

Bank Diversification and Lending Resiliency

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Abstract

In this paper, we show the benefits of bank asset diversification for the economy. A more diversified stream of earnings enables banks to better absorb negative shocks, leading to increased and more stable lending. This, in turn, provides positive spillovers to the economy. By using changes in bank regulation as exogenous shocks to diversification, we show these banks increase lending supply to bank-dependent and riskier firms. During crisis periods, banks with higher levels of geographic or business-line diversification maintain credit supply relative to less diversified banks and support the economy when it is needed most. Our results speak to the long-standing debate in the literature and among policy makers about whether the expansion of banks into new activities benefits or threatens the economy, and provide some counterbalance to concerns about systemic risk.

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A central question among policy makers and in the banking literature is whether the expansion of banks benefits or threatens the economy. On the one hand, diversification increases the resiliency of individual banks to idiosyncratic shocks and allows for additional liquidity and investment opportunities to savers (Yellen, 2013). On the other hand, certain non-bank activities, such as the relatively complex derivatives business, are associated with the negative outcomes during the 2008 financial crisis (Mian and Sufi, 2009; Mukherjee and Vig, 2010). Bank expansion may also lead to more homogeneous and interconnected banks, heightening systemic risk and seeding potential future crises.¹

In this paper, we study the positive effects of bank diversification. We show that asset diversification leads to a higher and more stable credit supply, providing positive spillovers to the economy. We argue that as banks expand into new activities and markets, this reduces the correlation of their various earnings streams. In response, banks increase their lending activity, even to riskier segments such as small, bank-dependent firms, without taking substantially more overall risk. Further, their credit supply becomes more resilient to negative systematic shocks. This lending resiliency of more diversified banks is especially important during crisis periods, when maintaining credit availability is of paramount importance. These benefits of asset diversification, that have not yet been fully explored, provide some counterbalance to concerns about systemic risk.

We consider two major types of diversification. First, we look at the geographic expansion of small business lending activity by banks across U.S. states. Geographic diversification enables banks to gain exposure to customers in areas that are imperfectly correlated with their existing pool of loans. Given the local nature of small business activity, this measure captures a bank's footprint in different areas. Second, we consider the expansion of banks into non-bank activities. Our particular focus is the entrance of banks into the insurance underwriting business. Insurance activities diversify earnings for the bank, as different factors drive earnings in insurance services

¹Papers that have theoretically considered this risk include Acharya (2009), Ibragimov, Jaffee, and Walden (2011), Wagner (2010, 2011), and Goldstein, Kopytov, Shen, and Xiang (2020).

and commercial lending. While business line diversification through insurance acquisition is expected to reduce bank earnings volatility (Boyd, Graham, and Hewitt, 1993; Lown, Osler, Sufi, and Strahan, 2000), its exact effects are relatively underexplored.

These types of diversification have become increasingly common over time. In 1999, the median bank conducted small business lending across three states, whereas in 2017 the median bank is active in seven states. Before 1999, banks were not permitted to engage in insurance underwriting, while as of 2017, 49% of banks reported having at least one domestic insurance subsidiary.

Although size and diversification are considered closely related, this is not always the case. The cross sectional correlation between the bank's total assets and the number of states it conducts small business lending was 0.29 in 2017, while the correlation between assets and having an insurance subsidiary is 0.13. For example, Axos Financial operates in all states across the U.S., but was ranked as the 112 largest BHC by assets.

We establish that for a given bank, increased geographic diversification and expansion into insurance are associated with a higher and more stable loan supply. Using the log number of states a bank operates in as our measure of geographic diversification, we find that a one standard deviation increase in the measure is associated with a 2.8% quarterly increase in lending. A one standard deviation increase in the log number of insurance subsidiaries is associated with 1.5% more lending each quarter. Lending by banks with higher measures of diversification is also less sensitive to business cycle conditions.

Lending resiliency of more diversified banks is especially important during declines in business activity. Bank lending is critical to encourage economic recovery, as prolonged credit scarcity further inhibits growth (Bernanke and Gertler, 1995; Peek and Rosengren, 1997, 2000; Bebhuk and Goldstein, 2011). Focusing on the 2008 financial crisis, we find that better diversified banks maintained more lending than less diversified banks during the crisis. Exploiting the heterogeneity in diversification prior to the onset of the crisis, the most geographically diversified banks had 11.5% more total lending than the least diversified banks. Banks with an

established insurance subsidiary before the crisis had about 3% more lending during the crisis compared to other banks.

Next, we show that banks maintain credit supply during 2008 crisis across different lending segments. For real estate lending, we find the most geographically diversified banks maintained 5.8% higher lending levels than the least geographically diversified banks. Banks with an insurance subsidiary kept 2.9% more lending than a bank without an insurance subsidiary. For commercial and industrial (C&I) lending, geographically-diversified banks lent 3.3% more and banks with an insurance subsidiary lent 5.78% more over the crisis period, compared to their less diversified peers.

If more diversified banks are better able to continue lending despite a strong systematic shock, like the 2008 crisis, we should see this for riskier categories of lending in particular. To test this idea, we focus on small business lending, a highly bank-dependent and riskier segment by its nature and an economically important one.² As this type of lending is reported at a granular county-level, we can better gauge to what extent lending amounts are a result of bank capital supply, and not just variation in loan demand.

In a given county and year, we find the most geographically-diversified banks maintain twofold higher levels of small business lending during the crisis, compared to the least diversified banks. Although certain non-bank activities, such as relatively complex derivatives business, are associated with much of the negative fallout from the crisis (Mian and Sufi, 2009; Mukherjee and Vig, 2010), for insurance we find the opposite. Banks with an established insurance subsidiary maintain 11% higher levels of lending than otherwise similar banks in a given county and year. In the spirit of Khwaja and Mian (2008), these results are while controlling for local economic conditions using county-year fixed effects. Rather than an artifact of loan demand, we find that more diversified banks choose to provide a higher loan supply in these

²Small firms accounted for 45% of GDP (SBA, 2010) and over 99% of American firms are small businesses. They employ 47% of the private workforce (SBA, 2020) and account for over half of net job creation (Census, 2014). At the same time, smaller firms are exposed to higher financial constraints due to frictions such as agency and moral hazard problems or the inability to provide strong collateral (Holmstrom, 1979; Holmstrom and Tirole, 1997).

counties.

While we find evidence that more diversified banks maintain higher levels of small business lending, a remaining question is the importance of this effect on the broader economy. To answer this question, we aggregate banks within each county to measure the overall impact of diversification on county-level lending and employment. We find that counties with a higher share of diversified banks experience higher aggregate small business lending. For a one standard deviation increase in county diversification, aggregate lending increases by about 3.5% and 2.1% for geographic and insurance diversification, respectively. More diversified banks do not simply capture market share from other banks, but rather their activity helps stabilize the amount of lending in a county overall.

Subsequently for employment, we establish meaningful positive real effects from this difference in lending. We find counties with more diversified banks have higher employment than those with fewer diversified banks. For a one standard deviation increase in county-level diversification, there is 0.8% higher employment in the geographic diversification case, and 0.4% higher employment in the insurance diversification case.

While we argue these effects are coming from a diversification channel, there are other related bank characteristics that may play a role. More diversified banks are likely to be larger and have different risk profiles. Indeed, there is mixed evidence on whether geographic diversification (domestic or international) increases or decreases bank risk (Goetz, Laeven, and Levine, 2016; Berger, El Ghoul, Guedhami, and Roman, 2017). Further, much of the regulatory concerns raised focus on the size of banks as the salient dimension.

To disentangle these issues, in our specifications we control for the amount of assets and proxies for bank risk, allowing the crisis to have effects along these dimensions. Our results can therefore be interpreted as measuring the effect of diversification controlling for bank size, risk, and other salient characteristics, meaning that diversification plays an important role for bank lending policy beyond these bank-specific characteristics.

As diversification reduces the idiosyncratic risk but not necessarily the systematic risk of

the bank, its effect on the sensitivity of banks to economic conditions is not straightforward. Focusing on the 2008 crisis, we find that more diversification is associated with higher systematic risk but lower idiosyncratic risk. However, consistent with prior evidence regarding the positive association between systematic and idiosyncratic risk (Campbell, Lettau, Malkiel, and Xu, 2001; Kalay, Nallareddy, and Sadka, 2018), we find a significant increase in idiosyncratic risk in the 2008 crisis. Given their lower idiosyncratic risk, the more diversified banks maintain more lending despite the shock.

Both types of diversification reduce the correlation of banks' cash flows and allow banks to maintain higher lending levels relative to more concentrated banks. However, geographic diversification may also have a beneficial effect on the cost and availability of banks' funding (Levine, Lin, and Xie, 2020; Doerr and Schaz, 2021). Therefore, we control for the geographic breadth of lending activity apart from the geographic breadth of funding. We show that our results are coming from the diversification of bank assets, separate from funding diversification.

To further address these endogeneity concerns, we use changes in bank regulation as exogenous shocks to diversification. We focus on these shocks' impact on the credit supply and its resilience on the credit supply to bank-dependent firms (i.e., small businesses), as we are best able to control for potential confounding demand factors in this setting.

For geographic diversification, we rely on the staggered relaxation of state-level banking restrictions as a set of exogenous shocks in a difference-in-differences framework. Specifically, the Riegel-Neal Interstate Banking and Branching Efficiency Act of 1994 removed several obstacles to banks opening branches in other states and reduced barriers to within-state expansion. The dates vary for each state's exact implementation of the act and the changes have been shown to be exogenous to the individual banks (Rice and Strahan, 2010; Krishnan, Nandy, and Puri, 2014). To help address the endogenous choice of expansion, we only focus on those banks which already had some lending footprint in the affected state prior to its deregulation. We compare their lending behavior to other untreated banks that lend in a common set of unaffected states. Our assumption is that these banks only adjust their lending in unaffected states,

relative to other banks, because of their expansion in lending in the deregulated state. We find that when a bank experiences a relaxing of branching restrictions in a particular state (the deregulated state), it increases small business lending in otherwise unaffected states by about 10% relative to the untreated banks.

