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13 April 2012

Online at <https://mpra.ub.uni-muenchen.de/38194/>  
MPRA Paper No. 38194, posted 18 Apr 2012 16:34 UTC

**Draft, April 2012:**

**Going Forward Financially:  
Credit Unions as an Alternative to Commercial Banks**

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**Abstract**

The global financial meltdown brought to light a number of weaknesses in the U.S. financial system. Not all financial institution types will be taking large sums of taxpayer money to address their crippling decisions. Credit unions in the U.S. represent a type of financial cooperative that will probably not take any taxpayer money directly due to their structure and prudential oversight. Commercial banks, especially the megabanks, are likely to see even more bailouts in the future unless structural weaknesses are addressed in the clarifications as part of the enforcement of the Dodd-Frank Act. Using a unique panel data set on U.S. commercial banks, thrifts and credit unions from 1994 through 2010 (over 300,000 observations) performance metrics on a number of dimensions point to strengths and weaknesses of the various financial institutional forms. Credit unions also have had far fewer adjustable rate mortgages and mortgage backed securities as a percent of their portfolio. Robust estimators to correct for potential endogeneity are used to analyze the ROA differentials between different institutional forms and portfolios. When controlling for size, region and portfolios credit unions are often estimated to have a better ROA. Institutions of under 50 million dollars, about 50 percent of the total sample, show credit unions having higher efficiency in that they control more assets per dollar spent on salaries than commercial and savings banks.<sup>1</sup>

*Journal of Economic Literature* Classification Numbers: P0, P13, L21, G14, G21

Keywords: credit unions, banks, cooperative, defaults, net charge-offs, return on assets

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<sup>1</sup> Thanks to the participants of the International Economics Association, Tsinghua University, Beijing, China, July 2011 and to the referees for insightful comments and suggestions.

## **I. Introduction**

The "Great Recession" has brought tremendous hardship to many across the globe. The finger pointing for who was at fault has not often strayed far from the financial sector and in particular the focus has often been on bank lending and regulatory oversight. What has often been missed in this focus has been the relative strength of the U.S.'s cooperative financial sector, the credit unions. Credit unions in the U.S. will ultimately probably not take a penny from the U.S. taxpayer in the form of a bailout for this crisis, while at the same time the amount given to commercial banks either directly or indirectly by a number of observers is well into trillions of dollars (e.g., Blinder and Zandi 2010 and the Congressional Oversight Panel 2010 and 2011). This paper will look at the U.S. financial sector and try to detect what early signals can be discerned that may help prevent a repeat of the current tragic contraction of world GDP and help develop prudential lending and regulatory practices by comparing the path various financial intermediaries have followed. Using a data set on all commercial banks, savings banks and credit unions in the United States for the last 17 years allows for comparisons between types of intermediaries that permits for controls for a number of different settings. This data set is quite unusual in its breadth and depth and makes possible an assessment of conditions precipitating the financial collapse across financial forms.

The regulatory environment is likely to change with the advent of the Dodd-Frank legislation in the U.S. and globally as well due to stiffer capital requirements in the Basel Accords (Stefan Walter, 2010). Although there is likely to be changes in the regulatory environment for all financial institutions, a number of the changes come

about from a lack of appropriate oversight of proper lending safeguards, capital adequacy and firm governance.

The fallout from this financial crisis continues to be seen in the high number of institutional failures. From the start of 2008 until the end of 2010 there were 366 bank failures in the U.S. compared to 27 from the start of 2000 to the end of 2007.<sup>2</sup> Credit unions, although percentage wise their failures have been smaller they likewise have had trouble during the recession with 52 closures over the same three year period. This lack of failure during tough economic times and much smaller bailouts from the taxpayer make it no surprise that credit unions are the most common financial intermediary in the United States, and have been for some time. The institutional structure and practices differ quite a bit between credit unions, commercial banks and savings banks. Credit unions are financial cooperatives, one person-one vote rules prevail in determining management and are regulated by the National Credit Union Administration.

Credit unions being financial cooperatives are often seen as a friendlier alternative to large commercial banks, witnessed by the recent "Bank Transfer Day" movement in the Fall of 2011. An art-gallery owner from California, Kristen Christian helped start the campaign over her irritation with poor customer service and high fees (Gelles, 2011 and Dan Beucke, 2011). This on-going movement towards credit unions and community banks brought a number of new accounts into credit unions. This movement away from institutions that are seen as too big to

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<sup>2</sup> There were 45 failures in 2011 as of June 4th, 2011 for both commercial and savings banks combined (source FDIC). Eight credit unions have closed over this same period.

care for their customers, especially those with smaller accounts is a recurrent theme in the growth of credit unions. Alphonse Desjardins of Quebec Canada, inspired by the earlier efforts of Hermann Schulze-Delitzsch in Germany in the 1840's, helped found the first credit union in the United States in 1909 (McLanahan and McLanahan, 1990). Later efforts by Pierre Jay and Edward Filene of Boston helped grow the credit union movement so that by 1970 there were over 23,000 credit unions in the U.S. (Klinedinst and Rock, 1993). The "Self Help Credit Union" of North Carolina carries on the tradition of not only offering services to those who are typically relatively neglected in the banking industry, but also has been active in supporting other cooperative firms and small businesses (Self Help, 2012).

