The Effect of Distance on Community Bank Performance Following Acquisitions and Consolidations

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We analyze the performance of more than two thousand U.S. community bank acquisitions and consolidations between 1988 and 2009. Post-acquisition bank performance deteriorates with the geographic distance between target and acquirer. In contrast, distance has little effect on bank performance following charter consolidation by a given bank holding company. Distant acquisitions between 2005 and 2007 led to even worse performance during the Great Recession. We argue that distance between target and acquirer harms performance because high information and monitoring costs overwhelm any diversification and growth benefits.

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1. Motivation

Geographical deregulation in the 1980s and 1990s provided U.S. banks ample merger opportunities. By the early 1990s, most states had relaxed intrastate branching restrictions, allowing banks to acquire other banks within a given state. In addition, many states had in place reciprocity agreements that allowed interstate banking. The 1994 Riegle-Neal Interstate Banking and Branching Efficiency Act (Riegle-Neal) replaced the patchwork of state laws with a federal law that allowed bank holding companies (BHCs) to acquire banks across state lines, and those banks could be consolidated into a single charter after June 1, 1997. The deregulation allowed for the first time geographically distant banks to merge. It also allowed BHCs to consolidate charters freely across state lines.

We examine the effect that distance between the merger entities has on post-merger community bank performance. Specifically, we compute the change in bank performance for the three years following the merger relative to the weighed-average bank performance one year prior to the merger. We then regress the change in performance on distance and a host of control variables. Our analysis is conducted at the bank level rather than the BHC level because many community banks are not part of BHCs so we are capturing a larger sample of mergers. In addition, most BHCs that own community banks are "shell" holding companies meaning that the holding company itself has few if any assets and activities separate from the bank so there is no substantive difference between BHC and bank performance.

We distinguish between acquisitions and consolidations because distance should affect these transaction types differently. For our purposes, a *merger* occurs when two or more community bank charters are combined in a given transaction, and only one of the charters survives. A *consolidation* occurs when the merger banks in a given transaction are part of the same BHC for at least one year prior to the merger. Any other merger is an *acquisition*. The one-year restriction in necessary because it is possible that a BHC acquires a bank and then consolidates the charter shortly thereafter. Such a transaction would be recorded as a consolidation without the restriction.

Understanding the role of distance in post-merger performance is important to bankers and supervisors because bankers are interested in strategies that maximize risk-adjusted shareholder wealth

while supervisors wish to constrain risk-taking. Should a banker pursue an acquisition in an area that she knows nothing about? Should supervisors discourage long-distance acquisitions or require more capital prior to approval? Will holding companies with distant banks achieve meaningful cost savings by consolidating charters and managing the bank through a more horizontal structure?

Various theories suggests that the "friction of distance" does matter—albeit in conflicting ways—through its impact on information costs, managerial costs, competition, risk diversification, and growth opportunities (Falk and Abler, 1980). Distance should affect acquisitions and consolidations differently, and we discuss each in turn.

Acquisitions necessitate the transfer of hard and soft information between the target and the acquirer. Hard and soft information differ in the ways that they are collected, recorded, and communicated (Petersen, 2004). Hard information consists of easily quantifiable, objective data that can be transferred and compared easily. Examples include employee job descriptions and wages, depositor balances, and borrower financial statements. Soft information, in contrast, is more difficult to quantify and communicate. It consists of more subjective knowledge that is learned over time by repeated interaction between the target and the acquirer (Petersen and Rajan, 2002). Examples include assessments of employee and managerial job performance, identification of important customer relationships, assessments of the ethical character of loan applicants, and analysis of local real estate trends when good data are absent. In addition to collecting information, acquirers must establish managerial policies to monitor and control the new entity.

All else equal, the integration of a target should become more difficult as distance from the acquirer increases because information asymmetries increase along with managerial costs. A nearby acquirer may already possess much of the soft information when merging with a target from the same community, so management can better distinguish between high- and low-quality loan applicants in the context of the local economy. Furthermore, being nearby enhances the ability of management to monitor and manage the new enterprise. Finally, a nearby bank merger can increase the market power of a bank, allowing it to boost loan pricing or cut deposit rates; the marginal change in market power from a distant acquisition is smaller.

Despite these benefits to nearby acquisitions, two factors could improve a bank's risk-return tradeoff from acquiring a distant target. First, the bank could reduce its systematic credit risk. Bank credit risk can be decomposed into two parts: exposure to business cycle downturns (systematic risk) and exposure to individual borrower defaults (idiosyncratic risk). Portfolio theory suggests that a bank with a geographically concentrated loan portfolio that merges with a distant target will reduce its systematic credit risk relative to a bank with all of its activities in one region. The risk benefit accrues if economic cycles in the two local economies are not perfectly correlated. Second, an acquisition of a distant target could provide growth opportunities that nearby mergers do not provide. A bank in a low-growth county or state could purchase a bank in a high-growth area. Such a strategy could allow the bank to achieve higher profits even if diversification benefits are small. The ultimate effect of the distance between target and acquirer on the bank's risk and profitability is an empirical question.

From a theory viewpoint, the effect of distance on consolidation is less clear. Systematic credit risk is unaffected if the consolidation does not alter directly the geographic locations of the banks' activities. A consolidation may allow the holding company to exert greater control over the bank by removing a layer of management and board of directors, potentially reducing costs and risk. Performance benefits from distant consolidations relative to nearby consolidations would accrue only to the extent that a more horizontal management structure is a more efficient way to monitor and manage a distant branch more efficiently.

