6-18-2019

Community Bank Competition and Distress Events

Alejandro Pacheco
apach006@fiu.edu

FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

COMMUNITY BANK COMPETITION AND DISTRESS EVENTS

A dissertation submitted in partial fulfillment

of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

BUSINESS ADMINISTRATION

by

Alejandro Pacheco

2019

To: Dean Joanne Li
College of Business

This dissertation, written by Alejandro Pacheco, and entitled Community Bank Competition and Distress Events, having been approved in respect to style and intellectual content, is referred to you for judgement.

We have read this dissertation and recommend that it be approved.

_____
Chun-Hao Chang

_____
Wen-Hsiu Chou

_____
Weidong Xia

_____
Edward R. Lawrence, Major Professor

Date of Defense: June 18, 2019

The dissertation of Alejandro Pacheco is approved.

_____
Dean Joanne Li
College of Business

_____
Andres G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2019

ABSTRACT OF THE DISSERTATION

COMMUNITY BANK COMPETITION AND DISTRESS EVENTS

by

Alejandro Pacheco

Florida International University, 2019

Miami, Florida

Professor Edward R. Lawrence, Major Professor

The Small Business Job Protection Act of 1996 allows US banks to adopt the Subchapter S status and avoid double taxation. Many banks adopt the Subchapter S status and then transition back to C banks. In our first analysis, we investigate the reasons why these Subchapter S banks convert back to C banks and find that Subchapter S banks that experience financial distress most likely convert to the C status. Post-conversion we observe a marked increase in equity and a decline in risk measures alongside improving profitability ratios. The limit on number of shareholders inherent in Subchapter S banks inhibits their ability to counter poor performance by restricting their access to capital markets. The Subchapter S banks in distress convert to C banks to access the additional equity needed to rebalance their loan portfolio and remain viable.

In our second analysis, we investigate the factors that explain mergers and acquisitions (M&A), defaults, and organizational conversions by Subchapter S banks and commercial (C) banks. Our results indicate that Subchapter S banks in financial distress first seek to undergo an M&A. Second, they seek to convert to the C status if the attainment of equity capital is possible and is sufficient to rebalance their portfolio and survive. Lastly, these banks default if the first two options are not possible. For C banks, the conversion to

an S bank is made from a position of profitability where they convert to benefit from the tax exemption. Similar to S banks, C banks under financial distress attempt to undergo M&A first and default if M&A is not possible.

Lastly, we compare competitive rates between C corporation banks, Subchapter S banks and Credit Unions. In this study, we perform an extensive analysis on 30 different bank products over 12 years. Our results indicate that while Subchapter S banks and credit unions both benefit from the tax exemption status, the tax savings are not passed onto customers in similar ways. Credit unions seem to pass tax savings onto all deposit and loan products when compared to C corporation banks while Subchapter S banks only do so for a few select products.

TABLE OF CONTENTS

CHAPTER PAGE

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

FIGURE PAGE

ABBREVIATIONS AND ACRONYMS

C Bank	Commercial Bank
S Bank	Subchapter S Bank
L&L	Loans and Leases
ROAA	Return on Average Assets
ROAE	Return on Average Equity
Net Int Inc	Net Interest Income
AEA	Average Earning Assets
Op Exp	Operating Expense
Op Rev	Operating Revenue
Com Div	Common Dividends
NPL	Nonperforming Loans
NPA	Nonperforming Assets
Net CO	Net Charge-offs
CD	Certificate of Deposit
LTV	Loan to Value
Home Eq	Home Equity
LoC	Line of Credit
ARM	Adjustable Rate Mortgage
SBJPA	Small Business Jobs Protection Act

CHAPTER 1: WHY DO SUBCHAPTER S BANKS CONVERT BACK TO C BANKS?

1.1 Introduction

Internal Revenue Services (IRS) gives all new corporations a C corporation status and imposes taxes on company profits separately from its owners. The Small Business Job Protection Act (SBJPA) of 1996 allows banks to convert from C status to Subchapter S corporations and avoid double taxation. In the Subchapter S status, bank is treated as a partnership for tax purposes and the shareholders pay federal income taxes on pass-through earnings and avoid taxes at the corporate level. Prior research in this area has mainly focused on identifying the factors that influence a C bank's decision to adopt the Subchapter S status. None of the papers so far has acknowledged the conversion of Subchapter S banks to C banks and hence there is no analysis of such change. Since 1998, significant number of Subchapter S banks have converted back to C banks. In this paper, we investigate the reasons why Subchapter S banks forgo their tax benefits that enables them to compete with larger institutions. Our results demonstrate significant financial distress in the banks that opt out of the Subchapter S status. In the years prior to opting out, these banks experience decreased levels of profitability ratios and increased levels of nonperforming assets. We also find that after conversion to the C status, banks have increased levels of equity and reduced levels of risk across the board. The shareholder limit of 100 imposed on Subchapter S banks inhibits their ability to access the equity capital needed to rebalance their asset portfolio. Subchapter S banks opt out of the S status and revert to C banks to remain viable by accessing further shareholder equity.

Since the implementation of the SBJPA, there has been a steady increase in the number of Subchapter S banks[1] from 606 banks in 1997 to a peak of 2,418 S banks at the end of 2008. After the financial crisis the trend turned, and we are now observing a constant decline in both C and S banks. Figure 1.1 highlights this trend over time. We observe a constant decline in the number of regular commercial banks since the beginning of our sample period while number of Subchapter S banks have increased up until the financial crisis at which point they also began to decline in number. Figure 1.2 shows the number of conversions every year from the C status to Subchapter S. Prior research has focused on this sample group and factors that have led C banks to convert to Subchapter S banks. Figure 1.3 highlights our sample of interest, Subchapter S banks that convert to the C status. There have been 409 conversions of Subchapter S banks to C banks during our sample period. This trend in conversions has not declined like that for C banks as displayed in Figure 1.2 but rather has remained constant with a peak occurring shortly after the financial crisis of 2008. In this paper, we investigate the reasons why Subchapter S banks convert to the C status by analyzing a variety of risk and performance measures pre- and post-conversion.

Given the significant benefits to profitability that stem from the lack of double taxation, a Subchapter S bank will convert to the C status when in financial distress and needs more equity to survive or when it plans to grow more than what can be sustained

[1] The favorable tax treatment should interest all banks in adopting the Subchapter S status, but there are certain conditions that have to be satisfied in order to qualify as a Subchapter S institution. The restrictions include limits to one class of stock as well as on the type and the number of shareholders. The Subchapter S bank can have no more than 100 shareholders and it is confined to individual shareholders, estates, and exempt organizations described in section 401(a) , 501(c)(3) and certain trusts described in section 1361(c)(2)(A).

through available equity. The C status also provides benefits of net operating loss carryforwards that the Subchapter S election does not, which favors adoption of C status by loss making Subchapter S banks. Therefore, the loss banks currently experience while under the Subchapter S status must supersede the gains from the taxation benefit. This can occur when banks are in financial distress and sustaining significant losses. In this instance, the taxation benefit is rendered null as the losses are only utilized on the shareholder's taxes with no benefit to the company's future operations. Furthermore, these Subchapter S banks must be in such a financial position where they cannot stabilize their operations and lack additional equity. Had these Subchapter S banks been able to access additional equity through existing shareholders they might have been able to rebalance their non-performing asset portfolios and recover from the losses or could use the additional equity for growth. Based on above arguments for equity requirement either for survival or for growth, we hypothesize that the primary reason for conversion to the C status is the requirement for additional access to equity. This is due to restriction placed on banks that enact the Subchapter S election limiting their number of shareholders to 100. These 100 shareholders must be U.S. citizens or permanent residents and families count as one shareholder for the purposes of this limit. We test this line of reasoning by analyzing Subchapter S bank performance and risk factors pre- and post-conversion utilizing a variety of econometric tests common in the banking literature.

Our results show that Subchapter S banks convert to the C status due to a combination of financial distress and constrained equity. In the years prior to conversion, these banks display significant differences in their performance and risk measures compared to similar Subchapter S banks. Profitability measures are lower while risk

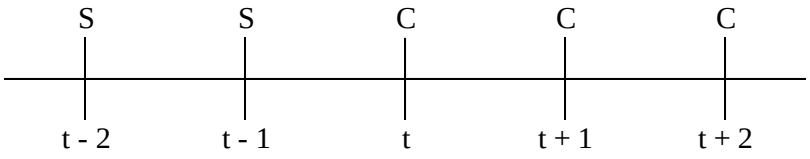
measures are higher. These differences continue to widen as we move in time towards the time of conversion. Post-conversion we observe a marked increase in equity and an improvement in all profitability ratios and reduction in risk measures. We believe that the shareholder limit of 100 enforced on Subchapter S banks impede access to capital markets and additional equity. This in turn makes it difficult for a Subchapter S bank to recover from poor performance or bad economic conditions.

The banking literature on Subchapter S banks has focused primarily on why C banks enact the S election. Our analysis remains unique and we believe the results add significant contributions to the community bank literature. Hodder, McAnally and Weaver (2003) find that banks are likely to convert to Subchapter S when conversion saves dividend taxes, avoids alternative minimum taxes and minimizes state income taxes. They find that banks alter their capital structure, sell appreciated assets, reduce NOL carryforwards, and set dividends to maximize conversion benefits prior to converting into Subchapter S corporations. Cyree, Hein and Koch (2010) find that banks adopting the Subchapter S status have higher dividend payout rates, higher profit growth, lower capital, and they rely more on core deposits. Our analysis contributes to the literature by highlighting new factors that explain the decision to change organizational forms. We utilize a large variety of variables commonly reported in the banking literature to portray levels of performance and risk.

1.2 Data

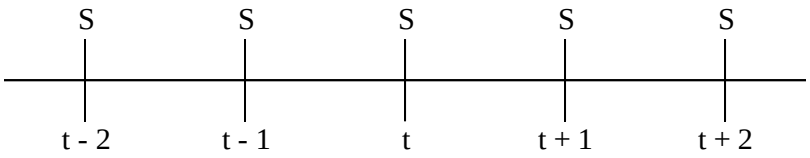
We collect the data on banks from the SNL database for the period of 1997 to 2018. Each bank in our sample has observations over five consecutive years. For our conversion group, these five years consist of two Subchapter S years prior to conversion and three C

status years during and post-conversion. The majority of conversions from Subchapter S to the C status occurred at the end of year while a few converted during the other three quarters. We use yearly data for our study, as the number of banks that converted in the middle of the year are few and are not expected to influence our results. In addition, annual bank statements are more reliable and the standard when conducting bank analysis. There are a few banks have converted from the Subchapter S status to the C status multiple times. We remove such banks from our analysis so that each bank in our conversion group only converts once during the sample period. Below we display the setup for our conversion group where S indicates the bank was under the Subchapter S status at the end of the year and C indicates the bank was under the C status at the end of the year. Year t indicates the year conversion from S to C took place.



Our control group observations consist of Subchapter S banks that never converted to the C status in our sample period. We include banks that originally started as C status banks and then converted to Subchapter S banks for our control group. These banks remained Subchapter S banks till the present time period or were acquired and thus removed from the sample for subsequent years. Each observation in our control group likewise consists of five consecutive years. Below we display the setup for our control group. Since a single bank can have multiple instances of the pattern below occurring, our control group is much larger than our conversion group. This is in our favor since we want to compare the conversion group banks to many control group Subchapter S banks during

the same time period. This allows us to compare the conversion group to a representative average S bank as measured by the control group.



Our original unfiltered dataset contains 409 conversions and 42,281 S-Bank-Years. To enhance comparability, we ensure both the conversion group and control group banks reside in the same state and year. Therefore, we remove observations that do not have a counterpart during the year or within the same state. After filtering for all the above mentioned and for missing data, our final sample consists of 176 observations in our conversion group and 10,286 observations in our control group. Our conversion group consists of banks that only converted once and so there are exactly 176 unique banks representing S banks that convert to C. Our control group consists of multiple observations representing the same banks and hence is larger in number the longer a bank has consecutively remained Subchapter S.

1.2.1 Variables

For our variables of interest, we utilize commonly reported measures of performance, leverage, and risk. For performance, we use profitability measures such as return on average assets and return on average equity. In addition, we measure the net interest income and net interest margin for a more detailed view of revenue. To measure efficiency, we analyze the ratio of operating expense to operating revenue. Operating expense here is simply non-interest expense, therefore our efficiency ratio measures how well a bank utilizes its resources. For leverage, we use total loans as a proportion of assets

and the ratio of total loans to total deposits. The first ratio provides a measure of what proportion of their business comprises of loans and leases while the second ratio shows how leveraged a bank is relative to their deposits. We also include the measure of equity to total assets as we hypothesize equity gain as the primary reason for Subchapter S banks conversion to the C status. This variable estimates the increase that stems from access to new shareholders. Additional measures of leverage include a factor measuring tier 1 capital as a proportion of assets and a factor measuring the risk-based capital ratio according Basel III standards.

To measure risk, we investigate variety of factors commonly reported in the literature. We use nonperforming loans and nonperforming assets, which provide insight into the company's financial health from their loan portfolio and asset portfolio. We also use net charge-offs to investigate how many assets were written off due to poor performance and repayment. Liquidity, which is measured as liquid assets divided by liabilities, provides information regarding how much debt a bank could cover before resorting to more costly measures. The yield cost spread, which is a measure of the difference between the gains on loans and costs of deposits, reflects the current portfolio profitability after considering the cost from deposits. Lastly, we include size (natural log of total assets) as a control in our analysis as we observe significant economies of scale in larger banks.

1.3 Methodology

We employ the OLS regression and the difference-in-differences methodology to compare the conversion group to the control group. We are interested in what factors

explain the choice to opt out of the Subchapter S state and these methods can provide results after controlling for a host of observable and unobservable effects.

1.3.1 Regression Analysis

Our main analysis results consist of the comparison between the conversion and control groups pre- and post-conversion. We seek to answer two distinct questions, the first is why these Subchapter S banks are opting out and the second is what outcome we can observe from this choice. The first question can provide insight into the state of the bank prior to the decision being made while the second question informs us what effect this choice had on the bank post-conversion.

To this end, we run the following multivariate regression model with our factors of interest as the dependent variable, $y_{i,t}$.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

Our estimate of interest, β_1, lies with the dummy variable, $S_{i,t}$, which is equal to 1 for our conversion group and equal to 0 for our control group. This β_1 coefficient informs us of the difference between the two groups pre- and post-conversion on the various factors we use and is what we primarily report in our tables. We control for size, location, and time effects in our regression. These control variables are represented as $X_{i,t}$ in the above regression model.

We repeat this regression for all five-time periods surrounding the event to obtain estimates indicating differences between our groups on each of these years. These estimates provide insight into how the conversion group bank changed over time compared to the representative S bank in our control group.

1.3.2 Difference-in-Differences (DID) Estimation

In addition to the OLS regression methodology, we use the Ashenfelter and Card's (1985) difference-in-differences (DID) methodology to measure the changes the bank undergoes, pre- and post-conversion, while controlling for additional unobserved factors. We use the following model,

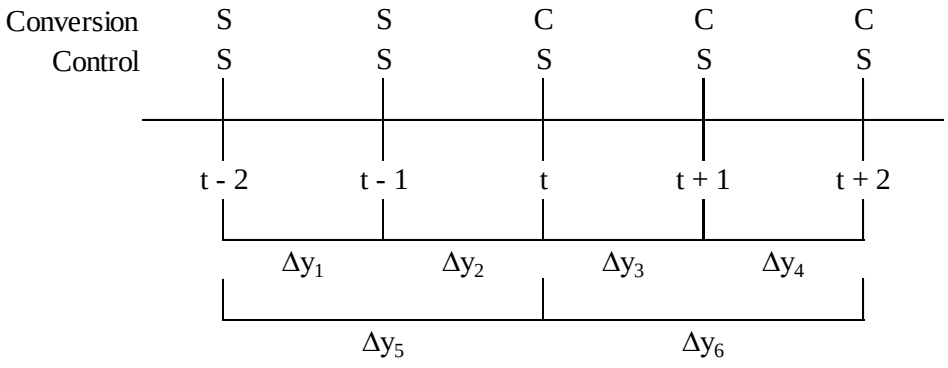
$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 T_{i,t} + \beta_3 S_{i,t} T_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

Where β_3 is our coefficient of interest as it is the difference-in-difference estimator. As before, $S_{i,t}$ is equal to 1 for our conversion group and 0 for our control group. $T_{i,t}$ is equal to 1 for the later period and equal to 0 for the earlier period. This dummy variable will change according to what time period we estimate.

This methodology allows us to control for additional effects the OLS regression methodology might have missed. Economic and market factors, individual bank specific factors, and time-period effects, are all controlled for under this model. The difference-in-differences methodology is a commonly used empirical estimation technique to measure the effect of a treatment or the impact of a change. β_1 in the above model measures the permanent difference between the conversion group and the control group. This is important since the treatment group in observational studies may not be the same as the control group pre-treatment. There may be a self-selection bias for the treatment group stemming from observable or unobservable factors. In our case, Subchapter S banks that undergo conversion may be significantly different to other Subchapter S banks even before conversion takes place. β_2 measures the time effect over the pre- post-treatment period. In our case we want to control for any time factors over the period we measure the difference. Finally, β_3 measures the actual change or difference between the groups that stems from

the event on the treatment group itself. In our case, β_3 will provide the real difference or change between our two groups pre- and post-conversion that does not simply stem from the permanent differences between the two groups. This benefit is incredibly important as it allows us to uncover the true effects from the conversion decision after the fact. Additionally, it allows us to measure real differences prior to conversion when both groups are Subchapter S banks.

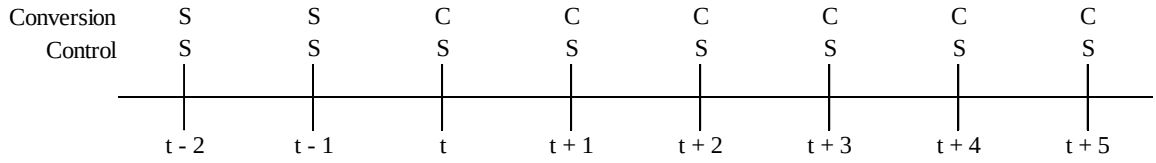
Utilizing the difference in difference methodology, we measure one- and two-year period differences between our groups. This test gives us information regarding how our conversion group changed every year relative to our control group. For the one-year periods, we perform the test every year. Since we have 5 total observation years for our conversion and control groups, this results in four difference in difference estimates for the one-year period tests. For the two-year periods, we perform two tests, one leading up to conversion and one post-conversion. These two tests give information regarding how our conversion group changed leading up to the conversion year and how the conversion affected the banks after the fact. The following figure shows these six tests and how they align with the time periods.



1.3.3 Robustness

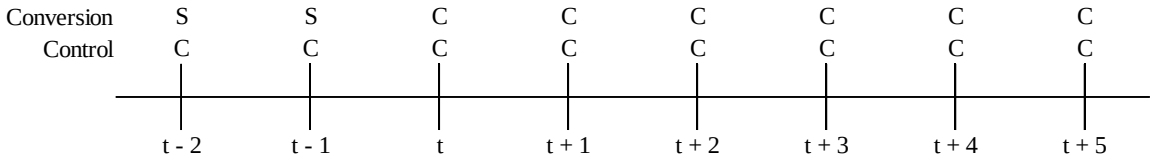
We chose the 5-year window for our analysis to optimize the amount of information we could observe while keeping the sample size relatively large. Since we require the banks in our conversion and control group to exist for the specified amount of time and have no missing data we filter out many observations. We would prefer an analysis that spanned further out pre- and post-conversion, but this is currently not possible without sacrificing significant power in our tests. Nonetheless, to ensure that our results post-conversion are representative of a real economic change within these banks we perform additional tests that span further years out.

The first set of additional tests push the last observation year one further until we reach 5 years post-conversion. Each test runs the original regression analysis on the new sample which is comprised of fewer banks as we require more years for each bank. The following figure demonstrates the limit of our additional tests where we compare a total of 8 years between our conversion and control group. If the results hold despite fewer observations, then we can be confident we are measuring a real effect and difference stemming from the conversion.



The second set of tests we perform for robustness compares our conversion group to regular C banks rather than S banks. Since our conversion groups ends up as regular C banks post-conversion it makes sense to compare the difference between these banks to regular C banks that have not undergone any significant events. This analysis is meant to

highlight whether the conversion group eventually converges to other C banks. In other words, we ask whether these now C banks, post-conversion, begin to look like other C banks as measured by our various factors. Additionally, we hope to see similar results compared to the S bank control group since our C bank control group will also be stable banks, albeit without the tax-exemption. The original regression analysis is repeated for this new sample and the number of years required is increased in each subsequent test to a maximum of 5 years post-conversion. The following figure demonstrates the limit of our additional tests where we compare a total of 8 years between our conversion and control group.



Lastly, the difference in difference test is also performed on our C bank control group to note differences pre- and post-conversion. This robustness test with an entirely different control group should not change the results significantly since the difference in difference methodology will take into account the permanent differences between the conversion and control group banks. In other words, firm specific characteristics will be controlled for and should not affect the real change observed over a period. Therefore, if our results hold for the pre- and post-conversion period when utilizing C banks as our control group, we can be confident that the changes observed are real and specific to S banks which convert to C. However, this strong confirmation in our robustness test only applies to the difference in difference methodology. We fully expect different estimates in our first regression analysis with C banks as the control group since that test does not take

into account the permanent differences prior to estimating the difference between the two groups.

1.4 Results

The main results of our study are in Tables 1.1, 1.2, and 1.3. Tables 1.4 through 1.11 display the results of our robustness tests. Table 1.1 provides summary statistics for the 5-year periods where we display the average and standard deviation of our factors for both groups. Since the 5-year period differs between observations, we control for time effects prior to estimating the average for each factor and group. This table helps us interpret the later results by observing what the baseline average is for each factor, year, and group. Table 1.2 provides the results from our regression analysis where we analyze the difference between the conversion and control group each year. Table 1.3 presents the difference in difference estimates for the six periods we measure where the first four estimates are for one-year periods and the last two estimates are for two-year periods.

Our primary aim with this study is to explain the choice to convert out of S and into C based on performance and risk factors commonly reported in the banking literature. Using the OLS and difference in difference methodologies, we analyze the difference between S banks that convert and S banks that do not. The first method analyzes the estimate from a dummy variable measuring the difference between our groups for different years. The second method analyzes the estimate from the difference in difference methodology where we look at the rate of change for our conversion group compared to our control group. In discussing these results, we divide the analysis into two parts, pre-conversion and post-conversion, as the former tests what factors explain the choice while the latter measures the change and whether it was a beneficial choice.

1.4.1 Pre-Conversion Results

The main results from our OLS regression analysis is in Table 1.2. Performance variables in the years preceding conversion show a marked difference in profitability (as measured by ROAA and ROAE), and in efficiency (as measured by Op Exp / Op Rev). Our results indicate that the choice to convert to C is not one made from a profitable position of growth but rather as a last resort method when losses are mounting. We observe an increase in the difference in profitability between both groups every year. The efficiency ratio, measured by operating expense to operating revenue, shows what portion of operating income non-interest expense takes up. The higher this value the less efficient an institution is using its resources.

From the risk perspective, we observe that the conversion group is overleveraged in their asset holdings relative to the control groups as measured by loans & leases to total assets and loans & leases to total deposits. This leverage alone in their loan to asset weight cannot cause poor performance, so we investigate the quality of the assets held by this group of banks to determine whether the leverage is beneficial or detrimental. The three variables measuring toxic assets, nonperforming loans, nonperforming assets, and net charge-offs, all indicate increased levels of past-due assets. As we approach the conversion period, we notice an increase in value of these factors as compared to our control group. Therefore, we conclude that the combination of increased levels of toxic assets and an over leveraged loan portfolio is what causes significant losses and financial distress in these banks.

Leverage also refers to the capital structure of a firm and we find distinct differences between our two groups. We observe significantly lower levels of equity capital ratios prior

to conversion for these Subchapter S banks. Three factors measure this kind of leverage, the tier 1 capital ratio, the risk-based capital ratio, and the equity to assets ratio. Each factor measures the capital structure of the firm in a different way but all point towards something similar, that our conversion group is suffering from lower levels of equity relative to their debt, even after accounting for different levels of risk in their assets.

Our second source of results come from the difference in difference analysis where we likewise compare our conversion group to the control group over different time intervals. Rather than compare the two groups in a single period, we test the difference between the two groups over a time interval which helps control for many unobserved factors affecting each bank. This second source of results should corroborate our first set of results and provide additional insight.

Our pre-conversion analysis only looks at the first column in Table 1.3 for our difference in difference analysis. We treat the change between $t-1$ to t to include effects from conversion and reserve that discussion for later. Between the $t-2$ and $t-1$ years we observe declining profitability ratios and increased risk ratios indicating financial distress years before conversion takes place. Over this period ROAE is negative and significant indicating a worsening of profitability for these banks on top of their already negative state as seen in Table 1.2. We find that all the factors measuring leverage decline in the years prior to conversion. These changes, combined with the increased ratios for nonperforming loans and nonperforming assets, gives us a clear picture of a bank in a state of declining performance. Our pre-conversion analysis points towards a bank with increased levels of nonperforming assets, decreased levels of equity, and low levels of profitability.

1.4.2 Post-Conversion Results

For our post-conversion analysis, we refer to Tables 1.2 and 1.3 where we discuss the results obtained from our regression analysis and difference in difference methodology. We are interested in how the conversion group faired after opting out of the Subchapter S election. These banks chose to abandon the very profitable tax exemption status and we analyze the factors post-conversion to determine whether this decision yielded positive results.

Our results from Table 1.2 where we compare the factors between the two groups each year show an improvement across the board, post-conversion. The improvements come in the form of improved profitability ratios, lower risk ratios, and improved leverage ratios. All factors that were discussed previously for the pre-conversion period have marked and significant improvements.

It should be emphasized that conversion occurred during year t, with most banks having the conversion done during the last quarter. This means that our conversion group banks are C banks at the end of year t and therefore caution should be taken when comparing after-tax variables since S banks will have a permanent difference that will bias estimates.

When we analyze the profitability ratios for years t to $t+2$ we note a general improvement in the post-conversion years with each average estimate being higher than the previous as compared to the control group. While the results for $t+1$ and $t+2$ are lower than the pre-conversion years we must take note that S banks have significantly higher after-tax profitability ratios compared to C banks. Therefore, we are surprised that our conversion group is only a few percentage points lower than the pre-conversion years.

This indicates a marked improvement that will be corroborated in later results. The other important factor for profitability is the efficiency ratio which measures non-interest expense to operating income. This factor is not affected by tax treatment and is therefore comparable between our C bank conversion group and S bank control group. We notice that this factor reaches a peak during the conversion year with a decline in the following years indicating improvement. Post-conversion, this factor is also lower than all pre-conversion periods indicating a long-term improvement from previous operations.

We believe the primary motivating factor for S banks adopting the C status is access to additional equity since they would no longer be restricted in the number of shareholders. Therefore, we expect to see an improvement in a bank's capital structure when conversion occurs. This is the case with our results as we note marked increases in the equity to assets ratio the year conversion takes place. This indicates our conversion group banks had investors standing by since the increase occurs the same year. Our ratio for equity to assets is negative and significant the years prior to conversion but increases the same year conversion occurs and remains positive and significantly difference from our control group for all post-conversion years. The same result, albeit to a lesser extent, applies to our other leverage ratios, tier 1 capital ratio and risk-based capital ratio. These ratios show improvement by being either less than the pre-conversion years or insignificant, indicating that conversion group banks are now similar to our control group.

One of the reasons for the profitability loss we observe is nonperforming assets in the pre-conversion years. Post-conversion, in particular during the $t + 2$ period, we note a significant difference in our ratios measuring nonperforming assets. All three factors,

including net charge-offs, are less than the pre-conversion years indicating these banks utilize the newly acquired capital to rebalance their portfolio of assets.

Table 1.3 further confirms the previous results with the difference in difference methodology. This powerful analysis allows us to observe the real change in a group by removing time factors, firm specific factors, location factors, and controlling effects based off a comparable group that does not receive treatment. This analysis is much stronger in many ways compared to the first and is presented as support since the more parsimonious method yields similar results.

The estimates from the difference in difference analysis that are of particular interest to us are shown in the last two columns. The first of these indicates the 2 year change up to the year conversion takes place. Therefore, we expect to see a worsening of most factors as they are not likely to change immediately on the conversion year. The second of the two columns we mentioned shows the difference between the year conversion takes place and two years after. Here we expect to see the improvements we mentioned before.

Our difference in difference analysis yields strong indications that our conversion group banks were in a state of decline leading up to the conversion year and improved in the years that followed. Our primary measures of profitability, ROAA, ROAE, and Op Exp / Op Rev, are all declining in the years leading up to conversion and improve the years following conversion. What is interesting is that most of the improvements observed for these factors occur the year following conversion, $t + 1$, with only marginal improvements the following year, $t + 2$. This indicates a rapid use of the available equity and benefits these conversion banks receive so improvement occurs quickly.

Our measures of risk show a similar pattern with the first column showing a worsening of all factors while the second column shows an improvement. It is important to note that a one-year difference may be marginal compared to our control group and show as insignificant while a two-year difference may show strong significance because the true change becomes more apparent the more years we add. Therefore, our two-year period analysis more accurately reflects the change rather than our one-year tests.

Lastly, in analyzing our difference in difference results, we notice that marked increase in equity occurs almost immediately which is why the first column shows a positive estimate for that particular factor alongside the other two measures of leverage. Our conversion group banks are able to access this much-needed capital very quickly during the year of conversion. Therefore, while we see a slight decline in our leverage factors in the second column we should note that the decline is does not surpass the gain as is the case for the tier 1 capital and equity to assets ratio.

Both tables 1.2 and 1.3 provide similar results using different methods that control for various observable and unobservable effects. When comparing our conversion group to our control group we note increased levels of financial distress mixed with high levels of leverage. The year conversion takes place, we see a strong improvement in their leverage ratios, particularly equity to assets indicating an influx of capital. The years following conversion display marked improvements in profitability, nonperforming assets, and their capital structure. These results indicate that conversion for these Subchapter S banks was favorable despite the significant loss in tax benefits.

