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AND ITS IMPACT ON SMALL BUSINESS LENDING

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The Evolution of U.S. Community Banks and Its Impact on Small Business Lending

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Abstract

There have been increasing concerns about the potential of larger banks acquiring community banks and the declining number of community banks, which would significantly reduce small business lending (SBL) and disrupt relationship lending. This paper examines the roles and characteristics of U.S. community banks in the past decade, covering the recent economic boom and downturn. We analyze risk characteristics (including the confidential ratings assigned by bank regulators) of acquired community banks, compare pre- and post-acquisition performance, and investigate how the acquisitions have affected SBL. Contrary to concerns, our regression analysis shows that the overall amount of SBL increases more after a merger when a large bank acquires a community bank. Data suggest an overall (regardless of mergers) declining SBL trend for all size groups. In fact, the decline in the SBL ratio has been more severe among community banks on average, relative to large banks. Community banks that were merged during the financial crisis were less healthy than in earlier periods. Our results indicate that mergers involving community bank targets over the past decade have enhanced the overall safety and soundness of the banking system without adversely impacting SBL. Supervisory policies that discourage mergers between community banks and large banks could potentially result in an unintentional dampening effect on the supply of SBL.

Keywords: community banks, small business lending, bank mergers

JEL Classifications: G21, G28, G34

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I. Introduction

The recent financial crisis has resulted in a dramatic increase in the number of problem banks — from 50 problem banks in 2005 to a peak of 884 in 2010. As of March 2013, there were still 612 problem banks.¹ Most of these are small community banks with average assets of about \$450 million. The stock market recovered and reached a new high in 2013 and has continued to climb. Large banks, particularly those in the too-big-to-fail (TBTF) category or the systemically important financial institutions (SIFI), have also recovered strongly.² However, the affected community banks remained troubled.

While the Dodd-Frank Wall Street Reform and Consumer Protection Act has focused mostly on large TBTF banks, there have been fears among small community banks that they also might be affected and that the new rules might inhibit their ability to lend in their local communities because of the increased costs of such lending.³ For these reasons, some commentators believe that many of the community banks have been seeking to merge or to be acquired by a large bank to take advantage of the scale economies under the new regulations.⁴ Should community banks be encouraged to merge? Would acquisitions of community banks by large banks result in a significant reduction in small business lending (SBL) and destroy relationship lending?

Our objective is to examine the impact of small community bank acquisitions on SBL over the past decade, covering both the boom and the recent downturns, with particular attention to the differential impacts of acquisitions by large versus small banks. It is important to note that we define community banks as being smaller than \$1 billion in this paper. The

¹ Source: Federal Deposit Insurance Corporation (FDIC) Report (2012)

² For example, JPMorgan Chase & Co. reported profit growth of 31 percent per share in the second quarter of 2013, Goldman Sachs' profits also more than doubled in the second quarter of 2013 compared with the year before, and the Bank of America reported a 65 percent increase in profits during the same period.

³ This concern holds despite the recent efforts to impose less complex requirements for small banks, such as the Volcker Rule, which was approved by the Senate in December 2013.

⁴ In the 2013 Annual Report, the Conference of State Bank Supervisors released a paper on designing a federal regulatory framework for community banks. The group has argued that the rulemaking policy since the financial crisis has undermined the smaller lenders' ability to provide credit tailored to consumers and small businesses. See the Conference of State Bank Supervisors (2014) for more details.

definition of a community bank has been evolving. Some may refer to community banks being as large as \$10 billion when considering the entire banking organization.⁵ In this study, however, we separate out small community banks with assets of less than \$1 billion from the group of larger community banks with assets of between \$1 billion and \$10 billion.

The measures of performance and risk characteristics used in this study include confidential supervisory ratings (CAMELS) before and after the mergers. (The component rating C represents capital adequacy, A represents asset quality, M is management quality, E represents earnings, L measures the bank's liquidity position, and S measures the bank's sensitivity to market risk. The composite rating of CAMELS is also assigned to represent the rating on the overall banking institution.) In addition, this study also measures how the banks perform in terms of risk-taking, efficiency, liquidity, capitalization, asset quality, and profitability. We use data on mergers and acquisitions that involved community bank targets from 2000 to 2012 to examine the risk characteristics of the targets and acquirers at the time of the mergers, to track post-merger performance of the combined banking firm, and to investigate whether the mergers affected the banks' SBL.

We find that community bank mergers that took place during the recent financial crisis are much different than those mergers that occurred in the earlier periods. Interestingly, the acquirers have been generally healthier prior to the merger, and the combined banking firms have been healthier financially and more efficient in their operations after the merger, regardless of the economic condition and whether the acquirers are large or small. Controlling for the risk characteristics of the targets and the acquirers, the economic environment, and the market condition for SBL at nonmerged banks with similar (to the combined firm) asset size and CAMELS rating, our regression analysis shows that the overall SBL amount increases more when the acquirer is a large bank with assets of more than \$10 billion. In terms of changes in the SBL-to-asset ratio, however, the impact of the mergers tend to be insignificant regardless of the size of the acquirers. Our overall results suggest that mergers that involved community bank targets have enhanced the safety and soundness of the banking system so far and have done so

⁵ See, for example, the Federal Deposit Insurance Corporation (2012) for definitions of a community bank.

without any adverse effects on SBL, as large banks have come in to substitute and to fill the SBL gap.⁶

The rest of the paper is organized as follows. Section II discusses existing literature related to the special role of community banks in relationship lending and those related to the impact of community bank mergers on credit availability to small businesses. Section III describes the data sources and provides a statistical overview of the changes in the U.S. community banking industry and community bank mergers since the year 2000. Section IV explores the risk characteristics of the targets, the acquiring banks, and the combined banking firms for all the mergers that involved community bank targets since the year 2000 and shows that community banks have become stronger through the mergers and acquisitions. Section V investigates the evolving role of community banks versus large banks in SBL between 2000 and 2012 by exploring SBL market shares at large versus community banks and how SBL may have been affected by community bank mergers. Section VI provides a rigorous analysis of the impact of community bank mergers on SBL using regression analysis and controlling for the various risk characteristics of the targets and the acquirers, economic conditions, and the overall market trend for SBL around the time of the merger announcement. Finally, concluding remarks and policy implications are presented in Section VII.

II. Literature Review and Our Contribution

About 90 percent of all U.S. banks are community banks with total assets of less than \$1 billion. These banks altogether, however, account for only about 10 percent of U.S. banking assets (see Table 1). This may be the reason why research that focuses on community banks has been relatively scarce, despite concerns about the impact of the recent recession on this sector and the related policy considerations. We will focus on studies pertaining to community bank mergers and the role of community banks in SBL.

The Role of Community Banks in SBL: The existing literature on the role of community banks in SBL has provided mixed results so far. Beccalli and Frantz (2013) and Kowalik (2014),

⁶ It should be noted, however, that we measure a bank's SBL activities based on Call Reports. The data do not allow us to identify whether the SBL was made to local businesses or to small businesses outside the local community.

for example, find support for the traditional view that small community banks have advantages in monitoring their customers through personal relationships and that, through mergers, community banks could become too large to look beyond credit scores in their lending decisions and too large to maintain direct personal knowledge, which has enabled them to meet community needs.

Using merger data from 1991 to 2006, Beccalli and Frantz (2013) examine important determinants for banks to become involved as either a target or an acquirer in a merger. While the paper focuses primarily on methodological approaches — multinomial logistic versus Cox regression — the authors find banks that are likely to become a target of a bank merger tend to be cost- and profit-inefficient, less liquid, and less capitalized. They also find that acquiring banks tend to be well diversified and well managed and managers leverage their profits and pursue higher growth strategies. Banks that acquire other banks multiple times (involved in multiple merger deals rather a single deal) tend to be larger banks.

Kowalik (2014) examines how competition from large banks, which have lower funding costs, affects small banks' ability to attract and maintain their borrowers. Small community banks have advantages in monitoring their customers through personal relationships, and they have an important role to play in monitoring and enhancing the project value for intermediate quality borrowers whose true quality may not be reflected in the public reports. The paper argues that small banks can be viable competitors of large banks and can add value to the borrowers' projects when the true value cannot be easily observed by large banks. This finding suggests that, unlike large banks that serve large transparent firms, small community banks have a special role in supporting small businesses in their local communities since they are better able to form strong relationships with small opaque firms.

Several other papers, however, find different results that may be driven by different data and/or by different methodologies. Overall, other studies suggest that while large banks may have a comparative disadvantage in relationship lending, it does not necessarily imply that large banks are disadvantaged in providing credit to informationally opaque (and small) firms. One reason is that large banks have a comparative advantage in using small business credit scores (SBCS) that has allowed them to increase lending to marginal borrowers and to do so at

lower cost than small banks could. The SBCS, which has been widely used by large banks, is also believed by some to serve as a better tool for evaluating credit risk than the individual (business owner) credit scores used by community banks. Finally, some studies examine reactions by other local banks to local community bank mergers and find that other banks start making more SBL. In addition, de novo banks⁷ tend to spring up in response to community bank mergers. Both large banks and de novo banks together have more than filled the SBL gaps caused by community bank mergers. More details on these studies follow.

Berger and Udell (2006) examine lending to small and medium-size enterprises (SME) using a more complete framework that allows the presence of alternative lending technologies. They conclude against some previous findings that large banks have a comparative advantage in transaction-based lending technologies and that some transaction-based lending technologies used by large banks are actually well suited for funding opaque SMEs. They also point out that the conventional results from other studies may be driven by the differences between the U.S. structure and that of other nations. The presence of small banks may be more important in other nations because their financial structures may limit use of some lending technologies that are available in the U.S.⁸

Berger, Goulding, and Rice (2014) examine the type of bank serving as the main relationship bank for small businesses, controlling for risk characteristics of the firm and those of the owner, using the 2003 Survey of Small Business Finances. Their results are not consistent with the conventional paradigm. Similarly, Berger, Cerqueiro, and Penas (2014) examine the contributions of small banks in lending to recent startups from 2004 to 2009. They find that the greater market presence of small banks results in more lending to small opaque firms and a lower failure rate of these small firms during normal times. However, this holds only for information-intensive loans, such as term loans and business lines of credit. In addition, this relationship disappeared and was reversed during the financial crisis.

