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Morgan, Horatio M.

Ryerson University

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**Credit Unions, Consolidation and Business Formation: Evidence from Canadian provinces**

Horatio M. Morgan, Ph.D.

Assistant Professor, Global Management Studies Department

Ted Rogers School of Management

Ryerson University

350 Victoria Street

Toronto, Ontario

Canada, M5B 2K3

E-mail: [horatio.morgan@ryerson.ca](mailto:horatio.morgan@ryerson.ca)

Telephone: +1(416) 979-5000 ext. 2526

Fax: +1(416) 979-5266

## **Credit Unions, Consolidation and Business Formation: Evidence from Canadian provinces**

### **Abstract**

This study empirically evaluates the impact of consolidation activity in the credit union system on the rate of business formation. Drawing on Canadian provincial-level data over the period 1992-2009, it provides evidence which suggests that consolidation activity is unlikely to hurt business formation in the absence of intense competition in the credit market. Specifically, a unit increase in credit union assets per working-age (15-64) individual has a negative, but negligible effect on the rate of business formation. However, the intensification of competition in the credit union system may increase the magnitude of this negative effect. These findings may inform the formulation of small business and entrepreneurship policies. In particular, they suggest that competition policies on the banking sector warrant greater attention as consolidation activity unfolds in the credit union system.

**Key words:** Competition, Consolidation, Credit unions, Business formation, Small business lending

**JEL classification:** C33, G18, G21, L16, L26, M13

## **Credit Unions, Consolidation and Business: Evidence from Canadian provinces**

### **1. Introduction**

The consolidation of the financial services industry in North America is an important phenomenon that warrants careful attention (Berger, Demsetz and Strahan, 1999). One of the major concerns that it raises is whether increasingly large financial intermediaries in concentrated credit markets will systematically curtail small business lending. Concerns along this line are warranted because such an outcome may undermine the ability of new and small firms to make significant contributions toward innovation, job creation and regional development (Aghion, Blundell, Griffith, Howitt and Prantl, 2009; Baumol, 1990; Fritsch and Mueller, 2004; Schumpeter, 1934). Since the bulk of prior studies have primarily focused on the question of how mergers among federally chartered banks impact small business lending (Berger, Kashyap and Scalise, 1995; Berger, Saunders, Scalise and Udell, 1998; Berger and Udell, 1996; Craig and Hardee, 2007; Francis, Hasan and Wang, 2008; Keeton, 1996; Strahan and Weston, 1998), very little systematic evidence is available on the patterns and implications of consolidation activity in the community banking segment; yet, structural changes in this segment may significantly impact the rate of business formation across the communities and regions within the same country.

This study systematically evaluates the major recent structural changes in the Canadian credit union system, and attempts to quantify the impact of consolidation activity on business formation. By way of preview, it will be shown that the consolidation of the credit union system is unlikely to have a significantly adverse impact on business formation on its own. However, when subjected to competition-enhancing policies, a consolidated credit union system may be less conducive to new business formation.

This study draws on the existing literature on the relationship between the structure of the banking sector and small business lending. Central to this research agenda is the question of whether a competitive or a concentrated banking sector will increase or decrease credit supply to small businesses. Since bank credit is an important source of external finance for young and small firms, one may draw conclusions about the potential impact of the banking sector structure on business formation from the evidence on the relationship between banking sector structure and small business lending. In particular, the evidence suggests that merged banks may reduce the share of small business loans in their loan portfolios relative to their pre-merger levels (Berger, Kashyap and Scalise, 1995); Berger and Udell, 1996; Keeton, 1996; Peek and Rosengren, 1996). By extension, this implies that the consolidation of the banking sector may inhibit business formation.

However, Berger, Saunders, Scalise and Udell (1998) suggest that there is a static view behind this inference that is incomplete. According to their dynamic view of the effect of mergers and acquisitions (M&As) on small business lending, M&As not only change the strategic focus of the merged bank, but also the reaction of other banks to M&A activities in the banking sector. When these dynamic effects are taken into account, any bank-size related decline in small business lending that is directly attributed to M&As may at least be partially offset by an increase in small business lending among lenders in the same market that do not participate in such M&A activities (Berger et al., 1998; Craig and Hardee, 2007). If this is so, then the net effect of consolidation activity on business formation may be approximately neutral at the macro level.

This study contributes to the existing literature primarily along two lines. First, it adds to the dearth of research on the nature of consolidation activity in the community banking segment by systematically analyzing and characterizing the ongoing episode in the Canadian context. Second, it provides evidence on the mediating effect of competition on the relationship between the size of the

credit union system and business formation. By focusing on business formation in the Canadian context, this study departs from prior studies that primarily focus on the impact of consolidation activity on small business lending in the United States (US) (Berger et al., 1995; Berger et al., 1998; Berger and Udell, 1996; Craig and Hardee, 2007; Francis et al., 2008; Keeton, 1996; Strahan and Weston, 1998). Given the well-documented differences in the financial histories of the US and Canada, this departure is warranted.

Until recently, for instance, the US essentially had a unit banking system that prohibited inter-state branching (Bordo, 1995). In contrast, Canada has not only long had unlimited branching, but its federally chartered banking sector also evolved into a highly concentrated market structure long before consolidation activity intensified in the US. Furthermore, it is notable that the recent trend in consolidation activity in the North American financial services industry may have more to do with the credit union system in Canada relative to the broader banking sector in the US. Therefore, the credit union system warrants particular attention in the Canadian context.

The remainder of this article proceeds as follows. The next section evaluates the major structural changes that are currently unfolding in the Canadian credit union system. A theoretical framework is then developed to support a number of hypotheses on the relationship between credit union structural variables and the rate of new business formation at the regional level. This is followed by a description of the data, sample, measures and the statistical methods employed. The results are then presented. The final section discusses the key findings and their limitations, and concludes by focusing on the policy implications.

## **2. Structural Changes in the Canadian Credit Union System**

Figure 1 shows the values of the assets (in millions of Canadian dollars) held by Credit Union Central of Canada (CUCC)-affiliated credit unions in nine of the ten Canadian provinces

(excluding Québec) over the period 1992-2009. In absolute terms, it is evident that the size of the credit union system, as measured by the value of total assets, has been growing over the period of study.

**[Insert Figure 1 about here]**

Using the core consumer price index (CPI), as defined by the Bank of Canada, and 2002 as the base year, the inflation-adjusted asset values of CUCC-affiliated credit unions were computed. This is shown in Figure 2. What is clear is that the nominal and inflation-adjusted asset values of CUCC-affiliated credit unions have moved in tandem at least since 1992. This implies that the Canadian credit union system has grown in both nominal and real terms.

**[Insert Figure 2 about here]**

Interestingly, the Canadian credit union system has also been growing in relative terms. Figure 3 shows *credit union asset density*, as defined by the value of CUCC-affiliated credit union assets per 1,000 working-age (15-64) individuals, across provinces from 1992 to 2009. It is evident that the credit union system has been growing faster than the working-age population in all provinces, albeit at different rates. In general terms, the asset values of CUCC-affiliated credit unions per 1,000 working-age individuals ranged from CDN\$543,325 (Newfoundland and Labrador) and \$8.7 million (Saskatchewan) in 1992 compared to CDN\$1.6 billion (New Brunswick) and CDN\$19.8 billion (Saskatchewan) in 2009.

**[Insert Figure 3 about here]**

Figure 4 shows a time plot of inflation-adjusted credit union asset density. It can be seen that this real measure of the relative size of the credit union system conveys the same information as nominal

credit union asset density shown in Figure 4; thus, the relative size of the Canadian credit union system has increased in both nominal and real terms between 1992 and 2009.

**[Insert Figure 4 about here]**

Figure 5 shows the number of CUCC-affiliated credit unions by province over the same period. In absolute terms, there has been a relatively steady decline in the number of independently operated credit unions across provinces.

**[Insert Figure 5 about here]**

To evaluate the trend in the number of credit unions in relative terms, *credit union density*, as defined by the number of (CUCC-affiliated) credit unions per 1,000 working-age (15-64) individuals, was computed. This information is conveyed in Figure 6. It is evident that there has been a decline in the number of credit unions per 1,000 working-age individuals, albeit at different rates across provinces. In general terms, credit union density ranged from 0.05 (Newfoundland and Labrador, Alberta and British Columbia) and 0.32 (Saskatchewan) in 1992 compared to 0.01 (British Columbia) and 0.10 (Prince Edward Island and British) in 2009.