Acquisitions and consolidations also have different implications for scale effects, though these effects are largely independent of the distance between acquirer and target. An acquisition increases bank size, which may help a community bank achieve revenue, scale, and scope economies. Previous research has shown that scale economies accrue primarily to smaller banks—perhaps those with as few as $300 million to $500 million in assets; scale economies above that threshold are more difficult to detect (Berger et al., 1999; Wheelock and Wilson, 2001). Because the majority of U.S. commercial banks have total assets below $500 million (85% as of 2009), acquisitions potentially allow them to improve efficiency. A consolidation by itself does not change the size of the banking organization so scale effects are likely to be small at best. Scale effects may accrue to the surviving bank charter if the

BHC prior to the consolidation failed to squeeze costs or extract synergies by running the banks as independent operations.

Our acquisition data show that acquiring banks exhibit a strong local bias. With assistance from The Gadberry Group and by utilizing the geographic information capabilities in SAS to compute distance from bank addresses, we obtained the distance in miles "as the crow flies" between acquirer and target headquarters for all bank acquisitions between 1988 and 2009 for which distance could be computed.[1] Panels A and B of Figure 1 plot the number of community bank acquisitions and consolidations, respectively, and the median distance between entities by year. The figures demonstrates the propensity of banks to merger with nearby entities. We also observe that the median distance between merger entities has increased through time, which is consistent with a decline in monitoring costs as credit scoring models, computing power, email, the internet, cell phones, and other communication and information processing technologies have evolved.

Though several studies have examined the effects of mergers on bank performance, few have focused specifically on the role of distance. The few results to date suggest that nearby bank mergers may be comparatively more beneficial. Uysal et al. (2008) examine the role of distance on acquirer returns in a sample of mergers and acquisitions between 1990 and 2003. They define a deal as "local" if the bidder is located within 100 kilometers of the target. They find that local bidders earn significantly higher returns than distant bidders. DeYoung et al. (2008A) investigate how increased distance affects default rates between lenders and small business borrowers. They find that greater borrower-lender distance is associated with higher default rates at banks that do not use credit scoring. In contrast, default rates are unchanged at banks that do use credit scoring, suggesting that new technologies can help to overcome the information costs from increased distance. Cornett et al. (2006) find that geographically focusing mergers—mergers with overlapping MSAs—produce greater performance gains than geographically diversifying mergers. Focusing exclusively on portfolio diversification benefits, Emmons et al. (2004) simulate mergers of U.S. community banks by

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[1] We were able to compute distances for 96 percent of all bank mergers. Distances are missing if the bank did not have a (correct) address or if the GIS software could not locate the address. Further, some of the observations were mapped less precisely than others because the exact GIS coordinate could not be determined.

combining the call reports of banks across different degrees of geographical diversification--within labor market area, within state, within Census, and cross-Census--to calculate the potential risk reduction. They find that risk decreases somewhat with the distance of the merger partners, but the significant risk reduction comes from scale effects independent of geographical diversification. Morgan and Somalyk (2005), in contrast, find that most large banks could increase risk-adjusted returns by further geographically diversifying their portfolios.

Another related issue is the effect that distance has on bank reorganization. The sparse literature on the relationship between distance and control confirms that distance decreases the ability of the parent organization to monitor and control affiliates. Berger and DeYoung (2001) examine the ability of a multibank holding company to control its non-lead-bank affiliates by computing the cost and profit efficiency correlations between affiliates and lead banks. They find that the holding companies strongly influence the productivity of affiliates, but that influence diminishes with the distance between the lead bank and affiliate. Berger and DeYoung (2006) also find that the ability of holding companies to control affiliates has increased over time. They argue that technological changes such as the internet and credit scoring models have reduced the effects of distance on the ability of lead banks to manage the operations of their far-flung enterprises. This results suggests that benefits from community bank consolidations have diminished over time.

We find that distance led to a decline in profitability and an increase in risk for bank acquisitions, especially for mergers that took place just prior to the Great Recession. Our findings are consistent with the argument that greater information asymmetries and monitoring costs from distance outweigh any diversification and growth benefits. In contrast, charter consolidations have few effects on bank performance, regardless of distance.

2. Data and Summary Statistics

We begin the empirical methodology by identifying all unassisted community bank mergers (acquisitions or consolidations) between 1988 and 2009. Government-assisted mergers of failing banks are excluded so that the poor performance of such banks does not influence the results. The

sample period includes roughly 10 years prior to, and 10 years after full implementation of nationwide geographic deregulation. Community banks are defined as those with less than $1 billion in inflation-adjusted assets, indexed by the GDP deflator to the first quarter of 1988. To be in the sample, these entities could have no further merger activity in the prior four quarters or the following twelve quarters around the merger quarter (but they could merge with more than one bank during the event quarter). In addition, the merger entities had to exist at least four quarters before the merger and at least eight quarters following the merger. These restrictions assure that previous and subsequent mergers do not influence the bank's performance around the identified acquisition, and they provide a long enough time horizon to assess bank condition around the merger. To control for business cycle effects, each ratio in each quarter is computed relative to the community bank industry median for that same quarter. The merger database and the quarterly call report data on bank performance are taken from the Federal Reserve Bank of Chicago's web site.