Berger, Frame, and Miller (2005) find that SBCS plays an important role in SBL. The SBCS has allowed some large banks to expand their lending to at least some pools of small business

⁷ Denovo banks are state banks that have been in business for less than five years.

⁸ The most recent review of bank lending technologies may be found in Berger (2014).

customers — therefore, this technology has allowed larger banks to increase their role in lending to small businesses. Consistent with these findings, Berger, Cowan, and Frame (2011) find that the use of credit scores (rather than relationships) in SBL by community banks is surprisingly widespread. Interestingly, the credit scores employed by community banks tend to be the consumer credit scores of the small business owners rather than the more encompassing SBCS that more accurately reflect credit information on both the firms and the owners.

Community Bank Mergers and SBL Impacts: Elyasiani and Goldberg (2004) present a literature survey on SBL and suggest that, while bank mergers are likely to affect SBL, the decision for banking firms to make relationship loans also could be affected by several other factors, such as regulatory and/or technological changes, loan characteristics (such as collateral and loan rates), and borrower characteristics (such as multiple relationships, length of relationship, distance, etc.).

Jagtiani (2008) examines 3,900 mergers that involved publicly traded banking organizations during the pre-financial crisis period from 1990 to 2006. The results indicate that more than one-half of the acquiring banks that bought community banks were themselves community banks. This, in conjunction with another finding that almost 90 percent of all mergers between community banks involved banks headquartered in the same state, seems to suggest that community banks may be merging with the goal of concentrating their efforts on what they are believed to do best (which is to provide personal service to small businesses and other local customers); thus, this should not have an adverse impact on SBL.

Avery and Samolyk (2004) look deeper into this issue and take into account reactions by other local banks, using data from 1994 to 2000. Interestingly, they find different reactions to large bank mergers versus small bank mergers. Specifically, large bank mergers are associated with slower loan growth in the local area, but community bank mergers are associated with higher loan growth and greater market share of the SBL funded by local community banks. They conclude that other community banks in the area react to mergers by making more SBLs. This is consistent with Jagtiani (2008) and sheds light on the source of increased SBLs by community banks in the local area.

Berger, Scalise, Saunders, and Udell (1998) also find that other banks in the area had strong SBL reactions to bank mergers as the size distribution of banks in the local market change. They investigate the *static* versus *dynamic* effects of bank mergers on SBL. They find that while the *static effects* (associated with scale and strategy because of reduced efficiency in relationship lending as the banks merge into a larger bank) resulted in a reduction in SBLs, the *dynamic effects* (associated with post-merger impact and reactions by other local banks) resulted in increased SBL by other banking firms in the local area. Overall, they conclude that the static effects reducing SBL are more than offset by the reactions of other local banks so the net impact of bank mergers results in increased SBL.

In addition to increased SBL from other nonmerged banks in the same local area, Berger, Bonime, Goldberg, and White (2004) found that de novo banks spring up and start engaging in SBL in markets in which there are mergers. Goldberg and White (1998) and DeYoung, Goldberg, and White (1999) find that new banks tend to make more relationship loans and that the amount of relationship lending declines as banks age (up to 20 years old). In response to community bank mergers, de novo banks tend to be formed to fill the SBL gap as small local banks disappear through mergers.

Overall, the literature suggests there are many factors that impact the amount and growth in SBL. Bank consolidation and reactions by other banks to local bank mergers could impact SBL. Besides mergers and acquisitions, factors such as changes in market environment and regulations could play an important role. The recent financial crisis has brought about one of the largest changes in the history of banking regulations, resulting in dramatic changes in the behaviors of both borrowers and banking firms. Our paper reexamines community bank mergers and SBL, using more recent data.

III. Community Banking Overview

Our data come from various sources. We focus on mergers that involved community bank (with assets of less than \$1 billion) targets from 2000 to 2012. All the information related to the mergers, such as merger announcement date, type of merger, financial characteristics as

of merger announcement date, comes from the SNL Financial database. Our sample excludes government-assisted mergers, mergers that were announced but not completed, and mergers that involved a purchase or sale of branches or some operating units (rather than the acquisition of the entire bank or bank holding company (BHC)).

Supervisory CAMELS ratings are collected from the National Examination Data (NED) System and the National Information Center (NIC). Data related to SBL are collected from the Federal Reserve Call Reports. We use information from Y-9 Reports and the structure data from the Federal Reserve to identify relationships between the banks and BHCs involved in the mergers. Some mergers involved mergers and acquisitions of between banks, some are between BHCs, and others are between a bank and a BHC. Since SBL and CAMELS ratings are available only at the bank (rather than the BHC) level, we use SBL and CAMELS of the largest bank under the BHCs that were involved in the mergers. Economic factors are collected from the Haver Analytics database.

Basic Facts on U.S. Banking Industry

The U.S. banking industry is unique in that, while more than 90 percent of about 7,000 U.S. banks are small community banks (with less than \$1 billion in assets), more than 90 percent of the U.S. banking assets are held at large banking institutions.⁹ The community banking sector has also been shrinking over time, both in terms of the number of community banks and the amount of assets controlled by community banks (Table 1).

There has also been a long-term, steady trend of merger and acquisition activity involving community banks. Overall, the number of large banks has been growing significantly in the past decade, while there has been a substantial decline in the number of community banks. More than 90 percent of all bank merger transactions that took place from 2000 to 2012 involved community bank targets. However, this number translates to about only 10 percent in terms of all targets' banking assets (Table 2A).

⁹ This is as of year-end 2012.

Community Banks and Relationship Lending

There have been concerns that attrition of the community banking sector may be adversely affecting SBL and that acquisition of small banks by large banking institutions would disrupt relationship lending. The general perception seems to be that the observed decline in the number of community banks in the past decade may not result in much impact on SBL if the acquirers have been community banks (rather than large banks). Table 2B shows that about 68 percent of the community banks that merged during the sample period were acquired by other community banks.

The next question is whether these acquirers of community banks are from out-of-state firms because of the concerns that, if the acquiring banks are headquartered in another state, the funding from the local community may be lost to out-of-state borrowers. Table 3 shows that more than 80 percent of community bank mergers (mergers between the community bank target and the community bank acquirer) have been within the same state (in-state mergers).

So far, these basic statistics indicate that the majority of community bank mergers involved community bank acquirers and that they were mostly in-state mergers; thus, the mergers may not have a significant impact in reducing lending to small businesses and/or moving funds out of the community. We explore this issue further and examine whether community bank mergers that took place in the past decade may have strengthened the banks' comparative advantage in relationship lending.

IV. Have Community Banks Become Stronger or Weaker After the Mergers?

We explore important characteristics of targets and acquirers around the mergers' announcement dates and compare those with characteristics of the combined firm (after the mergers). Figures 1.1 to 1.7 compare pre-merger and post-merger performance based on the various components of the confidential supervisory CAMELS ratings.

The sample includes nonassisted mergers that involved community banks targets from 2000 to 2012. The plots in Figures 1.1 to 1.7 compare the targets' and the acquirers' average supervisory CAMELS ratings across all the mergers that were announced in each year. The

ratings are usually assigned at least about every 18 months. The pre-merger ratings for targets and acquirers are the latest assigned CAMELS ratings prior to the merger announcement date. The post-merger CAMELS ratings are the combined firm's first assigned rating after the merger has been completed. When the targets or the acquirers are BHCs, we use the CAMELS rating of the largest bank under the involved BHC. Note that the lowest rating (1) represents the best rating, and the highest rating (5) is the worst.¹⁰

Based on the average supervisory ratings prior to the mergers, the community bank target is consistently weaker on average than the acquirer, particularly for mergers that took place during the financial crisis period or later (2008 and thereafter) when the targets' ratings averaged around 3 (satisfactory) for capital adequacy, asset quality, management quality, and composite rating. The targets' average rating for earnings and profitability was slightly below 3 for mergers that were announced between 2008 and 2010. The ratings of the combined firm (after the merger) are much improved compared with those of the targets before the mergers. These results are consistent across all component ratings and the composite CAMELS ratings. Overall, community banks that were acquired during the financial crisis had performed poorly and, on average, were right around border line to be rated satisfactory by their regulators on all risk aspects.

Figure 1.8 plots the number of community bank targets and the distribution of their composite CAMELS ratings as of the merger announcement date. The majority of community bank targets for mergers announced during the sample period (except for the financial crisis period) are healthy banks, with composite CAMELS rating of 1 or 2. Unlike the mergers that were announced between 2000 and 2007 and in 2012, community bank targets for mergers that took place between 2008 and 2011 consisted of a larger share of lower rated targets, which would have been less able to serve as a good funding source for small businesses

¹⁰ Agarwal, Lucca, Seru, and Trebbi (2014) find that different regulators may be applying different standards when assigning the CAMELS ratings. The discrepancy is related to different weights given to local economic conditions. While our analysis here does not control for the regulators (federal versus state regulators) that assigned the ratings, we do control for economic conditions around the merger date.

anyway. In fact, they were more likely to fail if they were not acquired by another (healthier) bank.¹¹

Unlike the target community banks, most of the acquirers of community banks were 1-rated or 2-rated institutions, as shown in Figure 1.9. Overall, for the entire sample period that includes both boom-and-bust economic environment, community bank mergers have served to enhance the safety and soundness of the banking system,¹² suggesting that there may not be any good reasons to be overly concerned about the large number of community bank mergers so far.

In addition to exploring the confidential supervisory ratings before and after the mergers, we support our findings with additional analysis of other important performance measures for targets and acquirers. Figures 2.1 to 2.5 present the various performance measures, based on the return on equity (ROE), operational inefficiency ratio (measured as the ratio of noninterest expense to the sum of net interest income and other income), nonperforming assets (NPA) ratio, loan-loss reserve ratio, and common equity capital-to-total asset ratio, respectively. The results are consistent with those presented earlier based on supervisory CAMELS ratings. It is also interesting to note that most of the community bank targets consistently have been very small banks — with less than \$500 million in assets — as shown in Figure 2.6. Again, community bank targets are generally weaker than the acquirers prior to the mergers, particularly for community bank mergers that took place during and after the recent financial crisis.¹³

¹¹ Gilbert, Meyer, and Fuchs (2014) examine banks with asset <\$10 billion that were rated 4 or 5 at some point during 2006–2013, and they find that almost half of them either merged with another bank (15.6 percent) or failed (24.7 percent) by the end of 2013.

