
Munich Personal RePEc Archive

Are Credit Associations a Source of Competitive Pressure on Regional Banks in Japanese Regional Lending Markets?

Kondo, Kazumine

13 May 2012

Online at https://mpra.ub.uni-muenchen.de/45319/
MPRA Paper No. 45319, posted 22 Mar 2013 02:23 UTC

Are Credit Associations a Source of Competitive Pressure on Regional Banks in Japanese Regional Lending Markets?

Kazumine Kondo

Faculty of Economics, Aichi Gakuin University, Aichi, Japan
kondo@dpc.agu.ac.jp

ABSTRACT

This study investigated whether credit associations are a source of competitive pressure on regional banks in Japanese regional lending markets. We found that credit associations pressurized regional banks to set lower lending interest rates in regional markets when the total deposits held by credit associations in a prefecture were used as a proxy for the presence of credit associations. Furthermore, regional banks in a prefecture where the ratio of deposits held by credit associations was more than 20%, which is larger than the average level, were forced to set lower lending interest rates.

Keywords: competitive pressures, credit associations, lending interest rates, regional banks, regional lending markets.

JEL Classification: G21

1. Introduction

In Japan, the regional banks, i.e. first- and second-tier regional banks (corporations), and non-profit cooperative financial institutions are financial institutions with deep roots in the local communities. The former seek to maximize profits for stock holders, whereas the latter do not always seek profits because of their organizational basis and they receive privileges from the government. Both have the same financial functions and these two different types of financial institutions coexist and conduct business in Japanese regional lending markets.

Some credit associations are the same size or even larger than regional banks. If credit associations are a source of competitive pressure on regional banks in regional lending markets, the government privileges given to credit associations would be unfair for the regional banks. Many previous studies have investigated the competitive relationships between banks and non-profit financial institutions, but the relationships between banks and credit associations in Japan remain unclear.

In the present study, we conduct an empirical investigation to determine whether the presence of credit associations in the regional lending markets in Japan was a source of pressure on regional banks to set low lending interest rates. The remainder of the present paper is organized as follows. In Section 2, we survey previous studies of the competitive relationships between banks and non-profit financial institutions. In Section 3, we describe our theoretical framework and present the empirical models and data. In Section 4, we interpret the empirical results, and we provide the summary and conclusions in the final section.

2. Literature Review

Emmons and Schmid (2000) investigated whether banks and credit unions competed in a regional deposit market using country-level data and concluded that both engaged in competitive relationships. Tokle and Tokle (2000) analyzed whether banks competed with S&Ls and credit unions using the bank deposit rates in Idaho and found that banks competed with these institutions, although the competition with credit unions was more severe than that with S&Ls.

Feinberg (2001) examined the effects of credit unions on banks using data related to the local lending markets and showed that banks set lower lending rates in a region where the share of credit unions was higher. Feinberg and Rahman (2001) analyzed the competitive relationships between banks and credit unions using the Granger causality test and demonstrated that their lending rates affected each other. Feinberg (2003) investigated the determinants of bank lending rates using both market data and bank data, and showed that the presence of credit unions negatively affected bank lending rates.

Hannan (2003) examined the competitive effects of credit unions on banks and thrift institutions in regional deposit markets and demonstrated that the presence of credit unions positively affected

bank and thrift deposit rates. Schmid (2005) analyzed whether the share of credit unions in a regional market affected deposit market concentrations and showed that a trend occurred during 1990–2000, whereas it was absent after 2001. Cohen and Mazzeo (2007) investigated the competitive relationships among multimarket banks, single-market banks, and thrift institutions in deposit markets and found that competition between the same types of financial institutions was more severe than that among different types, while thrift institutions appeared to be competitively distinct from both multimarket banks and single-market banks in most cases.

3. Methodology and Data

3.1 Methodology

In the present study, we use the same theoretical framework as that used in Feinberg (2001, 2003). In imperfect competition models, an increased number of fringe suppliers in a market will lead to lower prices. When we apply this model to Japanese regional lending markets, the increased number of credit associations as fringe suppliers relative to banks leads to lower lending rates. We formalize this effect using a modified version of the dominant firm-price leadership model.

We assume that the demand for loans is a homogeneous product and that credit associations act as fringe suppliers, so the Lerner Index of banks can be presented as follows[1]:

$$LI = \frac{kConcentration}{|\eta| + \varepsilon_{CA} CA} \tag{1}$$

where *Concentration* is the market concentration index and *CA* is the presence of credit associations. On the basis of equation (1), a higher presence of credit associations in a market leads to a lower Lerner Index, which is the lending rate of banks in this study. The present study aims to conduct an empirical investigation to determine whether this trend occurs in Japanese regional lending markets.

