

# 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 stock market reactions to these acquisitions, and investigate how the acquisitions have affected SBL. Contrary to concerns, we find that the overall amount of SBL tends to increase after a large bank acquires a community bank. The ratio of SBL to assets does decline in the large acquiring banks but at a slower rate than the decline seen in surviving community banks. Further, community banks that were merged during the financial crisis were mostly in poor financial condition, had been rated as unsatisfactory by their regulators on all risk aspects, and would have been unlikely to continue lending. We found that community bank targets accepted smaller merger premiums (or even discounts) to be part of a large banking organization. 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. This implies that a policy that discourages mergers between community banks and large banks is unwarranted and could potentially result in a weaker financial system and have an unintentional dampening effect on the supply of SBL.

JEL Classifications: G21, G28, G34

Keywords: Community Bank, Small Business Lending, Bank Mergers

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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.<sup>1</sup> Most of these have been small community banks with an average asset size of about \$450 million. The stock market recovered and reached its new high in 2013, and large banks, particularly the too-big-to-fail (TBTF) or systemically important financial institutions, have also recovered strongly.<sup>2</sup> However, affected community banks have 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 might also 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.<sup>3</sup> For these reasons, some commentators believe that many of the community banks have been seeking to merge or to be acquired by a larger bank in order to take advantage of the scale economies under the new regulations.<sup>4</sup> Should community banks be encouraged to merge? Would acquisitions of community banks by large banks result in a significant reduction in SBL in local communities and destroy relationship lending?

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<sup>1</sup> Source: FDIC Report

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

<sup>3</sup> 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.

<sup>4</sup> In December 2013, 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 since the financial crisis has undermined the smaller lenders' ability to provide credit tailored to consumers and small businesses. See Conference of State Bank Supervisors (2013) for more details.

Our objective is to examine the impact of small community bank acquisitions by large banks on SBL over the past decade, covering both the boom and the recent downturns. The measures of performance and risk characteristics used in this study include the change in the confidential supervisory ratings (CAMELS) before and after the mergers; how the banks perform in terms of risk-taking, efficiency, liquidity, capitalization, and profitability; and how they are perceived by the market. We use the data on mergers and acquisitions that involved community banks during the period from 2000 to 2012 to examine the risk characteristics of the targets and acquirers at the time of the mergers, to track postmerger performance of the combined banking firm, and to investigate whether the mergers have affected the banks' SBL. Finally, we observe how the stock markets react to the community bank merger announcement, during both the boom and the financial crisis.

We find that community bank mergers that took place during the recent financial crisis are much different than those mergers that occurred in earlier periods (examined in previous studies). We find that mergers of community banks with other (healthier) banks have resulted in combined banking firms that are healthier financially and more efficient in their operations. Controlling for the risk characteristics of the targets and their acquirers and for economic factors, we find that overall SBL tends to increase when the acquirer is a large bank (with assets of more than \$10 billion). Overall, mergers that involved community bank targets have so far enhanced the safety and soundness of the banking system and have done so without hurting SBL, as large banks have come in to substitute and fill the SBL gap.

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 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 in SBL over the 2000–2012 period by exploring SBL market shares at large versus community banks, and how SBL may have been affected by community bank mergers. Section VI examines merger deal premiums and stock market reactions in all mergers that involved community bank targets during 2000–2012. Finally, concluding remarks and policy implications are presented in Section VII.

## **II. Literature Review and Our Contribution**

About 93 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 for more details). This may be 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 on community bank mergers and the role of community banks in SBL.

*Role of Community Banks in SBL:* The existing literature on the role of community banks in SBL has so far presented mixed results. 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 — they find that 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 the acquiring banks tend to be well diversified and well managed, where 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. The results from Beccalli and Frantz (2013) imply that the acquirers of community banks are likely to be larger banks, thus causing concerns that the combined banking firm would be too large to look beyond credit scores and other model-based metrics in its lending decision and too large to maintain the direct personal knowledge of the local economy that has enabled community banks to tailor products and services to meet community needs.

Kowalik (2013) 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 is consistent with the conventional paradigm, which suggests that, unlike large banks that serve large transparent firms, small community banks have their special role in supporting small businesses in their local communities, as they are better able to form strong relationships with small opaque firms.

Other papers, however, seem to suggest the opposite findings. For example, 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 a comparative disadvantage in relationship lending does not necessarily imply that large banks are disadvantaged in providing credit to informationally opaque SMEs. They also add that some transaction-based lending technologies used by large banks are actually well suited for funding opaque SMEs. Further, previous findings may be driven by the differences between the U.S. structure and that of other nations. Small bank presence may be more important in other nations because their financial structures may limit their use of some lending technologies available in the U.S.<sup>5</sup>

In addition, using the 2003 Survey of Small Business Finances, 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. They also find results that are not consistent with the conventional paradigm.

Interestingly, Berger, Frame, and Miller (2005) find that small business credit score (SBCS) plays an important role in SBL, as it reduces lending costs and allows for a net increase in lending to “marginal borrowers.” Further, the SBCS has allowed some large banks to expand their lending to at least some pools of small business customers — therefore, this technology has allowed larger banks to increase their role in lending to small businesses.

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<sup>5</sup> The most recent review of bank lending technologies may be found in Berger (2014).

Berger, Cerqueiro, and Penas (2014) examine the contribution of small banks in lending to recent startup firms during the period 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, but this only holds 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. 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 SBGS that more accurately reflect credit information on both the firms and the owners.

*Community Bank Mergers and SBL Impacts:* 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 (during the period before the financial crisis) 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).

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

could also 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.).

Using data from older 1994 to 2000 and focusing on the role of community banks in SBL lending, Avery and Samolyk (2004) examine how bank mergers affected SBL in local markets. They find that while large bank mergers are associated with slower loan growth in the local area, community bank mergers are associated with higher loan growth and greater market share of SBL funded by community banks. This is consistent with Jagtiani (2008) and sheds light on the source of increased SBL by community banks in the local area, since Jagtiani (2008) does not examine reactions by other community banks in the local area in response to a community bank merger. Avery and Samolyk (2004) take into account these reactions and conclude that other community banks in the area react to mergers by making more SBL.

Berger, Scalise, Saunders, and Udell (1998) also found 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 the “dynamic” effects of bank mergers on SBL. They find that while the *static effects* (associated with scale and strategy due to reduced efficiency in relationship lending as the banks merge into a larger bank) resulted in a reduction in SBL, the *dynamic effects* (associated with postmerger 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 that reduce SBL are more than offset by the reactions of other local banks so that 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 that there are many factors that impact the amount and growth in SBL. Bank consolidation and reaction by other banks to local bank mergers could impact SBL. Besides mergers and acquisitions, 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. All the information related to the mergers, target characteristics, and the acquirer characteristics come from the SNL Financial database. Data related to SBL are collected from the Federal Reserve Call Reports and Y-9 Reports. Supervisory ratings are collected from the National Examination Data (NED) System. Stock prices are from the Center for Research in Security Prices (CRSP) database, and economic factors are collected from the Haver Analytics database.

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.<sup>6</sup> 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 during 2000 to 2012 involved community bank targets. However, this number translates to only about 10 percent in terms of all targets' banking assets (Table 2).