¹² Our finding is consistent with Cooper and Vermilyea (2012), who find that mergers involving a well-managed acquiring bank (with a superior M rating) could improve the long-term performance of the combined banking firm after the merger.

¹³ The targets were not profitable (smaller ROE or larger losses), were less efficient in their operations, had more bad loans (more charge-offs), and were less capitalized.

Funding Availability for Small Businesses

As mentioned previously, the conventional wisdom is that small local community banks make loans based on relationships and other qualitative information (rather than the typical model-based risk score used by large banks). The public concerns around community bank mergers and the declining number of U.S. community banks have been mainly associated with the belief that community banks have been the traditional funding sources for local small businesses and that there would be a shortage of funds to small and new businesses without them. We explore the role of community banks versus large banks in SBL and examine the potential impact of attrition of the community banking sector on SBL.

SBL at Community Banks Versus Large Banks: First, we examine the changes in market share of SBL for the various bank size groups from 1997 to 2013, using Call Report data.¹⁴ The data include all commercial banks in the U.S. regardless of their asset size and whether they were involved in a merger. Figure 3.1 shows that SBL market share has declined for community banks in recent years starting in 2008. In contrast, the SBL market share among large banks (with assets more than \$10 billion) increased significantly. The trend is even more pronounced when we consider only those SBL loans that were smaller than \$100,000 in origination amount. As shown in Figure 3.2, large banks have significantly increased their market shares on these small SBLs since the beginning of the financial crisis. Community banks, on the contrary, have reduced their market shares in small SBL during the same period. The increased market share in SBL at large banks may be partly because small banks became larger over time.¹⁵ If this is the case, then the evidence would suggest that these small community banks would continue SBL even after they have grown in size and have become one of the large banks (larger than \$10 billion).

Second, in addition to examining the SBL volume, we also explore the change in ratio of SBL to assets at large versus small banks during the same period from 1997 to 2013. Figure 3.3

¹⁴ Data on SBL and assets are obtained from the June Call Reports, and the sample includes all banks (the entire market) in the U.S.

¹⁵ The number of banks in the largest size category (with more than \$50 billion) increased from 10 banks in 1997 to 34 banks in 2014, and their share of domestic assets increased from 26 percent in 1997 to 71 percent in 2014.

shows that the SBL-to-assets ratio has declined for all bank size groups (including community banks). This evidence suggests that banking assets have been growing at a faster rate than the banks' small business loans, possibly partially driven by a decline in overall demand for SBL and/or competition from nonbank lenders.¹⁶ Focusing on depository institutions, Figure 3.3 shows that the decline in the SBL ratio at community banks has been more severe than at larger banks since the beginning of the financial crisis. This evidence is consistent with an argument that large banks could potentially fill the gap created by community banks in SBL lending.¹⁷

In summary, while community banks have consistently been more committed to SBL (with larger SBL-to-asset ratios), this does not translate to a large volume of SBL. More important, since the beginning of the recent financial crisis, the average SBL-to-assets ratio has declined more sharply on average at community banks than at the larger banks. The significant decline in SBL among community banks occurred despite the federal support to help them jump-start the economy during the financial crisis through the Small Business Lending Fund (SBLF). The SBLF was made available only to small banks with assets less than \$10 billion. However, 87 percent of the eligible community banks did not apply for the SBLF.¹⁸

SBL at Community Banks That Merged: We next focus on SBL volume associated with community banks that merged during the period from 2000 to 2012. First, we compare SBL at the targets versus the acquirers. In terms of SBL volume (in dollar amount), Figure 3.4 shows that, as expected, the community bank targets had significantly smaller SBL on average than the acquirers did.¹⁹ In terms of commitment to SBL (SBL-to-assets ratio), however, Figure 3.5

¹⁶ Jagtiani and Lemieux (2015) find evidence that nonbank lenders have also been playing an increasing role in small business lending in recent years.

¹⁷ Hughes, Jagtiani, and Mester (2015) explore the incentives (for SBL) across large and small banking institutions. Their preliminary results suggest that small banks (with assets of less than \$1 billion) had fewer incentives for SBL when compared with larger banks with assets of between \$1 billion and \$10 billion, based on 2013 data.

¹⁸ Of the 7,700 banks that were eligible, only 1,000 banks applied and 332 banks were approved. As a result, of the total SBLF funding of \$30 billion, only \$4 billion was distributed. See Carpenter and Robinson (2014) for more details.

¹⁹ For Figures 3.4 to 3.7, the data on SBL and assets are obtained from the quarterly Call Reports. The sample includes all mergers announced from 2000 to 2012 that involved community banks (targets of less than \$1 billion in assets). The mergers data are from the SNL database. Note that SBL is reported only once a year in June until 2012, when the SBL began being reported quarterly.

shows that the community bank targets were more committed than the acquirers prior to the mergers.

We then compare SBL activities during the period pre- versus post-mergers, controlling for the asset size of the acquirers, whether they are also community banks or larger banks. The results are presented in Figures 3.6A, 3.6B, and 3.7. From Figure 3.6A, the change in dollar amount of SBL, from before mergers (combined targets' and acquirers' SBL) to one year after the mergers, is large and quite volatile when the acquirers are large banks (larger than \$10 billion). For this group of (large) acquirers, the change in SBL has been consistently positive on average for the entire sample period. Figure 3.6B is an enlarged version of Figure 3.6A that focuses on small acquirers (excluding large acquirers), indicating that the change in SBL volume, from before the mergers to one year after the mergers, has often been negative when the acquirers are smaller banks. The results support an argument that mergers between small community banks and large banks would not necessarily harm SBL as some may have feared.

Figure 3.7 plots the change in the SBL-to-assets ratio, from before the mergers to one year after the mergers. The percentage change in SBL ratio is measured based on the combined SBL made by the targets and the acquirers as of the merger announcement date versus the SBL made by the combined firm as of one year after the merger. Post-merger SBL ratio is the SBL volume of combined firm (as of one year after the merger) divided by the assets of the combined firm (as of one year after the merger). We find that the average change in the SBL-to-assets ratio, from pre-mergers to one year after the mergers, have been consistently negative (a decline in the SBL ratio) on average when the acquirers are small banks, with less than \$10 billion in assets. The change in the SBL ratio was positive on average in a few years (around the financial crisis period) when the acquirers are larger than \$10 billion. Again, this evidence is consistent with an argument that supports the acquisitions of community banks by large banks.

To summarize, our results so far suggest that, while the U.S. banking industry has been expanding rapidly in the past decade, the share of SBL-to-banking assets ratio has become significantly smaller now than it was more than a decade ago.²⁰ Following the overall industry trends, the ratio of SBL to assets has declined for all bank size groups, regardless of whether

²⁰ For example, for community banks, the SBL-to-asset ratio declined from about 12 percent in 2000 to about 8 percent in 2013. See Figure 3.3 for more details.

they were involved in mergers and acquisitions. Interestingly, the decline in the SBL ratio has been more severe at community banks than at larger banks. Large banks have been playing an increasing role in providing funding to small businesses.

V. Community Bank Mergers and SBL

To further understand the impact of community bank mergers on SBL, we perform a regression analysis in which we control for the characteristics of the targets and the acquirers as well as the SBL trend for similar banks (in the same size category, in the same time period as merger announcement date, and with the same supervisory CAMELS rating), including banks that did not merge. The data used for the analysis of SBL before and after the mergers consist of 1,509 nonassisted mergers that involved community banks from 2000 to 2012. Summary statistics of the sample are presented in Table 4.

We attempt to measure the impact of mergers on the changes in SBL activities between merger announcement date (pre-merger SBL) and one year after the merger (post-merger SBL), controlling for the SBL activities at similar banks that were not merged. We focus on both the changes in SBL volume and the changes in SBL ratio to assets. Our analysis uses a diff-in-diff regression analysis, in which our dependent variables measure the difference between the change in SBL activities at merged banks and the change in SBL activities at nonmerged banks that are similar to the merged banks, during the same time period (between the merger date and one year later).

SBL activity at the similar nonmerged banks is calculated for each merged bank i . It is calculated as a simple average of SBL activities (either SBL \$ volume or SBL ratio to assets) at all banks that are similar to the merged banks — i.e.; being in the same asset size *Segment j* (less than \$1 billion, \$1 billion to \$10 billion, or greater than \$10 billion) as the combined firm, and holding the same composite supervisory CAMELS rating *Segment k* (1, or 2 rated, 3 rated, 4 or 5 rated) as the acquiring bank — as of the merger announcement year (*pre-merger*) and as of one year after the merger (*post-merger*). See Equations (1) and (2) that follow for the SBL trend calculated for nonmerged banks before and after the merger for each merged bank i . We then

calculate the changes (differences) in SBL activities for these nonmerged banks between the pre-merger and post-merger periods for each of the merger observations, as shown in Equation (3) that follows. For each of the merged banks, we calculate the change in SBL activities from merger announcement date to one year after the merger, as shown in Equation (4).²¹

$$Trend_SBL_{i,j,k,pre-merger} = Average(SBL_{j,k,pre-merger}) \text{ ----- (1)}$$

$$Trend_SBL_{i,j,k,post-merger} = Average(SBL_{j,k,post-merger}) \text{ ----- (2)}$$

$$Diff_Trend\ SBL_{i,j,k} = Trend_SBL_{i,j,k,post-merger} - Trend_SBL_{i,j,k,pre-merger} \text{ ----- (3)}$$

$$Diff_SBL_i = SBL_{i,post-merger} - SBL_{i,pre-merger} \text{ ----- (4)}$$

$$Diff_Diff_SBL_i = Diff_SBL_i - Diff_Trend\ SBL_{i,j,k} \text{ ----- (5)}$$

Dependent variables are measured as spreads between change in SBL activities at each of the merged banks ($Diff_SBL_i$) and the change in the trend of SBL activities at the similar nonmerged banks ($Diff_Trend\ SBL_{i,j,k}$). As noted previously, the SBL activities are measured in two ways: change in SBL \$ volume and change in SBL ratio to assets. For each merged bank i , the dependent variable ($Diff_Diff_SBL_i$) is calculated as the difference between the change at bank i and the change at similar nonmerged banks, as shown in equation (5).