For business line diversification, our identification strategy uses the newfound ability of banks to undertake insurance underwriting following the passage of the Gramm–Leach–Bliley Act in 1999. It repealed part of the Glass-Steagall Act of 1933 and allowed financial institutions to combine commercial lending, investment banking, and insurance activities. We compare the small business lending activities of banks that acquire or begin an insurance subsidiary to those banks that do not. Our identifying assumption is that the only reason these banks would change lending is through the diversifying effect of adding insurance underwriting into the bank’s organizational structure. We find evidence that these banks increase small business lending around 43% relative to their peer banks.

Aggregating lending to a county level, we find that a higher percentage of diversified banks increases lending. We find aggregate lending is 3.2% higher for a one standard deviation increase in the number of treated banks in a county. A one standard deviation increase in county-level exposure to the insurance diversification is associated with a 6.1% increase in lending. These effects lead to positive spillovers to the economy. These increases in county-level exposure to diversification are associated with 0.4% and 0.2% higher employment in the geographic and insurance cases, respectively.

The main contribution of this paper is to establish that asset diversification leads to a higher and more stable credit supply, providing positive spillovers to the economy. We are the first to show that the combination of insurance activities with traditional banking, as well as geographic diversification, enable banks to better absorb systematic and idiosyncratic shocks. Past work on bank diversification has focused on the sources of funding (Levine, Lin, and Xie, 2020), the risk implications (Demsetz and Strahan, 1997; Goetz, Laeven, and Levine, 2016; Berger, El Ghoul, Guedhami, and Roman, 2017), or its effects on bank profitability and shareholder value (De-

Long, 2001; Stiroh and Rumble, 2006; Laeven and Levine, 2007; Schmid and Walter, 2009). While this literature has come to mixed conclusions on whether diversification is beneficial at a bank level, we find asset diversification leads to positive spillovers from increased lending activity.

We also show the implications of bank diversification on lending to bank-dependent firms. Other papers have considered the dynamics of small business lending by focusing on the relationships between banks and firms (Santikian, 2014; Beck, Degryse, De Haas, and van Horen, 2018), the spillover effects from tax policy (Smolyansky, 2019), and lending changes around the financial crisis (Berger, Cerqueiro, and Penas, 2014; Bord, Ivashina, and Taliaferro, 2018; Cortés, Demyanyk, Li, Loutskina, and Strahan, 2020). Our contribution is to show the effect of bank asset diversification on small business lending and employment.

Our results contribute to the long-standing debate in the literature and among policy makers about whether the expansion of banks into new activities benefits or threatens the economy, and how far banks should be permitted to expand. In the United States, there have been many significant regulatory reforms regarding the nature of banks and their activities. In this paper, we highlight that bank diversification is beneficial for loan supply during crisis periods. Our results may help offset concerns that a higher interdependence among banks caused by asset diversification may lead to risk contagion and a rise in systemic risk (Ibragimov, Jaffee, and Walden, 2011; Wagner, 2011; Allen, Babus, and Carletti, 2012; Berger, El Ghouli, Guedhami, and Roman, 2017; Chu, Deng, and Xia, 2019).

Finally, our paper speaks to the broader question about the optimal boundaries of the firm. There is a large literature that considers the benefits and costs of firms diversifying across business activities. On the positive side, diversification may increase firm access to better productive opportunities (Gomes and Livdan, 2004) or bring more effective monitoring by the capital provider and better asset deployment (Gertner, Scharfstein, and Stein, 1994; Stein, 1997). On the negative side, it may reduce entrepreneurial incentives and firm frictions may lead to cross-subsidization, divisional rent-seeking, or other agency conflicts that result in inefficient resource

allocation (Jensen, 1986; Lamont, 1997; Shin and Stulz, 1998; Scharfstein and Stein, 2000). In our case, we show diversification benefits the core business of banks rather than distracts from it. These benefits spill over to the broader economy through the positive real effects from increased lending.

The remainder of the paper is organized as follows. In Section I, we discuss the sources of data, our measures of diversification, and other variables used in the analysis. In Section III, we analyze the role of diversification on lending during the financial crisis. Section IV uses exogenous shocks to diversification to better understand the effects of diversification on bank lending. Section V considers the spillovers from diversification to the broader economy. Section VI concludes.

I Data

For our analysis, we bring together a few sources of data. The majority of our bank-level variables are from the Federal Reserve's quarterly Y-9C (consolidated bank holding company data) reports.³ For our small business lending data, we use the Federal Financial Institutions Examination Council's (FFIEC) Community Reinvestment Act (CRA) small business lending data. We match and aggregate the small business lending data to the BHC parent level. We also collect the quarterly organizational structure of all the BHCs in our sample. Available from the FFIEC's National Information Center (NIC), the data provides the complete subsidiary structure of each bank, including the institution names, Federal Reserve identifiers (RSSD IDs), location, and a categorization of each institution type. For bank deposit data, we use the FDIC's Summary of Deposits data, aggregated to the BHC level. For additional county-level economic data, such as employment, we use the data provided by the U.S. Bureau of Economic Analysis.

Our data sample runs from 1996, when the small business lending data begins, until 2017.

³Throughout our paper, we consider banks at a bank holding company (BHC) level. We often refer to BHCs as banks for simplicity.

We conduct our aggregate BHC-level lending analysis on a quarterly level. As the small business lending data is annual, the small business lending analysis is at an annual level. To have our sample be comparable throughout, we require that banks report their small business lending activity in the CRA dataset to be included. The summary statistics for the variables are presented in Table I.

I.A Measures of diversification

We measure diversification among two dimensions in this paper. For geographic diversification, we consider the number of states where the bank operates. Specifically, using the CRA data, we define *No. of States, Lending* as the number of states that a bank reports some small business lending activity in a given year.⁴ Separately, we also count the number of states where banks report deposit activity (*No. of States, Deposits*). Interestingly, we find the majority of banks have larger lending than deposit footprints. The median bank in our sample lends in three times as many states as it reports deposits. This difference suggests that banks can have quite different geographic diversification when it comes to their assets and liabilities, and controlling for both types of diversification separately may be important.

For business line diversification, we focus on identifying which banks have a domestic insurance subsidiary. Using the organizational data from the NIC, we categorize domestic insurance subsidiaries as those domiciled in the United States with a charter code of 550, which covers insurance brokers, agents, underwriters, or insurance companies. Over our entire sample, 26% of BHC observations have at least one domestic insurance subsidiary in their structure.

I.B Other bank variables

We consider three categories of lending at the BHC level: total loans, real estate loans, and C&I loans. We use the reported values of the loan types from the quarterly BHC balance sheet data.

⁴The measure counts each distinct state FIPS code, which includes Washington D.C. and U.S. territories such as Puerto Rico. Limiting our analysis to the fifty states does not change our results.

For small business loans (SBL), this is the total volume originated by a bank in a year. Small-business loans are those loans whose original amounts are \$1 million or less and fall into either the “Loans secured by nonfarm or nonresidential real estate” or “Commercial and industrial loans” categories on a bank’s Call Reports. All banks over a certain threshold of total assets are required to report this data.⁵ Importantly for our purposes, this small business lending data is reported at a county-level, which allows us to more robustly control for economic conditions in the specific area.

Apart from lending data, we include other common bank-level variables such as the natural logarithm of total assets (*Log Assets*), *Equity to Assets*, and *Deposits to Assets*. As a measure of bank profitability, we calculate the bank’s average ROA over the past three years (*Average ROA*) and the bank’s *Z-Score* as a measure of the total risk of the bank. For some analysis, we include the bank’s three-year growth in loans (*Loan Growth*) and its fraction of originated SBL (at a BHC level) to its total balance sheet loans at the end of the year (*SBL to Loans*). The summary statistics for these variables are reported in Table I.

I.C County variables

Apart from bank-level variables, we include a few county-level variables as well. Specifically, we aggregate all the SBL in a given county and year to measure the aggregate amount of small business lending. To investigate the impact of small business lending on the county economy, we use a measure of small business employment. Specifically, we use the total full-time and part-time employment for nonfarm proprietors. The BEA estimates this employment data using IRS data from tax return forms primarily submitted by small businesses.

When we consider the effects of diversification at a county-level, we need aggregate versions of our diversification measures and other control variables. To accomplish this, we create

⁵The threshold is \$250 million for the earlier part of our sample (1996-2006). Starting in 2007, the FFIEC began annual updates of the asset threshold level required for reporting. For 2007, the asset threshold was increased to \$1.033 billion. By 2017, the threshold reached \$1.226 billion. See <https://www.ffiec.gov/cra/reporter.htm> for the yearly thresholds.

county-level weighted-averages of our main variables. For weights, we use each bank’s reported SBL amount in a county from a prior period, depending on the particular analysis. For the financial crisis, we use the SBL amounts at the end of 2006. For the analysis of the shocks to geographic or business-line diversification, we use the SBL amount in the year prior to the shock.⁶ We use past SBLs for aggregate weights, as opposed to deposits, because of the evidence that many banks report small business loans in states where they do not report collecting deposits.

II Diversification and bank lending

We start our analysis by examining the effect of a bank’s diversification on its lending levels and lending sensitivity to aggregate business cycle conditions. To this end, we perform the following specification:

$$Y_{it} = \beta_1 \text{Diversification Var.}_{it-1} + \beta_2 \text{Diversification Var.}_{it-1} \times \text{Log GDP}_{t-1} + \beta_3 \text{Bank Controls}_{it-1} + \alpha_i + \gamma_t + \varepsilon_{it}. \quad (1)$$

Where Y_{it} is either *Log Loans*, measured as the log amount of total loans for bank i in quarter t , or *Loans to Assets* calculated as the bank’s quarterly total loans scaled by its total assets. Our proxy for the changes in the business cycle conditions is *Log GDP*, measured as the log of the quarterly national real gross domestic product (in billions of chained 2012 dollars, seasonally adjusted). *Diversification Var.* is one of two indicator variables for bank diversification: *Log No. States, Loans* is the log of the number of states with reported bank lending activity, or *Log No. Insurance Subsidiaries* which stands for the log of one plus the number of domestic insurance subsidiaries in the bank’s organizational structure. To test whether asset diversification affects lending beyond deposit diversification, we control for *Log No. States, Deposits*, calculated as

⁶See Section IV for more details on the specific shocks.

the log of the number of states with reported bank deposits. Additionally, We control for other bank characteristics that likely relate to lending activity: *Log Assets* is the log of the bank's total assets, *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard's deviation), *Average ROA* is the bank's average quarterly ROA over the past three years (as a percent), *Equity to Assets* is the bank's equity to assets ratio, and *Deposits to Assets* is the bank's deposits to assets ratio. We include bank fixed effects to account for any bank time-invariant characteristics and year-quarter fixed effects to control for macroeconomic factors that influence all banks in a given quarter. Standard errors are clustered by bank and the sample period is between 1997-2017.

