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

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## **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 at the regional level. A theoretical framework is developed which supports a number of hypotheses. First, it is hypothesized that there is no systematic relationship between the relative size of the credit union system, as measured by credit union assets per 1,000 working-age (15-64) individuals, and the rate of business formation among these individuals. Second, it is hypothesized that competition, as measured by the number of credit unions per 1,000 working-age individuals, will negatively moderate the relationship between the relative size of the credit union system and the rate of business formation. Finally, it is hypothesized that there is a statistically positive relationship between competition and the rate of business formation. Drawing on Canadian provincial-level data for the period 1992-2009, it provides statistical evidence from fixed effects models that robustly supports the first hypothesis, but weakly supports the other two hypotheses. These findings suggest that policies and regulations that are intended to create a level playing field in a consolidated banking sector may have implications for small business formation; therefore, they warrant attention when formulating policies that are aimed at facilitating small business and entrepreneurship development.

**Key words:** Competition, Consolidation, Credit unions, New business formation, Relationship lending, 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 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 have implications for the rate of business formation across the communities and regions within countries.

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 the rate of business formation across provinces. 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. As will be discussed, this has implications

for the formulation of coherent small business and entrepreneurship policies, and therefore warrants attention.

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, contributions and limitations, and concludes by focusing on the policy implication.

## **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**

#### *3.1. Consolidation and small business lending*

This study primarily draws on the existing literature on the relationship between the structural characteristics 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 importance source of external finance for informationally opaque 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). This suggests that consolidation activity in the banking sector may inhibit business formation. However, Berger, Saunders, Scalise and Udell (1998) suggest



that there is a static industrial organization (IO) view behind this inference that is incomplete. They offer, instead, a dynamic IO view.

According to the dynamic IO 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 negligible at the macro level.

### *3.2. Hypotheses*

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 IO 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). Furthermore, a decline in the number of competing credit unions across regions may mitigate any potential negative effect that the expansion and consolidation of the credit union system may have on business formation. This is so because credit union members are more likely to loyal to their credit unions when only a few exist; and credit union managers in turn may be willing to extend small business loans on favorable terms to members deemed loyal. 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:* Credit union density will negatively moderate the relationship between credit union asset density and the rate of business formation 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 IO 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. In the case of credit markets, one would expect an increase in the supply of credit as the number of financial intermediaries increase, all else equal. This leads to the following hypothesis:

*Hypothesis 2:* The rate of new business formation is positively related to credit union density at the regional level.

#### **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 is entry density. This variable was defined above as the number of newly registered employer businesses per 1,000 working-age individuals. Entry density serves as a proxy for the rate of business formation among working-age individuals. An increase (decrease) in entry density implies an increase (decrease) in the number of new businesses with employees per 1,000 working-age individuals.

##### 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 potential 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 the Herfindahl-Hirschmann index was considered as a general measure of credit market concentration, its inclusion was precluded due to data limitations.

#### 4.2.3. Control variables

To mitigate a variety of conflating 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. Specifically, controls are applied for the demographic characteristics of Canadian provinces. This includes the age, education, gender and immigration characteristics of these provinces.

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 because prior studies have found 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 new business formation. 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. Indeed, 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 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 either directly, or when combined with consolidation activity in the credit union system.

#### 4.2.4. Statistical Methods

The fixed-effects estimator is used to estimate the relationships between credit union structural variables and entry density. 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. In addition, its use is justified 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 the hypotheses developed above: credit union asset density will not be systematically related to entry density (i.e.  $\beta_1 = 0$ ) (i.e. hypothesis 1a); credit union density will negatively moderate the relationship between credit union asset density and entry density (i.e.  $\beta_3 < 0$ , and statistically significant) (i.e. hypotheses 1b); and finally, credit union density will be positively related to entry density (i.e.  $\beta_2 > 0$ , and statistically significant) (i.e. hypothesis 2). The vector of controls constitutes the provincial demographic, economic and banking sector structural variables discussed above, as well as province and time fixed effects. The latter two are used to control for unobserved time-invariant province-level heterogeneity (i.e. constant province-specific intercepts) and macroeconomic shocks (i.e. constant time-specific intercepts).

A number of steps are taken to address common violations of the standard assumptions that underpin the classical linear regression model. Specifically, multiple model specifications are used to untangle the joint effects of correlated bank and credit union structural variables on the rate of business formation. Meanwhile, robust standard errors are 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 in the estimation, another set of fixed effects models are estimated using one-period lagged values of the credit union structural variables.

## 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 all the model specifications considered, credit union asset density is not found to be systematically related to entry density. Thus, there is robust evidence in support of hypothesis 1a. However, we do not find robust evidence in support of hypotheses 1b and 2. Specifically, credit

union density has a statistically negative moderating effect on the relationship between credit union asset density and entry density (i.e.  $\beta = -0.003$ , 10 percent level of significance) in only one of the four model specifications. We also have only one out of four model specifications in which there is a statistically positive relationship between credit union density and entry density (i.e.  $\beta = 22.2$ , 5 percent level of significance).

**[Insert Table 2 about here]**

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 estimation may suffer from endogeneity bias. As explained above, we attempt to mitigate endogeneity bias in the estimation by using one-period lagged values of credit union structural variables. The fixed-effects estimates of the regression models with these lagged values are reported in Table 3.

