 2012, Spearman's rank correlation, which ranges from -1 to 1, shows an almost perfect positive correlation (0.977). The only changing ranks involved some neighbouring ones switching places. Consequently, structural change—i.e. shifts in employment away from the more highly ranked categories—will lead to overall union density decline.

There are differences in the key causal factors determining union coverage across jurisdiction, industry and occupation. The role of jurisdiction reflects differences in the legal framework underlying the incentive and ability of workers to unionize. A jurisdiction's political culture may also separately affect worker interest in union

representation. The role of industry reflects differences in price competition and thus the ability of firms to pass on union compensation premiums to their customers and to pay a union compensation premium. Further, combinations of industry and occupation reflect underlying differences in the nature of the employment contract. For example, Flynn (2005) argues that where “contracts are complete”—that is, where employers can monitor the quality and quantity of worker output—employers have little incentive to offer employees “gift wages” in exchange for high effort. Consequently, employees have a greater incentive to unionize to win higher compensation by capturing some of the business’ potential profit.<sup>3</sup>

Continuity in these causal factors implies persistence in relative union density across jurisdictions, industries and occupations. Moreover, even if all organizing of new collective bargaining units were to stop, there would still be a certain amount of persistence in relative density across jurisdictions, industries, and occupations until all unionized establishments were closed or their unions decertified.

### ***Industry-specific factors affecting union density***

We can determine the contribution of the change in a sector’s union density to the explanation of the overall decline in the business sector. First, re-calculate the 2012 overall business-sector union density using the sector’s 1997 union density instead of the 2012 one. Second, subtract the re-calculated value from its observed one. This gives the contribution of the change in sector’s union density to the change in overall union density.

After undertaking these calculations for each of the 12 business sectors in table 2, we find that manufacturing makes the greatest contribution to overall union-density decline. Its contribution to the decline was 1.7 percentage points, amounting to 44% of the overall density decline in the business sector (3.9 percentage points). None of the other

---

<sup>3</sup> This is most feasible where there are “rents” owing to superior resources that are difficult for other businesses to replicate. Collective bargaining is one factor that would lead employers to share some of these rents with their workers.



11 sectors is close to manufacturing in the degree of accounting for overall union-density decline (table 2). Manufacturing makes a big contribution because of the large size of the density decline (10.4 percentage points) coupled with a relatively large share of employment (16% in 2012). As for other sectors, either the union density change is much smaller or the sector comprises a much lower share of overall employment (in 2012) or both.

*Table 2: Change in overall density caused by the change in industry-specific union density, 1997–2012*

	1997 density	Industry density change (p.p.)	Consequence for overall density (p.p.)	2012 employment share
<i>Goods-producing industries</i>	36.7%	-8.2	-2.4	29%
Forestry, fishing, mining, oil and gas	31.0%	-7.6	-0.2	3%
Utilities	72.2%	-6.6	-0.1	1%
Construction	32.4%	0.4	0.0	8%
Manufacturing	36.4%	-10.4	-1.7	16%
<i>Service-producing industries</i>	16.8%	-1.5	-1.1	71%
Trade	14.9%	-0.7	-0.2	22%
Transportation and warehousing	45.4%	-3.5	-0.2	7%
Finance, insurance, real estate, leasing	10.4%	-0.1	0.0	8%
Professional, scientific and technical	5.8%	-0.2	0.0	8%
Business, building and other support serv.	15.0%	2.1	0.1	5%
Information, culture and recreation	30.3%	-4.6	-0.3	6%
Accommodation and food services	8.7%	-1.5	-0.1	10%
Other services	10.9%	-0.7	0.0	5%
<i>All 12 industries</i>	23.3%	-3.9	---	100%

Source: Labour Force Survey (1997–2012)

A portion of the union-density decline in each of the 12 industries is structural change within them. For example, our calculations show that some 30% of the density decline in manufacturing came from shifts in the composition of employment towards less

unionized parts of this broad sector (based on cells involving seven occupations, 18 manufacturing industries and 11 jurisdictions).<sup>4</sup>

Why has the decline in union density within manufacturing been so precipitous? Some of the factors explaining the decline in the share of manufacturing employment in overall employment also explain the decline in union density. First, labour productivity growth has historically been very high in this sector. This remains one of the chief causes of the decline in the share of manufacturing employment in overall employment, in Canada and in developed countries generally (Baumol, 2012). It has generally also entailed fewer blue-collar workers relative to the number of white-collar ones and thereby, lower union density, as white-collar workers in this industry have a much lower likelihood of being unionized.

Second, greater international competition and greater opportunities for offshoring have also helped to erode not just manufacturing employment, but union density within manufacturing. Martinello (2002) found that the implementation of the *Canada-US Free Trade Agreement* in January 1989 was associated with a 22% drop in certification applications. The trade agreement—and along with the *North American Free Trade Agreement* that came into effect in January 1994—seems likely to have substantially increased the credibility and perhaps prevalence of threats of plant closure or outsourcing.<sup>5</sup> Aside from the trade agreements, the credibility of the threat to offshore production has increased with the ongoing development of manufacturing in developing countries. The use of an MV regime may have interacted with these changes, because it gives management a greater opportunity to present its case against unionization and to try to influence the workforce's ultimate choice.

---

<sup>4</sup> The calculation uses the 1997 employment composition.