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 themselves (rather than large banks). Table 3 shows that community banks have been acquired mostly by other community banks throughout the study period, especially during the period after the recent financial crisis began. In addition to the acquirers' asset size, there also have been 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 4 shows that this has not been the case. Community bank mergers

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<sup>6</sup> This is as of year-end 2012.

(mergers between the community bank target and the community bank acquirer) have mostly been within the same state (in-state mergers).

Overall, since most of the community bank mergers involved community bank acquirers and were mostly in-state mergers, the mergers should not have reduced lending to small businesses and/or moved funds out of the community. In fact, community bank mergers that took place in the past decade should have strengthened the banks' comparative advantage in relationship lending. The next sections further examine how community bank mergers have affected their risk characteristics and their roles as relationship lenders to small businesses.

#### **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 present the comparison of premerger and postmerger performance based on the various components of the confidential supervisory ratings (i.e., the capital adequacy (C), asset quality (A), management quality (M), earnings (E), liquidity (L), sensitivity to market (S), and the composite rating (CAMELS), respectively).<sup>7</sup> The sample includes all mergers that involved community banks during the period from 2000 to 2012. The plots compare average ratings across all the mergers that were announced in each year from that period. Note that the lowest rating (1) represents the best rating, and the highest rating (5) is the worst.<sup>8</sup>

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<sup>7</sup> The premerger ratings for targets and acquirers are the latest assigned ratings prior to the merger announcement date. The postmerger ratings are the first assigned rating after the merger has been completed.

<sup>8</sup> 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.

Based on the average supervisory ratings prior to the mergers, the community bank targets are clearly weaker than the acquirers, particularly for mergers that took place during the financial crisis period or later (2008 and thereafter) when the targets' ratings were below satisfactory (3 rating), on average. The ratings of the combined firm (after the merger) are much improved compared with those of the targets prior to the mergers. These results are consistent across all component ratings and the composite CAMELS rating.

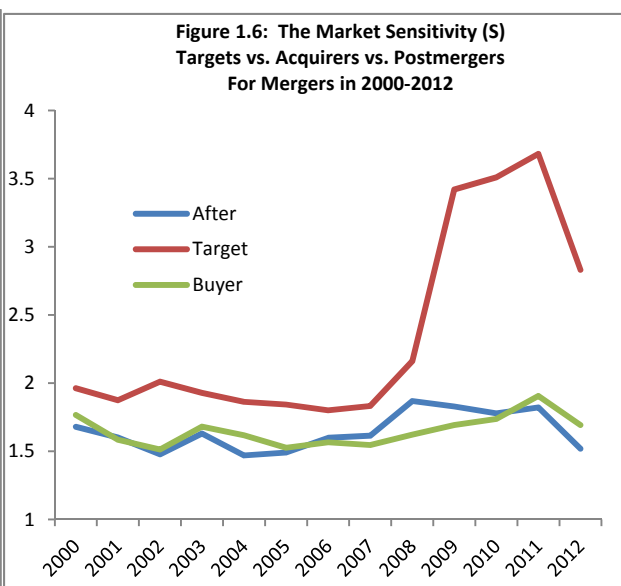
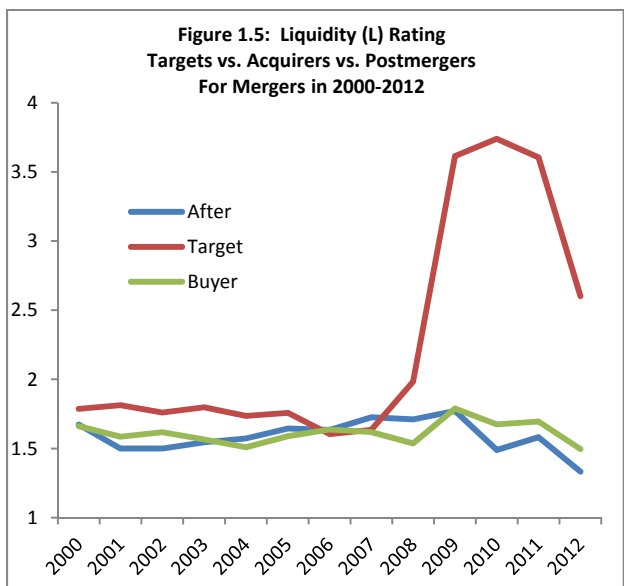
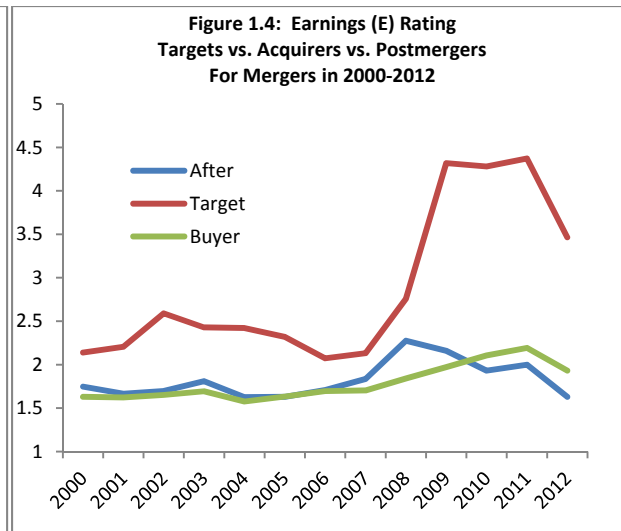
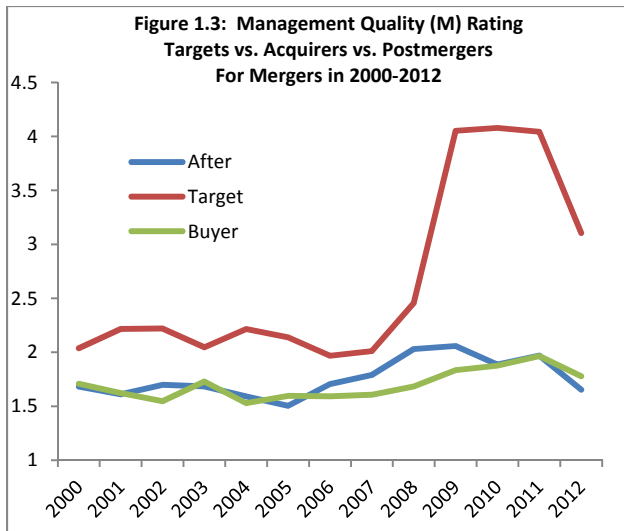
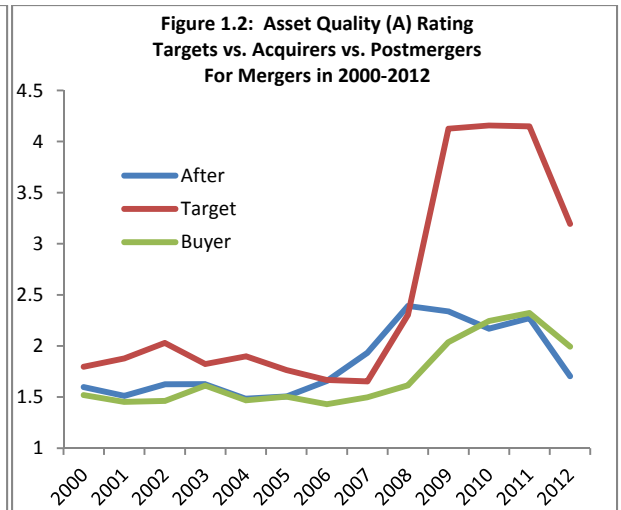
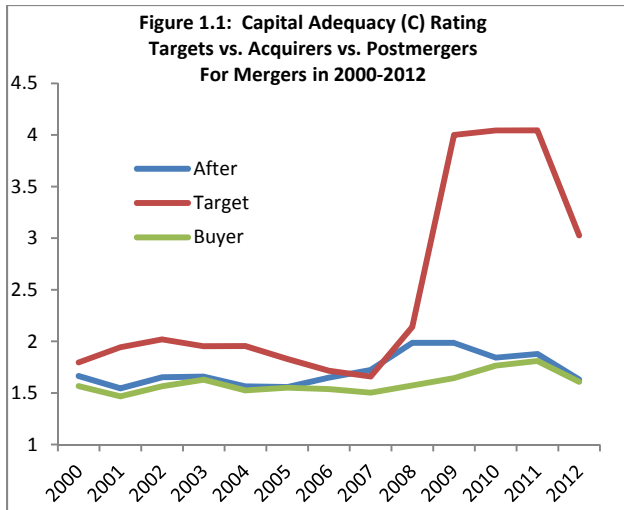
Overall, community banks that were acquired during the financial crisis had performed poorly and, on average, were rated unsatisfactory by their regulators on all risk aspects.<sup>9</sup> These banks would not have been able to serve as a good funding source for small businesses anyway, and, in fact, they were more likely to fail if they were not acquired by another (healthier) bank. Overall, these mergers actually served to enhance the safety and soundness of the banking system,<sup>10</sup> suggesting that there are no good reasons to be overly concerned about the large number of community bank mergers so far.