**[Insert Table 3 about here]**

As before, we find systematic evidence in support of a statistically negative relationship between provincial median age and entry density; and a statistically positive relationship between the share of the provincial population with a Bachelor's degree and entry density. However, we still find that credit union density has a statistically negative moderating effect on the relationship between credit union asset density and entry density in only one of the four model specifications (i.e.  $\beta = -0.004$ , 10 percent level of significance). Thus, the evidence in support of hypothesis 1b remains weak. However, we now find a statistically positive relationship between credit union density and entry density in two of the four model specifications (i.e.  $\beta = 28.09$  and  $26.24$  at the 5 and 10 percent levels of significance, respectively). While this somewhat strengthens the evidence in support of hypothesis 2, the potential for more robust evidence remains.



## **6. Discussion and Conclusion**

This study has investigated the extent to which an expanding and increasingly concentrated credit union system impacts the rate of business formation at the regional level in Canada. It makes a number of contributions to the existing literatures on both financial and non-financial determinants of new business formation. In particular, it contributes to the existing literature on the relationship between demographics and business formation by confirming a number of findings in prior studies. Specifically, it provides robust evidence in support of a negative relationship between age and business formation, and a positive relationship between the attainment of university-level education and the rate of business formation. These findings are consistent with prior studies that find a negative correlation between age and risk-taking propensity (Blanchflower et al., 2001), and others that emphasize the importance of formal education for entrepreneurship (Bates, 1990; Colombo and Grilli, 2005; Henley, 2005).

This study also contributes to the literature on the relationship between the structural characteristics of the banking sector and new business formation. However, the strength of the evidence is mixed on the relationship between credit union structural variables and the rate of business formation at the regional level. Specifically, it provides robust evidence which suggests that there is no systematic relationship between the expansion of the credit union system across regions and the rate of business formation across these regions. But since the expansion of the credit union system is partly attributed to the growth in the asset base of merged credit unions, this finding suggests that the small firms that are dropped by large credit unions may be picked up by smaller credit unions that have not participated in merger activity. This is consistent with the dynamic IO view of consolidation activity on small business lending (Berger et al., 1998).

Meanwhile, the evidence is not robust on the relationship between competition, as captured by the number of credit unions per 1,000 working-age individuals, and the rate of business formation; and on the moderating role of competition on the relationship between the relative size of the credit union system and the rate of business formation. At best, there is suggestive evidence that while an increasing number of credit unions may foster business formation, small businesses may be better served by fewer credit unions in an increasingly concentrated credit union system. Consistent with prior studies, competition in the credit union system seems to foster business formation (Roger, 2012). At the same time, business formation may progress at a slower rate if competition intensifies in a concentrated credit union system. In other words, 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.

More generally, this study 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. By focusing on business formation in the Canadian context, it 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.

### 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 concentrated 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. 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 scrutinized

more carefully given the potentially adverse implication for young and small firms that rely on financing from a concentrated credit union system. To provide policymakers with a platform that supports the formulation of coherent small business and entrepreneurship policies, it is important for future studies to systematically evaluate this issue.