<sup>5</sup> Using US data for 1986-87, Bronfenbrenner (1996) showed that the threat of plant closing was a key part of employer campaigns to prevent successful certification. The threat rate was 62% in “mobile industries” such as manufacturing, transportation, and warehouse/distribution, compared to a 36% threat rate in relatively “immobile industries” such as construction, health care, education, retail, and other services. The certification success rate was lowered from 47% to 33% when threats were made.

It is notable that Ontario, which contained about 45% of Canadian manufacturing employment in the mid-1990s, adopted an MV regime in 1995. If not for this change, only about 10% of manufacturing employment in Canada would have been under an MV regime at that time. British Columbia's adoption of an MV regime in 2001 added another 10 percentage points to the share of manufacturing employment under this regime.

Aside from manufacturing, two other goods-producing sectors have also seen a large decline in union density. The steepness of the decline in union density in the forestry, fishing, mining, and oil and gas industry (-7.6 percentage points) partly reflects structural change within this broad industry. The more heavily unionized forestry and mining part of this sector declined over the period, while the less unionized oil and gas and support services for the mining and oil and gas industry grew. It is not clear what is behind the density decline in the utilities industry (-6.6 percentage points) other than much faster growth in non-union employment, particularly since 2005.

Two service-producing sectors that have experienced relatively large density declines have been information, culture and recreation (-4.6 percentage points) and transportation and warehousing (-3.5 percentage points). Deregulation seems to have had an important role in both industries, as it has created opportunities for non-unionized entrants and consequent market-share erosion of unionized incumbents. In late 1993, new federal legislation governing telecommunications (classified in information, culture and recreation sector) came into force. By 1999, incumbent companies had lost 35% of their Canadian long-distance market share (Crandall and Hazlett, 2000). New entrants have been able to remain less unionized. Deregulation has also substantially reduced barriers to entry in the trucking and airline industries, beginning from the late 1980s (Anderson et al. 1998; Iacobucci et al. 2006).

Technological change seems also to have been important in breaking down entry barriers in the telecommunications industry, namely, the growth of cellular-phone and internet services. With more new firms entering the industry—which would typically be

non-union, unless perhaps diversifying from another industry—an MV regime would have helped these firms and their establishments to remain non-union.

### 3. Statistical Methodology

In this section, we set forth some of the technical details of our statistical methodology for quantifying the effects of structural change and the use of an MV regime on the change in union density from 1997:Q1 to 2012:Q1. Using the *Labour Force Survey* (LFS), we generated quarterly average union coverage rates based on combinations of 11 jurisdictions, 36 industries and 7 occupations. The 11 jurisdictions are the 10 Canadian provinces and the federal labour jurisdiction.<sup>6</sup>

The LFS is a monthly survey with one-sixth of the sample refreshed every month. The data for the study cover January 1997 to March 2012. We calculated quarterly averages of union density by averaging the monthly union densities. The result is an unbalanced panel with 61 quarters, 1997:Q1 to 2012:Q1. The maximum number of cells in a given quarter is 2,772 (= 11 \* 36 \* 7), but it varies from quarter to quarter depending on the number of non-empty cells. For some jurisdictions, some potential industry/occupation combinations do not exist (or at least their share of employment in the jurisdiction is too small for it to make an appearance in the LFS). Appendix I shows definitions of the industry and occupation categories.

The following is the basic version of the model for estimating the impact of an MV regime on quarterly union coverage rate ( $\Delta C_{jt}$ ) with subscript  $j$  referring to the cell and  $t$ , the quarter:

$$\Delta C_{jt} = MV_{jt}\delta + (U_{jt} * MV_{jt})\gamma + (U_{jt}^2 * MV_{jt})\mu + U_{jt}\phi + U_{jt}^2\varphi + X_{jt}\beta + \Delta C_{jt-1}\kappa + \varepsilon_{jt} \quad (1)$$

The variable  $MV$  is a binary variable that takes a value of one if an MV regime is in place; otherwise, zero. The model includes an interaction of  $MV$  with union density,  $U$ , and with union density squared, as the effect of an MV regime on the change in union

---

<sup>6</sup>We cannot precisely identify the federal labour jurisdiction using the NAICS, so there will be some misclassification at the margins. The impact of this measurement should be very small.

density from one quarter to the next is certain to depend heavily on the level of union density. We expect that higher levels of union density will be associated with a more negative effect.

The variables represented by the vector  $X$  include:

- the lagged change in level of union coverage rate;
- the share of low-tenure workers (less than 12 months in a firm);
- the share of part-time workers;
- the share of women;
- the share of university educated workers;
- the share of workers in establishments with less than 100 employees;
- dummies for 11 jurisdictions, 36 industries and 7 occupations; and
- dummies for each of the 4 quarters of the year.

The model also includes a quarter lagged change of the dependent variable. This would help to capture any persistence in the quarterly change in coverage rate. We are particularly concerned with negative autocorrelation stemming from sampling error.

The change in unionization rate is bounded from below by -1 and from above by 1: unionization level cannot decrease or increase by more than 1.0 between any two time periods. This makes the traditional OLS approach less appropriate for our purposes than two possible alternative approaches: (1) fractional logit model, and (2) Tobit model, with two-sided truncation. For a fractional logit model we would need to further transform the dependent variable to lie within the interval  $[0, 1]$ , which is not really problematic since it would be a monotonic transformation. However, we chose not to apply this model, given the difficulty in interpreting the coefficients on the interaction terms. Considering this, we chose a Tobit model, with a lower limit of -1 and an upper limit of 1.