In the present study, we estimate equation (2) on the basis of the theoretical framework used by panel analysis. The samples are derived from regional banks and pooled data for 2005–2010.

$$\begin{aligned} Interestrate_{it} = {} & c_0 + c_1 Concentration_{it} + c_2 CA_{it} + c_3 logAsset_{it} + c_4 HoldingDum_{it} \\ & + c_5 logPopulation_{it} + c_6 Callrate_{t-0.25} \end{aligned} \tag{2}$$

Here subscript *i* refers to bank *i* and subscript *t* refers to year *t*. *Interestrate* is the lending interest rate.

Concentration is the degree of market concentration in a prefecture where the headquarters of bank *i*

[1] See Feinberg (2001, 2003) for description of the processes leading to equation (1).

are located. As a proxy of *Concentration*, we first use the Herfindahl–Hirschman index (*HHI*) which is calculated using deposit data from the first- and second-tier regional banks and credit associations with headquarters located in a prefecture where the headquarters of bank *i* are located. However, the deposit data for each bank and credit association used to calculate *HHI* include deposits made outside the prefecture where the headquarters are located. The deposit data for large banks, i.e. city banks and trust banks, could not be used to calculate *HHI*. For these reasons, *HHI* might not sufficiently accurate to precisely measure the market concentration. Therefore, as a proxy for *Concentration*, we also use the deposit share of the largest banks in a prefecture which is calculated by dividing it by the sum of the deposits in large banks, first- and second-tier regional banks and credit associations in a prefecture (*Top1share*)[2]. If the competition is severe in less concentrated regions, the coefficient of *Concentration* will take a positive sign.

CA is the presence of credit associations in a prefecture where the headquarters of bank *i* are located. Proxies for this measure are as follows: (1) The sum of deposits held by credit associations in a prefecture (*CAsize*). (2) A dummy variable which takes a value of 1 when the ratio of deposits held by credit associations in a prefecture relative to the sum of those held by large banks, first- and second-tier regional banks and credit associations in the prefecture is more than 20%, which is larger than the average ratio, i.e. 17%, while the dummy variable takes a value of 0 when that ratio is less than 20% (*CAshareDum*). The coefficient of *CA* will be negative if credit associations are a source of pressure on regional banks to set lower lending rates in the regional markets.

Asset is an asset of bank *i* and a proxy for scale. If larger banks enjoy economies of scale, these banks might return their reduced costs to their customers by setting lower lending rates. Therefore, the coefficient of *Asset* will take a negative sign.

HoldingDum is a dummy variable which takes a value of 1 when a bank is affiliated with a bank holding company, whereas it takes a value of 0 when a bank is an independent bank. If banks affiliated with bank holding companies can realize efficiencies, they might reflect them in their lending rates. Therefore, the coefficient of *HoldingDum* will be negative.

Population is the population in the prefecture where the headquarters of bank *i* are located and is used as a proxy of market size. If larger markets need more money, the lending rates will tend to be higher in these markets. Therefore, the coefficient of *Population* will be positive.

Callrate is the call money rate in the previous quarter. If banks set lending rates which are consistent with market rates, the coefficient of *Callrate* will be positive.

3.2 Data

[2] Feinberg (2001, 2003) used the top two shares in a regional market as a proxy for the degree of market concentration. However, we used *Top1share* because some prefectures only disclosed the top one bank in Japan so the sample size would have been smaller if we had used the top two shares.

Data related to the financial statements of individual banks and credit associations are derived from the Nikkei NEEDS. Data absent from Nikkei NEEDS are supplemented using the 'Analysis of Financial Statements of All Banks' edited by the Japanese Bankers Association and 'Financial Statements of All Credit Associations' edited by the Consultant of Financial Books Co., Ltd. Data related to the deposit balances of individual banks in a prefecture where their headquarters are located and data related to prefectural deposit balances are obtained from the 'Financial Map' edited by the Japan Financial News Co., Ltd. Data related to the prefectural population are obtained from the 'Financial Resources of a Nation' (Minryoku) edited by Asahi Shimbun. Call money rate data are taken from the homepage of the Bank of Japan.

Descriptive statistics for the data used in the present study are shown in Table1.