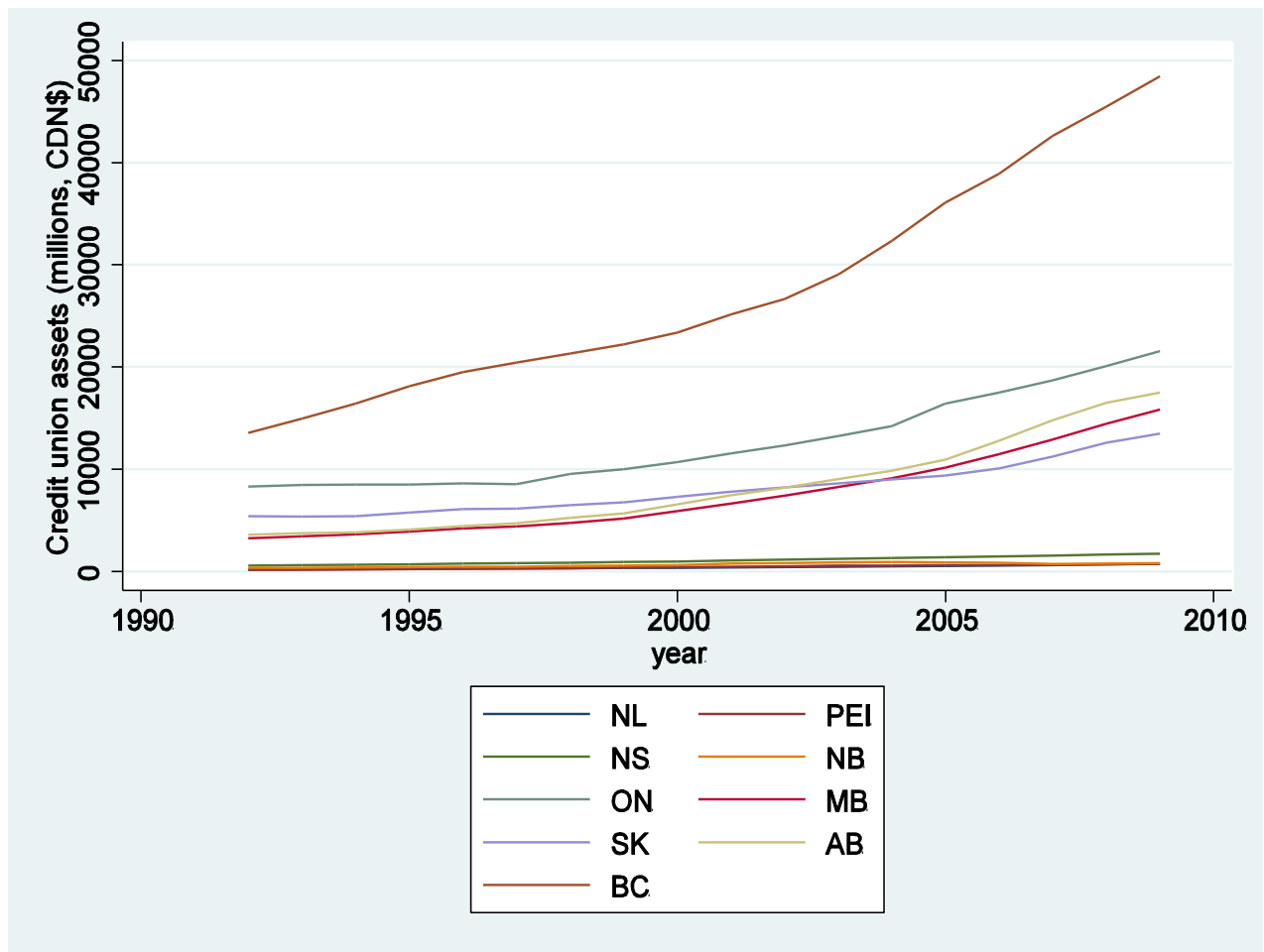
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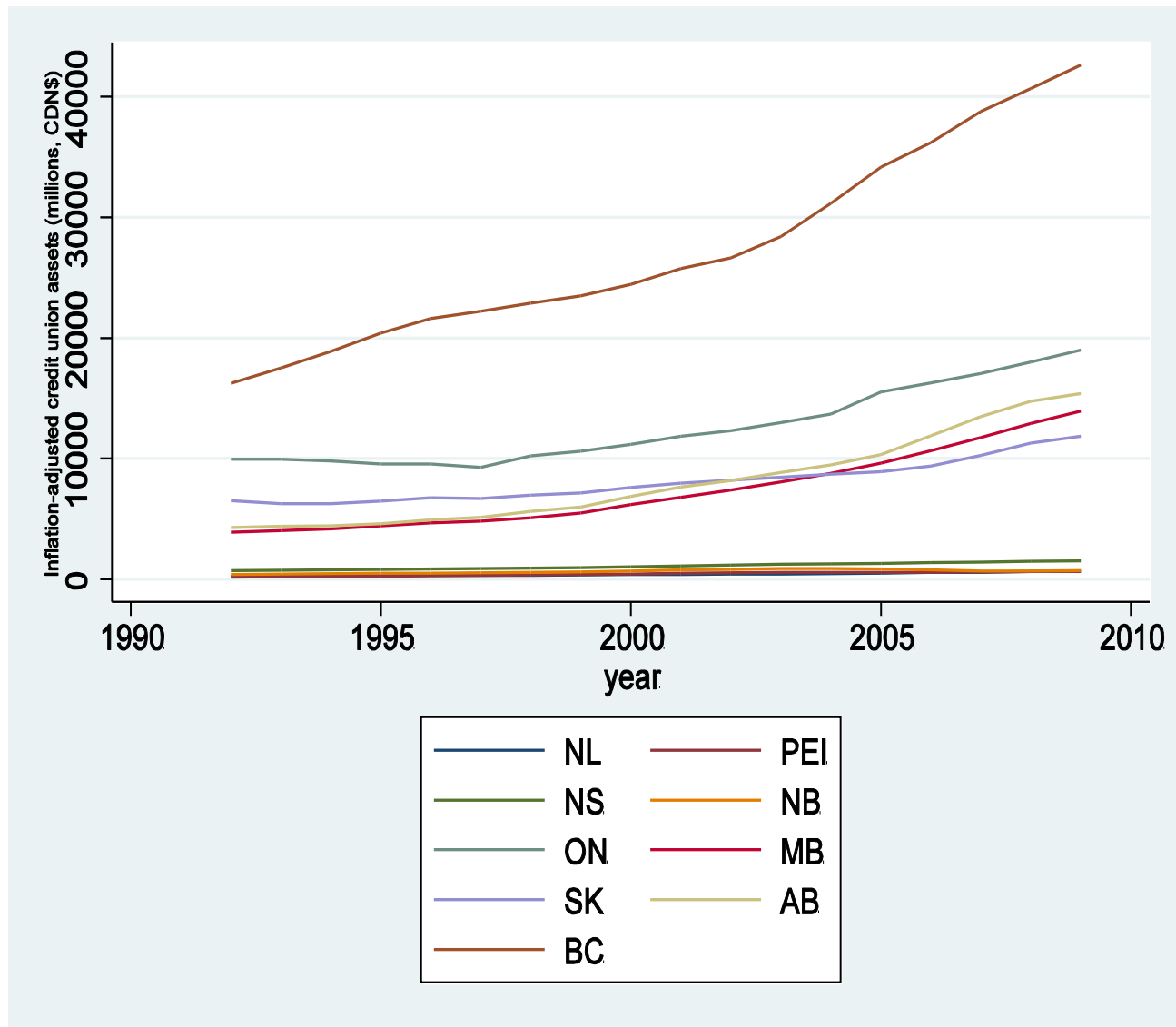
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