**[Insert Figure 6 about here]**

Although the reported data excludes Desjardins-affiliated *caisse populaires* in Québec, and non-CUCC affiliated credit unions/*caisse populaires* in general, the emerging story is that the Canadian credit union system is becoming more concentrated. The salient developments in the credit union system may be summarized by the following two empirical observations: (1) credit union asset density has been increasing across provinces, and (2) credit union density has been decreasing across provinces. Taken together, these facts suggest that a small number of large players are playing an important role in the Canadian credit union system.

A central question in this study is whether a more concentrated credit union system, as implied by the two empirical observations above, will inhibit or foster business formation. Figure 7 shows that the number of newly registered businesses was either relatively constant or increasing between 1992 and 2009 in absolute terms.

**[Insert Figure 7 about here]**

However, a much different picture emerges when new business formation is expressed in relative terms. Figure 8 shows *entry density* - as defined by the number of newly registered ‘employer’ businesses (that maintain a payroll for at least one listed employee who may be the owner) per 1,000 working-age (15-64) individuals - by province over the period 1992-2009. It is evident that there has generally been a decline in entry density across provinces over this period. For instance, entry density ranged from 5.89 (Ontario) and 16.24 (Prince Edward Island) in 1992 compared to 5.81 (Nova Scotia) and 10.82 (Prince Edward Island) in 2009.

**[Insert Figure 8 about here]**

The finding of a downward trend in the rate of new business formation among working-age individuals and an apparently upward trend in the concentration of the credit union system suggests that concerns about the adverse impact of the latter on business formation are not misplaced. At the same time, this time series evidence is only suggestive. To quantify the impact of consolidation activity on business formation, a multivariate regression analysis is required. A theoretical framework is developed to support such an analysis in the next section.

### **3. Theoretical Framework and Hypothesis Development**

As credit unions become larger, they may lose their comparative advantage in small business lending. This is primarily attributed to the tendency of large financial institutions to not only

centralize lending decisions, but also place greater emphasis on independently verifiable information that new and small firms generally lack (Berger, Miller, Petersen, Rajan and Stein, 2005; Petersen and Rajan, 1994). Furthermore, relatively large credit unions that are finding it increasingly costly to provide relationship-based loans may reduce the share of such loans in their portfolios if competition intensifies in the credit market; that is, large credit unions may lack the incentive to extend credit to new and small firms on favorable terms if competition makes it easy for the latter to break away from the relationships they have forged with credit unions (Petersen and Rajan, 1995).

Insofar as the growth in credit union asset density reflects the growth and increasing dominance of above-average size credit unions, one would expect a negative relationship between credit union asset density and the rate of business formation among working-age individuals. However, if this relationship is evaluated at the regional level, the dynamic view of consolidation activity suggests that there may not be a systematic relationship between credit union asset density and business formation (Berger et al., 1998). At the same time, intense competition within the credit union system at the regional level may still have an adverse impact on business formation. This leads to the following two hypotheses:

*Hypothesis 1a:* The rate of business formation is not systematically related to credit union asset density at the regional level; and

*Hypothesis 1b:* There is a systematically negative relationship between the rate of business formation and the credit union asset density increases as competition increases at the regional level.

Alternatively, when viewed in isolation, greater competition in the credit union system at the regional level may positively impact new business formation (Rogers, 2012). This is consistent with standard economic theory which suggests that competitive markets are likely to yield greater quantities of goods at lower prices relative to markets that are dominated by few players. This leads to the following hypothesis:

*Hypothesis 2a:* The rate of new business formation is positively related to the degree of competition in the credit union system at the regional level.

However, for the same arguments articulated above, hypothesis 2a may be extended in line with hypothesis 1b as follows:

*Hypothesis 2b:* There will be a systematically negative relationship between the rate of new business formation and the degree of competition in credit union system at the regional level as credit union asset density increases.

## **4. Research Method**

### 4.1. Data and Sample

To empirically evaluate the hypotheses developed in the previous section, this study draws on provincial-level data on credit union structural variables from Credit Union Central of Canada. In addition, it draws on provincial-level data on new business registrations from Statistics Canada's Longitudinal Employment Analysis Program (LEAP) file. A number of publicly available Statistics Canada tables were also used as data sources for this study. A balanced panel dataset was prepared on the variables described below for nine of the ten Canadian provinces over the period 1992-2009. This yields 162 province-year observations.

### 4.2. Measures

#### 4.2.1. Dependent variable

The dependent variable in entry density. This variable was defined above as the number of newly registered employer businesses per 1,000 working-age individuals. Entry density serves a proxy for the rate of business formation among working-age individuals. An increase (decrease) in entry density implies an increase (decrease) in the supply of credit to new and small firms.

#### 4.2.2. Credit union structural variables

Credit union asset density is used to capture both the relative size of the credit union system and the growth, and the dominance of above-average size credit unions that are expanding much faster than their small counterparts in Canada. Meanwhile, credit union density is used as a proxy for the degree of competition in the credit union system. An increase (decrease) in credit union density is associated with an increase (decrease) in the degree of competition in the credit union system, all else equal. Although general measures of credit market concentration including the Herfindahl-Hirschmann index were considered, their inclusion was precluded due to data limitations.

#### 4.2.3. Control variables

To mitigate a variety of confounding influences on the relationship between the rate of new business formation (entry density) and credit union structural variables (credit union asset density and credit union density) in our analysis, a number of control variables are included in the multivariate regression models described below. The controls for the demographic characteristics of provinces span age, education level, gender and immigration.

To the extent that age is negatively correlated with risk-taking propensity, or positively correlated with human capital (i.e. business experience or organizational skill), provinces with a relatively high share of individuals who are above the median age may have a relatively low, or high propensity for entrepreneurship, respectively, up to a certain age (Blanchflower, Oswald and

Stutzer, 2001; Lévesque and Minniti, 2006; Lévesque, Shepherd and Douglas, 2002; Madsen, Neergaard and Ulhoi, 2003). Therefore, the use of *provincial median age* as a control variable is justified. In addition, we also controlled for cross-province differences and temporal changes in human capital by using the share of the adult population (age, 25-44) with a Bachelor's degree as a control variable. This is appropriate based on studies that find a positive relationship between formal education and entrepreneurship (Bates, 1990; Colombo and Grilli, 2005; Henley, 2005).

The share of the provincial population that is female is used to control for the influence of gender on the relationship between the rate of new business formation and credit union structural variables. This is justified because prior studies have found gender-based differences in the propensity for entrepreneurship, startup capital, access to finance, among others (Birley, 1989, 2006; Blanchard, Zhou and Yinger, 2008; Brush, 1992; Kim, 2006; Lee and Rendall, 2001). Meanwhile, the *share of newly landed immigrants* is used to control for the conflating influence of immigration on entrepreneurship. This is appropriate because prior studies have found relatively high rates of self-employment among immigrants (Borjas, 1986; Lofstrom, 2002), while others have not found any systematic differences in the rates of self-employment between immigrants and natives (Brock and Evans, 1986; Levie and Smallbone, 2007).

Consolidation activity in the credit union system is a notable phenomenon in an otherwise consolidated banking sector. This appears to be the case for the Canadian banking sector where a handful of federally chartered banks dominate the financial industry (i.e. Royal Bank of Canada, Toronto-Dominion Bank, Bank of Nova Scotia, Bank of Montreal, Canadian Imperial Bank of Commerce and the National Bank of Canada). An interesting question is whether the consolidation activity in the credit union system will adversely impact business formation when combined with a large concentrated federally chartered banking sector. At the regional level, consolidation in the

credit union system need not significantly inhibit business formation if the small firms that are dropped by large or merged credit unions are picked up by small or unmerged credit unions. Bank loan density (i.e. federally chartered bank loans per 1,000 working-age individuals) is used as a proxy for the relative size of the federally chartered banking sector. As a control variable, it allows us to isolate the potentially negative impact that Canada's concentrated, federally chartered banking sector may have on the rate of new business formation both directly, and when combined with consolidation activity in the credit union system.