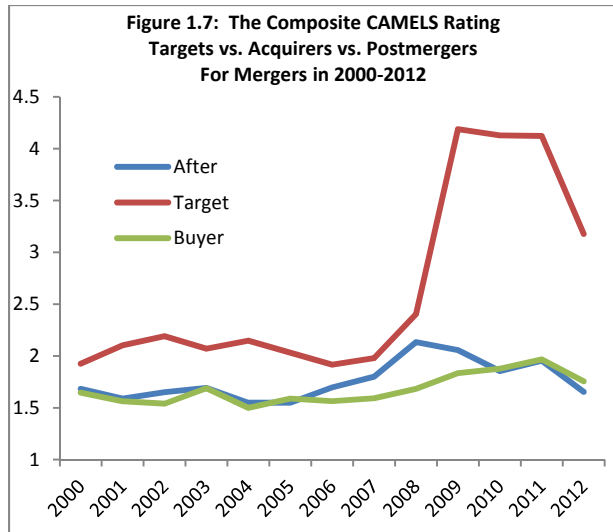
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While our analysis here does not control for the regulators (federal versus state regulators) that assigned the ratings, we do control for economic conditions around the merger date.

<sup>9</sup> These community bank targets were undercapitalized, holding poor-quality assets on the balance sheet, not well managed, not profitable, less liquid, and more exposed to greater market risks.

<sup>10</sup> Our finding is consistent with Cooper and Vermilyea (2012), who find that mergers that involved a well-managed acquiring bank (with a superior M rating) could improve the long-term performance of the combined banking firm after the merger.





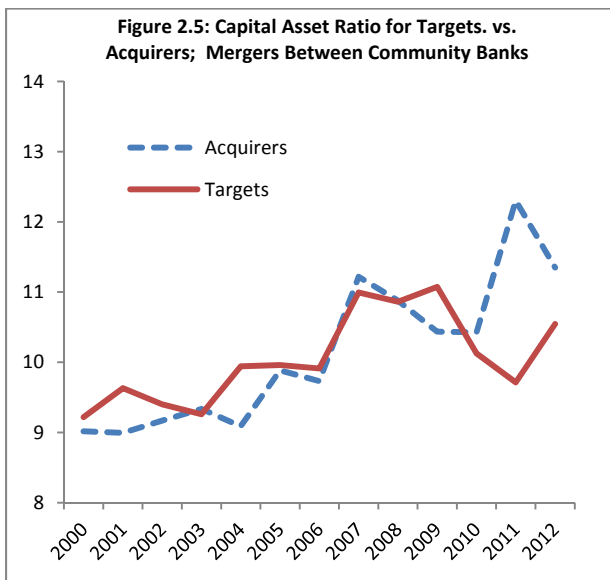
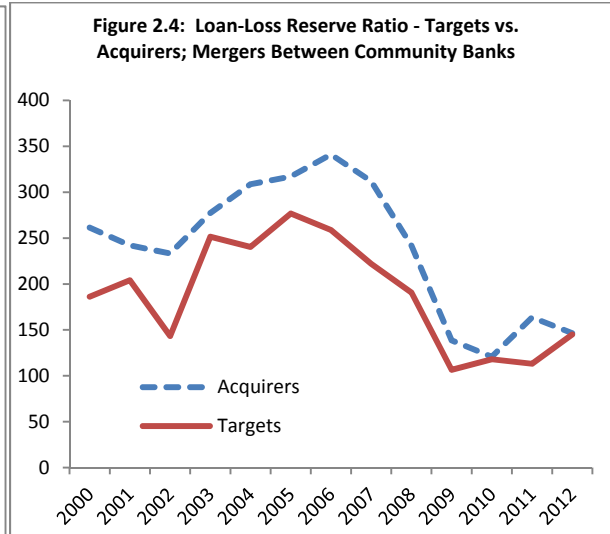
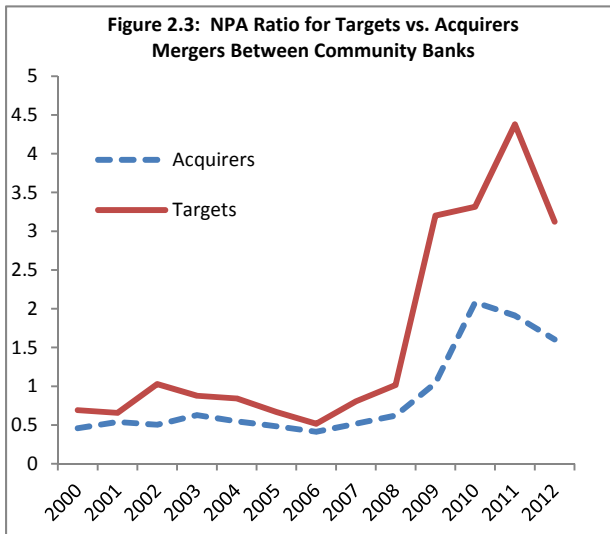
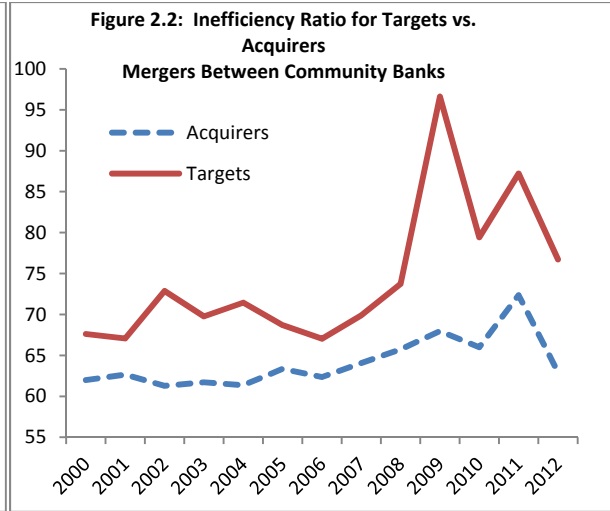
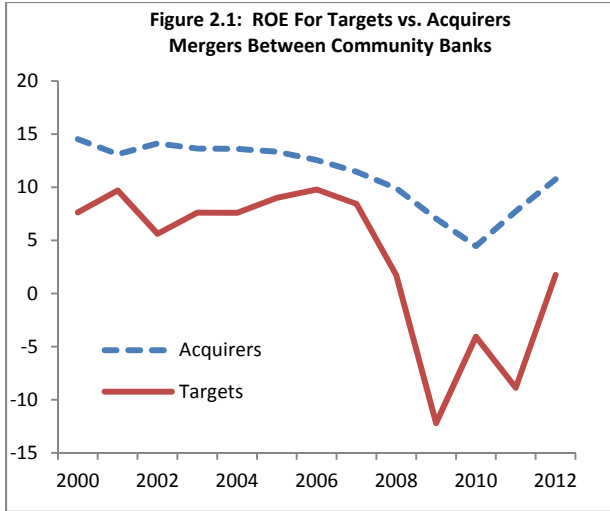
Sources: SNL database and the Federal Reserve

