Do Credit Associations Compete with Each Other in Japanese Regional Lending Markets?

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ABSTRACT

This paper examines whether credit associations in Japanese regional lending markets compete on price now that Japanese financial authorities have replaced the convoy system of financial regulation with the principle of competition. Specifically, the effects of the market share of credit associations in regional markets on their lending rates are empirically investigated. Accordingly, we determined that credit associations compete with each other in regional lending markets by using two different proxies for the market share held by credit associations in a region. The first proxy was the credit associations' share of all deposits in a region and the second was the credit associations' share of all branch offices in a region. In addition, credit associations that face more intense competition from regional banks in regional markets were found to face more intense competition from other credit associations.

Keywords: credit associations, abolition of convoy system of financial regulation, lending rates, market share of credit associations, regional lending market

JEL Classification: G21

1. Introduction

In the past, Japanese financial authorities adopted a convoy system of financial regulation. The government imposed a number of strict regulations to restrict competition among financial institutions and to ensure uniformity among the management of all financial institutions. Under this system, all financial institutions were able to realize excess profits. For example, financial institutions could set lower deposit rates and higher lending rates because of this policy, and therefore earn large profits on the marginal interest rate.

These regulations contributed to long-term stability in the Japanese financial system, and in general, the convoy system of financial regulation worked well. However, these regulations also caused problems such as inefficiencies in the markets. Therefore, many such regulations were largely loosened or abolished. That is, the principle of competition was introduced into Japanese financial markets. As a result, competition now drives how financial institutions set their interest rates, and they must offer higher deposit rates and lower lending rates than before to attract customers. This benefits customers of financial institutions such as depositors and borrowers.

Incidentally, because of the changes to the financial system mentioned above, the number of failures, mergers, and reorganizations of financial institutions has increased, resulting in fewer financial institutions. In particular, when we pay attention to credit associations (which are all nonprofit or cooperative financial institutions), then the number of credit associations dropped from 401 at the end of March 1998 to 270 at the end of March 2013[1]. Overbanking, i.e., too many regional financial institutions including regional banks (first- and second-tier regional banks) and cooperative financial institutions, has been regarded as a problem; therefore, the recent decrease in the number of financial institutions may be desirable. However, there are also some undesirable effects such as the tendency of surviving financial institutions to form oligopolies preventing price competition among themselves. This could occur in regional financial markets if the number of regional financial institutions dramatically decreases in the future. Should this happen, one concern is that borrowing costs will increase. This may in turn cause slower or negative economic growth because the ability to borrow money is important for small- and medium-sized enterprises (SMEs), which play important roles in activating regional economies and largely depend on regional financial institutions as funding sources.

In this paper, we focus on credit associations that play significant roles in providing funding to local SMEs and investigate whether appropriate price competition exists among credit associations in regional lending markets now that the convoy system of financial regulation has been abolished and competitive principles have been introduced to Japanese financial markets. We also investigate whether, based on the results of our analysis, the number of credit associations will be likely to sufficiently decrease in the future to have a negative impact on regional economies.

The remainder of the paper is organized as follows. In Section 2, we review previous studies that

[1] The source of these data is Shinkin Central Bank Research Institute.

have analyzed competition among financial institutions. In Section 3, we explain our analytical method and the data used in this study. In Section 4, we present and discuss our empirical results. A summary and conclusion are provided in the final section.

2. Literature Review

Competition among financial institutions in banking markets and the performance of these financial institutions (e.g., their profits and interest rates) have often been analyzed by testing structure-conduct-performance (SCP) and efficient structure (ES) hypotheses (Clarke et al. 1984; Smirlock 1985; Evanoff and Fortier 1988; Lloyd-Williams and Molyneux 1994; Berger 1995; Molyneux and Forbes 1995; Tu and Chen 2000; Pilloff and Rhoades 2002; Hahn 2008; Al-Muharrami and Matthews 2009; Garza-Garcia 2012).

Previous studies that paid attention to competition between banks, which are for-profit organizations, and nonprofit financial institutions are given below[2].