We applied a pooled time series-cross section framework (for the Tobit model) instead of a panel approach. We did not estimate fixed effects panel data model (FE), mainly because it suffers from an incidental parameter problem.<sup>7</sup> One problem of not modeling

---

<sup>7</sup> The maximum likelihood estimator of the parameters in the Tobit model suffers from an inconsistency problem when the time dimension of the panel is fixed (e.g. Wooldridge, 2002).

the fixed effects is that the error terms may not be identically independently distributed, creating “clustered errors”. To account for this, we maintained the assumption of zero correlation across cells as with fixed effects, but allowed for within-cell correlation.

Finally, to enable using the estimates to simulate the path of union density in the absence of mandatory-voting, we used a balanced panel (i.e. cells with non-missing value for the 61 consecutive quarters in the sample). About 85% of the observations remain in the balanced panel. Nonetheless, the unbalanced and balanced panels lead to similar coefficient estimates.

## 4. Regression and Simulation Results

### *The regression results*

The estimated effect of an MV regime compared to a CC regime on the quarterly change in union density is -0.32 percentage points, computed at roughly the mean level of unionization (20%). However, at low union densities, a MV regime is associated with increases in union density. Lower than 12%, an MV regime is actually associated with increases in union density. Above 12%, the reverse is true (model #1 in table 3).

*Table 3: Tobit regression results*

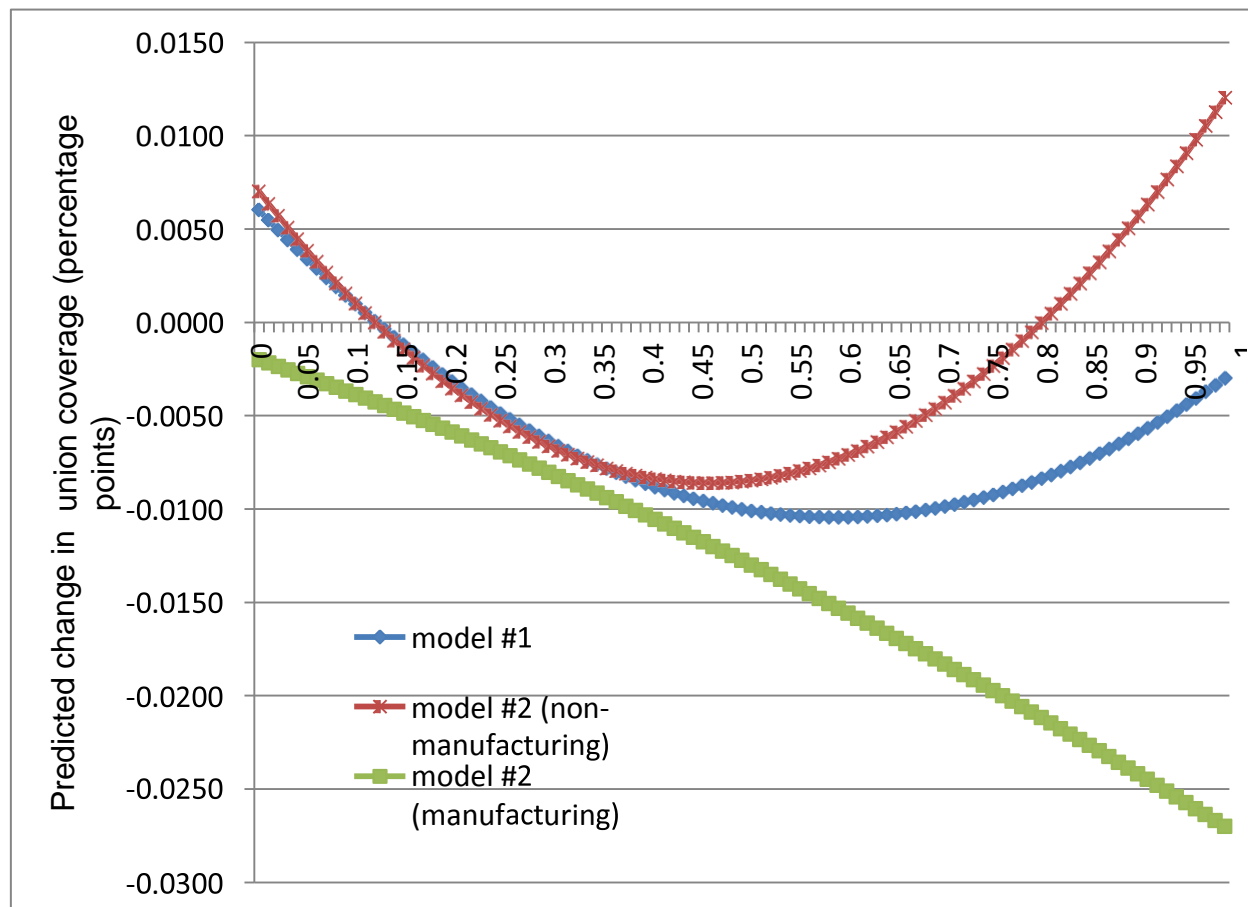
Variable	Model #1		Model #2	
	Coeff.	S.E.	Coeff.	S.E.
Mandatory Voting	0.006 *	0.003	0.007 **	0.003
Mandatory Voting * (Union Density)	-0.055 ***	0.018	-0.067 ***	0.022
Mandatory Voting * (Union Density) <sup>2</sup>	0.046 ***	0.020	0.072 ***	0.019
Manu * Mandatory Voting	---	---	-0.009 *	0.005
Manu * Mandatory Voting * (Union Density)	---	---	0.049 *	0.027
Manu * Mandatory Voting * (Union Density) <sup>2</sup>	---	---	-0.079 ***	0.023

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Appendix II contains a more complete list of estimates.

