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Does Rocky Mountain Credit Union Competition still Affect Commercial Bank Interest Rates?

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ABSTRACT

Historically, increased credit union competition in Idaho and Montana has caused commercial banks to offer higher deposit rates to savers and lower loan rates to borrowers. Data are collected for the second quarter of 2018 to examine whether that pattern still holds true. Unlike prior studies, empirical results indicate that credit union competition no longer exerts statistically reliable impacts on deposit rates or loan rates in this northern Rocky Mountain region of the United States. Potential contributing factors include bank and thrift consolidation in recent years, the low interest rate environment prevailing during the late 2010s, and greater emphasis on non-interest forms of intermediary competition in the banking markets that comprise this regional economy.

KEYWORDS

Regional banking; Interest rates; Financial intermediary competition

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1. Introduction

Over time, simple survey data consistently show that credit unions offer better rates than banks on loans and deposits. For example, Table 1 reports two certificates of deposit (CD) rates and two loan rates using data from June 2018. In general, credit union competition may benefit credit union nonmembers by forcing banks to develop better products, reduce fees, offer higher deposit rates, and charge lower loan rates (Evans and Shull, 1998; Luntz, 1998).

Table 1. Comparative Credit Union and Commercial Bank Interest Rates.

Product (June 2018)	Credit Unions	Commercial Banks
1-Year Certificates of Deposit	1.97 percent	1.62 percent
5-Year Certificates of Deposit	1.97 percent	1.62 percent
48-Month Used Car Loans	3.22 percent	5.24 percent
60-Month New Car Loans	3.16 percent	4.86 percent

Notes: June 2018 data reported by National Credit Union Administration. All eight rates are national averages for the United States. All rates are shown in percentages.

A number of studies report evidence that credit union completion does induce banks to offer higher rates on deposits and charge lower rates on loans (Hannan, 1984; Tokle, 2005). Some of those studies have been conducted for banks and credit unions in the northern Rocky Mountain region of the United States using data from financial intermediaries in Idaho and Montana (Tokle and Tokle, 2000). Of course, both the credit union and banking industries have changed since the 1990s. For example, the number of banks in the U.S. decreased from 9,596 in 1996 to 4,390 in 2020 (FRED, 2020). Over that same period, the number of credit unions decreased from 11,392 in 1996 (USDT, 1997) to 5,204 in 2020 (CUNA, 2021).

Along with reductions in the numbers of banks and credit unions, concentration increased substantially in both industries. For example, the share of all commercial bank assets held by the ten largest U.S. banks increased from 36.6 percent in 1996 (Mishkin, 1998) to 60.1 percent in 2017 (Mishkin, 2019). Similarly, in 2018, the 311 credit unions (out of 5,489) with assets over $1 billion accounted for 65.4 percent of all credit union assets (CUNA, 2021). Although credit unions have grown more rapidly than banks, credit union assets remain relatively small. Total credit union assets relative to commercial bank assets were 5.7 percent in 1996 (Mishkin, 1998). By 2016, that ratio increased to 7.4 percent, but still remained in single digits (Mishkin, 2019).

In addition to banking and credit unions becoming more concentrated, technological advancements, such as online and mobile banking, have also evolved substantially. From a contestable markets perspective, both sets of intermediaries increasingly face new competition from companies such as small financial technology (emerging fintech) firms. Feinberg and Meade (2017) argue that the nature of local market credit union competition with banks has remained the same since the early 1990s. This study uses data from 2018 to directly examine whether credit union competition continues to affect commercial bank interest rates. The results obtained differ substantially from prior studies and indicate that links between credit union competition and northern Rocky Mountain commercial bank interest rates do not exist in the manner observed at the beginning of the century.

2. Literature Review

With the passage of the 1980 Depository Institutions Deregulation and Monetary Control Act, credit unions and other depository institutions begin to offer interest bearing personal checking deposits. Credit unions also begin offering residential mortgages, credit cards, and commercial loans, products that range well beyond traditional consumer lending efforts. That increases the scope for potential credit union competition with commercial banks.

Tokle and Tokle (2000) document regional evidence of the competitive effect of credit unions on bank interest

rates. Credit union competition is found to positively influence bank 1- and 2-year certificate of deposit (CD) rates. This study documents whether there continues to be a northern Rocky Mountain varietal of a contestable market shootout among commercial and non-profit financial intermediaries.