Emmons and Schmid (2000) investigated whether banks and credit unions compete in a regional deposit market by using country-level data and concluded that both banks and credit unions compete with each other. Tokle and Tokle (2000) used bank deposit rates in Idaho to analyze whether banks compete with savings and loan associations (S&Ls) and credit unions. They found that banks do compete with these other types of institutions and that they compete more intensely with credit unions than with S&Ls.

Feinberg (2001) used data from local lending markets to examine competition between credit unions and banks, showing that banks set their lending rates lower if they are located in a region where credit unions hold higher market share. Feinberg and Rahman (2001) analyzed competition between banks and credit unions by a Granger causality test and demonstrated that these two types of institutions influence each other's lending rates. Feinberg (2003) used both market data and bank data to investigate whether credit unions affect bank lending rates, revealing that the presence of credit unions tends to reduce bank lending rates.

Hannan (2003) examined the competitive impact of credit unions on banks and thrift institutions in regional deposit markets, demonstrating that the presence of credit unions tends to increase bank and thrift deposit rates. Kondo (2013) analyzed competition between banks and credit associations in Japanese regional lending markets, finding that the presence of credit associations pressures regional banks to set lower lending rates.

The studies reviewed above concluded that banks and nonprofit financial institutions compete with each other. However, other studies have shown that the presence of nonprofit financial institutions does not necessarily put competitive pressure on bank performance. Rose and Wolken (1988) analyzed the

[2] Heinrich and Kashian (2008) investigated whether there are differences in interest rates charged on loan products and offered on savings products between credit unions and for-profit financial institutions. They found that on almost all products, credit unions offer their members interest rates more favorable than those offered by for-profit financial institutions and converted credit unions.

determinants of the total operating incomes and total interest expenses of banks and concluded that the presence of S&Ls has only limited effects on such banks' performance. Hannan and Liang (1995) analyzed bank loan rates by using the Harfindahl index and demonstrated that the presence of S&Ls does not affect the loan rates of banks. Therefore, there are different views on the competitive relationships between banks and nonprofit financial institutions.

Other studies that investigated competition among financial institutions are given below[3].

Berger and Hannan (1989) investigated the determinants of bank loan rates and showed that the relative number of bank branches in a market did not influence the deposit rates of banks there. Focarelli and Panetta (2003) tested how the entry of new banks into a market affects deposit rates. They examined the pricing effects of mergers and acquisitions (M&As) in the market on bank deposits in Italy and revealed that deposit rates increase (to the benefit of consumers) when new competitors enter the local market. Schmid (2005) analyzed whether the market share of credit unions in a regional market affects deposit-market concentration, showing that these tendencies existed from 1990 to 2000 but have not been observed since 2001. Cohen and Mazzeo (2007) investigated competition among multimarket banks, single-market banks, and thrift institutions in deposit markets and found that competition among the same types of financial institutions is greater than that among different types of institutions. They also found that in most cases, thrifts appear to be competitively distinct from both multimarket banks and single-market banks.

In addition, Feinberg (2002), who analyzed competition among credit unions and whose research objectives were the same as those of this paper[4], revealed that when credit unions increase their market share, credit union loan rates decrease.

3. Methodology and Data

3.1. Methodology

We analyze competition among credit associations in the regional markets by testing the same theoretical framework as Feinberg (2002). In a Cournot framework, the larger the number of firms in a market, the lower the markup of price above marginal cost. In an individual firm, the price-cost margin (or Lerner

[3] Ariss (2010) examined the effects of market power on the efficiency and stability of banks by using data from banks in developing countries, finding a significant negative relationship between bank market power and cost efficiency and a significant positive relationship between market power and each bank's efficiency and overall stability.

[4] Although previous studies that focused only on credit unions are lesser compared with studies that included banks as research subjects, there are some studies that paid attention to the importance of credit unions. Bauer (2008) detected abnormal performance of credit unions. Goddard et al. (2008) investigated the impact of revenue diversification on the financial performance of credit unions. Ely and Robinson (2009) examined whether credit unions issue more business loans in markets experiencing bank M&A activities. Goddard et al. (2009) analyzed the determinants of acquisition for credit unions.

index (*LI*)) is shown as follows[5]. Here, q_i is a firm's market share, and η is demand elasticity.

$$LI = \frac{q_i}{\eta} \ . \qquad (1)$$

Thus, there is a positive relationship between price and a firm's market share. When we aggregate all credit associations in a market, the share of credit associations in the market has a positive effect on market price.