Commercial banks and savings banks<sup>3</sup> in the United States may be publicly traded joint stock companies and usually, especially commercial banks, have more diverse portfolios than credit unions and are regulated by the Federal Deposit Insurance Corporation or the Office of Thrift Supervision. To the average consumer sometimes the difference between these institutions is not apparent, but clearly the financial performance during this crisis and earlier crises often offer stark comparisons.

The next section will discuss the theory on different financial institutions and performance. The third section will examine the data used here and the empirical approach. The final two parts of the paper will focus on the empirical results and the policy implications that follow.

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<sup>3</sup> Savings banks and savings associations are grouped together here.

## II. Theory

Credit unions and banks have a long history in the U.S. Although they generally fill a different niche in the market, they compete in some cases quite fiercely. Credit unions as financial cooperatives, based on the principle of one person-one vote, are non-profit institutions. Hence when comparing banks and credit unions a major question to be dealt with is what is the appropriate metric across such dissimilar institutions. Reporting to stockholders who want a good return on investments, managers would be keen to follow the return on assets (ROA). Credit unions, however, may be modeled as maximizing their shareholders income, quite a different maximand since for example the return retained by the credit union may make the income from deposits smaller for the shareholder (Bauer, 2010 and Sollenberger, 2008). Efficiency measures may sometimes work across institutions, but still typically suffer from the same confounding problems as the return on assets criterion. The ability to survive adverse conditions, contributions to the community (or minus in the case of bailouts), assets per employee or assets per dollar spent on salaries are all commonly used metrics.

Credit unions are typically much smaller than banks, hence their role as a small town lender is often similar to small banks. Like small banks in rural areas they play a key role in economic development by allowing small businesses the cash needed to get started or to continue to operate. This help to businesses is often indirect in the form of loans to an individual for home equity or personal loans (credit unions

are proscribed by law to limit their business lending to 12.25 percent of assets<sup>4</sup>). In the U.S. then the credit union often plays the role of the Grameen bank by helping out small businesses. Certainly a useful metric then would be how many successful businesses started out with a loan from a credit union, savings bank or commercial bank, but alas this data is not readily available. Another metric that could be explored is the development of social capital (Aoki, 2010 and Klinedinst, 2007). How much trust does a customer feel towards their intermediary may be a useful metric if this could be measured. Does this trusting relationship depend on customer relations' strategies that may for example, at least temporarily, cause more employees to be added and then hurt the "bottom line?"

### **III. Data and Methodology**

The data set covers all credit unions and banks in the United States from 1994 until December 2010, available from the FDIC and the National Credit Union Association (NCUA). Altogether there are 331,289 observations over the seventeen-year period.

Determining credit union and bank performance could be done, as mentioned already, by looking at returns on assets, net charge-offs, asset growth, number of failures, variants of the value-added approach or assets per employee.<sup>5</sup>

Generally the functional forms estimated can be posited as:

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<sup>4</sup> Credit unions are actively trying to increase this limit to 27.5 percent of assets arguing that this would create thousands of jobs and help diversify portfolios.

<sup>5</sup> See for example, Sollenberger (2008), Greer and Rhoades (1977), Lieberman and Asaba (1997), Berger and Humphrey (1992), Goddard J., McKillop D. and Wilson J. (2008), and Park and Weber (2006).

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \quad (1)$$

The performance indicator,  $Y_{it}$ , used here is return on assets. The intercept,  $\alpha_i$ , captures firm specific factors which may be otherwise unseen, while the  $X$  matrix contains policy variables, state dummies, regional and time dummies to capture exogenous contemporaneous shocks. The use of firm specific intercepts helps to eliminate the bias that may be due, for example, to larger firms having the ability to use better technology or stronger market power. The time invariance of a credit union dummy variable that is used would in a fixed effects model mean these estimates would be unavailable. Using a random effects estimator allows us to keep this time invariant variable. The robust Huber-White sandwich estimator allowed estimates of the standard errors in the presence of potential heterogeneity over such a diverse range of institutions.<sup>6</sup> Possible endogeneity problems may arise, hence to correct for possible non-spherical errors terms the instrumental variable technique developed by Hausman and Taylor (1981) is used. This technique partitions the right hand side variables such that equation one can be rewritten as:

$$Y_{it} = \alpha_i + \beta X_{it} + \gamma Z_{it} + \varepsilon_{it} \quad (2)$$

Here  $X_{it}$  is assumed to be exogenous and  $Z_{it}$  contains elements that may be endogenous. Using a generalized instrumental variable estimator on this equation gives statistics that are asymptotically valid. This method allows estimation of the primary variable examined here, the time invariant dummies for whether the institution is a credit union, savings

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<sup>6</sup> White (1980).



bank or a commercial bank.<sup>7</sup> To allow a degree of robustness to the results and mimic to some extent the wide range of estimators in the literature a number of specifications are used such as measuring the variables in levels or in logarithms, fixed effects, etc.