We define distance in miles "as the crow flies" between the headquarters of the banking entities. Following previous literature, we define a nearby merger as one less than 62 miles (100 kilometers), and distant mergers are all others. We also use the log of distance as an alternative specification in our regression framework.

We track nine risk and return measures in the 16 quarters around the merger quarter. These measures are grouped into four income variables, two expense variables, and three risk variables. Return variables include operating income (net income plus taxes less extraordinary gains and interest expense on subordinated debentures) to average assets, return on equity (ROE), net interest income to average assets, and noninterest income to average assets.[2] Expense variables include the efficiency ratio (noninterest expense to net operating income), and noninterest expense to average assets. Risk variables include the four-quarter standard deviation of ROE, nonperforming loans (loans that are 90 days or more past due or nonaccruing interest) to total assets, and net chargeoffs (chargeoffs less recoveries) to average assets. All flow variables are quarterly annualized values. In addition, the top

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[2] Our definition of operating income is taken from Cornett et al. (2006). Interest expense on subordinated debt is subtracted to remove the effect that a debt-financed takeover has on the acquirer's net income. This effect is unlikely to be important for community banks, especially so because most subordinated debt is held at the BHC level.

and bottom 0.5th percentiles of the distributions are Windsorized to ensure that outliers caused by accounting errors or niche banks are not influencing the results. Pre-merger ratios of the pro-forma bank are computed using the book values of assets of the acquirer and target as weights.

The left-hand columns of Table 1 display the summary statistics for the 1,333 bank acquisitions in the sample. The three columns list for each industry-adjusted performance variable the mean pre-merger weighted-average ratio (t-1 to t-4), the mean post-merger ratio (t+1 to t+12), and their difference. The merger quarter, t=0 is excluded from the analysis because of the potential accounting noise introduced during the merger quarter. Post-acquisition operating income is 6bp higher than pre-acquisition income, ROE is 48bp higher, the efficiency ratio is 1.24% lower, nonperforming loans are 5bp higher, and chargeoffs are 3bp higher. The right-hand columns of Table 1 display the equivalent information for the 906 consolidations. The changes in performance measures are generally smaller than those in the acquisition sample. Relative to the pre-consolidation period, post-consolidation, operating income is 2bp higher, ROE is 19bp higher, the efficiency ratio is 92bp lower, nonperforming loans are 2bp higher, and chargeoffs are unchanged. The mean distance for the bank acquisition (consolidation) sample is 46 (48) miles. Overall, the table suggest that banks benefit slightly more from acquisitions rather than consolidation.

3. **Base Regression Methodology and Results**

Our regression methodology must isolate the effect of distance on bank performance, controlling for other factors that influence performance. We define a *Distant* indicator variable equal to one if the distance between merger entities is greater than 62 miles (100 kilometers), and zero otherwise. In addition to the fact that other researchers have used this same definition, it makes intuitive sense because distance is clustered near zero. Intuitively, one would expect that management and monitoring costs increase significantly once the distance between target and acquirer is beyond a reasonable driving distance so that managers cannot easily observe branch operations on a routine basis. Econometrically, the effect of distance on bank performance is likely to be discrete rather than

continuous when distance is small. In unreported results we replace the *Distant* variable with the log of miles, and the results are similar, though the statistical significance of some coefficients disappear.

The ordinary-least-squares cross-sectional regression equation has the following general form both for acquisitions and consolidations:

$$\Delta BP_i = \alpha + \beta Distant_i + \boldsymbol{\gamma Control_i} + \varepsilon_{it} \tag{1}$$

where *ΔBP_i* is the change in the (industry-adjusted) bank performance ratio for bank *i* from the mean value in the 12 post-merger quarters less the mean value in the four pre-merger quarters; α is the intercept, which can be interpreted as the average change in bank performance for nearby mergers; *Distant* is an indicator variable as described above; and *Control* is a vector of control variables.

Control variables include the ratio of target assets to acquirer asset at t-1 to account for the relative size of the pre-merger banks. For acquires and targets, respectively, we include the lagged dependent variable to account for mean reversion. The number of banks and the log of population in the headquarters county, and a rural indicator that equals one if the headquarters is not in an MSA account for competitive effects and growth potential.

Table 2 contains the regression results for the acquisition sample, which indicate that distant acquisitions are less profitable and more risky than nearby acquisitions. The coefficients show a statistically significant decline in operating income of 13bp, and a drop in ROE of 1.3%. It is difficult to discern exactly why operating income falls, but one clue is that the efficiency ratio increases by 1.3 percentage points due to an increase in noninterest expense. All three risk variables are adversely affected by distance. The standard deviation of ROE rises by 1.1 percentage points, nonperforming loans increase by 14bp, and chargeoffs rise by 7bp. Each of these risk coefficients is statistically significant. With the exception of lagged dependent variables, all of which exhibit strong mean reversion, nearly every other control variable is statistically insignificant. Interestingly, the intercept is also statistically insignificant in every case; however, the signs and magnitudes of some intercepts suggest that nearby acquisitions benefit the post-merger bank almost to the same degree that a nearby merger harms the bank. For example, operating income is 13bp higher, and chargeoffs are 8bp lower in the post-merger period relative to the pre-merger period.