1.4.3 Robustness

Tables 1.4 through 1.11 provide robustness tests where we alter the time frame of our original analysis and change the control group to C banks rather than S banks. The changing of the time frame is significant as it alters our sample size quite heavily. For every year we increase our analysis we also require our sample banks to exist in their current state for another year. Given the environment of the banking industry within the U.S., we expect this kind of addition in years to restrict our sample size significantly. However, despite this reduction, we expect the results to hold if the effects we observe are indeed what our conversion group experiences pre- and post-conversion. Additionally, our change in control group to C banks should not alter the results significantly pre-tax since we are comparing our conversion group to an aggregate level of C banks that are not in distress.

For all robustness tests we see consistent results in line with our original discussion. The same pattern of pre-conversion financial distress and post-conversion improvements are seen no matter which time frame we utilize. Additionally, the results with the C bank control group also remain consistent with our original conclusion. One interesting difference to note regards the post-tax profitability factors ROAA and ROAE. The difference in difference test shows similar estimates for these factors no matter which control group we use, and this makes sense since this methodology controls for firm specific factors. However, our regression analysis shows very different estimates for these factors post-conversion. Compared to our original result where our conversion group differed by about 10% on average for ROAE post-conversion, under the new C bank control group our conversion group only differs by about 3% post-conversion. This result further shows the marked improvement in these banks post-conversion. Put differently,

pre-conversion in year $t-1$, our conversion group, which are still S banks, differed from the S bank control group by about 8%. Post-conversion, our conversion group which now comprises of C banks differs from the C bank control group by only 3%. Therefore, the difference between the conversion group and control group pre- post-conversion is more readily seen under this guise.

1.5 Conclusion

Subchapter S banks are exempt from double taxation and instead pay taxes on passthrough earnings. This has allowed smaller community banks to compete with larger institutions that benefit from economies of scale. The Subchapter S election was intended to help promote the viability of these smaller corporations and in turn protect jobs. Given the high rate of decline in the banking sector, this election was intended to assist smaller institutions and slow the rate of defaults and acquisitions. However, we observe that several Subchapter S banks are opting out of the S status and therefore leaving their tax benefit. In this paper, we investigate the reason subchapter S converts back to C and what leads banks to make such a seemingly unprofitable decision.

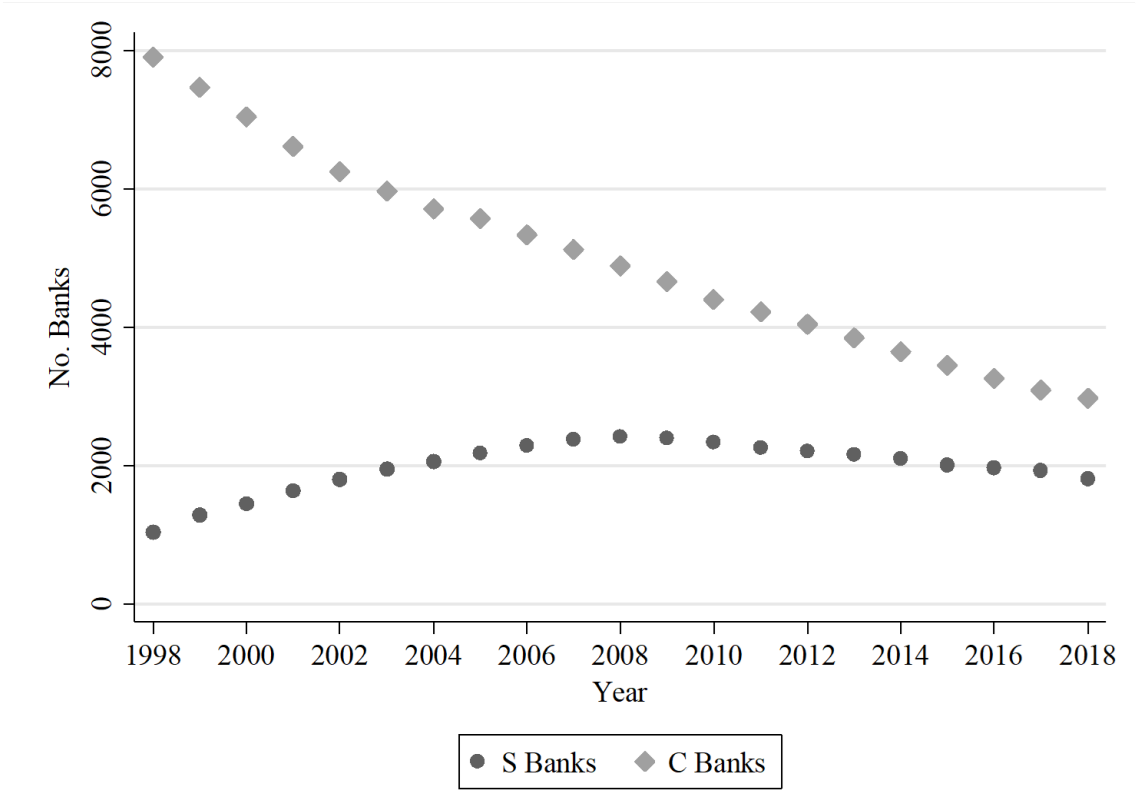
We find that the Subchapter S banks that change to the C status are holding increasing levels of nonperforming assets, are overleveraged and short on equity, and are suffering from declining profitability ratios in the years prior to conversion. Our results show that Subchapter S banks converting to the C status do so to access equity markets and service their nonperforming assets through a rebalancing of their asset portfolio. Due to restriction on the number of shareholders (maximum 100 shareholders) placed on Subchapter S banks, these institutions cannot service this imbalance in assets when already constrained in equity. For instance, these banks cannot raise equity capital to rebalance

their asset portfolio and stabilize losses. In these cases, banks are limited in their options when dealing with financial distress and must opt out of Subchapter S status as a last resort attempt to salvage bank operations.

Subchapter S banks have been lobbying for an increase in the shareholder limit to 150 in recent years. They claim the current limit is too restricting to bank operations once they reach a certain size. Our results have shown this to be true for banks that experience financial distress. Once a bank can no longer access equity markets, the acquisition of capital to service toxic assets becomes difficult and drastic measures are made such as opting out of the Subchapter S election. This decision may assist banks in the short-term but ultimately places them in an uncompetitive state where the probability of acquisition and default increase.

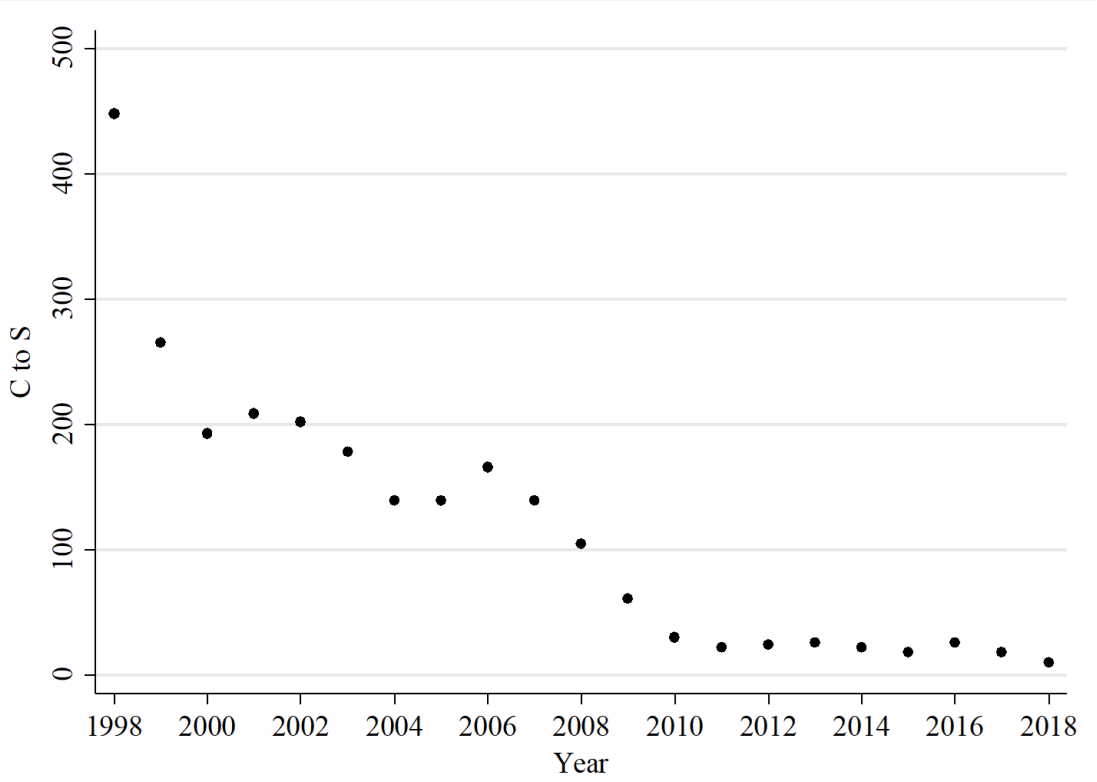
Given today's economic environment, community banks have a difficult time competing with larger banks due to the economies of scale present in the banking sector. Increasing levels of financial technology has become the standard in many banks and smaller depository institutions find themselves unable to compete. In this paper, we show how access to capital markets are critical for smaller banks and how the limit on number of shareholders placed on Subchapter S banks can be a devastating hindrance in the event of unexpected financial distress. Future policy should seek to address this situation and provide a means for community banks to stay afloat and within the Subchapter S election when additional capital is needed and the shareholder limit is reached.

Figure 1.1



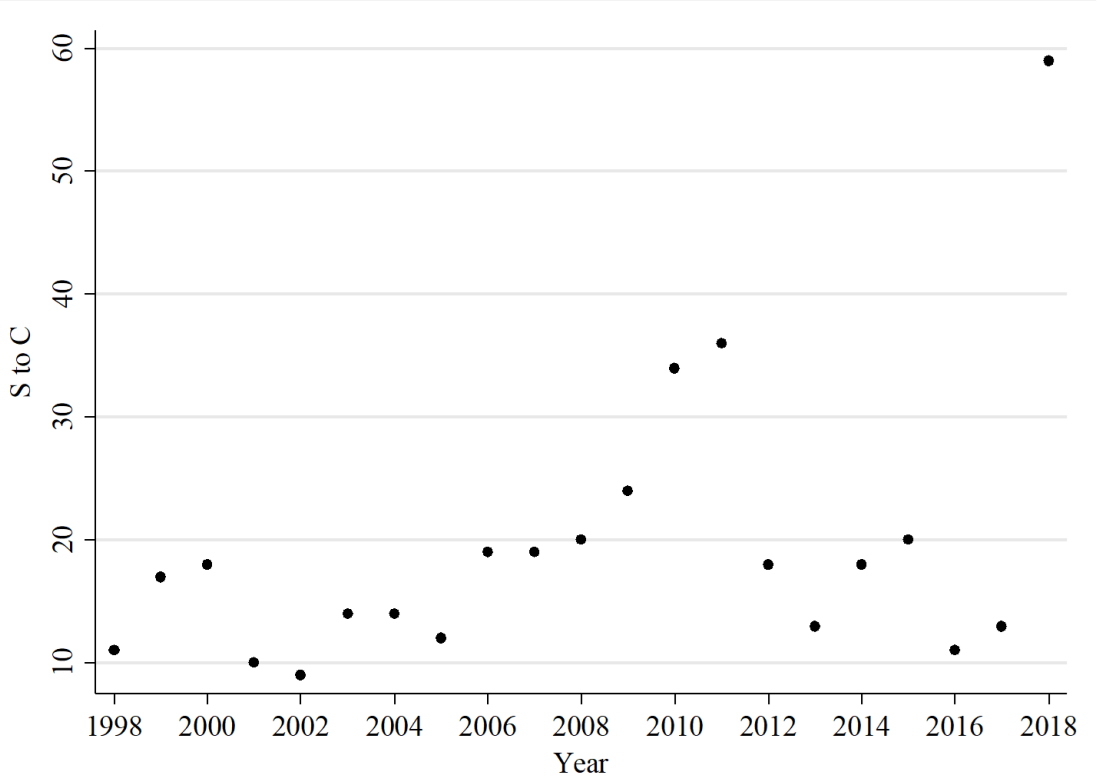
In this figure, we provide trends in the banking industry over the past two decades. Overall, we observe a decline in the number of banking institutions. Number of SubchapterS banks have increased steadily since the adoption of Small Business JobProtection Act of 1996 but started to decline after the financial crisis of 2008.

Figure 1.2



In this figure, we plot the conversions of banks from the C status to the Subchapter S status. The number of conversions has steadily decreased since the introduction of Small Business Job Protection Act of 1996 with very low conversions since 2010.

Figure 1.3



In this figure, we plot the trend for the conversions of banks from the Subchapter S status to the C status. The conversions to the C status have remained relatively stable over time with a marked short-term increase after the financial crisis of 2008.

Table 1.1 – In this table, we provide summary statistics for our variables of interest. We report the mean, $\mu = \beta_0$, and standard deviation, σ_{β_0}, for each variable and separate the results by treatment (conversion) and control groups and by time periods. The conversion group consists of Subchapter S banks that convert to C banks while the control group consists of Subchapter S banks that do not change their status during the sample period. We control for year effects, $\boldsymbol{X_t}$, in computing the summary statistics since observations in our sample span over multiple years.

$$y_{i,t} = \beta_0 + \boldsymbol{\beta X_t} + \varepsilon_{i,t}$$

	t - 2				t - 1				t				t + 1				t + 2			
	Conversion		Control		Conversion		Control		Conversion		Control		Conversion		Control		Conversion		Control	
N1=176, N0=10,286	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
L&L / A	58.74	8.40	58.62	1.34	54.21	8.38	57.62	1.36	57.73	8.26	59.98	1.38	64.95	8.02	62.05	1.40	68.44	8.09	61.03	1.41
L&L / Deposit	65.35	10.86	67.37	1.67	60.85	11.11	66.26	1.69	70.80	10.41	69.21	1.71	82.39	10.83	72.35	1.74	82.36	10.83	70.99	1.76
ROAA	1.55	1.01	2.01	0.07	1.70	0.74	2.04	0.07	0.95	1.10	1.94	0.06	0.99	0.96	2.05	0.06	0.51	0.90	1.84	0.06
ROAE	16.87	9.76	20.31	0.78	18.60	9.71	20.94	0.72	7.49	14.23	20.84	0.67	7.85	10.03	22.60	0.65	3.82	9.43	19.30	0.65
Interest Income / A	8.00	0.49	7.88	0.06	7.84	0.47	7.80	0.06	6.84	0.96	7.46	0.06	7.72	0.44	7.92	0.06	7.18	0.47	7.37	0.06
Interest Expense / A	3.36	0.30	3.19	0.04	3.33	0.27	3.20	0.04	2.73	0.36	2.99	0.04	3.35	0.23	3.34	0.03	3.24	0.25	3.05	0.03
Net Interest Income / A	4.65	0.48	4.69	0.06	4.52	0.45	4.59	0.06	4.11	0.74	4.47	0.06	4.37	0.40	4.58	0.06	3.94	0.42	4.32	0.06
Non-Interest Income / A	0.91	0.73	1.24	0.14	1.02	0.84	1.16	0.14	0.64	0.96	1.15	0.16	0.70	0.90	1.19	0.18	0.85	1.27	1.13	0.17
Non-Interest Expense / A	3.45	1.00	3.52	0.14	3.62	0.97	3.46	0.14	3.35	1.25	3.42	0.16	3.44	1.13	3.43	0.18	3.57	1.34	3.38	0.16
Net Int Inc / AEA	4.98	0.52	5.08	0.07	4.88	0.48	4.96	0.07	4.58	0.83	4.83	0.06	4.90	0.45	4.94	0.06	4.42	0.47	4.66	0.07
Yield Cost Spread	4.28	0.51	4.18	0.07	4.17	0.47	4.03	0.07	3.90	0.81	3.97	0.06	4.05	0.44	3.98	0.06	3.62	0.48	3.80	0.06
Op Exp / Op Rev	62.02	19.78	57.37	1.27	66.78	14.31	58.14	1.24	65.19	19.70	58.72	1.19	61.41	12.62	57.26	1.17	69.51	13.21	59.71	1.18
Tier 1 C / A	9.28	2.43	10.26	0.25	9.21	1.67	9.94	0.24	10.20	3.67	9.79	0.24	9.58	1.97	9.86	0.24	8.25	1.73	9.63	0.49
Risk Based Capital Ratio	15.88	4.26	17.84	0.60	16.52	3.02	17.26	0.59	15.48	6.03	16.83	0.59	13.63	3.24	16.43	0.58	11.97	3.00	16.01	0.59
Equity / A	9.31	2.35	10.24	0.25	9.24	1.75	9.99	0.25	14.43	3.62	9.43	0.25	13.10	2.44	9.87	0.24	11.57	2.06	9.83	0.24
Com Div / NI	145.07	31.95	70.91	4.34	83.65	40.41	85.01	4.03	57.93	61.70	78.47	4.32	49.03	23.59	75.64	4.32	98.75	22.14	80.26	4.22
NPL / L	0.66	1.89	0.55	0.18	0.76	2.07	0.56	0.17	0.17	2.29	0.51	0.17	0.74	2.07	0.52	0.17	1.57	2.12	0.63	0.17
NPA / A	0.91	1.61	0.41	0.16	1.02	1.74	0.41	0.16	0.09	1.99	0.40	0.16	0.50	1.85	0.43	0.15	1.15	1.90	0.48	0.15
Net CO / AL	0.29	0.55	0.23	0.05	0.11	0.47	0.22	0.05	-0.02	0.59	0.19	0.04	0.01	0.56	0.21	0.04	0.15	0.48	0.27	0.04
Liquid A / L	29.67	8.84	32.37	1.36	40.19	8.89	33.88	1.38	25.47	10.59	30.08	1.40	10.04	8.22	27.16	1.40	14.02	8.35	30.33	1.42

Table 1.2 – In this table we present the estimates from our regression analysis. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to Subchapter S banks that never convert to the C status during the sample period. This analysis is repeated for 5 periods to measure the differences between the two groups pre- and post-conversion. The results provide a clear indication that the conversion group was performing significantly worse prior to conversion and began to improve post-conversion.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

N1=176, N0=10,286	t - 2	t - 1	t	t + 1	t + 2
L&L / A	3.44 ***	2.33 **	1.24	2.70 **	3.57 ***
L&L / Deposit	4.53 ***	2.61 *	3.44 **	5.08 ***	5.61 ***
ROAA	-0.78 ***	-0.75 ***	-1.24 ***	-1.07 ***	-0.98 ***
ROAE	-7.23 ***	-8.32 ***	-13.42 ***	-10.68 ***	-10.21 ***
Interest Income / A	0.00	-0.04	-0.29 ***	-0.04	0.06
Interest Expense / A	0.05	0.05 *	-0.09 ***	0.00	0.06 **
Net Interest Income / A	-0.05	-0.09 *	-0.20 ***	-0.04	-0.01
Non-Interest Income / A	-0.07	-0.03	-0.05	-0.08	0.04
Non-Interest Expense / A	0.49 ***	0.44 ***	0.59 ***	0.54 ***	0.66 ***
Net Int Inc / AEA	-0.01	-0.08	-0.10 *	0.08	0.11 **
Yield Cost Spread	-0.03	-0.09 *	-0.11 **	0.07	0.13 **
Op Exp / Op Rev	14.07 ***	13.06 ***	18.35 ***	12.13 ***	12.92 ***
Tier 1 C / A	-0.54 **	-0.92 ***	0.56 ***	-0.20	-0.29
Risk Based Capital Ratio	-1.49 ***	-2.03 ***	-0.29	-1.47 ***	-1.78 ***
Equity / A	-0.48 **	-0.85 ***	2.22 ***	1.42 ***	0.95 ***
Com Div / NI	-18.65 ***	-11.18 ***	-22.04 ***	-43.50 ***	-44.13 ***
NPL / L	0.74 ***	1.18 ***	1.30 ***	1.10 ***	0.76 ***
NPA / A	0.77 ***	1.17 ***	1.22 ***	1.13 ***	0.94 ***
Net CO / AL	0.20 ***	0.25 ***	0.35 ***	0.23 ***	0.16 ***
Liquid A / L	-2.75 **	-2.00 *	-1.42	-3.97 ***	-3.77 ***

Table 1.3 –Estimates from our difference in difference analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to Subchapter S banks that never convert to the C status during the sample period. Our factor of interest is differenced according to the time period shown. The estimate therefore is the difference in difference measure between the two groups, between the two time periods. The results provide a clear indication that the conversion group was performing significantly worse prior to conversion and began to improve post-conversion.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 T_{i,t} + \beta_3 S_{i,t} T_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	1 Period Difference in Difference				2 Period Difference in Difference	
N1=176, N0=10,286	Δ (t - 2 , t - 1)	Δ (t - 1 , t)	Δ (t , t + 1)	Δ (t + 1 , t + 2)	Δ (t - 2 , t)	Δ (t , t + 2)
L&L / A	-1.13 ***	-0.04	2.38 ***	1.56 ***	-1.70 ***	3.18 ***
L&L / Deposit	-1.95 ***	2.04 ***	2.75 ***	1.33 ***	-0.50	3.16 ***
ROAA	0.03	-0.47 ***	0.16 ***	0.08 **	-0.46 ***	0.24 ***
ROAE	-1.09 **	-5.09 ***	2.61 ***	0.38	-6.27 ***	2.95 ***
Interest Income / A	-0.04	-0.27 ***	0.24 ***	0.08 ***	-0.31 ***	0.32 ***
Interest Expense / A	0.01	-0.17 ***	0.07 ***	0.05 ***	-0.16 ***	0.11 ***
Net Interest Income / A	-0.05 *	-0.10 ***	0.17 ***	0.03	-0.14 ***	0.21 ***
Non-Interest Income / A	0.04	0.00	-0.01	0.12 *	0.04	0.12
Non-Interest Expense / A	-0.05	0.17 ***	-0.01	0.13 *	0.15	0.16 *
Net Int Inc / AEA	-0.07 **	-0.02	0.19 ***	0.03	-0.08 *	0.24 ***
Yield Cost Spread	-0.07 **	-0.01	0.20 ***	0.06 **	-0.08 *	0.27 ***
Op Exp / Op Rev	-1.01	5.28 ***	-5.95 ***	0.81	4.94 ***	-4.63 ***
Tier 1 C / A	-0.38 ***	1.56 ***	-0.52 ***	0.41	1.26 ***	-0.06
Risk Based Capital Ratio	-0.54 ***	1.74 ***	-0.90 ***	-0.23	1.31 ***	-1.15 ***
Equity / A	-0.38 ***	3.17 ***	-0.51 ***	-0.31 ***	2.86 ***	-0.90 ***
Com Div / NI	7.47	-10.22 **	-21.01 ***	0.09	-2.78	-21.31 ***
NPL / L	0.44 ***	0.15	-0.20 *	-0.33 ***	0.59 ***	-0.52 ***
NPA / A	0.40 ***	0.10	-0.04	-0.16 *	0.50 ***	-0.21 *
Net CO / AL	0.05	0.09 **	-0.11 ***	-0.07 *	0.14 ***	-0.18 ***
Liquid A / L	0.79	-0.65	-3.50 ***	-0.59	0.73	-3.19 ***

Table 1.4 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to Subchapter S banks that never convert to the C status during the sample period. This analysis is performed for robustness as we push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=149, N0=8,891	t - 2	t - 1	t	t + 1	t + 2	t + 3
L&L / A	2.76 **	1.96	1.32	2.89 **	3.93 ***	4.20 ***
L&L / Deposit	3.97 ***	2.47	3.70 **	5.22 ***	6.32 ***	6.95 ***
ROAA	-0.78 ***	-0.72 ***	-1.30 ***	-0.88 ***	-0.86 ***	-0.77 ***
ROAE	-7.43 ***	-8.05 ***	-14.05 ***	-8.90 ***	-8.44 ***	-8.48 ***
Interest Income / A	-0.04	-0.04	-0.25 ***	0.01	0.13 **	0.10
Interest Expense / A	0.03	0.05	-0.08 **	0.02	0.08 ***	0.07 **
Net Interest Income / A	-0.07	-0.09	-0.17 ***	-0.02	0.05	0.03
Non-Interest Income / A	-0.12	-0.04	-0.10	-0.10	0.02	0.18
Non-Interest Expense / A	0.43 ***	0.42 ***	0.63 ***	0.44 ***	0.60 ***	0.58 ***
Net Int Inc / AEA	-0.04	-0.08	-0.07	0.08	0.16 ***	0.13 **
Yield Cost Spread	-0.05	-0.08	-0.08	0.08	0.19 ***	0.12 **
Op Exp / Op Rev	14.20 ***	13.19 ***	19.47 ***	11.49 ***	10.32 ***	9.44 ***
Tier 1 C / A	-0.51 **	-0.91 ***	0.76 ***	-0.14	-0.09	-0.15
Risk Based Capital Ratio	-1.36 **	-1.97 ***	0.07	-1.27 **	-1.45 ***	-1.33 **
Equity / A	-0.42 *	-0.85 ***	2.20 ***	1.38 ***	1.05 ***	1.06 ***
Com Div / NI	-18.56 ***	-11.01 ***	-25.05 ***	-43.93 ***	-42.54 ***	-42.60 ***
NPL / L	0.66 ***	1.19 ***	1.20 ***	1.01 ***	0.50 ***	0.65 ***
NPA / A	0.71 ***	1.19 ***	1.22 ***	1.10 ***	0.77 ***	0.86 ***
Net CO / AL	0.21 ***	0.23 ***	0.34 ***	0.16 ***	0.11 ***	0.10 ***
Liquid A / L	-2.38 *	-2.12 *	-1.65	-4.21 ***	-4.25 ***	-4.69 ***

Table 1.5 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to Subchapter S banks that never convert to the C status during the sample period. This analysis is performed for robustness as we push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=125, N0=7,166	t - 2	t - 1	t	t + 1	t + 2	t + 3	t + 4
L&L / A	3.14 **	2.03	1.32	2.85 **	3.75 ***	3.88 ***	3.66 ***
L&L / Deposit	4.75 ***	2.91 *	4.04 **	5.54 ***	6.59 ***	6.99 ***	5.89 ***
ROAA	-0.86 ***	-0.70 ***	-1.30 ***	-0.91 ***	-0.88 ***	-0.78 ***	-0.88 ***
ROAE	-7.71 ***	-7.15 ***	-14.34 ***	-9.11 ***	-8.32 ***	-8.17 ***	-9.91 ***
Interest Income / A	-0.06	-0.04	-0.18 ***	0.01	0.16 **	0.10	0.11 *
Interest Expense / A	0.05	0.05	-0.06 *	0.03	0.10 ***	0.08 **	0.08 ***
Net Interest Income / A	-0.11 *	-0.09	-0.12 **	-0.01	0.06	0.02	0.03
Non-Interest Income / A	-0.13	-0.03	-0.10	-0.11	0.05	0.23	0.05
Non-Interest Expense / A	0.46 ***	0.41 ***	0.67 ***	0.48 ***	0.69 ***	0.64 ***	0.51 ***
Net Int Inc / AEA	-0.07	-0.07	-0.01	0.11	0.20 ***	0.14 **	0.14 **
Yield Cost Spread	-0.08	-0.08	-0.03	0.11 *	0.23 ***	0.14 **	0.14 **
Op Exp / Op Rev	14.92 ***	11.66 ***	18.80 ***	12.27 ***	11.10 ***	9.69 ***	9.79 ***
Tier 1 C / A	-0.35	-0.75 ***	0.68 ***	-0.24	-0.16	-0.20	-0.29
Risk Based Capital Ratio	-1.40 **	-1.81 ***	-0.14	-1.51 ***	-1.55 ***	-1.30 **	-1.44 **
Equity / A	-0.29	-0.64 **	2.33 ***	1.46 ***	1.13 ***	1.15 ***	0.95 ***
Com Div / NI	-15.66 ***	-11.20 ***	-28.52 ***	-44.89 ***	-42.10 ***	-44.84 ***	-33.59 ***
NPL / L	0.64 ***	1.08 ***	1.22 ***	1.00 ***	0.42 **	0.53 ***	0.59 ***
NPA / A	0.67 ***	1.20 ***	1.31 ***	1.14 ***	0.74 ***	0.80 ***	0.72 ***
Net CO / AL	0.18 ***	0.24 ***	0.38 ***	0.19 ***	0.10 **	0.04	0.29 ***
Liquid A / L	-2.66 **	-2.23 *	-1.74	-4.29 ***	-4.40 ***	-4.50 ***	-4.19 ***

Table 1.6 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to Subchapter S banks that never convert to the C status during the sample period. This analysis is performed for robustness as we push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=99, N0=5,695	t - 2	t - 1	t	t + 1	t + 2	t + 3	t + 4	t + 5
L&L / A	2.77 *	1.67	0.43	1.92	3.20 **	3.29 **	2.90 *	3.78 **
L&L / Deposit	4.37 **	2.59	3.34 *	4.88 **	6.00 ***	6.35 ***	5.03 **	7.00 ***
ROAA	-0.93 ***	-0.74 ***	-1.42 ***	-0.96 ***	-0.92 ***	-0.79 ***	-0.89 ***	-0.76 ***
ROAE	-8.18 ***	-7.66 ***	-15.91 ***	-9.94 ***	-9.05 ***	-8.48 ***	-9.95 ***	-9.08 ***
Interest Income / A	-0.09	-0.06	-0.30 ***	-0.05	0.03	0.04	0.05	0.06
Interest Expense / A	0.05	0.05	-0.09 **	0.02	0.05	0.06	0.05	0.05
Net Interest Income / A	-0.14 **	-0.11	-0.21 ***	-0.07	-0.02	-0.02	0.00	0.01
Non-Interest Income / A	-0.30 *	-0.14	-0.12	-0.17	-0.02	0.24	0.03	0.01
Non-Interest Expense / A	0.33 **	0.33 **	0.67 ***	0.47 ***	0.65 ***	0.66 ***	0.46 **	0.40 *
Net Int Inc / AEA	-0.13 *	-0.11	-0.11	0.06	0.12	0.11	0.13 *	0.12
Yield Cost Spread	-0.14 *	-0.13 *	-0.12	0.07	0.15 **	0.12	0.14 *	0.12
Op Exp / Op Rev	16.92 ***	13.12 ***	20.68 ***	14.07 ***	11.64 ***	10.76 ***	9.29 ***	11.26 ***
Tier 1 C / A	-0.16	-0.63 **	0.83 ***	-0.15	-0.25	-0.22	-0.26	-0.44
Risk Based Capital Ratio	-1.12	-1.57 **	0.34	-1.23 *	-1.38 **	-1.15 *	-1.16 *	-1.45 **
Equity / A	-0.09	-0.48	2.76 ***	1.81 ***	1.36 ***	1.29 ***	1.14 ***	1.11 ***
Com Div / NI	-13.61 ***	-14.18 ***	-25.83 ***	-45.62 ***	-40.71 ***	-44.20 ***	-37.50 ***	-35.96 ***
NPL / L	0.66 ***	1.05 ***	1.32 ***	0.86 ***	0.34 *	0.41 **	0.45 **	0.32
NPA / A	0.71 ***	1.19 ***	1.38 ***	1.00 ***	0.69 ***	0.70 ***	0.62 ***	0.58 ***
Net CO / AL	0.13 **	0.18 ***	0.39 ***	0.19 ***	0.09 **	0.02	0.32 ***	0.31 ***
Liquid A / L	-2.69 *	-2.36	-0.94	-3.74 **	-4.46 ***	-4.71 ***	-4.08 **	-5.91 ***

Table 1.7 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to C banks that never resulted from a conversion of an S bank. This analysis is performed for robustness as we analyze Subchapter S banks to their C counterparts. Since Subchapter S banks convert to C banks, we are interested in their post-conversion comparison to C banks. Additionally, we also push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=177, N0=16,458	t - 2	t - 1	t	t + 1	t + 2
L&L / A	4.89 ***	3.87 ***	2.49 **	3.83 ***	4.60 ***
L&L / Deposit	4.61 **	3.49 **	3.98 **	5.25 ***	5.61 ***
ROAA	-0.04	-0.01	-0.53 ***	-0.39 ***	-0.34 ***
ROAE	0.14	-0.73	-6.13 ***	-3.61 ***	-3.29 ***
Interest Income / A	0.09	0.07	-0.18 **	0.05	0.14 **
Interest Expense / A	0.02	0.03	-0.10 ***	-0.01	0.05
Net Interest Income / A	0.07	0.04	-0.07	0.07	0.09
Non-Interest Income / A	0.19 *	0.18 *	0.14	0.14	0.21 **
Non-Interest Expense / A	0.45 ***	0.40 ***	0.56 ***	0.54 ***	0.66 ***
Net Int Inc / AEA	0.09	0.04	0.01	0.16 **	0.19 ***
Yield Cost Spread	0.09	0.03	-0.01	0.16 **	0.21 ***
Op Exp / Op Rev	5.99 ***	5.64 ***	11.30 ***	5.66 ***	6.70 ***
Tier 1 C / A	-1.10 ***	-1.29 ***	0.25	-0.47 **	-0.55 **
Risk Based Capital Ratio	-2.78 ***	-3.13 ***	-1.27 *	-2.40 ***	-2.61 ***
Equity / A	-1.04 ***	-1.28 ***	1.83 ***	1.03 ***	0.54 **
Com Div / NI	9.99 **	16.44 ***	6.65	-13.98 ***	-15.47 ***
NPL / L	0.53 ***	0.88 ***	1.04 ***	0.85 ***	0.54 ***
NPA / A	0.60 ***	0.91 ***	0.98 ***	0.90 ***	0.70 ***
Net CO / AL	0.10 *	0.14 **	0.25 ***	0.13 **	0.05
Liquid A / L	-4.80 ***	-4.11 ***	-3.08 **	-5.35 ***	-4.93 ***

Table 1.8 –Estimates from our difference in difference analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to C banks that never resulted from a conversion of an S bank. Our factor of interest is differenced according to the time period shown. The estimate therefore is the difference in difference measure between the two groups, between the two time periods. This analysis is performed for robustness as we analyze Subchapter S banks to their C counterparts. Since Subchapter S banks convert to C banks, we are interested in their post-conversion comparison to C banks.