#### 4.2.4. Statistical Methods

The fixed-effects estimator is used to estimate the impact of credit union structural variables on entry density. At this point, the use of the fixed-effects estimator is justified on the grounds that it allows us to control for differences in the unobserved time-invariant characteristics across provinces. However, the appropriateness of the fixed-effects estimator as opposed to the random-effects estimator is formally justified later based on the Hausman test. For each province indexed  $i$ , the linear panel regression model to be estimated is as follows:

$$\begin{aligned}
 \text{entry density}_{it} = & \alpha + \beta_1 \cdot \text{credit union asset density}_{it} \\
 & + \beta_2 \cdot \text{credit union density}_{it} \\
 & + \beta_3 \cdot \text{credit union asset density}_{it} * \text{credit union density}_{it} \\
 & + \boldsymbol{\gamma}' \cdot \mathbf{Controls}_{it} + \varepsilon_{it}
 \end{aligned}$$

According to hypotheses developed above: credit union asset density will not systematically impact entry density (i.e.  $\beta_1 = 0$ ) (hypothesis 1a); combined effect of credit union asset density and credit union density on entry density will be negative and statistically significant (i.e.  $\beta_3 < 0$ ) (hypotheses 1b and 2b); and credit union density will be positively related to entry density (i.e.  $\beta_2 > 0$ ) (hypothesis 2a). The vector of controls constitutes the provincial demographic, economic and bank-

size variables discussed above, as well as province and time fixed effects. The latter two are used to control for macroeconomic shocks.

A number of steps are taken to address expected violations of the standard assumptions that underpin the classical linear regression model. Specifically, credit union and federally chartered bank structural variables were added in turn to untangle the joint effects that may be induced by multicollinearity. Meanwhile, robust standard errors were computed to address a potential violation of the assumption that the variance of the error term is constant. Finally, since credit union structural variables and entry density are measured contemporaneously, the potential for endogeneity bias in the estimation exists. To mitigate endogeneity bias, one-period lagged values of the credit union structural variables were used in the multivariate regression model.

## **5. Results**

### 5.1. Descriptive statistics

The means, standard deviations and correlation coefficients reported are Table 1. The average province has a relatively high standard of living with a real per capita gross domestic product (GDP) (in 2002 Canadian dollars) of CDN\$33,246. In addition, it generates almost 10 newly registered businesses per 1,000 working-age individuals each year. In the average province, 50 percent of the population is just below 37 years old, and the male-female ratio is almost 1:1. In addition, the average province receives approximately 9 percent of newly landed immigrants. At CDN\$16,887 in federally chartered inflation-adjusted bank loans and CDN\$ 5,098 in inflation-adjusted (CUCC-affiliated) credit union assets per 1,000 working-age individuals, the federally chartered banking sector is significantly larger than the credit union system in the average province. There are approximately 0.07 CUCC-affiliated credit unions for every 1,000 working-age individuals in the average province.

**[Insert Table 1 about here]**

## 5.2. Multivariate Analysis

The fixed-effects coefficient estimates are reported in Table 2. Among the control variables, a systematic negative relationship seems to exist between entry density and the *provincial median age* variable. The coefficient estimate ranges from -0.634 to -1.036 and are significant at either the 5 or 10 percent level of significance. Neither *immigrant share* nor *female share* seems to systematically impact entry density. This also applies to *provincial real GDP per capita*.

In general terms, the results are related to the hypotheses in the following way. A marginal increase in credit union asset density does not have a statistically significant effect on density in all the models considered. This is consistent with hypothesis 1a. However, the evidence weakly supports hypotheses 1b/2b; that is, the combined effect of credit union asset density and credit union density on entry density may be negative and statistically significant. Meanwhile, competition, as captured by credit union density, has a positive effect on entry in the more completely specified models. This is consistent with hypothesis 2a.

The fixed-effects models that generate these results can explain between 76.2 and 77.6 percent of the *within variation* in entry density, and between 24.1 and 29.2 percent of the overall variation in entry density. However, the fixed-effects estimator may suffer from endogeneity bias. In addition, since the strongest support for the hypotheses 1b and 2b come from model 6, it remains to be shown why it may be more suitable than the other models. These two issues are addressed in the next section. In addition, the coefficient estimates are examined more closely.

**[Insert Table 2 about here]**

### 5.3. Additional Robust Checks

To address the issue of endogeneity, credit union structural variables were lagged one period and the panel regression model was re-estimated. The fixed-effects estimates are reported in Table 3. The Hausman test provides the strongest support for the use of the fixed-effects estimator over the random-effects estimator in models 6 and 7 relative to the other model specifications. Specifically, the chi-squared distributed Hausman test statistic was 41.06 and 145 for models 6 and 7, respectively. A p-value of 0.000 was found in both cases. Meanwhile, model 6 can explain 77.8 and 15.0 percent of the within variation and overall variation, respectively, in entry density; while model 7 can explain 78.6 and 15.8 percent of the within variation and overall variation, respectively, in entry density. The next competing model in terms of explanatory power is model 5, which can explain 78.4 and 21.2 percent of the within variation and overall variation, respectively, in entry density. However, taking into account the apparent impact of multicollinearity on the precision with which the coefficients were estimated, model 6 appears to yield the most reliable estimates.

While the inclusion of provincial real GDP per capita does not seem to provide independent information that improves the precision of the fixed-effects estimator, its correlation with the other regressors introduces bias. This is evident from models 5, 6 and 7. In particular, the inclusion of provincial real GDP per capita in models 5 and 7 seems to contribute to the underestimation of the marginal effect of credit union density on entry density. Therefore, by dropping provincial real GDP per capita in model 6, the fixed-effects estimator yields less biased estimates; hence, it is deemed to be the most reliable model specification.

Focusing on model 6, the estimate of the marginal effects of provincial median age on entry density was found to be negative and statistically significant (i.e. estimated coefficient of -0.995 at the 5 percent level of significance). While female share and immigrant share relative to the

provincial population do not systematically impact entry density, Batchelor's degree share had a statistically significant positive effect on entry density (i.e. estimated coefficient of 0.217 at the 10 percent level of significance).

In summary, the results suggest that: (1) credit union asset density does not systematically impact entry density (i.e.  $\beta_1 = -0.000$ ), which is consistent with hypothesis 1a; (2) the combined effect of credit union asset density and credit union density on entry density is negative and statistically significant (i.e.  $\beta_3 = -0.004$ , 10 percent level of significant), which is consistent with hypotheses 1b and 2b; (3) credit union density has a statistically positive effect on entry density (i.e.  $\beta_2 = 28.093$ , 5 percent level of significant), which is consistent with hypothesis 2a

**[Insert Table 3 about here]**

## **6. Discussion and Conclusion**

This study has addressed the question of whether the expanding and increasingly concentrated credit union system in Canada can be expected to foster business formation. It contributes to the existing literature by not only confirming some of the findings in prior studies, but also in terms of the evidence that it provides on the relationship between the rate of business formation and credit union structural variables. In addition, it provides a platform for the formulation of coherent policies on the banking sector that have implications for small business and entrepreneurship.

Consistent with prior studies that point to a potentially negative correlation between age and risk-taking propensity (Blanchflower et al., 2001), a robust negative relationship was found between age and the rate of new business formation among working-age individuals. On the contrary, a robust positive relationship was found between the attainment of formal education at the university level and the rate of new business formation. This is consistent with prior studies that emphasize the

importance of formal education for entrepreneurship (Bates, 1990; Colombo and Grilli, 2005; Henley, 2005).

Meanwhile, the impact of consolidation activity in the Canadian credit union system on business formation is less straightforward. The rate at which new businesses are formed by working-age individuals is not systematically impacted by the relative size of the credit union system. Since much of this expansion is partly attributed to the growth in the asset base of merged credit unions, it is possible that small firms that are dropped by large credit unions are picked up by smaller ones. This is consistent with the dynamic view of consolidation activity on small business lending (Berger et al., 1998).

Similar to prior studies, competition seems to foster business formation (Roger, 2012). However, if competition intensifies in an increasingly concentrated credit union system, business formation may progress at a slower rate. Thus, while competition seems to create credit market conditions that apparently make it easier for new and small firms to gain better access to credit, it may lead some credit unions to curtail small business lending. The latter may stem from the potentially high cost of retaining members in a highly competitive environment.