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Table 3 presents the consolidation sample results. We label the merging entities as non-survivor and survivor rather than target and acquirer. Distant consolidations boost operating income by 10bp relative to nearby consolidations, and the higher income results from an increase in net interest income. The other distance coefficients are generally small and statistically insignificant. Besides the lagged dependent variables, the only other variable with consistent statistical significance is the ratio of non-survivor assets to survivor assets. These coefficients, however, are small and they do not tell a consistent story regarding the effect on income and risk.

4. Distance and Bank Performance During the Great Recession

We would expect that the benefits and costs of bank mergers would rise to the surface the most during a severe economic downturn. An interesting question, then, is to ask what the marginal effect of distance was on banks that merged just prior to the Great Recession period of 2008 through 2010. To address this question, we identify the banks that merged in 2005, 2006, or 2007. We create a *Precrisis* indicator variable that takes a value of one for transactions in these pre-crisis years.[3] This variable captures the marginal effect on the change in bank performance for mergers in these years. We then interact that variable with *Distant*. The interaction term *Distance* x *Precrisis* captures the marginal effect of distance on the change in bank performance for mergers that took place in the pre-crisis years. The general form of the OLS regression is

$$\Delta BP_i = \alpha + \beta Distant_i + \delta Precrisis_i + \theta(Distant_i \ x \ Precrisis_i) + \boldsymbol{\gamma Control_i} + \varepsilon_{it} \quad (2)$$

All other variables are defined as in equation (1).

The acquisition results are in Table 4. The statistical significance of several *Distance* coefficients disappear in this specification, most likely because the two additional variables are competing for explanatory power. Nevertheless, the signs of these additional variables are telling. The *Precrisis* coefficients point to declines in operating income (10bp) and ROE (120bp) for mergers in those years relative to mergers in other years. In addition, noninterest income and noninterest expense drop by

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[3]Most observers believe that the financial crisis began in 2007. However, the crisis was centered in the Wall Street banks with subprime mortgage securitization operations. Most community banks did not feel the effects of the crisis until late 2007 or 2008.

statistically significant amounts, reflecting the slowing economic activity in the recession years. Nonperforming loans and chargeoffs for acquisitions completed in the pre-crisis years tick up by 10bp and 8bp, respectively.

The *Distance x Precrisis* coefficients indicate a further decline in bank performance for distant acquisitions, but none of the results are statistically significant. The coefficients on operating income and ROE are -7bp and -140bp, respectively. All the risk coefficients are positive, with nonperforming loans and chargeoffs increasing by an additional 18bp and 9bp, respectively. Taken together, the results suggest that relative to nearby acquisitions in years other than 2005-2007, industry-adjusted bank performance for long-distance mergers that occurred in the pre-crisis period suffered a 27bp drop in operating income, a 3.43 percentage point drop in ROE, a 37bp increase in nonperforming loans, and a 22bp increase in chargeoffs.

Before turning to the consolidation sample, we address the issue of bank failures and survivorship bias. It is possible that several acquisition banks in the pre-crisis period failed less than two years later, so they are excluded from our sample. However, only one bank meets this criteria, and its target was just 31 miles away.

Table 5 presents the consolidation results for the Great Recession period. The results show a somewhat counterintuitive result in that there was a deterioration in bank performance for banks involved in consolidations during the pre-crisis period. We would expect the opposite results because these BHCs reorganized just before a severe downturn, presumably to tighten control over independent banks. For these consolidations, operating income declines 14bp, ROE falls 1.2 percentage points, nonperforming loans increase 30bp and chargeoffs increase 13bp. The statistically insignificant coefficients on *Distance x Precrisis* show little effect of distance on bank performance for consolidations that took place just before the financial crisis. Operating income is essentially unchanged, and nonperforming loans increase while chargeoffs decrease. In sum, the results suggest that BHCs that consolidated charters just before the crisis still had more difficulty managing their performance afterwards.

5. Conclusion

Theoretically, distance can have mixed effects on the success of bank acquisition. Geographic diversification and potential growth opportunities outside of the home market suggest that distance enhances post-acquisition performance while increased information asymmetries and higher managerial costs suggest that distance erodes post-acquisition performance. We defined nearly 1200 community bank acquisitions that occurred between 1988 and 2009 as either nearby or distant based on whether the merger entities were more than 100 kilometers apart, and then we evaluated the marginal impact that distance had on bank performance. The acquisition results suggest that distance negatively affects bank performance; profitability declines while risk increases. Performance further deteriorates if the acquisition takes place just before a severe economic downturn.

We also classified more than 700 community bank charter consolidations as nearby or distant using the same 100 kilometer threshold. Distance seem to have little effect on post-merger performance. However, banks that consolidated just prior to the Great Recession experienced worse performance than those that did not consolidate. These results are difficult to explain and require further analysis.

The bottom line for community banks is that long-distance acquisitions are riskier than nearby acquisitions, and they should be done only when management can justify the marginal risk and lower returns. Otherwise, banking in one's backyard appears to be the safer, more profitable strategy.

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Figure 1. Median distance between merger entities.
This figure plots median distance between merger entities for all community bank mergers between 1988 and 2009. Panel A plots acquisitions, or mergers where the entities were not owned by the same BHC at least one year prior to the merger. Panel B plots consolidations, or mergers where the entities were owned by the same BHC at least one year prior to the merger. Both figures exhibit strong preferences for nearby mergers, and they show upward trends, reflecting geographic deregulation and technological advancements in information sharing through the sample period.