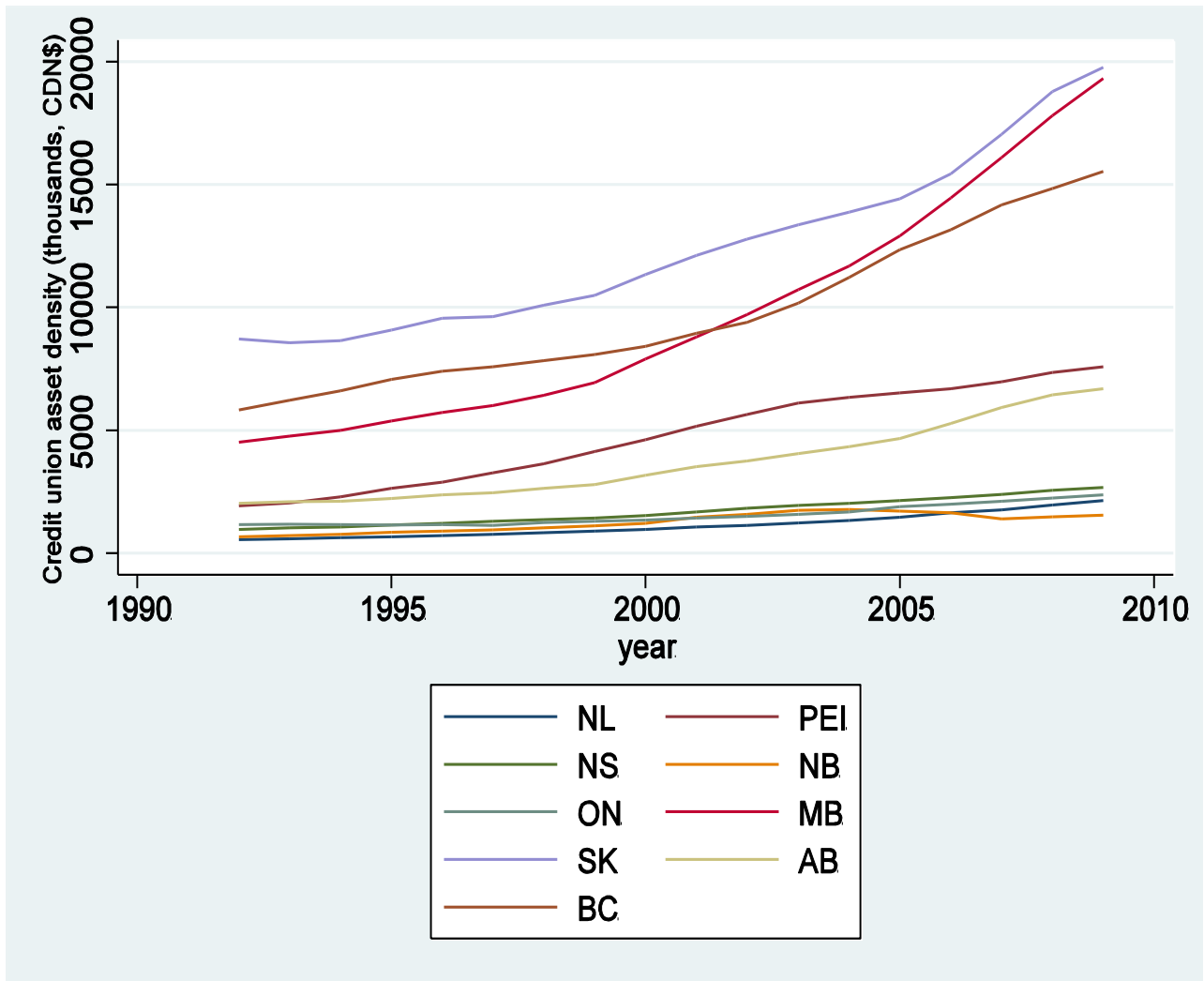
**Figure 1.** A time plot of credit union assets (in millions of Canadian dollars) by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB;