Table II presents the results of this specification. In Columns 1-3, we use *Log Loans* as the outcome variable, and in Columns 4-6 we use *Loans to Assets*. Panel A presents the results for the geographical diversification measure and Panel B for the business line diversification measure.

We find a positive association between the bank's diversification and its loan portfolio. In Panel A, the coefficient estimate of *Log No. States, Loans* is significantly positive, indicating that for a given bank, geographical diversification enhances credit supply. The magnitude of this result is meaningful. A one standard deviation increase in log number of states increases the bank's quarterly total loan supply by 2.8%, and loans scaled by assets by 1.5% (using Columns 3 and 6 of Panel A, respectively). We find similar results for *Log No. Insurance Subsidiaries*. A one standard deviation change in this measure is associated with a 0.8% increase in loans to assets (using Columns 6 of Panel B).

Not only the more diversified banks increase lending, but their credit supply is also more resilient to aggregate business cycle shocks. The coefficient of the interaction term *Diversification Var. × Log GDP* is negative for both types of diversification. This implies that for a one standard deviation decrease in log GDP, banks with one standard deviation higher geographical or business segment diversification maintain more of their credit supply (scaled by assets) by 0.8% and 0.5% respectively.

As banks expand into new activities and markets, the correlation between their various earnings streams decreases. This leads to higher and more resilient credit supply. The results show that asset diversification has a meaningful effect on the bank’s credit supply separate from other bank characteristics. Differences in bank size, risk, profitability, or the geographic diversification of deposit funding cannot explain the effect of asset diversification.

To further analyze asset diversification, in Section III we study how a shock to the business cycle affected bank lending supply and lending stability during the 2008 financial crisis, and the implications on the real economy. Then, in Section IV we analyze the impact of shocks to bank diversification on bank lending and the positive spillovers to the economy.

III Diversification and lending during the financial crisis

III.A Bank-level lending behavior

Next, we consider how differences in diversification affected banks’ lending behavior during the 2008 financial crisis. Our reason for considering this period is two-fold. First, it provides an unanticipated shock to bank lending with which we can better understand the effect of bank diversification. Second, any positive effects of bank structure on lending during a crisis period is important in itself, as lending is an important factor for economic recovery, and for bank-dependent firms in particular (e.g., Kang and Stulz, 2000; Paravisini, 2008).

To analyze the impact of diversification in a time of crisis, we estimate different versions of the following specification:

$$Y_{it} = \beta_1 \text{Diversification Var.}_{i,\text{Pre-Crisis}} \times \text{Post-Crisis}_t + \beta_2 \text{Bank Controls}_{i,\text{Pre-Crisis}} \times \text{Post-Crisis}_t + \alpha_i + \gamma_t + \varepsilon_{it}. \quad (2)$$

Here Y_{it} represents different lending variables for bank i in quarter t . *Post-Crisis* is an indi-

cator variable for the crisis period, which begins in 2007Q3. *Diversification Var.* is one of two indicator variables for bank diversification: *High Geographic Diversification* or *Insurance Subsidiary*. For geographical diversification, we divide the sample into quartiles based on the number of states in which each bank operated in 2007Q2. *Diversified* equals one for the banks in the top quartile (ten or more states) and zero for banks in the bottom quartile (three or fewer states). To clearly identify the effect of diversification, we exclude the middle two quartiles from the analysis. In unreported results, we find similar effects if we use the natural logarithm of the number of states in which the bank lends as a continuous measure of geographic diversification and include all the banks in the sample. For business segment diversification, *Insurance Subsidiary* indicates whether a bank acquired its first insurance subsidiary before 2007. In addition to our main diversification measures, in *Bank Controls* we include other bank characteristics that likely relate to lending activity, such as *Log Assets*, *Z-Score*, *Average ROA*, *Equity to Assets*, and *Deposits to Assets*.

Here, we choose to fix our control variables at their 2007Q2 values and interact each control variable with the *Post-Crisis* indicator for two reasons. First, as the crisis also affects many of the other bank controls, we seek to avoid changes in those variables affecting our outcomes of interest (i.e., the “bad controls” problem as discussed in Angrist and Pischke, 2009). Second, by interacting these variables with the crisis indicator, we can control for a host of alternative channels that are correlated with but not the exact diversification mechanism in which we are interested. For example, more diversified banks tend to be larger and more profitable. It could be that a bank’s pre-crisis size or profitability has an effect on its crisis lending separate from its diversification. In all specifications, we include bank fixed effects (α_i), time fixed effects (γ), and cluster standard errors by bank. We focus on a time window around the crisis, from 2005Q1 through 2010Q4.

Panel A of Table III presents the results for the effect of geographic diversification on lending, and Panel B for the effect of business segment diversification on lending. Columns 1-6 use the logarithm of loans as the dependent variables: Columns 1-2 consider total loans, Columns

3-4 consider real-estate loans, and Columns 5-6 consider C&I loans. Columns 7-12 present the results of the same outcome variables scaled by the bank's total assets. For similar reasons as our other control variables, we use the bank's total assets as of 2007Q2 as our scaling factor.

In both panels, we find a positive coefficient for interaction term *Diversified*×*Post-Crisis*, meaning that more diversified banks maintain their lending during the crisis relative to less diversified banks. Focusing on total lending and geographic diversification (Panel A), we find that the most geographically diversified banks had 10.6% higher lending in the crisis and post-crisis period than the least geographically diversified banks (Column 1).⁷ In Column 2, we include other pre-crisis variables interacted with the *Post-Crisis* indicator. We find a very similar effect for geographic diversification. This means that our diversification measure is not simply picking up differences in size, risk, or other characteristics that correlate with diversification but could presumably have unique impacts on lending during the crisis. As a prior literature has found that bank diversification also has implications for the funding of banks (Levine, Lin, and Xie, 2020; Doerr and Schaz, 2021), in Column 2, we separately control for the geographic breadth of funding sources (*Log No. States, Deposits*). We do not find a meaningful effect of funding diversification on lending in our setting.⁸

We find similar economic effects if we focus on real estate loans (Columns 3 and 4) or C&I loans (Columns 5 and 6). Although the estimates of geographic diversification on the log of C&I loans are not statistically significant, we find more statistically robust estimates when scaling C&I loans by assets (Columns 11 and 12). The increases in both types of loans are of a similar economic magnitude. Overall, geographic diversification is associated with more robust lending during and immediately following the crisis. These results appear specific to a bank having more diversified loan assets and are not explained by differences in bank size, risk, profitability, or the geographic diversification of deposit funding.

⁷Since the specification includes bank and time fixed effects, the standalone coefficients for *Post-Crisis*, *High Geographic Diversification*, and the other fixed bank control variables are absorbed.

⁸In unreported results, we also do not find funding diversification to have a significant effect if we exclude our *High Geographic Diversification* measure.

Panel B of Table III shows that having an established insurance subsidiary before the crisis is associated with about 3% more lending during the crisis, compared to other banks (Column 1). Similar to Panel A, all of the columns identify a positive effect of diversification going into the crisis on different types of lending, although a couple of the estimates are not statistically significant. Like in Panel A, these results are robust to allowing for other prominent bank characteristics to explain the change in lending behavior during the crisis period.

Although different in nature, both types of diversification reduce the correlation of banks' cash flows. In times of crisis, there are spikes in uncertainty and counterparty risk. The fact that more diversified banks maintain higher levels of lending during such times, relative to more concentrated banks, is clearly beneficial to the broader economy.

III.B Small business lending behavior

In this section, we focus on small business loans, a riskier segment of lending by its nature but an important one for the economy. Small business lending has the additional benefit that it is available at a very granular county level, which allows us to more robustly control for loan demand. Specifically, we run the following specification:

$$Y_{ict} = \beta_1 \text{Diversification Var.}_{i,\text{Pre-Crisis}} \times \text{Post-Crisis}_t + \beta_2 \text{Bank Controls}_{i,\text{Pre-Crisis}} \times \text{Post-Crisis}_t + \alpha_{ic} + \gamma_{ct} + \varepsilon_{ict}, \quad (3)$$

where Y_{ict} represents the logarithm of small business lending for bank i in county c in year t . As small business lending is on an annual basis, we necessarily perform our analysis at that level. As a result, we shift our *Post-Crisis* indicator to begin in 2008. As in Section III.A, *High Geographic Diversification* is an indicator variable that equals one for the banks in the top quartile according to the number of states in which they operated in 2007 and zero for banks in the bottom quartile. For the business segment diversification, *Insurance Subsidiary* indicates

whether a bank acquired its first insurance subsidiary before 2007. All the explanatory variables are as of the end of 2007. In addition to our prior control variables, we include the ratio of small business lending to total lending at the bank level to account for differences in specialization in small business lending. We also include the past three-year loan growth at the BHC level to account for differences in BHC growth strategies. We interact each of these control variables with our *Post-Crisis* indicator to allow these variables to have a distinct effect on small business lending.

Given the county-level data, we include bank-county fixed effects (α_{ic}) in all specifications. These fixed effects account for the time-invariant locality-specific characteristics of each bank. We also include either year fixed effects or county-year fixed effects. The county-year fixed effects allow us to robustly control for time-varying county factors, such as local loan demand. In this case, the estimates can be interpreted as estimates for the supply of lending capital, separate from the demand for capital (Khwaja and Mian, 2008). Our time window runs from 2005 through 2010.

Panel A of Table IV presents the results for the geographical diversification on lending, and Panel B for the business segment diversification on lending. Similar to the bank-level loan results in Table III, we generally find positive coefficients for the interaction of our diversification variables and the *Post-Crisis* indicator. During the crisis, the more diversified banks maintain more small business lending than the less diversified banks. Our findings hold for both types of diversification: geographical diversification that is related directly to the loan portfolio, as well as the bank-level business segments.

Further, we can rule out any arguments about differential demand shocks for loans or any differences in banks' specific locations thanks to the county-year fixed effects. Our estimates in Columns 3 and 4 of both panels can be interpreted as the effect of diversification during the crisis for banks in the same county in the same year. Diversification enables banks to lend more, even to riskier segments such as small business lending.