	1 Period Difference in Difference				2 Period Difference in Difference	
N1=177, N0=16,458	Δ (t - 2 , t - 1)	Δ (t - 1 , t)	Δ (t , t + 1)	Δ (t + 1 , t + 2)	Δ (t - 2 , t)	Δ (t , t + 2)
L&L / A	-1.12 ***	-0.94 **	1.68 ***	1.06 ***	-2.37 ***	2.31 ***
L&L / Deposit	-1.21	1.16 *	1.59 **	0.80	-0.48	2.00 **
ROAA	0.04	-0.53 ***	0.14 **	0.04	-0.52 ***	0.19 ***
ROAE	-0.79	-5.51 ***	2.47 ***	0.20	-6.41 ***	2.73 ***
Interest Income / A	-0.01	-0.28 ***	0.21 ***	0.06	-0.29 ***	0.28 ***
Interest Expense / A	0.02	-0.15 ***	0.07 ***	0.05 ***	-0.14 ***	0.12 ***
Net Interest Income / A	-0.03	-0.12 **	0.13 ***	0.02	-0.15 ***	0.16 ***
Non-Interest Income / A	-0.01	-0.03	0.01	0.07 *	-0.03	0.10
Non-Interest Expense / A	-0.06	0.17 ***	0.00	0.12 **	0.15 **	0.15 **
Net Int Inc / AEA	-0.05	-0.04	0.15 ***	0.02	-0.08	0.18 ***
Yield Cost Spread	-0.06	-0.04	0.16 ***	0.05	-0.10 *	0.22 ***
Op Exp / Op Rev	-0.76	6.03 ***	-5.58 ***	1.24	6.02 ***	-3.91 ***
Tier 1 C / A	-0.29 **	1.56 ***	-0.62 **	0.00	1.46 ***	-0.64 **
Risk Based Capital Ratio	-0.45 *	1.95 ***	-1.02 ***	-0.13	1.67 ***	-1.15 ***
Equity / A	-0.34 ***	3.23 ***	-0.68 ***	-0.39 ***	2.98 ***	-1.12 ***
Com Div / NI	6.43	-8.42	-20.49 ***	-0.84	-2.71	-21.15 ***
NPL / L	0.35 ***	0.20	-0.16	-0.30 **	0.55 ***	-0.46 ***
NPA / A	0.31 ***	0.11	-0.04	-0.18 *	0.41 ***	-0.23 *
Net CO / AL	0.03	0.12 **	-0.10 *	-0.08	0.15 **	-0.18 ***
Liquid A / L	0.77	0.49	-2.68 ***	0.06	1.68 **	-2.15 ***

Table 1.9 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to C banks that never resulted from a conversion of an S bank. This analysis is performed for robustness as we analyze Subchapter S banks to their C counterparts. Since Subchapter S banks convert to C banks, we are interested in their post-conversion comparison to C banks. Additionally, we also push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=150, N0=13,528	t - 2	t - 1	t	t + 1	t + 2	t + 3
L&L / A	4.40 ***	3.60 ***	2.69 **	4.09 ***	5.13 ***	5.40 ***
L&L / Deposit	4.20 **	3.52 **	4.35 ***	5.52 ***	6.68 ***	7.24 ***
ROAA	-0.02	0.01	-0.60 ***	-0.21 ***	-0.21 ***	-0.10
ROAE	0.03	-0.55	-6.78 ***	-1.87 ***	-1.63 **	-1.29
Interest Income / A	0.05	0.07	-0.14 *	0.09	0.20 ***	0.17 **
Interest Expense / A	0.00	0.02	-0.10 **	0.00	0.06 *	0.04
Net Interest Income / A	0.05	0.05	-0.05	0.08	0.14 **	0.13 **
Non-Interest Income / A	0.17 *	0.18 *	0.11	0.14	0.22 **	0.36 ***
Non-Interest Expense / A	0.41 ***	0.40 ***	0.61 ***	0.45 ***	0.59 ***	0.56 ***
Net Int Inc / AEA	0.07	0.04	0.03	0.16 *	0.23 ***	0.21 ***
Yield Cost Spread	0.08	0.04	0.03	0.17 *	0.26 ***	0.21 ***
Op Exp / Op Rev	6.02 ***	5.77 ***	12.40 ***	4.96 ***	4.11 ***	3.13 **
Tier 1 C / A	-1.13 ***	-1.31 ***	0.38	-0.45 *	-0.37	-0.40
Risk Based Capital Ratio	-2.83 ***	-3.19 ***	-1.09	-2.31 ***	-2.38 ***	-2.20 ***
Equity / A	-1.02 ***	-1.29 ***	1.76 ***	0.96 ***	0.64 **	0.63 **
Com Div / NI	10.12 **	16.91 ***	3.97	-14.56 ***	-13.09 ***	-14.66 ***
NPL / L	0.43 **	0.86 ***	0.90 ***	0.71 ***	0.22	0.40 **
NPA / A	0.52 ***	0.90 ***	0.92 ***	0.80 ***	0.47 **	0.57 ***
Net CO / AL	0.11 *	0.11 *	0.23 ***	0.05	0.00	-0.01
Liquid A / L	-4.68 ***	-4.33 ***	-3.37 **	-5.58 ***	-5.52 ***	-5.87 ***

Table 1.10 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to C banks that never resulted from a conversion of an S bank. This analysis is performed for robustness as we analyze Subchapter S banks to their C counterparts. Since Subchapter S banks convert to C banks, we are interested in their post-conversion comparison to C banks. Additionally, we also push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=126, N0=10,747	t - 2	t - 1	t	t + 1	t + 2	t + 3	t + 4
L&L / A	4.81 ***	3.75 ***	2.82 **	4.13 ***	5.07 ***	5.10 ***	4.75 ***
L&L / Deposit	5.29 ***	3.96 **	4.74 ***	5.83 ***	6.97 ***	7.21 ***	5.88 ***
ROAA	-0.06	0.07	-0.58 ***	-0.21 ***	-0.21 ***	-0.08	-0.20 ***
ROAE	0.05	0.68	-6.87 ***	-1.80 **	-1.35 *	-0.80	-2.84 ***
Interest Income / A	0.03	0.07	-0.08	0.09	0.23 ***	0.18 **	0.18 **
Interest Expense / A	0.01	0.02	-0.08 *	0.01	0.07 *	0.05	0.05
Net Interest Income / A	0.02	0.05	0.00	0.09	0.16 **	0.13 *	0.13 *
Non-Interest Income / A	0.22 *	0.24 **	0.16	0.18 *	0.29 ***	0.47 ***	0.30 ***
Non-Interest Expense / A	0.45 ***	0.40 ***	0.67 ***	0.52 ***	0.70 ***	0.64 ***	0.52 ***
Net Int Inc / AEA	0.05	0.06	0.09	0.18 *	0.27 ***	0.23 ***	0.22 ***
Yield Cost Spread	0.06	0.05	0.08	0.19 *	0.31 ***	0.23 ***	0.23 ***
Op Exp / Op Rev	6.31 ***	3.82 **	11.30 ***	5.27 ***	4.31 ***	2.89 **	3.25 **
Tier 1 C / A	-1.03 ***	-1.18 ***	0.28	-0.58 **	-0.44	-0.41	-0.48 *
Risk Based Capital Ratio	-2.99 ***	-3.09 ***	-1.40 *	-2.64 ***	-2.54 ***	-2.16 ***	-2.28 ***
Equity / A	-0.91 ***	-1.08 ***	1.86 ***	1.03 ***	0.72 **	0.76 ***	0.54 *
Com Div / NI	13.32 ***	17.42 ***	1.25	-15.52 ***	-11.98 **	-16.07 ***	-4.53
NPL / L	0.43 **	0.76 ***	0.89 ***	0.67 ***	0.13	0.28	0.39 *
NPA / A	0.51 ***	0.92 ***	1.00 ***	0.83 ***	0.44 **	0.50 **	0.48 **
Net CO / AL	0.07	0.11	0.26 ***	0.06	-0.02	-0.06	0.22 ***
Liquid A / L	-5.04 ***	-4.54 ***	-3.62 **	-5.70 ***	-5.77 ***	-5.63 ***	-5.23 ***

Table 1.11 – Estimates from our regression analysis is shown below. The estimate shown is from the dummy variable where 1 corresponds to Subchapter S banks that convert to the C status and 0 corresponds to C banks that never resulted from a conversion of an S bank. This analysis is performed for robustness as we analyze Subchapter S banks to their C counterparts. Since Subchapter S banks convert to C banks, we are interested in their post-conversion comparison to C banks. Additionally, we also push the post-conversion window. This increase shortens the total number of observable years in our sample period and therefore decreases our sample size.

N1=99, N0=8,479	t - 2	t - 1	t	t + 1	t + 2	t + 3	t + 4	t + 5
L&L / A	4.40 ***	3.43 **	2.07	3.65 **	4.98 ***	5.00 ***	4.48 ***	5.36 ***
L&L / Deposit	4.75 **	3.60 *	4.09 **	5.55 ***	6.88 ***	7.04 ***	5.53 **	7.61 ***
ROAA	-0.19 **	-0.01	-0.72 ***	-0.29 ***	-0.27 ***	-0.14 *	-0.22 ***	-0.09
ROAE	-0.95	-0.25	-8.76 ***	-2.91 ***	-2.19 ***	-1.64 *	-2.97 ***	-2.13 **
Interest Income / A	-0.01	0.05	-0.20 **	0.03	0.10	0.11	0.12	0.13
Interest Expense / A	0.01	0.02	-0.11 **	-0.01	0.02	0.02	0.01	0.01
Net Interest Income / A	-0.02	0.03	-0.09	0.03	0.08	0.09	0.11	0.12
Non-Interest Income / A	0.02	0.11	0.11	0.12	0.24 **	0.46 ***	0.32 ***	0.32 ***
Non-Interest Expense / A	0.35 **	0.34 **	0.68 ***	0.54 ***	0.70 ***	0.69 ***	0.52 ***	0.47 ***
Net Int Inc / AEA	-0.02	0.03	0.00	0.14	0.20 **	0.20 **	0.21 **	0.21 **
Yield Cost Spread	-0.01	0.02	0.00	0.15 *	0.23 ***	0.21 **	0.23 ***	0.22 **
Op Exp / Op Rev	8.82 ***	5.75 ***	13.68 ***	7.48 ***	5.26 ***	4.27 ***	2.79 *	4.54 **
Tier 1 C / A	-0.90 **	-1.12 ***	0.39	-0.51	-0.53 *	-0.46	-0.43	-0.60 **
Risk Based Capital Ratio	-2.85 ***	-3.06 ***	-1.11	-2.58 ***	-2.55 ***	-2.19 **	-2.09 **	-2.28 ***
Equity / A	-0.75 **	-0.96 ***	2.29 ***	1.37 ***	0.96 ***	0.89 ***	0.77 **	0.79 **
Com Div / NI	16.44 ***	14.43 **	4.32	-16.81 ***	-11.00 **	-15.53 ***	-8.13	-6.78
NPL / L	0.44 **	0.78 ***	1.06 ***	0.63 **	0.12	0.23	0.28	0.12
NPA / A	0.57 ***	0.98 ***	1.16 ***	0.79 ***	0.45 **	0.47 **	0.41 *	0.37
Net CO / AL	0.05	0.05	0.28 ***	0.08	-0.03	-0.08	0.24 ***	0.23 ***
Liquid A / L	-5.11 ***	-4.76 ***	-3.11 *	-5.71 ***	-6.38 ***	-6.38 ***	-5.66 ***	-7.50 ***

CHAPTER 2: DISTRESS AND CONVERSION EVENTS IN COMMERCIAL BANKS

2.1 Introduction

Three major bank events can be observed in significant quantities over the last twenty years. These include mergers and acquisitions, defaults, and organizational form conversions. Furthermore, two significant groups distinguish these events between them, so we end up with six major outcomes we can observe. These two groups are Subchapter S banks, which are tax exempt institutions and therefore do not experience double taxation present in most corporations and banks, and regular commercial banks which we denote as C banks. With these two groups we can distinguish the conversion event by the direction of change. One outcome for the conversion event is when C banks convert to S banks while the second outcome is the opposite, when S banks convert to C banks. Due to significant differences observed between C banks and S banks within the U.S., the M&A and default events are likewise each differentiated by these groups. With these six important bank outcomes our goal in this paper is to analyze the various events and differentiate them according to factors that will explain a bank's decision to undergo one of these outcomes. Furthermore, we aim to order the events according to which outcome a bank would choose given their current state and a state of worsening financial performance. In other words, a hierarchy of event choice is our goal with this analysis, so we can determine which of the three outcomes, for each group, a bank is most likely to select. While it may be trivial to assume that a bank would prefer to merge or become acquired rather than default in the case of financial distress, it is less obvious whether this same bank would prefer to avoid M&A and choose the conversion route instead. As indicated in Pacheco, Lawrence, Chang (WP), Subchapter S banks that experience financial distress choose to convert to the C

status to acquire additional equity capital necessary to rebalance their asset portfolio, which consists of a significant portion of nonperforming assets. The Subchapter S status, while beneficial due to the tax treatment, imposes a cap on the number of shareholders, currently at 100. This causes significant problems for these banks when additional capital is required and cannot be accessed. Rather than become acquired or default, these banks opt to convert to C banks, acquire capital, and survive on their own.

Our interest in analyzing these three events between two groups stems from the historic trend in bank decline we observe up to the present day. The quantity of commercial banks in the U.S has been in a state of decline over the past thirty years. This decline was most notable over the period 1990-2000 when commercial bank deregulation in the U.S. reached its peak. Since then, the rate in yearly decline has reduced but continues today at a relatively constant pace. The bank events affecting this decline change according to various economic shocks. For instance, while the number of commercial banks has been declining at a steady pace from 2000-2010, the reasons for this decline shift dramatically during the second half of this period. Mergers and acquisitions are the primary source of bank decline during the first half of this period and defaults are found to be low in quantity. During the second half of this period, mergers and acquisitions decline while defaults rise in commercial banks. These two outcomes, when combined, net out and result in the steady decline in commercial banks we observe in Figure 2.1.

This decline is associated with deregulation in the banking sector that reached its peak during the 1990s. Various policies that aimed at protecting banks from competition and from widespread mergers and acquisitions have been repealed over time such as the McFadden Act, the Glass-Steagall Act, and Regulation Q. With these barriers removed,

the banking sector experienced a surge of mergers and acquisitions alongside increased levels of competition across the country. Whereas the U.S. contained over 14,000 commercial banks in the 1980s, today there are under 6,000 commercial banks. Figures 2.2 through 2.7 highlight this trend in bank decline due to M&A and defaults. Additionally, we provide figures regarding bank conversions and a pattern that coincides with the economic environment can be seen.

The results we obtain provide insight into why and when these decisions are made from the banks perspective. By observing factors on a wide variety of performance and risk measures, we gain information on when a bank might undergo a specific event. We then order the events according to increasing levels of distress as measured by our factors to gain a further understanding regarding which outcome is best suited given the current state of a bank.

The results of our analysis indicate that the motivation for the conversion events differ greatly between our two groups, C banks and S banks. We find that C banks undergoing this event are not in a state of financial distress but just the opposite. C banks that convert the following year are more profitable, have lower risk ratios, and are more efficient compared to our control group sample of C banks. This is in stark contrast to the motivation behind S bank conversions. Our results indicate that S banks convert when performance is lower than average and risk factors are high.

When we compare the conversion events to M&A and default events we find that C banks have an event ordering of (1^{st}) Conversion, (2^{nd}) M&A, and (3^{rd}) Default. C banks that undergo conversion are in a profitable position and engage in this choice to further take advantage of their state by adding the tax exemption benefit. M&A events are

explained by lower performance ratios and increased risk factors. Default events, as expected, are last in the hierarchy of bank event choice with vastly larger differences in the estimates for our factors compared to the M&A event group.

For Subchapter S banks, we expected bank to choose the conversion event ahead of M&A event to remain viable as its own entity. Since both the conversion event and M&A event are motivated by inefficiencies and lower than average performance ratios, we expected banks to first pick self-preservation before the M&A event, which always results in some form of downsizing and job loss. Contrary to our expectation, we find that Subchapter S banks first opt for M&A when in a state of financial distress and then resort to the conversion to C in order to fund its survival through the acquisition of capital. We find that banks which undergo the M&A event have better performance and risk measures compared to Subchapter S banks that convert. Therefore, we order the three events for Subchapter S banks as (1^{st}) M&A, (2^{nd}) Conversion to C, and (3^{rd}) Default.

2.1.1 Literature

The literature on bank conversion and distress events are numerous. The banking literature on conversion events has focused primarily on C banks and why they enact the S election. Hodder, McAnally and Weaver (2003) find that banks are likely to convert to Subchapter S when conversion saves dividend taxes, avoids alternative minimum taxes and minimizes state income taxes. Cyree, Hein and Koch (2010) find that banks adopting the Subchapter S status have higher dividend payout rates, higher profit growth, lower capital, and they rely more on core deposits. The bankruptcy and M&A literature are likewise vast in quantity and focus on prediction and factor explanations for these events. Our study

focuses primarily on the ordering of these events from a bank's perspective and what factors explain this observation.

2.2 Data

We collect data on commercial banks from 1997 to 2018 from the SNL database. We arrange the data into two groups of interest, regular C banks and Subchapter S banks. The first group consists of regular commercial banks whereas the second group consists of tax-exempt commercial banks that enacted the Subchapter S election. We acquire data to differentiate three important outcomes for our sample banks. This includes the merger and acquisition event, the default event, and the conversion event.

In the table below, we show the quantity of events before any filtering for missing data or other oddities. C to S refers to the conversion from a regular commercial bank to a Subchapter S bank. C to A refers to the event where a C bank becomes acquired or merges with another bank. C to D refers to the event where a C bank ceases to exist, either through bankruptcy or other means that does not involve acquisition. S refers to Subchapter S banks and follows the same pattern described above. We note that the quantity of events corresponding to acquisitions and defaults is the same as the total number of banks undergoing this outcome. This is due to these events only occurring once for the banks in our sample. Additionally, it should be mentioned that a bank can have a conversion event and an event where it ceases to exist. Therefore, the total number of banks that undergo events will be lower than the sum of the events in the table. For the conversion events, unlike the M&A and default events, some banks undergo the transition more than once which further causes a discrepancy between the number of banks in our event group and

the number of observations. However, due to the method in which the sample is constructed, we allow multiple conversion events as they will be separated by many years.

No. Events Before Filtering (1 Period Sample)		
Event	No. Banks	Percent
C to S	2,440	31%
C to A	3,906	50%
C to D	1,482	19%
S to C	409	29%
S to A	706	49%
S to D	317	22%

Our analysis of these events focuses on the t-1 period prior to the event occurrence. We require our test sample to contain all relevant data during t-1 period and therefore we filter out observations that contain missing information. After filtering through our dataset for missing variables and correcting the occasional oddity, our groups of interest have the following observations for each event.

No. Events After Filtering (1 Period Sample)		
Event	No. Banks	Percent
C to S	2,371	33%
C to A	3,693	51%
C to D	1,209	17%
S to C	375	29%
S to A	658	51%
S to D	260	20%

We note that acquisitions make up about half of the total events in our sample, conversions make up one-third, and defaults represent less than 20% of events.

No. Events After Filtering (1 Period Sample)		
Event	No. Banks	Percent
Conversion	2,746	32%
M&A	4,351	51%
Default	1,469	17%

Our control group consists of C banks and S banks that have no M&A or default events associated with them. These banks continue to exist throughout our sample period. Compared to our event group, where a bank is represented only once for certain events, our control group banks are represented multiple times in our sample. Since these banks continue to exist every year and do not undergo the M&A or default events, each bank has multiple observations associated with it. Below we display the number of banks, the number of observations, and the average number of years each bank is represented for our control groups. The total number of banks in the control group is not the sum of the C bank and S bank quantities as some banks are used for both groups. For example, a bank may exist as a regular C bank for 7 years and then convert to an S bank and remain as such for another 8 years. Given the length of these periods we will use some of these observations for the C bank control group and some for the S bank control group. We exclude the pre- and post-conversion years from the control group observations as these periods have been shown to have unique effects associated with them.

No. Observations for Control Group (1 Period Sample)			
Control Group	No. Banks	Observations	Average
C	4,085	59,627	14.60
S	1,964	27,546	14.03
Total	4,713	87,173	18.50

2.2.1 Variables

The factors used to measure financial distress in our sample banks are the commonly cited ratios useful at explaining a bank's profitability and risk. The appendix at the end of this paper contains specific variable definitions for these factors. For profitability, we use the return on average assets and return on average equity. This is measured as net income divided by the average assets or average equity from the current and prior year financial statements. For a pre-tax analysis of profitability stemming from a bank's earning assets, we include the ratio of net interest income to average earning assets. For efficiency, we utilize ratio of non-interest expense divided by operating revenue. Operating revenue in the prior equation is equal to interest income minus interest expense plus non-interest income. This efficiency ratio shows us how well the bank manages its non-interest expense and is important in determining bank financial distress.

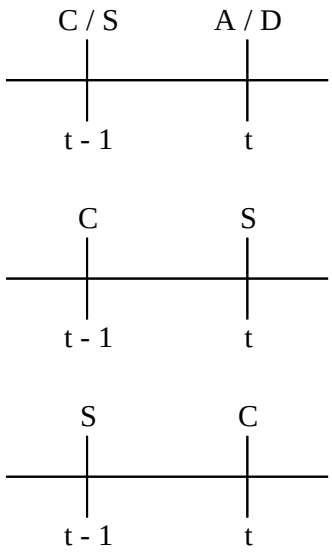
For measuring risk, we use the ratio of net charge-offs divided by total loans. This factor measures distress as the fraction of loans a bank had to mark off during its fiscal year. Another factor we use to measure risk is the ratio of nonperforming assets to total assets. Nonperforming assets here refers to assets that are 90 days past due and are at risk of defaulting. We include a similar measure of nonperforming loans to total loans to further describe where these past due assets stem from.

To measure leverage and capital structure, we utilize five factors as they each capture a different aspect of a bank's operations. The first factor is the ratio of total loans and leases to total assets. This indicates what fraction of asset portfolio comprises solely loans and leases. The second factor is the ratio of total loans to total deposits. This informs us how a bank is leveraged in terms of their total deposits. The third factor is the ratio of equity to total assets. This factor is a commonly reported statistic and measures the capital structure within a bank. This measure provides a simple picture of how debt and equity are balanced in our sample banks. The last two factors provide further descriptions regarding a bank's capital structure. These two variables are the tier 1 capital ratio, which measures tier 1 capital to total assets, and the risk-based capital ratio, which measures capital after assets have been weighted for its risk according to the current industry standards. These factors all contribute in forming a picture regarding how a firm utilizes its capital and debt for its operations. The last factor we use measures liquidity and is the ratio of current assets to total liabilities. This ratio provides information regarding what portion of its debt a bank could cover with its current liquid assets.

2.3 Methodology

We analyze factors in the year prior to the event and compare our group of interest to a control group to determine what differences explain the event choice. Our group of interest, or event group, are C banks and S banks that undergo one of the three events, mergers and acquisitions, defaults, or conversion to a different organizational form. Our control group are C banks and S banks that have not undergone any of the events during the sample period. We allow C and S banks to be used in the control group even if a conversion occurs. But to ensure comparability we exclude the observations surrounding a

conversion event as we have found significant effects surrounding the event date. Below we display what our test sample looks like for all six outcomes of interest. The figures demonstrate that we analyze and compare factors the year prior to an event, t – 1.



We use the ordinary least squares regression for our primary analysis. To determine which factors explain an event outcome, we perform two distinct tests. The first test compares the event group to its control group counterpart alone and this test is repeated for all six events outcomes. The second test pools together all events into a single regression analysis where we compare the estimates for each event to determine an order of choice for our sample banks regarding these outcomes. In the second test, we are able to control for time- and location-based effects. Additionally, many firm specific effects that cannot be controlled for in the first test are taken into account in the second test.

Our regression equation for the first test comparing our event group and control group is constructed as follows.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

Our factors of interest are our dependent variables, $y_{i,t}$, in the regression while the dummy variable indicating the event group is the independent variable we primarily observe and discuss. For our analysis, the dummy variable is equal to one for any of the event observations. Therefore, all M&A, defaults, and conversion observations take on a value of one for our dummy variable. This variable is equal to zero for all observation years in our control group. Since a bank can be represented multiple times for our control group based on how many years it remains active, our control group sample is much larger than our event group sample. This is to our benefit as we will be comparing our event group banks, which are represented once, to an aggregate measure of many banks in a given year. In our regression equation we include controls for year, state, and size. The first two controls are dummy variables indicating an observation falls within a given year or state. The third control, size, is measured as the natural logarithm of total assets. We find that these control factors are significant in our analysis and take into account many time- and location-based effects. The size variable is also important as we observe significant economies of scale within the banking industry.

Our second regression analysis pools together all observations into a single regression test where we compare the estimates for each event to determine an order of choice for our sample banks. This regression takes into account many more effects compared to our first test and therefore provides estimates that are more accurate for each event group. The regression equation we utilize for this test is displayed below.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 (ACQ)_{i,t} + \beta_3 (DEF)_{i,t} + \beta_4 (ACQ)_{i,t} S_{i,t} + \beta_5 (DEF)_{i,t} S_{i,t}$$
$$+\beta_6 (S\ to\ C)_{i,t} + \beta_7 (C\ to\ S)_{i,t} + \beta_8 (SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

As before, the dependent variables are the factors we find important in describing bank performance and risk. Compared to our first test where we had only a single dummy variable for an event group, we include all events in this regression analysis and differentiate each effect with its own dummy variable. β_1 measures the effect of being a Subchapter S bank in our sample, for both the event and control group. This coefficient is already a significant improvement compared to the first analysis because we find permanent differences between S and C banks in both the event and control groups. Therefore, if we previously wanted to compare the difference between S banks and C banks for a specific event, an estimate from the first analysis would be confounded because it would contain the difference due to the specific event and an effect due to the permanent difference between S and C banks. With our second analysis where we pool all observations together, we can control for these permanent differences and therefore our event dummy variables provide the real difference between groups. β_2 and β_3 measure the average difference from the baseline observations, which is our C bank control group, for the M&A and default events, respectively. Unlike the first analysis, these two dummy variables don't separate S and C banks into two distinct groups. The observations for the M&A and default event dummy variables include all S bank and C bank events. To account for the differences between S and C banks in the two events mentioned, β_4 and β_5 measure the effect on M&A and default events stemming from S banks. These estimates provide us with the difference between C banks and S banks that are not accounted for in the β_1 estimate for permanent differences. β_6 and β_7 measure the effects stemming from the conversion events S to C and C to S, respectively. As discussed earlier, the motivation for C bank conversions stems from a favorable position whereas S bank conversions are

motivated by financial distress. Because of how different these events are motivated we separate the conversion dummy variable into two separate variables measuring each conversion event. We include the control for size effect to account for the economies of scale.