In the dominant-firm price-leadership model, the larger the market share of fringe firms, the lower the market price, i.e., increasing the market share of fringe firms disciplines the market price. When we assume a homogeneous product and that credit associations act as price-taking fringe suppliers, banks are relatively dominant actors. The Lerner index of banks is shown as follows[6].

$$LI = \frac{k\ Concentration}{|\eta| + \varepsilon_{CA}\ CA}, \qquad (2)$$

where *k* is a constant, *Concentration* is the market concentration index, ε_{CA} is the elasticity of supply by credit associations, and *CA* is the presence of credit associations. Given the homogeneous product assumption, the credit association price equals the bank price. Thus, the share of credit associations in a market has a negative effect on market price in this model.

Based on the dominant-firm price-leadership model (i.e., equation (2)), the following model is estimated by using panel data from Japanese credit associations from 2005 to 2010.

$$LR_{it} = c_0 + c_1\, Concentration_{it} + c_2\, CA_{it} + c_3\, logAssets_{it} + c_4\, LDratio_{it} + c_5\, logDensity_{it} + c_6\, logPerincome_{it}. \qquad (3)$$

Subscript *i* refers to *i* credit association, and subscript *t* refers to year *t*. *LR* is the lending interest rate, which is calculated by dividing the interest on loans and discount of each credit association by loans and bills discounted (average balances) of each credit association.

Concentration is the degree of competition among financial institutions in a prefecture where the headquarters of *i* credit association is located. In general, financial institutions that face more intense competition in regional markets must set lower lending rates to attract more customers. As a proxy for *Concentration*, we use the Herfindahl–Hirschman index that is calculated by using the deposits of regional banks (i.e., first- and second-tier regional banks) and credit associations whose headquarters are located in the same prefecture as the headquarters of *i* credit association (*HHI1*) and the Herfindahl–Hirschman index that is calculated by using the deposits of only regional banks whose headquarters are in the same prefecture as the headquarters of *i* credit association (*HHI2*). However, the deposit data of each regional bank and credit

[5] To assess the relative competitive positions of banking markets in 14 European countries, Carbó et al. (2010) used five major indicators, including the Lerner index, that were often used in previous studies of competition between banks.

[6] See Feinberg (2001, 2003) for a description of the processes leading to equation (2).

association used to calculate *HHI1* and *HHI2* include deposits gathered outside the prefecture where the headquarters is located. In addition, the deposit data for large banks, including city banks and trust banks, cannot be used to calculate *HHI*. Therefore, we also use the share of the deposits of the largest regional bank relative to the total deposits held by large banks, regional banks, and credit associations in each prefecture (*Top1share*) as *Concentration*[7]. If credit associations in more competitive markets are pressured to set lower lending rates as mentioned before, the coefficients of *HHI1*, *HHI2*, and *Top1share* will be positive.

CA represents the degree of the presence of credit associations in a prefecture where the headquarters of *i* credit association is located. As proxies for *CA,* we first use (1) the share of the total deposits of credit associations relative to the sum of the deposits of all banks and credit associations in each prefecture (*CAdeposit1*) and (2) the ratio of the total deposits of credit associations to the population of each prefecture (*CAdeposit2*). Second, we use (3) the share of the total number of credit association branches relative to the total number of bank and credit association branches in each prefecture (*CAbranch1*) and (4) the ratio of the total number of credit association branches to the population of each prefecture (*CAbranch2*). If credit associations compete with each other in regional lending markets, as shown in the dominant-firm price-leadership model, credit associations in the prefectures that have a greater market share of credit associations will be pressured to set lower lending rates. In this case, the coefficient of *CA* will be negative.

We use two control variables when examining specific factors related to credit associations. *Assets* refers to the total assets of each credit association and is a proxy for the scale. Larger credit associations might realize economies of scale, and thus generate greater financial reserves. If larger credit associations pass these savings along to borrowers by setting lower lending rates, the coefficient of *Assets* will be negative. On the other hand, if larger credit associations have greater bargaining power with borrowers, they might offer higher lending rates. In this case, the coefficient of *Assets* will be positive.