III.C The relationship between idiosyncratic and systematic risk

As diversification reduces idiosyncratic risk, one may wonder why diversification had a meaningful effect on banks during a systematic shock, such as the financial crisis. Consequently, we explore whether during the crisis a rise in idiosyncratic risk occurred in addition to the increase in systematic risk (e.g., Campbell, Lettau, Malkiel, and Xu, 2001).

We use a standard market-model-style regression to estimate each risk type to explore the association between the systematic and idiosyncratic risk of banks. Since our sample consists of public and private banks, we extract these risks using the quarterly accounting returns (ROEs) instead of stock returns. Specifically, using quarterly data, we estimate for each bank in our sample the following model:

$$R_{it} = \alpha_i + \beta_i R_{Mt} + \varepsilon_{it}, \quad (4)$$

where R_{it} is bank i 's ROE in quarter t . R_{Mt} is the equivalent of the market portfolio return calculated as the weighted average by size (total assets) of the ROEs of all the banks in quarter t . Our estimate of idiosyncratic risk of bank i is the (annualized) standard deviation of the regression residual ε_{it} over a rolling window of the past three years, and our estimate of market risk of bank i is β_i times the (annualized) standard deviation of R_{Mt} .

We plot our results in Figure 1. The spikes in the systematic and the idiosyncratic risk start at the beginning of the crisis. While the systematic risk decreases to pre-crisis levels towards the end of 2010, idiosyncratic risk declines more slowly. Focusing on the crisis period, we find a correlation coefficient of 0.61 between the systematic and the idiosyncratic risk. Further, we explore the relationship between our two types of diversification (geographic and business segment) and the systematic versus idiosyncratic risk during the financial crisis. We measure geographic diversification as the natural logarithm of the number of states in which the bank operated as of the prior quarter. Business segment diversification is estimated using the natural logarithm of the number of domestic insurance subsidiaries the bank reports as of the prior

quarter. We also include bank fixed effects to control for any time-invariant bank characteristics. We cluster standard errors by bank. In this specification, the sample period is from 2008Q1 through 2010Q4. Table VII presents the results.

As expected, we find a negative relationship between diversification and idiosyncratic risk (Columns 2 and 4) and a positive association with systematic risk (Columns 1 and 3). These results confirm the intuition that diversification lowers a bank's exposure to idiosyncratic risk. As the idiosyncratic risk co-moves strongly with systematic risk during the crisis, diversification plays an important role for banks during this period.

IV Shocks to bank diversification and small business lending

In the previous section, we showed a positive effect of ex-ante diversification on lending during the financial crisis. However, such ex-ante diversification may have been the outcome of other bank decisions, such as seeking to increase assets. Therefore, to better isolate the effects of the diversification decision from other bank choices, in this section we use changes in bank regulation as exogenous shocks to diversification. We focus on these shocks' impact on small business lending, as we are best able to control for potential confounding demand factors in this setting.

We exploit two quasi-natural experiments to establish the causal effect of each type of diversification. First, we exploit the 1994 Riegel-Neal Interstate Banking and Branching Efficiency Act as an exogenous shock to the geographical diversification of banks, as it removed restrictions on banks expanding into new states across the U.S. Second, we exploit the 1999 Financial Services Modernization Act (a.k.a. the Gramm-Leach-Bliley Act) as an exogenous shock to the business segment diversification of banks, as it eliminated restrictions on commercial banks entering into new business activities. Our focus is on banks entering the insurance market.

IV.A Institutional setting

IV.A.1 Geographic diversification

During the 1990s, U.S. states began allowing out-of-state banks to set up and acquire local bank branches. The Riegel-Neal Interstate Banking and Branching Efficiency Act of 1994 removed several obstacles to banks opening branches in other states and provided a uniform set of rules regarding banking in each state. Well-managed and well-capitalized bank holding companies were allowed to acquire banks in any state. Additionally, banks could merge banks located in different states into a single branch network. The effective dates of the state's implementation of interstate bank branching removal restrictions vary across states, as states were given the discretion to set up their interstate bank branching regulations.

Consistent with the prior literature (e.g., Rice and Strahan, 2010; Krishnan, Nandy, and Puri, 2014), we exploit this staggered implementation of the Act as a shock to the ability of banks to diversify geographically in the deregulated state. Our focus is on the change in small business lending of banks in states unaffected by the deregulation. We perform a difference-in-differences specification in which we observe the response of banks' supply of small business lending (SBL). The county-level SBL data enables us to measure the effect of diversification on lending separate from local changes in loan demand and other time-varying local effects.

We compare banks that could more easily diversify and expand their operations after a state-level banking regulation versus those banks that were not active in the deregulating state. As the decision to enter a new state following the deregulation is endogenous, we construct this setup conservatively. For each deregulated state, the treatment group is defined as banks that were present there prior to the deregulation. Following the deregulation they were allowed to operate and expand with fewer restrictions in the deregulated state. Thus the shock influenced their ability to expand in the deregulated state, but not their ex-ante decision to operate there. The control group are those banks that were not present in this state and therefore not directly affected by the deregulation.

For each regulatory shock, we compare the lending behavior of the treated banks to the control banks that lend in a common set of unaffected states. Our assumption is that these treated banks only adjust their lending in unaffected states, relative to other banks, because of their exposure to the deregulated state. Because we use 18 shocks between 1998 and 2005 across 14 states, we do not believe the identified effect is driven by a particular regional or macroeconomic factor. See Table A.2 for the list of the specific shocks. Figure 2 shows the average small business lending for treated and control banks in counties outside of the deregulated states. Time zero represents the deregulation year of each state, the time when obstacles to bank operation in this state were removed. The figure shows that while three years prior to the deregulation, the treated and the control groups had a similar small business lending trend, in time zero occurs a significant increase in lending of diversified banks in the non-deregulated areas, which constantly persists over the following four years. The treated banks were active in the non-deregulated counties before the deregulation occurred and could increase their lending there at any point in time. However, the difference in banks' behavior starts following the increase in geographic diversification.

IV.A.2 Business line diversification

As an exogenous shock to business line diversification of banks, we exploit the Financial Services Modernization Act of 1999. The Act allowed financial institutions to integrate their operations, invest in each other's businesses, and eliminated restrictions on entering into new business types. These changes applied to commercial banks, insurance companies, and securities firms.

Prior literature studies this Act or some earlier regulatory changes mainly in the context of the separation between investment and commercial banking and the creation of financial holding companies (e.g., Neuhann and Saidi, 2018). However, our focus is on banks' entrance into insurance underwriting. This aspect of the Act is less explored in the literature, but it is useful in the context of business segment diversification. Insurance activity creates earnings

diversification to the bank, as different factors drive the stream of earnings in insurance services versus commercial lending. This combination is anticipated to reduce the earnings volatility of the bank (Boyd, Graham, and Hewitt, 1993; Lown, Osler, Sufi, and Strahan, 2000). Further, the risk associated with a traditional insurance portfolio is typically low. The expansion into insurance activities by banks is also quite common: in our sample, 49% of banks have domestic insurance subsidiaries by 2017. This statistic implies that insurance subsidiaries are present in many small and medium-sized BHCs in addition the largest ones.

We perform a difference-in-differences specification in which we observe the response of banks' supply of small business lending. The treated banks increased their business line diversification by acquiring their first insurance subsidiary from 1999 to 2002. For the analysis, we treat each acquisition year as a separate cohort (so there are four cohorts). This approach allows us to generate an appropriate control group for each cohort of treated banks. Control banks are those banks that do not acquire their first insurance subsidiary until after the end of the cohort's sample period. Our identifying assumption is that the only reason these banks would change small business lending is through the diversifying effect of adding insurance activities into the bank's organizational structure. As the decision to acquire an insurer is endogenous and may correlate with other bank characteristics, we note that the control group also includes banks that acquire insurance subsidiaries. However, these banks have not yet acquired an insurance subsidiary during the period we investigate. The specifications also include year or county-year fixed effects to control for any time specific factors that might influence banks to diversify into insurance activities. The sample period runs three years before each cohort's acquisition year through four years after.

Figure 3 shows the average small business lending for treatment and control banks four years following the acquisition of each bank compared to the three years prior. While before the insurance subsidiary acquisition, the treated and the control groups have similar small business lending trends, a significant increase in lending for treated banks occurs in the acquisition year and one year after. The differences persist in future years but become less significant.

IV.B Bank diversification and small business lending

Before proceeding to the formal difference-in-differences specifications, we perform one additional test. Namely, we test whether diversification affects the sensitivity of small business lending in a similar fashion as the bank’s total lending (Section II). To test this, we aggregate the small business lending of each bank across its counties into a single amount each year. To avoid the potential confounding factor the deregulatory changes, we only include those counties in states without a deregulatory change. We again use the log number of states a bank lends in and the log number of insurance subsidiaries as our two diversification measures, similar to Section II.

The results are presented in Table VIII. Similar to Table II, we find that both measures of diversification are associated with a higher amount of small business lending. Also, we document that better business cycle conditions (proxied by higher GDP) are associated with more lending. Lastly, we find that for firms that are more diversified—either geographically or in terms of business lines—are less sensitive to business cycle conditions. When GDP declines, more diversified banks are less likely to cut small business lending compared to their less diversified peers. Overall, we find similar level and sensitivity results for small business lending as we do for overall lending at the aggregate bank level.

Next, we investigate the causal impact of changes in diversification more directly using our two types of diversification shocks. We perform the following difference-in-differences specification to establish the relationship between diversification and small business lending:

$$Y_{ict h} = \beta_1 \text{Treat}_i \times \text{Post}_{t h} + \beta_2 \text{Bank Controls}_i \times \text{Post}_{t h} + \alpha_{i c h} + \gamma_{c t h} + \varepsilon_{i c t h}, \quad (5)$$

where $Y_{ict h}$ represents the logarithm of small business lending for bank i in year t in county c in cohort h . For geographic diversification, the outcome variable includes only counties outside of the deregulated state in each cohort. For the business segment diversification, we include small business lending in all counties. This cohort approach to the difference-in-differences

allows us to identify a common treatment effect over multiple treatment events while controlling for many potentially confounding factors with cohort-bank-county (α_{ich}) or cohort-county-year fixed effects (γ_{cht}) (Gormley and Matsa, 2011). For geographic diversification, *Treat* is a dummy variable equal to one for banks that operated in the deregulated state before its regulatory change and zero if the bank had no presence in that state. For business line diversification, *Treat* equals one for banks that acquired an insurance subsidiary in each cohort-year and zero if do not acquire an insurance subsidiary during the sample window. *Post* is an indicator variable that equals one in the diversification-shock year or the following four years, and zero for the three years before the shock. All the control variables are the same as in the specification in Equation 3, fixed at the year before the shock and interacted with *Post*.⁹ Standard errors are clustered by bank.