Independent variables include the various risk characteristics of the acquirers and the targets, including size of the acquirers, whether it is an in-state or out-of-state merger, whether the acquirers are involved in any other merger activities within a year, the supervisory CAMELS ratings, and the SBL market trends. For the supervisory ratings, which have values ranging from 1 (best) to 5 (worst), we include dummy indicators for the composite CAMELS ratings being 2, 3, or 4 for the acquirers and 2, 3, 4, or 5 for the targets, as of merger announcement date. The base cases are 1-rated targets and 1-rated acquirers.²² We also include dummy indicators for the size category (less than \$1 billion, between \$1 billion and \$10 billion, and larger than \$10 billion) of the acquiring banks, where the community bank acquirers, with assets of \$1 billion or less, are included in the analysis as the base case.

²¹ Until 2010, SBL was reported only once a year at the end of the second quarter. The trend control factor is measured as the one-year change in the overall market (for the merged bank's size group) around the merger date. For example, for a merger announced in November 2006, the trend variable would capture the change in SBL in the market from June 2006 to June 2007.

²² As shown earlier in Figures 1.8 and 1.9, which present the CAMELS distribution for the targets and the acquirers, respectively, indicate that most of the acquirers are 1-rated or 2-rated banks, while the targets are lower rated.

It is expected that the SBL and relationship lending may be harmed when a community bank is acquired by an out-of-state acquirer. To measure change in SBL that was caused by a specific merger, we control for multiple mergers within the one year using a dummy indicator in the regression. The supervisory ratings are included in the analysis to control for the risk characteristics of the targets and the acquirers. We include dummy indicators for the acquirers' asset size to examine the impacts of acquirers' size on SBL activities at the combined banking firms. The results are reported in Table 5.²³

From column 1 of Table 5, controlling for all the risk characteristics of the targets and the acquirers and economic factors as described earlier, the combined banking firms tend to increase their overall SBL volume by a larger amount when the acquiring bank is very large (with more than \$10 billion in assets).²⁴ This is reflected in the significantly positive coefficients of the dummy indicator *D_Largest_Acquirer_>\$10Bill*. We find no significant change in the SBL volume when the acquiring banks are either small community banks or medium size (with assets less than \$10 billion), after controlling for the risk characteristics, economic conditions, and market trends. That is, there is no significant difference in SBL activities whether the acquirers are community banks or not as long as the acquirers have less than \$10 billion in assets, as reflected in the insignificant coefficient of *D_Large Acquirer_ \$1Bill to \$10Bill*.²⁵

When focusing on the change in ratio of SBL to assets, rather than the change in dollar, the results in column 2 of Table 5 show that the change in SBL activity in terms of ratio to assets (after the merger) is not significantly affected by the size of the acquirers after controlling for the various risk characteristics of the targets and the acquirers and the SBL trends. The coefficient of the indicator for the large acquirer is positive but not statistically significant.

²³ We have also performed similar analysis, using changes in SBL activities at merged banks as dependent variables and controlling for the SBL trends at similar nonmerged banks; this is used instead of the diff-in-diff approach. The trend variable is calculated for each observation, and it is defined as a change in SBL at similar banks (regardless of whether they merged) that are in the same size segment and the same CAMELS segment, where the SBL change is measured over the same period based on the merged bank's merger date. This trend variable is included in the analysis to control for SBL activities that were driven by the overall market trend and SBL demand through time and across banks (rather than the merger). The results are consistent with the results presented in Table 5.

²⁴ Our analysis is based on the overall reported SBL in the Quarterly Call Report, which does not allow us to identify whether the increase in SBL takes place in the same local community as the community bank target or in other communities.

²⁵ We repeat the same analysis with the component CAMELS ratings as control factors, rather than the composite rating; the concluding results are consistent with those reported in Table 5.

Instead, the risk characteristics of the acquirers and the targets seem to play a role here. When the targets are poorly rated by bank supervisors (unsatisfactory ratings at 4 or 5 composite CAMELS), the SBL activity after the merger tends to increase by less (or even decrease), as reflected in significantly negative coefficients of the dummy indicators for targets being 4 rated or 5 rated. For the acquirers, as shown earlier in Figure 1.9, most of the acquirers are either 1 rated or 2 rated. The results in column 2 of Table 5 show that the increase in the SBL ratio after the merger is smaller when the acquirers are 2 rated than when the acquirers are 1-rated banks. Very few acquirers are rated below 2, and the coefficients are not significant in those cases.

The regression results confirm our previous findings that SBL activities on average change significantly after the acquisitions. On the one hand, the *volume of SBL* lending seems to grow by a substantially larger amount, even after controlling for the SBL trend, when the acquirer is larger than \$10 billion in assets. On the other hand, asset size of the acquirer does not seem to have significant impacts on the change in *SBL ratio to assets* after the mergers, controlling for important risk characteristics of the targets and acquirers, economic conditions, and market trends.

Overall, the results are consistent with a favorable impact of acquisitions of community banks on SBL activities, regardless of whether the acquirer is large or small. We note one limitation on our SBL data that does not differentiate whether the increase in SBL after the mergers occur in the local community of the acquired community banks or outside the local community. Our results only conclude that the SBL activities have not been negatively affected (reduced) overall by community bank mergers that involved large acquirers.

These findings should also be viewed in the context of the overall industry trends described previously. The SBL ratio for the banking industry overall has been declining, more so for community banks than large banks, on average, over the recent years. Figure 4 shows that the overall SBL by the banking industry has been declining since the beginning of the financial crisis and that larger banks (with assets more than \$10 billion) have been playing increasing

roles in SBL relative to smaller banks during the same period.²⁶ The roles of large banks in supporting small businesses have become increasingly important relative to small community banks.²⁷ The overall results, in conjunction with the plot in Figure 3.3 that shows smaller SBL ratio to assets at larger banks, suggest that the growth in loan demand for small business may be slower than that of the overall banking assets in recent years. This is something to explore in more detail in a separate study.

VI. Conclusions and Policy Implications

There have been growing concerns about the potential of the decline in the number of community banks and the increasing number of acquisitions of community banks by larger banks — to disrupt local relationships and significantly reduce SBL.

In this paper, we examine the roles and characteristics of U.S. community banks in the past decade, covering both the boom period and the subsequent downturn. We compare the pre- and post-merger performance and risk characteristics (including the confidential ratings assigned by bank regulators) and investigate whether the mergers have affected SBL. We also explore whether large banks have been able and willing to step in and substitute for community banks in providing funding to small businesses.

We show that large banks have been getting larger and that the number of small banks has been declining over the past two decades. During our sample period from 2000 to 2012, the number of community banks has declined, and the overall SBL market share for the large banks has grown, indicating that large banks have been stepping in to fill the SBL gap.

Our regression analysis, controlling for risk characteristics of the targets and the acquirers, economic factors, and market trends, finds that the amount of SBL tends to increase from the pre-acquisition base, and more so when the acquirer is a large bank (with assets of more than \$10 billion), indicating that the large bank acquirers do grow SBL. Our results on the

²⁶ Nonbank lenders have also been playing an increasing role in SBL in recent years; see Jagtiani and Lemieux (2015) for more details.

²⁷ It is interesting to note that while the amount of SBL by large banks increased throughout the years (as shown in Figure 4), the ratio of SBL by large banks has been declining (as shown in Figure 3.3). This suggests that assets at large banks have been growing at a faster rate than SBL.

change in SBL ratio to assets after the mergers suggest that the acquirers tend to increase the volume of SBL in line with their overall asset growth rate, so that the SBL ratio does not change significantly after the mergers, controlling for the risk, trend, and other driving factors. While the overall SBL ratio to assets has declined for all bank size groups during the period from 2000 to 2012, including the community banks themselves, the decline seems to be less severe among large banks than that of community banks.

We find that community bank targets generally were less creditworthy (more risky) than the acquirers. This is particularly so for the acquired community banks during the financial crisis period. Our results overall indicate that mergers of community bank targets with healthier banks have resulted in combined banking firms that are healthier financially and more efficient in their operations. Overall, we conclude that the trend of acquisitions of community banks by large banks over the past decade has enhanced the overall safety and soundness of the banking system without adversely impacting SBL.²⁸ In fact, large banks have stepped in and grown their SBL in recent years.²⁹ Our results conclude that the SBL activities have not been negatively affected (reduced) overall by community bank mergers that involved large acquirers.

²⁸ In addition, Brewer and Jagtiani (2013) find that there may be incentives for small banks to want to be acquired by a large “too-big-to-fail” bank.

²⁹ Thirteen large banks pledged in September 2012 to boost lending to small businesses by \$20 billion as of September 2014. These large banks include Bank of America Merrill Lynch, Citigroup, JPMorgan Chase & Co., PNC Bank N.A., TD Bank, U.S. Bank, Wells Fargo, KeyCorp, Regions Financial Corp., SunTrust Banks Inc., Citizens Financial Group Inc., Huntington Bancshares Inc., and M&T Bank Corp. As of September 2013, the banks had already boosted their SBL by \$17 billion.

Table 1: Industry Trend
Number of Banking Organizations and Share of Banking Assets
by Asset Size of Banking Organizations

Banking organizations include bank holding companies and independent commercial banks. Size thresholds are adjusted for inflation by using assets measured in 2006 prices.

This table shows that while more than 90 percent of (about 7,000) U.S. banks are small community banks (with less than \$1 billion in assets), more than 90 percent of the U.S. banking assets are held at larger banking institutions. More important, the community banking sector has been shrinking over time, both in terms of the number of community banks and the amount of assets controlled by community banks.