Table1. Descriptive Statistics

4. Empirical Results

4.1 Results Obtained Using *CAsize* as *CA*

In this section, we calculate equation (2) using *CAsize* as *CA*. We present the following two estimation results: (1) A case in which *Interestrate* is calculated by dividing the interest on the loans and discounts by loans and bills discounted (average balances), which is referred to as the 'Total'. (2) A case in which *Interestrate* is calculated by dividing the interest on loans and discounts to SMEs and individual customers by loans to SMEs and individual customers (average balances), which is referred to as 'SMEs and Individuals'[3].

The detailed method used to calculate 'SMEs and Individuals' is as follows. We use the disclosed loans to SMEs and individual customers (average balances) as the denominator. We regard the long-term prime rates as lending rates to large companies and estimate the interest on loans and discounts to large companies using the long-term prime rates and (loans and bills discounted − loans to SMEs and individual customers). We take interests on loans and discounts minus interests on loans and discounts to SMEs and individual customers as the numerator.

The results of these estimations are shown in Table2.

Table2. Estimation Results 1

[3] It is natural to consider that the presence of credit associations does not affect the lending rates to large companies set by regional banks because credit associations do not lend to large companies. Therefore, credit associations might only be a source of competitive pressure for lending to SMEs and individuals by regional banks. So, we also estimated equation (2) using the lending rates to SMEs and individuals to calculate *Interestrate*.

In all of these cases, the coefficients of *CAsize* are negative and significant at the 1% level[4]. Therefore, the regional banks located in a prefecture where the deposit sizes of credit associations are larger tended to set lower lending rates and the presence of credit associations in a regional lending market is a source of competitive pressure on regional banks.

As a proxy of the market concentration, the coefficient of *Top1share* takes a significantly negative sign at the 1% level in the 'Total' estimation results, while the coefficient of *HHI* takes a significantly positive sign at the 5% level in the 'SMEs and Individuals' estimation results. Therefore, we cannot conclude that the market concentration is always an important factor when setting lending rates. However, if the latter results are reliable, the regional banks in more competitive markets might be forced to set lower lending rates.

The coefficients of *Asset* in all estimates took a significantly negative sign at the 1% level. Larger regional banks can reduce the costs so they can still make profits if they set lower lending rates.

The coefficients of *Population* in the three cases are positive and significant at the 1% level. This may have been because the money needs are high in larger markets so the regional banks can set higher lending rates in these markets.

The coefficients of *Callrate* took a significantly positive sign at the 1% or 5% level. Therefore, the regional banks set their lending rates by considering the market rates.

4.2 Results Obtained Using *CAshareDum* as *CA*

Equation (2) is estimated using *CAshareDum* as *CA*. The estimated results are shown in Table3.

Table3. Estimation Results 2

The coefficients of *CAshareDum* took a significantly negative sign at the 1% or 5% level[5]. Therefore, the regional banks in a prefecture where the proportion of deposits in credit associations is more than 20%, i.e. greater than the average ratio, experienced pressure to set lower lending rates. The same trend occurs when the ratio of credit associations in the regional market is employed as a proxy of their presence, as described in section 4.1.

Other variables take nearly the same signs as those in section 4.1 and are generally consistent with our expectations.

[4] The coefficients of *CAsize* in these three cases show the results of random effect models in Table 2, which also took significantly negative signs at the 1% or 5% level in the results of the fixed effect models.

[5] The coefficient of *CAshareDum* in the results of the random effect model in the 'Total' estimation was also significant and negative at the 1% level in the results of the fixed effect model.

5. Concluding Remarks

The present study conducted an empirical investigation of the competitive relationships between regional banks and non-profit-making credit associations in Japanese regional lending markets.

It was shown that credit associations were a source of competitive pressure on regional banks in the regional lending markets when the deposit size of credit associations in a prefecture was used as a proxy of the presence of credit associations. We also found that regional banks with headquarters located in a prefecture where the ratio of deposits held by credit associations in the market was more than 20%, i.e. larger than the average level, were forced to set lower lending rates.

These results suggested that regional banks might consider that the tax and other privileges given by governments to credit associations are unfair. Therefore, governments might have to reconsider the privileges given to credit associations to promote fair competition among regional financial institutions in the regional lending markets.

The competitive relationships among the same types of financial institutions such as credit associations in the regional lending markets should be investigated in future work.

References

Cohen, A. M. and M. J. Mazzeo (2007) "Market Structure and Competition among Retail Depository Institutions," *Review of Economics and Statistics*, Vol. 89, pp. 60-74.

Emmons, W. R. and F. A. Schmid (2000) "Banks VS. Credit Unions: Dynamic Competition in Local Markets," The Federal Reserve Bank of St. Louis Working Paper 2000-006.