#### **IV. Results**

Credit unions are the most numerous financial intermediary in the U.S. as can be seen in Table 1 where they make up just over 50 percent of the observations. Next in number are commercial banks with about 42 percent of the observations, with savings banks making up the remainder. The rate of return on assets is highest at commercial banks and lower at credit unions as theory would suggest and even lower at savings banks that have been hard hit by the decline in the housing industry. Total assets for intermediaries average \$569 million in 2010 dollars. Commercial and savings banks average about 15 times the assets of credit unions at 67.2 million. It is interesting to note that there are commercial banks that individually have more assets than all the credit unions combined (e.g., J. P. Morgan with \$1.78 trillion versus the combined assets of credit unions in 2010 of \$934 billion). The data on the number of employees is similar to that of real assets with the banks being eight to ten times as large as the average credit union.

Assets per employee average about \$5.1 million dollars overall with savings banks having the highest ratio at \$6.4 million dollars. Loans to insiders as a percent of assets, a potential loss to shareholders and members, averages about 0.43 %, again commercial banks and credit unions are similar, 0.47 and 0.46 percent

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<sup>7</sup> Woolridge 2006, p. 327, Baltagi and Khanti-Akom (1990) and Baltagi (2005).

respectively, with savings banks much smaller at 0.16 percent. The next series of variables relate to the asset portfolio. First mortgages average 13 percent overall with savings banks having the highest percent. Adjustable rate mortgages, which often were a problem in the housing collapse (Hampel et al, 2008) average 6.5 percent, with credit unions having just 2 percent. Commercial and industrial loans average 10.7 percent with credit unions having just 1.6 percent and as expected commercial having the most. Credit card loans have a 3.7 percent average overall with credit unions having the highest percent at about 4.1 percent. Mortgage-backed securities average 9.6 percent of assets with credit unions having an average of just 0.06 percent. The last variable included in Table 1 is net charge-offs, uncollectable obligations minus that recovered. The average is about 55 basis points with commercial banks having the highest average of about 61 basis points.

Given that there may be large differences in salaries the assets per dollar spent on salaries is also calculated in Table 2. The overall average is approximately 75\$, with both credit unions and commercial banks below the average. It is important to note that salaries sometimes make up a small percent of executive compensation at larger institutions since incentive payments in the form of bonuses, options, deferred compensation, etc. may approach 100 percent.<sup>8</sup> Hence consideration of just salaries would mean that the assets to salary figures stated here would be substantially overstated for large institutions. To mitigate the impact that the approximately 90,000 volunteers contribute to the bottom line for credit unions the

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<sup>8</sup> Sometimes "market research" or "computer repair" expense items have hidden corporate entertainment (Ferguson et al, 2010).

observations with zero compensation were not used (CUNA, 2012). To get around this problem and to make a comparison among similar sized institutions, the figures for "assets per dollar of salary" were also computed for all institutions with assets more than a billion dollars and also those under 50 million. In both divisions credit unions out perform commercial banks, which are below the average in each sub sample. In the case of the smaller institutions, where about 50 percent of the credit unions observations are, credit unions out performed both commercial and savings banks. These results in favor of the credit unions may be just "the tip of the iceberg" if all compensation and executive perks were available.

The regression results presented in Tables 3a-c and Table 4 generally increase in complexity in this unbalanced panel data set with 27,346 firms. Random effects models are in column three of Tables 3a-c, with Table 3b and Table 3c including time, regional and state dummies as well, all trying to capture unobservable differences due to managerial ability, technology, etc. The additional controls proved to be significant,<sup>9</sup> but this effort to show robustness through a number of functional forms is also sometimes plagued with multicollinearity which weakens the parameter estimates. A dummy for institutions with assets over \$50 billion, "too big to fail," is included to try and capture any effects that come from such a large size and that may cause systemic risk. The Hausman-Taylor model used in Table 4 takes into account the potential presence of endogeneity, which the Durbin-Wu-Hausman test showed to be present, hence Table 4 will be the main focus of the discussion on

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<sup>9</sup> F statistic of 242.58 with 66 degrees of freedom and a p value of 0.00.

the econometric results.<sup>10</sup> Table 3a starts the series by using the variables measured in raw levels and no controls for time, region and state. The OLS and random effects estimates show that credit unions and commercial banks, when controlling for large size, employees, and portfolio selection have a significantly better return on assets performance relative to savings banks. This performance edge holds up through all through Table 3. The "too big to fail" dummy was not always estimated with significance, but when it was in the Table 3 series it was measured as having a negative impact on ROA. The coefficient on employees when measured with precision was shown to have a positive impact on ROA. This might be picking up some scale effects and possibly greater service and coordination. Assets per dollar of salary was not often measured with accuracy, the strongest measurement in Table 3c is positive as might be expected. Loans to insiders in the Table 3 series was consistently shown to have a negative impact when significant. The portfolio variables in the Table 3 series were often estimated with precision as might be expected, but since the presence of endogeneity is indicated these estimates will be discussed in detail with Table 4.