Year	Number of Banking Organizations by Asset Size (\$billions)					Share of Domestic Banking Assets (%) by Asset Size (\$billions)				
	<\$1	\$1-\$10	\$10-\$100	>\$100	All	<\$1	\$1-\$10	\$10-\$100	>\$100	All
2001	6850	275	53	6	7184	18.4%	15.3	30.1	36.1	100%
2002	6671	270	52	7	7000	18.0%	14.3	25.7	42.0	100%
2003	6521	277	60	7	6865	17.1%	12.5	27.1	43.3	100%
2004	6380	300	54	7	6741	16.0%	12.8	24.6	46.7	100%
2005	6240	312	54	7	6613	13.4%	11.0	22.1	53.6	100%
2006	6933	384	75	8	7400	12.6%	11.3	27.5	48.6	100%
2007	6795	394	68	13	7270	11.9%	10.5	20.6	57.0	100%
2008	6674	379	57	17	7127	11.3%	9.7	16.8	62.1	100%
2009	6440	406	63	18	6927	10.8%	9.4	16.9	62.8	100%
2010	6159	379	57	19	6614	10.6%	8.9	14.7	65.8	100%
2011	5897	375	61	17	6350	9.9%	8.5	16.8	64.8	100%
2012	5708	369	61	18	6156	9.7%	8.5	15.9	65.9	100%

Source: Call Reports (June data for each year)

Table 2A: Bank Mergers – by Asset Size of the Targets

This table presents the merger trend, including both assisted and nonassisted mergers, over the period from 2000 to 2012. More than 90 percent of the mergers that took place involved community bank targets (with assets less than \$1 billion). This number, however, accounts for only slightly more than 10 percent in terms of all targets’ banking assets. Note: Banking organizations include bank holding companies and independent commercial banks. Size thresholds are adjusted for inflation by using assets measured in 2006 prices.

Year	Number of Acquisitions (\$billions) by Target’s Asset Size					Amount of Assets Acquired (\$billions) by Target’s Asset Size				
	<\$1	\$1- \$10	\$10- \$100	>\$100	All	<\$1	\$1-\$10	\$10- \$100	>\$100	All
2000–2004	810	67	18	4	899	\$140.3	\$172.0	\$526.1	\$937.4	\$1775.8
2005–2006	412	28	7	0	447	\$73.6	\$70.1	\$220.0	\$0.0	\$363.8
2007–2008	307	24	4	3	338	\$53.0	\$69.0	\$102.9	\$1017	\$1242.7
2009–2010	342	28	6	0	376	\$69.3	\$77.0	\$114.3	\$0.0	\$260.6
2011–2012	337	23	1	0	361	\$64.2	\$53.1	\$24.5	\$0.0	\$141.8
Total	2208 91.2%	170 7.0%	36 1.5%	7 0.3%	2421 100%	\$400.4 10.6%	\$441.2 11.7%	\$987.8 26.2%	\$1955 51.9%	\$3764.7 100%

Source: SNL Financial database

Table 2B: Bank Mergers — by Asset Size of Acquirers

The table below shows that about 60 percent of all the community bank acquisitions that took place during the period from 1990 to 2012 involved community bank acquirers. This translates to about 40 percent of all community bank assets being acquired in the same period. Note: Banking organizations include bank holding companies and independent commercial banks. Size thresholds are adjusted for inflation by using assets measured in 2006 prices.

Year	Number of Community Bank Acquisitions (\$billion) by Buyer’s Asset Size					Amount of Community Bank Assets Acquired (\$billion) by Buyer’s Asset Size				
	<\$1	\$1- \$10	\$10- \$100	>\$100	All	<\$1	\$1- \$10	\$10- \$100	>\$100	All
2000–2004	467	257	80	6	810	44	62	31	2.5	140
2005–2006	243	137	24	8	412	28	32	10	2.6	73
2007–2008	217	74	14	2	307	24	22	6	0.8	53
2009–2010	312	29	0	1	342	61	8	0	0.4	69
2011–2012	261	69	6	1	337	44	18	2	0.4	64
Total	1500 68%	566 26%	124 5%	18 1%	2208 100%	201 50%	142 36%	49 12%	6.7 2%	399 100%

Source: SNL Financial database

**Table 3: Mergers Between Community Banks
In-State vs. Out-of-State**

The table below shows that about 80 percent of community bank mergers (mergers between the community bank target and the community bank acquirer) have been within the same state (in-state mergers). This translates to about 60 percent of assets of the targets. Note: The sample includes all bank mergers in which both the targets and the acquirers are U.S. commercial banks or bank holding companies with total assets less than \$1 billion (in 2006 prices).

Year	Number of Community Bank Acquisitions		Amount of Community Bank Assets Acquired (\$billion)	
	In-State	Out-of-State	In-State	Out-of-State
1990–1994	937 87%	137 13%	115 61%	75 39%
1995–1999	718 89%	86 11%	125 56%	96 44%
2000–2004	445 82%	97 18%	85 61%	55 39%
2005–2006	212 79%	57 21%	44 60%	29 40%
2007–2008	204 80%	50 20%	35 66%	18 34%
2009–2010	257 66%	132 32%	45 65%	24 35%
2011–2012	237 77%	70 23%	40 63%	24 37%
Total	3,010 82.7%	629 17.3%	490 60.4%	321 39.6%

Source: SNL Financial database

Table 4: Sum Statistics — Sample Excludes Assisted Mergers

Data include all mergers that involved community bank targets during the period 2000–2012.

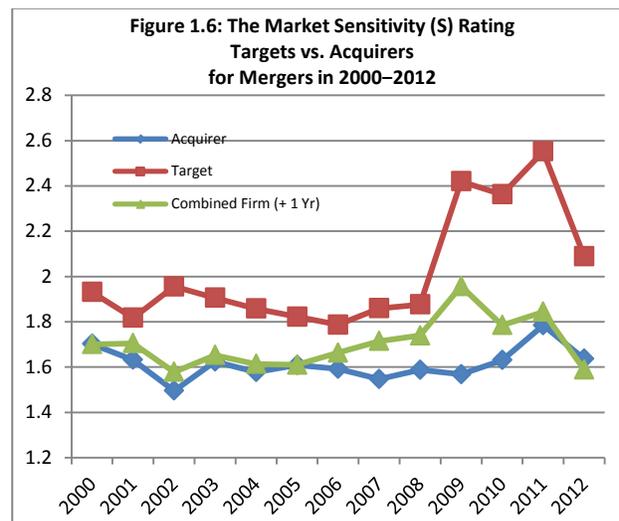
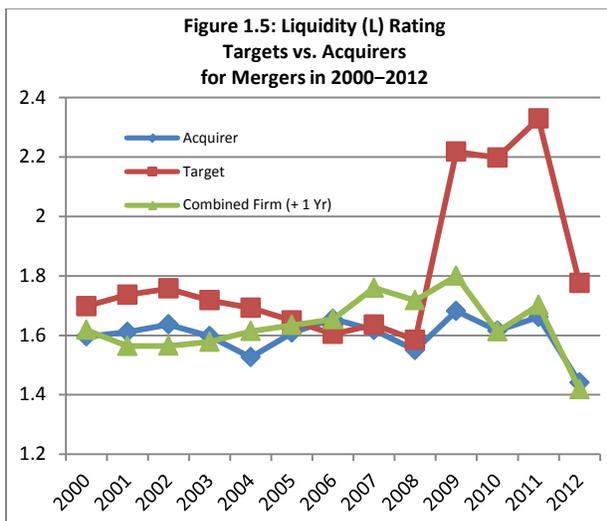
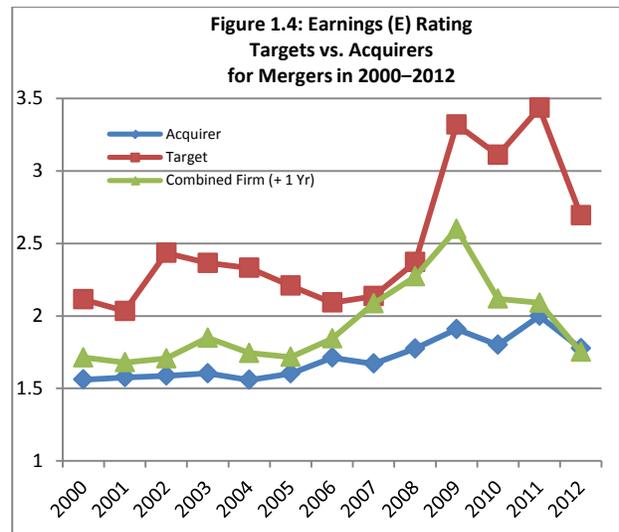
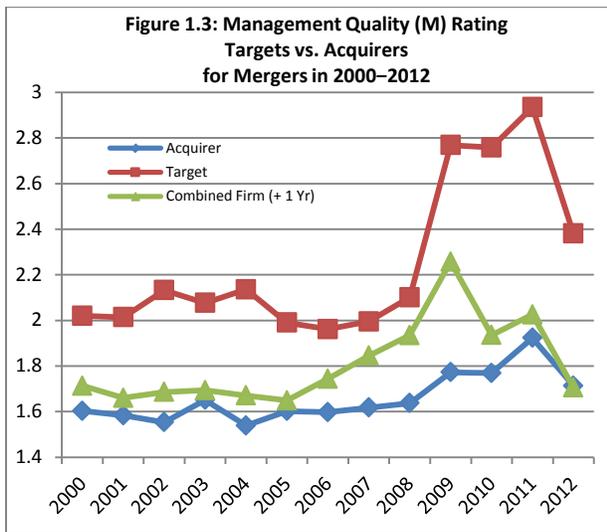
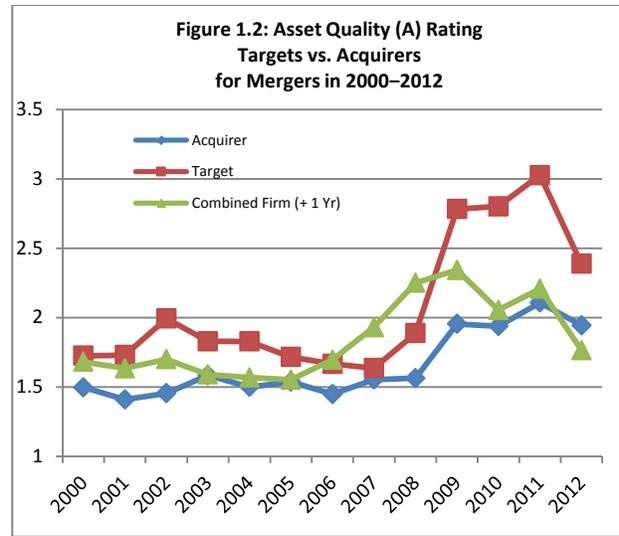
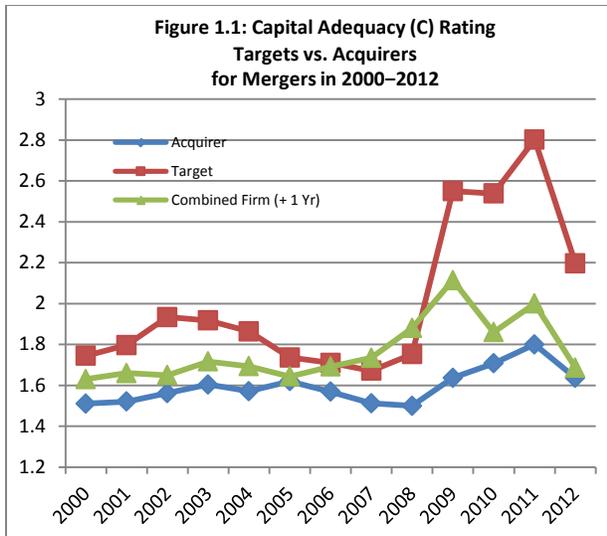
Name	N	Mean	Std.	Min.	Max.
Acquirer_C Rating	1509	1.5792	0.5187	1	4
Acquirer_A Rating	1509	1.5958	0.6080	1	4
Acquirer_M Rating	1509	1.6243	0.5201	1	4
Acquirer_E Rating	1509	1.6455	0.6273	1	5
Acquirer_L Rating	1509	1.5878	0.5212	1	3
Acquirer_S Rating	1509	1.5931	0.5291	1	3
Acquirer_Composite CAMELS	1509	1.6163	0.5078	1	4
Target_C Rating	1509	1.9032	0.9277	1	5
Target_A Rating	1509	1.9192	1.0236	1	5
Target_M Rating	1509	2.1431	0.9437	1	5
Target_E Rating	1509	2.3545	1.0709	1	5
Target_L Rating	1509	1.7455	0.7812	1	5
Target_S Rating	1506	1.9283	0.6879	1	5
Target_Composite CAMELS	1509	2.0862	0.9252	1	5
<u>For Acquirers < \$1 Billion:</u>					
Target's Asset Size (in \$1,000)	957	99,157	101,047	4,588	847,427
Acquirer's Asset Size (in \$1,000)	957	360,206	257,465	14,977	999,631
Change in SBL Volume (in \$1,000)	957	1,847.53	1,076.56	-558.76	4,204.57
Change in SBL Ratio (% to Assets)	957	0.13	0.70	-1.02	1.40
<u>For Acquirers \$1–10 Billion:</u>					
Target's Asset Size (in \$1,000)	457	262,437	209,239	11,433	939,247
Acquirer's Asset Size (in \$1,000)	457	3,282,551	2,328,735	1,004,059	9,986,914
Change in SBL Volume (in \$1,000)	457	17,261.61	6,675.70	-18,914.45	24,866.78
Change in SBL Ratio (% to Assets)	457	0.069	0.22	-0.48	0.49
<u>For Acquirers > \$10 Billion:</u>					
Target's Asset Size (in \$1,000)	94	369,660	242,913	34,727	918,388
Acquirer's Asset Size (in \$1,000)	95	55,100,000	85,500,000	10,000,000	397,000,000
Change in SBL Volume (in \$1,000)	95	221,423.2	140,204.3	14,463.89	504,067.5
Change in SBL Ratio (% to Assets)	95	-0.016	0.13	-0.24	0.22