### 6.1. Limitations

There are two limitations that must be borne mind when evaluating the results in this study. First, as with any study that draws on aggregate data to estimate the relationship between banking sector structural variables and business formation, the potential for endogeneity bias in the estimation is a concern. Although one-period lagged values of credit union structural variables were used to mitigate endogeneity bias in the estimation, it remains a concern. Therefore, the estimated effects of credit union structural variables on entry density should be interpreted with caution. Finally, data limitation precluded the use of general measures of credit market concentration such as

the Herfindahl-Hirschmann index in this study. At the same time, this does not seem to lead to qualitatively different results when compared to prior studies that use this measure along with per capita bank-size measures that are similar to the credit union density measure of competition that is used in this study (Roger, 2012).

## 6.2. Policy Implications

Notwithstanding these limitations, this study presents findings that are relevant for the formulation of small business and entrepreneurship policy. In particular, it contributes to the ongoing discourse on the merit of a level playing field for federally chartered banks and credit unions. This is partly informed by standard competition-efficiency arguments, and the elimination of the exclusive tax benefits that credit unions have traditionally enjoyed is one way to create a level playing field in the banking sector. However, this study offers preliminary evidence which suggests that competition-enhancing policies along this line should be explored in more detail given the potentially adverse implication for young and small firms in a concentrated credit union system.