Panel A. Acquisitions
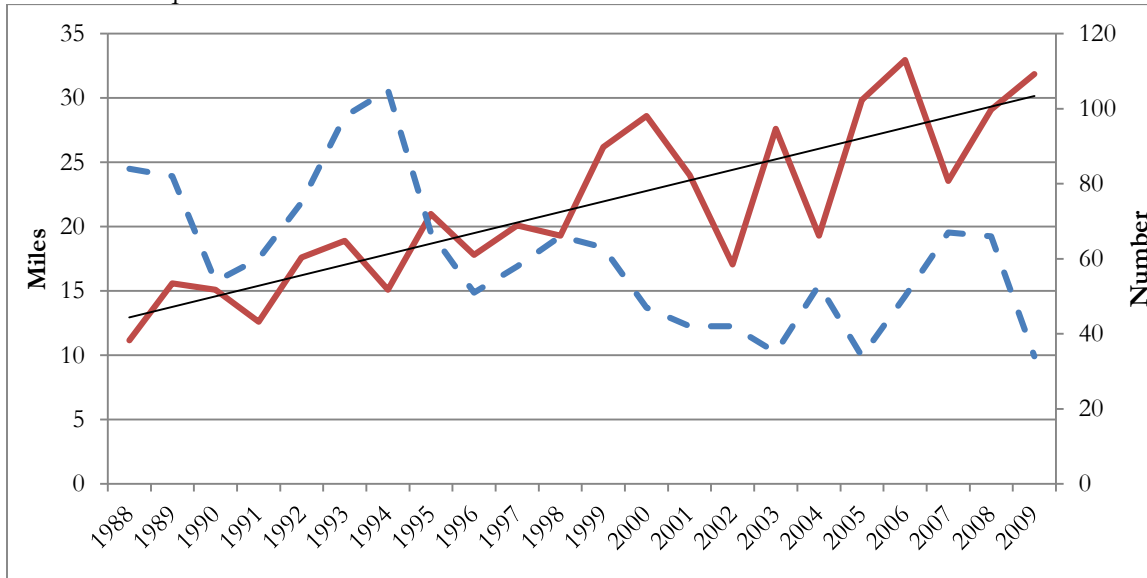
Panel B. Consolidations
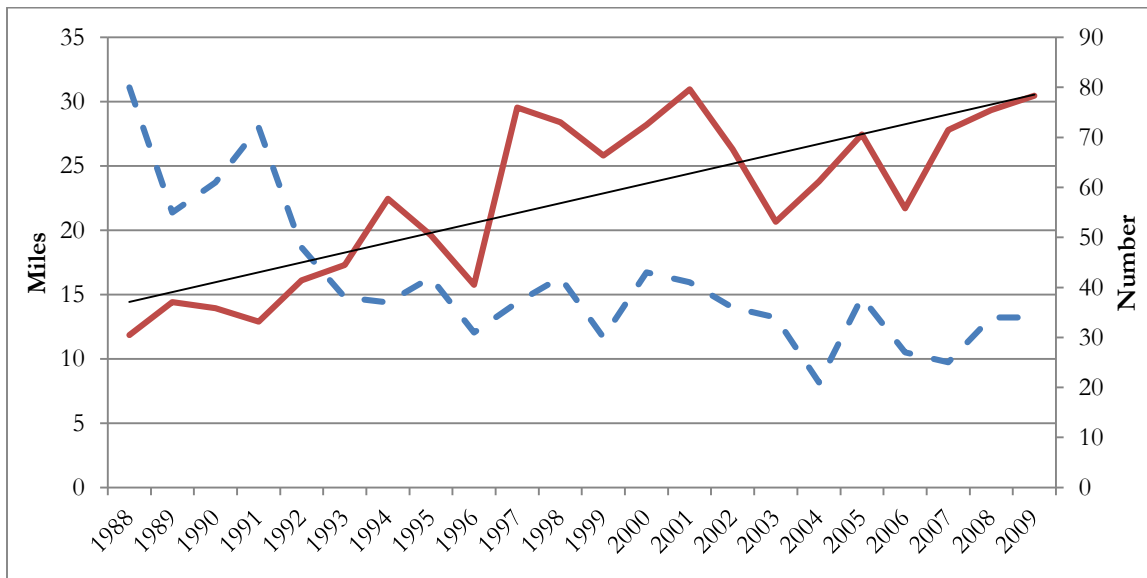
Table 1. Summary Statistics

This table displays the means of key variables for community bank acquisitions and consolidations. Each performance ratio is the difference between the bank ratio and the median industry ratio in the same quarter. Pre-merger includes the four quarters before the merger, and post-merger is the 12 quarters following the merger.

	Industry-adjusted ratio	Acquisitions			Consolidations		
		Pre-merger	Post-merger	Difference	Pre-merger	Post-merger	Difference
Income	Operating income (%)	-0.037	0.023	0.061	0.010	0.029	0.019
	ROE (%)	0.125	0.610	0.484	1.294	1.482	0.188
	Net interest income (%)	0.034	0.045	0.011	0.052	0.040	-0.012
	Noninterest income (%)	0.216	0.230	0.014	0.292	0.263	-0.029
Expense	Efficiency ratio (%)	1.403	0.164	-1.239	0.574	-0.345	-0.919
	Noninterest expense (%)	0.248	0.153	-0.094	0.258	0.116	-0.142
Risk	Std ROE (%)	1.711	1.802	0.091	1.662	3.245	1.583
	Nonperforming loans (%)	0.253	0.301	0.048	0.310	0.331	0.022
	Chargeoffs (%)	0.138	0.165	0.027	0.184	0.190	0.006

County characteristics	Acquirer	Target		Survivor	Non-survivor
Number of banks in county	10.8	9.9		13.0	11.8
Log of population	11.1	13.7		11.2	13.7
Rural status	0.5	0.6		0.5	0.6

Merger characteristics					
Number of mergers	1333			906	
Distance in miles	46.2			48.4	

Table 2. Effect of distance on acquisitions.