Panel A of Table IX presents the results for the geographic diversification on small business lending, and Panel B for the business line diversification. In Column 1 of both panels, we find a significant positive coefficient for $Treat \times Post$. The magnitude of the effect remains statistically significant and economically meaningful even when allowing the shock to influence small business lending through other channels, such as bank size or bank specialization in small business lending (Column 2 in each panel). Banks that were exposed to either of the deregulatory shocks increased their small business lending by 9.3% (for the geographic diversification) or 33% (for the business line diversification), relative to control banks.¹⁰ In Columns 3 and 4 of each panel, we include both bank-county and county-year fixed effects. We use this set of fixed effects to absorb any local changes in the demand for small business loans and local economic factors. Our results remain consistent, confirming that the observed effects are the consequence of banks increasing their lending supply and not differential loan demand.

⁹Due to the fixed effects used in all specifications, the stand-alone *Post*, *Treat*, and *Bank Controls* are absorbed.

¹⁰These magnitudes are based on the estimates from Column 2 of both panels.

V The effects of bank diversification on the real economy

The findings in Section IV show that banks increase their lending to a risky segment (small business lending) following a diversification shock to their loan portfolios or following an expansion in the bank's business lines. However, small business lending is also an interesting case study because of its spillover effects to the real economy (Neumark, Wall, and Zhang, 2011; Haltiwanger, Jarmin, and Miranda, 2013), especially at the local level. Small firms also have more financial constraints (Holmstrom, 1979; Holmstrom and Tirole, 1997), and thus are more reliant on bank lending. In this section, we investigate the real effects of bank diversification.

V.A Diversification and total county small business lending

Next, we analyze the effect of diversification on aggregate small business lending in each county. The fact that some banks diversify and increase their supply of lending does not necessarily mean that on aggregate, an increase in small business lending occurs. Rather, it is possible that non-diversified banks lose market share to the diversified ones and at the aggregate county level, total lending remains unchanged.

To this end, we perform the following specification to establish the relationship between the level of diversification of the banks in a county and the aggregate county small business lending:

$$Y_{cth} = \beta_1 \text{Treat}_{ch} \times \text{Post}_{th} + \beta_2 \text{Bank Controls}_{ch} \times \text{Post}_{th} + \alpha_{ch} + \gamma_{th} + \varepsilon_{cth}, \quad (6)$$

where Y_{cth} represents the logarithm of annual small business lending aggregated to county c in year t in cohort h . County-level aggregation is achieved by weighting each bank by its small business loans in that county in the year prior to the sample window. For geographic diversification, the outcome variable includes only counties outside of the deregulated state in each cohort, similar to the approach in Section IV.B. For business line diversification, we use all counties. $Post$ is an indicator variable that equals one for the diversification-shock year and the

years following and zero for the pre-shock period. *Treat* and the other bank control variables are the same as in specification (5) but are aggregated to the county level. The values are from the year prior to the diversification shock. To make the *Treat* variable more interpretable, we scale it by its sample standard deviation. Its coefficients are therefore interpreted as for a one standard deviation increase in the percentage of treated banks in a county. Specifications include county-cohort fixed effects (α_{ch}) and cohort-year or cohort-state-year fixed effects (γ_{th}).

Panel A of Table X presents the results for the geographical diversification on county-level small business lending. Panel B presents the results for the business segment diversification. In Columns 1 and 2, we find a significant positive coefficient of the interaction $Treat \times Post$. Following the deregulation, for a one standard deviation increase in county diversification, aggregate lending increases by about 3% and 6% for geographic and insurance diversification, respectively, relative to the control group (using the estimates from Column 2 of each panel). Since not all banks in a county are treated by the shocks and not all banks have substantial small business loan volume, these magnitudes are meaningful. The rise in lending among the diversified banks is not driven only by reduction in the loan supply of the less-diversified banks.

In Columns 3 and 4, we use cohort-county-year fixed effects (instead of cohort-year fixed effects). Given our variables are computed at a county-level, this is the most finely that we can control for local economic conditions. Our results remain significant after controlling for loan demand and the overall economic conditions in a state. These positive aggregate lending effects do not appear to be the result of differential economic conditions.

V.B Diversification and county employment

Having established the positive impact of diversification on small business lending at the county level, in this section we show that the rise in lending has a positive real effect on the economy. Increased lending should enable small businesses to start and expand their operations and create jobs that support economic activity. To this end, we use the county-level specification from the

previous section but focus on county-level small business related employment as our outcome variable. Table XI presents the results.

In Panel A, we find a positive coefficient for the $Treat \times Post$ term, indicating that geographic diversification enhances county-level employment. The result remains consistent after adding control variables and when including cohort-state-year fixed effects. For a one standard deviation increase in county-level diversification, there is a 1.6% increase in employment (Column 4). In Panel B, we find similar effects for business line diversification. In our most robust specification (Column 5), we find a 5.8% increase in local employment for a one standard deviation increase in county-level diversification. The more banks in a county that are exposed to the diversification shock, the higher the positive impact on local employment levels. As banks with a more diversified stream of earnings can lend more freely to risky segments, we document positive real effects from this increase in lending.

VI Conclusions

In this paper, we highlight a few of the key benefits of bank diversification. Analyzing two major types of diversification—geographic expansion of lending activity and expansion of banks into non-bank activities—we show that banks with more diversified assets lend more during crisis periods, when it is critical that banks maintain lending to support economic activity. Using exogenous shocks to the ability to diversify, we isolate the effect of diversification on bank lending separate from other factors. We find these banks increase small business lending, which leads to positive real effects for the broader economy. These benefits of bank diversification, that have not yet been fully explored, are separate from the scale of banks and their potential sources of funding. We believe that the positive benefits that comes from asset diversification provide some counterbalance to concerns about the systemic risk implications of bigger banks.

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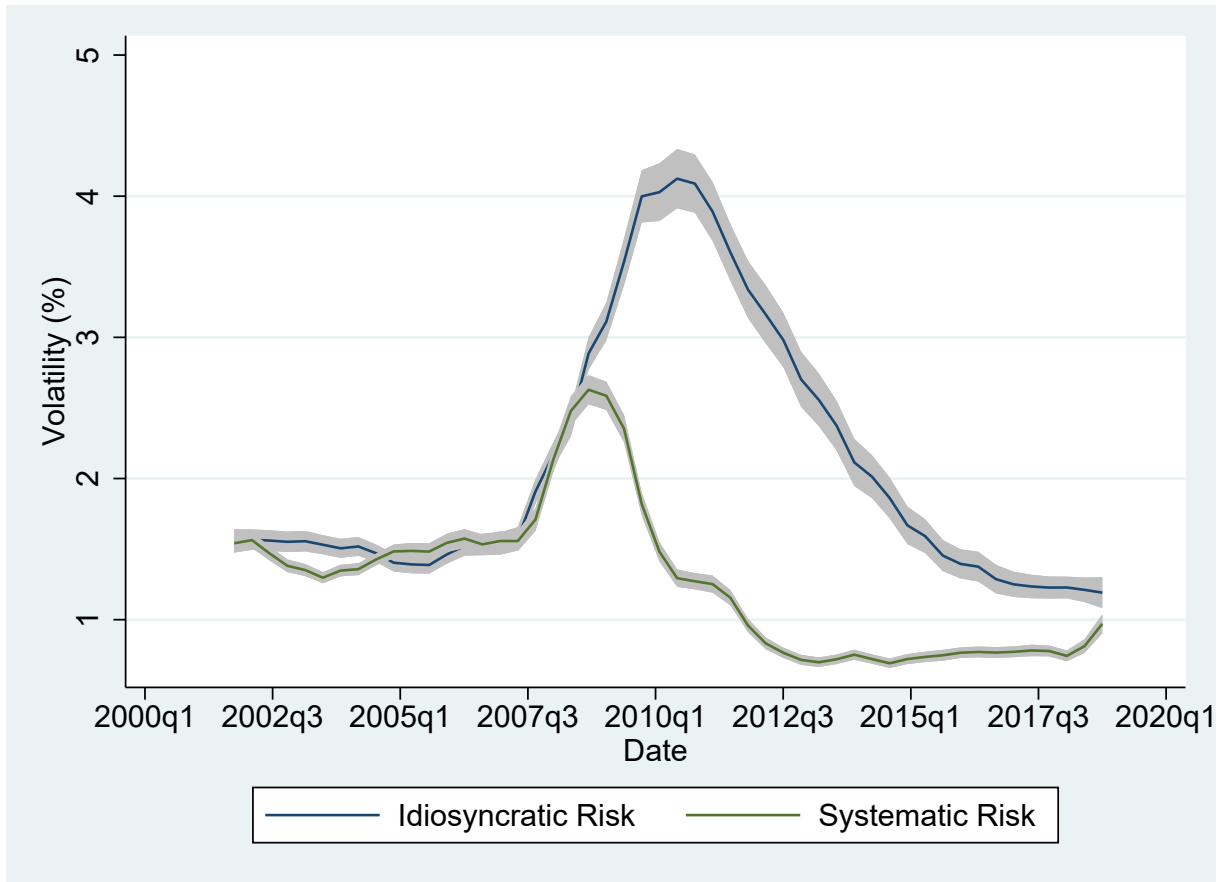


Figure 1: The figure plots the average idiosyncratic risk and systematic risk of banks over time, with 95% confidence intervals. Correlation between idiosyncratic and systematic risk during 2008 and 2009 is 0.61.