In addition to exploring changes in the confidential supervisory ratings, we confirm 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. 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.<sup>11</sup>

## V. Funding Availability for Small Businesses

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

<sup>11</sup> 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.



Source: SNL Financial database

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 2001 to 2012, using Call Report data.<sup>12</sup> Figure 3.1 shows that SBL market share increased significantly (more than doubled) for the largest banks (larger than \$100 billion) but decreased for community banks.<sup>13</sup> Second, we examine the average SBL-to-total-asset ratio for the various bank size groups during the same period from 2001 to 2012.<sup>14</sup> Figure 3.2 shows that the SBL-to-assets ratio has declined during this period — for all bank size groups (including community banks). While community banks have consistently been more committed (larger ratio of SBL to total assets) to SBL, this does not translate to a large volume of SBL. More important, it is indicated in Figure 3.2 that since 2008 the average SBL-to-assets ratio has declined more sharply for the surviving community banks than the larger banks.

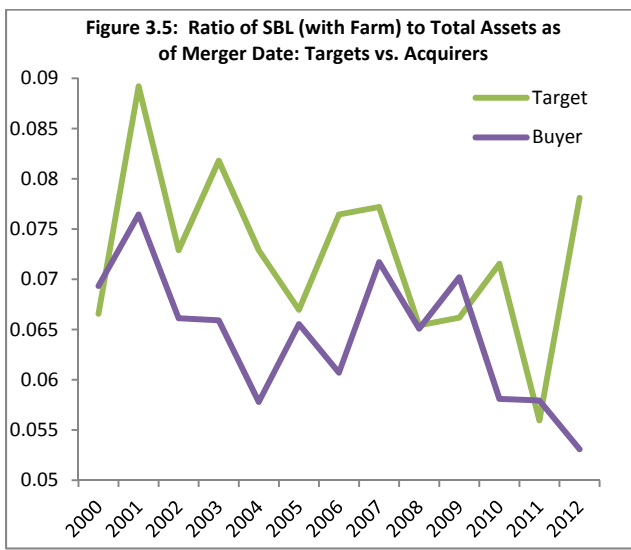
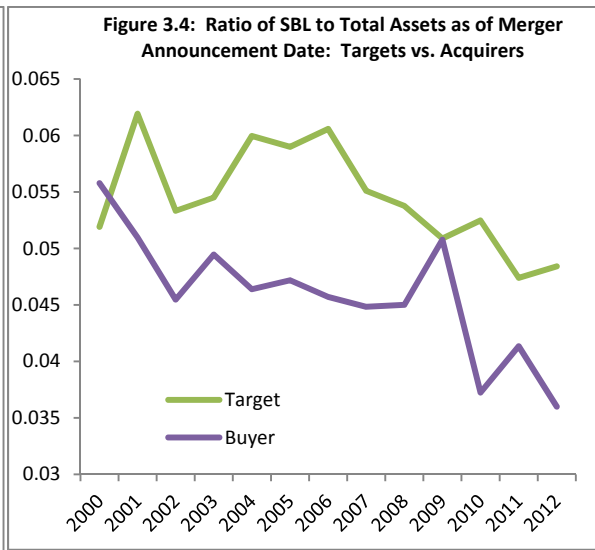
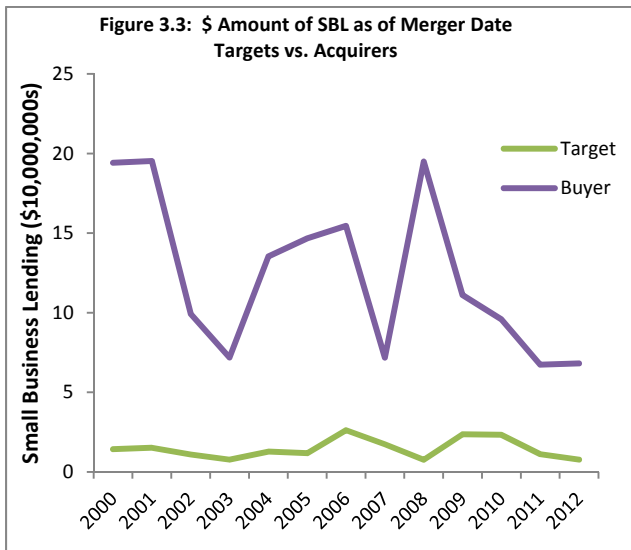
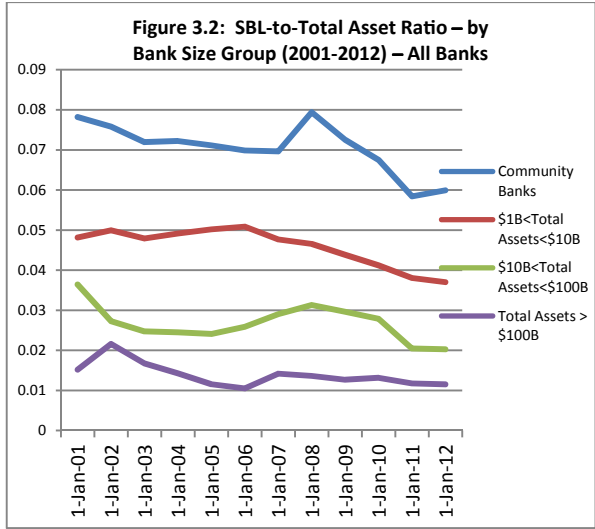
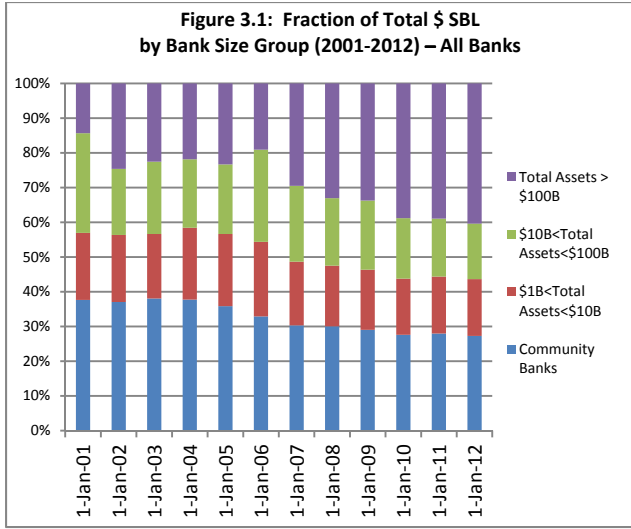
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<sup>12</sup> Data on SBL and assets are obtained from the year-end quarterly Call Reports, and the sample includes all banks (the entire market) in the U.S.