We also developed estimates of MV by whether the industry in the manufacturing sector or not (model #2). With respect to this model, the effect on the union-density change for non-manufacturing is generally less negative than for manufacturing, as shown in figure

1. It is difficult to explain why estimated effect for non-manufacturing becomes positive at very high union densities (greater than 81%). Nonetheless, such high densities are not that common.

Figure 1: Predicted quarterly change in cell union density associated with a mandatory-vote regime at a given level of union density



### The simulations

We now simulate the effect of no jurisdiction having a mandatory voting during the period using the regression estimates. This requires subtracting the predicted values associated with the MV variables from the predicted values from equation (1). The resulting predicted value plus the error term from the regression gives the quarterly change in union density without the effect of mandatory voting from 1997:Q2 to

2011:Q1. These predicted values are then sequentially added to the initial union density in 1997:Q1 to simulate the path of union density without the presence of an MV regime.

The simulations thus assume a situation where jurisdictions that had an MV regime in 1997 switched to a CC regime in 1997:Q1. Furthermore, no jurisdiction subsequently adopts an MV regime. As of 1997, the simulations imply that Newfoundland and Ontario would have had a brief period with an MV regime, as their dates of adoption were 1994 and 1995. And three other provinces would have also had an MV regime for a period before the first quarter of 1997: Nova Scotia (1977–1997), Alberta (1988–1997), and British Columbia (1988–1993)

Consider the simulation using the results from model #2, where the MV variables are also interacted with a dummy for manufacturing. The series for no-MV regime continually diverges from the observed series (figure 2). Over the last five quarters of the scenario, union density ranges from 4.6 to 5.4 percentage points greater than the observed. In effect, there is a slight increase (0.3 to 0.9 percentage points) in union density in the simulation where all jurisdictions did not have an MV regime since 1997:Q1.

Comparing the no-MV regime simulations using the model #1 and #2 results, we find little difference until 2008. By the end of the simulation scenario, the one using model #1 has a union density that is about 0.5 percentage point higher than that of model #2 (Appendix III). In yet a third model (model #3), we interacted 11 industry dummies<sup>8</sup> with each of the three MV variables. The simulated effect of an MV regime becomes much greater compared to models #1 and #2. By the first quarter of 2012, union density is 9.1 percentage points higher than the observed or 4.7 percentage points higher than it was in 1997:Q1. The effect seems high, but the main point is that it is not lower than in