LDratio is the loan-deposit ratio of each credit association and is a proxy for the aggressiveness of credit associations' lending activities. Credit associations that lend aggressively might want to increase loans and bills discounted even if they have to set lower lending rates. If so, the coefficient of *LDratio* will be negative.

We use the following two variables to describe regional market characteristics that will affect lending rates of financial institutions. *Density* is the population density in the prefecture where the headquarters of *i* credit association is located. Funding requirements might be larger among households in the prefectures where population densities are higher. As a result, credit associations in these markets might set higher lending rates. If this tendency is actually observed, the coefficient of *Density* will be positive.

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[7] Berger and Hannan (1989), Tokle and Tokle (2000), and Wu and Shen (2011) used a three-firm concentration ratio as the market concentration measure. Feinberg (2002) used a two-firm concentration. However, in Japan, as of 2010, there were seven prefectures that had only one regional bank whose headquarters was located there, and we have access to the deposit data of only one regional bank in these prefectures. Therefore, to secure the samples, we used one-firm concentration in the present study.

Perincome is the per capita prefectural income in the prefecture where the headquarters of *i* credit association is located, and it is a proxy for the economic wealth of each prefecture. In general, high-performing firms are more active in wealthy prefectures, and the funding requirements of firms in these prefectures are greater. Therefore, credit associations in these markets might be able to set higher lending rates because many firms in these markets might have to raise more funds. If this effect on lending rates set by credit associations is strong, the coefficient of *Perincome* will be positive.

3.2 Data

Data on the financial statements of each bank and each credit association were derived from *Nikkei Needs*. Data absent from *Nikkei Needs* were supplemented by "*Analysis of Financial Statements of All Banks*," edited by the Japanese Bankers Association, and from "*Financial Statements of All Credit Associations*," edited by the Consultant of Financial Books Co., Ltd. Data on the deposit balances of individual regional banks in a prefecture where their headquarters are located and that on prefectural deposit balances of each type of financial institution are quoted from the "Financial Map" edited by the Japan Financial News Co., Ltd. Prefectural data, i.e., *Density* and *Perincome*, are obtained from "*Financial Resources of a Nation*," edited by Asahi Shimbun.

The descriptive statistics used in the present study are detailed in Table 1.

Table 1. Descriptive Statistics

4. Estimation Results

4.1 Estimation Results for All Credit Associations

In this section, we discuss the estimation results using panel data from all credit associations. First, we examine the estimation results that use *CAdeposit1* and *CAdeposit2* as *CA*. They are presented in Table 2.

Table 2. Estimation Results Using *CAdeposit* as *CA*

According to the results of a Hausman test, selecting a fixed-effect model is supported in all estimations. Therefore, we present the estimation results of a fixed-effect model.

All coefficients of *HHI1*and *HHI2* are positive and significant at the 5% and 10% levels. In addition, the coefficient of *Top1share* is positive and significant at the 10% level in one of the two cases. That is, credit associations that face more intense competition from other financial institutions in regional markets are pressured to set lower lending rates. These tendencies are consistent with the expectations we laid out in Section 3.1.

All coefficients of *Assets* are negative and significant at the 5% and 10% levels. That is, larger credit associations, where economies of scale are at work, are likely to set lower lending rates because they can probably pass along to their customer savings, which can be realized from economies of scale. On the other hand, smaller credit associations cannot afford to do so because of their weaker financial positions.

The coefficients of *LDratio* are negative and significant at the 1% levels in all estimations. Credit associations that adopt strategies to create more loans for the purpose of obtaining more lending-based income might want to lend more money, even if they cannot help setting lower lending rates in the process.

All coefficients of *Perincome* are positive and significant at the 1% levels. In general, businesses are more active in wealthier prefectures, and funding requirements of firms in such prefectures are greater, as mentioned in Section 3.1. Therefore, even though credit associations offer higher lending rates to firms in these markets than to those in other markets, such firms cannot help borrowing because of their credit needs.