Saskatchewan, SK; Alberta, AB, and British Columbia, BC. Source: Credit Union Central of Canada (CUCC).

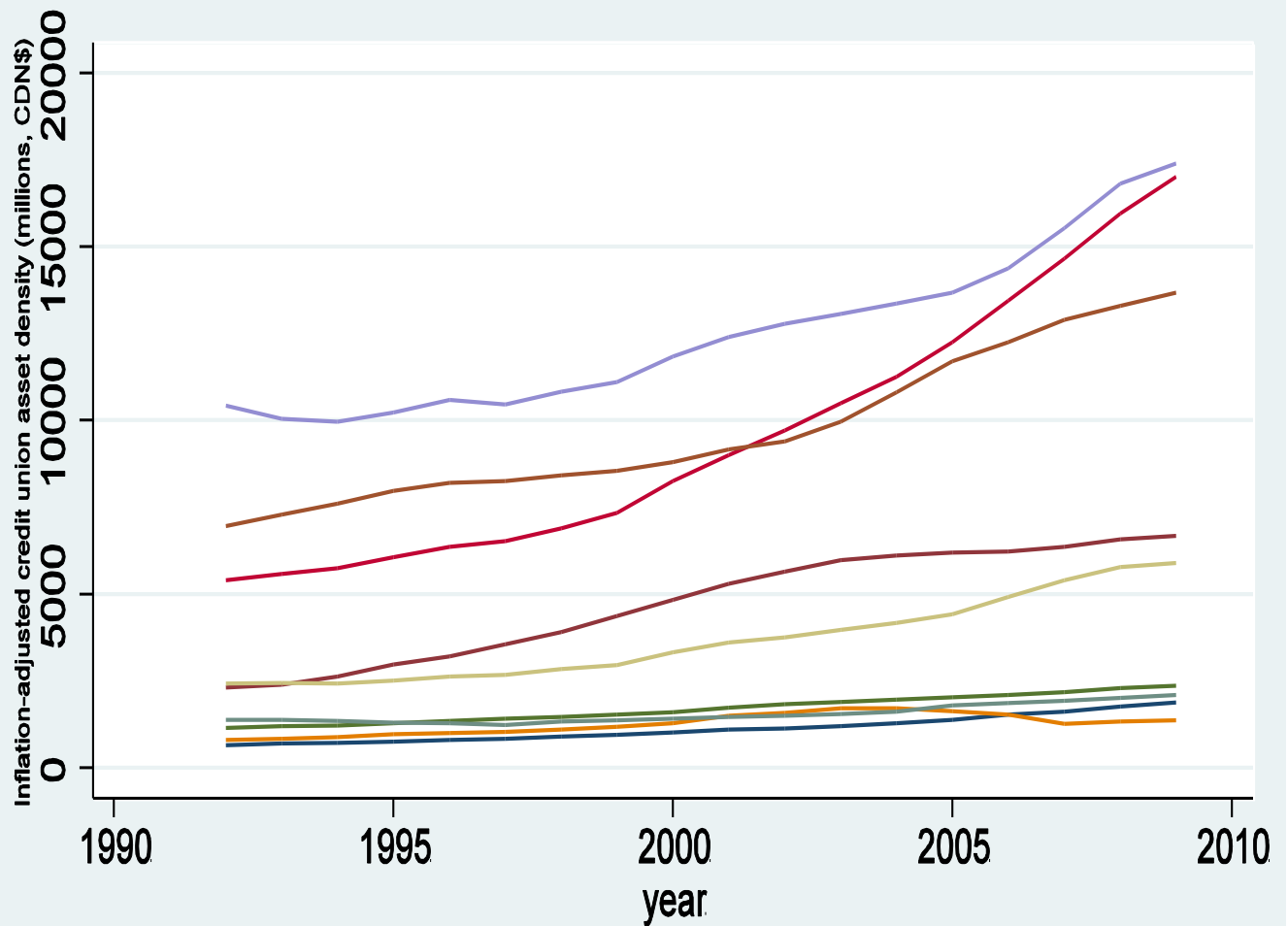


**Figure 2.** A time plot of inflation-adjusted credit union assets (in millions of Canadian dollars) by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan,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