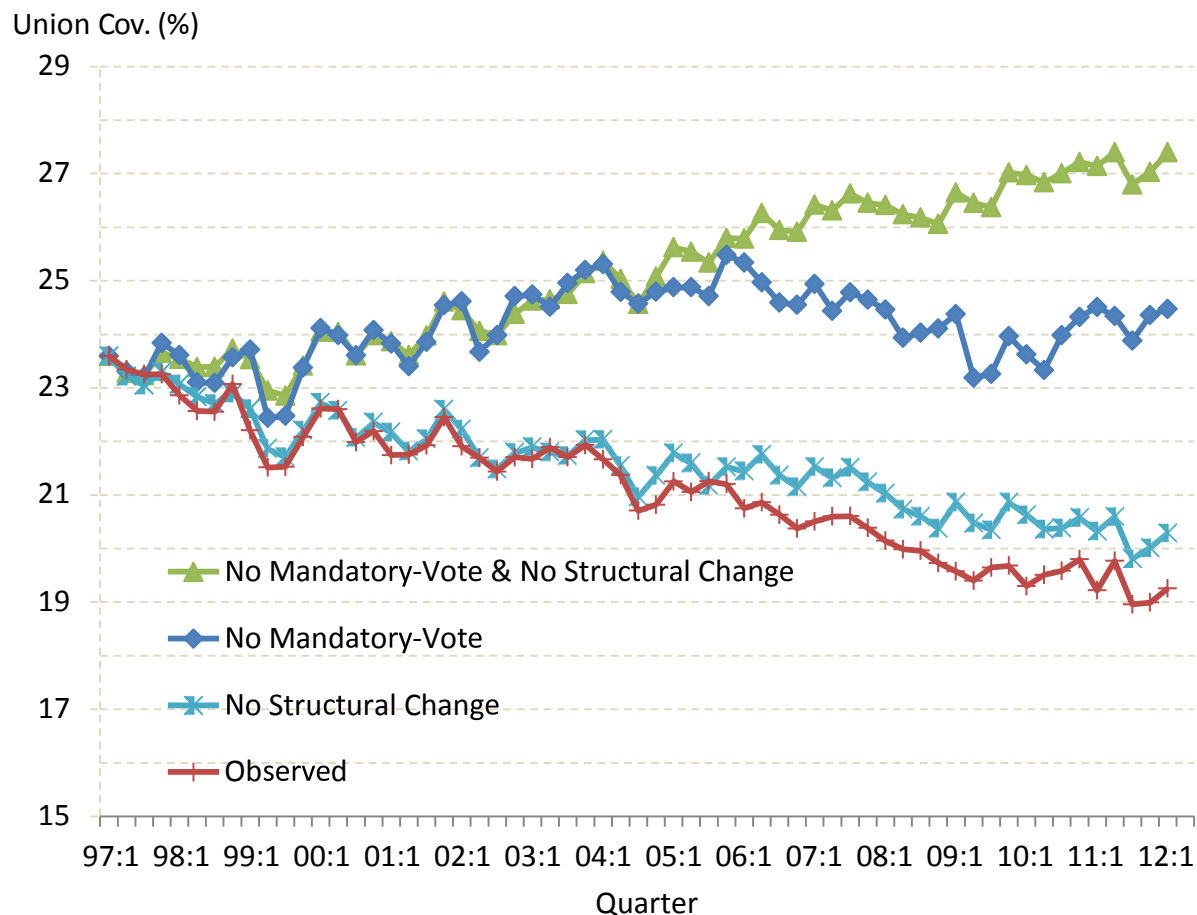
---

<sup>8</sup> These 11 industries include agriculture and fishing; forestry and mining; utilities; construction; manufacturing; wholesale and retail trade; transportation; warehousing and storage; finance, insurance, real estate and business services; information, culture and recreation; other services (non-business sector).



model #1 and model #2: the use of an MV regime still has an appreciable impact on union density.

Figure 2: Business Sector Union Coverage Simulations (using model #2), 1997:Q1–2012:Q1



The results of the simulations are summarized in table 4.

Table 4: Business Sector Union Coverage Simulation Results, 1997 to 2012

	1997:Q1		2012:Q1		
	Observed	Observed	No MV Regime	No Structural Change	No MV and no Structural Change
Union Coverage	23.6%	19.3%	24.5%	20.3%	27.4%
Change* from 1997:Q1	---	-4.3	0.9	-3.3	3.8

\*The change is expressed in percentage points.

The appendix also shows simulations where all jurisdictions have adopted an MV regime since 1997 instead of where they have all adopted a CC regime, as in the simulations above. As expected, union density in the business sector declines much more than the observed.

In addition to the no MV regime scenario, we simulated a scenario where the employment distribution across jurisdiction/industry/occupation cells does not change from the 1997:Q1 distribution (no structural change). Recall that cells are based on 11 jurisdictions, 36 industries and 7 occupations. In this scenario, there is little difference with observed union density until about 2006 (Figure 2). Over the last few years of the scenario, the gap with observed density is roughly one percentage point. The scenarios for no-MV regime and no structural change can also be combined. Again there is little difference between this scenario and the one with no-MV regime only until about 2006. After that, the two diverge so that no structural change leads to a significant increase in union density by 2012:Q1. The difference with respect to the no-MV scenario alone is almost three percentage points. When there is no MV regime, union density in individual cells declines less, and this accentuates the effect on overall union density of shifts in employment away from more highly unionized cells.

### ***Other industrial relations policies***

Are there other industrial relations policies that are strongly correlated with the use of an MV regime and that could have a non-trivial effect on new bargaining unit certification? This is an important question because it raises the potential of omitted-variable bias distorting the estimates related to how the use of an MV regime affects the change in union density. But the problem would only arise with changes in these policies (over the sample period), as the regressions contain dummies for jurisdiction.

A major factor would be changes in legislation similar to the US “right to work states” where unions and employers are prohibited from negotiating “union security provisions”. These provisions define obligations regarding the payment of union dues and union membership. However, all jurisdictions in Canada require compulsory dues check-off, except for four provinces—Alberta, New Brunswick, Nova Scotia, and PEI—that allow

for compulsory dues check-off to be negotiated and placed in the collective agreement. Moreover, there have been no changes in this type of legislation over the sample period for the study (1997–2012).

Seven of the eleven jurisdictions had some provisions for first contract arbitration, but again there were no changes in this legislation over the sample period. There were also no legislative changes regarding a ban on temporary replacement workers during a work stoppage. Two provinces had such a ban, Quebec and British Columbia. There were no particularly notable legislative changes over the sample period that would have affected the ability or incentive of workers to form a new bargaining unit, except for changes in use or not of an MV regime.

Nonetheless, there could have been a number of minor (and less conspicuous) industrial relations policy changes that might collectively have had a substantial effect on the estimated results for the MV variables. These might include, for example, policies regarding the access of union organizers to employees; the power and opportunities of labour boards to impose a certification; the opportunities of employers to file petitions against the union during certification drive; and possibly others. For such policies to have affected the regression results and hence the simulations, there would have to have been both correlation with the use of an MV regime and some variation in these policies over the sample period. Inspection of legislation that brought forth changes in union-certification regime over the sample period does reveal one notable change: the 2008 legislation in Saskatchewan that led to the switch to an MV regime also made it not an unfair labour practice for employers to communicate facts and opinions to their employees during a certification campaign. This is only possible exception, which is unlikely to have appreciably affected the estimates. As for other provinces, when British Columbia re-adopted an MV regime in 2001, it seemed not to make any other change that would have much affected either the ability or incentive of workers to unionize. This also applies to Manitoba's re-adoption of a CC regime in 2000. These facts suggest that omitted-variable bias from lack of controls for these "lessor policies" may be relatively minimal.