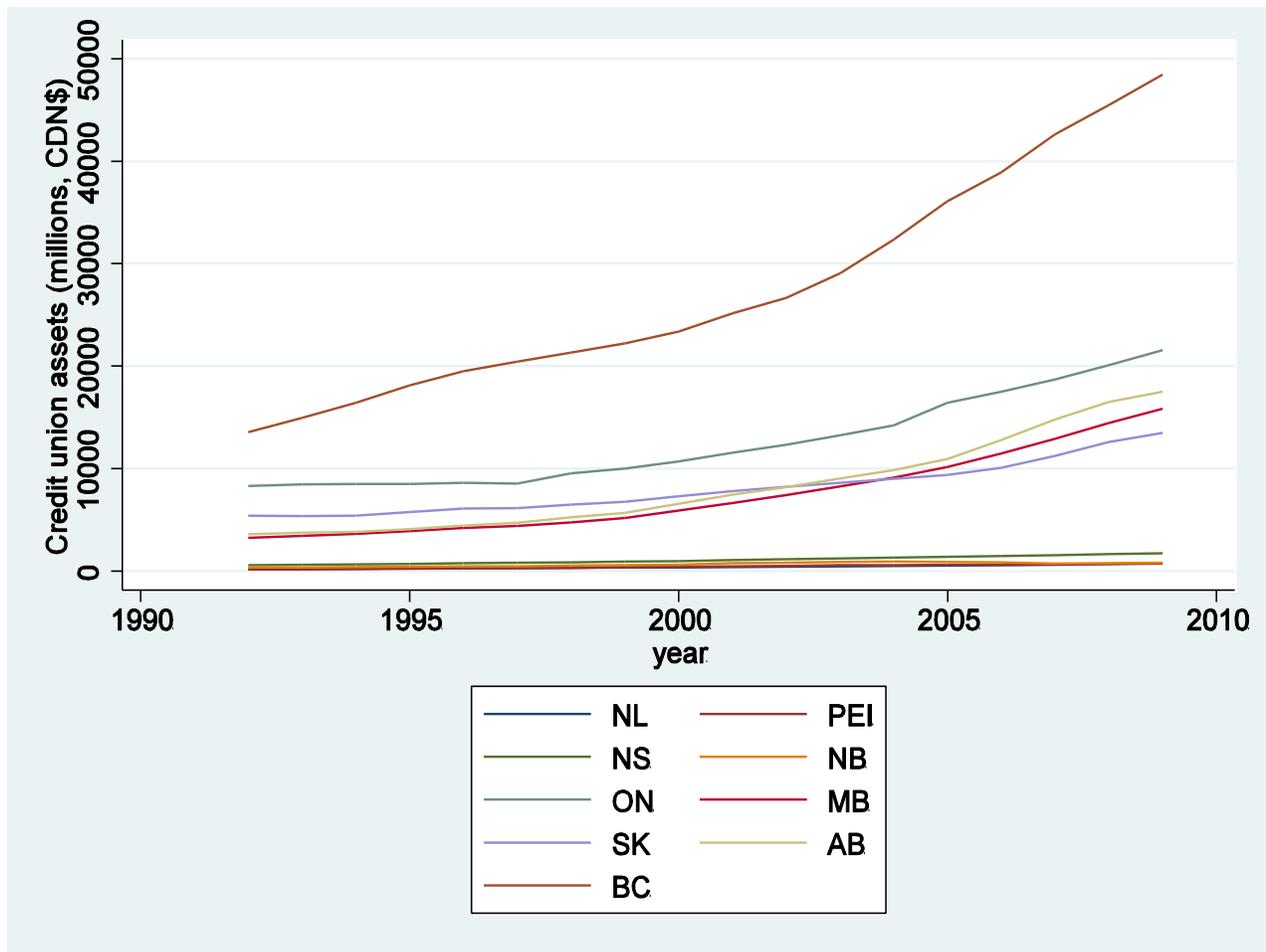
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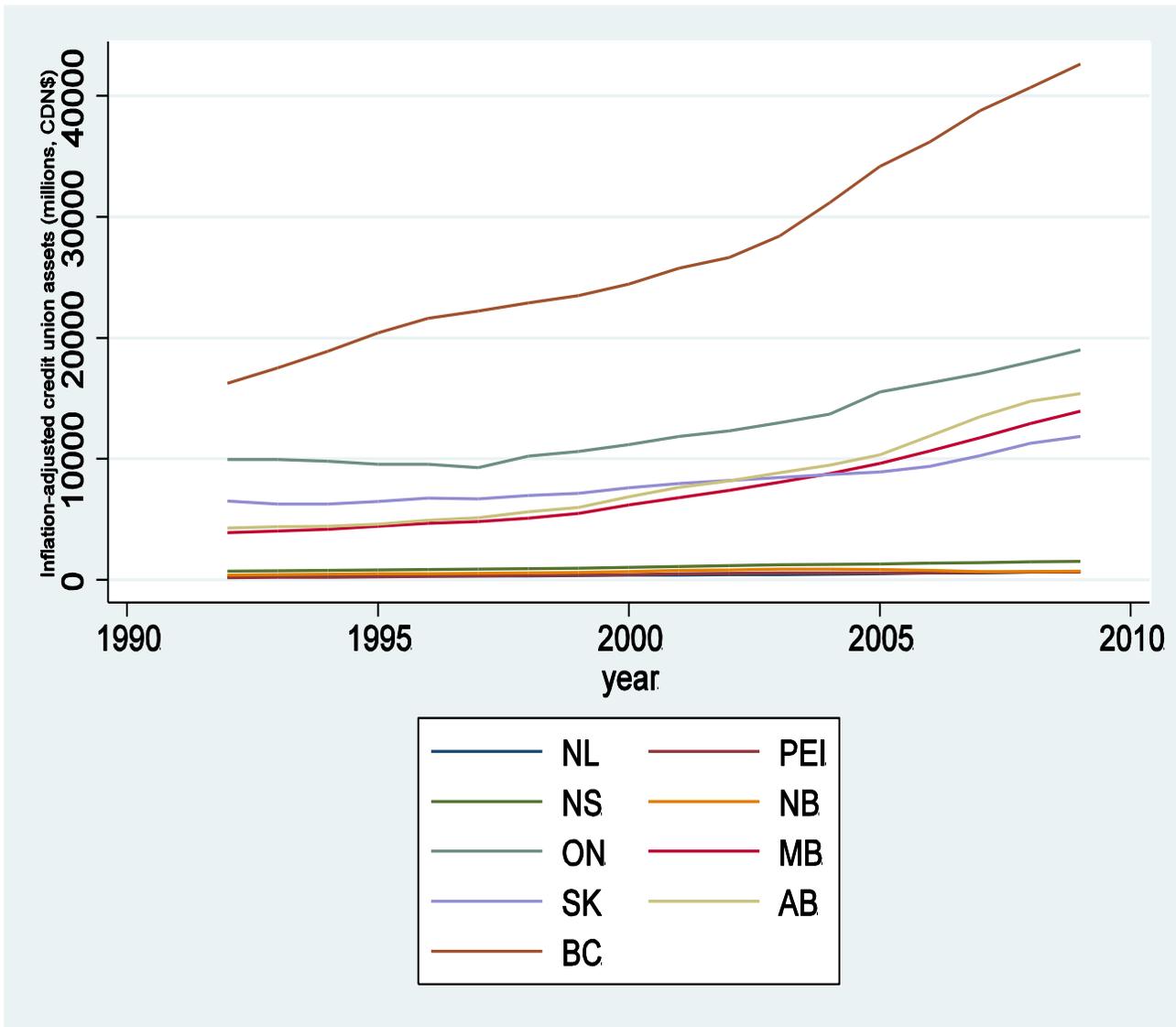
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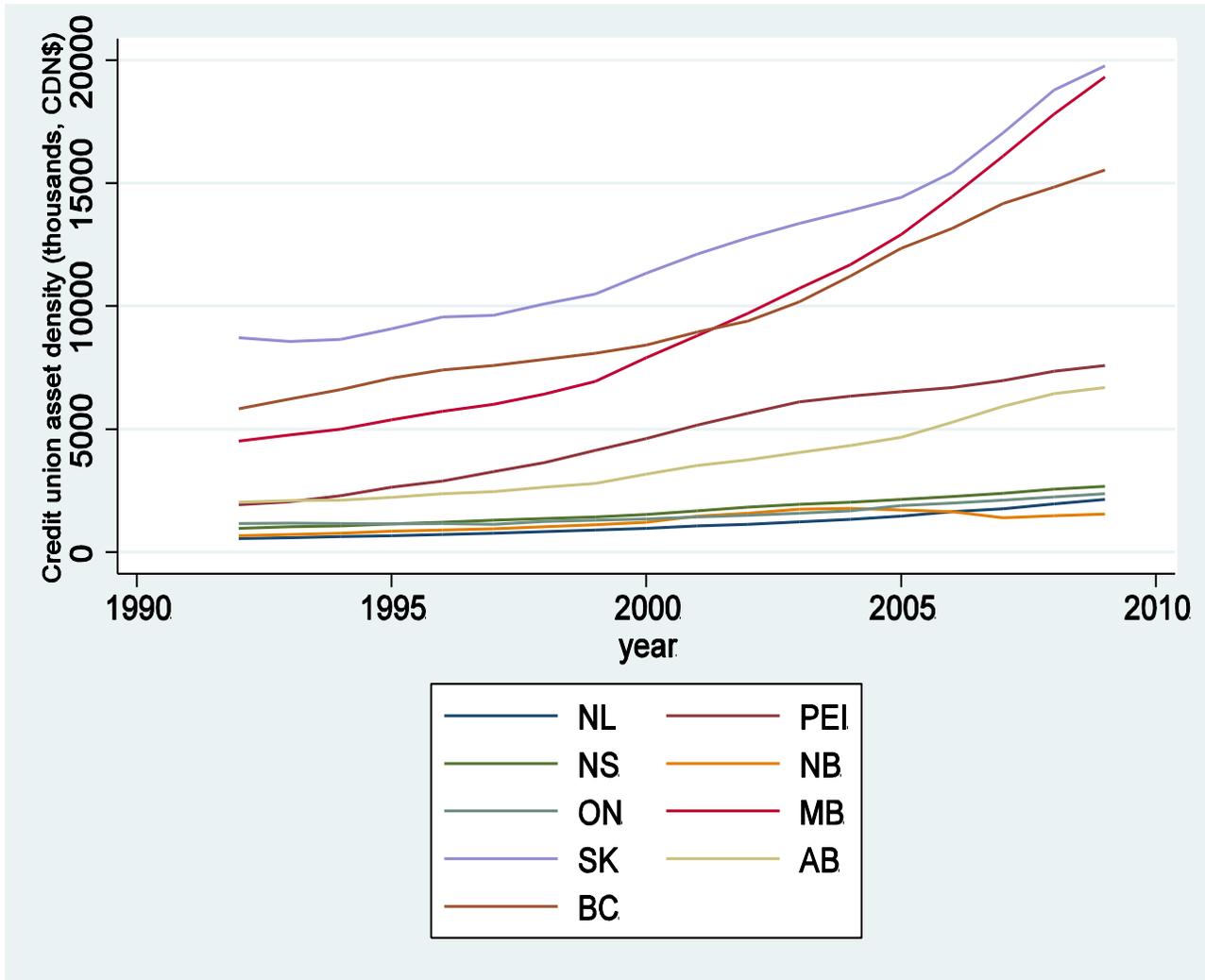
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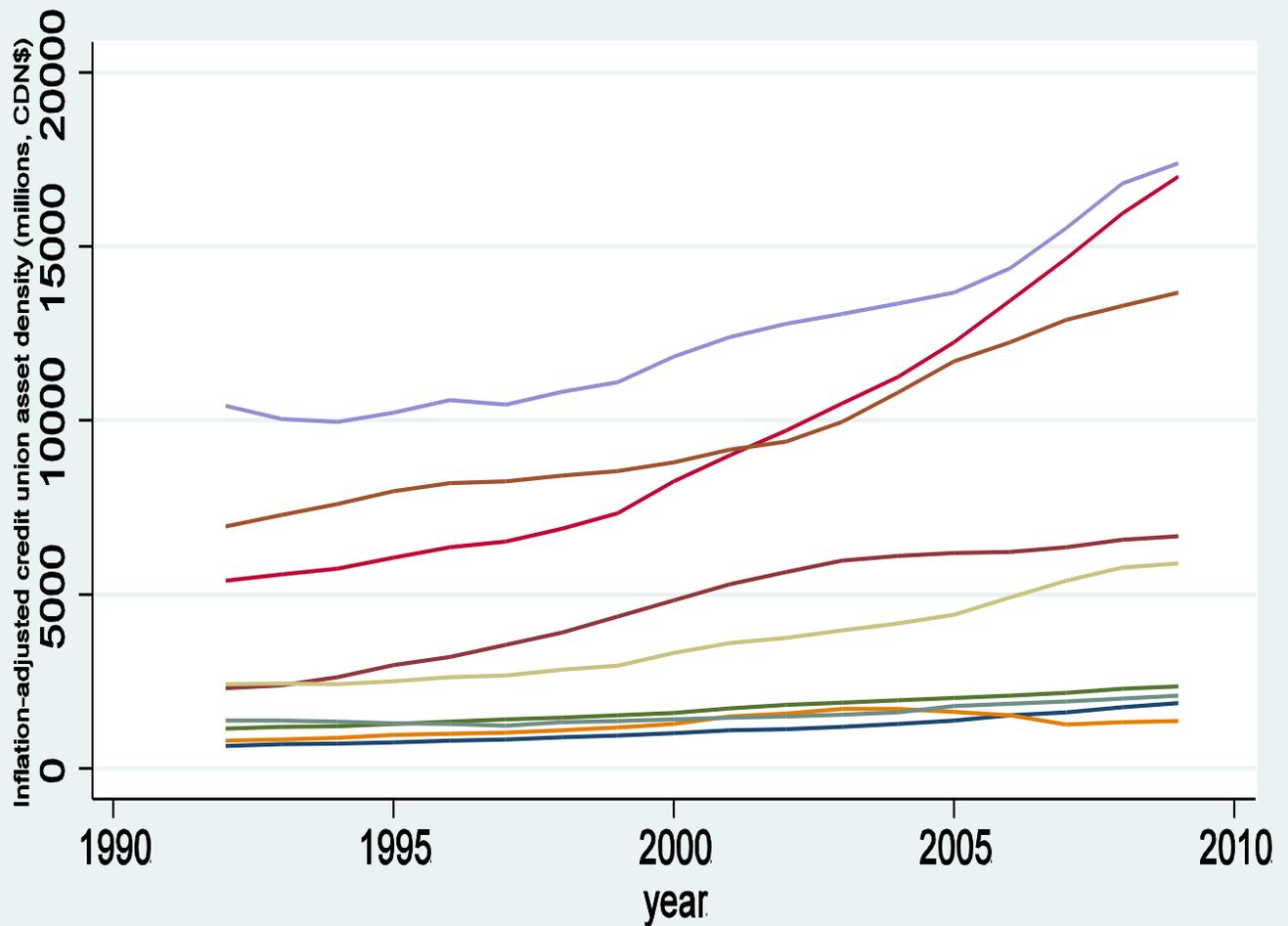
**Figure 1.** A time plot of credit union assets (in millions of Canadian dollars) by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia, BC. Source: Credit Union Central of Canada (CUCC).