Table 4 estimates account for endogeneity using all the controls. This table also allows a comparison between credit unions, commercial banks and savings banks. Typically the logarithmic estimators give more precise parameter estimates than do the specifications using levels of the raw data. Except for column 4 of Table 4 where the commercial bank dummy is positive and significant, the credit unions are predicted to have better ROA when all else is equal. The "too big to fail" dummy is

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<sup>10</sup>  $\chi^2$  of 8,900 with nine degrees of freedom and a p value of 0.00.

not significant across the table. Similar to the Table 3 results, the number of employees when significant is positive. The efficiency measure of assets per dollar of salary is also positive when measured precisely. Loans to insiders, a way to possibly measure hidden compensation here, unlike in the earlier estimates, is positive when significant. Credit card loans and net charge-offs are all measured to have a negative and significant impact on ROA. The other portfolio measures are typically estimated to be positive, except for commercial loans.

## **V. Policy Implications**

Credit unions although the most numerous financial intermediary in the United States have an important role to play in that their failure rates are much less than other financial institutions. The small size of the institution may be an important factor in developing strong ties to customers that lead not only to trust and loyalty, but also to engendering pertinent information to offer loans and other services that are prudentially sound. Finding a good metric to measure performance across institution types is a difficult problem that offers no easy solution. For example, return on assets (ROA) is commonly used in many industries, but for associations and financial cooperatives this is not commonly seen to be the organizations primary objective. Efficiency measures are also problematic in many cases for spanning institutional forms since what may be efficient in one setting may be counter productive in another. Acknowledging the caveats about using the ROA nevertheless that is the main metric used here to compare the performance of credit unions, savings banks and commercial banks. As would be expected the average

ROA at commercial banks is higher than found at credit unions and savings banks. The assets per dollar spent on reported salaries overall are smaller at credit unions and commercial banks, with savings banks being about 30 percent higher. When considering smaller institutions with assets under 50 million dollars, which include about 50 percent of the total observations and 79 percent of the credit unions, the credit unions have the best score. This score is likely to be improved upon when other forms of compensation are included (e.g., executive office space, jets, assistants, etc.). These figures do not even include various expenditures on other forms of compensation show a considerable advantage that credit unions have in efficiency. The adjustable rate mortgages which were notorious in a number of instances of predatory lending were found to be a much smaller percent of assets at credit unions than either commercial or savings banks. Another area that probably has helped the credit unions fare better in this collapse is the much smaller percent of mortgage-backed securities, just 0.6 percent of the overall average.

The estimated equations show that when controls for size, region and portfolio distribution are taken into consideration that credit unions are often estimated to have a better ROA than savings banks and possibly commercial banks, even though this is often not taken to be the primary goal of the credit unions. This reverses the ranking of ROA seen in simple aggregate statistics. This higher ROA when "holding all else constant" may actually be improved upon since the clear majority of credit unions are smaller organizations that offer a more efficient control of assets for each dollar spent on salaries. No discernable impact in the "too big to fail" category, here over \$50 billion in assets, was seen on ROA. A number of factors could be

responsible for this relatively strong performance with ROA and the lack of a large taxpayer bailout. This result could be from the network of trust that is often developed at credit unions in their goal to service their members, fewer cases of excessive executive compensation, the prudential avoidance of untenable adjustable loans, avoidance of mortgage-backed securities whose pricing was questionable and better regulatory oversight are all probably contributing influences. The small size of these financial cooperatives could give them an information advantage that allows for better decision-making about a host of concerns, such as loan selection, choice of executives and their compensation, community awareness and developing connections to other credit unions. Individually the fact that the credit unions might not take any taxpayer money, strong ROA results in the regressions, more efficient control of assets through compensation, the perceived lack of corruption relative to a number of banks lately in the news (Smith, 2012) and more reasonable fees add up so much that to a number of Americans they have decided to transfer their assets to credit unions. Although the results indicate a number of areas that appear to be have some of the answers to the diverse financial results of various institutional forms, the size of the data collected here is enormous and all the complicating factors of the macroeconomy leaves a good deal for future research.

**Table 1**  
**Summary Statistics**

<b>Variable<sup>11</sup></b>	<b>Mean</b>	<b>St. Dev.</b>	<b>Min</b>	<b>Max</b>	<b>Number</b>
<b>Return on Assets***</b>	0.0075316	0.018461	-0.9269855	0.9197733	331,289
Credit Unions	0.0063958	0.016454	-0.9269855	0.7486125	166,647
Savings Banks	0.0058507	0.025132	-0.7087379	0.8340615	25,884
Commercial Banks	0.0092245	0.019140	-0.8148771	0.9197733	138,527
<b>Total assets***</b> (2010 dollars)	569 m. \$	13 b. \$	0	1.78 t. \$	331,289
Credit Union	67.2 m. \$	386 m. \$	0	44.2 b. \$	166,647
Savings Banks	1.03 b. \$	7.1 b. \$	123,293 \$	370 b. \$	25,884
Commercial Banks	1.08 b. \$	19.6 b. \$	67240 \$	1.78 t. \$	138,527
<b>Employees***</b>	112	1944	0	231,333	331,289
Credit Union	20	80	0	7,303	166,647
Savings Banks	161	901	0	50,817	25,884
Commercial Banks	213	2,976	0	231,333	138,527
<b>Assets per***</b> <b>Employee</b> (2010 dollars)	5,087,797 \$	149 m. \$	0 \$	37.2 b. \$	331,289
Credit Union	3,309,364 \$	2.1 m. \$	0 \$	254 m. \$	166,647
Savings Banks	6,410,394 \$	13.6 m. \$	61,647 \$	940 m. \$	25,884
Commercial Banks	5,095,786 \$	228 m. \$	19,553 \$	37.2 b. \$	138,527
<b>Loans to Insiders</b> <b>as percent of</b> <b>assets***</b> (2010 dollars)	0.0043	0.0272	0	1.0959	331289
Credit Union	0.0046	0.0337	0	0.9640	166647
Savings Banks	0.0016	0.0119	0	0.7588	25884
Commercial Banks	0.0047	0.0175	0	1.0959	138527
<b>First mortgages***</b> <b>percent of</b>	0.1350393	0.1305835	0	0.991595	331289