Hannan (2002) analyzes the effects of credit union competition on bank deposit interest rates using national data for 80 large metropolitan markets. Bank money market rates, checking account interest rates, and 3-month CD rates are the deposit categories examined. Robust results are reported due to heteroscedasticity and potential outliers in the data. Outcomes indicate that higher bank deposit rates are the response to increased credit union market footprints.

On the asset side of the ledger, Feinberg (2001) documents evidence that credit unions had a procompetitive effect on bank lending interest rates. A key finding is that credit union competition (measured as credit union deposits to total market deposits) exerts a negative effect on new-vehicle bank loan rates. Using a larger sample size, Feinberg (2003) corroborates those outcomes.

Bank customers tend to benefit substantially from credit union competition. Tokle (2005) applied estimates that a one standard deviation drop in credit union market share fell precipitates CD interest payment losses of $203 to $726 million to commercial banking clients. Similarly, Feinberg and Meade (2017) estimate, that if credit union market shares were to be cut by 50 percent, then banks customers losses would total $10.2 billion per year due to a combination of higher loan rates and lower deposit rates.

As noted above, the numbers of banks and credit unions have declined noticeably in recent years. Given that, natural questions include whether credit union competition still affects regional commercial bank pricing behavior and whether it can still be reliably quantified for small market areas. Similar to Tokle and Tokle (2000), this study employs bank and credit union data for Idaho and Montana to provide partial insights on these questions.

3. Data and Methodology

Table 2 lists all of the variables that comprise the sample data for this study. Six different dependent variables are utilized to examine the potential effect of credit union competition in northern Rocky Mountain banking markets. Two commercial bank deposit rates and four bank loan rates are utilized. For the deposit side of the ledger, 3- and 5-year $10,000 bank CD rates are selected as the dependent variables. Among various types of bank deposits, the 3- and 5-year CDs generally exhibit the most variation during 2018, the year for which the data are purchased.

Table 2. Variable Names and Descriptions.

Variable	Description	Units	Sources
CD3YR	$10,000 3-Yr Cert of Deposit Rate	Percent	RateWatch
CD5YR	$10,000 5-Yr Cert of Deposit Rate	Percent	RateWatch
NCL5YR	$25,000 5-Year New Car Loan	Percent	RateWatch
NCL6YR	$25,000 6-Year New Car Loan	Percent	RateWatch
UCL4YR	$15,000 4-Year Used Car Loan	Percent	RateWatch
UCL5YR	$15,000 5-Year Used Car Loan	Percent	RateWatch
CU	Credit Union Competition	Percent	Authors
CR3	Large Bank Concentration Ratio	Percent	FDIC
SIZE	Total Commercial Bank Assets	Dollars	FDIC
SIZECHPCT	Bank Assets Growth Rate	Percent	Authors
TYPE	Chain (1) and Independent Bank (0)	Binary	Authors
OPXPAST	Operating Expense to Assets Ratio	Percent	FDIC
FEEAST	Fee Income to Assets Ratio	Percent	FDIC
CHGOFFS	Net Charge-Offs to Loan Ratio	Percent	FDIC

Notes: All six commercial bank interest rates are second quarter 2018 data reported by RateWatch. CU is credit union deposits as a percentage of total bank, savings and loan, and credit union deposits in each local market. FDIC and NCUA data are used for the author calculations. CR3 is share of bank deposits held by three largest commercial banks in each city. SIZE is the second quarter 2018 dollar amount of total commercial bank assets in each local market reported by the FDIC. SIZECHPCT is the percentage growth in bank assets in each city from the second quarter of 2017 to the second quarter of 2018. TYPE is a binary dummy variable for top-10 bank holding company chain banks (1) that often provide lower deposit rates compared to smaller independent banks (0). OPEXPAST is the bank operating expense to average asset ratio for the 4-quarter period from the second quarter of 2017 to the second quarter of 2018. FEEAST is the commercial bank fee income to average asset ratio for the 4-quarter period from the second quarter of 2017 to the second quarter of 2018. CHGOFFS is the commercial bank net charge-offs to average loan ratio for the 4-quarter period from the second quarter of 2017 to the second quarter of 2018. FDIC is Federal Deposit Insurance Corporation. FRED is Federal Reserve Bank of St. Louis Economic Data. RateWatch is a unit within S&P Global Market Intelligence. Authors stands for author calculations.