## 5. Concluding Remarks

There are two basic forms of bargaining-unit certification regimes. One involves a mandatory vote and the other allows for certification in cases where a certain minimum proportion of the proposed bargaining unit signs a card in favour of forming a union without a subsequent vote being held. From 1993 to 1997, the proportion of business-sector employees in Canada covered by a mandatory-vote regime increased from 23% to 53%.<sup>9</sup> By 2001, the proportion had increased to 61%, reaching a high of 63% in 2008. Through this time period – namely, since the early 1990s – union density in the business sector has steadily declined. From 1997 to 2012, the time period of this study, density declined from 23% to 19%.

In this study, we examined the link between the adoption of a mandatory-vote regime and this decline in business-sector union density. We found that the use of an MV regime has been an important factor in the decline in union density in the Canadian business sector. It was estimated that had all Canadian jurisdictions not used an MV regime for union certification starting in 1997, business-sector union density would have been substantially higher by 2012. Simulations show that union density would have increased by around a half a percentage point from 1997 instead of dropping by 4 percentage points.

We have also shown that the shift in the composition of employment away from high density jurisdictions, industries and occupations has been an important contributing cause of the decline in business-sector union density. Such structural change accounts for a one percentage point decline in union density assuming no other changes in the propensity of a worker to be unionized. Furthermore, the use of an MV regime seems to have reduced the role of structural change. We found that in a scenario where there was no use of an MV regime, structural change accounted for about a three-percentage point decline in union density. The contribution of structural change was greater

---

<sup>9</sup> Figures are based on the 1997 distribution of employment using the LFS.

because there was less diminution of union density in higher density industries and occupations.

## Appendix I: Industry and Occupational categories used

*Table A1-1: Industry Categories*

<b>Industry</b>	<b>NAICS Code</b>
Agriculture, Fishing, Hunting and Trapping	1100–1129, 1151–1152, 1141–1142
Forestry and Logging with support activities	1131–1133, 1153
Mining and Oil and Gas Extraction	2100–2131
Utilities	2211–2213
Prime Contracting	2361–2379
Trade Contracting	2381–2389
Food, Beverage and Tobacco Product Manufacturing	3111–3122
Textile Mills & Textile Product Mills	3131–3133, 3141–3149
Clothing Manufacturing & Leather & Allied Product Manufacturing	3151–3159, 3161–3169
Wood Product Manufacturing	3211–3219
Paper Manufacturing	3221–3222
Printing and Related Support Activities	3231
Petroleum and Coal Products Manufacturing	3241
Chemical Manufacturing	3251–3259
Plastics and Rubber Products Manufacturing	3261–3262
Non-Metallic Mineral Product Manufacturing	3271–3279
Primary Metal Manufacturing	3311–3315
Fabricated Metal Product Manufacturing	3321–3329
Machinery Manufacturing	3331–3339
Computer and Electronic Product Manufacturing	3341–3346
Electrical Equipment, Appliance and Component Manufacturing	3351–3359
Transportation Equipment Manufacturing	3361–3369
Furniture and Related Product Manufacturing	3371–3379
Miscellaneous Manufacturing	3391–3399
Wholesale Trade	4111–4191
Retail Trade	4411–4543
Transportation	4811–4922
Warehousing and Storage	4931
Finance, Insurance Carriers & Related Activities	5211–5239
Real Estate, Rental & Leasing Services	5311–5313
Professional, Scientific and Technical Services	5411–5419
Management, Administrative and Other Support	5511–5629
Information, Culture and Recreation	5111–5191, 7111–7139
Accommodation and Food Services	7211–7224
Other Services	8111–8141

Table A1-2 Occupational Categories

Category	NOC-S (2001) Codes
Managers	A01–A392
Professionals	B011 to B014; B021, B022; B313; B315 to B318; C011 to C015; C021 to C023; C031 to C034; C041 to C048; C051 to C054; C061 to C063; C071 to C075; C111 to C113; C121; C152; C162, C163; C181 to C183; D011 to D014; D021 to D023; D031, D032; D041 to D044; D111, D112; D211; D232; E011, E012; E021 to E025; E031 to E036; E037 to E039; E111, E112; E121; E130 to E133; E211 to E217; F011 to F013; F021 to F025; F031 to F034; F111; F121; F123; F143;
Technical	B111 to B116; B212 to B214; B311, B312; B314; B411 to B415; B576; C122 to C125; C131 to C134; C141 to C144; C151; C153 to C155; C161; C164; C171 to C175; D212 to D219; D221 to D223; D231; D233 to D235; D311 to D313; E215; F035, F036; F112; F122; F124 to F127; F131, F132; F141, F142; F144, F145; F151 to F154
Trades	H011 to H019; H021, H022; H111 to H113; H121; H122; H131 to H134; H141 to H145; H211 to H217; H221, H222; H311, H312; H321 to H326; H411 to H418; H421, H422; H431 to H435; H511 to H514; H521 to H523; H531 to H535; H611, H612; H621 to H623; H711 to H714; H721, H722; H731; H736, H737; I011 to I017; I021, I022; I111; I121, I122; I131, I132; I141, I142; I151; I161, I162; I171, I172; I182; J011 to J016; J021 to J027; J111 to J114; J121 to J125; J131 to J134; J141 to J146; J151 to J154; J161, J162; J164; J171, J172; J174, J175; J181 to J184; J191; J193 to J197; J211; J213; J215, J216; J221 to J223; J225; J227, J228;
Sales and service	G011 to G016; G111; G121; G131 to G134; G211; G311; G411, G412; G511 to G513; G611, G612; G621 to G625; G631; G711 to G714; G722, G723; G812, G813; G911, G912; G921, G922; G933; G941, G942; G951; G973; G981
Clerical and administrative	B211; B511, B514; B521 to B524; B531 to B535; B541 to B543; B551 to B554; B561 to B563; B571 to B575; G715; G721; G972;
Production workers	G731, G732; G811; G814; G923, G924; G931, G932; G961, G962; G971; G982, G983; H732 to H735; H811, H812; H821, H822; H831, H832; I181; I211 to I216; J163; J173; J192; J212; J214; J217; J224; J226; J311 to J319