<sup>11</sup> \*\*\*, \*\*, and \* indicating significance at the 1, 5 and 10 percent level, respectively for difference in means.



<b>assets<sup>12</sup></b>					
Credit Union	0.2034629	0.1128349	0	0.9145243	166,647
Savings Banks	0.2222669	0.2374389	0	0.991595	25,884
Commercial Banks	0.1149997	0.1017258	0	0.9665815	138,527
<b>Adjustable first*** mortgages percent of assets</b>	0.0674228	0.0805795	0	0.9111944	331,289
Credit Union	0.0215865	0.0395383	0	0.7730708	166,647
Savings Banks	0.2068402	0.1641324	0	0.9111944	25,884
Commercial Banks	0.0466826	0.0699852	0	0.8563153	138,527
<b>Commercial and industrial loans*** percent of assets</b>	0.1065534	0.0710911	0	1.0	331,289
Credit Union	0.0160559	0.0276117	0	1.0	166,647
Savings Banks	0.0325093	0.0400408	0	0.6306143	25,884
Commercial Banks	0.1259102	0.0750369	0	0.9616175	138,527
<b>Credit card loans*** percent of assets</b>	0.0371361	0.0458483	0	1.0	331,289
Credit Union	0.0411833	0.0348321	0	0.9757313	166,647
Savings Banks	0.0185680	0.0355006	0	1.0	25,884
Commercial Banks	0.0401361	0.0563912	0	1.0	138,527
<b>Mortgage-backed securities*** percent of assets</b>	0.0960509	0.0782623	0	0.9672325	331,289
Credit Union	0.0005613	0.0037818	0	0.3116819	166,647
Savings Banks	0.1582456	0.1373305	0	0.9649894	25,884
Commercial Banks	0.0925099	0.0882607	0	0.9672325	138,527
<b>Net charge-offs*** percent of assets</b>	0.0055542	0.0169807	-1.076378	5.778124	331,289
Credit Union	0.0041368	0.0103099	-0.4261894	0.6933583	166,647
Savings Banks	0.0032106	0.0136756	-1.076378	1.683438	25,884
Commercial Banks	0.0060781	0.0229094	-0.0685947	5.778124	138,527

<sup>12</sup> Note the figure for savings banks and commercial banks includes residences with up to four families.

Table 2

## Assets per Dollar of Salary by Different Firm Sizes

Variable <sup>13</sup>	Mean	St. Dev.	95% Confidence Interval	Number
<b>All Firms</b>				
<b>Assets per Dollar of Salary<sup>14</sup></b> (2010 dollars)	75.38 \$	0.68	74.06-76.71	322,232
Credit Union	63.84 \$	0.32	63.2-64.48	158158
Savings Banks	100.45 \$	1.75	97.02-103.88	25871
Commercial Banks	73.11 \$	0.79	71.57-74.66	138203
<b>Firms with over a Billion dollars in Assets</b>				
<b>Assets per Dollar of Salary for firms with Assets over 1 billion</b> (2010 dollars)	79.21 \$	0.88	77.49-80.93	12,976
Credit Union	80.94 \$	1.03	78.93-82.96	1,571
Savings Banks	112.88 \$	2.54	107.90-117.86	3,022
Commercial Banks	75.41 \$	0.93	73.58-77.24	8,383
<b>Firms with under 50 million dollars in Assets</b>				
<b>Assets per Dollar of Salary for firms with Assets under 50 million</b> (2010 dollars)	52.70 \$	0.18	52.35-53.04	161,051
Credit Union	54.10 \$	0.07	53.95-54.24	125,048
Savings Banks	42.92 \$	1.47	40.05-45.79	3,709
Commercial Banks	52.02 \$	0.36	51.31-52.74	32,294

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<sup>14</sup> Note that the figures here were computed from only greater than zero entries of assets and real compensation. This involves a slight bias against credit unions that in a number of cases use only unpaid volunteers.