In comparison, 2018 checking deposit, savings deposit, and 1-year CDs are quoted at relatively low levels with little variation. CD rates tend to remain at set rates, while consumer loans are sometimes negotiated or set by rate matching. The 3- and 5-year bank CD interest rates for the second quarter of 2018 are data purchased from RateWatch (RW, 2018).

Also selected as dependent variables are the interest rates charged on loans used to purchase new and used automobiles. Two loan rates are selected for each car loan category. Because new automobiles are more expensive, the loan rates for $25,000 5- and 6-year contracts are utilized. For the less expensive used cars, 4- and 5-year contract rates for $15,000 loans are employed. The loan rates are also data purchased from RateWatch (RW, 2018).

Eight different variables are employed as independent variables. Those variables are listed below the interest rates in Table 2. Included among the independent variables are competition, market concentration, size, bank type, and three operating ratios. The reasons underlying the inclusion of each regressor in the sample are explained below.

The credit union competition (CU) variable is calculated as total credit union deposits divided by total savings and loan (S&L), credit union, and commercial bank deposits in each local market for the second quarter of 2018. The Federal Deposit Insurance Corporation (FDIC, 2018) reports deposits by branch for banks and S&Ls in each city. However, the National Credit Union Administration (NCUA, 2018) reports deposits only by credit union(s). Increasingly, as credit unions consolidate and become larger, operations tend to be located in two or more cities. The most common way to estimate credit union deposits by city is to assume that all branches have equal deposits and divide the total deposits of each credit union by the number of branches for each company. Next, to estimate the total deposits that a credit union has in each city where it operates, deposits per branch are multiplied by the number of branches in that city (Hannan, 2002; Feinberg, 2001; 2003; Feinberg and Rahman, 2006).

Tokle and Tokle (2000) and Hannan (2002) report evidence that CU is positively correlated with higher bank deposit rates. Similarly, Feinberg (2001 and 2003) find some evidence that CU exercises a negative effect on bank loan rates. As measured by CU, a greater credit union presence is hypothesized to lower commercial interest rates charged on automobile loans and raise bank rates offered on CDs.

CR3 is a market share measure of the three largest commercial banks in each market. Market share is defined as the percentage of total deposits held by the largest three banks in each city. Second quarter 2018 data are used for the calculations (FDIC, 2018). According to the structure-performance hypothesis, higher market concentration increases monopoly power and allows banks to pay lower deposit rates. Tokle and Tokle (2000) documents an inverse relationship between CR3 and both 1- and 2-year CD rates. A direct relationship is anticipated between CR3 and the loan rates.

Bank size (SIZE) is measured as second quarter 2018 total commercial bank assets in each market (FDIC, 2018). After transforming these data using natural logarithms, this variable is used as a proxy measure for economies of scale (Barret and Unger, 1991; Hannan and Liang, 1995; Tokle and Tokle, 2000). Bank size tends to be negatively associated with loan rates (Hannan and Liang, 1995; Hannan 2002). If economies of scale exist, then larger banks may have lower average costs. Thus, SIZE is expected to lower loan rates, while allowing for higher deposit rates.

Bank size change, SIZECHPCT, is measured as the percentage change in bank assets in each city from the second quarter of 2017 to the second quarter of 2018. If a bank thrives due to strong loan demand, it may offer higher CD rates to attract more deposits to fund further loan growth. However, growth may be due to deposit base expansion. If loan opportunities are not very strong, CD rates are likely to be lower than in the former case, as attracting new deposits is not an issue. The coefficient sign for the bank size change variable can, thus, be either positive or negative.

A binary indicator variable, TYPE, is used to control for large chain banks versus independent banks. The dummy variable equals one for the large chain banks and zero for independent banks during the second quarter of 2018. A bank is classified as a chain bank if they are part of a top-10 bank holding company. Estimated TYPE parameters for deposit rate equations are negative in Tokle and Tokle (2000), indicating that large banks provide lower rates of return to depositors. For the sample period in question, the large banks are also expected to charge higher loan rates. There are 16 large chain banks and 39 independent banks in the data sample.