All coefficients of *CAdeposit1* and *Cadeposit2*, which are the variables of most interest to this study, are negative and significant at the 1% and 5% levels[8]. Therefore, credit associations whose headquarters are located in prefectures where the presence of the same type of financial institutions, i.e., credit associations, is larger are likely to be pressured to set lower lending rates. In other words, credit associations compete with each other in regional lending markets. These results are the same as those found by Feinberg (2002).

Next, let us see the estimation results that use *CAbranch1* and *CAbranch2* as *CA*, as shown in Table 3.

Table 3. Estimation Results Using *CAbranch* as *CA*

According to the Hausman test, selecting a fixed-effect model is supported in all estimations. Therefore, we present the estimation results of a fixed-effect model.

All coefficients of *CAbranch1* and *CAbranch2* are negative and significant at the 1% levels, which are qualitatively the same results as those in Table 2 using *CAdeposit* as *CA*[9]. Thus, we find that credit associations tend to compete with each other in regional lending markets, even when we use branch share of credit associations as the proxy for the presence of credit associations in regional markets. These tendencies are consistent with those in Feinberg (2002). Other variables also take nearly signs as those in Table 2.

Incidentally, the different types of financial institutions have branch offices of different sizes. Therefore, we apply branch-size weighting to each type of financial institution while calculating credit-association branch shares. We then make estimates based on this calculation. Specifically, we assign the

[8] We calculated the ratio of total deposits of credit associations to prefectural income in each prefecture (*CAdeposit3*) and estimated it by using *CAdeposit3* as *CA*. The coefficients of *CAdeposit3* are also negative and significant at the 1% levels in these estimations.

[9] We also calculated the ratio of total branches of credit associations to prefectural income in each prefecture (*CAbranch3*) and estimated it by using *CAbranch3* as *CA*. The coefficients of *CAbranch3* are also negative and significant at the 1% levels in these estimations.

following branch-size weights to each type of financial institution while calculating the denominator of *CAbranch1*: 3 to large banks, 2 to regional banks, and 1 to credit associations. The estimation results from this measure of the branch shares of credit associations (*WeightedCAbranch*) are presented in Table 4.

Table 4. Estimation Results Using *WeightedCAbranch* as *CA*

In all estimations, the coefficients of *WeightedCAbranch* are negative and significant at the 1% levels, which are the same as those in Table 3. Hence, we can confirm the robustness of the results that credit associations compete with each other in regional lending markets. In addition, the coefficients of other variables take nearly signs as those in Table 2 and Table 3.

4.2 Estimation Results for Credit Associations in Competitive Markets

In this section, we confirm that the tendency for credit associations to compete with each other in regional lending markets can also be found in regional markets where competition among regional banks is intense. Specifically, we use the samples that include credit associations whose headquarters are located in prefectures where *HHI2* values are less than 5627.037, i.e., the mean level, and estimate equation (3)[10].

Let us first discuss the estimation results that use *CAdeposit1* and *CAdeposit2* as *CA*. They are shown in Table 5.

Table 5. Estimation Results Using *CAdeposit* as *CA* (Competitive Markets)

All coefficients of *CAdeposit1* and *CAdeposit2* are negative and significant at the 1% and 5% levels, as in the estimation results in the previous section, which used the samples including all credit associations. Therefore, credit associations in regional markets where competition among regional banks is more intense, i.e., credit associations that compete with regional banks more intensely, also compete with other credit associations and are pressured to set lower lending rates.

When we pay attention to the values of the coefficients of *CAdeposit1* and *CAdeposit2*, all values in Table 5 are smaller than those in Table 2. This means that credit associations that face above the mean level of competition with regional banks are more likely to set lower lending rates than credit associations in regional markets where competition with regional banks is below the mean level. In other words, credit associations that compete with regional banks more intensely than the mean level also have to compete more intensely with other credit associations. That is, credit associations that compete more intensely with regional banks face a generally more competitive environment.

Next, let us see the estimation results that use *CAbranch1*, *CAbranch2*, and *WeightedCAbranch* as *CA*. They are presented in Table 6.

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[10] Focarelli and Panetta (2003) also estimated using the samples whose *HHI* are below median.