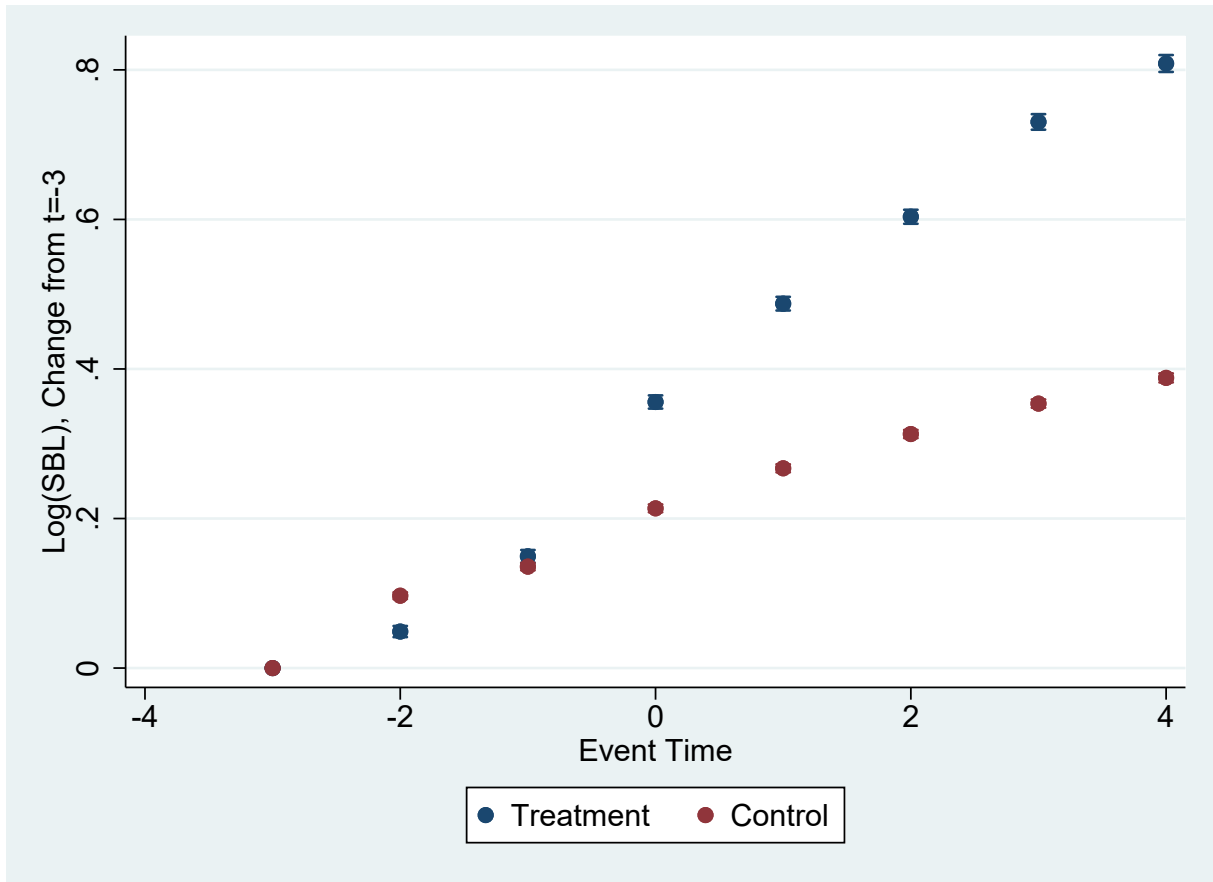


Figure 2: Effect of Geographic Deregulation on Small Business Lending. Figure looks at small business lending for treatment and control banks in counties outside of states that have changed intrastate banking regulations. Treatment banks are actively lending in these affected states before the change while control banks are not. 18 different regulatory changes (cohorts) are used. See Table A.2 for the list of the specific shocks.

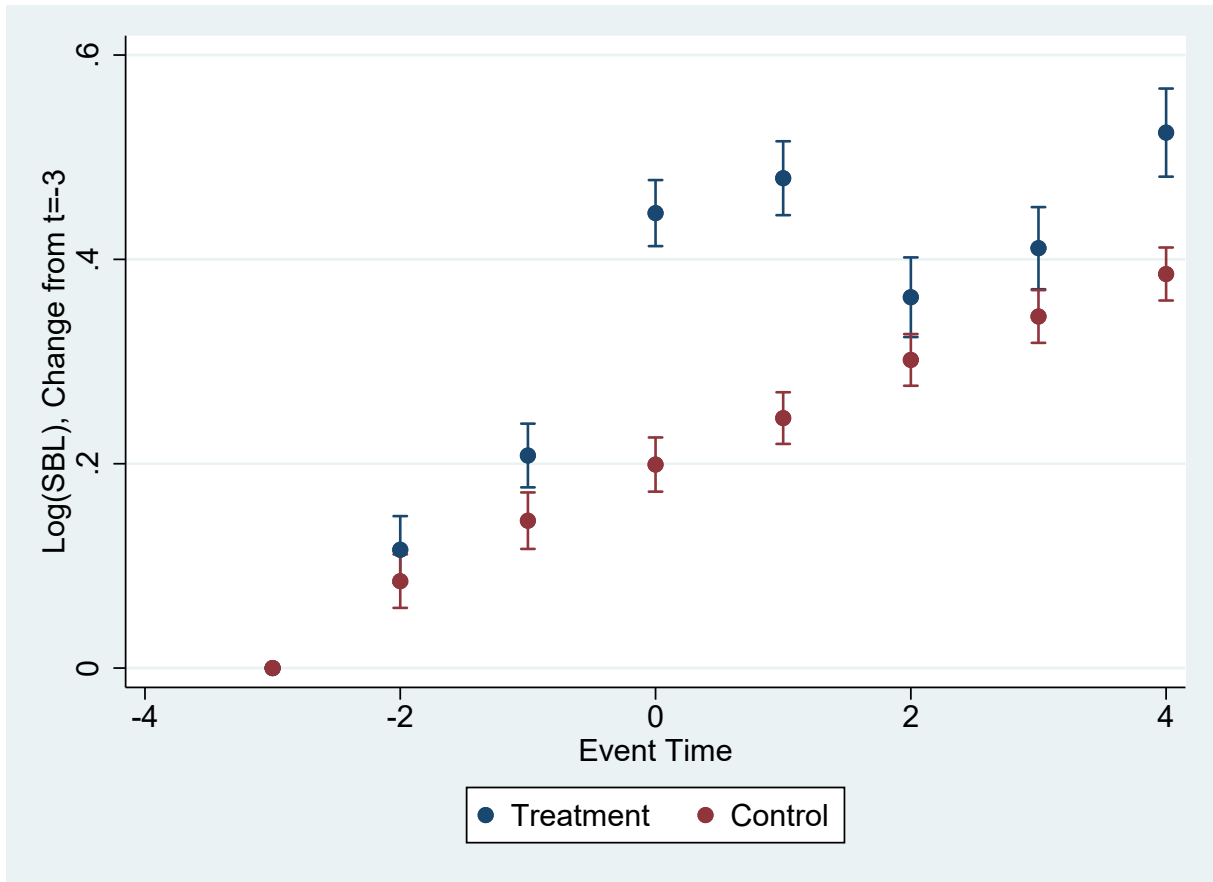


Figure 3: Effect of Insurance Subsidiary Acquisition on Small Business Lending. Figure includes 4 cohorts: banks with first insurance acquisition in 1999, 2000, 2001, and 2002. Control group: banks that acquire insurance subsidiary after the event period.

Table I: Summary Statistics

This table presents the summary statistics for our main variables. Our sample is from 1996-2017. *Bank Variables* are constructed at a BHC-level. *Bank-County Variables* are reported at a county-level for each BHC, and *County Variables* are at an aggregate county level.

	Mean	Std Dev	25th Pctile	Median	75th Pctile	# Obs.
<i>Bank Variables</i>						
Log Loans	13.5	1.07	12.7	13.4	14.1	39,663
Loans to Assets	0.66	0.12	0.59	0.67	0.74	39,663
Log Real Est. Loans	13.2	1.09	12.3	13.0	13.8	39,663
Log C&I Loans	11.5	1.43	10.6	11.4	12.3	39,364
Log Assets	14.0	1.04	13.2	13.8	14.5	39,663
Z-Score	62.6	28.6	46.2	60.8	76.8	36,802
Average ROA	0.0036	0.0023	0.0028	0.0038	0.0048	36,802
Equity to Assets	0.092	0.029	0.075	0.089	0.10	39,663
Deposits to Assets	0.79	0.086	0.76	0.81	0.85	36,157
Loan Growth	0.30	0.29	0.14	0.28	0.45	37,059
SBL to Loans	0.11	0.073	0.057	0.095	0.15	39,467
No. of States, Lending	6.84	7.50	2	4	8	40,912
No. of States, Deposits	1.52	1.38	1	1	2	34,727
Lending States to Deposit States	4.44	4.44	2	3	5.50	34,727
Has Insurance Subsidiary	0.26	0.44	0	0	1	33,502
<i>Bank-County Variables</i>						
Log SBL	5.73	2.27	4.09	5.70	7.20	788,366
<i>County Variables</i>						
Log SBL	9.16	1.99	7.88	9.16	10.5	73,813
Log Employment	9.44	1.45	8.47	9.30	10.3	73,813

Table II: BHC Loans and Diversification

This table measures the sensitivity of quarterly bank lending on aggregate business cycle conditions and the bank's degree of diversification from 1997–2017 at the BHC level. *Log Loans* is the log amount of the bank's total loans. *Loans to Assets* is the bank's total loans divided by its total assets. All independent variables are as of the prior quarter. *Log GDP* is the log of the quarterly national real gross domestic product (in billions of chained 2012 dollars, seasonally adjusted). *Log No. States, Loans* is the log of the number of states with reported bank lending activity. *Log No. States, Deposits* is the log of the number of states with reported bank deposits. *Log No. Insurance Subsidiaries* is the log of the number of domestic insurance subsidiaries in the bank's organizational structure. *Log Assets* is the log of the bank's total assets. *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard's deviation). *Avg. ROA* is the bank's average quarterly ROA over the past three years (as a percent). *Equity to Assets* is the bank's equity to assets ratio. *Deposits to Assets* is the bank's deposits to assets ratio. Standard errors are clustered by bank.