Operating expenses divided by average assets, OPXPAST, over the one-year period ending in the second quarter of 2018, is used as a measure of cost efficiency. A higher operating expense ratio suggests lower efficiency. That is associated with higher costs and may lead intermediaries to pay lower CD rates (Tokle and Tokle, 2002). It is hypothesized to exert a negative effect on CD rates and a positive effect on loan rates.

Annual bank fee income divided by average assets, FEEAST, over the one-year period ending in the second quarter of 2018, is used as a measure of profitability. Tokle and Tokle (2008) use the fee income to assets ratio measured in percentage terms as an explanatory variable for loan rates. The parameter sign for this variable is ambiguous. At first glance, higher fees may allow lenders to charge lower loan rates. However, banks and credit unions might be forced to charge higher loan rates along with higher fees if under pressure to increase profits.

Net bank loan charge-offs, CHGOFFS, as a percentage of loans, are included as a cost of operations metric (Tokle and Tokle, 2008). CHGOFFS is measured as bank loan charge-offs divided by average loans over the one-year period ending in the second quarter of 2018. It is measured in percentage terms, as reported by the FDIC (2018). Higher charge-offs imply higher operating costs and potentially lead to higher loan rates. By similar reasoning, it is further hypothesized in this study that greater charge-offs should lead to lower CD rates.

In sum, the general model specification is:

$$CDRATE_i = a_0 + a_1 CU_i + a_2 CR3_i + a_3\, ln(SIZE_i) + a_4\, SIZECHPCT_i + a_5 TYPE_i + a_6\, OPXPAST_i + a_7\, FEEAST_i + a_8\, CHGOFFS_i + U_i, \quad (1)$$

where I = 1, 2, …, n.

This specification provides a comprehensive vantage from which to analyze the potential links between credit union market presence and commercial bank interest rates in the northern Rocky Mountain region of the United States. Historically, these links have been relatively strong, and bank customers in the area have benefitted from higher deposit rates and lower loan rates due to greater credit union competition. However, financial markets are dynamic, and it is essential to periodically assess whether prior competitive patterns are still observed.

4. Sample Information

All Idaho and Montana commercial banks that are located in cities with 2017 populations of 7,000 or greater are included in the initial sample (USCB, 2018). Branch banks that offer deposit and loan rates determined by headquarter banks in other markets are excluded from the sample. As in Tokle and Tokle (2008), cities with more than 7,000 inhabitants are defined as local markets. That step is taken because Idaho and Montana are sparsely populated states with geographically isolated cities that tend to be separated by fairly large distances. As shown in Table 3, several geographically adjacent cities are combined as single markets.

Table 3. Geographic Bank Markets.

Idaho Cities	2017 Population Estimates
Ammon / Idaho Falls	76,616
Blackfoot	11,922
Boise / Garden City	238,460
Burley / Heyburn	13,803
Caldwell	54,660
Chubbuck / Pocatello	70,062
Couer d'Alene / Hayden	63,358
Eagle	26,089
Hailey	8,282
Jerome	11,636
Kuna	19,200
Lewiston	32,820
Meridian	99,926
Moscow	25,146
Mountain Home	14,224
Nampa	93,590
Payette	7,434
Post Falls	33,290
Rexburg	28,337
Sandpoint	8,390
Twin Falls	49,202
Montana Cities	**2017 Population Estimates**
Anaconda – Deer Lodge County	9,106
Billings	100,642
Bozeman	46,596
Butte – Silver Row	34,602
Great Falls	58,876
Havre	9,784
Helena	31,429
Kalispell	23,212
Livingston	7,529
Miles City	8,483
Missoula	73,340
Whitefish	7,608

Note: All 2017 city population estimates are from the U.S. Census Bureau.

Table 4. Summary Statistics.