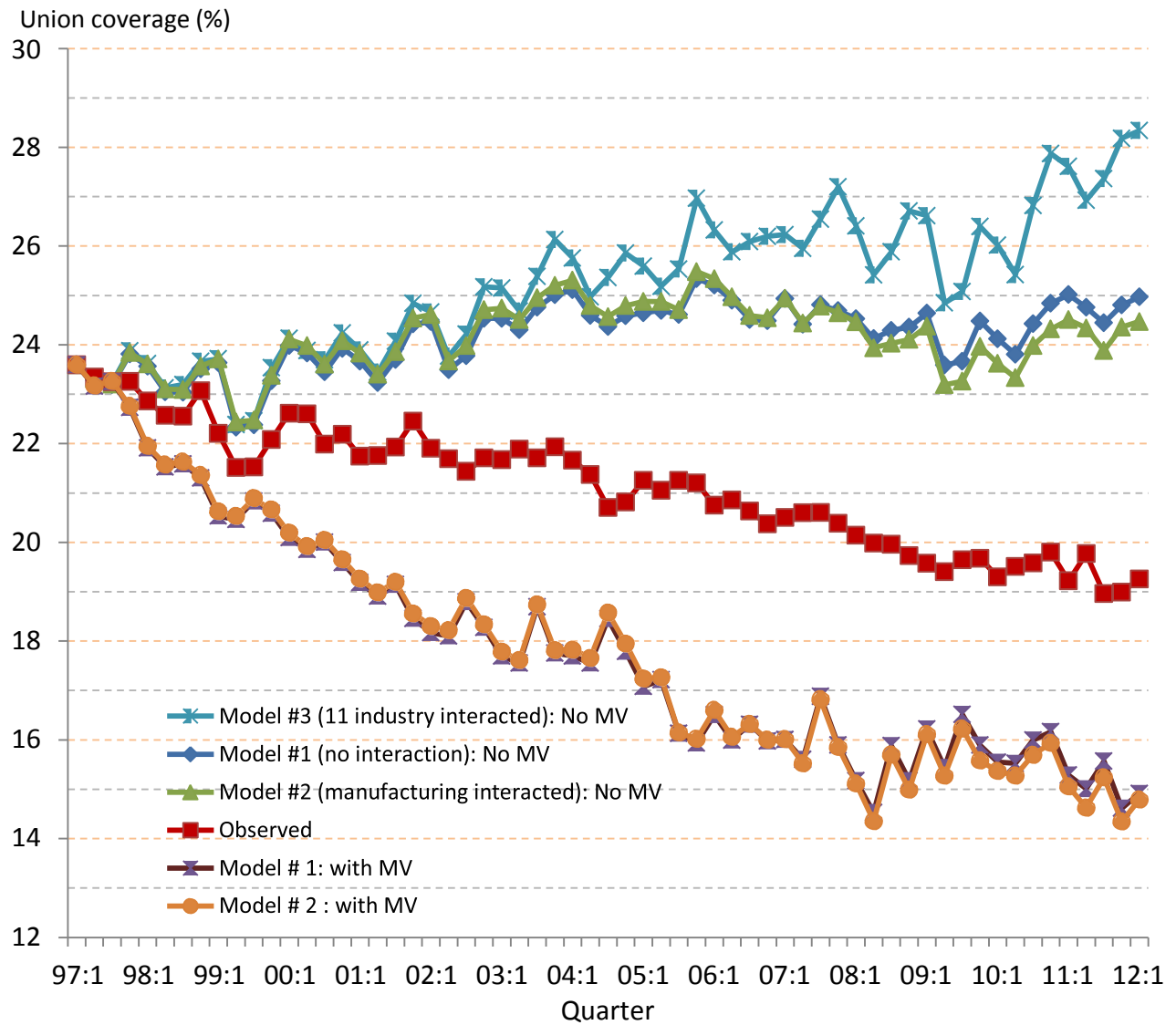
## APPENDIX II: Tobit regression coefficients