Panel A: Geographic Diversification						
	Log Loans			Loans to Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
Log No. States, Loans	0.0299*** (0.00631)	0.0406*** (0.00774)	0.0380*** (0.00799)	0.0170*** (0.00347)	0.0229*** (0.00402)	0.0208*** (0.00402)
Log GDP		0.430*** (0.129)			0.210*** (0.0607)	
Log No. States, Loans × Log GDP		-0.132** (0.0601)	-0.160** (0.0646)		-0.0731** (0.0285)	-0.0878*** (0.0303)
Log No. States, Deposits	-0.00253 (0.0269)	0.0134 (0.0253)	0.0160 (0.0266)	-0.00274 (0.0131)	0.00574 (0.0123)	0.00685 (0.0129)
Log Assets	1.003*** (0.0114)	0.969*** (0.0170)	0.986*** (0.0179)	0.0163*** (0.00623)	0.00307 (0.00947)	0.0141 (0.00976)
Z-Score	0.0214 (0.0142)	0.0176 (0.0144)	0.0388*** (0.0136)	0.00358 (0.00810)	0.00208 (0.00818)	0.0156** (0.00768)
Average ROA	0.122*** (0.0184)	0.140*** (0.0171)	0.0685*** (0.0200)	0.0599*** (0.00990)	0.0677*** (0.00935)	0.0228** (0.0107)
Equity to Assets	-0.0415 (0.291)	-0.0576 (0.302)	0.442 (0.307)	-0.167 (0.149)	-0.163 (0.153)	0.156 (0.151)
Deposits to Assets	0.310** (0.149)	0.324** (0.149)	0.524*** (0.153)	0.171*** (0.0658)	0.182*** (0.0653)	0.310*** (0.0657)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter Fixed Effects	No	No	Yes	No	No	Yes
Observations	28470	28470	28470	28470	28470	28470
Adjusted R ²	0.988	0.988	0.989	0.748	0.751	0.779

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01

Table II—Continued

Panel B: Business Line Diversification						
	Log Loans			Loans to Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
Log No. Insurance Subsidies	0.0242*** (0.00804)	0.0283*** (0.00889)	0.0257*** (0.00864)	0.0126*** (0.00440)	0.0155*** (0.00472)	0.0135*** (0.00457)
Log GDP		0.261*** (0.0474)			0.111*** (0.0238)	
Log No. Insur. Subsidies. × Log GDP		-0.0825** (0.0415)	-0.121*** (0.0408)		-0.0502** (0.0203)	-0.0734*** (0.0198)
Log Assets	0.991*** (0.00661)	0.950*** (0.0116)	0.966*** (0.0123)	0.0145*** (0.00338)	-0.00189 (0.00570)	0.00834 (0.00604)
Z-Score	0.0309*** (0.00972)	0.0273*** (0.00990)	0.0429*** (0.00966)	0.00712 (0.00477)	0.00575 (0.00480)	0.0148*** (0.00465)
Average ROA	0.132*** (0.0116)	0.148*** (0.0113)	0.0766*** (0.0130)	0.0686*** (0.00592)	0.0748*** (0.00584)	0.0303*** (0.00657)
Equity to Assets	-0.177 (0.201)	-0.264 (0.196)	0.164 (0.201)	-0.264*** (0.0704)	-0.294*** (0.0688)	-0.0274 (0.0711)
Deposits to Assets	0.131* (0.0781)	0.128 (0.0781)	0.347*** (0.0815)	0.0651* (0.0357)	0.0662* (0.0353)	0.200*** (0.0365)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter Fixed Effects	No	No	Yes	No	No	Yes
Observations	75706	75706	75706	75706	75706	75706
Adjusted R^2	0.993	0.993	0.993	0.799	0.801	0.822

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table III: Bank Diversification and the Financial Crisis

This table presents the results of the specification in Equation (2) for the effect of bank diversification on lending during and after the crisis. In Columns 1-6 of both panels, the outcome variables are $\text{Log}(\text{Loans})$, $\text{Log}(\text{Real Est. Loans})$ and $\text{Log}(\text{C\&I Loans})$, estimated as the log amount of the BHC's total loans, real-estate loans and C&I loans, respectively. In Columns 7-12 of both panels, the outcome variables are scaled by the BHC's total assets as of 2007Q2. *Post-Crisis* is an indicator variable for the crisis period, which begins in 2007Q3. Panel A presents the results for the geographic diversification, where *High Geographic Diversification* defined as an indicator variable that equals one for banks in the top quartile of the number of states in which they operated in 2007Q2 and zero for banks in the bottom quartile. *Log No. States*, *Deposits* represents the geographic breadth of the bank's funding sources. Panel B presents the results for business line diversification, where *Insurance Subsidiary* indicates a bank started or acquired its first insurance subsidiary before 2007. In both panels, *Loan Growth* is the bank's loan growth over the past three years. *Avg. ROA* is the bank's average quarterly ROA over the past three years (as a percent). *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard deviation). *Equity to Assets* is the bank's equity to assets ratio. *Deposits to Assets* is the bank's deposits to assets ratio. The control variables are fixed at their 2007Q2 values interacted with *Post-Crisis*. Standard errors are clustered by bank. The sample is from 2005 through 2010.

	Panel A: Geographic Diversification																
	Log(Loans)			Log(Real Est. Loans)			Log(C&I Loans)			Loans to 07 Assets			Real Est. Loans to 07 Assets			C&I Loans to 07 Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)					
High Geo. Div. × Post-Crisis	0.101*** (0.0281)	0.126*** (0.0319)	0.0936*** (0.0293)	0.116*** (0.0345)	0.0953 (0.0837)	0.111 (0.106)	0.0849*** (0.0225)	0.102*** (0.0236)	0.0432*** (0.0176)	0.0580*** (0.0203)	0.0321*** (0.00750)	0.0327*** (0.00803)					
Log No. States, Deposits × Post-Crisis		-0.0510 (0.0496)		-0.0691 (0.0495)		0.0205 (0.140)		-0.0198 (0.0440)		-0.0149 (0.0301)		0.00355 (0.0184)					
Log Assets × Post-Crisis		0.00299 (0.0209)		0.0129 (0.0220)		0.00137 (0.0971)		-0.00514 (0.0156)		-0.00440 (0.0134)		-0.00180 (0.00491)					
Z-Score × Post-Crisis		0.00201* (0.00106)		0.00239*** (0.00116)		-0.00355 (0.00490)		0.00162*** (0.000802)		0.00126* (0.000695)		0.000236 (0.000177)					
Average ROA × Post-Crisis		-0.0508 (0.139)		-0.0276 (0.147)		-0.867 (0.857)		-0.0327 (0.101)		-0.0438 (0.0978)		-0.00614 (0.0187)					
Equity to Assets × Post-Crisis		-0.901 (0.755)		-1.139 (0.782)		1.667 (4.043)		-0.921 (0.597)		-0.622 (0.512)		-0.187 (0.165)					
Deposits to Assets × Post-Crisis		-0.0312 (0.147)		-0.0423 (0.155)		-0.105 (0.428)		0.0785 (0.104)		0.0466 (0.0862)		0.0267 (0.0317)					
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Observations	4222	4222	4222	4222	4222	4222	4222	4222	4222	4222	4222	4222					
Adjusted R ²	0.982	0.983	0.979	0.980	0.951	0.952	0.674	0.686	0.781	0.791	0.841	0.842					

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01

Table III—Continued

	Panel B: Business Line Diversification											
	Log(Loans)		Log(Real Est. Loans)		Log(C&I Loans)		Loans to 07 Assets		Real Est. Loans to 07 Assets		C&I Loans to 07 Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Insur. Subsid. × Post-Crisis	0.0308** (0.0146)	0.0246* (0.0148)	0.0238 (0.0156)	0.0195 (0.0155)	0.0690*** (0.0256)	0.0461* (0.0247)	0.0356*** (0.0127)	0.0339** (0.0133)	0.0286*** (0.0103)	0.0286*** (0.0109)	0.00718** (0.00330)	0.00578* (0.00330)
Log Assets × Post-Crisis		0.00695 (0.00675)		0.00350 (0.00733)		0.0241** (0.0108)		0.00236 (0.00624)		-0.00441 (0.00451)		0.00456*** (0.00146)
Z-Score × Post-Crisis		0.000732** (0.000355)		0.000577 (0.000384)		-0.000138 (0.00112)		0.000449 (0.000310)		0.000378 (0.000255)		0.0000457 (0.0000640)
Average ROA × Post-Crisis		-0.0685 (0.0544)		-0.110* (0.0597)		-0.239 (0.172)		-0.0623 (0.0440)		-0.0596 (0.0381)		-0.00930 (0.00919)
Equity to Assets × Post-Crisis		0.230 (0.224)		0.461* (0.253)		0.113 (0.519)		0.300 (0.213)		0.229 (0.171)		0.0317 (0.0334)
Deposits to Assets × Post-Crisis		0.156* (0.0857)		0.195 (0.149)		-0.220 (0.175)		0.183*** (0.0542)		0.140*** (0.0402)		0.0425*** (0.0146)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20333	20333	20283	20283	20285	20285	20333	20333	20333	20333	20333	20333
Adjusted R ²	0.985	0.985	0.984	0.984	0.969	0.969	0.641	0.644	0.725	0.728	0.826	0.827

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01

Table IV: Diversification, the Financial Crisis, and Small Business Lending

The table presents the results of the specification in Equation (3) for the effect of bank diversification on small business lending during and after the crisis. *Log(SBL)*, *Bank-County Level* is the log amount of the small business loans originated annually by a bank in a county. *Post-Crisis* is an indicator variable for the crisis period, which begins in 2008. Panel A presents the results for the geographic diversification, where *High Geographic Diversification* is defined as an indicator variable that equals one for banks in the top quartile of the number of states in which they operated in 2007Q2 and zero for banks in the bottom quartile. Panel B presents the results for the business line diversification, where *Insurance Subsidiary* indicates a bank created or acquired its first insurance subsidiaries before 2007. In both panels, *Loan Growth* is the bank's loan growth over the past 3 years. *Avg. ROA* is the bank's average quarterly ROA over the past 3 years (as a percent). *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard deviation). *Equity to Assets* is the bank's equity to assets ratio. *Deposits to Assets* is the bank's deposits to assets ratio. The control variables are fixed at their 2007 values and interacted with the *Post-Crisis* indicator. Standard errors are clustered by bank. The sample uses a window from 2005 through 2010.