<sup>13</sup> The increased market share in SBL at large banks is partly due to their becoming more active in SBL and partly due to the fact that large banks became larger in this period. The number of banks in this size category increased from six banks in 2001 to 18 banks in 2012, and their share of domestic assets increased from 36 percent in 2001 to 66 percent in 2012.

<sup>14</sup> Again, data on SBL and assets are obtained from the year-end quarterly Call Reports, and the sample includes all banks in the U.S.





Sources: SNL database and Call Reports

*SBL at Community Banks That Merged:* We then focus on SBL volume associated with community banks that merged during the period from 2000 to 2012. In terms of SBL volume (in dollar amount), Figure 3.3 shows that the targets had significantly smaller SBL, on average, than the acquirers did.<sup>15</sup> In terms of commitment to SBL (ratio of SBL to assets), however, Figures 3.4 and 3.5 show that the targets were more committed than the acquirers prior to the mergers.<sup>16</sup> We also find that after the mergers, SBL for the combined firms (as of one year and two years after the completion of the mergers) tends to follow the acquirers' patterns.

The overall 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 has become significantly smaller now than it was over a decade ago (Figure 3.2). Following overall industry trends, the ratio of SBL to assets has declined for all bank size groups, regardless of whether they were involved in mergers and acquisitions (Figures 3.3 to 3.5). Interestingly, the decline in the SBL ratio has been more severe at community banks than at larger banks. Large banks have also been playing an increasing role in providing funding to small businesses in terms of SBL volume and market share (Figure 3.1).

*Regression Analysis — 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 and the SBL trend for similar banks (in the same size category and geographic location). The samples include all mergers that

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<sup>15</sup> For Figures 3.3 to 3.5, the data on SBL and assets are obtained from the year-end quarterly Call Reports. The sample includes all mergers announced from 2000 to 2012 that involved community banks (targets being less than \$1 billion in assets). The data are from the SNL database.

<sup>16</sup> Figure 3.5 presents similar information to that in Figure 3.4 except that the amount of lending includes both the regular (nonfarm) SBL as well as farm SBL.

involved community banks during the period from 2000 to 2012. The summary statistics of the sample are presented in Table 5.<sup>17</sup>

Dependent variables are measured in two different ways. First, we use the total increased dollar amount (not adjusted for inflation) of SBL due to the mergers — estimated as the combined firm's total SBL after the merger minus the combined total SBL (the target and the acquirer) prior to the merger. The results are presented in columns 1 and 2 of Table 6. Second, we use the change in the ratio of SBL to assets for the combined (merged) banking firm as compared with premerger. The premerger ratio is the combined SBL of the target and the acquirer divided by the combined total assets of the target and the acquirer before the merger. The results are presented in columns 3 and 4 of Table 6.

Independent variables include risk characteristics as reflected in the CAMELS ratings for the targets and the acquirers prior to the merger in which the supervisory ratings have values ranging from 1 (best) to 5 (worst). 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.

In addition, we control for the interaction between economic factors (such as the boom period indicator) and asset size of the combined firm (by size category, with assets being less than \$1 billion, between \$1 billion and \$10 billion, and larger than \$10 billion), where the boom

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<sup>17</sup> When CAMELS data are included in the analysis, the number of observations drops significantly. However, the sample distribution across bank size groups remains roughly the same for both the original (full) sample and the reduced sample (with no missing CAMELS). For acquirers, in the full sample, 27 percent of the banks are in the \$1 billion to \$10 billion range, 10 percent are in the more than \$10 billion range, and the rest are in the less than \$1 billion range. The numbers change only slightly to 25 percent in the \$1 billion to \$10 billion range and 6 percent in the larger than \$10 billion range for the reduced sample, which is used for the regression analysis (with no missing CAMELS).

period is defined as the years from 2004 to 2007. This is intended to capture the varying economic impact on SBL for the various size groups. Further, we control for whether the merger is an assisted merger in which the target was failing. For this, we include a dummy indicator for mergers that involved targets that were rated 4 or 5 (unsatisfactory) by their supervisors.<sup>18</sup>

Controlling for the Overall SBL Market Trends: We control for the overall market trend of SBL around the time of the merger announcement — to account for the SBL activities at banks that did not merge and to account for the varying SBL activities both in tough economic cycles (through time) and across banks. Specifically, this SBL market trend variable is included to separate the change in SBL after mergers that may have been driven by factors other than the merger, such as changes in SBL activities due to changes in the economic environment, changes in demand and supply of SBL, regulatory changes, etc. The trend variable is calculated for each observation, and it is defined as a percentage change in the overall SBL by all banks (regardless of whether they merged) that are in the same size class as the combined merged firm, in which the SBL change is measured over the same period based on the merged banking firm's merger date.<sup>19</sup>

From columns 1 and 2 in Table 6, 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 by a larger amount when the acquiring bank is very large (with

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<sup>18</sup> We also perform a separate analysis that excludes all 5-rated banks and includes a control indicator for 4-rated banks; the results are consistent with those presented in Table 6.

<sup>19</sup> 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 completed in November 2006, the trend variable would capture the change in SBL in the market from June 2005 to June 2006.

more than \$10 billion in assets). This is reflected in the significantly positive coefficients of the dummy indicator *D\_Largest\_Acquirer\_>\$10Bill*. In addition, the coefficient of the interactive term *D\_Boom (2004-2007)\*D\_Largest* is also significantly positive, indicating that the increase in the SBL amount (when the acquirers are in the largest size group) is even larger for those mergers that took place during the boom period from 2004 to 2007. 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.

When focusing on the change in ratio of SBL to assets, rather than the change in dollar amount of SBL, the results in columns 3 and 4 of Table 6 show that the SBL ratio tends to decline after the mergers when the acquiring banks are the largest or medium-size banks (larger than \$10 billion in assets), as reflected in the significantly negative coefficients of *D\_Large Acquirer\_ \$1Bill to \$10Bill* and *D\_Largest Acquirer\_>\$10Bill*. This is likely due to the fact that these large acquiring institutions tend to grow more aggressively such that the overall assets growth exceeds that of SBL.<sup>20</sup> Nonetheless, the decline in the SBL ratio at large banks overall is not as severe as that of the surviving community banks, as shown earlier in Figure 3.2. We also control for failing targets, with the composite CAMELS rating being unsatisfactory (rated 4 or 5) — the coefficients are consistently insignificant.