Statistic	CD3YR	CD5YR	NCL5YR	NCL6YR	UCL4YR
Mean	0.96%	1.38%	4.51%	4.50%	4.70%
Median	0.90%	1.35%	4.50%	4.49%	4.59%
Maximum	2.70%	3.10%	7.75%	6.00%	8.00%
Maximum	2.70%	3.10%	7.75%	6.00%	8.00%
Minimum	0.05%	0.16%	3.13%	3.50%	3.25%
Std. Dev.	0.54%	0.59%	0.89%	0.62%	1.03%
Skewness	1.1	0.3	2.0	0.95	1.8
Kurtosis	4.9	4.2	9.5	3.6	6.9
CV	0.57	0.43	0.20	0.14	0.22
Observations	40	37	26	25	27

Notes: Sample data are second quarter 2018 RateWatch data from commercial banks in Idaho and Montana. CV stands for coefficient of variation.

Table 4. Summary Statistics (continued).

Statistic	UCL5YR	CU	CR3	SIZE	SIZECHPCT
Mean	4.86%	18.83%	55.39%	$117.6 Billion	7.63%
Median	4.72%	18.14%	56.71%	$552.3 Million	5.10%
Maximum	8.00%	55.33%	85.72%	$2.168 Trillion	37.47%
Minimum	3.25%	4.33%	24.68%	$37.1 Million	-9.86%
Std. Dev.	1.10%	9.67%	8.84%	$432.0 Billion	9.25%
Skewness	1.4	1.9	-0.8	4.0	1.3
Kurtosis	5.1	9.0	9.6	18.1	4.8
CV	0.23	0.51	0.16	3.67	1.21
Observations	27	55	55	55	55

Notes: Sample data are second quarter 2018 RateWatch data from commercial banks in Idaho and Montana. CV stands for coefficient of variation.

Table 4. Summary Statistics (continued).

Statistic	OPXPAST	FEEAST	CHGOFFS
Mean	3.09%	0.88%	0.04%
Median	2.92%	0.72%	0.01%
Maximum	6.01%	3.68%	0.48%
Minimum	1.66%	0.15%	-0.46%
Std. Dev.	0.85%	0.67%	0.16%
Skewness	0.8	1.8	0.3
Kurtosis	4.0	7.5	5.5
CV	0.28	0.75	3.63
Observations	55	55	55

Notes: Sample data are from commercial banks in Idaho and Montana. CV stands for coefficient of variation.

Table 4 reports summary statistics for the sample data. The mean and median rates for all six commercial bank deposit and loan rates exhibit the expected term structure patterns with one small exception. The 60-month car loan interest rate mean and median rates, NCL5YR, slightly exceed those of the 72-month rates, NCL6YR. This oddity is because the bank in Montana that charges the highest 60-month new car loan rate does not report a 72-month rate. That rate would, presumably, be higher and, otherwise, raise the means and median rates for that maturity. Excluding that bank from 62-month rates drops the mean rate to 4.39 percent, which is 10 basis points below the corresponding 72-month rate.

From a historical perspective, one of the most notable things about Table 4 is the small number of observations for each of the dependent variables (Tokle and Tokle, 2010). The Tokle and Tokle (2000) bank deposit rate study collects data for 121 Idaho and Montana banks in 1996. Bank and credit union consolidation reduce the number of observations to only 25 for 72-month new car loans. With 40 banks that offer that product, the largest number of observations is tallied for 36-month certificates of deposit.

5. Estimation Results

Robust estimation results are summarized in Table 5. Similar to Hannan (2002), robust estimation is deployed to control for outliers and heteroscedasticity. The outcomes are notably different from those reported in earlier studies on this topic. For the 36-month and 60-month bank CD rates, neither of the CU coefficients are greater than zero. That runs counter to previously reported empirical evidence (Tokle and Tokle, 2000; Hannan, 2002; Feinberg and Meade, 2017). Although several of the diagnostic statistics are similar to those reported in prior research, many of the computed t-statistics in Table 5 are comparatively low, and some of the other slope parameter signs are not as hypothesized.

Table 5. Robust Least Squares Estimation Results.