This second test provides powerful results and allows us to more accurately determine what explains an event outcome and bank choice. We utilize the results of this test to order the events according to financial distress levels and discuss a banks choice when facing difficulties.

2.3.1 Robustness

For robustness and to provide additional information we perform two extra tests on our sample. The first is a difference-in-difference analysis where we compare the change over time for an event group to the change over time for the control group. The result of this analysis provides estimates that are not confounded by additional unobservable factors such as firm specific effects that we cannot account for in our primary results. The second robustness test repeats our first analysis in the paper and extends the time observed to $t - 2$ to obtain more information regarding the state of these banks prior to the event.

To perform these robustness tests, we add an additional time period constraint to our sample. We therefore require all our observations to be present in the periods $t - 1$ and $t - 2$ prior to an event. Due to missing information, a reduction in the time periods observed, and other oddities, extending the timeline results in a loss of observations. Below we summarize the number of observations for our robustness tests when we add an additional year. Compared to our initial sample we note a significant reduction in the sample size.

No. Events After Filtering (2 Period Sample)		
Event	No. Banks	Percent
C to S	1,910	32%
C to A	3,086	51%
C to D	1,045	17%
S to C	314	28%
S to A	575	51%
S to D	231	21%

Our control groups are likewise reduced when we require an additional year of information. Our original analysis included a total of 87,173 observations for the control groups and this is reduced by about 10% to 79,884 when we add an additional year to our requirements.

No. Observations for Control Group (2 Period Sample)			
Control Group	No. Banks	Observations	Average
C	3,942	54,695	13.87
S	1,932	25,189	13.04
Total	4,712	79,884	16.95

The summary totals for all events is presented below.

No. Events After Filtering (2 Period Sample)		
Event	No. Banks	Percent
Conversion	2,224	31%
M&A	3,661	51%
Default	1,276	18%

For the difference-in-difference analysis, we use the following equation.

$$y_{i,(t-1)} - y_{i,(t-2)} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t}$$

$$+\beta_2(\Delta SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

The coefficients and dummy variable descriptions are the same as the initial analysis. The significant change from the original test is that the coefficient for β_1 provides the difference-in-difference estimate which is measuring,

$$E[\beta_1] = \left[E\left[y_{i,t-1}|D = 1\right] - E\left[y_{i,t-2}|D = 1\right]\right] - \left[E\left[y_{i,t-1}|D = 0\right] - E\left[y_{i,t-2}|D = 0\right]\right]$$

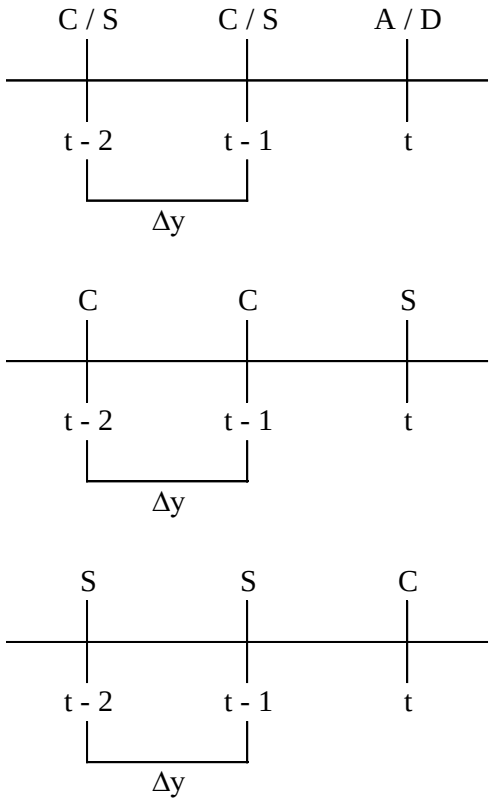
Where D is equal to 1 for the event group and equal to 0 for the control group. The above equation measures the expected change over time for each group and the difference of this result between each group. This is equivalent to the traditional presentation of the difference-in-difference methodology,

$$y_{i,t} = \beta_0 + \beta_1 D_i + \beta_2 T_i + \beta_3 D_i T_i + \varepsilon_{i,t}$$

Where D is the dummy indicating the event and control group as before and T is a dummy variable equal to 1 for the later period and equal to 0 for the earlier period. Therefore, in this equation β_3 provides the difference-in-difference estimate.

Our goal with this robustness test is to determine whether we can observe any significant differences between our event group and control group over a one-year period beginning two years prior to the event. Since the bank no longer exists during the time period t, because it either is acquired or defaults, we could not perform an analysis of a bank's factor changes immediately prior to the event. For consistency, we perform the same kind of test for our conversion group despite being able to measure the difference

immediately prior to the event. The following figures demonstrate our setup for the difference in difference analysis.



As stated previously, the second robustness test repeats our first analysis in the paper and extends the time period observed to t – 2. Since we extended the period for the difference-in-difference analysis it makes sense to conduct an additional test looking into whether the t – 2 period could also provide information regarding event outcomes. The equation and methodology for this test is the same as the original analysis with the slight modification that we test the t – 2 time period in addition to the t – 1 time period.

2.4 Results

The results and insight into the event choice banks undertake is obtained from our primary analysis. This includes two different tests where we look at our factors of interest

among all six event outcomes. The first test analyzes the t – 1 period for each event outcome separately while the second pools all observations together for a stronger test that controls for additional unobservable effects. These two analysis results provide what is necessary to draw the conclusions we seek. Additionally, our robustness results will be presented to confirm our initial tests and provide some extra insight.

Tables 2.3 and 2.4 present the results from our first test where we compare the event group to the control group and estimate the difference as measured by our factors. Table 2.3 presents the results for the C bank event group while table 2.4 presents the results for the Subchapter S bank event group. Each table utilizes a different control group to ensure accurate results. Table 2.3 compares the event group to C banks while table 2.4 compares them to S banks. This analysis estimates the difference in the t – 1 period and we seek to find which factors explain each of the six event choice outcomes.

2.4.1 Primary Results

Table 2.3 presents the results for C banks undergoing either a M&A, default, or conversion event. The estimates provided measure the difference between the event group and control group the year prior to the event.

C banks undergoing conversion the following year report factor estimates that differ greatly from any of the other five outcomes. This event outcome is significantly different in that the choice to undergo conversion does not stem from financial distress or default risk but rather from above average performance. We observe significant and positive estimates for all profitability measures the year prior to conversion compared to the control group. Nonperforming assets and loans, in addition to net charge-offs, are likewise significant and negative, indicating an asset portfolio that is performing better than the

control group. The measures for leverage and capital structure indicate these banks hold more debt and more loans compared to the control group but this itself is not an indication of distress as the previous estimates only signal good overall performance. For this particular event outcome, we conclude that C banks are not in any form of distress but rather are in a profitable position where conversion to the Subchapter S status makes sense. The Subchapter S election provides exemption from double taxation and has shown to dramatically increase after tax profit. A simple result demonstrating this is in summary statistics that we provide in Tables 2.1 and 2.2. For the control group, which consists of stable, average banks, we observe that C banks have an average ROAE of 8% throughout our sample period whereas S banks display an average ROAE of 13% over the same period. This marked increase stems mostly from the taxation benefit in Subchapter S banks. Therefore, we can conclude that the conversion choice for C banks is to further increase their profitability by taking advantage of this opportunity.

In contrast to the conversion event for C banks, M&A events for this group do not signify any indication of positive performance prior to the event. Profitability factors are all negative and significant while risk factors measuring nonperforming assets are positive, albeit economically small. The efficiency ratio, measured as non-interest expense to operating revenue, is higher for these banks, which indicates an inefficient use of capital. Our results for this event indicate that these C banks are performing at a lesser level compared to our control group. However, the estimates are not economically large for many factors and therefore these banks are not in a state of high financial distress but rather moderate levels of inefficiency and low performance.

For the default event, we observe a clear distinction compared to the M&A event group. C banks that default the following year show clear signs of financial distress across the board. Profitability ratios are negative and economically significant in magnitude. Our estimate for ROAE, which indicates the difference compared to the control group, is –22%. In contrast, the M&A event group displayed an ROAE estimate of –1.6%. We can observe one of the sources of financial distress through our risk ratios. Nonperforming assets and loans provide an estimate of 3%, indicating significantly higher levels of past due assets compared to our control group. The efficiency ratio, which is a measure of capital utilization, provides a high estimate of 17% compared to the M&A event group estimate of 3.4%.

It is clear from these results that the M&A and default event groups differ drastically. Banks undergoing a M&A event are not on the verge of defaulting or even close to that state. Our estimates indicate that these M&A event banks are performing only moderately worse than our control group whereas default event banks show clear signs of impending closure. In contrast to these two outcomes, the conversion event for C banks indicates these institutions are more profitable than our control group and in a position to take advantage of the tax benefits conferred by the Subchapter S election.

Table 2.4 provides the same type of results as in Table 2.3 for the Subchapter S bank group. We compare the S bank event group to other Subchapter S banks the year prior to the events. Since both the event group and control group are Subchapter S banks, the significant differences that stem from the tax treatment will be controlled for and the results we find should indicate the real effects these banks display prior to the events.

For the conversion event we observe very different results compared to the C bank conversion group. S banks that choose to convert are not at all in a state of profitability but rather significant financial distress. Profitability ratios are negative, significant, and large in magnitude for an S bank. ROAE has an estimate of –7% under this test, indicating a significant departure from the control group. Our measure for efficiency, non-interest expense to operating revenue, is likewise indicating large inefficiencies in these banks with an estimate of 10%. Nonperforming assets and loans are positive and significant, indicating heightened levels of toxic assets. Furthermore, the capital structure of these banks indicates increased levels of debt and leverage when we look at equity to assets, loans to deposits, and tier 1 capital. As a whole, all these factors point to significant financial distress in these S banks that convert. Given that the tax exemption status primarily benefits banks that are profitable, we conclude that these banks convert primarily to access additional equity capital to restructure their asset portfolio and survive. Pacheco, Lawrence, Chang (WP) provides a more in-depth analysis demonstrating this to be the case.

Subchapter S banks that undergo M&A events likewise display signs of financial distress. Profitability ratios are all negative and significant but not to the extent of the conversion group. We compare ROAE estimates of –3% for this event group compared to estimates of –7% for the conversion group. The efficiency ratio for these banks provides an estimate of about 5% in comparison to the estimate of 10% for the conversion group. While nonperforming loans is found to be significant, nonperforming assets is insignificant. This indicates the problem for these banks is not widespread across all asset but rather their loan portfolio. From these results we can clearly see signs of financial

distress when compared to the control group but not to the extent the conversion group displays.

For the S bank default group, we observe similar estimates to the C bank default group, albeit slightly smaller in magnitude. S banks that default the following year show significant signs of financial distress across all factors. Profitability is negative, significant, and economically large at –17%. The efficiency ratio is high and significant at about 14%. Nonperforming assets and loans sit at similar levels of 3% when compared to the C bank default group results. As was the case for our C bank default group, these S banks show very similar estimates when comparing them to the control group. All estimates indicate significant levels of toxic assets and loss that lead these banks to close the following year.

For our S bank event group, we note a clear distinction between the conversion, M&A, and default groups when we compare the magnitude of the estimates. Compared to the C bank group where not all events resulted from financial distress, our S bank event group all show signs of inefficiencies and less than average performance. When we compare ROAE, measuring profitability, among the S bank event groups we note that the M&A event group has the best relative performance at –3% while the conversion group displays an estimate of –7% and the default group provides an estimate of –17%. For the efficiency ratio, the same pattern is observed with an estimate of about 5% for the M&A event group, 10% for the conversion group, and about 14% for the default group. This same pattern prevails when we consider risk ratios and leverage ratios. Before drawing further conclusions regarding the ordering of these events from a bank's perspective we perform the pooled analysis that provides stronger results for all these outcomes.

Table 2.5 presents the regression results for our combined analysis where we compare all six event groups simultaneously. As defined previously, each dummy variable in the equation provides information regarding a specific bank event group. We analyze the estimates in this analysis to confirm our previous tests and discussion. Since we are able to incorporate additional control for location- and time-based effects, this combined regression provides stronger tests. Additionally, when comparing S and C banks, this test correctly accounts for the permanent differences between the two groups and the estimates therefore provide the real difference that does not solely stem from the organizational form choice.

β_1 estimates the permanent difference between S and C banks for all banks in the analysis. For ROAE, our measure of profitability, this estimate is about 6.2%, indicating that S banks are significantly more profitable. Our summary statistics indicated a difference of about 5% on average for this factor but this was computed based off the difference in means and did not control for a host of effects affecting this factor. With our current regression, our estimates for the permanent difference observed across all periods are more precise.

For our second factor, the efficiency ratio, we observe a permanent difference of about –5.2% between S and C banks. This factor measures non-interest expense to operating revenue and does not factor in the tax expense. This marked difference between the two groups can be explained by the endogenous choice that is converting to an S bank. As we mentioned earlier, C banks that convert to S banks seem to have higher profitability ratios and better risk factors compared to our control group. Therefore, the choice to become an S bank is partially motivated by being in a profitable position to take advantage

of the tax benefits conferred. Our result for the efficiency variable, which indicates that S banks are on average more efficient in using their capital compared to C banks, confirms that these banks are inherently better run and more likely to benefit from the tax exemption status. While many other factors are found to be significant for β_1, this measure is primarily meant to control for the permanent differences between S and C banks and therefore is not the focus of our study.

β_2 measures the effect for C banks that undergo a M&A event. While this factor utilizes all M&A events in the sample, β_4 controls for the effect on M&A events solely from S banks. Therefore, the estimate for β_2 can be interpreted as the effect on M&A events from C banks. The same principle applies to β_3 and β_5 for the default event.

Our results for β_2 indicate that C banks undergoing an M&A event are performing at below average levels, though not too detrimental. Similar to our prior analysis, we find lower profitability ratios, increased inefficiency, and higher leverage. β_3 likewise yields similar results when compared to our previous analysis, though we see larger magnitudes in our current estimates. For the banks that default, β_3, we find significantly higher levels of distress compared to any other event group with an ROAE estimate of –22%, an inefficiency ratio of 17.5%, and nonperforming assets above 3%.

β_4 and β_5 indicate the difference when a bank is Subchapter S rather than a C bank for these events. β_4 measures the change in the β_2 coefficient when a bank is Subchapter S for the M&A event. Interestingly, we find that the estimates indicate Subchapter S banks are significantly less leveraged compared to C banks that undergo M&A events. Our estimate for loans to deposits is –6.2% while the estimate for tier 1 capital is positive and significant. Additionally, we find that S banks are less profitable, as measured by ROAE,

and more inefficient compared to C banks for this event group. This detail is something we could not uncover in our original analysis as we could not account for the permanent differences between S and C banks. Since S banks do not pay taxes, the factor for ROAE is almost always higher for S banks in all instances. In this analysis, after controlling for the permanent difference, we are able to find that S banks undergoing M&A event are actually less profitable on average compared to C banks that undergo the M&A event. β_5 likewise provides interesting and new results we could not see in our original test. Overall, we find that S banks are in a slightly better state when undergoing default compared to C banks. Our measures for profitability, ROAE and the efficiency ratio, are both indicating signs of improvement. The estimate for ROAE is 5% while the estimate for the efficiency ratio is –4.5%. These indicate that S banks in the default event group, while still showing significant signs of loss, are in a better state when compared to C banks that default.

β_6 provides estimates for conversions from S to C while β_7 provides estimates for conversions from C to S. To understand the estimate for β_6 we have to also consider the estimate for β_1, as β_6 modifies the estimate for β_1 which indicates an S bank. When we consider profitability ratios, the ROAE estimate for β_6 is about –6.5. The estimate for the same factor for β_1 is about 6.2%. These two effects cancel out and indicate that S banks undergoing the conversion event are comparable to our C bank control group. This result does not indicate a favorable outcome, rather it tells us that these S banks are similar to C banks and are therefore not utilizing their tax advantage effectively. To compare this S bank conversion group to S banks undergoing default we compare the estimate β_6 to β_3 and β_5. The latter two coefficients result in an estimate of –17% for ROAE which is significantly less than the estimate for β_6. When comparing this S bank conversion group

to the S bank M&A event group we analyze at the estimate for β_2 and β_4. These two estimates sum up to –3% for ROAE and is greater than the estimate for β_6. Therefore, using this combined regression analysis, we are able to confirm our previous results indicating that Subchapter S banks undergoing M&A events are in a better state compared to S banks undergoing conversion. This analysis confirms our previous results by utilizing a more powerful test and we are therefore confident in these estimates indicating the real difference between our event groups.

β_7 displays the estimates for C banks converting to S banks. In the same manner as before, we can compare different groups utilizing the coefficients present in the regression analysis. For our discussion we compare the coefficient for ROAE to the M&A event group and the default event group. The estimate for β_7 measuring ROAE is a positive 1%. When we compare this to β_2 and β_3 estimates, –1.7% and -22% respectively, we see that C banks undergoing the conversion event are actually in a better state compared to our control group and compared to the M&A event group and the default event group. The results from this analysis likewise confirm our prior results for the C bank conversion group. That these banks chose to convert from a profitable position and aim to benefit from the tax advantage.

The results from the combined regression analysis provides similar insights to our previous tests. We are also able to make out clear distinctions between different event groups and discuss the event choice among banks undergoing financial distress or profitability. For C banks, we determine that the conversion event is higher in order than the M&A and default event when considering financial distress as the guiding factor in bank event choice. We order the events as (1^{st}) Conversion, (2^{nd}) M&A, and (3^{rd}) Default, indicating that the best financial state would most likely lead to a conversion to the

Subchapter S status while a worsening of performance and an increase in risk would then lead to a M&A event choice and then a default event choice if the prior option was not possible. For S banks, our results indicate that the conversion choice is made from a state of financial distress, similar to the M&A and default events. Our results strongly differentiate each of these outcomes and places the M&A outcome above the conversion outcome when ranked according to financial distress. Therefore, the order for S banks is (1^{st}) M&A, (2^{nd}) Conversion, and (3^{rd}) Default, which indicates that an S bank would first consider a merger or acquisition prior to conversion as their financial state worsens. When a certain level of inefficiency and loss is reached, S banks then choose to convert as a last resort prior to default if the M&A option was unavailable due to being an undesirable target or other reasons.

2.4.2 Robustness

We run a few additional tests to confirm our results for each event outcome. We first extend the time period by one additional year into the past to t – 2. With the availability of two periods we perform a difference-in-difference analysis between the event group and the control group from t-2 to t-1. The results for the difference-in-difference analysis are in tables 2.6 and 2.7 while the results for the regression test on both periods are in tables 2.8 through 2.13.

The results from our difference-in-difference analysis provides further insight into the event selection by banks as we observe the trend in various factors over a one-year period beginning two years prior to the event. For our C bank conversion group, we largely find insignificant results across the board apart from two factors. The first involves capital, where we observe a slight decrease over this period above the control group's change. This

makes sense since the Subchapter S election constrains the maximum number of shareholders to 100. Therefore, C banks preparing to convert may purchase back shares utilizing debt and this is why we observe this result in our analysis. The second significant factor we observe is in regards to common dividends paid as a fraction of net income. What is interesting here is that we observe a significant increase in the dividends paid out by C banks over this period as compared to the changes in the control group. Since the Subchapter S election avoids double taxation and passes income through to shareholders, it makes sense that a C banks preparing to convert may begin to increase its dividend payout.

For C banks in the M&A and default event group, the results corroborate our findings. Factors that measure profitability decrease over this time for both event groups with the default event group showing significantly larger decreases. The factors for nonperforming assets increase significantly over this period for the default event group while remain relatively constant for the banks that undergo M&A.

For the S banks that convert to C banks, we observe a negative and significant estimate for the profitability ratio, ROAE, an increase in leverage as measured by any of the five factors for this category, and an increase in nonperforming assets and loans. The S banks that undergo M&A, in contrast, display a similar pattern to the conversion group but with lower magnitudes and significance levels. The measure for the change in ROAE is only –0.5% for the M&A event group while the estimate for the conversion group is –1.4%. Likewise, we observe marginal increases in nonperforming assets for the M&A event group whereas the conversion group displays significant results for both nonperforming assets and loans. These results are in line with our previous assessment. The S banks that

undergo M&A are in a better state compared to the S banks that convert to C. The results for the S banks that default are as expected and show changes similar to the C banks that default, albeit with lower magnitudes for most factors.

Our t – 1 and t – 2 analysis utilizing our initial test are in tables 2.8 through 2.13. This analysis is the same as the first but is conducted on the smaller sample that we use for the difference-in-difference methodology. We provide the estimates for our factors for both time periods and determine whether the results continue to hold.

All results for the t – 1 period are in line with our initial test and therefore we skip a discussion on those estimates. For the t – 2 period, we observe that all six event groups display significant factors that demonstrate the same kind of financial distress we observe in the t – 1 period. This signals that the factors explaining an event can be observed even two years before the event occurs. This is particularly true for banks that undergo the default event, regardless of their organizational form. The M&A event group displays similar signs and significance levels for most factors in the t – 2 period though the magnitude for the estimates are smaller across the board. For C banks that convert, we can still see increased levels of profitability and efficiency two years before the conversion event is taken. For S banks that convert, the t – 2 period shows very strong and economically large results that indicate financial distress in these institutions. Therefore, while the S bank M&A group only show small levels of distress in their factors during the t – 2 period, the S bank conversion group show differences that are over twice as large.

2.5 Conclusion

We investigate the factors that explain mergers and acquisitions, defaults, and conversions for both C banks and S banks. Our results indicate that all these events, apart

from the adoption of the Subchapter S status by C bank, are due to some level of financial distress. We further order the bank event choice according to measures of performance and risk. For C banks we find the order of event choice, according to increasing levels of financial distress, being M&A and Default. We find that the conversion event for C banks is made from a profitable position as we observe above average levels of performance and risk factors compared to our control group. For S banks we find the order of even choice being M&A, Conversion, and Default. The M&A event and conversion event show similar signs and significance levels for most factors but differ greatly in magnitude. We find that S banks undergoing conversion display very high levels of inefficiency and risk measures compared to the S bank control group and compared to the S banks that undergo M&A. We conclude that S banks in financial distress first seek to merge or get acquired and then choose to convert to a C bank to survive when no other option is available to them.

Figure 2.1

The following figures displays the number of commercial banks in the U.S. separated by its organizational form. We note the constant decline in commercial banks over our sample period and the decline in Subchapter S banks since the financial crisis of 2008.

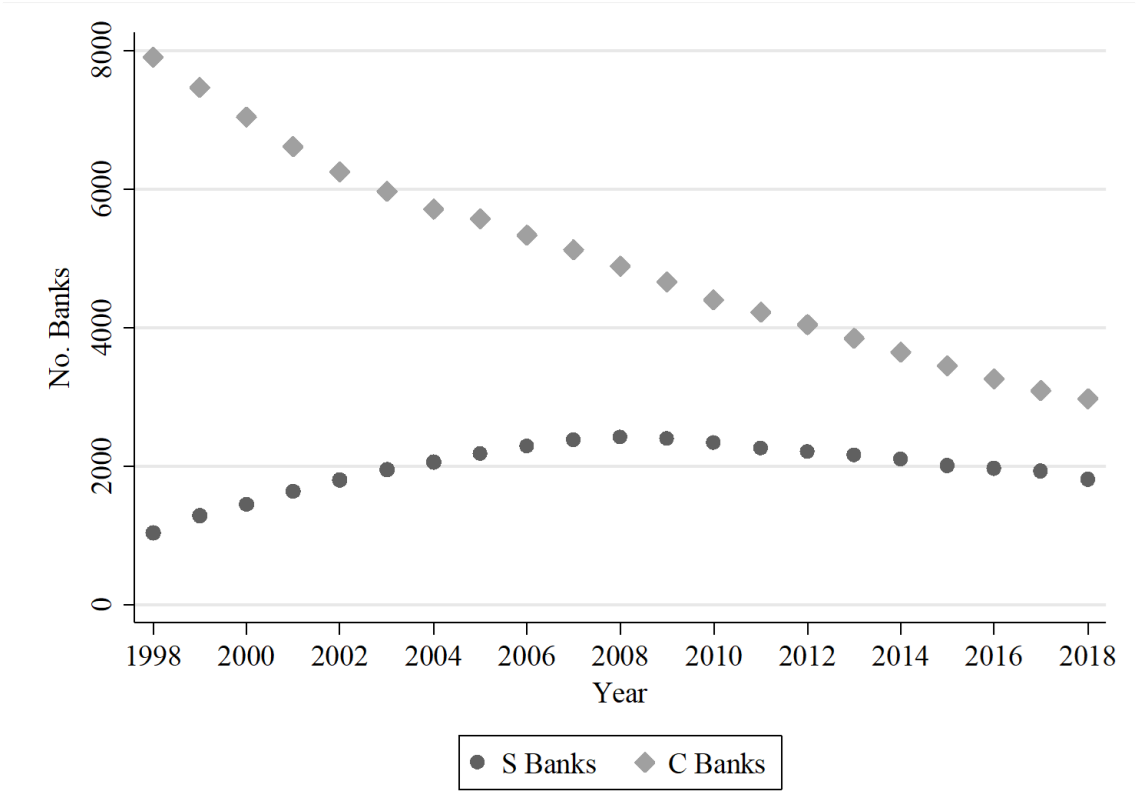


Figure 2.2

The following figure displays the annual quantity of C banks that adopt subchapter S status.

We note a general decline in the conversion to the Subchapter S status over the years.

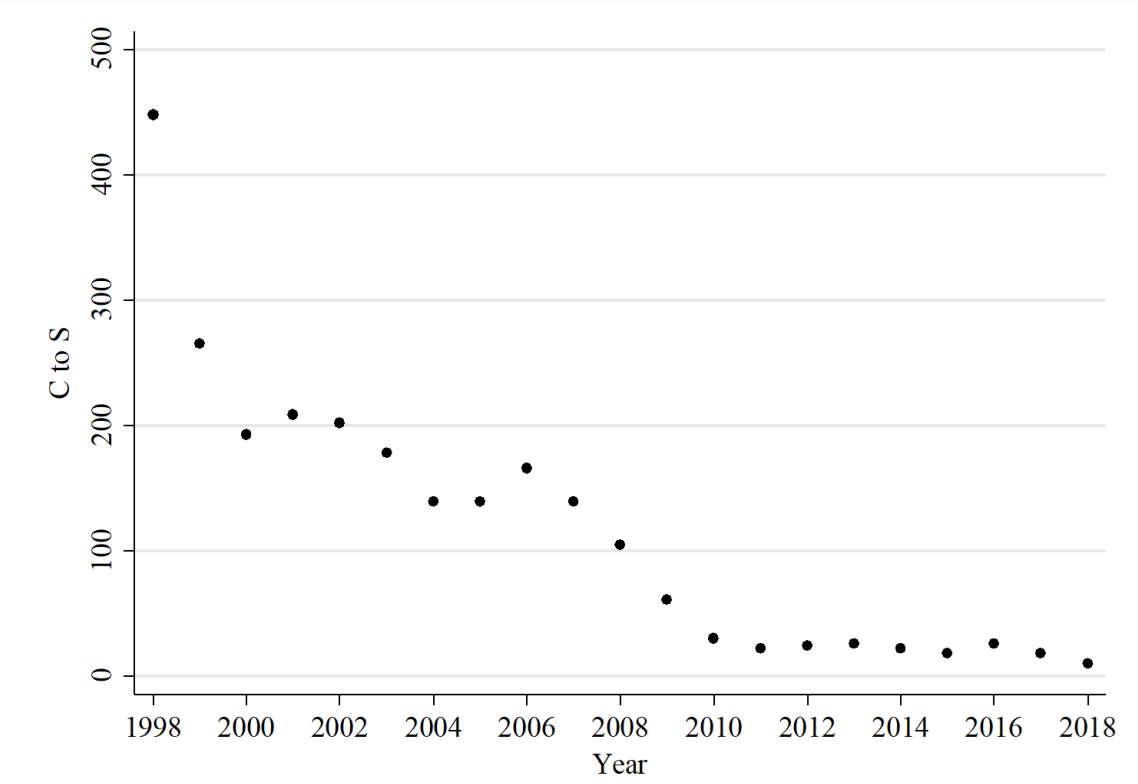


Figure 2.3

The following figure displays the annual quantity of the C banks involved in mergers and acquisitions. The number of bank acquisitions has declined since 1998 and then began increasing after the financial crisis.