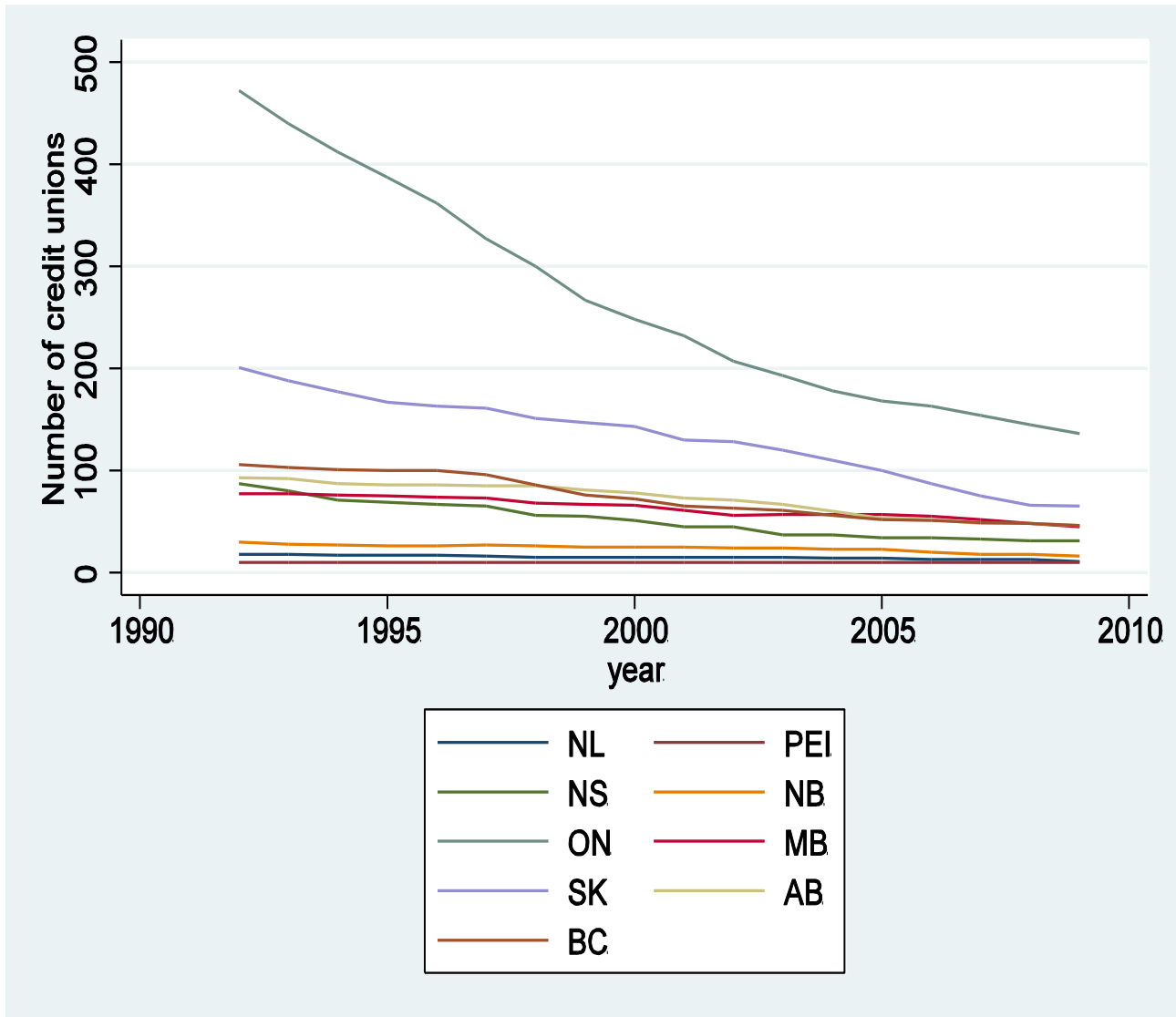


**Figure 3.** A time plot of credit union assets (in thousands of Canadian dollars) per 1,000 working-age (15-64) individuals (“credit union asset density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova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