**Table 3a.**  
**Return on Assets, U.S. Data 1994-2010.**  
**Variables measured without logarithms and controls for time, region and state.**  
 (Dependent variable is return on assets. Savings Bank is base excluded dummy.  
 Standard errors are in parentheses<sup>15</sup>)

	(1) OLS	(2) Fixed Effects	(3) Random Effects
Credit Union Dummy	0.000861*** (0.000148)	(omitted)	0.0015946** (0.0007722)
Commercial Bank Dummy	0.0048358*** (0.0001339)	(omitted)	0.002228*** (0.0007532)
"Too Big to Fail" Dummy <sup>16</sup>	-0.0016952* (0.0009679)	-0.0030203*** (0.0010644)	-.0025717*** (0.0009763)
Employees	8.05e-08*** (1.92e-08)	-9.29e-09 (1.60e-08)	1.85e-08 (1.69e-08)
Assets per dollar on Salary	-8.49e-09 (5.26e-09)	-3.71e-09 (2.36e-09)	-3.06e-09 (2.16e-09)
Loans to Insiders, percent of assets	-0.0282449*** (0.0012164)	0.0042248 (0.0028392)	-.0018774 (0.0026551)
First Mortgages, percent of assets	-0.0012449 *** (0.0002592)	-.00044709 *** (0.0005164)	-.0003625*** (0.0004451)
Adjustable First Mortgages, percent of assets	0.0044761 *** (0.0004511)	0.0156699 *** (0.0011472)	0.0141604*** (0.0010759)
Commercial Loans, percent of assets	-0.0112431*** (0.0005705)	0.0094743*** (0.001506)	0.0057281*** (0.0013453)
Credit card Loans, percent of assets	0.028231*** (0.0006908)	-0.0132543 (0.0099258)	-.0026764 (.0083319)
Mortgage Backed Securities percent of assets	-0.0027951*** (0.000445)	-0.0014713 (0.0013848)	-.0017341 (0.0012619)
Net Charge-Offs, percent of assets	-0.2142721*** (0.0022753)	-0.2212327* (0.1097574)	-.2205325 * (1107766)
Time Dummies	no	no	no
Region Dummies	no	no	no
State Dummies	no	no	no
N	322,239	322,239	322,239
Number of Groups		27,346	27,346
Wald test	1136.76	48.89	567.91

<sup>15</sup> \*\*\*, \*\*, and \* indicating significance at the 1, 5 and 10 percent level, respectively.

<sup>16</sup> Firms with over \$50 billion in assets. There were 494 observations in this group, 56 for savings banks and the rest were commercial banks.

**Table 3b.**  
**Return on Assets, U.S. Data 1994-2010.**  
**Variables measured without logarithms and with controls for time, region and state.**  
 (Dependent variable is return on assets. Savings Bank is base excluded dummy.  
 Standard errors are in parentheses<sup>17</sup>)

	(1) OLS	(2) Fixed Effects	(3) Random Effects
Credit Union Dummy	0.0008004*** (0.0001474)	(omitted)	0.0018975** (0.0007541)
Commercial Bank Dummy	0.0040478*** (0.0001358)	(omitted)	0.0014898** (0.0007494)
"Too Big to Fail" Dummy <sup>18</sup>	-0.0004931 (0.0009515)	0.0007227 (0.0013978)	-0.0001973 (0.0009217)
Employees	9.31e-08*** (1.89e-08)	-1.11e-08 (8.13e-08)	5.42e-08* (3.16e-08)
Assets per dollar on Salary	-8.90e-09* (5.16e-09)	-3.42e-09 (2.23e-09)	-2.68e-09 (2.03e-09)
Loans to Insiders, percent of assets	-0.0332867*** (0.0012018)	-0.000754 (0.00277)	-0.0068569*** (0.0026413)
First Mortgages, percent of assets	0.0029535*** (0.0002657)	0.0023695*** (0.0004281)	0.0030915*** (0.0004184)
Adjustable First Mortgages, percent of assets	-0.0014227*** (0.0004577)	0.0043452*** (0.0009693)	0.0033728 *** (0.0009046)
Commercial Loans, percent of assets	-0.0086353*** (0.0005669)	0.0124782*** (0.0014872)	0.0086617*** (0.0013471)
Credit card Loans, percent of assets	0.0258499*** (0.0006929)	-0.0213996** (0.0094712)	-0.0090475 (0.0082232)
Mortgage Backed Securities percent of assets	-0.002042*** (0.0004425)	0.0024609* (0.0014229)	0.0016224 (0.0013068)
Net Charge-Offs, percent of assets	-0.1959803*** (0.002245)	-0.2026724* (0.1011613)	-0.2019155* (0.1021729)
Time Dummies	yes	yes	yes
Region Dummies	yes	yes	yes
State Dummies	yes	yes	yes
N	322,239	322,239	322,239
Number of Groups		27,346	27,346
Wald test	987.81	460,000	14293.84

<sup>17</sup> \*\*\*, \*\*, and \* indicating significance at the 1, 5 and 10 percent level, respectively.

<sup>18</sup> Firms with over \$50 billion in assets. There were 494 observations in this group, 56 for savings banks and the rest were commercial banks.