Table 6. Estimation Results Using *CAbranch* as *CA* (Competitive Markets)

All coefficients of *CAbranch1*, *CAbranch2*, and *WeightedCAbranch* are negative and significant at the 1% levels. In addition, the values of all coefficients of *CAbranch1*, *CAbranch2*, and *WeightedCAbranch* in Table 6 are smaller than those in Table 3 and Table 4. That is, we can confirm the tendency that credit associations that compete with regional banks more intensely than the mean level also have to compete with other credit associations much more intensely, even when branch share of credit associations is used as the proxy for the presence of credit associations in regional markets.

5. Concluding Remarks

As mentioned in Section 1, the competition principle has been introduced into Japanese financial markets. In addition, the number of credit associations has been decreasing over time. This paper investigated competition among credit associations in regional lending markets to consider whether appropriate price competition exists among credit associations and whether a decrease in the number of credit associations is desirable for local SMEs that largely depend on regional financial institutions, including credit associations, as financing resources.

First, we made two estimates based on samples that included all credit associations. The first estimate used the deposit share of credit associations as a proxy for the degree of the presence of credit associations in regional markets, and the second estimate used the branch shares of credit associations. From these estimates, we demonstrated that credit associations compete with each other in regional lending markets. In addition, we revealed that credit associations in regional markets with lower degrees of market concentration are pressured to set lower lending rates. We also found that credit associations in wealthier markets are likely to set higher lending rates because firms in these markets are more active, and therefore require more funding.

Next, we made estimates based on samples that include credit associations whose headquarters are located in prefectures where competition among regional banks is more intense than the mean level. As a result, we observed the same tendency: credit associations compete with each other in regional lending markets. Furthermore, we found that the values of the coefficients of all measures that are the proxies for the share of credit associations in these estimates were smaller than those in the estimates that used samples including all credit associations. Therefore, credit associations that are forced to compete more intensely with regional banks in regional markets also have to compete more intensely with other credit associations, i.e., they are in very strict management environments.

Judging from the results obtained by the present study, we can conclude that price competition among credit associations exists in Japanese regional lending markets. However, credit associations in the prefectures where competition among regional banks is intense might experience significant reduction in their financial strength over time; therefore, they might not have sufficient financial reserves to meet the credit demands of local SMEs. Such a scenario is not conducive to the growth and development of regional

economies. On the other hand, if the number of credit associations continues to decrease, competition among credit associations will be weaker and local SMEs might suffer from higher lending rates set by the small number of credit associations in the regional markets. Therefore, government should consider measures to promote moderate competition among credit associations.

Future studies will investigate whether regional banks, which are also likely to be decreasing in numbers at the present time, also compete with each other in regional markets.

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Table 1. Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
LR	2.657	2.588	7.550	0.988	0.479	1709
HHI1	3211.785	3419.078	7175.260	569.687	1660.120	1709
HHI2	5627.037	5392.279	10000.000	2453.547	2111.215	1709
Top1share	35.399	41.705	70.720	1.044	18.845	1709
CAdeposit1	19.634	17.788	35.506	3.800	8.683	1709
CAdeposit2	6.96E-05	6.60E-05	0.0001	1.35E-05	2.52E-05	1709
CAbranch1	37.742	35.736	56.649	9.314	11.433	1709
CAbranch2	0.009	0.008	0.025	0.001	0.005	1709
Assets	424994.6	241832.0	4108394.0	23782.0	524949.3	1709
LDratio	54.553	54.958	79.046	16.225	9.503	1709
Density	1068.351	313.100	5766.000	66.200	1694.344	1709
Perincome	2886.263	2770.000	4820.000	1987.000	578.641	1709