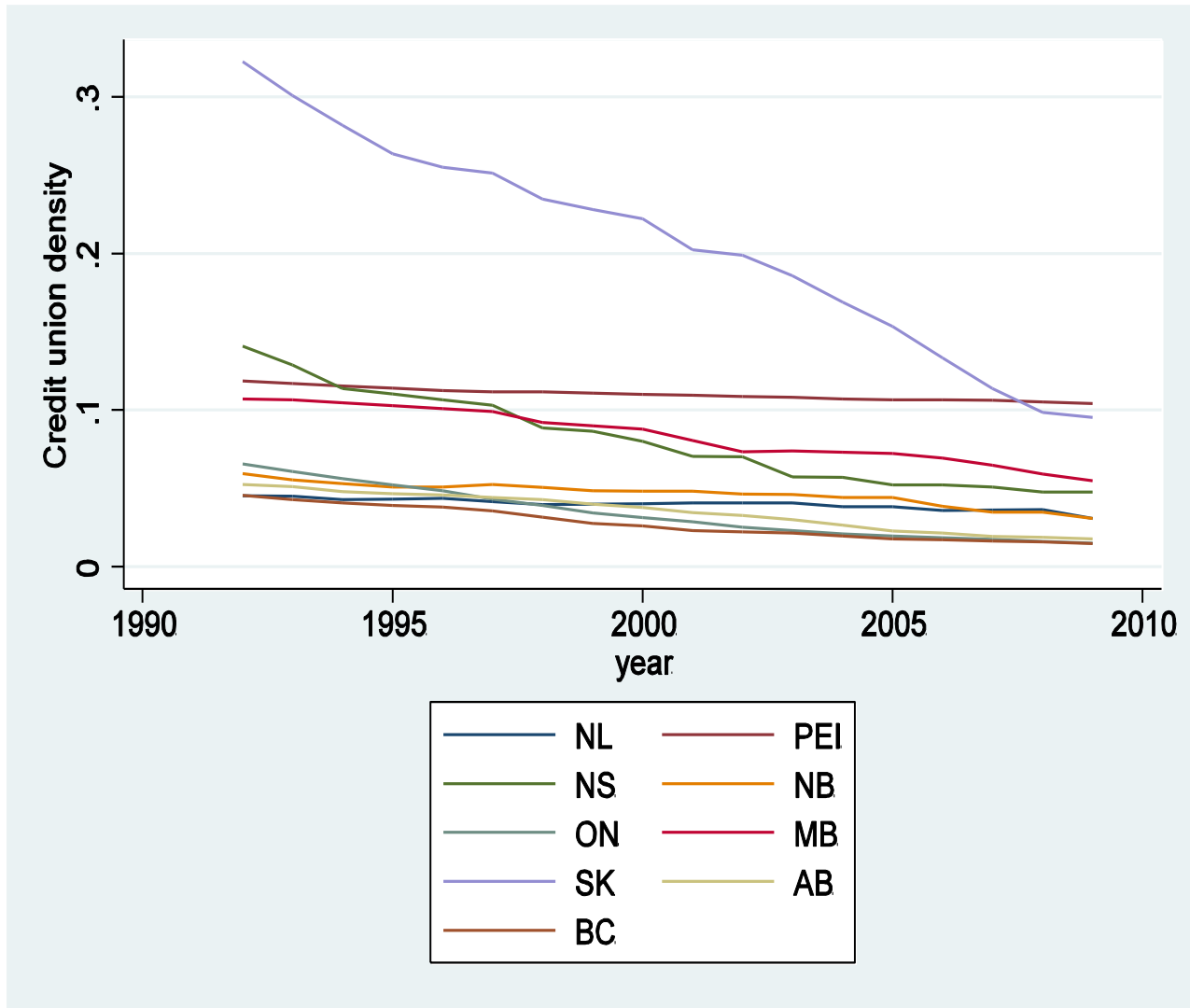


**Figure 4.** A time plot of inflation-adjusted credit union assets (in thousands of Canadian dollars) per 1,000 working-age (15-64) individuals (“inflation-adjusted credit union asset density”) by province over the period 1992-2009. The nine provinces covered are as follows: Newfoundland and

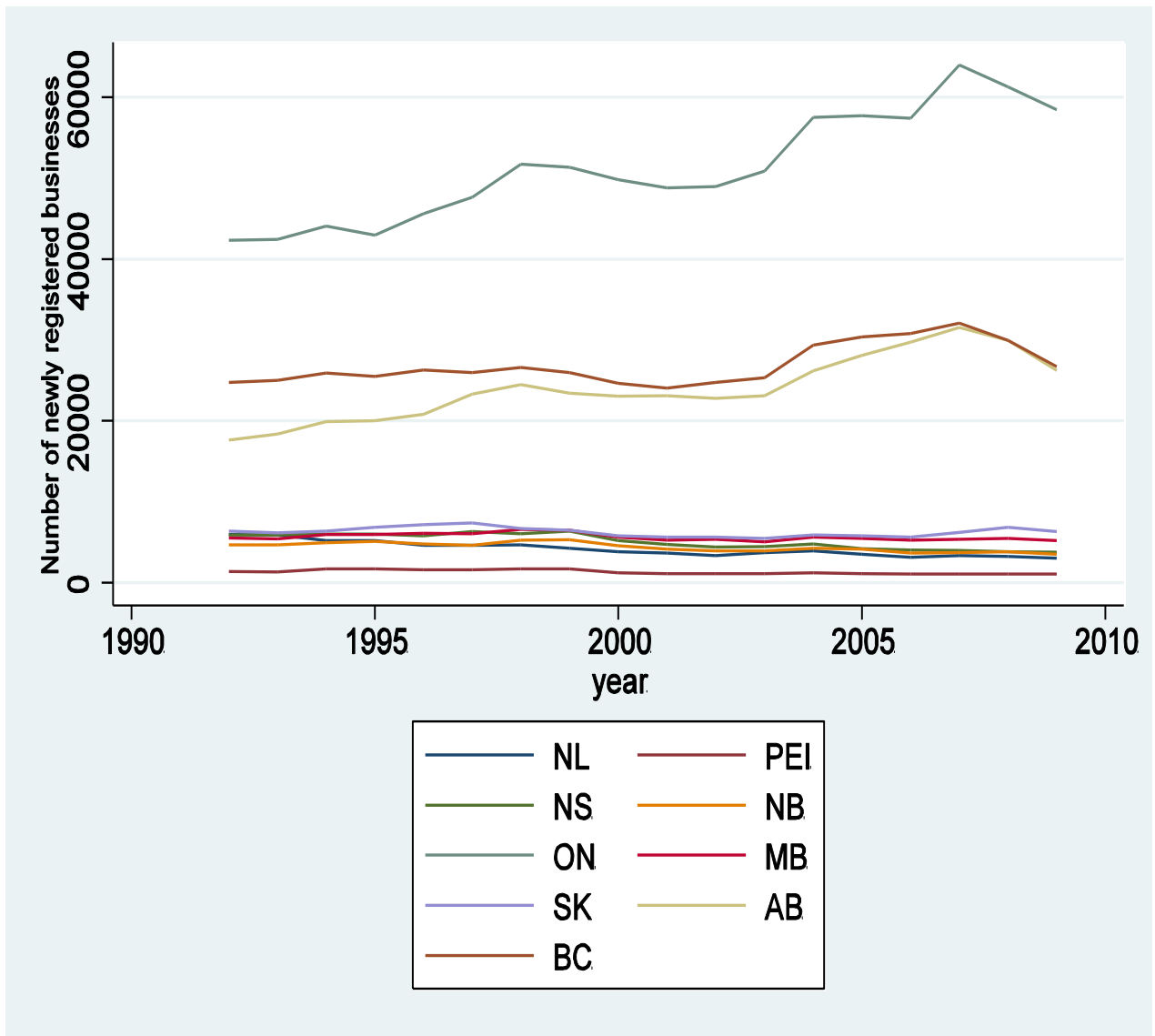
Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; BC. Source: Credit Union Central of Canada (CUCC).