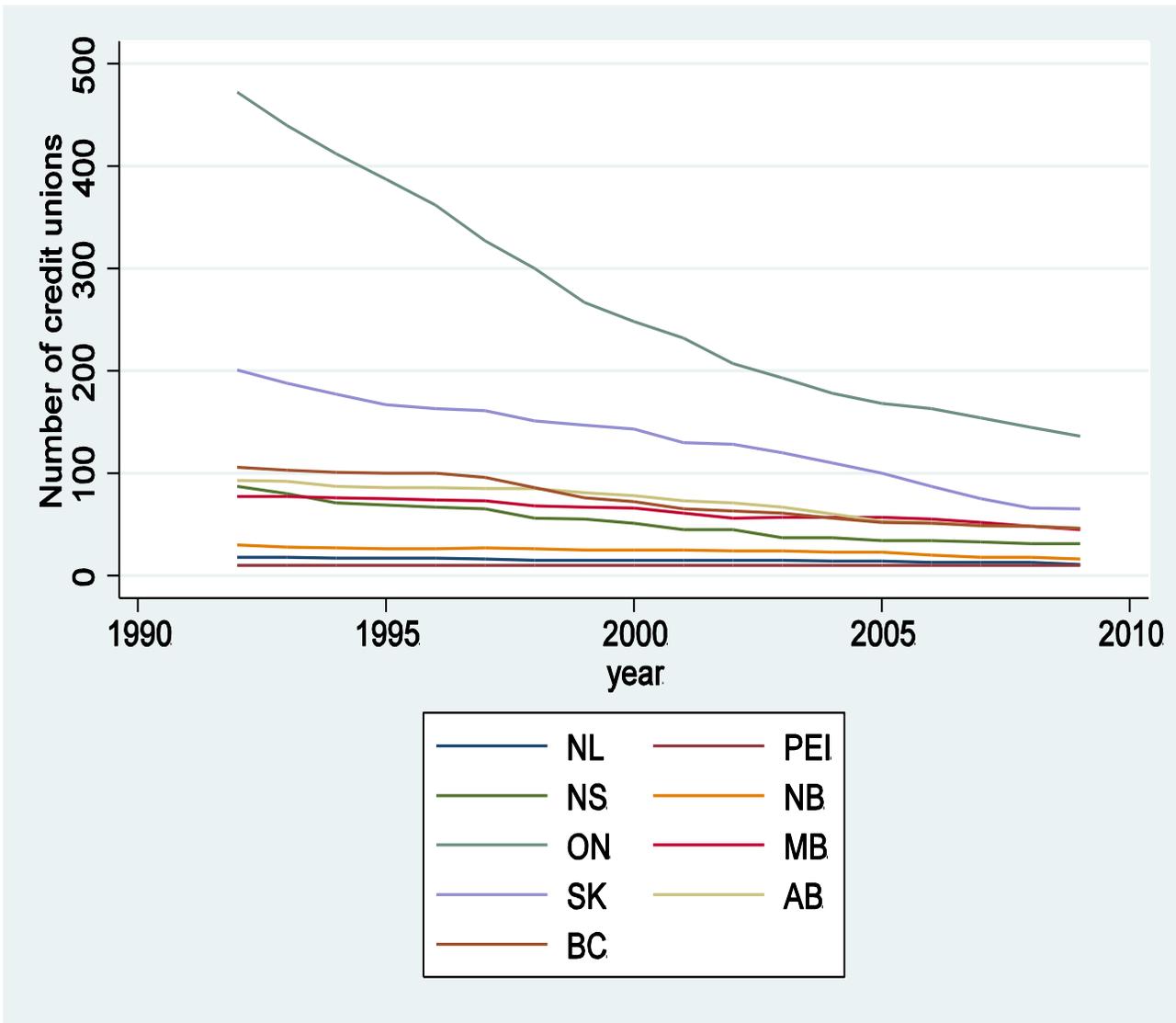
**Figure 2.** A time plot of inflation-adjusted credit union assets (in millions of Canadian dollars) by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia, BC. Source: Credit Union Central of Canada (CUCC).



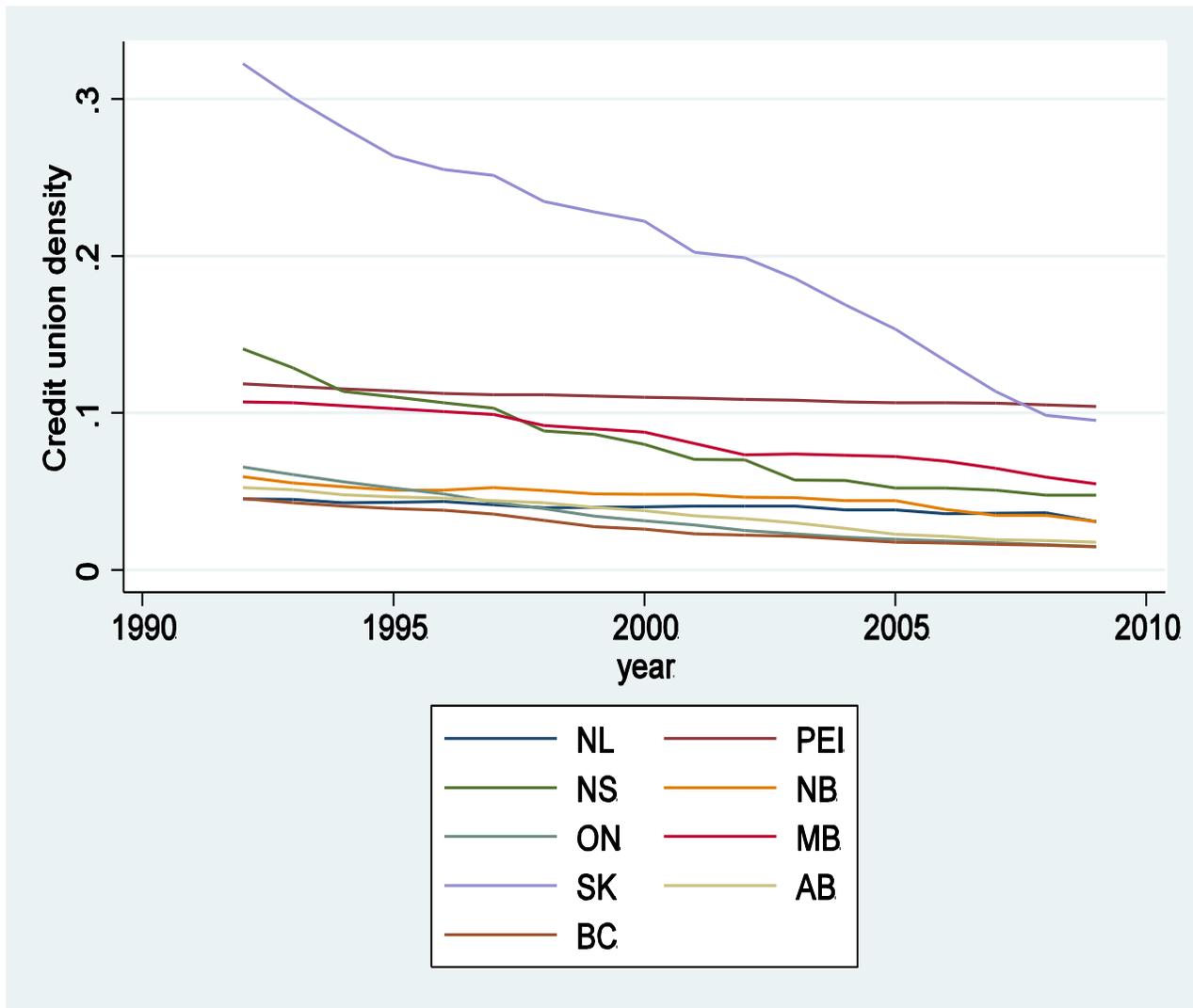
**Figure 3.** A time plot of credit union assets (in thousands of Canadian dollars) per 1,000 working-age (15-64) individuals (“credit union asset density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Credit Union Central of Canada (CUCC).