Table 2. Estimation Results Using *CAdeposit* as *CA*

	CAshare1 as *CA*			*CAshare2* as *CA*		
Variable	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)
Constant	0.619 (0.288)	0.188 (0.086)	0.479 (0.210)	0.643 (0.298)	0.335 (0.153)	-0.115 (-0.051)
HHI1	0.000* (1.705)			0.000** (2.238)		
HHI2		0.000** (2.063)			0.000** (2.189)	
Top1share			0.004 (0.915)			0.007* (1.946)
CAdeposit1	–0.025*** (–3.103)	–0.027*** (–3.394)	–0.024*** (–2.940)			
CAdeposit2				–19.240** (–2.028)	–20.037** (–2.104)	–18.934** (–1.995)
Assets	–0.176** (–2.227)	–0.177** (–2.236)	–0.175** (–2.189)	–0.163* (–1.912)	–0.164* (–1.920)	–0.165* (–1.935)
LDratio	–0.005*** (–3.293)	–0.005*** (–3.295)	–0.005*** (–3.350)	–0.005*** (–3.427)	–0.005*** (–3.449)	–0.005*** (–3.488)
Density	0.043 (0.148)	0.099 (0.340)	0.066 (0.213)	0.105 (0.362)	0.158 (0.537)	0.206 (0.680)
Perincome	0.579*** (7.186)	0.592*** (7.297)	0.576*** (7.131)	0.466*** (6.181)	0.466*** (6.175)	0.476*** (6.227)
Adj-R^2	0.938	0.938	0.938	0.937	0.937	0.937
Chi-sq	59.677***	58.365***	56.267***	39.715***	41.713***	37.933***
Observation	1709	1709	1709	1709	1709	1709

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Table 3. Estimation Results Using *CAbranch* as *CA*

	CAbranch1 as *CA*			*CAbranch2* as *CA*		
Variable	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)
Constant	2.735 (1.249)	2.373 (1.073)	2.364 (1.017)	2.653 (1.209)	2.374 (1.068)	2.652 (1.126)
HHI1	0.000** (1.985)			0.000* (1.777)		
HHI2		0.000** (2.251)			0.000* (1.866)	
Top1share			0.005 (1.307)			0.003 (0.765)
CAbranch1	–0.018*** (–4.953)	–0.019*** (–5.121)	–0.018*** (–4.835)			
CAbranch2				–8224.6*** (–4.666)	–8367.7*** (–4.758)	–8135.0*** (–4.502)
Assets	–0.284*** (–3.709)	–0.291*** (–3.793)	–0.282*** (–3.671)	–0.278*** (–3.623)	–0.282*** (–3.675)	–0.273*** (–3.561)
LDratio	–0.004*** (–2.826)	–0.004*** (–2.812)	–0.004*** (–2.898)	–0.004** (–2.430)	–0.004** (–2.421)	–0.004** (–2.500)
Density	–0.081 (–0.283)	–0.017 (–0.060)	–0.030 (–0.100)	–0.032 (–0.112)	0.019 (0.067)	–0.029 (–0.096)
Perincome	0.594*** (7.666)	0.601*** (7.734)	0.594*** (7.593)	0.541*** (7.181)	0.543*** (7.204)	0.536*** (7.039)
Adj-R^2	0.938	0.938	0.938	0.938	0.938	0.938
Chi-sq	56.804***	57.271***	54.994***	43.574***	46.346***	44.259***
Observation	1709	1709	1709	1709	1709	1709

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Table 4. Estimation Results Using *WeightedCAbranch* as *CA*

Variable	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)
Constant	2.196 (1.010)	1.873 (0.851)	1.981 (0.856)
HHI1	0.000* (1.805)		
HHI2		0.000** (1.979)	
Top1share			0.004 (1.051)
WeightedCAbranch	–2.398*** (–4.737)	–2.456*** (–4.863)	–2.368*** (–4.622)
Assets	–0.287*** (–3.734)	–0.293*** (–3.801)	–0.284*** (–3.691)
LDratio	–0.005*** (–2.979)	–0.005*** (–2.975)	–0.005*** (–3.043)
Density	–0.008 (–0.028)	0.049 (0.170)	0.022 (0.074)
Perincome	0.596*** (7.647)	0.601*** (7.693)	0.594*** (7.567)
Adj-R^2	0.938	0.938	0.938
Chi-sq	59.007***	59.526***	56.628***
Observation	1709	1709	1709

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Table 5. Estimation Results Using *CAdeposit* as *CA* (Competitive Markets)