Variables	Income				Expense		Risk		
	Operating Income	ROE	Net interest income	Noninterest income	Efficiency ratio	Noninterest expense	Std ROE	Nonperforming Loans	Chargeoffs
Distant merger	-0.127**	-1.250***	0.001	-0.014	1.285*	0.047	1.073***	0.142**	0.073***
	(-2.108)	(-2.699)	(0.023)	(-0.587)	(1.727)	(1.320)	(2.697)	(2.436)	(3.173)
Target assets to acquirer assets	0.367***	3.135***	0.010	-0.070	-1.950	-0.221***	1.675*	-0.181**	-0.079**
	(2.861)	(2.807)	(0.130)	(-1.282)	(-1.154)	(-2.820)	(1.908)	(-2.135)	(-2.214)
Lagged acquirer dependent variable	-0.298***	-0.263***	-0.171***	-0.122***	-0.194***	-0.126***	-0.460***	-0.329***	-0.444***
	(-9.433)	(-8.235)	(-8.492)	(-4.151)	(-8.160)	(-5.455)	(-13.828)	(-8.810)	(-10.018)
No of banks in acquirer county	-0.001	0.000	0.001	0.001	0.017	0.003**	0.016	0.001	-0.000
	(-0.514)	(0.028)	(0.985)	(1.482)	(0.880)	(1.965)	(1.393)	(0.684)	(-0.173)
Log of acquirer county population	-0.012	-0.308*	-0.005	0.001	-0.210	-0.030*	0.132	0.023	0.018**
	(-0.565)	(-1.751)	(-0.341)	(0.094)	(-0.728)	(-1.764)	(0.955)	(1.172)	(2.380)
Rural status of acquirer county	0.001	-0.122	0.006	0.052**	-0.175	0.016	-0.003	0.085	0.018
	(0.021)	(-0.278)	(0.177)	(2.518)	(-0.258)	(0.463)	(-0.008)	(1.634)	(0.916)
Lagged target dependent variable	-0.150***	-0.158***	-0.040**	-0.024	-0.120***	-0.044***	-0.139***	-0.111***	-0.093***
	(-8.914)	(-10.293)	(-2.461)	(-1.136)	(-9.251)	(-3.644)	(-9.809)	(-6.160)	(-4.501)
No of banks in target county	-0.001	-0.013	-0.001	-0.001	0.012	-0.000	0.003	0.000	0.000
	(-0.317)	(-0.790)	(-1.053)	(-1.266)	(0.598)	(-0.161)	(0.241)	(0.135)	(0.465)
Log of target county population	-0.006	0.034	0.016	0.003	0.449*	0.017	0.026	-0.003	-0.000
	(-0.285)	(0.200)	(1.162)	(0.270)	(1.665)	(1.066)	(0.192)	(-0.149)	(-0.026)
Rural status of target county	0.000	0.338	0.019	-0.038*	0.441	0.002	-0.160	-0.120**	-0.037*
	(0.001)	(0.724)	(0.551)	(-1.774)	(0.641)	(0.062)	(-0.471)	(-2.160)	(-1.800)
Intercept	0.127	2.368	-0.094	0.021	-2.677	0.157	-1.458	-0.011	-0.078
	(0.537)	(1.240)	(-0.584)	(0.213)	(-0.863)	(0.930)	(-0.969)	(-0.050)	(-0.927)
Observations	1,178	1,172	1,169	1,175	1,172	1,168	1,127	1,181	1,181
R-squared	0.227	0.240	0.110	0.086	0.205	0.152	0.357	0.208	0.262

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3. Effect of distance on consolidations.