Dependent Variable	CD3YR	CD5YR	NCL5YR	NCL6YR
Constant	4.315	4.324	7.509	9.152
	3.136	2.610	1.962	2.107
CU	-0.012	-0.023	0.035	0.006
	-1.274	-1.700	1.140	0.167
CR3	-0.014	-0.028	0.007	-0.001
	1.328	-1.695	0.281	-0.043
Log(SIZE)	-0.097	-0.113	-0.109	-0.143
	-1.939	-1.283	-0.733	-0.884
SIZECHPCT	-0.007	-0.008	-0.004	-0.006
	-1.190	-0.778	-0.298	-0.369
TYPE	0.181	0.254	-0.352	-0.205
	0.770	0.662	-0.564	-1.013
OPXPAST	-0.116	-0.042	-0.877	-0.785
	-1.026	-0.218	-2.729	-2.070
FEEAST	-0.080	-0.088	1.048	0.852
	-0.548	-0.267	1.913	1.399
CHGOFFS	-0.033	-0.100	-0.327	0.927
	-0.081	-0.150	-0.281	0.716
Rw-Squared	0.622	0.438	0.436	0.360
Std. Error Regression	0.557	0.611	0.982	0.733
Sum Squared Residuals	9.610	10.462	16.407	8.592
Rn-Squared Statistic	29.334	14.778	10.980	6.878
Prob(Rn-Squared Stat)	0.0003	0.064	0.203	0.550
Deviance	3.406	5.979	7.028	6.070
Scale	0.248	0.382	0.474	0.541

Notes: Deposit and loan rate dependent variables are listed across the top row. Computed z-statistics appear below the regression coefficients and are calculated using Huber Type I heteroscedasticity consistent standard errors. 0.22E-06 indicates that the regression coefficient 0.22 is divided by 1,000,000. Rw-Squared is calculated using Renaud and Victoria-Feser robust estimates. Standard Error of Regression and Sum of Squared Residuals are non-robust estimates. Rn-Squared Statistics are robust Wald statistics that follow a Chi-squared distribution with 8 degrees of freedom for a null hypothesis that all eight of the parameter estimates are equal to zero. Deviance is the goodness of fit statistic estimated for the final parameter estimates and the scale. Scale is an outlier resistant measure of residual dispersion.

In the cases of the new car loan rates, the CU parameter estimates are negative as hypothesized. In the case of 60-month new car loans, a 1-percentage point increase in the credit union share of total banking sector deposits (CU) leads to a 0.4 basis point reduction in the commercial bank loan rate. Also corroborating results obtained in studies such as Hannan and Liang (1995), a 1-percentage point increase in CU is associated with a 1.4 basis point reduction in the 72-month new car loan rate charged by commercial banks. In both equations, the low computed t-statistics for CU indicate that these inverse relationships are statistically tenuous.

For 48-month and 60-month used car loan rates, neither of the CU estimated slope coefficients are negative, as hypothesized. That outcome implies that credit union competition does not affect this category of loan activity in Idaho and Montana. The 2018 evidence indicates that credit union competition is much less prevalent in the northern Rocky Mountain region than in prior decades. Is that inference accurate? Several factors may contribute to the unexpected results shown in Table 5.

Regional banking econometric analysis always faces several obstacles. As might have been anticipated by Machlup (1974), some of them can be summarized as being forced to use proxies for competition, a dummy for chain banking, and the steady erosion of degrees of freedom due to banking sector consolidation and the steady expansion of branch banking. The latter is easily discernible in Table 4 where the number of observations for the six dependent variables ranges from a low of 25 for NCL6YR to a high of 40 for CD3YR. In other words, the largest

Table 5. Robust Least Squares Estimation Results (continued).

Dependent Variable	UCL4YR	UCL5YR
Constant	5.822	4.784
	1.566	1.315
CU	0.053	0.056
	1.649	1.778
CR3	0.017	0.018
	0.665	0.698
Log (SIZE)	-0.069	-0.013
	-0.444	-0.086
SIZECHPCT	-0.005	0.002
	-0.298	0.123
TYPE	-0.391	-0.610
	-0.617	-0.982
OPXPAST	-0.807	-0.889
	-2.542	-2.862
FEEAST	0.961	1.017
	1.664	1.801
CHGOFFS	-1.150	-0.770
	-0.945	-0.647
Rw-Squared	0.531	0.588
Std. Error Regression	1.099	1.309
Sum Squared Residuals	21.738	30.865
Rn-Squared Statistic	14.361	17.779
Prob(Rn-Squared Stat)	0.0703	0.023
Deviance	7.965	8.186
Scale	0.494	0.451