**Table 3c.**  
**Return on Assets, U.S. Data 1994-2010.**  
**Variables measured with logarithms and with controls for time, region and state.**  
 (Dependent variable is return on assets. Savings Bank is base excluded dummy.  
 Standard errors are in parentheses<sup>19</sup>)

	(1) OLS	(2) Fixed Effects	(3) Random Effects
Credit Union Dummy	0.0678723*** (0.010928)	(omitted)	0.072008*** (0.022716)
Commercial Bank Dummy	0.4951701*** (0.0081232)	(omitted)	0.4127601*** (0.0177886)
"Too Big to Fail" Dummy <sup>20</sup>	-0.1889337*** (0.0432062)	0.0352708 (0.0760369)	0.0041279 (0.0659545)
Employees	0.047908*** (0.0011725)	0.0021602 (0.0021087)	0.0204948*** (0.0018783)
Assets per dollar on Salary	0.1019395*** (0.0038665)	0.0997372*** (0.0165801)	0.0858181*** (0.0122425)
Loans to Insiders, percent of assets	-0.0126914*** (0.0007224)	0.0056238*** (0.0013383)	-0.0013934 (0.001196)
First Mortgages, percent of assets	-0.0008499* (0.0004453)	-0.0017555 (0.0011077)	0.0012941 (0.000837)
Adjustable First Mortgages, percent of assets	0.0012348*** (0.000459)	0.0057563*** (0.0008419)	0.0048809*** (0.0006949)
Commercial Loans, percent of assets	-0.00855*** (0.000767)	-0.0054067*** (0.0013157)	-0.0063819*** (0.0012318)
Credit card Loans, percent of assets	-0.0009620** (0.000444)	-0.0172993*** (0.00101)	-0.0068086*** (0.0007609)
Mortgage Backed Securities percent of assets	-0.0055001*** (0.0005615)	0.0020311* (0.0010979)	-0.0001319 (0.0008958)
Net Charge-Offs, percent of assets	-0.0082266*** (0.0007981)	-0.0298296*** (0.0012752)	-0.0226016*** (0.0012166)
Time Dummies	yes	yes	yes
Region Dummies	yes	yes	yes
State Dummies	yes	yes	yes
N	255,250	255,250	255,250
Number of Groups		26,332	26,332
Wald test	434.29	493.52	51,281.76

<sup>19</sup> \*\*\*, \*\*, and \* indicating significance at the 1, 5 and 10 percent level, respectively.

<sup>20</sup> Firms with over \$50 billion in assets. There were 494 observations in this group, 56 for savings banks and the rest were commercial banks.

**Table 4**  
**Return on Assets, U.S. Data 1994-2010.**  
**Endogenous Random Effects with controls for time, region and state.**  
**Measured in levels and logarithms with savings banks and credit unions as the dummy base.**  
 (Dependent variable is return on assets. Standard errors are in parentheses<sup>21</sup>)

	(1) Levels	(2) Logarithms	(3) Levels	(4) Logarithms
Savings Bank Dummy			-0.001534*** (0.0004719)	-0.0135392 (0.0260772)
Credit Union Dummy	0.0023391 *** (0.0004738)	0.0646235** (0.025949)		
Commercial Bank Dummy	0.0012249 *** (0.0004018)	0.3769703*** (0.0220849)	-0.0008067** (0.0003468)	0.3261944*** (0.0205846)
"Too Big to Fail" Dummy <sup>22</sup>	-0.0003397 (0.0010276)	0.0276834 (0.0583212)	-0.0003506 (0.0010276)	0.026567 (0.0583868)
Employees	3.63e-08 (2.74e-08)	0.0048326*** (0.0014751)	3.64e-08 (2.74e-08)	0.0046287*** (0.001474)
Assets per dollar on Salary	-3.57e-09 (4.60e-09)	0.1022027 *** (0.0067076)	-3.57e-09 (4.60e-09)	0.021882*** (0.006702)
Loans to Insiders, percent of assets	-0.0015082 (0.0014046)	0.0056681 *** (0.0009002)	-0.001522 (0.0014045)	0.0056536*** (0.0008994)
First Mortgages, percent of assets	0.002559*** (0.000366)	-0.0004313 (0.0007368)	0.0025926*** (0.0003659)	-0.00052 (0.0007362)
Adjustable First Mortgages, percent of assets	0.0041183 *** (0.0005821)	0.0058381*** (0.0006318)	0.004149*** (0.000582)	0.0058294*** (0.0006312)
Commercial Loans, percent of assets	0.0122114 *** (0.0007459)	-0.0050575 *** (0.0009011)	0.0121676*** (0.0007458)	-0.005143*** (0.0009003)
Credit card Loans, percent of assets	-0.0205478 *** (0.0010991)	-0.0157309 *** (0.0007307)	-0.0205472*** (0.001099)	-0.0158798*** (0.0007304)
Mortgage Backed Securities, percent of assets	0.0021896 *** (0.0005965)	0.0018825 ** (0.0010979)	0.0022084*** (0.0005964)	0.0018848** (0.0008464)
Net Charge-Offs, percent of assets	-0.2030538 *** (0.001904)	-0.0293371*** (0.0008735)	-0.2030503*** (0.001904)	-0.0294069*** (0.0008728)
Time Dummies	yes	yes	yes	yes
Region Dummies	yes	yes	yes	yes
State Dummies	yes	yes	yes	yes
N	322,239	255,250	322,239	255,250
Number of Groups	27,346	26,332	27,346	26,332
Wald test	28,245.47	27,788.50	28248.18	27,825.42

<sup>21</sup> \*\*\*, \*\*, and \* indicating significance at the 1, 5 and 10 percent level, respectively.