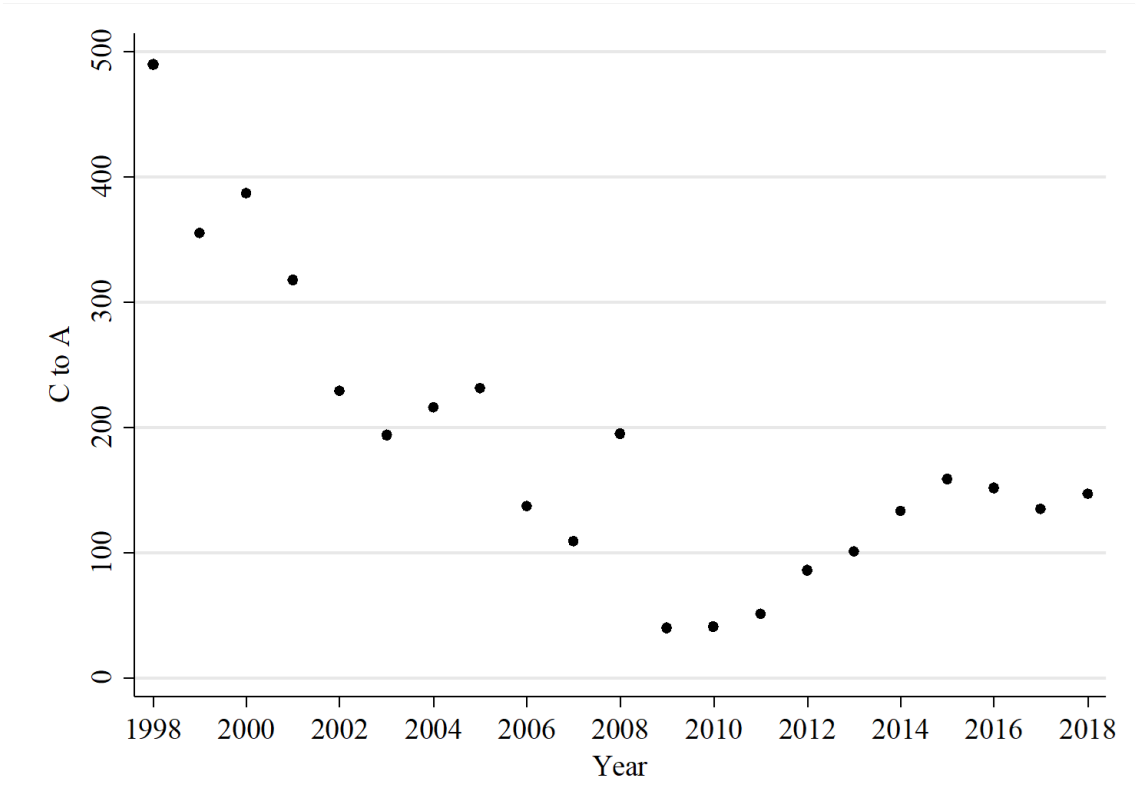


Figure 2.4

The following figure displays the annual quantity of the C banks that default. C bank defaults spiked during the financial crisis and has since declined.

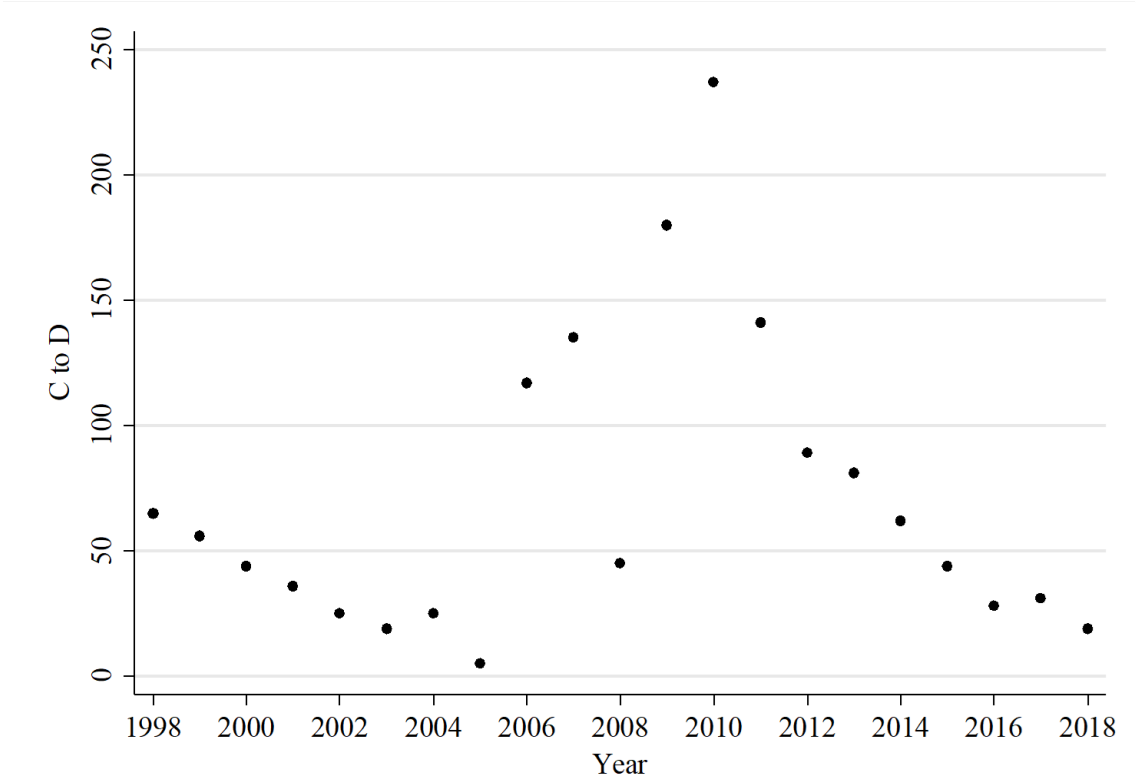


Figure 2.5

The following figure displays the annual quantity of Subchapter S banks that adopt C status. A steady rate of conversion from the Subchapter S status to the C status is observed since banks could opt into the election.

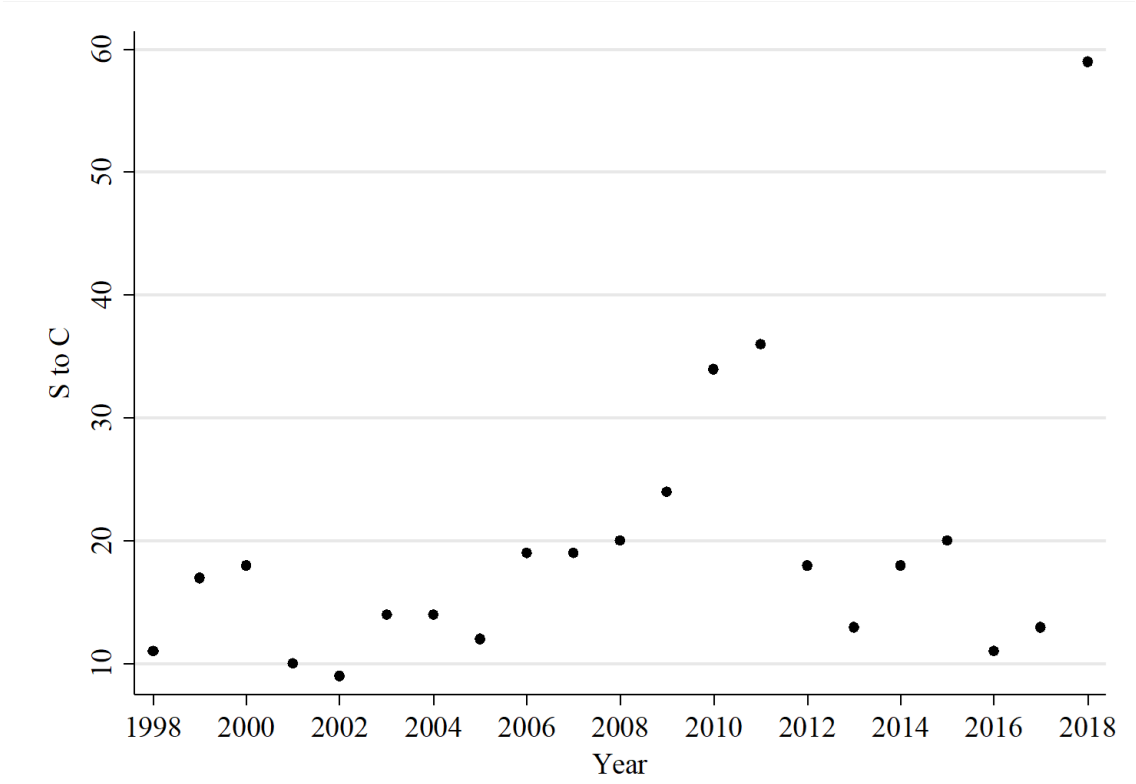


Figure 2.6

The following figure displays the annual quantity of the Subchapter S banks that are involved in mergers and acquisitions. Whereas C bank acquisitions have been declining since 1998, we note that Subchapter S bank acquisitions have been steadily increasing.

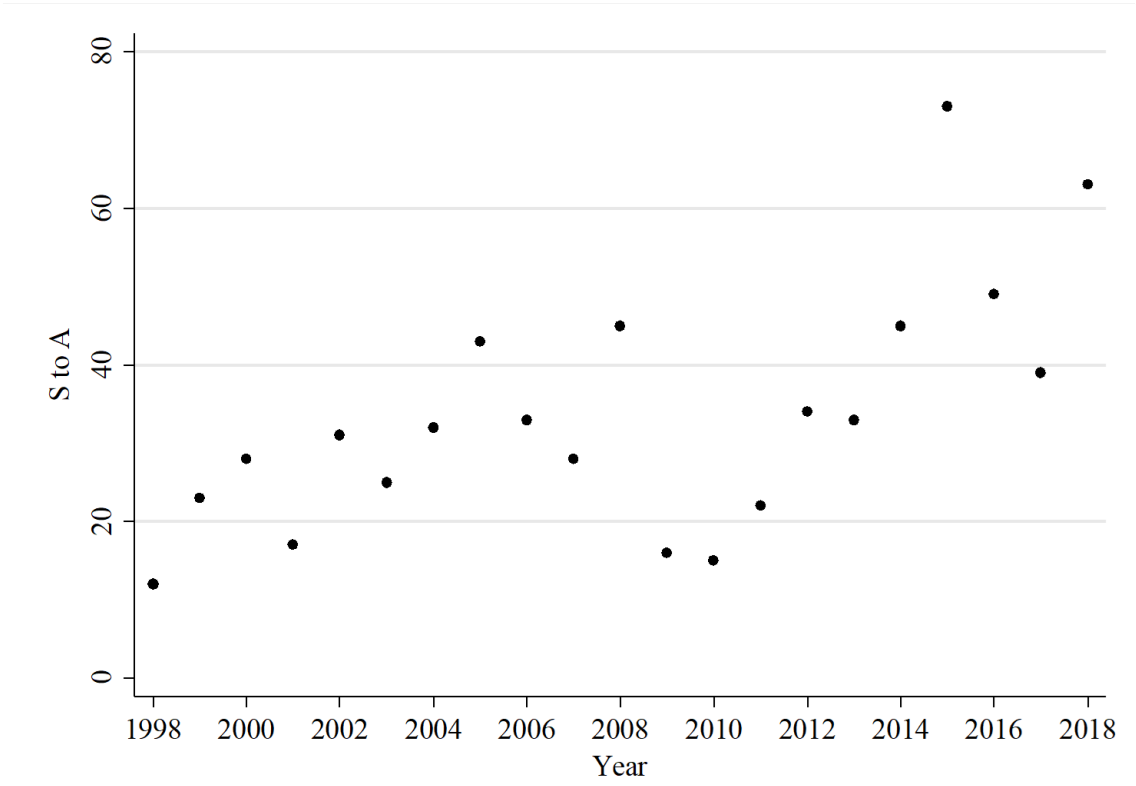


Figure 2.7

The following figure displays the annual quantity of the Subchapter S banks that default. Subchapter S banks have had low levels of default prior to the financial crisis. Post-crisis we observe a significant quantity of bank defaults that remain high through 2011.

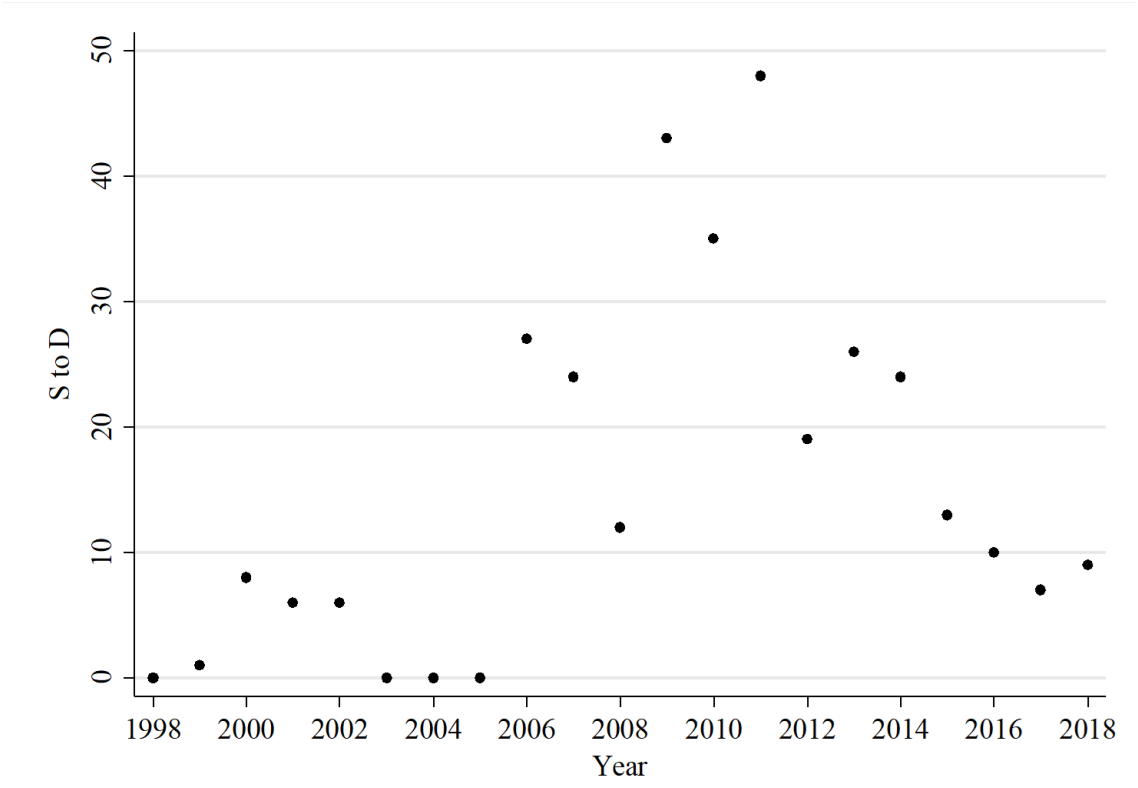


Table 2.1 – Summary statistics for our factors of interest are shown below for the C bank group. We report the mean (μ), and standard deviation (σ), for each factor and separate the results by event group.

	C to S Conversion				C to M&A				C to Default			
	Event N=2,371		Control N=59,627		Event N=3,693		Control N=59,627		Event N=1,209		Control N=59,627	
$y_{i,t}$	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
L&L / A	60.92	14.53	62.01	15.54	63.47	15.25	62.01	15.54	65.88	15.89	62.01	15.54
L&L / Deposit	72.04	18.41	76.44	63.83	79.96	67.45	76.44	63.83	82.89	64.93	76.44	63.83
ROAA	1.10	0.55	0.85	0.98	0.74	1.29	0.85	0.98	-0.69	2.96	0.85	0.98
ROAE	10.92	6.35	8.10	8.99	7.47	13.38	8.10	8.99	-15.75	45.41	8.10	8.99
Net Int Inc / AEA	4.39	0.87	4.05	1.22	4.12	1.14	4.05	1.22	3.72	1.26	4.05	1.22
Yield Cost Spread	3.76	0.83	3.60	1.18	3.61	1.05	3.60	1.18	3.35	1.19	3.60	1.18
Op Exp / Op Rev	63.80	13.67	68.60	19.52	70.57	23.14	68.60	19.52	88.71	48.83	68.60	19.52
Tier 1 C / A	10.28	3.43	10.77	4.34	9.57	3.55	10.77	4.34	8.35	5.42	10.77	4.34
Risk Based Capital Ratio	17.32	7.94	18.20	11.46	16.03	10.46	18.20	11.46	13.71	11.14	18.20	11.46
Equity / A	10.44	3.45	11.03	4.11	10.50	4.37	11.03	4.11	9.54	6.19	11.03	4.11
Com Div / NI	64.96	88.52	40.11	55.19	51.51	95.08	40.11	55.19	39.83	86.20	40.11	55.19
NPL / L	0.76	1.16	1.48	2.43	1.33	2.48	1.48	2.43	5.31	7.50	1.48	2.43
NPA / A	0.62	0.89	1.26	2.21	1.10	2.03	1.26	2.21	5.00	7.47	1.26	2.21
Net CO / AL	0.23	0.68	0.36	0.83	0.43	1.43	0.36	0.83	1.39	2.17	0.36	0.83
Liquid A / L	28.75	16.11	28.31	18.50	26.99	17.66	28.31	18.50	23.57	19.90	28.31	18.50

Table 2.2 – Summary statistics for our factors of interest are shown below for our S bank group. We report the mean (μ), and standard deviation (σ), for each factor and separate the results by event group.

	S to C Conversion				S to M&A				S to Default			
	Event N=375		Control N=27,546		Event N=658		Control N=27,546		Event N=260		Control N=27,546	
$y_{i,t}$	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
L&L / A	65.61	13.86	62.08	15.46	58.62	16.65	62.08	15.46	65.12	15.41	62.08	15.46
L&L / Deposit	77.33	18.09	74.01	26.11	69.06	20.87	74.01	26.11	76.15	19.39	74.01	26.11
ROAA	0.75	1.56	1.36	1.06	1.06	1.00	1.36	1.06	0.09	2.82	1.36	1.06
ROAE	6.67	20.26	13.11	8.75	10.16	10.88	13.11	8.75	-5.66	41.74	13.11	8.75
Net Int Inc / AEA	4.08	0.99	4.05	0.87	3.93	0.86	4.05	0.87	3.78	0.95	4.05	0.87
Yield Cost Spread	3.69	0.95	3.69	0.83	3.57	0.77	3.69	0.83	3.46	0.91	3.69	0.83
Op Exp / Op Rev	75.76	24.02	65.55	15.04	72.03	17.94	65.55	15.04	81.17	44.48	65.55	15.04
Tier 1 C / A	9.45	3.43	10.42	3.41	10.10	3.00	10.42	3.41	10.55	31.78	10.42	3.41
Risk Based Capital Ratio	15.02	6.02	17.27	7.25	17.60	7.62	17.27	7.25	14.13	6.82	17.27	7.25
Equity / A	9.79	3.63	10.68	3.60	10.51	3.23	10.68	3.60	9.21	3.85	10.68	3.60
Com Div / NI	54.27	72.56	66.42	50.96	60.17	63.72	66.42	50.96	58.11	88.68	66.42	50.96
NPL / L	2.35	3.80	1.37	2.17	1.44	2.34	1.37	2.17	4.68	7.84	1.37	2.17
NPA / A	2.15	3.41	1.20	1.96	1.15	1.83	1.20	1.96	4.50	7.67	1.20	1.96
Net CO / AL	0.54	1.12	0.28	0.59	0.31	1.00	0.28	0.59	1.02	2.06	0.28	0.59
Liquid A / L	24.67	15.02	27.46	16.34	32.20	18.03	27.46	16.34	24.39	14.64	27.46	16.34

Table 2.3 – We test for differences in our factor variables between the event group and control group in the year prior to the event, t-1. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the C bank group.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

$y_{i,t}$	C_S vs C	C_A vs C	C_D vs C
L&L / A	1.93 ***	1.36 ***	2.44 ***
L&L / Deposit	1.20	3.10 ***	1.07
ROAA	0.12 ***	-0.20 ***	-1.35 ***
ROAE	1.34 ***	-1.62 ***	-21.87 ***
Net Int Inc / AEA	0.11 ***	-0.07 ***	-0.37 ***
Yield Cost Spread	0.13 ***	-0.03 *	-0.29 ***
Op Exp / Op Rev	-2.45 ***	3.41 ***	16.94 ***
Tier 1 C / A	-0.51 ***	-1.10 ***	-2.38 ***
Risk Based Capital Ratio	-1.57 ***	-2.06 ***	-4.05 ***
Equity / A	-0.47 ***	-0.36 ***	-1.48 ***
Com Div / NI	22.07 ***	12.60 ***	3.90 **
NPL / L	-0.12 **	0.08 **	3.19 ***
NPA / A	-0.08 *	0.06 *	3.10 ***
Net CO / AL	-0.05 ***	0.11 ***	0.84 ***
Liquid A / L	-2.94 ***	-1.79 ***	-3.27 ***

Table 2.4 – We test for differences in our factor variables between the event group and control group in the year prior to the event, t-1. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the S bank group.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

$y_{i,t}$	S_C vs S	S_A vs S	S_D vs S
L&L / A	3.12 ***	-2.11 ***	3.02 ***
L&L / Deposit	2.41 *	-2.93 ***	2.10
ROAA	-0.72 ***	-0.29 ***	-1.11 ***
ROAE	-6.90 ***	-2.84 ***	-17.27 ***
Net Int Inc / AEA	-0.05	-0.17 ***	-0.29 ***
Yield Cost Spread	-0.04	-0.15 ***	-0.23 ***
Op Exp / Op Rev	10.12 ***	5.34 ***	13.71 ***
Tier 1 C / A	-1.10 ***	-0.57 ***	0.05
Risk Based Capital Ratio	-2.37 ***	-0.43	-3.25 ***
Equity / A	-1.03 ***	-0.33 ***	-1.50 ***
Com Div / NI	-10.40 ***	-6.02 ***	-6.17 *
NPL / L	0.81 ***	0.21 ***	3.11 ***
NPA / A	0.82 ***	0.11	3.07 ***
Net CO / AL	0.23 ***	0.08 ***	0.69 ***
Liquid A / L	-2.80 ***	2.75 ***	-3.81 ***

Table 2.5 – We present results of a multivariate regression where event effects are distinguished by their associated dummy variable in the equation below. This pooled regression provides comparisons regarding each event choice between C and S banks by controlling for size, location, and time fixed effects. β_1 controls for the permanent difference between S and C banks. β_2 provides the average effect for a C bank undergoing acquisition. β_3 provides the average effect for a C bank undergoing default. β_4 and β_5 provide estimates for an S bank undergoing acquisition and default respectively. β_6 estimates the effect when an S bank converts to C. β_7 estimates the effect when a C bank converts to S, and lastly β_8 estimates the effect of size, measured as $LN(Total\ Assets)$.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 (ACQ)_{i,t} + \beta_3 (DEF)_{i,t} + \beta_4 (ACQ)_{i,t} S_{i,t} + \beta_5 (DEF)_{i,t} S_{i,t} + \beta_6 (S\ to\ C)_{i,t} + \beta_7 (C\ to\ S)_{i,t} + \beta_8 (SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

$y_{i,t}$	B_0	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8
L&L / A	27.79 ***	1.56 ***	1.29 ***	2.43 ***	-3.76 ***	0.40	3.36 ***	1.81 ***	1.84 ***
L&L / Deposit	17.62 ***	1.05 **	3.10 ***	1.56	-6.23 ***	0.73	2.03	1.05	3.47 ***
ROAA	-0.13	0.62 ***	-0.20 ***	-1.38 ***	-0.11 **	0.27 ***	-0.61 ***	0.11 ***	0.13 ***
ROAE	-7.31 ***	6.21 ***	-1.71 ***	-22.09 ***	-1.25 ***	4.99 ***	-6.43 ***	1.03 ***	1.67 ***
Net Int Inc / AEA	6.13 ***	0.12 ***	-0.08 ***	-0.39 ***	-0.09 **	0.12 *	-0.06	0.10 ***	-0.06 ***
Yield Cost Spread	4.96 ***	0.13 ***	-0.04 **	-0.30 ***	-0.11 ***	0.09	-0.06	0.12 ***	-0.04 ***
Op Exp / Op Rev	119.23 ***	-5.21 ***	3.38 ***	17.48 ***	1.88 **	-4.52 ***	10.04 ***	-2.36 ***	-4.56 ***
Tier 1 C / A	21.35 ***	-0.44 ***	-1.11 ***	-2.39 ***	0.49 ***	2.41 ***	-0.92 ***	-0.51 ***	-0.79 ***
Risk Based Capital Ratio	46.84 ***	-1.23 ***	-2.05 ***	-4.01 ***	1.47 ***	0.69	-2.28 ***	-1.52 ***	-2.13 ***
Equity / A	19.23 ***	-0.46 ***	-0.37 ***	-1.49 ***	-0.01	-0.03	-0.81 ***	-0.47 ***	-0.60 ***
Com Div / NI	10.59	26.63 ***	12.23 ***	3.85 **	-16.72 ***	-9.60 **	-9.86 ***	21.02 ***	3.50 ***
NPL / L	0.65 **	-0.24 ***	0.05	3.23 ***	0.17 *	-0.27 *	0.88 ***	-0.09 *	-0.01
NPA / A	0.38	-0.21 ***	0.03	3.13 ***	0.08	-0.19	0.88 ***	-0.05	-0.01 *
Net CO / AL	-0.41 ***	-0.06 ***	0.11 ***	0.86 ***	-0.01	-0.20 ***	0.22 ***	-0.04 **	0.04 ***
Liquid A / L	86.22 ***	-2.30 ***	-1.70 ***	-3.30 ***	4.65 ***	-0.26	-2.78 ***	-2.74 ***	-3.98 ***

Table 2.6 – Estimates from our difference in difference analysis is shown below. We test for differences in our factor variables between our event group and control group over a two-year period prior to the event, $\Delta t = (t-1) - (t-2)$. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to our C bank group.

$$\Delta y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(\Delta SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

$y_{i,t}$	C_S vs C	C_A vs C	C_D vs C
L&L / A	0.23 *	-0.78 ***	-1.30 ***
L&L / Deposit	0.41	0.01	-2.98 ***
ROAA	-0.02	-0.08 ***	-0.53 ***
ROAE	-0.13	-1.03 ***	-11.43 ***
Net Int Inc / AEA	0.01	-0.05 ***	-0.12 ***
Yield Cost Spread	0.01	-0.04 ***	-0.09 ***
Op Exp / Op Rev	0.32	0.54 **	8.22 ***
Tier 1 C / A	-0.11 **	-0.12 ***	-1.02 ***
Risk Based Capital Ratio	-0.23 **	0.21 ***	-1.03 ***
Equity / A	-0.14 ***	0.23 ***	-0.81 ***
Com Div / NI	14.63 ***	8.30 ***	3.23
NPL / L	-0.04	-0.01	1.53 ***
NPA / A	-0.04	-0.05 **	1.39 ***
Net CO / AL	-0.03	0.05 ***	0.37 ***
Liquid A / L	-0.14	0.92 ***	0.85 ***

Table 2.7 – Estimates from our difference in difference analysis is shown below. We test for differences in our factor variables between our event group and control group over a two-year period prior to the event, $\Delta t = (t-1) - (t-2)$. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to our S bank group.

$$\Delta y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(\Delta SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

$y_{i,t}$	S_C vs S	S_A vs S	S_D vs S
L&L / A	-1.00 ***	-1.07 ***	-1.14 ***
L&L / Deposit	-1.30 **	-1.14 **	-1.74 **
ROAA	-0.01	-0.02	-0.40 ***
ROAE	-1.35 ***	-0.50 **	-8.01 ***
Net Int Inc / AEA	-0.06 **	-0.02	-0.05 *
Yield Cost Spread	-0.05 **	-0.02	-0.05 *
Op Exp / Op Rev	-0.52	-0.18	2.38 ***
Tier 1 C / A	-0.17 ***	-0.05	1.50 ***
Risk Based Capital Ratio	-0.31 ***	0.32 ***	-0.84 ***
Equity / A	-0.12 *	0.08 *	-0.41 ***
Com Div / NI	3.28	-0.69	-2.17
NPL / L	0.24 ***	-0.03	0.99 ***
NPA / A	0.24 ***	-0.09 **	0.94 ***
Net CO / AL	0.06 *	0.00	0.28 ***
Liquid A / L	0.66 *	1.61 ***	0.24

Table 2.8 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the C banks that adopt Subchapter S status.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	C_S vs C	
$y_{i,t}$	t - 1	t - 2
L&L / A	2.17 ***	1.88 ***
L&L / Deposit	1.66	1.18
ROAA	0.09 ***	0.11 ***
ROAE	1.08 ***	1.25 ***
Net Int Inc / AEA	0.10 ***	0.09 ***
Yield Cost Spread	0.11 ***	0.11 ***
Op Exp / Op Rev	-1.86 ***	-2.36 ***
Tier 1 C / A	-0.43 ***	-0.36 ***
Risk Based Capital Ratio	-1.49 ***	-1.30 ***
Equity / A	-0.40 ***	-0.30 ***
Com Div / NI	22.45 ***	7.77 ***
NPL / L	-0.14 ***	-0.10 *
NPA / A	-0.10 **	-0.06
Net CO / AL	-0.05 ***	-0.02
Liquid A / L	-2.98 ***	-2.81 ***

Table 2.9 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the C banks that undergo merger and acquisitions.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	C_A vs C	
$y_{i,t}$	t - 1	t - 2
L&L / A	1.31 ***	1.91 ***
L&L / Deposit	2.94 ***	2.56 ***
ROAA	-0.21 ***	-0.12 ***
ROAE	-1.78 ***	-0.68 ***
Net Int Inc / AEA	-0.09 ***	-0.03 *
Yield Cost Spread	-0.05 ***	0.00
Op Exp / Op Rev	4.06 ***	3.21 ***
Tier 1 C / A	-0.93 ***	-0.93 ***
Risk Based Capital Ratio	-1.74 ***	-2.09 ***
Equity / A	-0.21 ***	-0.56 ***
Com Div / NI	12.30 ***	3.76 ***
NPL / L	0.08 **	0.09 **
NPA / A	0.05	0.09 **
Net CO / AL	0.10 ***	0.05 ***
Liquid A / L	-1.58 ***	-2.35 ***

Table 2.10 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the C banks that default.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	C_D vs C	
$y_{i,t}$	t - 1	t - 2
L&L / A	2.17 ***	3.11 ***
L&L / Deposit	1.62	3.86 **
ROAA	-1.25 ***	-0.69 ***
ROAE	-19.82 ***	-8.16 ***
Net Int Inc / AEA	-0.35 ***	-0.22 ***
Yield Cost Spread	-0.27 ***	-0.17 ***
Op Exp / Op Rev	16.69 ***	7.78 ***
Tier 1 C / A	-2.29 ***	-1.52 ***
Risk Based Capital Ratio	-3.89 ***	-3.13 ***
Equity / A	-1.42 ***	-0.85 ***
Com Div / NI	6.02 ***	2.46
NPL / L	3.00 ***	1.46 ***
NPA / A	2.91 ***	1.49 ***
Net CO / AL	0.72 ***	0.35 ***
Liquid A / L	-3.22 ***	-3.75 ***

Table 2.11 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the Subchapter S banks that convert to the C status.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	S_C vs S	
$y_{i,t}$	t - 1	t - 2
L&L / A	2.82 ***	3.88 ***
L&L / Deposit	2.53 **	3.91 ***
ROAA	-0.57 ***	-0.56 ***
ROAE	-5.88 ***	-4.55 ***
Net Int Inc / AEA	-0.04	0.02
Yield Cost Spread	-0.05	0.00
Op Exp / Op Rev	9.61 ***	10.18 ***
Tier 1 C / A	-0.74 ***	-0.55 ***
Risk Based Capital Ratio	-1.80 ***	-1.47 ***
Equity / A	-0.63 ***	-0.49 ***
Com Div / NI	-12.42 ***	-15.70 ***
NPL / L	0.72 ***	0.47 ***
NPA / A	0.76 ***	0.52 ***
Net CO / AL	0.18 ***	0.11 ***
Liquid A / L	-1.97 **	-2.68 ***

Table 2.12 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the Subchapter S banks that undergo merger and acquisitions.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	S_A vs S	
$y_{i,t}$	t - 1	t - 2
L&L / A	-2.41 ***	-1.69 ***
L&L / Deposit	-3.24 ***	-2.55 **
ROAA	-0.26 ***	-0.24 ***
ROAE	-2.54 ***	-1.99 ***
Net Int Inc / AEA	-0.17 ***	-0.15 ***
Yield Cost Spread	-0.16 ***	-0.13 ***
Op Exp / Op Rev	5.43 ***	5.43 ***
Tier 1 C / A	-0.47 ***	-0.52 ***
Risk Based Capital Ratio	-0.11	-0.52 *
Equity / A	-0.31 **	-0.51 ***
Com Div / NI	-5.52 ***	-4.95 **
NPL / L	0.12	0.15 *
NPA / A	0.01	0.09
Net CO / AL	0.05 **	0.05 **
Liquid A / L	3.33 ***	2.06 ***

Table 2.13 – We extend our analysis 2 years prior to the event. We test for differences in our factor variables between our event group and control group the year prior to the event, t-1, and two years prior to the event, t-2. We list the estimates for β_1 alongside its significance according to the equation below. These results pertain to the Subchapter S banks that default.

$$y_{i,t} = \beta_0 + \beta_1(Event\ Group = 1,\ Control\ Group = 0)_{i,t} + \beta_2(SIZE)_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{i,t}$$

	S_D vs S	
$y_{i,t}$	t - 1	t - 2
L&L / A	3.44 ***	4.05 ***
L&L / Deposit	2.78 **	3.85 **
ROAA	-0.97 ***	-0.56 ***
ROAE	-14.78 ***	-6.68 ***
Net Int Inc / AEA	-0.24 ***	-0.19 ***
Yield Cost Spread	-0.20 ***	-0.14 ***
Op Exp / Op Rev	11.10 ***	8.52 ***
Tier 1 C / A	0.49 *	-1.27 ***
Risk Based Capital Ratio	-2.96 ***	-2.29 ***
Equity / A	-1.31 ***	-1.08 ***
Com Div / NI	-6.17 *	-4.18
NPL / L	2.80 ***	1.79 ***
NPA / A	2.83 ***	1.85 ***
Net CO / AL	0.55 ***	0.27 ***
Liquid A / L	-3.98 ***	-3.67 ***

CHAPTER 3: BANK PRODUCT RATE COMPETITION

3.1 Introduction

We analyze three very different depository institutions within the U.S. to determine whether their organizational form significantly affects their deposit and loan rates. Given the ever-increasing deregulation in bank competition, such as the relaxing of requirements for credit union membership, we are interested in whether bank product rates differ between institutions and over time. The institutions we are interested in analyzing are standard C corporation banks, Subchapter S banks, and credit unions as these comprise the majority share of depository institutions within the U.S.