The SBL trend variable in Table 6, *TREND\_SBL Change\_Size Group*, is the average change in the SBL ratio by all banks in the same size class around the merger announcement date,

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<sup>20</sup> Appendix 1 presents the plots of changes in SBL for the groups of merged banks compared with all other banks (merged and nonmerged banks combined) in the same size group. We find that changes in the SBL ratio due to mergers (that involved community bank targets) seem to be unrelated (or negatively correlated) to the overall SBL market trend (for the same size class).

regardless of whether they were involved in any merger transactions. The coefficients of this SBL trend factor are significantly negative in column 2 (change in SBL volume) but insignificant in column 4 (change in SBL ratio). Other control factors in Table 6 are the composite supervisory ratings of the targets and the acquiring banks. They are generally not significantly important in determining the change in SBL after the mergers — with only one exception (in column 3) where it is weakly significantly positive at the 10 percent level, suggesting that the SBL ratio may rise for mergers that involve poorly rated acquiring banks.<sup>21</sup>

The regression results confirm our previous findings that SBL activities, on average, change significantly after the mergers. Specifically, SBL volume increases more when the acquirers of community bank targets are large banks (larger than \$10 billion). The change in SBL is smaller for large acquirers than community bank acquirers, however, when considering changes in SBL ratio (rather than volume). These results hold even after controlling for important risk characteristics of the targets and acquirers, economic conditions, size-related factors, and market trends.

As mentioned earlier, SBL ratio for the industry overall actually declines more for community banks than large banks, on average, over the recent years (Figure 3.2). In addition, the roles of large banks in supporting small businesses have become increasingly important in recent years with greater SBL market shares (Figure 3.1). The smaller SBL ratio to assets at large banks suggests that the growth in loan demand for small business seems to be slower than that of the overall banking assets in recent years.

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<sup>21</sup> We repeat the same analysis with the component CAMELS ratings as control factors, rather than the composite rating — the results are consistent with those reported in Table 6 (they are not presented here but are available upon request).

## VI. Merger Deal Premiums and Stock Market Reactions

*Merger Deal Premiums:* This section examines the merger deal premiums that acquirers are willing to pay to acquire a community bank target. We perform a regression analysis, with the dependent variable being the merger deal premiums, which are calculated as a ratio of price per share paid by the acquirer divided by the market price per share of the target, based on the target's share price as of the day before the merger announcement date. The data on mergers and share prices are obtained from the SNL database and Yahoo Finance.<sup>22</sup>

The analysis controls for the various risk characteristics of the targets and the acquirers, including the ROE, efficiency ratio (the ratio of noninterest expense to the sum of net interest income and other income), nonperforming loans (NPLs), capital adequacy, asset size of the acquiring banks, market to book ratio, and an indicator for in-state mergers. The acquirer's size indicators are calculated with inflation adjusted. All the risk characteristics are measured as of the merger announcement date — calculated as the ratio of the acquirer's characteristic to the target's characteristic. The market-to-book ratio is the ratio of the acquirer's market-to-book ratio to the target's market-to-book ratio. The results are presented in Table 7.

The results indicate that merger premiums are smaller when the acquiring banks are very large banks (with assets greater than \$10 billion). The community bank targets were willing to accept a smaller premium (or even a discount) to become a part of a large banking organization — probably because large banks have greater ability to diversify, to obtain scale and scope economies, and to better manage their operations. In addition, higher growth

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<sup>22</sup> Our analysis in this section includes a much smaller number of observations because most of the community banks that were involved in the mergers were not publicly traded; thus, their market share prices were not available.

acquirers (compared with the target), as measured by the ratio of market to book of the acquirer and the target, are willing to pay more to acquire the community bank target.

*Stock Market Reactions:* Based on the subset data of community bank mergers that involved publicly traded community bank targets, we examine how the stock market reacts to the mergers, controlling for the various risk characteristics of the acquirers and the targets. We perform a regression analysis with the dependent variable being cumulative abnormal returns (CARs) around the merger announcement date (window -3 days to +3 days around the announcement date).<sup>23</sup> The abnormal returns are calculated based on an index of the 25 largest financial institutions, following the methodology used for the abnormal returns calculation in Brook, Hendershott, and Lee (1998). Again, we control for the relative acquirer-to-target ratios for ROE, efficiency ratio, NPLs, and capital-to-assets ratio. The risk factors are measured as of the merger's announcement date. Relative asset size is the ratio of the target's assets to the acquirer's assets. The acquirer's size indicators are inflation adjusted. The merger deal premium variable is the price per share that the acquirer paid to acquire the target divided by the market price per share of the target (source: SNL database and Yahoo Finance). A dummy indicator for low trading volume is also included to indicate that the bank's stocks were traded with an average of less than 1,000 shares daily for the period in which the market model is fitted. The results are presented in Table 8.

After controlling for the risk characteristics of both the targets and the acquirers, the results suggest that the stock market's perception about these community bank mergers seems to be determined by the merger deal premiums (i.e., the premiums that the acquirers are

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<sup>23</sup> We also perform the same analysis with different CARs windows, including (-1, +1) and (-1, +3). The results are not shown here, but they are consistent with those presented in Table 8.



willing to pay over the target's market price per share). The larger the premiums that the acquiring banks are willing to pay to acquire the community bank target, the larger the positive abnormal returns around the merger announcement date. Given that the deal premiums that acquirers are willing to pay are proxies for the synergies to be obtained from the mergers, the results are consistent with an argument that the market reacts more positively to the mergers that are expected to produce greater synergies.

## **VII. 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), investigate whether the mergers have affected SBL, and observe how the stock markets react to community bank mergers. 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. However, from 2000 to 2012, as the number of community banks has declined, we have found that the overall SBL market share for the largest banks (more than \$100 billion) has more than doubled; thereby indicating that large banks have been stepping in to fill the 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 by acquiring banks tends to increase from the pre-acquisition base when the acquirer is a large bank (with assets of more than \$10 billion), indicating that the large bank acquirers do grow SBL.

When examining SBL activities in terms of the average SBL-to-total-asset ratio, the data show that the SBL-to-assets ratio has declined (over the same period from 2001 to 2012) for all bank size groups, including the community banks themselves. But the rate of decline among large banks has been lower than that of community banks.

We find that community banks that were merged during the financial crisis period performed poorly and were often rated unsatisfactory by their regulators on all risk aspects. These community bank targets were undercapitalized, held poor quality and less liquid assets on their balance sheet, were not profitable, and were not well managed. 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, mergers that involved community bank targets have so far enhanced the safety and soundness of the banking system.

Among all community bank mergers that involved publicly traded targets, we find that the merger premiums are smaller when the acquiring banks are large banks (with total assets greater than \$10 billion). This suggests that community bank targets may see an advantage in becoming a part of large banking organizations and therefore may be willing to accept smaller premiums (or even discounts).

Based on the above, 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, as large banks have stepped in and grown their local lending.<sup>24</sup> This implies that a policy that discourages mergers between community banks and large banks is unwarranted and could potentially result in a weaker financial system and have an unintentional dampening effect on the supply of SBL lending.

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<sup>24</sup> 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**  
**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.