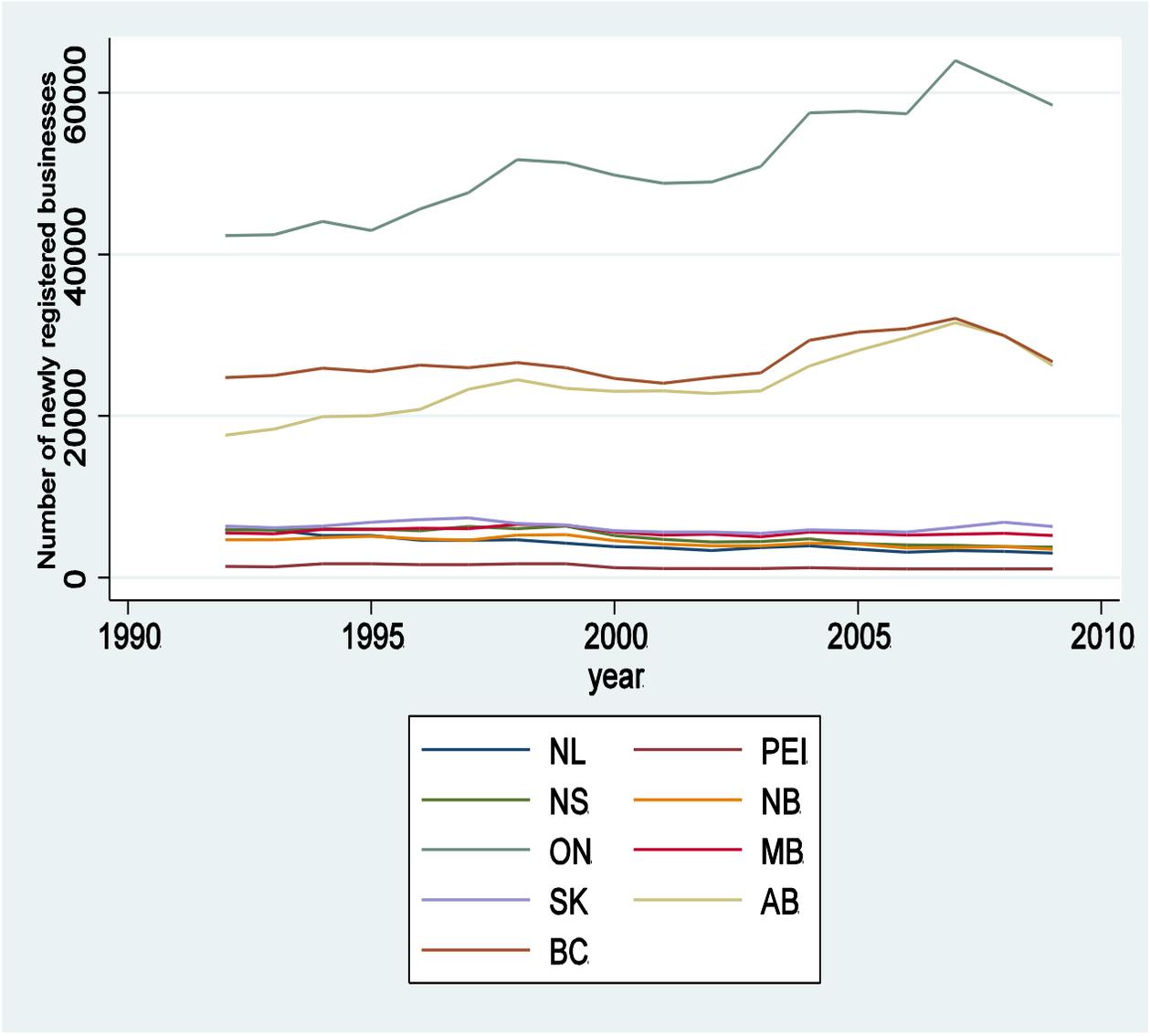
**Figure 4.** A time plot of inflation-adjusted credit union assets (in thousands of Canadian dollars) per 1,000 working-age (15-64) individuals (“inflation-adjusted credit union asset density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Credit Union Central of Canada (CUCC).



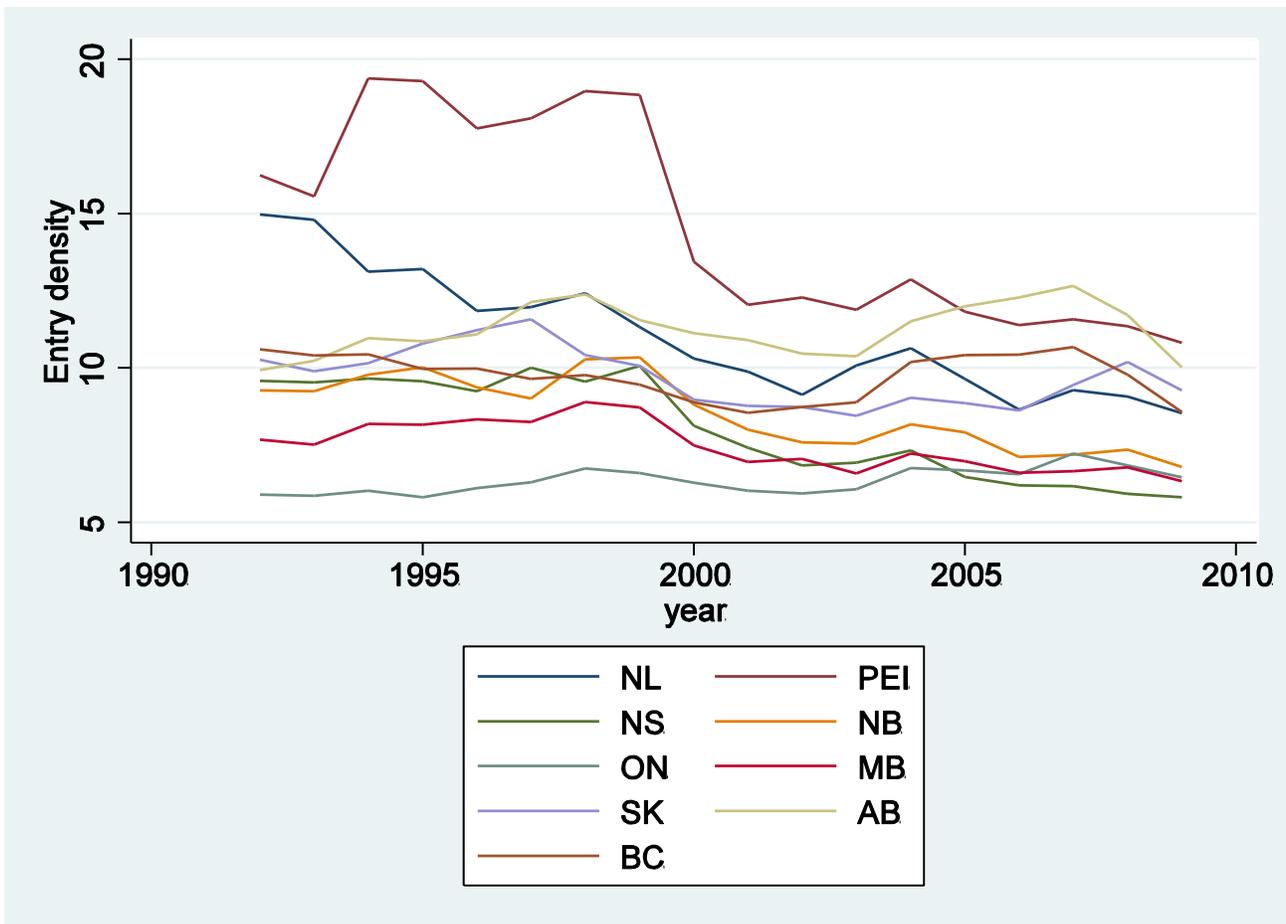
**Figure 5.** A time plot of the number of credit unions by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Credit Union Central of Canada (CUCC).



**Figure 6.** A time plot of the number of credit unions per 1,000 working-age (15-64) individuals (“credit union density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Credit Union Central of Canada (CUCC).



**Figure 7.** A time plot of the number of newly registered ‘employer’ businesses – defined by the maintenance of a payroll for at least one listed employee who may be the owner - by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Longitudinal Employment Analysis Program (LEAP) file, Statistics Canada.



**Figure 8.** A time plot of the number of newly registered ‘employer’ businesses (that maintain of a payroll for at least one listed employee who may be the owner) per 1,000 working-age (15-64) individuals (“entry density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Longitudinal Employment Analysis Program (LEAP) file, Statistics Canada.