Notes: Deposit and loan rate dependent variables are listed across the top row. Computed z-statistics appear below the regression coefficients and are calculated using Huber Type I heteroscedasticity consistent standard errors. Rw-Squared is calculated using Renaud and Victoria-Feser robust estimates. Standard Error of Regression and Sum of Squared Residuals are non-robust estimates. Rn-Squared Statistics are robust Wald statistics that follow a Chi-squared distribution with 8 degrees of freedom for a null hypothesis that all eight of the parameter estimates are equal to zero. Deviance is the goodness of fit statistic estimated for the final parameter estimates and the scale. Scale is an outlier resistant measure of residual dispersion.

number of observations in this study is less than one-third of the sample size employed by Tokle and Tokle (2000). Such a drastic reduction in sample observations and degrees of freedom is hard to overcome, significantly, since multimarket branch banking generally reduces interest rate competition (Hannan and Prager, 2004).

Some of the other results in Table 5 should also be noted. In particular, the vast majority of the estimated parameters in Table 5 are statistically distinguishable from zero. For CR, the bank concentration ratio, those outcomes are similar to what is reported in two prior studies using data for Idaho and Montana (Tokle and Tokle, 2000; 2002), but very different from what is documented by Hannan and Liang (1995) using a much larger national data sample. The generalized absence of statistical significance in Table 5 potentially reflects the smaller sample sizes (Conolly, 1989). That has resulted from bank and credit union consolidation and may mean that single-year small region interest rate studies may no longer be feasible. While larger region and national studies, as well as multi-year analyses, can still be undertaken, the data acquisition prices for those efforts will be much higher than the $950 charged for interest rate data in this sample.

In spite of the reduced number of observations, the results obtained do point to an interesting possibility. Commercial banks and credit unions in the northern Rocky Mountain region of the United States may not compete any longer via deposit rates or loan rates. That does not mean that the intermediaries offer identical rates. The gaps are fairly fixed due in part to the non-profit tax treatment afforded to the thrifts, separating the bank rates

from the credit union rates. That means that increased credit union presences no longer seem to narrow that gap as it did in prior years. It does not significantly rule out other service competition as credit union market shares increase (Emmons and Schmid, 2000).

Do credit unions and commercial banks compete? Yes, and that competition is a prominent feature of the financial intermediary landscape (Anderson and Liu, 2013). Credit unions tend to be more consumer finance oriented, while banks tend to be more business finance oriented. Beyond interest rates, competition occurs via advertising campaigns, product differentiation, service fees, and delivery platforms (Cohen and Mazzeo, 2007). It also occurs via subsidiary firms in sectors such as insurance and real estate. However, taken at face value, results in Table 5 simply indicate that deposit rate and loan rate competition may no longer characterize northern Rocky Mountain regional competition between these two groups of intermediaries.

Another possibility that may affect the estimation outcomes shown in Table 4 is the low interest rate environment that prevailed during 2018 in the United States. For example, the 1-year CD rate in Table 1 is less than half the magnitude of the corresponding rate from 20 years earlier (Tokle and Tokle, 2000). Because there is less variability, the lower than usual 2018 rates may make quantifying competitive small market interest rate fluctuations difficult to undertake. Also, the low interest rates prevailing in 2018Q2 did not leave much room for maneuverability the way the higher rates that characterize the 1999 data did.

6. Conclusion

Prior research indicates that Idaho and Montana credit union rate competition forces commercial banks to offer higher deposit rates and lower loan rates. Data from 2018 indicate that the rate gaps still exist, but the econometric evidence indirectly suggests that those gaps may be a consequence of tax differences rather than competitive pressures. Econometric analyses of two CD rates and four loan rates indicate that the competitive patterns reported in prior studies are no longer prevalent in this region.

Bank and thrift consolidation has also reduced the number of institutions so much in this two-state region that additional analyses using data from more states may be necessary to confirm that interpretation. Although the low interest rate landscape in 2018 may have reduced rate variability, the results indicate that quantifying regional market interest rate competition may no longer be viable for 21st century banking studies in the United States. Verifying whether that is also the case for the nation as a whole will require additional testing that employs data from throughout the entire country.

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Conflict of interest

All the authors claim that the manuscript is completely original. The authors also declare no conflict of interest.

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