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	100.0
2002	6671	270	52	7	7000	18.0	14.3	25.7	42.0	100.0
2003	6521	277	60	7	6865	17.1	12.5	27.1	43.3	100.0
2004	6380	300	54	7	6741	16.0	12.8	24.6	46.7	100.0
2005	6240	312	54	7	6613	13.4	11.0	22.1	53.6	100.0
2006	6933	384	75	8	7400	12.6	11.3	27.5	48.6	100.0
2007	6795	394	68	13	7270	11.9	10.5	20.6	57.0	100.0
2008	6674	379	57	17	7127	11.3	9.7	16.8	62.1	100.0
2009	6440	406	63	18	6927	10.8	9.4	16.9	62.8	100.0
2010	6159	379	57	19	6614	10.6	8.9	14.7	65.8	100.0
2011	5897	375	61	17	6350	9.9	8.5	16.8	64.8	100.0
2012	5708	369	61	18	6156	9.7	8.5	15.9	65.9	100.0
Change 2001 to 2012	-1142	94	8	12	-1028	-8.8	-6.9	-14.2	29.8	

Source: Call Reports (June data for each year)

Note:

- It is shown above that both the total number of community banks (with total assets less than \$1 billion) and their share of banking assets have declined significantly in the past decade. It should also be noted that most of the decline has been driven by very small community banks with assets less than \$100 million. As expected, banks in all asset categories have become larger over time.
- The share of U.S. banking assets has shifted significantly from small community banks to larger banks. Community banks held 18.4 percent of U.S. banking assets in 2001; that number fell to 9.7 percent in 2012. The share of U.S. banking assets (inflation adjusted) at the largest banks almost doubled during the same period.

**Table 2**  
**Acquisitions of Banking Organizations**  
**by Asset Size of the Targets**

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	1017.8	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
<b>Total</b>										
Number of Acquisitions	<b>2208</b> <b>91.2%</b>	170 7.0%	36 1.5%	<b>7</b> <b>0.3%</b>	2421 100%	<b>400.4</b> <b>10.6%</b>	441.2 11.7%	987.8 26.2%	<b>1955.2</b> <b>51.9%</b>	3764.7 100%

Source: SNL database

Note: This table presents the merger trend over the study period. More than 90 percent of the mergers that took place from 2000 to 2012 involved community bank targets. This number, however, accounts for only slightly more than 10 percent in terms of all targets' banking assets.

**Table 3**  
**Acquisitions of Community Banks**  
**by Asset Size of Acquirers**

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
1990-1994	946 61%	388	196	11	1541 100%	69 36%	71	45	4.1	189 100%
1995-1999	692 49%	458	218	34	1402 100%	62 28%	92	58	8.3	221 100%
2000-2004	467 58%	257	80	6	810 100%	44 32%	62	31	2.5	140 100%
2005-2006	243 59%	137	24	8	412 100%	28 38%	32	10	2.6	73 100%
2007-2008	217 71%	74	14	2	307 100%	24 46%	22	6	0.8	53 100%
2009-2010	312 91%	29	0	1	342 100%	61 88%	8	0	0.4	69 100%
2011-2012	261 77%	69	6	1	337 100%	44 69%	18	2	0.4	64 100%
<b>Total</b>	<b>3138</b> <b>61%</b>	<b>1412</b> <b>27%</b>	538 10%	63 1%	5151 100%	<b>333</b> <b>41%</b>	<b>304</b> <b>37%</b>	153 19%	19 2%	811 100%

Source: SNL database

Note:

- This table shows that community banks have been acquired mostly by other community banks throughout the study period, especially during the period after the recent financial crisis had begun.
- In 2007, about 50 to 60 percent of community bank mergers involved community bank acquirers. After 2007, the ratio increased to more than 70 percent and peaked at more than 90 percent from 2009 to 2010.
- The asset value of acquisitions by community bank acquirers also rose significantly during the postfinancial crisis period from 2009 to 2010.

**Table 4**  
**In-State vs. Out-of-State Mergers of Community Banks**  
**That Were Acquired by Other Community Banks**

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	3010 82.7%	629 17.3%	490 60.4%	321 39.6%

Source: SNL database

Note:

- This table shows that community bank mergers (mergers between the community bank target and the community bank acquirer) have mostly been within the same state (in-state mergers).
- Out-of-state mergers account for less than 20 percent of all community bank mergers in terms of numbers and less than 40 percent when measured in terms of banking assets.

**Table 5**  
**Summary Statistics of the Full Sample**

Variable	N	Mean	Minimum	Maximum	Std Dev	N Miss
Relative Size (Target/Acquirer)	1658	0.284	0.00007	13.940	0.6629	572
D_Acquirer Size \$1-\$10 Billion	2230	0.253	0	1.00	0.4352	0
D_Acquirer Larger Than \$10 Billion	2230	0.063	0	1.00	0.2442	0
ROE Ratio (Acquirer/Target)	1606	1.170	-201.606	193.662	10.0735	624
Efficiency Ratio (Acquirer/Target)	1563	0.869	-48.159	3.3557	1.2742	667
NPA Ratio (Acquirer/Target)	1277	3.565	0	200.031	12.8812	953
Capital Asset Ratio (Acquirer/Target)	1659	-0.507	-2693.87	12.048	66.1690	571
Acquirer_C Rating	1588	1.594	1.00	5.00	0.5561	642
Acquirer_A Rating	1610	1.696	1.00	5.00	0.7025	620
Acquirer_M Rating	1588	1.687	1.00	5.00	0.5685	642
Acquirer_E Rating	1592	1.773	1.00	5.00	0.7509	638
Acquirer_L Rating	1590	1.610	1.00	4.00	0.5461	640
Acquirer S Rating	1582	1.645	1.00	4.00	0.5498	648
Acquirer_Composite CAMELS	1597	1.670	1.00	5.00	0.5442	633
Target_C Rating	1606	2.492	1.00	5.00	1.4672	624
Target_A Rating	1615	2.531	1.00	5.00	1.5128	615
Target_M Rating	1610	2.681	1.00	5.00	1.3520	620
Target_E Rating	1610	2.916	1.00	5.00	1.4022	620
Target_L Rating	1611	2.278	1.00	5.00	1.3139	619
Target S Rating	1591	2.389	1.00	5.00	1.1455	639
Target_Composite CAMELS	1608	2.666	1.00	5.00	1.4021	622
D_In-State Mergers	2230	0.722	0	1.00	0.4476	0
DealPremium1DayBefore	293	35.038	-49.600	96.880	25.2010	1937
DealPremium2DayBefore	303	38.337	-31.370	119.740	27.5024	1927
DealPremium3DayBefore	309	40.715	-31.370	137.700	30.6425	1921
CAR_Window -1, +1	576	-0.004	-0.5165	0.3477	0.0519	1654
CAR_Window -3, +3	576	-0.005	-0.2841	0.3296	0.0598	1654
CAR_Window -1, +3	576	-0.005	-0.2537	0.3546	0.0538	1654