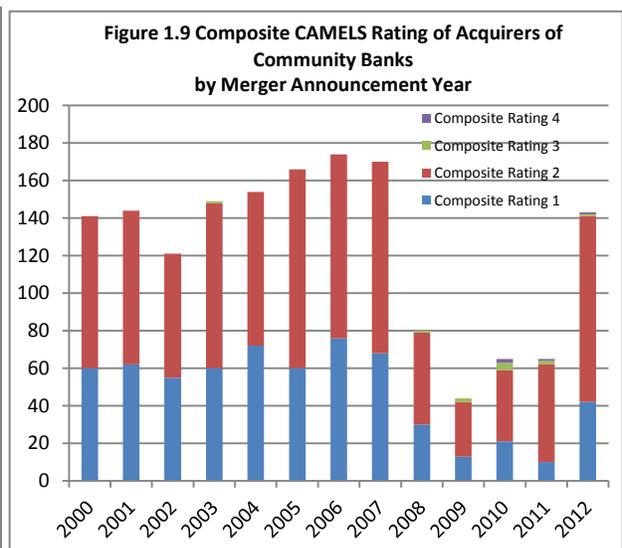
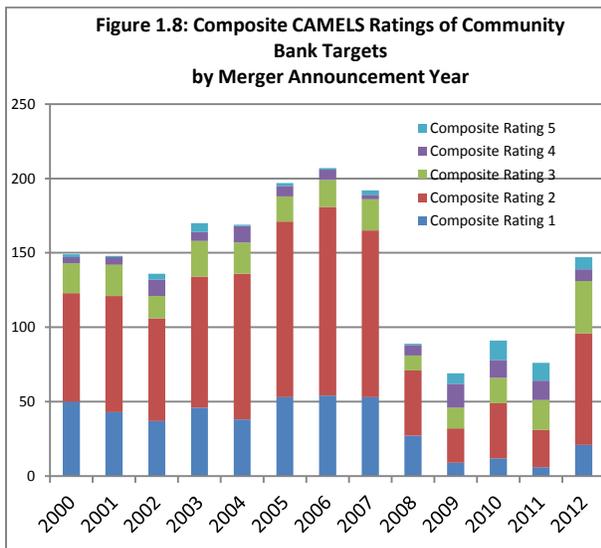
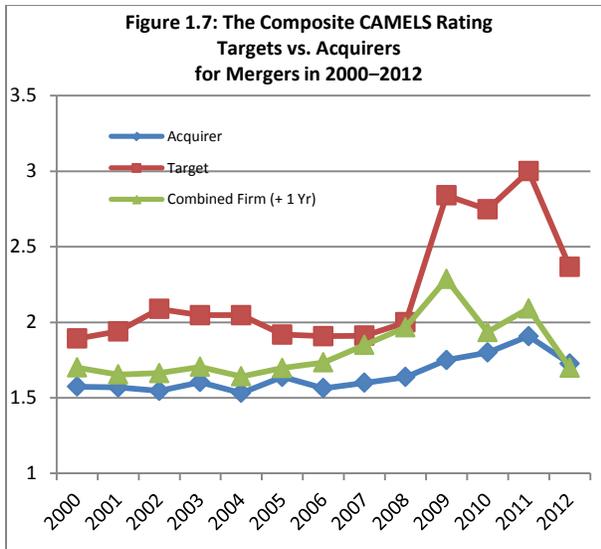
Table 5: Change in SBL After the Mergers — Relative to the Peer Nonmerged Banks (Using Diff-in-Diff Approach)

The samples include all mergers that involved community bank targets during the period from 2000 to 2012 (assisted mergers are excluded). Supervisory CAMELS ratings have a value of 1 (best) to 5 (worst). Community bank acquirers (with assets up to \$1 billion) are included in the analysis as the base case. The dependent variable is the Diff_Diff_SBLi (see Equations 1-5) for the definition; it is the increase in total SBL (\$amount in column 1 and SBL ratio in column 2) from pre- to post-mergers relative to the control group. The change in SBL activities by the control group are measured based on the activities at similar nonmerged banks — being in the same asset size segment, the same CAMELS rating segment, and observed in the same period as the merger announcement. The significance levels are calculated with heteroscedasticity-consistent standard errors, where ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