<sup>22</sup> Firms with over \$50 billion in assets. There were 494 observations in this group, 56 for savings banks and the rest were commercial banks.

## References

- Aoki, Masahiko, 2010, " "Individual" Social Capital, "Social" Networks, and Their Linkages to Economic Game," Annual World Bank Conference on Development Economics.
- Baltagi, B. H., 2005. *Econometric Analysis of Panel Data*, Wiley, New York
- Baltagi, B. H. and S. Khanti-Akom, 1990. "On the Efficient Estimation with Panel Data: An Empirical Comparison of Instrumental Variable Estimators, *Journal of Applied Econometrics*, 5, 401-406.
- Berger, A.N. and Humphrey, D.B. (1992). Megamergers in banking and the use of cost efficiency as an antitrust defense. *The Antitrust Bulletin*, Fall: 541-600.
- Beucke, Dan, November 3, 2011. "Bank Fees are a Gift for Credit Unions," Business Week.
- Bauer, Keldon, 2010, "What does credit union ROA really measure?, <http://southwesternfinance.org/conf-2010/C5-1.pdf>.
- Blinder, Alan S. and Mark Zandi, 2010, "How the Great Recession Was Brought to an End," Moody's, <http://www.economy.com/mark-zandi/documents/End-of-Great-Recession.pdf>.
- Congressional Oversight Panel, "The AIG Rescue, Its Impact on Markets, and the Government's Exit Strategy," <http://cop.senate.gov/documents/cop-061010-report.pdf> accessed June 30, 2010.
- Congressional Oversight Panel, "The Final Report of the Congressional Oversight Panel," <http://cybercemetery.unt.edu/archive/cop/20110401232213/http://cop.senate.gov/documents/cop-031611-report.pdf>, March 16, 2011.
- CUNA, Credit Union National Association, 2012. "Basic Information about Credit Unions," <http://www.cuna.org/public/press/credit-union-basics>, April 3, 2012.
- Charles Ferguson, Beck C. and Bolt, 2010. "Inside Job", [http://www.sonyclassics.com/awards-information/insidejob\\_screenplay.pdf](http://www.sonyclassics.com/awards-information/insidejob_screenplay.pdf).
- Goddard J., McKillop D. and Wilson J. 2008. " Consolidation in the US Credit Union Sector: Determinants of Failure and Acquisition", FDIC, [www.fdic.gov/bank/analytical/cfr/Goddard\\_McKillop\\_Wilson.pdf](http://www.fdic.gov/bank/analytical/cfr/Goddard_McKillop_Wilson.pdf).
- Gelles, Jeffrey, November 6, 2011. "Bank Transfer Day a boon to credit unions, small banks," Philadelphia Inquirer.

- Greer, Douglas F. and Stephen A. Rhoades, 1977. "Test of the Reserve Labour Hypothesis" *The Economic Journal*, Vol. 87, No. 346 (Jun., 1977), pp. 290-299
- Hampel, Bill, Mike Schenk, and Steve Rick, 2008. "The U.S. Mortgage Crisis Causes, Effects and Outlook Including Suggested Credit Union Responses" Madison, Wisconsin: Credit Union National Association.
- Klinedinst, Mark, 2007. "Cooperative Comebacks: Resilience in the Face of the Hurricane Katrina Catastrophe," Filene Research Monographs.
- and Charles Rock, 1993. "United States Credit Unions as Supporting Structures," in Mahlingham and Smith, eds., *Labour-Managed Market Economies*, pp. 258-269. Mittal Publications, New Delhi, India, 1993.
- Lieberman, Marvin B. and Shigeru Asaba, 1997. "Inventory Reduction and Productivity Growth: A Comparison of Japanese and US Automotive Sectors," *Managerial and Decision Economics*, Vol. 18, pp. 73-85.
- McLanahan, Jack and Connie, 1990. Cooperative/Credit Union Dictionary and Reference. Cooperative Alumni Association.
- Park, Kang H. and William L. Weber, 2006. "Profitability of Korean banks: Test of market structure versus efficient structure," *Journal of Economics and Business*, Vol. 58, pp. 222-239.
- Self Help Credit Union, 2012. <http://www.self-help.org/>.
- Smith, Greg, 2012. "Why I am Leaving Goldman Sachs," New York Times, March 14.
- Sollenberger, Harold M., 2008, Financially "High-Performing" Credit Unions: Evaluating Performance within a Strategic Financial Vision," Filene Research Monographs.
- Walter, Stefan, Secretary General, "Basel III and Financial Stability," Basel Committee on Banking Supervision, at the 5th Biennial Conference on Risk Management and Supervision, Financial Stability Institute, Bank for International Settlements, Basel, 3-4 November 2010.
- White, H. 1980. "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica* 48, 817-838.
- Woolridge, Jeffrey M. 2006. *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge Massachusetts.