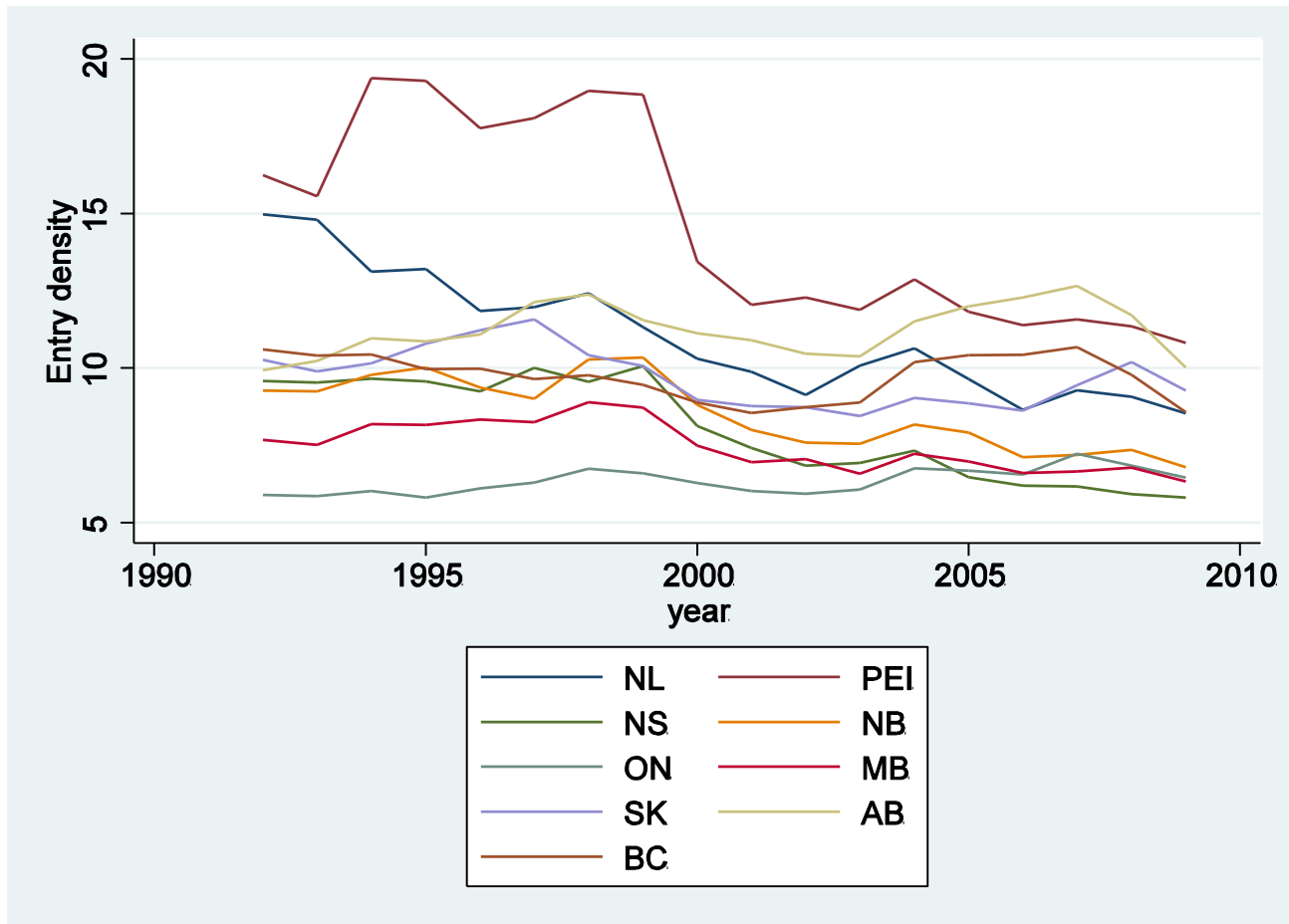
**Figure 5.** A time plot of the number of credit unions by province over the period 1992-2009. The nine provinces covered are: Newfoundland and Labrador, NL; Prince Edward Island, PEI; Nova Scotia, NS; New Brunswick, NB; Ontario, ON; Manitoba, MB; Saskatchewan, SK; Alberta, AB, and British Columbia; 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***	-				
3. Female share <sup>b</sup>	49.774	0.545	-0.108	0.662***	-			
4. Bachelor's degree share <sup>c</sup>	13.768	3.145	-0.449***	0.529***	0.011	-		
5. Immigrant share <sup>d</sup>	9.308	16.476	-0.410***	-0.053	0.026	0.455***	-	
6. Bank loan density <sup>e</sup>	16,887	6,975	-0.149 <sup>+</sup>	-0.228**	-0.195*	0.360***	0.772***	-
7. Provincial real GDP per capita	33,246	11,790	-0.206**	0.374***	-0.282***	0.728***	0.183*	0.191*
8. Credit union asset density <sup>f</sup>	5,088	4,487	-0.051	0.073	-0.283***	0.234**	-0.147 <sup>+</sup>	-0.211**
9. Credit union density <sup>g</sup>	0.074	0.060	0.201*	-0.282***	-0.078	-0.422***	-0.346***	-0.436***
						7.	8.	9.
7. Provincial real GDP per capita						-		
8. Credit union asset density <sup>f</sup>						0.273***	-	
9. Credit union density <sup>g</sup>						-0.321***	0.393***	-

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

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**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 46.838	Yes 21.559	Yes 15.123	Yes 69.777**	Yes 30.725	Yes 55.976+	Yes 32.824
Constant	(25.453)	(36.468)	(28.273)	(19.215)	(39.324)	(29.101)	(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

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

<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.

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