Variables	Income				Expense		Risk		
	Operating Income	ROE	Net interest income	Noninterest income	Efficiency ratio	Noninterest expense	Std ROE	Nonperform-ing Loans	Chargeoffs
Distant merger	0.097*	0.203	0.072*	-0.003	-0.973	0.002	0.461	0.064	0.009
	(1.758)	(0.399)	(1.819)	(-0.114)	(-1.403)	(0.056)	(0.814)	(0.957)	(0.405)
Non-survivor assets to survivor assets	-0.016***	-0.103***	-0.009***	0.020***	-0.514	-0.009***	0.285***	-0.018***	-0.005**
	(-5.689)	(-2.873)	(-5.917)	(11.926)	(-0.308)	(-4.094)	(10.649)	(-6.102)	(-2.058)
Lagged survivor dependent variable	-0.331***	-0.334***	-0.233***	-0.128***	-0.211***	-0.158***	-0.304***	-0.311***	-0.400***
	(-11.433)	(-9.571)	(-8.354)	(-3.626)	(-8.142)	(-4.218)	(-4.643)	(-7.959)	(-10.218)
No of banks in survivor county	0.002	0.014	0.001	-0.001**	-0.011	-0.001	-0.004	-0.001	-0.000
	(1.521)	(1.090)	(0.510)	(-2.058)	(-1.101)	(-0.925)	(-0.390)	(-0.612)	(-0.043)
Log of survivor county population	0.023	0.127	-0.003	0.000	-0.231	-0.016	0.050	-0.029	-0.018*
	(0.913)	(0.562)	(-0.157)	(0.020)	(-0.643)	(-0.872)	(0.222)	(-0.989)	(-1.779)
Rural status of survivor county	0.033	-0.173	-0.000	-0.022	-0.413	-0.059	0.479	0.031	-0.034
	(0.464)	(-0.273)	(-0.008)	(-0.701)	(-0.489)	(-1.205)	(0.871)	(0.413)	(-1.222)
Lagged non-survivor dependent variable	-0.072***	-0.092***	-0.045*	0.007	-0.062***	-0.013	-0.112***	-0.050*	-0.116***
	(-2.908)	(-3.427)	(-1.739)	(0.249)	(-3.112)	(-0.528)	(-3.070)	(-1.807)	(-3.503)
No of banks in non-survivor county	-0.003**	-0.011	-0.001	0.000	0.018	0.000	0.018	0.001	0.000
	(-2.226)	(-0.920)	(-1.140)	(0.778)	(1.534)	(0.319)	(1.626)	(0.915)	(1.050)
Log of non-survivor county population	-0.013	-0.271	0.019	0.004	0.136	0.005	0.001	0.034	0.010
	(-0.599)	(-1.328)	(1.091)	(0.328)	(0.445)	(0.315)	(0.005)	(1.262)	(1.021)
Rural status of non-survivor county	-0.000	0.129	0.017	-0.010	-0.404	-0.013	-0.251	-0.021	0.009
	(-0.001)	(0.198)	(0.437)	(-0.314)	(-0.508)	(-0.267)	(-0.446)	(-0.301)	(0.297)
Intercept	-0.077	2.461	-0.125	0.036	0.632	0.168	0.361	0.079	0.198
	(-0.255)	(0.921)	(-0.644)	(0.281)	(0.164)	(0.776)	(0.145)	(0.236)	(1.480)
Observations	717	716	715	718	715	712	690	717	719
R-squared	0.253	0.265	0.191	0.106	0.187	0.120	0.181	0.168	0.318

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Effect of distance on acquisitions during the financial crisis.

	Income				Expense			Risk		
Variables	Operating Income	ROE	Net interest income	Noninterest income	Efficiency ratio	Noninterest expense		Std ROE	Nonperforming Loans	Chargeoffs
Distant merger	-0.103*	-0.846*	0.018	-0.028	1.469*	0.054		1.039**	0.096	0.045**
	(-1.683)	(-1.785)	(0.464)	(-1.066)	(1.821)	(1.324)		(2.349)	(1.627)	(2.065)
Precrisis merger	-0.099	-1.200**	-0.015	-0.050**	-0.557	-0.083**		0.030	0.096	0.079***
	(-1.471)	(-2.425)	(-0.416)	(-2.310)	(-0.672)	(-2.245)		(0.080)	(1.445)	(3.176)
Distance merger x Precrisis merger	-0.065	-1.386	-0.073	0.091	-0.572	0.007		0.141	0.178	0.092
	(-0.354)	(-1.047)	(-0.830)	(1.467)	(-0.281)	(0.080)		(0.136)	(0.993)	(1.288)
Target assets to acquirer assets	0.362***	3.063***	0.006	-0.069	-2.024	-0.226***		1.680*	-0.172**	-0.074**
	(2.799)	(2.718)	(0.084)	(-1.283)	(-1.194)	(-2.831)		(1.916)	(-1.994)	(-2.047)
Lagged acquirer dependent variable	-0.298***	-0.261***	-0.171***	-0.123***	-0.194***	-0.128***		-0.460***	-0.329***	-0.438***
	(-9.471)	(-8.254)	(-8.390)	(-4.173)	(-8.177)	(-5.540)		(-13.816)	(-8.904)	(-9.885)
No of banks in acquirer county	-0.001	-0.001	0.001	0.001	0.016	0.003*		0.016	0.002	0.000
	(-0.596)	(-0.073)	(0.950)	(1.442)	(0.839)	(1.893)		(1.390)	(0.776)	(0.022)
Log of acquirer county population	-0.010	-0.281	-0.005	0.001	-0.198	-0.029*		0.131	0.020	0.017**
	(-0.479)	(-1.607)	(-0.300)	(0.110)	(-0.683)	(-1.682)		(0.942)	(1.014)	(2.202)
Rural status of acquirer county	0.001	-0.116	0.007	0.051**	-0.176	0.015		-0.003	0.083	0.018
	(0.022)	(-0.267)	(0.186)	(2.460)	(-0.259)	(0.451)		(-0.008)	(1.606)	(0.937)
Lagged target dependent variable	-0.148***	-0.156***	-0.040**	-0.024	-0.120***	-0.044***		-0.138***	-0.108***	-0.089***
	(-8.877)	(-10.174)	(-2.463)	(-1.174)	(-9.317)	(-3.659)		(-9.824)	(-6.013)	(-4.380)
No of banks in target county	-0.001	-0.014	-0.001	-0.001	0.012	-0.000		0.003	0.000	0.000
	(-0.337)	(-0.824)	(-1.054)	(-1.284)	(0.589)	(-0.171)		(0.242)	(0.137)	(0.477)
Log of target county population	-0.006	0.026	0.016	0.003	0.445*	0.017		0.027	-0.001	0.001
	(-0.317)	(0.157)	(1.143)	(0.246)	(1.648)	(1.043)		(0.194)	(-0.049)	(0.072)
Rural status of target county	-0.007	0.254	0.018	-0.041*	0.401	-0.003		-0.157	-0.111**	-0.031
	(-0.128)	(0.548)	(0.509)	(-1.918)	(0.581)	(-0.095)		(-0.460)	(-2.017)	(-1.547)
Intercept	0.132	2.380	-0.094	0.030	-2.649	0.160		-1.455	-0.017	-0.082
	(0.560)	(1.259)	(-0.587)	(0.307)	(-0.850)	(0.945)		(-0.958)	(-0.075)	(-1.004)
Observations	1,178	1,172	1,169	1,175	1,172	1,168		1,127	1,181	1,181
R-squared	0.230	0.249	0.111	0.090	0.206	0.156		0.357	0.214	0.280