C corporation banks are the second largest group for depository institutions despite their organizational form being the most prominent for businesses. C corporations have the characteristic of shareholders being taxed separately from the entity. Therefore, C corporations are subject to double taxation, once at the corporate level, and again at the personal shareholder level. To contrast this, we look at Subchapter S banks, which comprise mostly of C corporation banks that elected into this status at some point in their life. While this group is smaller than C corporation banks, the gap between them is closing every year. Subchapter S banks are not taxed at the corporate level and this is the primary benefit of the organizational form. Income is taxed only at the personal level for Subchapter S banks as business income, losses, deductions, and credits are passed onto shareholders. One prominent restriction for Subchapter S banks is the shareholder limit of 100. These 100 shareholders may be individuals, trusts, estates, or certain tax-exempt organizations. Partnerships, corporations, and nonresident aliens cannot become shareholders for Subchapter S banks. The benefit to Subchapter S banks from the tax-exemption status is

significant and we observe after-tax profits in large excess of average C corporation banks. Our last and largest group of depository institutions are credit unions in the U.S. Of the roughly 10,500 depository institutions today, credit unions amount to about 5,500. Credit unions differ from the previous two bank types in many ways. One primary difference is that credit unions are created, managed, and owned by the participants or depositors. Credit unions are considered not-for-profit enterprises and therefore are tax-exempt, similar to Subchapter S banks. While credit union membership was restricted in the past to individuals sharing some common bond, today, due to deregulation over the last thirty years, membership into credit unions is open to most.

A prominent difference between commercial banks, whether they be C or S banks, and credit unions stems from the goals of management and operators. Commercial banks are profit maximizers and are expected to increase profits to the benefit of shareholders. This naturally leads to maximizing a bank's spread between loan rates and deposit rates. In other words, commercial banks may want to increase loan rates and decrease deposit rates to maximize shareholder wealth. In contrast, credit unions are managed by depositors, each of whom have equal vote on business matters regardless of the size of their deposits. As a not-for-profit institution, credit unions may seek to minimize their spread as depositors seek higher returns on investments and simultaneously seek low rates on loans. This opposite goal compared to commercial banks begs the question whether credit unions really offer more competitive rates.

In a similar vein to credit unions, previous studies have asked whether Subchapter S banks, which are also tax-exempt, pass any of their savings onto customers. Chang, Jain, Lawrence, and Prakash (2016) investigate if the tax benefit for Subchapter S banks are

passed onto employees in the form of job protection, increased salaries, and further job opportunities. They conclude that none of these outcomes are delivered by these banks onto their employees. Depken, Hollans, and Swidler (2010) investigate if the tax benefit in Subchapter S banks is passed onto customers through higher deposit rates and lower loan rates. Their study focuses on a single period in 2008 and they conclude that Subchapter S banks do not pass on any benefits to customers in either deposits or loans compared to C banks. These studies demonstrate interest in whether tax-exempt institutions are passing their benefits primarily onto employees, customers, or shareholders.

This paper aims to add to the literature and further answer these questions by performing an extensive analysis on bank product rates for all three bank types mentioned. Our results provide significant insight into the competition between these groups regarding product rates. Despite the tax exemption status on both Subchapter S banks and credit unions, we find that this benefit is passed on in very different ways. For credit unions we find strong and significant signs that the tax benefit is passed onto their participants and depositors when compared to C corporation banks. This benefit can be seen in both deposit and loan rates across all products. In contrast, Subchapter S banks display mixed results with some surprising, if rather unintuitive, findings. Subchapter S banks offer only marginally higher deposit rates compared to C banks and actually charge higher rates on certain loan products. Our analysis significantly extends any previous work on this topic by its scope and we hope future work in this area seeks to find the economic impact of these differences on bank portfolios and regional competition between C banks, S banks, and credit unions.

3.2 Data

Bank product rates are acquired from the S&P Global Market Intelligence database. Originally, this data was collected from Datatrac, which was itself acquired by SNL which was then subsequently acquired by S&P Global. Of the available bank products, we chose 30 products based on the number of observations available and their importance. This dataset is relatively new with the collection of data beginning in 2007. Therefore, our sample spans 12 years from 2007 to 2018. Many products that have low observation counts in earlier years are not included in this analysis.

Bank product rates are available in high frequencies with deposits products being updated weekly and loan products being updated monthly. The product rates we obtain measure the prevailing average prime rate for a specific product across all branches for a bank. In other words, the prime rate is acquired for a specific product at a given time period for each branch of a bank and then averaged. It should be emphasized that the product rate is the current rate and not an average of past rates.

In our analysis, we provide controls for bank size and other effects that are available on an annual basis. Therefore, we construct two different samples for our analysis and annualize bank product rates differently in each. The first sample is simply the last rate of a product in a given year by a bank. This is usually the product rate on the last Friday of the year. Since this method measures the rate at the end of the year, it makes sense to account for a bank's size by using the end of year total assets as they are both current values. For the second sample, we acquire bank product rates on a quarterly basis. These rates are therefore the current rates on the last Friday of each quarter. We then take the average of the four quarterly rates and use this annual measure in our second analysis.

As mentioned previously, the data for bank product rates is not available for a number of banks in any given period though this has improved in recent years. Figure 3.1 displays the number of banks in our sample, though the actual number of banks analyzed are fewer due to missing data. We note the steady decline in the number of banks across all categories. In 2007, when our sample begins, there are a total of 15,780 banks split among 8,271 Credit Unions, 5,130 C corporation banks, and 2,379 Subchapter S banks. In 2018, the total number of banks is reduced to 10,458, a significant drop. Each category of banks likewise reduces by a similar proportion. The table as part of Figure 3.1 provides the quantities for each bank type every year and we observe a steady declining trend.

In Appendix I, we provide the definitions for many of the abbreviations used in describing deposit and loan products. In Appendix Tables IA1 through IA9 we provide a summary for the number of observations for each bank product, by year and bank category. The summary for the number of observations shows how the availability of data improves each year. Whereas the number of banks decreases every year, the number of bank product observations increases for later years. For example, the bank deposit product "CD 1 Yr 10k", which measures the rate for a certificate of deposit over one year on $10,000, has 4,619 observations in 2018 which corresponds to roughly half the number of banks in that year. This can be seen when we focus on a specific bank type as well. Under the same product and year, we observe 941 observations for Subchapter S banks whereas there are 1,808 S banks in that year. While the number of observations is less than optimal compared to the number of banks in existence, it is sufficient for drawing meaningful conclusions.

Bank deposit products have more observations for all bank types while the loan and mortgage products contain fewer observations. Even in recent years the number of

observations for loan products has not increased much. For example, 36-month auto loans of $25,000 has 3,234 observations in 2018, a significantly smaller amount compared to the 4,619 observations for CD deposit product previously mentioned. Our second sample, which comprises of quarterly rates, improves on data availability as some banks may report three quarters of data and not a fourth. Under this circumstance, the average rate from three quarters is still used to represent the annual average for that bank in the second sample. This allows for a greater quantity of observations as some bank data is missing for different inter-year periods. In our second sample, for the deposit and loan products discussed previously, we observe 4,817 and 3,310 observations, respectively for each product, in year 2018.

3.2.1 Variables

The bank products we compare across C banks, S banks, and credit unions consist of deposit, loan, and mortgage products. For deposit products we acquire rates on certificates of deposit with differing maturities. All CD rates are based on a lump sum of $10,000. The maturities we measure range from 3 months to 5 years. The next three deposit products are all accounts that differ according to the interest earned, the amount of transactions and withdrawals possible, and the minimum balance necessary to maintain it. These three deposit products comprise of interest checking accounts on $5,000, money market accounts on $2,500, and a regular savings accounts on $1,000. The rates measured for each of these accounts is therefore the best rate offered by a bank at the given time period.

For loan products we include auto loans of differing maturities and amounts. Maturities for these products range from 36 months to 72 months and loan principles are

either $25,000 or $15,000. The loan-to-value ratio for auto loans are 100% and therefore cover the entire value of the car. For home equity loans the first product is a line of credit on $25,000 and the following three are loans with maturities of 5, 10, and 15 years on $25,000. These home equity loans are based on a loan-to-value ratio of 80%. Lastly, a product for unsecured fixed loans is included as it is a very common type of personal loan. An unsecured loan does not have collateral but rather depends entirely on the credit worthiness of the borrower. Credit cards, student loans, and personal loans are all examples of unsecured debt. This specific product is a 36-month fixed unsecured loan on $5,000 and has the greatest number of observations for all personal loans since 2007.

The last category of products covered are mortgages and we include two main types, adjustable-rate mortgages and fixed-rate mortgages. Adjustable-rate mortgage products are numerous and based on the time the fixed rate prevails. We include 1, 3, 5, and 7-year ARMs on $200,000 with a loan-to-value ratio of 80%. For fixed-rate mortgages we include three maturities, 15 years, 20 years, and 30 years, each on $200,000 with the same loan-to-value ratio of 80%. These larger loans have the lowest quantity of observations in the dataset.

3.3 Methodology

We utilize the OLS regression in analyzing the differences between bank types for each bank product. The equation for our various tests is as follows,

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t} \qquad (1)$$

Where $y_{i,t}$ is the bank product of interest, $S_{i,t}$ is a dummy variable equal to 1 for Subchapter S banks in our sample and equal to 0 otherwise, $CU_{i,t}$ is likewise a dummy variable equal to 1 for credit unions in our sample and equal to 0 otherwise. $\boldsymbol{X_{i,t}}$ represents various control

dummy variables we use to account for many effects we observe. The first control dummy variable measures the effect when a bank has the denovo status. Banks with the denovo status are relatively young in age and display significant differences in characteristics as compared to more established banks. In total, throughout the years 2007 to 2018, our sample contains 1,443 denovo status banks, which can be C or S corporations, and therefore we utilize a control variable to account for this characteristic. A time period control variable is likewise included as our bank rates are heavily dependent on annual economic factors. Our sample begins during the recession of 2007-08 and we observe significant changes in rates throughout. Therefore, the time period dummy variable attempts to mitigate the effects that stem from each year's economic environment. Our third control variable takes the size of banks into account using the natural logarithm of total assets. For our first sample, where bank product rates are acquired at the end of each year, we use the end of year total assets as it most accurately reflects the economies of scale at that time. For our second sample, where we average quarterly rates throughout the year to form an average annual rate, the variable for size is the average of the current year's total assets and the previous year's value. This is an attempt to match the size of the bank to the average rate offered throughout the year. Lastly, to control for regional differences, we perform our analysis three different ways. The first does not take into account any regional effects, the second takes into account state effects depending on the bank's headquarters location, and the third specification narrows it further by measuring the effect of a bank's MSA (Metropolitan Statistical Area). Since many of our banks have branches across the entire country, our measures controlling for location primarily affect smaller regional banks such

as Subchapter S banks and Credit Unions. Our results may differ significantly depending on which location factor we utilize and therefore we present the results for all three ways.

For our analysis, equation 1 is used in two regression formats, pooled and annual. The first method estimates the equation across the entire sample period by controlling for year effects and other factors. This method yields estimates for β_1 and β_2 that represent the overall difference between each bank type. The second annualized regression method performs the above equation each year and excludes time controls for obvious reasons. This method provides estimates of β_1 and β_2 that inform us of the differences between bank types each year. This second analysis is of interest to us as we want to know whether the differences between bank types change over time. Additionally, due to the number of products tested, we only display the results for 15 products in the annual regression analysis based on observation size and importance.

As may be expected, this analysis does not contain a balanced panel dataset since the number of observations for each product differs between one another and every year. Despite this, the observation count is high enough to offer useful inference and the differences in quantity each year do not pose any particular problems under the OLS methodology. As mentioned previously, this analysis is repeated using our second sample where the product rates are averaged and annualized from quarterly rates. We analyze both results to ensure the differences we observe are consistent and not due to an end of year effect we may not account for.

3.4 Results

Tables 3.10 through 3.22 provide summary statistics for our bank products of interest by year and by bank type. We separate the summary statistics in this way to show

the differences between bank types throughout our sample period and to provide a reference point regarding the baseline levels. We provide similar summary statistics for our second sample group in tables 3.43 to 3.63 in the appendix.

Our summary statistics provide some interesting insight into the years surrounding the financial crisis and the post-recession period leading to the present day. For our deposit products, we observe a clear trend of rates decreasing across all bank types following the financial crisis. This trend reversed around in 2014 with rates beginning to increase as compared to prior years.

When comparing bank types by the annual means we observe that credit unions offer the highest rates for deposit products. Subchapter S banks likewise offer higher deposit rates compared to C banks in most years but by marginal amounts. For automobile loans credit unions offer almost half the rates as compared to those offered by C banks and S banks. In 2013 the average loan rate for a 36-month auto loan on $25k by credit unions was 2.58%. In contrast, Subchapter S banks offered a rate of 5.01% and C banks offered a rate of 4.78%. The stark difference between credit unions and commercial banks can be seen very clearly from just annual averages and will be confirmed with more formal tests. Additionally, and perhaps surprisingly, we note that averages for Subchapter S loan product rates are higher than C banks for most periods. The same pattern can be seen for home equity loans and mortgage products. One loan product that offers results significantly different from the others is unsecured personal loans. This product has rate averages that fall more in line with our initial expectations. Credit unions charge the lowest rate for personal loans followed closely by Subchapter S banks and then C banks charge the highest rate. For 2015, credit unions charged an average of 9.25% on unsecured personal loans

while Subchapter S banks charged 9.50%, a 25 basis point difference. C banks, in contrast, charged 10.17%, 67 basis points higher than S banks. With this specific product we can see the Subchapter S tax benefit being passed onto customers when compared to C banks. A further investigation into why this specific kind of loan product displays the expected results while the others do not is necessary.

3.4.1 Regression Analysis

In Tables 3.23 through 3.27, we provide the results of our regression analysis where we pool together all observations to determine the overall difference between bank types across all years. Our estimates of interest are β_1 and β_2 which correspond to S banks and credit unions, respectively. For deposit products, our results indicate that both S banks and credit unions offer higher rates across the board as compared to the C banks. The difference in magnitude of these estimates between S banks and credit unions is large however. On average, for certificates of deposit, Subchapter S banks offer 5 basis points more than C banks. Credit unions, for the same product, offer between 15 to 30 basis points more than C banks. These results are robust to different location effects. These estimates provide new insight for the banking literature as previous studies, including Depken et al. (2010), have concluded that Subchapter S banks offer either lower deposit rates or the same as compared to C banks. Additionally, while it the previous study has also shown that credit unions do indeed offer higher returns on deposits, our analysis demonstrates the magnitude of these returns and shows a fivefold increase in the difference compared to Subchapter S banks.

For auto loan products we find surprising results with Subchapter S banks charging significantly higher rates compared to C banks. Across all model specifications and our second sample analysis we find that Subchapter S banks charge between 10 to 25 basis

points more compared to C banks. Given the tax benefit Subchapter S banks experience, which provide significantly larger after-tax profits compared to C banks, we are surprised that they further increase their margins through these loan product rates. Credit unions however tell an entirely different story with estimates for this variable ranging from negative 230 basis points to negative 140 basis points across all specifications. When compared to commercial banks, credit unions offer significant savings to their participants. This result brings additional research questions to mind such as how this discrepancy has affected loan portfolios between these institutions. Are credit unions gaining a significant market share in automobile loans?

For home equity loans, whether it be a line of credit or a traditional fixed rate loan, we observe similar patterns albeit to a lesser degree. We find Subchapter S banks charging higher rates compared to C banks although these results become insignificant when additional location effects are introduced. Credit unions show consistent results in all specifications with estimates averaging between negative 30 and negative 70 basis points. These results, while significant, do not show the same discrepancy in magnitude as automobile loans. The product for unsecured fixed rate personal loans shows what we expected to be default case when comparing these institutions. Subchapter S banks charge about 50 basis points less than C banks across all specifications including our second sample analysis while credit unions charge over 100 basis points less than C banks. Additional research into this type of product can yield information on why Subchapter S banks offer lower rates. Our last category for loan products is mortgages and we observe estimates indicating Subchapter S banks charge higher rates for adjustable-rate mortgages but lower rates for the 15-year fixed-rate mortgage. Credit unions on the other hand charge

a lesser amount for adjustable-rate mortgages and we find mostly insignificant results for fixed-rate mortgages. This is the first instance where we find credit unions charging the same as C banks for the greater maturity products. Fixed-rate mortgages with maturities of 20 and 30 years are charged similarly between all three bank types when the third specification is observed where we control for MSA location effects.

3.4.2 Annual Regression Analysis

Our results for the annual regression analysis provide insight into how the differences between the institutions change over time. Tables 3.27 through 3.41 display our findings for this analysis. Interestingly, the results for our certificates of deposit change when the analysis is separated into 12 tests, one for each year. While we can still observe positive and significant differences between S banks and C banks as in our previous pooled analysis, this result is largely insignificant in specifications 2 and 3, where we control for additional location-based effects. However, we do see the significance hold under specification 2 during the last two to three years, 2016-2018. Therefore, when comparing these institutions across the country, Subchapter S banks still offer higher deposit rates on CDs, albeit the difference being small in magnitude – 2 to 3 basis points.

The surprising finding in automobile loans between credit unions and C banks is still present here when we observe annual differences. Credit unions charge about 200 basis points less than C banks for most years while Subchapter S banks are found charging higher amounts, ranging between 20 to 30 basis points. Difference between the rates for home equity loans become largely insignificant between S banks and C banks when location effects are considered. Credit unions offer lower rates, ranging between 50 to 80 basis points less than C banks. For unsecured fixed rate loans, our findings for Subchapter S

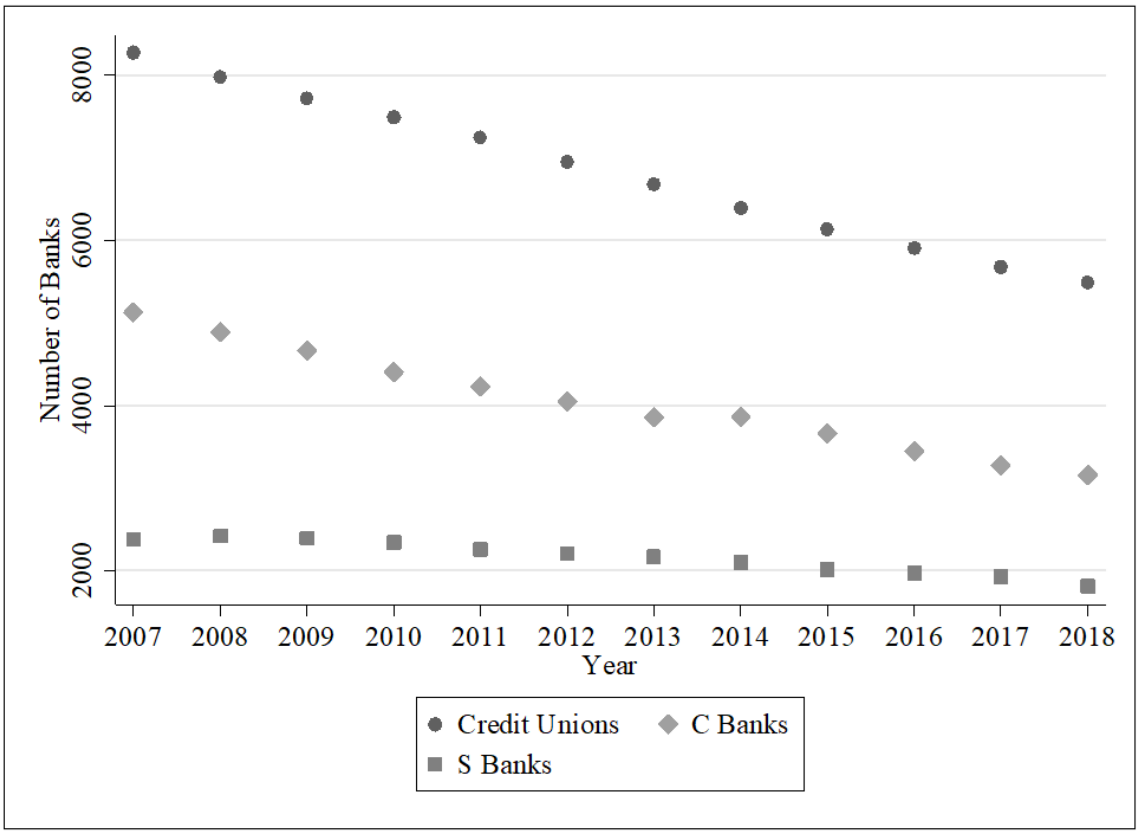
banks seem to hold for most periods under different specifications. The third specification offers estimates indicating Subchapter S banks charge about 50 basis points less than C banks over the last four years. Under specification 2 we find that credit unions charge over 100 basis points less than C banks for these unsecured personal loans. These results only get stronger under specification 3, indicating credit unions offer the best rates for unsecured personal loans. Our results for adjustable-rate mortgages are largely the same as before with Subchapter S banks charging higher rates and credit unions charging lower rates. For fixed-rate mortgages we find significant results for Subchapter S banks in the last 4 to 5 years. During this period, we find estimates indicating Subchapter S banks charge less for fixed-rate mortgages compared to C banks. This finding confirms the results of our pooled regression analysis and shows that these estimates largely stem from recent years. For credit unions, as before, results are largely scattered with the occasional estimate indicating credit unions charge lower rates compared to C banks.

3.5 Conclusion

Depository institutions today largely compete over the same depositors due to competitive deregulation over the last thirty years. Given this, we investigate whether the largest three bank groups compete effectively by comparing their deposit and loan product rates. We expect Subchapter S banks and credit unions to offer better deposit and loan rates solely because their tax benefit offers them the income margin to do so. We find that, on average, credit unions offer the best deposit and loan rates, particularly for automobile loans. Subchapter S banks, while tax-exempt, largely pass this benefit onto the shareholders as we observe only marginally higher deposit rates compared to C banks. Surprisingly, we find that Subchapter S banks charge higher rates on many loan products compared to C

banks. These results indicate significant discrepancies between the three bank groups and further research into the economic effects of these rate differences is necessary. A study into how bank portfolios have changed due to competitive pressure from credit unions should yield significant insight into the changing banking environment. Furthermore, an analysis on deposits within counties should demonstrate a shift towards local credit unions and away from community banks as they continue to offer better deposit product rates.

Figure 3.1 – The number of each type of bank in our sample is displayed annually.