**Table 6**  
**Small Business Lending Regressions**

The samples include all mergers that involved community banks during the period from 2000 to 2012. Supervisory 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 increase in SBL (includes both farm and nonfarm SBL) due to mergers is calculated as the difference (not adjusted for inflation) between SBL by the combined firm after the merger and the combined SBL of the target and the acquirer prior to the merger. Standard errors are reported in parentheses under the coefficients. The significance levels are calculated with heteroscedasticity-consistent standard errors, where \*\*\*, \*\*, and \* represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Independent Variables	\$ Increased SBL After M&A		SBL/Assets Ratio After M&A	
	(1)	(2)	(3)	(4)
Intercept	6450.81 (19776.78)	24157.17 (21032.40)	0.1328*** (0.0310)	0.1464*** (0.0329)
D_Large Acquirer_ \$1Bill to \$10Bill	-4462.10 (12905.91)	-1303.96 (10655.19)	-0.1191*** (0.0202)	-0.1151*** (0.0167)
D_Largest Acquirer_ > \$10Bill	235,460.54*** (25298.30)	274848.47*** (19858.60)	-0.1252*** (0.0399)	-0.1234*** (0.0317)
D_Boom (2004-2007)*D_Large	15270.68 (17356.39)		0.0152 (0.0277)	
D_Boom (2004-2007)*D_Largest	89004.29** (38023.39)		-0.0010 (0.0614)	
D_Failing Target (4-5 Rated)	4340.26 (23605.85)	-3191.54 (23760.00)	-0.0208 (0.0375)	-0.0255 (0.0377)
TREND_SBL Change_Size Group		-123905.17** (52126.92)		-0.0951 (0.0829)
Acquirer_Composite CAMELS	4684.41 (8379.62)	3042.56 (8390.49)	0.0227* (0.0134)	0.0211 (0.0134)
Target_Composite CAMELS	-5845.41 (7475.89)	-6913.00 (7485.27)	-0.0140 (0.0117)	-0.0147 (0.0117)
R-Square	16.59%	16.54%	5.89%	5.99%
Adjusted R-Square	16.05%	16.08%	5.37%	5.40%
Observation Number (N)	1087	1087	960	960

**Table 7**  
**Community Bank Merger — Deal Premiums**

The merger deal premiums are calculated based on the target's share price as of one day before the merger announcement date. The acquirer's size indicators are inflation adjusted. The merger deal premium is the price per share that the acquirer paid to acquire the target divided by market price per share of the target (sources: SNL database and Yahoo Finance). All the risk characteristics (ROE, efficiency ratio, NPLs, capital-to-assets ratio, market-to-book ratio) are measured as of the merger's announcement date — acquirer-to-target ratio. The market-to-book ratio is the ratio of the acquirer's market-to-book ratio to the target's market-to-book ratio. Standard errors are reported in parentheses under the coefficients. The significance levels are calculated with heteroscedasticity-consistent standard errors, where \*\*\*, \*\*, and \* represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Model	(1)	(4)	(7)
<b>Intercept</b>	46.4153*** (12.0062)	16.8278 (14.9138)	19.7697 (16.1707)
D_Mergers Announced in 2003-2007	--	--	-2.8784 (4.2457)
D_Mergers Announced in 2008-2010	--	--	3.7930 (8.6852)
D_Mergers Announced in 2011 or Later	--	--	3.8699 (6.4883)
D_ \$1 Billion < Acquirer Size > \$10Billion	-0.4798 (4.7004)	1.9512 (4.8895)	2.0128 (4.9228)
D_Acquirer Asset Size > \$10 Billion	-10.7393* (5.7128)	-12.0855** (5.6041)	-11.5112* (5.8775)
ROE Ratio_Acquirer to Target	-0.1446 (0.1891)	-0.1432 (0.5100)	-0.1109 (0.4982)
Efficiency Ratio_Acquirer to Target	-12.0745 (10.6378)	-8.7366 (11.2318)	-8.7455 (11.1935)
NPL Ratio_Acquirer to Target	0.1868 (0.2277)	0.4726*** (0.1683)	0.5053*** (0.1593)
Capital Ratio_Acquirer to Target	1.8847 (2.9373)	5.8738 (3.7927)	4.9612 (3.8398)
Market-to-Book_Acquirer to Target	--	15.2883*** (3.6965)	13.7855*** (4.1138)
D_In-State Mergers	-1.5262 (4.4637)	-1.8270 (4.7382)	-1.8626 (4.7850)
R-Square	0.0341	0.148	0.1569
Adjusted R-Square	-0.0047	0.101	0.0916
RMSE	25.8544	24.4372	24.5649
Observation Number	182	154	154

**Table 8**  
**Stock Market Reactions**  
**Cumulative Abnormal Returns (CARs) Regressions**

The cumulative abnormal returns (CARs) are calculated for the window (-3, +3) around the merger announcement date, based on an index of the 25 largest financial institutions. Relative asset size is the ratio of the target's assets to the acquirer's assets. The acquirer's size indicators are inflation adjusted. The merger deal premium is the price per share that the acquirer paid to acquire the target divided by the market price per share of the target (sources: SNL database and Yahoo Finance). All the risk characteristics (ROE, efficiency ratio, NPLs, capital-to-assets ratio) are measured as of the merger's announcement date — acquirer-to-target ratio. The dummy indicator for low trading volume indicates that the bank's stocks were traded with an average of less than 1,000 shares daily for the period in which the market model is fit. Standard errors are reported in parentheses under the coefficients. The significance levels are calculated with heteroscedasticity-consistent standard errors, where \*\*\*, \*\*, and \* represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

	(1)	(2)	(3)
Intercept	-0.014** (0.0072)	-0.026 (0.0164)	-0.057 (0.0442)
Relative Asset Size_Target to Acquirer	0.035** (0.0150)	0.015 (0.0234)	-0.0093 (0.0550)
D_Acquirer Asset Size > \$1Billion	0.012* (0.0059)	0.0105 (0.0120)	0.003 (0.0239)
D_Acquirer Asset Size > \$10Billion	0.012 (0.0081)	0.0109 (0.0162)	-0.004 (0.0309)
D_In-State Mergers	0.001 (0.0047)	0.0002 (0.0083)	-0.006 (0.0147)
Merger Deal Premium	--	0.0006*** (0.0002)	0.0007** (0.0003)
ROE Ratio_Acquirer to Target	--	--	0.0003 (0.0021)
Efficiency Ratio_Acquirer to Target	--	--	0.027 (0.0323)
NPL Ratio_Acquirer to Target	--	--	-0.001 (0.0007)
Capital Ratio_Acquirer to Target	--	--	0.019 (0.0165)
D_Low Trading Volume	--	--	0.00049 (0.027)
D_Mergers Announced in 2003-2007	--	--	0.0041 (0.016)
D_Mergers Announced in 2008-2010	--	--	0.001 (0.0203)
D_Mergers Announced in 2011 or Later	--	--	0.004 (0.0206)
R-Square	1.50%	12.59%	0.17.67%
Adjusted R-Square	0.56%	9.12%	12.37%
RMSE	0.0436	0.0417	0.0547
Observation Number	132	132	84

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## Appendix 1

The plots in this appendix illustrate the one-year and two-year changes in small business lending (SBL) during the periods one-year and two-years following the merger dates. The goal is to compare the changes in SBL at merged banks (our sample banks) with the overall market (all banks in the U.S.) — to explore whether the SBL changes following the mergers were driven by the mergers or simply reflect the changes in market conditions.

A separate analysis was performed for each size groups, resulting in three plots below. The banks are grouped by the asset size of the combined entity postmerger (for the sampled merged banks) and by asset size of each individual bank in the market (for nonmerged banks). Data are from the SNL financial database and the Federal Reserve Call Report (June) data.

The results from these figures indicate that SBL at sampled merged banks tends to move largely independently of the overall SBL in the same time period. What we observe from these plots is consistent with the regression results in Table 6, which indicate that SBL at merged banks in our sample tended to, on average, move in the opposite direction of the market. The results could also imply that banks that acquire community banks, as a size class, tend to be different from banks that generally make up the market (nonmerged banks) in terms of their SBL.