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Effect of distance on consolidations during the financial crisis.

Variables	Income				Expense		Risk		
	Operating Income	ROE	Net interest income	Noninterest income	Efficiency ratio	Noninterest expense	Std ROE	Nonperform-ing Loans	Chargeoffs
Distant merger	0.102*	0.289	0.074*	-0.005	-0.855	0.001	0.437	0.042	0.019
	(1.767)	(0.527)	(1.683)	(-0.191)	(-1.111)	(0.024)	(0.705)	(0.614)	(0.791)
Pre-crisis merger	-0.138	-1.192	-0.049	-0.016	-0.498	-0.081**	0.317	0.296***	0.132***
	(-1.567)	(-1.645)	(-1.036)	(-0.539)	(-0.580)	(-2.083)	(0.723)	(2.792)	(3.318)
Distance merger x Precrisis merger	-0.006	-0.354	-0.005	0.022	-0.723	0.032	0.090	0.078	-0.101
	(-0.032)	(-0.248)	(-0.052)	(0.416)	(-0.487)	(0.430)	(0.066)	(0.416)	(-1.381)
Non-survivor assets to survivor assets	-0.016***	-0.104***	-0.009***	0.020***	-0.475	-0.010***	0.286***	-0.018***	-0.005*
	(-5.644)	(-2.858)	(-5.984)	(11.898)	(-0.285)	(-4.177)	(10.679)	(-5.959)	(-1.933)
Lagged survivor dependent variable	-0.327***	-0.330***	-0.233***	-0.128***	-0.212***	-0.159***	-0.302***	-0.306***	-0.389***
	(-11.539)	(-9.518)	(-8.357)	(-3.612)	(-8.192)	(-4.255)	(-4.619)	(-7.892)	(-9.963)
No of banks in survivor county	0.002	0.013	0.001	-0.001**	-0.012	-0.001	-0.003	-0.000	-0.000
	(1.494)	(1.061)	(0.503)	(-2.038)	(-1.139)	(-0.929)	(-0.377)	(-0.523)	(-0.096)
Log of survivor county population	0.021	0.114	-0.004	-0.000	-0.230	-0.017	0.053	-0.026	-0.016
	(0.858)	(0.507)	(-0.186)	(-0.002)	(-0.636)	(-0.922)	(0.234)	(-0.893)	(-1.573)
Rural status of survivor county	0.026	-0.243	-0.003	-0.022	-0.447	-0.063	0.498	0.047	-0.028
	(0.360)	(-0.384)	(-0.071)	(-0.718)	(-0.529)	(-1.289)	(0.902)	(0.638)	(-1.016)
Lagged non-survivor dependent variable	-0.073***	-0.092***	-0.046*	0.007	-0.062***	-0.013	-0.111***	-0.049*	-0.116***
	(-2.932)	(-3.452)	(-1.763)	(0.230)	(-3.088)	(-0.560)	(-3.051)	(-1.753)	(-3.516)
No of banks in non-survivor county	-0.003**	-0.010	-0.001	0.000	0.018	0.000	0.018	0.001	0.001
	(-2.191)	(-0.880)	(-1.125)	(0.750)	(1.575)	(0.316)	(1.605)	(0.811)	(1.124)
Log of non-survivor county population	-0.018	-0.324	0.017	0.003	0.103	0.003	0.016	0.048*	0.014
	(-0.842)	(-1.557)	(0.951)	(0.297)	(0.333)	(0.157)	(0.083)	(1.799)	(1.358)
Rural status of non-survivor county	-0.012	0.026	0.013	-0.012	-0.453	-0.020	-0.221	0.005	0.020
	(-0.171)	(0.040)	(0.323)	(-0.354)	(-0.569)	(-0.420)	(-0.389)	(0.080)	(0.647)
Intercept	0.024	3.387	-0.087	0.045	1.066	0.222	0.101	-0.159	0.114
	(0.078)	(1.239)	(-0.442)	(0.348)	(0.273)	(1.008)	(0.040)	(-0.486)	(0.855)
Observations	717	716	715	718	715	712	690	717	719
R-squared	0.258	0.270	0.192	0.106	0.188	0.123	0.182	0.191	0.335

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1