Year	Credit Unions	C Banks	S Banks	Total
2007	8,271	5,130	2,379	15,780
2008	7,972	4,890	2,418	15,280
2009	7,715	4,665	2,396	14,776
2010	7,493	4,403	2,342	14,238
2011	7,243	4,228	2,258	13,729
2012	6,955	4,048	2,211	13,214
2013	6,681	3,855	2,165	12,701
2014	6,396	3,862	2,100	12,358
2015	6,139	3,654	2,012	11,805
2016	5,901	3,451	1,968	11,320
2017	5,682	3,277	1,930	10,889
2018	5,488	3,162	1,808	10,458

Table 3.1 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	CD 3 Mo 10k				CD 6 Mo 10k				CD 1 Yr 10k			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	694	1135	433	2262	1313	1240	469	3022	1352	1243	472	3067
2008	722	1124	450	2296	1340	1228	492	3060	1379	1235	495	3109
2009	745	1127	470	2342	1363	1235	506	3104	1405	1240	509	3154
2010	768	1207	491	2466	1401	1309	545	3255	1441	1314	549	3304
2011	803	1341	549	2693	1466	1449	601	3516	1511	1455	606	3572
2012	896	1926	800	3622	1677	2092	879	4648	1746	2106	883	4735
2013	902	2056	868	3826	1741	2282	976	4999	1827	2300	986	5113
2014	855	1939	876	3670	1670	2159	977	4806	1756	2177	988	4921
2015	858	1936	898	3692	1692	2162	1004	4858	1785	2184	1015	4984
2016	877	1875	915	3667	1744	2099	1025	4868	1838	2120	1037	4995
2017	854	1793	912	3559	1734	2024	1036	4794	1832	2048	1048	4928
2018	817	1664	804	3285	1654	1910	930	4494	1745	1933	941	4619
Total	9791	19123	8466	37380	18795	21189	9440	49424	19617	21355	9529	50501

Table 3.2 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	CD 2 Yr 10k				CD 3 Yr 10k				CD 4 Yr 10k				CD 5 Yr 10k			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	1290	1212	450	2952	1199	1162	431	2792	930	986	358	2274	995	1024	347	2366
2008	1321	1204	475	3000	1224	1140	458	2822	958	987	379	2324	1033	1025	373	2431
2009	1348	1212	489	3049	1246	1158	469	2873	992	1014	397	2403	1059	1051	388	2498
2010	1389	1288	530	3207	1290	1232	508	3030	1030	1092	425	2547	1094	1129	421	2644
2011	1453	1424	585	3462	1350	1366	562	3278	1085	1217	477	2779	1145	1242	480	2867
2012	1661	2060	854	4575	1544	1966	816	4326	1230	1755	690	3675	1313	1796	707	3816
2013	1738	2255	953	4946	1627	2153	911	4691	1293	1902	763	3958	1379	1957	787	4123
2014	1675	2125	955	4755	1566	2035	900	4501	1256	1821	771	3848	1338	1869	789	3996
2015	1704	2132	982	4818	1594	2039	935	4568	1291	1833	794	3918	1373	1870	822	4065
2016	1752	2073	1001	4826	1651	1986	953	4590	1327	1770	817	3914	1418	1815	833	4066
2017	1752	2008	1016	4776	1659	1921	965	4545	1348	1714	827	3889	1432	1755	843	4030
2018	1674	1898	912	4484	1592	1822	865	4279	1299	1628	744	3671	1391	1672	766	3829
Total	18757	20891	9202	48850	17542	19980	8773	46295	14039	17719	7442	39200	14970	18205	7556	40731

Table 3.3 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Interest Checking 5k				Money Market 2.5k				Regular Savings 1k			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	913	1177	454	2544	943	1083	413	2439	1361	1230	470	3061
2008	940	1175	471	2586	1005	1138	447	2590	1393	1225	492	3110
2009	967	1184	485	2636	1034	1149	457	2640	1422	1239	508	3169
2010	995	1242	525	2762	1054	1214	494	2762	1458	1310	549	3317
2011	1067	1386	585	3038	1095	1345	549	2989	1536	1441	605	3582
2012	1211	2032	858	4101	1302	1980	813	4095	1777	2087	884	4748
2013	1253	2222	944	4419	1402	2161	909	4472	1856	2289	981	5126
2014	1129	2078	941	4148	1334	2019	899	4252	1788	2162	982	4932
2015	1098	2056	956	4110	1385	2007	913	4305	1811	2171	1008	4990
2016	1118	1983	976	4077	1411	1928	934	4273	1867	2100	1032	4999
2017	1104	1904	989	3997	1412	1855	942	4209	1859	2028	1047	4934
2018	1032	1767	870	3669	1372	1743	850	3965	1776	1916	938	4630
Total	12827	20206	9054	42087	14749	19622	8620	42991	19904	21198	9496	50598

Table 3.4 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 36 Mo 25k 100% LTV				Auto 48 Mo 25k 100% LTV				Auto 60 Mo 25k 100% LTV				Auto 72 Mo 25k 100% LTV			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	131	51	5	187	944	346	75	1365	944	348	76	1368	161	40	2	203
2008	132	50	7	189	980	338	83	1401	981	342	86	1409	214	60	6	280
2009	301	106	19	426	1017	356	91	1464	1014	360	92	1466	335	82	6	423
2010	506	190	40	736	1031	357	91	1479	1028	357	90	1475	532	123	10	665
2011	735	279	64	1078	1035	388	101	1524	1033	389	101	1523	735	166	26	927
2012	1175	1015	352	2542	1347	1053	372	2772	1346	1047	367	2760	1169	487	121	1777
2013	1466	1314	504	3284	1484	1320	510	3314	1483	1303	500	3286	1408	595	192	2195
2014	1455	1240	507	3202	1458	1246	506	3210	1457	1242	502	3201	1404	600	211	2215
2015	1408	1289	552	3249	1408	1291	553	3252	1407	1287	552	3246	1372	692	234	2298
2016	1501	1299	605	3405	1502	1302	606	3410	1502	1300	604	3406	1470	722	288	2480
2017	1511	1247	618	3376	1512	1252	618	3382	1512	1248	616	3376	1481	721	296	2498
2018	1472	1194	568	3234	1474	1200	568	3242	1472	1196	566	3234	1435	720	286	2441
Total	11793	9274	3841	24908	15192	10449	4174	29815	15179	10419	4152	29750	11716	5008	1678	18402

Table 3.5 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 36 Mo 15k 100% LTV				Auto 48 Mo 15k 100% LTV				Auto 60 Mo 15k 100% LTV				Auto 72 Mo 15k 100% LTV			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	931	338	71	1340	942	339	71	1352	163	44	3	210	39	10	0	49
2008	965	333	80	1378	978	335	81	1394	218	63	5	286	62	15	0	77
2009	1002	355	85	1442	1016	352	88	1456	353	97	11	461	191	24	0	215
2010	1018	350	86	1454	1030	345	87	1462	551	139	20	710	370	35	0	405
2011	1027	384	96	1507	1035	377	96	1508	764	209	37	1010	553	59	5	617
2012	1345	1038	366	2749	1347	1013	354	2714	1170	686	215	2071	886	177	40	1103
2013	1481	1296	507	3284	1482	1265	492	3239	1453	848	306	2607	1122	198	60	1380
2014	1454	1233	504	3191	1458	1199	488	3145	1446	840	319	2605	1143	205	74	1422
2015	1409	1282	552	3243	1410	1250	537	3197	1403	907	368	2678	1130	239	76	1445
2016	1504	1293	604	3401	1504	1264	590	3358	1494	961	414	2869	1215	282	109	1606
2017	1511	1246	618	3375	1511	1218	607	3336	1502	934	439	2875	1241	290	114	1645
2018	1470	1188	565	3223	1472	1167	553	3192	1461	913	415	2789	1229	293	106	1628
Total	15117	10336	4134	29587	15185	10124	4044	29353	11978	6641	2552	21171	9181	1827	584	11592

Table 3.6 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Home Eq LoC 25k 80% LTV				Home Eq 5 Yr 25k 80% LTV				Home Eq 10 Yr 25k 80% LTV			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	711	302	55	1068	558	193	30	781	116	58	3	177
2008	733	286	63	1082	593	185	33	811	134	69	4	207
2009	770	310	67	1147	648	205	40	893	236	91	7	334
2010	765	295	65	1125	667	199	37	903	383	116	8	507
2011	805	319	67	1191	695	221	41	957	551	143	11	705
2012	1037	807	221	2065	909	532	145	1586	824	386	56	1266
2013	1144	998	307	2449	1030	656	194	1880	1015	509	98	1622
2014	1124	967	321	2412	972	612	190	1774	971	475	112	1558
2015	1093	992	321	2406	927	609	187	1723	927	478	107	1512
2016	1113	967	347	2427	926	583	196	1705	934	465	120	1519
2017	1048	840	299	2187	878	502	177	1557	890	407	105	1402
2018	1016	713	229	1958	822	433	132	1387	833	360	86	1279
Total	11359	7796	2362	21517	9625	4930	1402	15957	7814	3557	717	12088

Table 3.7 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Home Eq 15 Yr 25k 80% LTV				Unsecured Fixed 36 Mo 5k			
Year	CU	C	S	Total	CU	C	S	Total
2007	91	47	1	139	760	201	30	991
2008	118	51	1	170	810	201	36	1047
2009	208	70	3	281	864	219	42	1125
2010	344	94	5	443	897	228	43	1168
2011	471	119	3	593	931	265	46	1242
2012	687	289	28	1004	1257	719	204	2180
2013	838	365	62	1265	1414	751	183	2348
2014	812	342	58	1212	1404	732	177	2313
2015	766	338	48	1152	1355	749	212	2316
2016	791	320	57	1168	1449	765	230	2444
2017	760	270	50	1080	1456	729	235	2420
2018	716	242	39	997	1412	680	213	2305
Total	6602	2547	355	9504	14009	6239	1651	21899

Table 3.8 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	ARM 1 Yr 200k 80% LTV				ARM 3/1 Yr 200k 80% LTV				ARM 5/1 Yr 200k 80% LTV				ARM 7/1 Yr 200k 80% LTV			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	53	23	2	78	96	58	4	158	118	74	5	197	17	10	0	27
2008	52	20	2	74	106	61	4	171	127	74	4	205	19	11	0	30
2009	60	31	2	93	117	70	5	192	150	84	5	239	17	15	0	32
2010	68	33	2	103	136	66	5	207	166	87	5	258	38	24	0	62
2011	87	33	4	124	162	69	12	243	201	97	12	310	93	49	4	146
2012	167	115	25	307	360	294	53	707	469	390	79	938	301	251	39	591
2013	186	128	30	344	311	307	55	673	510	498	86	1094	365	338	46	749
2014	151	123	25	299	313	327	75	715	563	567	112	1242	405	419	62	886
2015	148	125	40	313	315	348	94	757	582	623	151	1356	452	494	90	1036
2016	161	118	38	317	334	334	82	750	625	609	161	1395	509	478	95	1082
2017	147	118	47	312	321	312	91	724	615	572	163	1350	522	463	95	1080
2018	133	94	32	259	294	257	68	619	595	511	119	1225	510	412	65	987
Total	1413	961	249	2623	2865	2503	548	5916	4721	4186	902	9809	3248	2964	496	6708

Table 3.9 – The number of observations for each bank product is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Fixed 15 Yr 200k 80% LTV				Fixed 20 Yr 200k 80% LTV				Fixed 30 Yr 200k 80% LTV			
Year	CU	C	S	Total	CU	C	S	Total	CU	C	S	Total
2007	186	119	13	318	15	11	0	26	167	116	13	296
2008	209	124	15	348	20	10	0	30	192	120	15	327
2009	245	139	16	400	20	12	1	33	228	134	15	377
2010	270	146	21	437	75	37	5	117	248	141	21	410
2011	304	157	26	487	155	81	10	246	283	153	25	461
2012	686	695	208	1589	552	567	177	1296	656	667	208	1531
2013	853	943	298	2094	731	777	258	1766	804	905	293	2002
2014	882	900	311	2093	768	772	282	1822	834	869	303	2006
2015	884	962	353	2199	789	878	331	1998	833	930	343	2106
2016	976	1035	397	2408	882	943	371	2196	926	994	382	2302
2017	992	997	405	2394	904	911	382	2197	941	957	390	2288
2018	982	954	361	2297	890	862	342	2094	935	918	350	2203
Total	7469	7171	2424	17064	5801	5861	2159	13821	7047	6904	2358	16309

Table 3.10 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	CD 3 Mo 10k						CD 6 Mo 10k						CD 1 Yr 10k					
	CU		C		S		CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	3.57	0.66	3.01	0.85	3.15	0.63	4.20	0.54	3.66	0.70	3.72	0.55	4.45	0.47	3.89	0.58	3.98	0.48
2008	2.15	0.51	1.58	0.58	1.60	0.53	2.59	0.48	2.01	0.60	2.01	0.52	2.93	0.47	2.35	0.60	2.36	0.53
2009	0.79	0.34	0.66	0.32	0.74	0.32	1.11	0.36	0.95	0.37	1.07	0.34	1.43	0.38	1.29	0.40	1.40	0.35
2010	0.43	0.23	0.36	0.20	0.40	0.21	0.62	0.26	0.55	0.25	0.61	0.24	0.87	0.29	0.81	0.29	0.88	0.26
2011	0.28	0.16	0.22	0.13	0.23	0.13	0.42	0.20	0.34	0.17	0.38	0.17	0.61	0.25	0.53	0.23	0.58	0.22
2012	0.21	0.13	0.16	0.10	0.17	0.10	0.31	0.16	0.25	0.13	0.27	0.13	0.46	0.21	0.40	0.19	0.42	0.17
2013	0.18	0.11	0.14	0.09	0.15	0.09	0.27	0.14	0.22	0.13	0.23	0.11	0.41	0.19	0.35	0.18	0.36	0.15
2014	0.19	0.13	0.14	0.09	0.14	0.09	0.28	0.14	0.22	0.12	0.22	0.11	0.43	0.20	0.36	0.19	0.36	0.16
2015	0.20	0.12	0.14	0.09	0.15	0.09	0.30	0.16	0.23	0.14	0.23	0.11	0.47	0.23	0.38	0.22	0.37	0.17
2016	0.21	0.16	0.15	0.11	0.16	0.11	0.33	0.17	0.24	0.15	0.25	0.13	0.51	0.25	0.41	0.24	0.41	0.20
2017	0.28	0.20	0.19	0.16	0.22	0.16	0.43	0.25	0.31	0.23	0.34	0.22	0.68	0.35	0.53	0.35	0.54	0.29
2018	0.51	0.37	0.37	0.36	0.43	0.33	0.84	0.50	0.59	0.48	0.68	0.45	1.29	0.65	1.00	0.68	1.06	0.60

Table 3.11 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	CD 2 Yr 10k						CD 3 Yr 10k					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	4.50	0.42	3.94	0.51	4.02	0.45	4.55	0.40	4.00	0.48	4.11	0.42
2008	3.17	0.47	2.63	0.61	2.63	0.52	3.38	0.47	2.84	0.60	2.86	0.52
2009	1.85	0.36	1.71	0.40	1.78	0.35	2.20	0.39	2.04	0.43	2.11	0.37
2010	1.24	0.33	1.16	0.33	1.23	0.30	1.60	0.38	1.45	0.37	1.54	0.35
2011	0.91	0.29	0.81	0.28	0.86	0.25	1.22	0.33	1.05	0.31	1.12	0.30
2012	0.70	0.26	0.61	0.24	0.64	0.21	0.93	0.29	0.80	0.27	0.85	0.25
2013	0.62	0.24	0.54	0.22	0.56	0.20	0.84	0.28	0.72	0.26	0.76	0.23
2014	0.65	0.26	0.55	0.24	0.56	0.20	0.89	0.30	0.75	0.28	0.76	0.24
2015	0.71	0.28	0.59	0.27	0.58	0.22	0.97	0.33	0.79	0.31	0.79	0.27
2016	0.75	0.30	0.61	0.29	0.62	0.24	1.00	0.34	0.80	0.31	0.83	0.28
2017	0.95	0.40	0.75	0.40	0.76	0.35	1.18	0.41	0.94	0.41	0.98	0.38
2018	1.63	0.69	1.30	0.75	1.36	0.67	1.87	0.68	1.48	0.76	1.54	0.66

Table 3.12 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	CD 4 Yr 10k						CD 5 Yr 10k					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	4.59	0.39	4.08	0.45	4.18	0.42	4.69	0.38	4.18	0.45	4.28	0.42
2008	3.56	0.48	3.03	0.60	3.04	0.52	3.80	0.52	3.23	0.63	3.20	0.59
2009	2.48	0.40	2.27	0.47	2.36	0.40	2.77	0.43	2.54	0.50	2.60	0.45
2010	1.89	0.40	1.70	0.40	1.78	0.37	2.21	0.43	1.97	0.42	2.05	0.42
2011	1.47	0.36	1.26	0.34	1.34	0.34	1.78	0.39	1.53	0.38	1.58	0.38
2012	1.14	0.32	0.97	0.29	1.03	0.29	1.40	0.37	1.18	0.32	1.23	0.32
2013	1.05	0.31	0.88	0.29	0.92	0.27	1.31	0.36	1.10	0.33	1.12	0.30
2014	1.12	0.35	0.92	0.31	0.95	0.28	1.41	0.41	1.15	0.38	1.17	0.33
2015	1.20	0.37	0.96	0.35	0.97	0.30	1.49	0.43	1.20	0.41	1.20	0.36
2016	1.24	0.37	0.97	0.34	1.01	0.31	1.52	0.42	1.19	0.38	1.24	0.35
2017	1.41	0.42	1.09	0.42	1.15	0.39	1.69	0.46	1.34	0.46	1.38	0.43
2018	2.07	0.67	1.58	0.73	1.68	0.66	2.35	0.67	1.84	0.75	1.93	0.66

Table 3.13 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Interest Checking 5k						Money Market 2.5k						Regular Savings 1k					
	CU		C		S		CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	0.63	0.59	0.64	0.57	0.72	0.63	1.90	0.81	1.23	0.81	1.33	0.73	0.93	0.52	0.78	0.59	0.87	0.54
2008	0.50	0.43	0.42	0.45	0.44	0.47	1.23	0.55	0.66	0.48	0.72	0.47	0.70	0.41	0.50	0.43	0.55	0.40
2009	0.30	0.25	0.27	0.27	0.27	0.23	0.61	0.33	0.40	0.30	0.44	0.30	0.42	0.29	0.35	0.29	0.38	0.28
2010	0.20	0.17	0.19	0.18	0.19	0.16	0.36	0.22	0.28	0.22	0.29	0.21	0.28	0.21	0.27	0.22	0.27	0.20
2011	0.15	0.14	0.13	0.12	0.14	0.12	0.25	0.17	0.19	0.15	0.20	0.15	0.21	0.20	0.20	0.17	0.19	0.15
2012	0.12	0.11	0.11	0.10	0.11	0.09	0.19	0.13	0.14	0.11	0.14	0.11	0.16	0.15	0.15	0.13	0.15	0.12
2013	0.10	0.10	0.09	0.08	0.10	0.08	0.16	0.11	0.12	0.11	0.12	0.10	0.13	0.13	0.13	0.12	0.13	0.10
2014	0.10	0.11	0.09	0.09	0.09	0.10	0.16	0.11	0.12	0.11	0.12	0.10	0.13	0.13	0.13	0.12	0.12	0.10
2015	0.10	0.09	0.09	0.09	0.10	0.10	0.16	0.12	0.12	0.11	0.12	0.09	0.13	0.12	0.12	0.12	0.12	0.10
2016	0.10	0.08	0.09	0.08	0.10	0.08	0.17	0.14	0.12	0.11	0.12	0.09	0.13	0.12	0.12	0.12	0.13	0.09
2017	0.10	0.10	0.10	0.10	0.11	0.09	0.19	0.17	0.14	0.14	0.15	0.12	0.14	0.14	0.13	0.14	0.14	0.10
2018	0.12	0.12	0.13	0.15	0.16	0.18	0.32	0.31	0.23	0.27	0.24	0.23	0.17	0.20	0.19	0.24	0.20	0.16

Table 3.14 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 36 Mo 25k 100% LTV						Auto 48 Mo 25k 100% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	6.04	0.71	7.21	0.91	7.39	0.67	6.14	0.61	7.37	0.78	7.59	0.96
2008	5.48	0.71	6.83	0.95	6.35	0.71	5.47	0.64	6.83	0.78	6.78	0.93
2009	4.99	0.77	6.54	1.17	6.50	0.59	5.09	0.68	6.56	0.91	6.68	1.00
2010	4.02	0.81	5.94	1.26	6.13	1.00	4.21	0.80	6.08	1.13	6.35	1.07
2011	3.26	0.76	5.33	1.36	5.87	1.36	3.44	0.77	5.40	1.32	5.89	1.26
2012	2.83	0.77	5.05	1.37	5.28	1.44	2.96	0.77	5.12	1.37	5.37	1.41
2013	2.58	0.69	4.78	1.39	5.01	1.44	2.70	0.69	4.87	1.39	5.09	1.42
2014	2.51	0.68	4.65	1.36	4.84	1.41	2.63	0.68	4.74	1.36	4.93	1.41
2015	2.46	0.64	4.50	1.34	4.69	1.43	2.58	0.62	4.59	1.34	4.81	1.43
2016	2.48	0.62	4.40	1.30	4.68	1.33	2.61	0.61	4.50	1.30	4.78	1.34
2017	2.67	0.63	4.49	1.27	4.78	1.29	2.79	0.61	4.59	1.27	4.87	1.24
2018	3.30	0.74	4.79	1.19	5.09	1.29	3.44	0.69	4.89	1.19	5.17	1.21

Table 3.15 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 60 Mo 25k 100% LTV						Auto 72 Mo 25k 100% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	6.25	0.60	7.46	0.80	7.68	1.00	6.65	0.73	7.64	0.78	6.75	0.36
2008	5.58	0.64	6.93	0.80	6.94	0.97	6.02	0.78	7.32	0.94	7.33	0.72
2009	5.21	0.71	6.65	0.92	6.82	1.03	5.61	0.85	6.88	1.12	7.37	0.70
2010	4.34	0.83	6.17	1.14	6.50	1.13	4.78	0.93	6.22	1.16	6.62	0.73
2011	3.55	0.81	5.48	1.32	6.02	1.30	4.06	0.93	5.51	1.17	6.20	1.20
2012	3.07	0.81	5.22	1.37	5.49	1.42	3.55	0.93	5.11	1.25	5.34	1.21
2013	2.80	0.73	4.95	1.39	5.18	1.39	3.20	0.86	4.79	1.26	5.09	1.26
2014	2.74	0.72	4.85	1.37	5.03	1.39	3.14	0.85	4.68	1.24	4.82	1.28
2015	2.70	0.66	4.70	1.35	4.91	1.40	3.09	0.78	4.53	1.22	4.73	1.20
2016	2.72	0.63	4.60	1.32	4.88	1.31	3.09	0.73	4.42	1.14	4.73	1.15
2017	2.91	0.61	4.70	1.29	4.99	1.26	3.29	0.69	4.56	1.12	4.88	1.20
2018	3.56	0.68	4.99	1.20	5.29	1.24	3.92	0.74	4.89	1.06	5.25	1.24

Table 3.16 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 36 Mo 15k 100% LTV						Auto 48 Mo 15k 100% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	6.26	0.73	7.93	0.92	8.13	1.33	6.37	0.70	7.99	0.94	8.19	1.33
2008	5.61	0.77	7.38	0.95	7.23	1.10	5.72	0.72	7.44	0.98	7.37	1.15
2009	5.23	0.79	7.12	1.11	7.08	1.09	5.35	0.76	7.17	1.11	7.23	1.13
2010	4.34	0.89	6.63	1.33	6.72	1.34	4.46	0.87	6.68	1.30	6.88	1.33
2011	3.53	0.88	5.92	1.51	6.27	1.39	3.66	0.88	5.95	1.50	6.39	1.41
2012	3.05	0.89	5.67	1.58	5.90	1.55	3.16	0.89	5.68	1.55	5.96	1.55
2013	2.79	0.81	5.41	1.60	5.55	1.59	2.90	0.81	5.43	1.57	5.63	1.62
2014	2.72	0.80	5.27	1.58	5.36	1.57	2.84	0.80	5.29	1.54	5.43	1.58
2015	2.66	0.75	5.10	1.55	5.23	1.56	2.78	0.73	5.14	1.53	5.30	1.52
2016	2.69	0.76	4.97	1.52	5.24	1.53	2.81	0.74	5.02	1.52	5.29	1.47
2017	2.87	0.73	5.05	1.49	5.33	1.50	2.99	0.71	5.11	1.47	5.39	1.42
2018	3.51	0.77	5.34	1.38	5.56	1.40	3.64	0.73	5.39	1.37	5.61	1.31

Table 3.17 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Auto 60 Mo 15k 100% LTV						Auto 72 Mo 15k 100% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	6.50	0.74	7.97	0.89	7.60	0.79	6.72	0.76	8.41	0.75	N/A	N/A
2008	5.82	0.74	7.44	0.88	7.38	1.41	6.36	0.92	7.51	0.98	N/A	N/A
2009	5.40	0.79	7.19	1.14	7.32	0.93	5.86	0.84	6.81	1.40	N/A	N/A
2010	4.52	0.88	6.38	1.35	7.01	1.22	4.97	0.96	6.14	1.31	N/A	N/A
2011	3.72	0.89	5.81	1.42	6.34	1.40	4.20	0.99	5.51	1.27	5.97	1.46
2012	3.27	0.92	5.45	1.47	5.77	1.42	3.66	0.97	5.08	1.29	5.10	1.27
2013	3.00	0.85	5.14	1.50	5.39	1.52	3.35	0.93	4.70	1.29	5.19	1.52
2014	2.95	0.85	5.04	1.45	5.20	1.52	3.29	0.91	4.64	1.41	4.69	1.28
2015	2.89	0.76	4.95	1.44	5.13	1.50	3.25	0.84	4.54	1.23	4.52	1.24
2016	2.91	0.75	4.85	1.46	5.10	1.41	3.25	0.77	4.33	1.04	4.64	1.21
2017	3.10	0.70	4.94	1.38	5.24	1.37	3.47	0.71	4.48	1.02	4.89	1.44
2018	3.76	0.72	5.25	1.27	5.52	1.31	4.12	0.75	4.82	0.91	5.23	1.47

Table 3.18 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Home Eq LoC 25k 80% LTV						Home Eq 5 Yr 25k 80% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	7.29	0.68	7.49	0.56	7.55	0.46	6.78	0.73	7.48	0.78	7.69	0.57
2008	4.69	1.00	4.79	0.99	5.03	1.12	6.08	0.83	6.94	0.87	6.77	0.93
2009	4.42	0.98	4.91	0.98	5.21	0.98	5.94	0.80	6.88	0.92	6.55	0.84
2010	4.35	0.91	4.82	0.95	5.23	0.86	5.63	0.96	6.34	0.98	6.53	0.78
2011	4.32	0.89	4.70	0.89	4.97	0.87	5.28	1.08	5.83	1.16	6.10	0.86
2012	4.24	0.90	4.57	0.83	4.89	0.81	4.96	1.15	5.49	1.15	5.86	1.07
2013	4.15	0.94	4.42	0.82	4.72	0.81	4.73	1.18	5.26	1.12	5.59	1.12
2014	4.06	0.86	4.37	0.78	4.61	0.84	4.49	1.07	5.17	1.07	5.50	1.07
2015	4.01	0.81	4.32	0.76	4.61	0.80	4.42	1.04	5.05	0.99	5.31	1.00
2016	4.09	0.71	4.42	0.74	4.64	0.74	4.41	1.03	5.01	0.99	5.27	0.99
2017	4.54	0.60	4.87	0.68	4.91	0.60	4.48	0.99	5.11	0.94	5.34	1.00
2018	5.34	0.63	5.67	0.67	5.62	0.52	4.90	0.95	5.38	0.96	5.61	1.06

Table 3.19 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Home Eq 10 Yr 25k 80% LTV						Home Eq 15 Yr 25k 80% LTV						Unsecured Fixed 36 Mo 5k					
	CU		C		S		CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	6.97	0.62	7.72	0.88	8.21	0.95	7.27	0.71	7.76	0.78	9.24	N/A	10.95	1.84	12.40	2.19	12.17	2.34
2008	6.39	0.68	7.21	0.95	6.84	0.83	6.84	0.76	7.53	0.89	7.79	N/A	10.54	1.92	12.31	2.35	11.28	2.64
2009	6.40	0.80	7.14	1.04	7.07	0.81	6.75	0.88	7.45	0.90	8.31	0.90	10.58	1.94	12.21	2.43	11.29	2.88
2010	6.16	0.97	6.54	0.88	6.91	0.75	6.51	1.00	6.88	0.82	7.61	0.71	10.42	1.94	11.90	2.58	11.37	3.05
2011	5.81	1.01	6.19	1.09	6.70	1.13	6.17	1.04	6.41	0.95	7.13	1.37	10.12	1.98	11.50	2.72	11.30	3.24
2012	5.48	1.11	5.81	1.12	6.30	1.16	5.87	1.13	6.05	1.13	6.41	1.28	9.86	2.05	10.96	3.03	10.27	3.20
2013	5.27	1.11	5.64	1.06	5.86	1.21	5.64	1.13	5.85	1.01	6.02	1.22	9.60	2.09	10.50	3.03	9.76	3.07
2014	5.07	0.99	5.52	1.02	5.90	1.12	5.45	1.01	5.75	0.96	5.82	1.15	9.39	2.10	10.39	3.00	9.78	3.00
2015	5.00	0.97	5.43	0.94	5.80	1.14	5.36	0.96	5.64	0.92	5.75	0.92	9.25	2.08	10.17	2.85	9.50	3.08
2016	4.95	0.95	5.38	0.96	5.68	1.08	5.31	0.94	5.59	0.92	5.77	0.94	9.17	2.07	10.02	2.74	9.53	2.99
2017	5.01	0.89	5.46	0.90	5.68	1.17	5.37	0.89	5.69	0.85	5.71	1.04	9.16	1.98	9.96	2.73	9.60	2.96
2018	5.38	0.83	5.72	0.88	5.96	1.13	5.73	0.82	5.93	0.89	5.91	1.14	9.37	1.85	10.01	2.64	9.76	2.96

Table 3.20 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	ARM 1 Yr 200k 80% LTV						ARM 3/1 Yr 200k 80% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	5.31	0.62	5.94	0.59	6.38	0.88	5.74	0.54	6.22	0.59	6.47	0.49
2008	4.90	0.76	5.38	0.95	5.57	0.09	5.35	0.68	5.87	0.65	6.04	0.28
2009	4.04	0.59	4.66	1.07	4.82	0.26	4.44	0.63	4.78	0.92	4.70	0.82
2010	3.50	0.80	4.22	1.20	4.57	0.26	3.85	0.75	4.22	1.00	4.62	0.85
2011	3.53	2.03	3.83	1.22	4.61	0.70	3.49	1.55	3.69	1.00	4.28	1.03
2012	3.38	1.72	3.63	0.96	3.99	0.77	3.17	1.20	3.42	0.88	4.01	1.08
2013	3.30	1.34	3.49	0.89	4.21	1.08	3.24	1.00	3.47	0.77	4.05	0.88
2014	2.95	0.80	3.39	0.91	4.02	0.74	3.04	0.59	3.37	0.71	3.91	0.86
2015	3.03	0.84	3.41	0.85	4.00	0.80	3.14	0.60	3.46	0.65	3.81	0.73
2016	2.97	0.68	3.39	0.79	4.07	0.92	3.33	0.61	3.55	0.63	4.07	0.72
2017	3.16	0.77	3.58	0.83	4.18	0.93	3.41	0.63	3.63	0.68	4.11	0.82
2018	3.82	0.76	4.17	0.90	4.80	0.89	4.05	0.71	4.23	0.79	4.61	0.76

Table 3.21 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	ARM 5/1 Yr 200k 80% LTV						ARM 7/1 Yr 200k 80% LTV					
	CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	5.99	0.47	6.26	0.43	6.50	0.50	6.10	0.29	6.15	0.42	N/A	N/A
2008	5.60	0.63	5.90	0.59	5.75	0.80	5.78	0.74	6.01	0.70	N/A	N/A
2009	4.83	0.67	4.90	0.87	4.93	0.81	5.18	0.66	5.37	0.84	N/A	N/A
2010	4.15	0.68	4.37	1.05	5.15	1.79	4.39	0.45	4.71	1.22	N/A	N/A
2011	3.65	1.38	3.64	1.06	4.11	1.48	3.64	0.54	3.82	1.14	4.49	2.31
2012	3.14	0.88	3.28	0.91	3.96	1.45	3.26	0.78	3.26	0.81	3.60	1.27
2013	3.32	0.59	3.58	0.75	3.93	0.91	3.65	0.48	3.78	0.58	3.92	0.66
2014	3.19	0.51	3.50	0.65	3.86	0.74	3.39	0.47	3.59	0.44	3.75	0.60
2015	3.30	0.44	3.53	0.62	3.82	0.70	3.59	0.43	3.64	0.50	3.74	0.50
2016	3.51	0.56	3.62	0.61	3.87	0.73	3.77	0.51	3.71	0.48	3.80	0.56
2017	3.55	0.51	3.70	0.63	3.97	0.82	3.72	0.44	3.76	0.50	3.80	0.55
2018	4.10	0.47	4.35	0.71	4.63	0.76	4.26	0.39	4.38	0.58	4.47	0.61

Table 3.22 – The mean and standard deviation for each bank products is displayed by year and bank type. This table corresponds to our first sample where bank rates are end of year values.