**Table 1. Means, standard deviations and correlations, 1992-2009.**

	Mean	SD	1.	2.	3.	4.	5.	6.
1. Entry density <sup>a</sup>	9.639	2.787	-					
2. Provincial median age	36.793	2.681	-0.352 <sup>***</sup>	-				
3. Female share <sup>b</sup>	49.774	0.545	-0.108	0.662 <sup>***</sup>	-			
4. Bachelor's degree share <sup>c</sup>	13.768	3.145	-0.449 <sup>***</sup>	0.529 <sup>***</sup>	0.011	-		
5. Immigrant share <sup>d</sup>	9.308	16.476	-0.410 <sup>***</sup>	-0.053	0.026	0.455 <sup>***</sup>	-	
6. Bank loan density <sup>e</sup>	16,887	6,975	-0.149 <sup>+</sup>	-0.228 <sup>**</sup>	-0.195 <sup>*</sup>	0.360 <sup>***</sup>	0.772 <sup>***</sup>	-
7. Provincial real GDP per capita	33,246	11,790	-0.206 <sup>**</sup>	0.374 <sup>***</sup>	-0.282 <sup>***</sup>	0.728 <sup>***</sup>	0.183 <sup>*</sup>	0.191 <sup>*</sup>
8. Credit union asset density <sup>f</sup>	5,088	4,487	-0.051	0.073	-0.283 <sup>***</sup>	0.234 <sup>**</sup>	-0.147 <sup>+</sup>	-0.211 <sup>**</sup>
9. Credit union density <sup>g</sup>	0.074	0.060	0.201 <sup>*</sup>	-0.282 <sup>***</sup>	-0.078	-0.422 <sup>***</sup>	-0.346 <sup>***</sup>	-0.436 <sup>***</sup>
						7.	8.	9.
7. Provincial real GDP per capita						-		
8. Credit union asset density <sup>f</sup>						0.273 <sup>***</sup>	-	
9. Credit union density <sup>g</sup>						-0.321 <sup>***</sup>	0.393 <sup>***</sup>	-

<sup>+</sup> $p < .10$ ; <sup>\*</sup> $p < .05$ ; <sup>\*\*</sup> $p < .01$ ; <sup>\*\*\*</sup> $p < .001$ ; number of province-year observations,  $n = 162$ .

<sup>a</sup> number of newly registered employer businesses per 1,000 working-age (15-64) individuals in a given province.

<sup>b</sup> percentage of provincial population that is female.

<sup>c</sup> percentage of the provincial population (age, 25 to 44) with a Bachelor's degree.

<sup>d</sup> province's share in total newly landed immigrants.

<sup>e</sup> federally chartered inflation-adjusted bank loans per 1,000 working-age (15-64) individuals.

<sup>f</sup> inflation-adjusted credit union assets (thousands, CDN\$) per 1,000 working-age (15-64) individuals.

<sup>g</sup> number of credit unions per 1,000 working-age (15-64) individuals in a given province.

**Table 2. Effects of credit union asset density and credit union density on entry density, 1992-2009.**

This table reports the fixed-effects estimates of the impact of the marginal and joint effects of credit union asset density and credit union density on entry density <sup>a</sup>. Starting with a baseline regression model that includes a standard set of control variables, credit union structural variables are subsequently added to yield more completely specified regression models. All variables are contemporaneously measured. Robust standard errors for the estimated coefficients are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates
Provincial median age	-0.707* (0.230)	-0.990* (0.386)	-1.036* (0.346)	-0.634* (0.207)	-0.988* (0.401)	-0.817* (0.348)	-0.992+ (0.348)
Female share <sup>b</sup>	-0.556 (0.680)	0.020 (0.991)	0.146 (0.868)	-0.808 (0.624)	-0.130 (1.150)	-0.895 (0.851)	-0.135 (1.084)
Batchelor's degree share <sup>c</sup>	0.305 (0.168)	0.237 (0.137)	0.233 (0.139)	0.296 (0.160)	0.199 (0.118)	0.190 (0.118)	0.200 (0.130)
Immigrant share <sup>d</sup>	-0.153* (0.048)	-0.116+ (0.059)	-0.114+ (0.061)	-0.151* (0.046)	-0.099 (0.056)	-0.080 (0.052)	-0.098 (0.062)
Provincial real GDP per capita	0.000+ (0.000)	0.000+ (0.000)	0.000+ (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Bank loan density <sup>e</sup>	-0.000+ (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000 (0.000)
Credit union asset density <sup>f</sup>		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Credit union density <sup>g</sup>			1.614 (2.883)		15.103 (10.192)	22.207* (9.417)	15.409 (10.399)
Bank loan density*credit union asset density							-0.000 (0.000)
Credit union asset density*credit union density				-0.000 (0.001)	-0.002 (0.001)	-0.003+ (0.001)	-0.002 (0.001)
Controls for province & time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	59.709+ (27.854)	41.583 (37.434)	36.643 (32.327)	70.283* (25.587)	48.630 (44.532)	81.399* (31.409)	48.891 (40.342)
R <sup>2</sup> : within	0.762	0.771	0.771	0.764	0.776	0.768	0.776
overall	0.241	0.269	0.272	0.247	0.292	0.254	0.288
Observations	162	162	162	162	162	162	162

+  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

<sup>a</sup> number of newly registered employer businesses per 1,000 working-age (15-64) individuals in a given province.

<sup>b</sup> percentage of provincial population that is female.

<sup>c</sup> percentage of the provincial population (age, 25 to 44) with a Batchelor's degree.

<sup>d</sup> province's share in total newly landed immigrants.

<sup>e</sup> federally chartered inflation-adjusted bank loans per 1,000 working-age (15-64) individuals.

<sup>f</sup> inflation-adjusted credit union assets (thousands, CDN\$) per 1,000 working-age (15-64) individuals.

<sup>g</sup> number of credit unions per 1,000 working-age (15-64) individuals in a given province.

**Table 3. Effects of credit union asset density and credit union density on entry density, 1992-2009.**

This table reports the fixed-effects estimates of the impact of the marginal and joint effects of credit union asset density and credit union density on entry density <sup>a</sup>. Starting with a baseline regression model that includes a standard set of control variables, credit union structural variables are subsequently added to yield more completely specified regression models. Credit union asset density and credit union density are lagged one period relative to the contemporaneously measured dependent and the control variables. Robust standard errors for the estimated coefficients are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates
Provincial median age	-0.740* (0.219)	-1.142* (0.424)	-1.201** (0.356)	-0.580** (0.171)	-1.129* (0.405)	-0.995* (0.378)	-1.164* (0.478)
Female share <sup>b</sup>	-0.290 (0.624)	0.524 (0.997)	0.690 (0.788)	-0.840 (0.473)	-0.319 (1.049)	-0.272 (0.826)	-0.282 (1.035)
Batchelor's degree share <sup>c</sup>	0.346+ (0.180)	0.260+ (0.129)	0.257+ (0.130)	0.331+ (0.163)	0.220+ (0.083)	0.217+ (0.104)	0.233+ (0.114)
Immigrant share <sup>d</sup>	-0.091+ (0.048)	-0.106 (0.058)	-0.086 (0.048)	-0.144 (0.042)	-0.061 (0.041)	-0.044 (0.041)	-0.054 (0.049)
Provincial real GDP per capita	0.000+ (0.000)	0.000+ (0.000)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)		0.000 (0.000)
Bank loan density <sup>e</sup>	-0.000* (0.000)	-0.000+ (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000+ (0.000)	-0.000* (0.000)	-0.000 (0.000)
Credit union asset density <sup>f</sup>		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Credit union density <sup>g</sup>			1.862 (3.418)		22.316 (12.247)	28.093* (11.582)	26.243+ (13.239)
Bank loan density*credit union asset density							-0.000 (0.000)
Credit union asset density*credit union density				-0.001 (0.001)	-0.003 (0.002)	-0.004+ (0.002)	-0.003 (0.002)
Controls for province & time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	46.838 (25.453)	21.559 (36.468)	15.123 (28.273)	69.777** (19.215)	30.725 (39.324)	55.976+ (29.101)	32.824 (37.785)
R <sup>2</sup> : within	0.755	0.772	0.772	0.761	0.784	0.778	0.786
overall	0.238	0.243	0.244	0.244	0.212	0.150	0.158
Observations	153	153	153	153	153	153	153

<sup>+</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

<sup>a</sup> number of newly registered employer businesses per 1,000 working-age (15-64) individuals in a given province.

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