Feinberg, R. M. (2001) "The Competitive Role of Credit Unions in Small Local Financial Services Markets," *Review of Economics and Statistics*, Vol. 83, pp. 560-563.

Feinberg, R. M. and A. F. M. A. Rahman (2001) "A Causality Test of the Relationship between Bank and Credit Union Lending Rates in Local Markets," *Economics Letters*, Vol. 71, pp. 271-275.

Feinberg, R. M. (2003) "The Determinants of Banks Rates in Local Consumer Lending Markets: Comparing Market and Institution-Level Results," *Southern Economic Journal*, Vol. 70, pp. 144-156.

Hannan, T. H. (2003) "The Impact of Credit Unions on the Rates Offered for Retail Deposits by Banks and Thrift Institutions," Board of Governors of the Federal Reserve System Discussion Paper.

Schmid, F. (2005) "When For-Profits and Not-For Profits Compete: Theory and Empirical Evidence from Retail Banking," *Managerial Finance*, Vol. 31, pp. 50-71.

Tokle, R. J. and J. G. Tokle (2000) "The Influence of Credit Union and Savings and Loan Competition on Bank Deposit Rates in Idaho and Montana," *Review of Industrial Organization*, Vol. 17, pp. 427-439.

Table1. Descriptive Statistics

	Interestrate	*SMEs Interestrate*	*Top1share*	*HHI*	*CAsize*
Mean	2.221	2.254	40.585	4005.340	28328.15
Median	2.165	2.208	44.274	4016.699	11200
Maximum	4.261	4.669	70.720	27317.090	197361
Minimum	1.477	1.400	1.044	598.785	1390
Std. Dev.	0.360	0.421	16.859	2050.360	40160
Observations	656	656	656	656	656

CAshareDum	*Asset*	*HoldingDum*	*Population*	*Callrate*
0.299	2610351	0.099	3138775	0.177
0	2092965	0	1948250	0.101
1	11693332	1	12609912	0.497
0	183391	0	595331	0.001
0.458	2169944	0.299	2889797	0.172
656	656	656	656	656

Table2. Estimation Results 1

Interestrate	Total		SMEs and Individuals	
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant	22.301** (2.392)	3.034*** (4.559)	3.344*** (3.152)	3.316*** (4.278)
Top1share	−0.024*** (−3.777)		0.001 (0.352)	
HHI		0.000 (0.085)		0.000** (2.077)
CAsize	−0.442*** (−3.788)	−0.145*** (−3.881)	−0.133*** (−2.998)	−0.140*** (−3.216)
Asset	−0.234*** (−3.477)	−0.251*** (−9.647)	−0.279*** (−9.057)	−0.278*** (−9.123)
HoldingDum	−0.001 (−0.042)	−0.014 (−0.481)	0.011 (0.308)	0.011 (0.299)
Population	−0.792 (−1.305)	0.283*** (4.890)	0.283*** (3.598)	0.289*** (4.276)
Callrate	0.210*** (8.421)	0.201*** (8.212)	0.068** (2.107)	0.069** (2.132)
Observations	656	656	656	656
χ^2 statistics	20.149***	7.408	8.610	8.621
Selected Model	Fixed Effect Model	Random Effect Model	Random Effect Model	Random Effect Model
Adjusted-R^2	0.915	0.203	0.129	0.134

Notes: *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table3. Estimation Results 2

Interestrate	Total		SMEs and Individuals	
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant	10.332 (1.205)	4.495*** (8.433)	4.530*** (4.443)	4.724*** (7.612)
Top1share	−0.024*** (−3.744)		0.001 (0.507)	
HHI		−0.000 (−0.142)		0.000* (1.899)
CAshareDum	−0.134** (−2.245)	−0.123*** (−3.122)	−0.134*** (−2.754)	−0.137*** (−2.848)
Asset	−0.284*** (−4.275)	−0.260*** (−10.083)	−0.288*** (−9.429)	−0.287*** (−9.456)
HoldingDum	−0.013 (−0.434)	−0.015 (−0.529)	0.012 (0.322)	0.012 (0.313)
Population	−0.208 (−0.359)	0.101*** (3.129)	0.126** (1.973)	0.113*** (3.014)
Callrate	0.189*** (7.593)	0.189*** (7.673)	0.057* (1.742)	0.057* (1.746)
Observations	656	656	656	656
χ^2 statistics	16.663**	3.408	6.371	5.968
Selected Model	Fixed Effect Model	Random Effect Model	Random Effect Model	Random Effect Model
Adjusted-R^2	0.914	0.198	0.128	0.131

Notes: *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.