	Fixed 15 Yr 200k 80% LTV						Fixed 20 Yr 200k 80% LTV						Fixed 30 Yr 200k 80% LTV					
	CU		C		S		CU		C		S		CU		C		S	
Year	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ	μ	σ
2007	5.84	0.36	5.87	0.36	5.86	0.48	6.08	0.31	6.15	0.22	N/A	N/A	6.21	0.28	6.22	0.25	6.16	0.20
2008	5.32	0.56	5.33	0.57	5.35	0.54	5.09	0.29	5.64	0.76	N/A	N/A	5.47	0.50	5.51	0.51	5.50	0.55
2009	4.59	0.42	4.53	0.32	4.67	1.00	5.01	0.20	4.98	0.17	8.59	N/A	5.13	0.33	5.10	0.26	5.03	0.27
2010	4.37	0.44	4.33	0.36	4.41	0.60	4.80	0.30	4.84	0.19	4.95	0.14	4.96	0.32	4.95	0.29	5.00	0.19
2011	3.55	0.51	3.44	0.40	3.54	0.70	4.01	0.40	3.96	0.43	3.90	0.10	4.15	0.39	4.07	0.32	4.03	0.18
2012	2.98	0.60	2.88	0.48	2.82	0.42	3.48	0.47	3.38	0.32	3.38	0.41	3.56	0.45	3.47	0.36	3.39	0.22
2013	3.60	0.42	3.60	0.46	3.58	0.36	4.31	0.35	4.30	0.39	4.29	0.34	4.52	0.32	4.49	0.35	4.48	0.26
2014	3.32	0.43	3.35	0.41	3.31	0.38	3.86	0.33	3.89	0.34	3.87	0.34	4.05	0.29	4.08	0.26	4.08	0.23
2015	3.36	0.37	3.38	0.40	3.34	0.37	3.86	0.28	3.85	0.30	3.80	0.31	4.08	0.25	4.07	0.25	4.02	0.19
2016	3.50	0.34	3.48	0.41	3.44	0.43	4.00	0.30	3.89	0.35	3.86	0.36	4.24	0.28	4.13	0.31	4.10	0.28
2017	3.51	0.32	3.54	0.38	3.50	0.34	3.87	0.27	3.87	0.30	3.83	0.25	4.09	0.24	4.07	0.23	4.05	0.19
2018	4.34	0.33	4.38	0.40	4.37	0.34	4.65	0.28	4.64	0.35	4.63	0.30	4.84	0.26	4.84	0.33	4.82	0.27

Table 3.23 – The results for our pooled regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use dummy variables to control for the time effect and the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
	S	CU	S	CU	S	CU
CD 3 Mo 10k	0.03 ***	0.15 ***	0.02 ***	0.16 ***	0.02 ***	0.17 ***
CD 6 Mo 10k	0.04 ***	0.17 ***	0.02 ***	0.18 ***	0.01 **	0.19 ***
CD 1 Yr 10k	0.04 ***	0.20 ***	0.02 ***	0.21 ***	0.01 **	0.21 ***
CD 2 Yr 10k	0.05 ***	0.22 ***	0.02 ***	0.24 ***	0.01 **	0.24 ***
CD 3 Yr 10k	0.05 ***	0.26 ***	0.03 ***	0.28 ***	0.01 *	0.28 ***
CD 4 Yr 10k	0.05 ***	0.29 ***	0.03 ***	0.32 ***	0.02 **	0.32 ***
CD 5 Yr 10k	0.04 ***	0.33 ***	0.03 ***	0.35 ***	0.02 *	0.36 ***
Interest Checking 5k	0.01 ***	0.02 ***	0.01 ***	0.03 ***	0.02 ***	0.04 ***
Money Market 2.5k	0.02 ***	0.14 ***	0.01 **	0.15 ***	0.00	0.15 ***
Regular Savings 1k	0.01 ***	0.04 ***	0.01 ***	0.05 ***	0.01 ***	0.06 ***

Table 3.24 – The results for our pooled regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use dummy variables to control for the time effect and the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
	S	CU	S	CU	S	CU
Auto 36 Mo 25k 100% LTV	0.23 ***	-1.95 ***	0.20 ***	-1.99 ***	0.13 ***	-1.94 ***
Auto 48 Mo 25k 100% LTV	0.24 ***	-1.86 ***	0.22 ***	-1.89 ***	0.14 ***	-1.84 ***
Auto 60 Mo 25k 100% LTV	0.25 ***	-1.85 ***	0.23 ***	-1.87 ***	0.15 ***	-1.82 ***
Auto 72 Mo 25k 100% LTV	0.23 ***	-1.41 ***	0.22 ***	-1.41 ***	0.18 ***	-1.32 ***
Auto 36 Mo 15k 100% LTV	0.17 ***	-2.30 ***	0.19 ***	-2.37 ***	0.11 ***	-2.31 ***
Auto 48 Mo 15k 100% LTV	0.20 ***	-2.22 ***	0.22 ***	-2.28 ***	0.15 ***	-2.21 ***
Auto 60 Mo 15k 100% LTV	0.21 ***	-1.97 ***	0.21 ***	-2.02 ***	0.13 ***	-1.95 ***
Auto 72 Mo 15k 100% LTV	0.17 ***	-1.23 ***	0.14 ***	-1.22 ***	0.13 **	-1.08 ***

Table 3.25 – The results for our pooled regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use dummy variables to control for the time effect and the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
	S	CU	S	CU	S	CU
Home Eq LoC 25k 80% LTV	0.18 ***	-0.36 ***	0.03	-0.40 ***	-0.01	-0.37 ***
Home Eq 5 Yr 25k 80% LTV	0.27 ***	-0.59 ***	0.13 ***	-0.72 ***	0.08 **	-0.72 ***
Home Eq 10 Yr 25k 80% LTV	0.33 ***	-0.38 ***	0.17 ***	-0.49 ***	0.03	-0.53 ***
Home Eq 15 Yr 25k 80% LTV	0.18 ***	-0.22 ***	0.03	-0.35 ***	-0.08	-0.37 ***
Unsecured Fixed 36 Mo 5k	-0.49 ***	-0.93 ***	-0.42 ***	-1.05 ***	-0.42 ***	-1.39 ***

Table 3.26 – The results for our pooled regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use dummy variables to control for the time effect and the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
	S	CU	S	CU	S	CU
ARM 1 Yr 200k 80% LTV	0.41 ***	-0.43 ***	0.30 ***	-0.37 ***	0.38 ***	-0.24 ***
ARM 3/1 Yr 200k 80% LTV	0.30 ***	-0.40 ***	0.24 ***	-0.34 ***	0.13 **	-0.25 ***
ARM 5/1 Yr 200k 80% LTV	0.18 ***	-0.35 ***	0.16 ***	-0.28 ***	0.09 ***	-0.17 ***
ARM 7/1 Yr 200k 80% LTV	0.02	-0.19 ***	0.05 *	-0.15 ***	0.05	-0.08 ***
Fixed 15 Yr 200k 80% LTV	-0.07 ***	-0.04 ***	-0.05 ***	-0.05 ***	-0.05 ***	-0.05 ***
Fixed 20 Yr 200k 80% LTV	-0.04 ***	0.00	-0.02 **	0.00	0.00	0.00
Fixed 30 Yr 200k 80% LTV	-0.05 ***	0.01 *	-0.03 ***	0.01	-0.01	0.00

Table 3.27 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
CD 1 Yr 10k	S	CU	S	CU	S	CU
2007	0.07 **	0.55 ***	0.03	0.54 ***	0.06	0.55 ***
2008	0.01	0.59 ***	0.01	0.60 ***	-0.01	0.57 ***
2009	0.06 ***	0.09 ***	0.01	0.16 ***	0.01	0.20 ***
2010	0.04 ***	0.03 **	0.01	0.08 ***	0.00	0.11 ***
2011	0.03 ***	0.06 ***	0.02	0.10 ***	0.00	0.12 ***
2012	0.02 ***	0.07 ***	0.01	0.08 ***	0.01	0.09 ***
2013	0.02 ***	0.07 ***	0.01	0.07 ***	0.01	0.08 ***
2014	0.02 ***	0.10 ***	0.01	0.10 ***	0.01	0.10 ***
2015	0.01	0.12 ***	0.00	0.12 ***	-0.01	0.12 ***
2016	0.03 ***	0.14 ***	0.01	0.15 ***	0.00	0.14 ***
2017	0.05 ***	0.21 ***	0.03 **	0.22 ***	0.01	0.22 ***
2018	0.15 ***	0.41 ***	0.09 ***	0.45 ***	0.07 **	0.44 ***

Table 3.28 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
CD 3 Yr 10k	S	CU	S	CU	S	CU
2007	0.08 ***	0.51 ***	0.06 **	0.52 ***	0.08 **	0.54 ***
2008	0.01	0.54 ***	0.03	0.57 ***	0.04	0.55 ***
2009	0.04 *	0.13 ***	0.02	0.20 ***	0.02	0.21 ***
2010	0.05 ***	0.11 ***	0.02	0.18 ***	0.02	0.20 ***
2011	0.04 ***	0.14 ***	0.02	0.17 ***	-0.01	0.20 ***
2012	0.05 ***	0.13 ***	0.02 *	0.15 ***	0.01	0.17 ***
2013	0.04 ***	0.14 ***	0.02 **	0.15 ***	0.01	0.16 ***
2014	0.04 ***	0.18 ***	0.02 *	0.18 ***	0.01	0.18 ***
2015	0.03 **	0.22 ***	0.02	0.22 ***	-0.01	0.22 ***
2016	0.05 ***	0.24 ***	0.03 **	0.25 ***	0.00	0.25 ***
2017	0.07 ***	0.29 ***	0.04 **	0.32 ***	0.00	0.32 ***
2018	0.12 ***	0.48 ***	0.06 **	0.54 ***	0.03	0.54 ***

Table 3.29 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
CD 5 Yr 10k	S	CU	S	CU	S	CU
2007	0.06 **	0.47 ***	0.06 **	0.49 ***	0.09 ***	0.52 ***
2008	-0.02	0.58 ***	0.01	0.60 ***	0.03	0.60 ***
2009	0.03	0.20 ***	0.02	0.25 ***	0.04	0.28 ***
2010	0.04	0.20 ***	0.02	0.27 ***	0.03	0.28 ***
2011	0.02	0.22 ***	0.00	0.26 ***	-0.01	0.29 ***
2012	0.04 ***	0.22 ***	0.01	0.23 ***	0.00	0.25 ***
2013	0.03 **	0.22 ***	0.01	0.23 ***	0.00	0.23 ***
2014	0.03 **	0.28 ***	0.03	0.28 ***	0.02	0.28 ***
2015	0.02	0.32 ***	0.02	0.32 ***	0.00	0.31 ***
2016	0.05 ***	0.34 ***	0.05 ***	0.35 ***	0.02	0.35 ***
2017	0.06 ***	0.38 ***	0.05 **	0.41 ***	0.02	0.41 ***
2018	0.12 ***	0.54 ***	0.08 **	0.60 ***	0.03	0.60 ***

Table 3.30 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Interest Checking 5k	S	CU	S	CU	S	CU
2007	0.09 ***	0.02	0.11 ***	0.06 **	0.14 ***	0.11 ***
2008	0.01	0.08 ***	0.03	0.11 ***	0.03	0.13 ***
2009	-0.01	0.03 **	0.00	0.05 ***	0.01	0.06 ***
2010	0.00	0.01	0.00	0.03 ***	0.00	0.04 ***
2011	0.01	0.02 ***	0.01	0.03 ***	0.01	0.03 ***
2012	0.00	0.02 ***	0.01	0.02 ***	0.01	0.03 ***
2013	0.01	0.02 ***	0.01 **	0.02 ***	0.02 ***	0.03 ***
2014	0.00	0.02 ***	0.01	0.02 ***	0.01 *	0.02 ***
2015	0.01 *	0.01 ***	0.01 **	0.02 ***	0.01 **	0.02 ***
2016	0.01 *	0.01 ***	0.01 *	0.01 ***	0.01 ***	0.02 ***
2017	0.01	0.01 *	0.01	0.01 ***	0.01 *	0.02 ***
2018	0.03 ***	-0.01	0.02 ***	0.00	0.03 ***	0.01

Table 3.31 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Money Market 2.5k	S	CU	S	CU	S	CU
2007	0.11 **	0.68 ***	0.06	0.73 ***	0.02	0.71 ***
2008	0.03	0.54 ***	0.03	0.56 ***	0.00	0.57 ***
2009	0.01	0.19 ***	0.00	0.22 ***	0.00	0.23 ***
2010	0.00	0.07 ***	0.00	0.09 ***	-0.01	0.09 ***
2011	0.00	0.06 ***	0.00	0.07 ***	0.00	0.08 ***
2012	0.00	0.05 ***	0.00	0.06 ***	0.01	0.07 ***
2013	0.00	0.04 ***	0.00	0.05 ***	0.00	0.05 ***
2014	0.00	0.04 ***	0.00	0.05 ***	0.00	0.05 ***
2015	0.00	0.05 ***	0.00	0.05 ***	0.00	0.06 ***
2016	0.01	0.05 ***	0.00	0.06 ***	0.00	0.06 ***
2017	0.01 **	0.06 ***	0.01	0.07 ***	0.01	0.08 ***
2018	0.03 ***	0.12 ***	0.02	0.14 ***	0.01	0.14 ***

Table 3.32 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Regular Savings 1k	S	CU	S	CU	S	CU
2007	0.11 ***	0.18 ***	0.09 ***	0.22 ***	0.11 ***	0.30 ***
2008	0.03	0.18 ***	0.02	0.22 ***	0.04	0.27 ***
2009	0.01	0.05 ***	0.01	0.09 ***	0.02	0.12 ***
2010	-0.01	0.00	-0.01	0.03 ***	0.01	0.05 ***
2011	0.00	0.01 *	0.00	0.03 ***	0.01	0.04 ***
2012	0.00	0.02 ***	0.00	0.02 ***	0.01 *	0.03 ***
2013	0.00	0.01 ***	0.01	0.02 ***	0.01 **	0.03 ***
2014	0.00	0.01 ***	0.00	0.02 ***	0.01	0.02 ***
2015	0.01	0.01 ***	0.00	0.02 ***	0.01	0.02 ***
2016	0.01	0.01 ***	0.00	0.02 ***	0.01	0.03 ***
2017	0.01 *	0.01 *	0.00	0.02 ***	0.01	0.03 ***
2018	0.02 **	0.00	0.01	0.01	0.01	0.02 **

Table 3.33 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Auto 48 Mo 25k 100% LTV	S	CU	S	CU	S	CU
2007	0.25 ***	-1.16 ***	0.16 *	-1.17 ***	0.14	-1.07 ***
2008	0.01	-1.24 ***	0.07	-1.24 ***	0.00	-1.16 ***
2009	0.10	-1.51 ***	0.12	-1.52 ***	0.09	-1.46 ***
2010	0.11	-2.07 ***	0.11	-2.06 ***	0.26 *	-2.02 ***
2011	0.31 ***	-2.14 ***	0.28 **	-2.11 ***	0.28 **	-2.09 ***
2012	0.22 ***	-2.20 ***	0.20 ***	-2.22 ***	0.04	-2.19 ***
2013	0.19 ***	-2.20 ***	0.14 **	-2.24 ***	0.03	-2.19 ***
2014	0.18 ***	-2.13 ***	0.16 **	-2.17 ***	0.10	-2.07 ***
2015	0.22 ***	-1.99 ***	0.20 ***	-2.03 ***	0.13 *	-1.96 ***
2016	0.28 ***	-1.87 ***	0.24 ***	-1.91 ***	0.16 **	-1.87 ***
2017	0.29 ***	-1.76 ***	0.26 ***	-1.79 ***	0.21 ***	-1.72 ***
2018	0.35 ***	-1.35 ***	0.30 ***	-1.35 ***	0.20 ***	-1.28 ***

Table 3.34 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Auto 60 Mo 25k 100% LTV	S	CU	S	CU	S	CU
2007	0.23 ***	-1.17 ***	0.15 *	-1.17 ***	0.11	-1.07 ***
2008	0.05	-1.26 ***	0.11	-1.26 ***	0.06	-1.20 ***
2009	0.13	-1.49 ***	0.17 *	-1.50 ***	0.10	-1.45 ***
2010	0.15	-2.05 ***	0.16	-2.05 ***	0.28 **	-2.00 ***
2011	0.33 ***	-2.14 ***	0.30 ***	-2.12 ***	0.30 **	-2.08 ***
2012	0.24 ***	-2.18 ***	0.23 ***	-2.20 ***	0.04	-2.19 ***
2013	0.20 ***	-2.19 ***	0.15 **	-2.20 ***	0.05	-2.15 ***
2014	0.16 ***	-2.13 ***	0.15 **	-2.16 ***	0.10	-2.06 ***
2015	0.22 ***	-1.97 ***	0.20 ***	-2.00 ***	0.15 **	-1.93 ***
2016	0.28 ***	-1.86 ***	0.24 ***	-1.89 ***	0.17 **	-1.84 ***
2017	0.30 ***	-1.75 ***	0.26 ***	-1.78 ***	0.20 ***	-1.70 ***
2018	0.37 ***	-1.33 ***	0.32 ***	-1.33 ***	0.23 ***	-1.25 ***

Table 3.35 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Home Eq LoC 25k 80% LTV	S	CU	S	CU	S	CU
2007	0.00	-0.28 ***	-0.08	-0.29 ***	-0.08	-0.23 ***
2008	0.11	-0.28 ***	-0.17	-0.33 ***	-0.13	-0.32 ***
2009	0.19	-0.66 ***	-0.01	-0.66 ***	0.05	-0.62 ***
2010	0.30 **	-0.59 ***	0.04	-0.65 ***	0.12	-0.63 ***
2011	0.15	-0.51 ***	-0.09	-0.56 ***	-0.16	-0.56 ***
2012	0.28 ***	-0.39 ***	0.11 *	-0.44 ***	0.10	-0.42 ***
2013	0.24 ***	-0.34 ***	0.08	-0.40 ***	0.01	-0.37 ***
2014	0.20 ***	-0.37 ***	0.03	-0.40 ***	-0.02	-0.35 ***
2015	0.26 ***	-0.35 ***	0.10 **	-0.38 ***	0.06	-0.32 ***
2016	0.20 ***	-0.35 ***	0.04	-0.38 ***	-0.02	-0.34 ***
2017	0.08 *	-0.29 ***	0.00	-0.34 ***	-0.05	-0.34 ***
2018	0.03	-0.23 ***	-0.03	-0.29 ***	-0.10	-0.31 ***

Table 3.36 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Home Eq 5 Yr 25k 80% LTV	S	CU	S	CU	S	CU
2007	0.18	-0.75 ***	-0.08	-0.80 ***	-0.13	-0.81 ***
2008	-0.02	-0.66 ***	-0.12	-0.75 ***	-0.12	-0.81 ***
2009	-0.17	-0.72 ***	-0.29 *	-0.87 ***	-0.28	-0.92 ***
2010	0.18	-0.69 ***	0.03	-0.85 ***	0.09	-0.85 ***
2011	0.24	-0.58 ***	0.04	-0.78 ***	-0.04	-0.85 ***
2012	0.36 ***	-0.54 ***	0.20 *	-0.73 ***	0.08	-0.74 ***
2013	0.34 ***	-0.53 ***	0.18 *	-0.73 ***	0.25 **	-0.70 ***
2014	0.35 ***	-0.65 ***	0.22 **	-0.80 ***	0.25 **	-0.74 ***
2015	0.26 ***	-0.62 ***	0.12	-0.74 ***	0.05	-0.72 ***
2016	0.27 ***	-0.58 ***	0.11	-0.70 ***	0.06	-0.64 ***
2017	0.26 ***	-0.58 ***	0.11	-0.69 ***	0.12	-0.62 ***
2018	0.30 ***	-0.40 ***	0.19 **	-0.45 ***	0.05	-0.40 ***

Table 3.37 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Home Eq 10 Yr 25k 80% LTV	S	CU	S	CU	S	CU
2007	0.57	-0.64 ***	1.58 **	-0.59 ***	2.52 ***	-0.45 **
2008	-0.12	-0.41 ***	0.38	-0.37 **	0.48	-0.36 *
2009	0.21	-0.41 ***	-0.11	-0.42 ***	-0.52	-0.51 ***
2010	0.45	-0.29 **	0.25	-0.43 ***	0.32	-0.43 ***
2011	0.54 *	-0.34 ***	0.25	-0.63 ***	0.06	-0.62 ***
2012	0.48 ***	-0.34 ***	0.26	-0.52 ***	-0.07	-0.61 ***
2013	0.25 **	-0.33 ***	0.11	-0.50 ***	0.15	-0.51 ***
2014	0.41 ***	-0.41 ***	0.29 ***	-0.52 ***	0.19	-0.53 ***
2015	0.37 ***	-0.43 ***	0.22 **	-0.54 ***	-0.05	-0.59 ***
2016	0.30 ***	-0.43 ***	0.12	-0.52 ***	0.01	-0.55 ***
2017	0.25 **	-0.41 ***	0.08	-0.48 ***	-0.08	-0.52 ***
2018	0.29 ***	-0.27 ***	0.14	-0.32 ***	-0.02	-0.31 ***

Table 3.38 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Unsecured Fixed 36 Mo 5k	S	CU	S	CU	S	CU
2007	0.05	-0.97 ***	-0.01	-1.14 ***	0.17	-1.50 ***
2008	-0.70 *	-1.26 ***	-0.95 **	-1.43 ***	-0.54	-1.68 ***
2009	-0.60 *	-1.16 ***	-0.76 **	-1.27 ***	-0.62	-1.65 ***
2010	-0.15	-0.93 ***	-0.32	-1.01 ***	-0.16	-1.44 ***
2011	0.11	-0.94 ***	0.01	-1.11 ***	0.15	-1.70 ***
2012	-0.54 ***	-0.86 ***	-0.50 **	-1.10 ***	-0.82 ***	-1.68 ***
2013	-0.72 ***	-0.90 ***	-0.63 ***	-1.06 ***	-0.41	-1.34 ***
2014	-0.61 ***	-1.03 ***	-0.42 **	-1.12 ***	-0.10	-1.38 ***
2015	-0.67 ***	-0.93 ***	-0.47 **	-1.05 ***	-0.43 *	-1.33 ***
2016	-0.52 ***	-0.93 ***	-0.42 **	-1.06 ***	-0.74 ***	-1.37 ***
2017	-0.35 **	-0.83 ***	-0.27	-0.95 ***	-0.46 *	-1.20 ***
2018	-0.26	-0.67 ***	-0.22	-0.77 ***	-0.45 *	-1.00 ***

Table 3.39 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
ARM 5/1 Yr 200k 80% LTV	S	CU	S	CU	S	CU
2007	0.16	-0.33 ***	0.09	-0.30 ***	0.13	-0.33 **
2008	-0.23	-0.38 ***	-0.37	-0.37 ***	-0.94	-0.04
2009	-0.30	-0.35 ***	-0.07	-0.31 ***	0.56	-0.14
2010	0.24	-0.60 ***	0.26	-0.57 ***	1.60 **	-0.45 **
2011	-0.05	-0.51 ***	-0.04	-0.53 ***	0.83	-0.25
2012	0.45 ***	-0.38 ***	0.44 ***	-0.35 ***	0.34 **	-0.13
2013	0.20 **	-0.42 ***	0.23 ***	-0.31 ***	0.21 **	-0.23 ***
2014	0.26 ***	-0.43 ***	0.25 ***	-0.34 ***	0.25 ***	-0.21 ***
2015	0.17 ***	-0.36 ***	0.17 ***	-0.28 ***	0.12 *	-0.17 ***
2016	0.15 ***	-0.22 ***	0.15 ***	-0.16 ***	0.04	-0.10 **
2017	0.15 ***	-0.27 ***	0.11 **	-0.19 ***	-0.07	-0.12 ***
2018	0.14 **	-0.38 ***	0.08	-0.31 ***	0.01	-0.23 ***

Table 3.40 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Fixed 15 Yr 200k 80% LTV	S	CU	S	CU	S	CU
2007	-0.10	-0.10 **	-0.10	-0.12 **	-0.32 **	-0.12
2008	-0.16	-0.16 **	-0.13	-0.10	-0.08	-0.25 **
2009	0.05	-0.01	0.15	0.04	0.17	0.00
2010	-0.02	-0.06	-0.01	-0.04	-0.09	-0.11
2011	0.00	0.02	0.06	0.02	0.10	0.01
2012	-0.11 **	0.05	-0.07	0.05	-0.08	-0.01
2013	-0.05	-0.04 *	-0.03	-0.02	0.02	0.01
2014	-0.09 ***	-0.08 ***	-0.07 **	-0.08 ***	-0.06 *	-0.10 ***
2015	-0.09 ***	-0.07 ***	-0.06 **	-0.09 ***	-0.07 **	-0.11 ***
2016	-0.06 ***	-0.01	-0.03	-0.02	-0.05 *	-0.02
2017	-0.07 ***	-0.06 ***	-0.06 ***	-0.08 ***	-0.09 ***	-0.06 ***
2018	-0.06 **	-0.08 ***	-0.04	-0.07 ***	-0.02	-0.03

Table 3.41 – The results for our annual regression analysis are displayed below. We estimate the difference in bank product rates between C banks, S banks, and credit unions using the equation below. The estimates for β_1 and β_2, indicating the difference compared to C banks, are displayed alongside their significance levels. We use a dummy variable to control for the effect when a bank is de novo. For location effects, test (1) does not control for any regional effect, (2) controls for state effects, and (3) controls for MSA effects, the latter two utilizing dummy variables. This table corresponds to our first sample where bank rates are end of year values.

$$y_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 CU_{i,t} + \boldsymbol{\beta X_{i,t}} + \varepsilon_{i,t}$$

	(1)		(2)		(3)	
Fixed 30 Yr 200k 80% LTV	S	CU	S	CU	S	CU
2007	-0.08	-0.03	-0.03	-0.03	-0.07	-0.03
2008	-0.11	-0.13 *	0.04	-0.09	0.06	-0.16
2009	-0.11	-0.01	0.04	0.02	0.03	0.02
2010	0.01	-0.03	0.00	-0.02	-0.04	-0.05
2011	-0.08	0.03	-0.03	0.03	-0.03	0.02
2012	-0.08 **	0.09 ***	-0.05	0.07 ***	-0.03	0.04
2013	-0.01	0.02	-0.01	0.03	0.03	0.05 **
2014	-0.02	-0.05 ***	-0.02	-0.06 ***	0.01	-0.06 ***
2015	-0.07 ***	-0.02	-0.06 ***	-0.03 ***	-0.05 **	-0.04 ***
2016	-0.04 **	0.09 ***	-0.03	0.09 ***	-0.01	0.09 ***
2017	-0.04 ***	0.00	-0.03 **	-0.01	-0.04 **	-0.02
2018	-0.05 ***	-0.02 *	-0.04 *	-0.02	-0.03	-0.01

REFERENCES

Ashenfelter, O., & Card, D. (1985). Using the longitudinal structure of earnings to estimate the effect of training programs. *Review of Economics and Statistics*, *67*(4), 648-660.

Cyree, K. B., Hein, S. E., & Koch, T. W. (2010). S Corporation Banks: The Impact of Taxes and Ownership on Capital Structure and Performance. Working paper.

Hodder, L., McAnally, M. L., & Weaver, C. D. (2003). The influence of tax and nontax factors on banks' choice of organizational form. *The Accounting Review*, *78*(1), 297-325.

Hughes, J. P., Mester, L. J., & Moon, C. G. (2001). Are scale economies in banking elusive or illusive? Evidence obtained by incorporating capital structure and risk-taking into models of bank production. *Journal of Banking and Finance, 25*(12), 2169–2208.

Mayne, L.S., (1977). A comparative study of bank holding company affiliates and independent banks, 1969-1972. *Journal of Finance, 32*(1), 147-158.

Satterthwaite, F. E. (1946). An approximate distribution of estimates of variance components. *Biometrics Bulletin*, *2*(6), 110–114.

Thomson, J.B. (1991). Predicting bank failures in the 1980s. *Economic Review*, *27*(1), 9-20.

Welch, B. L. (1947). The generalization of "Student's" problem when several different population variances are involved. *Biometrika*, *34*(1/2), 28–35.

Chang, C., Jain, A., Lawrence, E. R., & Prakash, A. J. (2016). The Tax Exemption to Subchapter S Banks: Who Gets the Benefit? *The Financial Review*, *51*, 329-362.

Depken, C. A., Hollans, H., & Swidler, S. (2010). Do Tax Benefits Conferred to Sub-S Banks Affect their Deposit or Loan Rates? *Finance Research Letters*, *7*, 239-245.

APPENDIX: VARIABLE DEFINITIONS

L&L / A – Loans and Leases divided by Total Assets

L&L / D – Loans and Leases divided by Total Deposits

ROAA – Return on Average Assets

ROAE – Return on Average Equity

Net Int Inc / AEA – Net Interest Income divided by Average Earning Assets

Yield Cost Spread – Yield on Loan Products minus Rate on Deposit Products

Op Exp / Op Rev – Non-interest Expense divided by Net Interest Income

Tier 1 C / A – Tier 1 Capital divided by total assets

Tier 1 Capital – Tier 1 capital is core capital that includes equity capital and disclosed reserves. It is essentially the most perfect form of a bank's capital — the money the bank has stored to keep it functioning through all the risky transactions it performs, such as trading/investing and lending.

Risk Based Capital – Tier 1 Capital divided by Risk-weighted assets. Risk-weighted assets are constructed by assigning different weights to assets with different levels of risk and summing the totals.

Equity / A – Total Equity divided by Total Assets

Com Div / NI – Common Dividends Declared divided by Net Income

NPL / L – Nonperforming Loans divided by Total Loans

NPA / A – Nonperforming Assets divided by Total Assets

Net CO / AL – Net Charge-offs divided by Average Loans

Liquid A / L – Liquid and Short-term Assets divided by Total Liabilities

VITA

ALEJANDRO PACHECO

	Born, Lima, Peru
2012	B.A., Economics Florida International University Miami, Florida
2013	M.S., Finance Florida International University Miami, Florida
2014 - 2019	Doctoral Candidate Florida International University Miami, Florida
	Graduate Teaching Assistant Florida International University Miami, Florida

PUBLICATIONS AND PRESENTATIONS

Pacheco, A. (March, 2016). *Why do Subchapter S Banks Convert Back to C Banks?* Paper presented at the Southwestern Finance Association conference.

Pacheco, A. (March, 2016). *Why do Subchapter S Banks Convert Back to C Banks?* Paper presented at the Midwest Finance Association conference.

Pacheco, A. (June, 2017). *Why do Subchapter S Banks Convert Back to C Banks?* Paper presented at the KPMG Financial Doctoral Student Association conference.