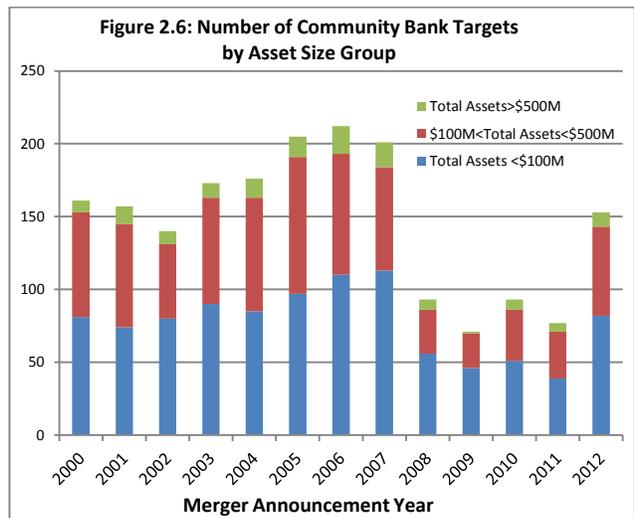
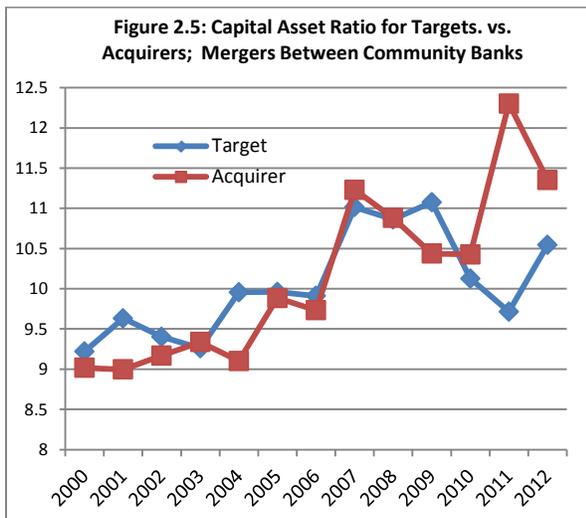
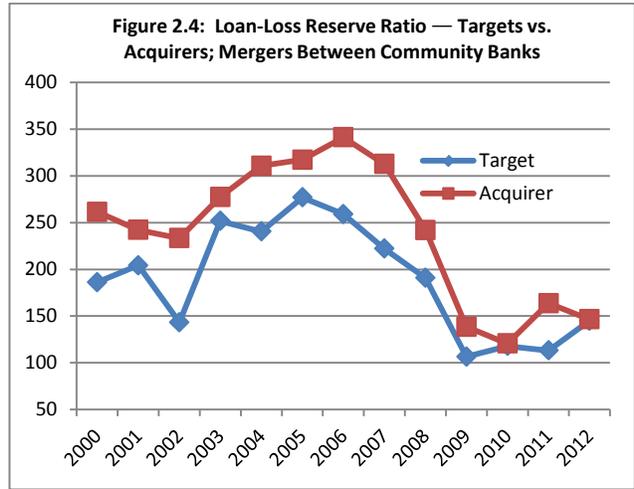
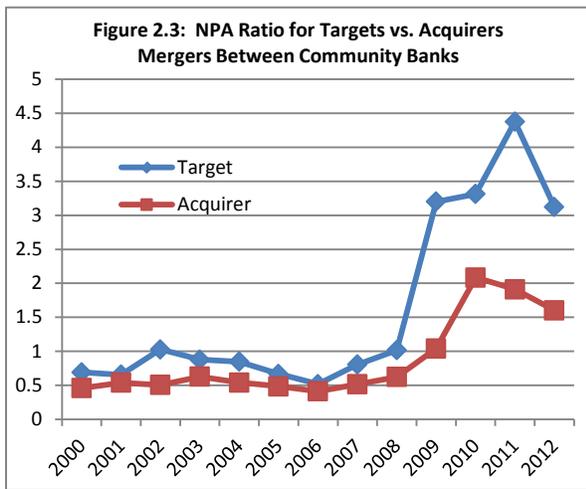
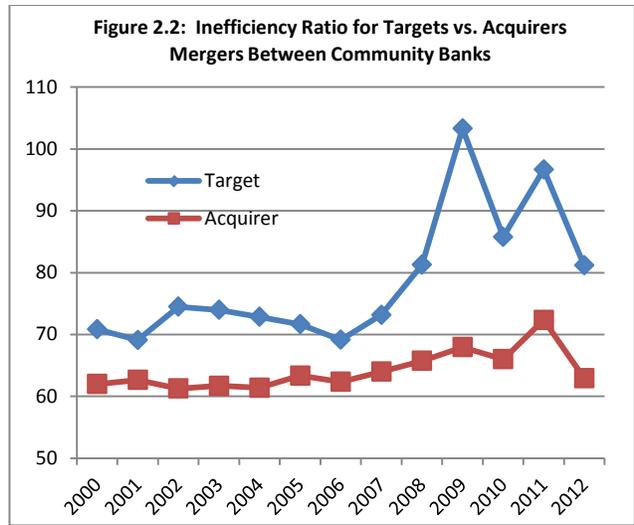
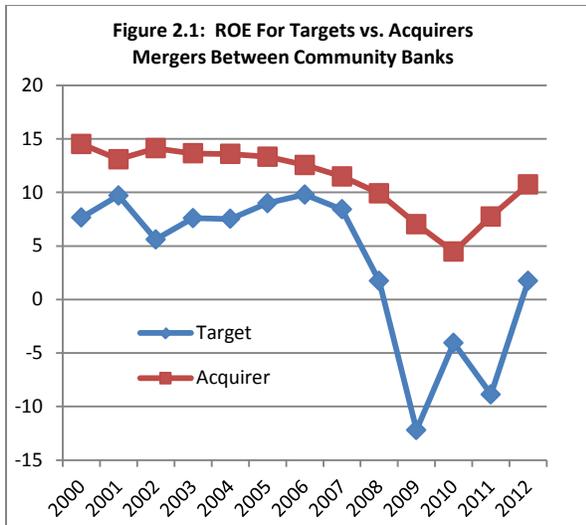
$$\text{Diff_Diff_SBLi} = \text{Diff_SBLi} - \text{Diff_Trend SBLi},j,k \quad \text{----- Equation (5)}$$

Independent Variables	Dependent Variable is Diff_Diff_SBLi (see Equations 1–5)	
	Increase in SBL \$	Increase in SBL Ratio %
Intercept	11,863.99 (19446.21)	0.00075 (0.0028)
D_Large Acquirer_ \$1Bill to \$10Bill	-7,759.81 (14179.72)	0.0022 (0.0020)
D_Largest Acquirer_ > \$10Bill	107,481.4*** (27080.66)	0.0060 (0.0039)
D_In-State Merger	-15,621.31 (14527.9)	-0.0013 (0.0021)
D_Multiple Merger in 1 Year	6,017.73 (15896.04)	-0.0029 (0.0023)
D_Acquirer_Composite CAMELS_2	10,096.88 (12272.5)	-0.0045** (0.0018)
D_Acquirer_Composite CAMELS_3	8,398.86 (74190.43)	-0.0138 (0.0107)
D_Acquirer_Composite CAMELS_4	-27,159.96 (163709.7)	-0.0117 (0.0236)
D_Target_Composite CAMELS_2	-7,039.93 (14464.23)	-0.0040* (0.0021)
D_Target_Composite CAMELS_3	-13,128.37 (20298.96)	-0.0047 (0.0029)
D_Target_Composite CAMELS_4	-34,155.2 (28313.5)	-0.0133*** (0.0041)
D_Target_Composite CAMELS_5	-21,047.12 (37354.11)	-0.0108** (0.0054)
R-Square	1.94%	2.08%
Adjusted R-Square	1.22%	1.36%
Observation Number (N)	1509	1509

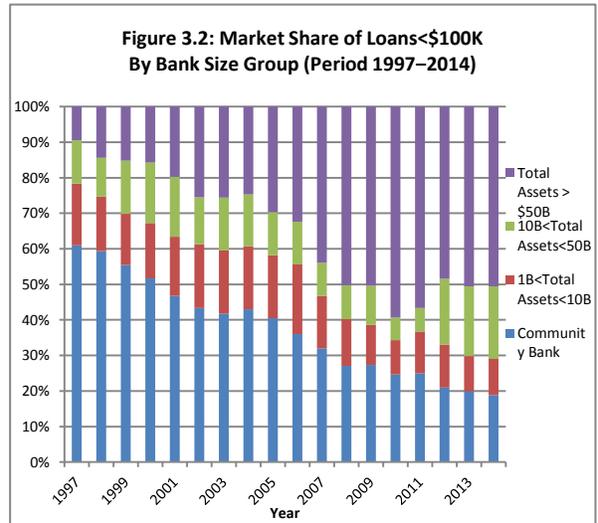
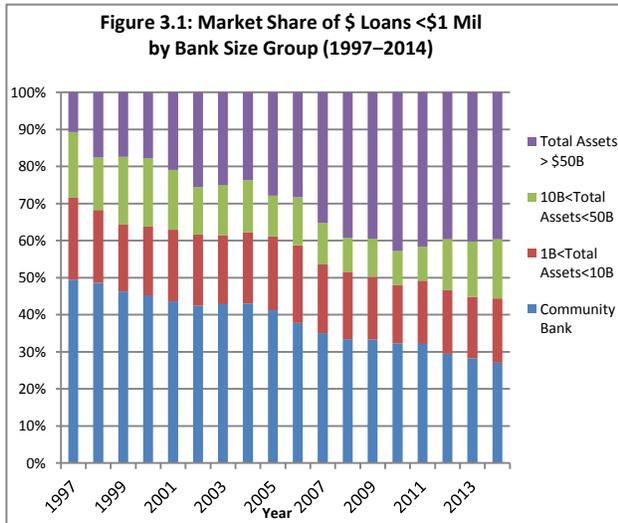




Sources for Figures 1.1 to 1.9: Mergers data are from the SNL Financial database, and supervisory rating data are from the Federal Reserve National Examination Database (NED) and National Information Center (NIC). Assisted mergers are not included.



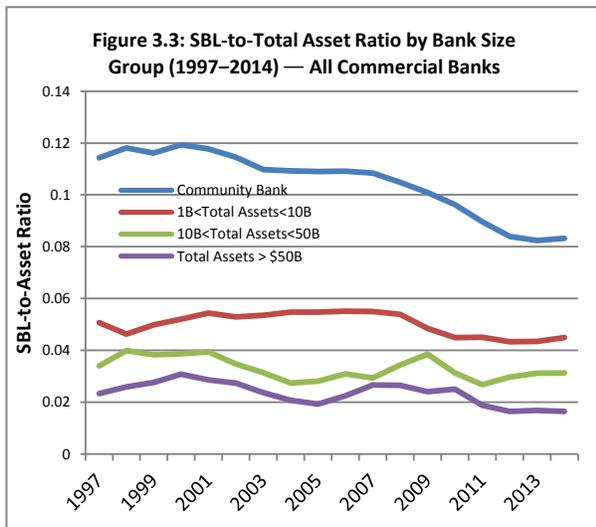
Sources for Figures 2.1 to 2.6: Mergers data and financial information as of merger announcement date are from the SNL Financial database. Assisted mergers are not included in the sample.