	CAdeposit1 as *CA*			*CAdeposit2* as *CA*		
Variable	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant	1.732 (0.593)	1.294 (0.443)	0.863 (0.298)	0.753 (0.260)	0.544 (0.187)	0.047 (0.016)
HHI1	–0.000* (–0.170)			0.000 (0.726)		
HHI2		0.000 (0.235)			0.000 (0.904)	
Top1share			0.003 (0.675)			0.008 (1.520)
CAdeposit1	–0.044*** (–2.933)	–0.043*** (–2.925)	–0.042*** (–2.817)			
CAdeposit2				–30.856** (–2.499)	–31.565** (–2.542)	–32.592*** (–2.635)
Assets	–0.059 (–0.541)	–0.062 (–0.572)	–0.071 (–0.652)	–0.015 (–0.128)	–0.016 (–0.135)	–0.026 (–0.229)
LDratio	–0.007*** (–3.116)	–0.007*** (–3.108)	–0.007*** (–3.115)	–0.008*** (–3.465)	–0.008*** (–3.496)	–0.008*** (–3.510)
Density	–0.309 (–0.861)	–0.247 (–0.686)	–0.180 (–0.501)	–0.090 (–0.265)	–0.056 (–0.163)	0.009 (0.028)
Perincome	0.598*** (5.296)	0.602*** (5.311)	0.607*** (5.362)	0.403*** (4.124)	0.405*** (4.152)	0.420*** (4.283)
Adj-R^2	0.892	0.892	0.892	0.892	0.892	0.892
Chi-sq	43.692***	44.548***	44.220***	34.718***	34.538***	35.832***
Observation	943	943	943	943	943	943

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Table 6. Estimation Results Using *CAdeposit* as *CA* (Competitive Markets)

	CAbranch1 as *CA*			*CAbranch2* as *CA*			*WeightedCAbranch* as *CA*		
Variable	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)	Coefficient (*t*-value)
Constant	4.853 (1.644)	4.430 (1.501)	3.726 (1.277)	5.286* (1.733)	4.989 (1.636)	4.450 (1.468)	4.475 (1.523)	4.228 (1.434)	3.341 (1.148)
HHI1	–0.000 (–0.624)			–0.000 (–0.319)			–0.000 (–1.032)		
HHI2		–0.000 (–0.250)			–0.000 (–0.063)			–0.000 (–0.805)	
Top1share			0.002 (0.405)			0.002 (0.420)			–0.000 (–0.058)
CAbranch1	–0.029*** (–5.625)	–0.029*** (–5.588)	–0.028*** (–5.502)						
CAbranch2				–13187*** (–4.608)	–13068*** (–4.589)	–12861*** (–4.494)			
WeightedCAbranch							–4.170*** (–5.532)	–4.112*** (–5.486)	–3.981*** (–5.326)
Assets	–0.201* (–1.905)	–0.201* (–1.900)	–0.207* (–1.946)	–0.206* (–1.925)	–0.206* (–1.924)	–0.211* (–1.961)	–0.213** (–2.009)	–0.210** (–1.983)	–0.212** (–1.991)
LDratio	–0.005** (–2.520)	–0.005** (–2.501)	–0.005** (–2.505)	–0.005** (–2.232)	–0.005** (–2.225)	–0.005** (–2.236)	–0.006*** (–2.669)	–0.006*** (–2.636)	–0.006*** (–2.640)
Density	–0.512 (–1.488)	–0.461 (–1.321)	–0.364 (–1.056)	–0.525 (–1.479)	–0.489 (–1.356)	–0.415 (–1.158)	–0.458 (–1.340)	–0.436 (–1.251)	–0.314 (–0.915)
Perincome	0.615*** (6.078)	0.620*** (6.114)	0.629*** (6.182)	0.547*** (5.487)	0.550*** (5.524)	0.558*** (5.583)	0.629*** (6.149)	0.631*** (6.168)	0.637*** (6.200)
Adj-R^2	0.896	0.895	0.895	0.894	0.894	0.894	0.895	0.895	0.895
Chi-sq	43.517***	44.069***	42.185***	40.630***	40.345***	40.845***	47.539***	47.434***	45.381***
Observation	943	943	943	943	943	943	943	943	943

*Significant at the 10% level

**Significant at the 5% level

***Significant at the 1% level