Variable	Est.	S.E.	Est.	S.E.
Mandatory-vote regime (MV)	0.006*	0.003	0.007**	0.003
MV * Union density	-0.055***	0.018	-0.067***	0.022
MV * sq(Union density)	0.046***	0.016	0.072***	0.019
Manufacturing * MVS	---	---	-0.009*	0.005
Manufacturing * MVS * Union density	---	---	0.049*	
Manufacturing * MVS * sq(Union density)	---	---	-0.079***	0.023
Lag of dependent variable	-0.014***	0.005	-0.014**	0.005
Provincial unemployment rate	-0.190***	0.023	-0.193***	0.024
Sq(Unemployment rate in the province?)	-0.012	0.031	-0.010	0.031
Provincial unemployment rate	0.065	0.047	0.060	0.047
Sq(Provincial unemployment rate)	-0.453*	0.245	-0.443*	0.244
Absolute growth in employment	-0.000***	0.000	-0.000***	0.000
Average proportion of employees with < 1 year of tenure	0.020	0.021	0.016	0.021
Sq(Average proportion of employees with < 1 year of tenure)	-0.035	0.049	-0.030	0.049
Average proportion of part-time employees	-0.017	0.026	-0.019	0.027
Sq(Average proportion of part-time employees)	0.082	0.068	0.086	0.068
Average proportion of university graduates	-0.034**	0.018	-0.037**	0.017
Sq(Average proportion of university graduates)	-0.027	0.037	-0.025	0.036
Average proportion of women	-0.065***	0.021	-0.066***	0.020
Sq(Average proportion of women )	0.073***	0.024	0.075***	0.024
Average proportion of employees in small workplaces with < 100 employees	-0.059*	0.031	-0.065**	0.042
Sq (Average proportion of employees in small workplaces with < 100 employees)	0.036	0.023	0.042*	0.023
Constant	0.021	0.013	0.022*	0.013

Coefficients for the dummies for occupation, industry, jurisdiction and quarter of the year are omitted from the table.



### APPENDIX III: Union Density Scenarios, 1997:Q1–2012:Q1



## References

- Anderson, Robert D. Abraham Hollander, Joseph Monteiro and W. T Stanbury. (1998). "Competition Policy and Regulatory Reform In Canada, 1986-1997" *Review Of Industrial Organization* 13, (April) pp. 177-204.
- Baldwin, John R. and Wulong Gu. (2006). "Plant turnover and productivity growth in Canadian manufacturing," *Industrial and Corporate Change*, 15, 3, pp. 417–465.
- Baumol, William J. (2012). *The Cost Disease*. Yale University Press (New Haven, Connecticut).
- Belman, Dale L. and Kristen A. Monaco. (2001). "The Effects Of Deregulation, De-Unionization, Technology, And Human Capital On The Work And Work Lives Of Truck Drivers," *Industrial And Labor Relations Review*, 54, 2, pp. 502-24.
- Bronfenbrenner, Kate, and T. Juravich (1997) *The Current Status of Union Organizing in the Public Sector: An Analysis of State and Local Elections* (Ithaca, NY).
- Crandall, Robert and Thomas Hazlett. (2000). Telecommunications Policy in the United States and Canada. *American Enterprise Institute Working Paper 00-9*.
- Flynn, Sean Masaki. (2005). Why Only Some Industries Unionize: Insights from Reciprocity Theory," *Journal of Institutional Economics*, 1, 1: pp. 88-120.
- Iacobucci, Edward, Michael Trebilcock, and Ralph A. Winter. (2006). "The Canadian Experience With Deregulation," *University Of Toronto Law Journal*, 56, pp. 1-74
- Johnson, Susan. (2002). "Card Check or Mandatory Representation Vote? How the Type of Union Recognition Procedure Affects Union Certification Success". *The Economic Journal*, 112 (April), pp. 344-36.
- Martinello, Felice. (1996) 'Correlates of certification application success in British Columbia, Saskatchewan and Manitoba', *Relations Industrielles/Industrial Relations*, 51(3), pp. 544-62.
- Martinello, Felice. (2000). "Mr. Harris, Mr. Rae, and Union Activity in Ontario". *Canadian Journal of Public Policy*, 26, pp. 17-33.
- Meltz, Noah, "Labor movements in Canada and the United states" in T.A. Kochan, ed., *Challenges and choices facing American labor*. Cambridge: MIT Press, 1985, pp. 315-34.
- Riddell, Chris. (2001) "Union Suppression and Certification Success" (2001), *Canadian Journal of Economics*. 34 (May 2001) pp. 396-410.
- Riddell, Chris. (2004). "Union Certification Success under Voting Versus Card-Check Procedures: Evidence from British Columbia, 1978-1998". *Industrial and Labor Relations Review*, Vol. 57, No. 4 (Jul., 2004), pp. 493-517.
- Slinn, S. (2004). An Empirical Analysis of the Effects of the Change from Card-Check to Mandatory Vote Certification. *Canadian Labour and Employment Law Journal* 11: 258–301.

Thomason, Terry. 1994. "The Effect of Accelerated Certification Procedures on Union Organizing Success in Ontario." *Industrial and Labor Relations Review*, Vol. 47, No. 2, 207-226.

Weiler, Paul C. (1983). "Promises to Keep: Securing Workers Rights to Self-Organization under the NLRA." *Harvard Law Review*, Vol. 96, No. 8, 1769-1827.

Wooldridge, J. (2002) "Simple Solutions to the Initial Conditions Problem in Dynamic, Nonlinear Panel Data Models with Unobserved Heterogeneity," Manuscript, Department of Economics, Michigan State University.