Source: Call Report Data

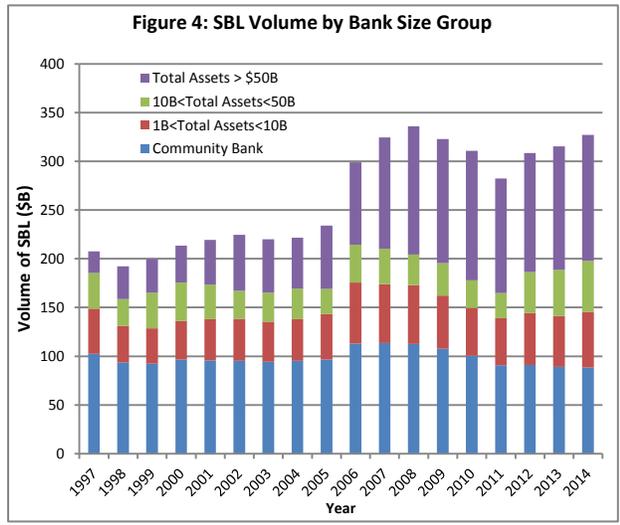
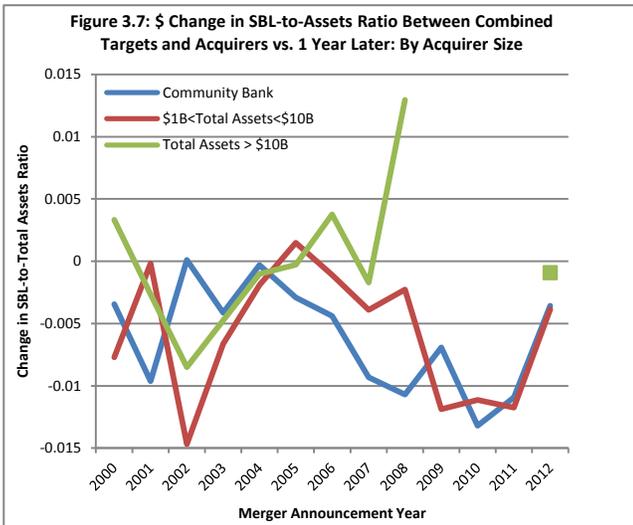
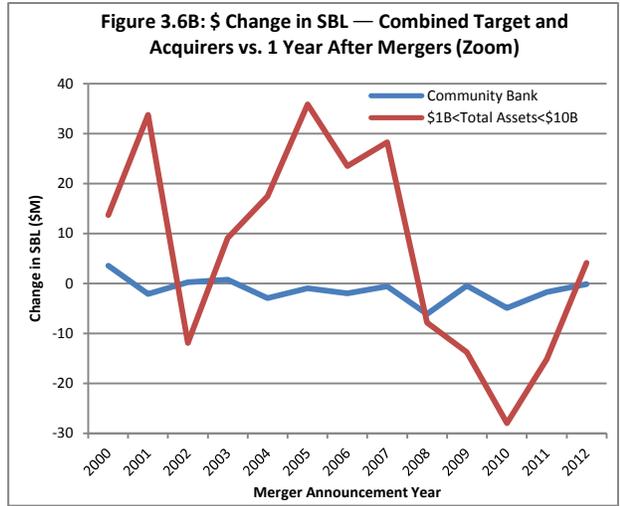
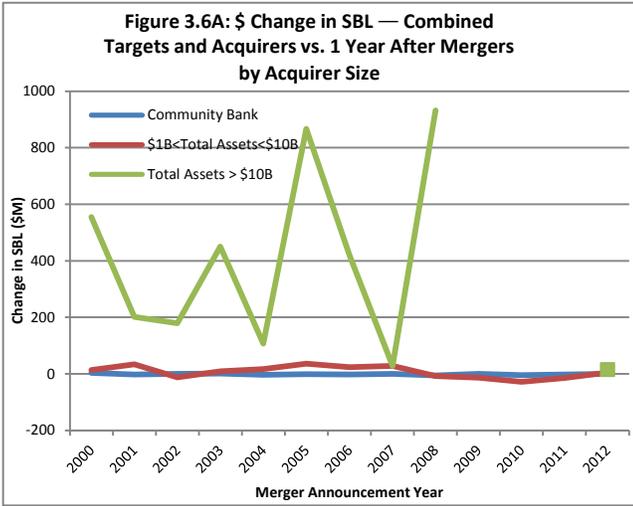
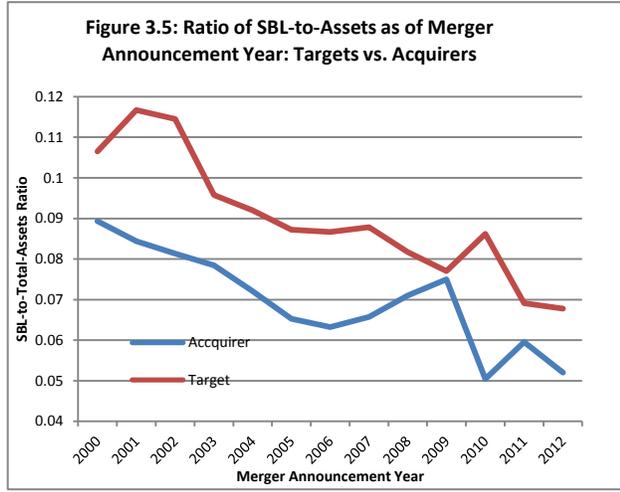
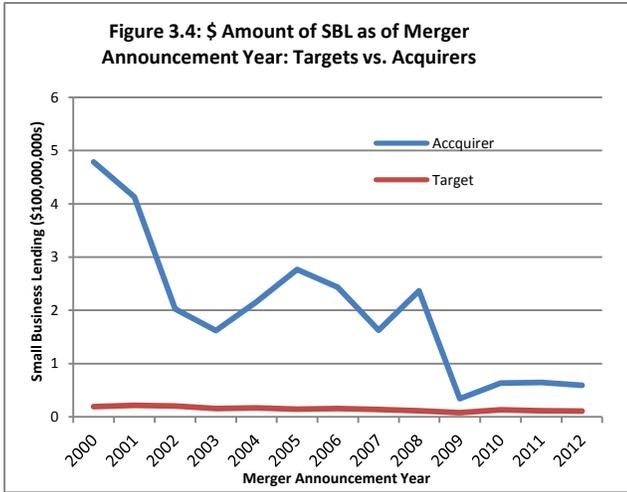
Source: Call Report Data

Note: The plot in Figure 3.1 is for small business loans with origination amount being less than \$100,000. The plot in Figure 3.2 is for small business loans with origination amount being less than \$1 million.



Source: Call Report data

Note: SBL is defined as loans with origination amount of \$1 million or less.



Sources: Call Report Data and SNL Financial database

References

Agarwal, Sumit, Divid Lucca, Amit Seru, and Francesco Trebbi (2014). "Inconsistent Regulators: Evidence from Banking," *Quarterly Journal of Economics* (forthcoming).

Avery, Robert, and Katherine Samolyk (2004). "Bank Consolidation and Small Business Lending: The Role of Community Banks," *Journal of Financial Services Research*, 25(2), 291–326.

Beccalli, Elena, and Pascal Frantz (2013). "The Determinants of Mergers and Acquisitions in Banking," *Journal of Financial Services Research* 43(3), 265–291.

Berger, Allen (2014). "Small Business Lending by Banks: Lending Technologies and the Effects of Banking Industry Consolidation and Technological Change," *Oxford Handbook of Banking*, Chapter 12, forthcoming.

Berger, Allen, Geraldo Cerqueiro, and Maria Fabiana Penas (2014). "Market Size Structure and Small Business Lending: Are Crisis Times Different from Normal Times?" *Review of Finance*, 1–31.

Berger, Allen, William Goulding, and Tara Rice (2014). "Do Small Businesses Still Prefer Community Banks?" *Journal of Banking and Finance* 44, 264–278.

Berger, Allen, Adrian Cowan, and Scott Frame (2011). "The Surprising Use of Credit Scoring in Small Business Lending by Community Banks and the Attendant Effects on Credit Availability, Risk, and Profitability," *Journal of Financial Services Research* 39, 1–17.

Berger, Allen, and Gregory Udell (2006). "A More Complete Conceptual Framework for SME Finance," *Journal of Banking and Finance* 30, 2945–2966.

Berger, Allen, Joseph Scalise, Anthony Saunders, and Gregory Udell (1998). "The Effects of Bank Mergers and Acquisitions on Small Business Lending" *Journal of Financial Economics*, 50(2), 187–229.

Berger, Allen, Seth Bonime, Lawrence Goldberg, and Lawrence White (2004). "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on Entry in the Banking Industry," *Journal of Business* 77 (October), 797–834.

Berger, Allen, Scott Frame, and Nathan Miller (2005). "Credit Scoring and the Availability, Price, and Risk of Small Business Credit," *Journal of Money, Credit, and Banking* 37, 191–222.

Brewer, Elijah, and Julapa Jagtiani (2013). "How Much Did Banks Pay to Become Too-Big-To-Fail and to Become Systemically Important?" *Journal of Financial Services Research*, 43 (2013), 1–35.

Carpenter, Robert, and Breck Robinson (2014). "Leaving So Soon? Exiting the Small Business Lending Fund," Federal Reserve Bank of Richmond, work-in-progress, presented at the Southern Finance Association conference, November.

Conference of State Bank Supervisors (2014). "2013 Annual Report of the Conference of State Bank Supervisors," May.

Cooper, Elizabeth, and Todd Vermilyea (2012). "The Impact of Management Quality on Merger Outcomes," Federal Reserve Board, unpublished manuscript.

DeYoung, Robert, Lawrence Goldberg, and Lawrence White (1999). "Youth, Adolescence, and Maturity of Banks: Credit Availability to Small Business in an Era of Banking Consolidation," *Journal of Banking and Finance* 23, 463–492.

Elyasiani, Elyas, and Lawrence Goldberg (2004). "Relationship Lending: A Survey of the Literature," *Journal of Economics and Business* 56, 315–330.

Federal Deposit Insurance Corporation (2012). "FDIC Community Banking Study," *FDIC Community Banking Study, Chapter 1: Defining the Community Bank*, December.

Gilbert, Alton, Andrew Meyer, and James Fuchs (2014). "The Future of Community Banks: Lessons From the Recovery of Problem Banks," Working Paper, Federal Reserve Bank of St. Louis.

Goldberg, Lawrence, and Lawrence White (1998). "De Novo Banks and Lending to Small Business: An Empirical Analysis," *Journal of Banking and Finance* 22, 851–867.

Hughes, Joseph, Julapa Jagtiani, and Loretta Mester (2015). "Does Scale Define the Winners in Community Banking?" Working Paper, International Atlantic Economic Society Conference (Boston), October.

Jagtiani, Julapa (2008). "Understanding the Effects of the Merger Boom on Community Banks," *Federal Reserve Bank of Kansas City: Economic Review*, Second Quarter, 29–48.

Jagtiani, Julapa, and Cathy Lemieux (2015). "Small Business Lending: Challenges and Opportunities for Community Banks – Before, During, and After the Financial Crisis," Working Paper, Federal Reserve System Community Banking Conference (St. Louis), September.

Kowalik, Michal (2014). "Can Small Banks Survive Competition from Large Banks?" Working Paper, Federal Reserve Bank of Boston.