Panel A: Geographic Diversification				
	Log(SBL), Bank-County Level			
	(1)	(2)	(3)	(4)
High Geo. Div. × Post-Crisis	-0.204 (0.304)	1.066*** (0.238)	-0.0990 (0.323)	1.128*** (0.253)
Log Assets × Post-Crisis		-0.219*** (0.0630)		-0.207*** (0.0611)
SBL to Loans × Post-Crisis		-0.903* (0.531)		-0.386 (0.512)
Loan Growth × Post-Crisis		-0.255* (0.144)		-0.176 (0.157)
Z-Score × Post-Crisis		0.00482*** (0.00178)		0.00412** (0.00182)
Avg. ROA × Post-Crisis		173.7*** (38.11)		189.9*** (39.20)
Equity to Assets × Post-Crisis		2.952* (1.740)		3.323* (1.799)
Deposits to Assets × Post-Crisis		0.799 (0.599)		0.853 (0.566)
Bank-County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
County-Year Fixed Effects	No	No	Yes	Yes
Observations	135102	135102	134957	134957
Adjusted R^2	0.845	0.859	0.838	0.855

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table IV–Continued

Panel B: Business Line Diversification				
	Log(SBL), Bank-County Level			
	(1)	(2)	(3)	(4)
Insur. Subsid. × Post-Crisis	-0.102 (0.156)	0.267** (0.116)	-0.0566 (0.144)	0.248** (0.123)
Log Assets × Post-Crisis		-0.0253 (0.0345)		-0.0104 (0.0336)
SBL to Loans × Post-Crisis		-1.111 (0.775)		-0.810 (0.765)
Loan Growth × Post-Crisis		-0.0201 (0.230)		0.0117 (0.239)
Z-Score × Post-Crisis		0.00107 (0.00319)		0.00105 (0.00320)
Avg. ROA × Post-Crisis		110.8 (71.09)		115.1 (75.24)
Equity to Assets × Post-Crisis		4.037 (2.863)		3.802 (2.827)
Deposits to Assets × Post-Crisis		1.880** (0.761)		1.934** (0.779)
Bank-County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
County-Year Fixed Effects	No	No	Yes	Yes
Observations	239879	239879	239815	239815
Adjusted R^2	0.831	0.839	0.829	0.836

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table V: Diversification, the Financial Crisis, and Aggregate Small Business Lending

The table presents the results of the effect of bank diversification on aggregate county-level small business lending during and after the crisis. *Log(SBL), Agg. County Level* is the log amount of the small business loans originated annually in a county across banks. *Post-Crisis* is an indicator variable for the crisis period, which begins in 2008. Panel A presents the results for the geographic diversification, where *Geographic Diversification* is the weighted-average of the log number of states in which banks operate that report lending in a particular county. Panel B presents the results for the business line diversification, where *Insurance Subsidiary* is the weighted average of the number of banks that acquired its first insurance subsidiary before 2007 in a that report lending in a particular county. Both panels use county-level weighted averages of the following controls: *Loan Growth* is the bank's loan growth over the past 3 years. *Avg. ROA* is the bank's average quarterly ROA over the past 3 years (as a percent). *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard deviation). *Equity to Assets* is the bank's equity to assets ratio. *Deposits to Assets* is the bank's deposits to assets ratio. The control variables are fixed at their 2007 values and interacted with the *Post-Crisis* indicator. Standard errors are clustered by bank. The sample uses a window from 2005 through 2010.

Panel A: Geographic Diversification				
	Log(SBL), Agg. County Level			
	(1)	(2)	(3)	(4)
Geo. Div. × Post-Crisis	-0.101*** (0.0225)	0.0731*** (0.0280)	-0.115*** (0.0268)	0.0790** (0.0333)
Log Assets × Post-Crisis		-0.0425*** (0.0109)		-0.0330*** (0.0102)
SBL to Loans × Post-Crisis		0.380 (0.461)		1.009** (0.444)
Loan Growth × Post-Crisis		0.0804 (0.0876)		0.0778 (0.105)
Z-Score × Post-Crisis		0.00183** (0.000814)		-0.00164* (0.000914)
Avg. ROA × Post-Crisis		71.93*** (9.704)		44.44*** (11.36)
Equity to Assets × Post-Crisis		-2.477*** (0.888)		0.835 (1.015)
Deposits to Assets × Post-Crisis		0.688*** (0.235)		0.697*** (0.235)
County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
State-Year Fixed Effects	No	No	Yes	Yes
Observations	19229	19229	19205	19205
Adjusted R ²	0.976	0.976	0.978	0.979

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01

Table V–Continued

Panel B: Business Line Diversification				
	Log(SBL), Agg. County Level			
	(1)	(2)	(3)	(4)
Insur. Subsid. × Post-Crisis	-0.0768*	0.133***	-0.132***	0.118***
	(0.0393)	(0.0385)	(0.0435)	(0.0436)
Log Assets × Post-Crisis		-0.0333***		-0.0234**
		(0.0103)		(0.0107)
SBL to Loans × Post-Crisis		0.566		1.114**
		(0.475)		(0.448)
Loan Growth × Post-Crisis		0.0959		0.102
		(0.0877)		(0.106)
Z-Score × Post-Crisis		0.00137*		-0.00219**
		(0.000810)		(0.000913)
Avg. ROA × Post-Crisis		71.14***		41.07***
		(9.737)		(11.44)
Equity to Assets × Post-Crisis		-2.321**		1.237
		(0.913)		(1.030)
Deposits to Assets × Post-Crisis		0.648***		0.646***
		(0.241)		(0.225)
County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
State-Year Fixed Effects	No	No	Yes	Yes
Observations	19229	19229	19205	19205
Adjusted R^2	0.975	0.976	0.978	0.979

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table VI: Diversification, the Financial Crisis, and Employment

The table presents the results of the effect of bank diversification on aggregate county-level small business lending during and after the crisis. *Log(Employment)*, *Agg. County Level* is the log number of jobs related to non-farm proprietorships. *Post-Crisis* is an indicator variable for the crisis period, which begins in 2008. Panel A presents the results for the geographic diversification, where *Geographic Diversification* is the weighted-average of the log number of states in which banks operate that report lending in a particular county. Panel B presents the results for the business line diversification, where *Insurance Subsidiary* is the weighted average of the number of banks that acquired its first insurance subsidiary before 2007 in a that report lending in a particular county. Both panels use county-level weighted averages of the following controls: *Loan Growth* is the bank's loan growth over the past 3 years. *Avg. ROA* is the bank's average quarterly ROA over the past 3 years (as a percent). *Z-Score* is the bank's Z-Score (ROA + equity ratio over ROA standard deviation). *Equity to Assets* is the bank's equity to assets ratio. *Deposits to Assets* is the bank's deposits to assets ratio. The control variables are fixed at their 2007 values and interacted with the *Post-Crisis* indicator. Standard errors are clustered by bank. The sample uses a window from 2005 through 2010.

Panel A: Geographic Diversification				
	Log(Employment), Agg. County Level			
	(1)	(2)	(3)	(4)
Geo. Div. × Post-Crisis	0.00643** (0.00272)	0.0211*** (0.00460)	0.00184 (0.00272)	0.0183*** (0.00535)
Log Assets × Post-Crisis		-0.00475*** (0.00124)		-0.00491*** (0.00123)
SBL to Loans × Post-Crisis		0.205*** (0.0759)		0.0401 (0.0704)
Loan Growth × Post-Crisis		0.115*** (0.0186)		0.00522 (0.0199)
Z-Score × Post-Crisis		-0.000332* (0.000170)		-0.000172 (0.000163)
Avg. ROA × Post-Crisis		5.820*** (2.071)		5.111** (2.010)
Equity to Assets × Post-Crisis		0.141 (0.178)		0.392** (0.172)
Deposits to Assets × Post-Crisis		-0.0111 (0.0270)		0.00169 (0.0256)
County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
State-Year Fixed Effects	No	No	Yes	Yes
Observations	18226	18226	18220	18220
Adjusted R^2	0.999	0.999	0.999	0.999

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01

Table VI—Continued

Panel B: Business Line Diversification				
	Log(Employment), Agg. County Level			
	(1)	(2)	(3)	(4)
Insur. Subsid. × Post-Crisis	0.0170*** (0.00638)	0.0284*** (0.00715)	0.0121* (0.00633)	0.0232*** (0.00774)
Log Assets × Post-Crisis		-0.00176* (0.000995)		-0.00256*** (0.000934)
SBL to Loans × Post-Crisis		0.243*** (0.0759)		0.0588 (0.0711)
Loan Growth × Post-Crisis		0.118*** (0.0187)		0.0106 (0.0201)
Z-Score × Post-Crisis		-0.000426** (0.000173)		-0.000283* (0.000167)
Avg. ROA × Post-Crisis		6.032*** (2.032)		4.541** (2.006)
Equity to Assets × Post-Crisis		0.174 (0.178)		0.475*** (0.174)
Deposits to Assets × Post-Crisis		-0.0233 (0.0262)		-0.0108 (0.0242)
County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
State-Year Fixed Effects	No	No	Yes	Yes
Observations	18226	18226	18220	18220
Adjusted R^2	0.999	0.999	0.999	0.999

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table VII: Idiosyncratic Risk and the Financial Crisis

The table presents the effect of bank diversification on the idiosyncratic and systematic risk during and after the crisis. *Idiosyncratic Risk* and *Systematic Risk* are annualized standard deviations (as a %) and estimated based on specification in Equation (4). *Log No. States, Loans* is the log of the number of states with reported bank lending activity. *Log No. Insurance Subsidiaries* is the log of the number of domestic insurance subsidiaries in the bank's organizational structure. Standard errors are clustered by bank. The sample uses a window from 2008 through 2010.

	Systematic Risk (1)	Idiosyncratic Risk (2)	Systematic Risk (3)	Idiosyncratic Risk (4)
Log No. States, Loans	0.325*** (0.0893)	-0.644*** (0.241)		
Log No. Insurance Subsids.			0.332** (0.163)	-1.139** (0.548)
Bank Fixed Effects	Yes	Yes	Yes	Yes
Observations	4170	3889	3928	3924
Adjusted R^2	0.860	0.668	0.857	0.668

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table VIII: Diversification and Small Business Lending Sensitivity

This table looks at aggregate bank small business lending and its sensitivity to diversification and economic conditions. *Log(SBL), Bank Level* is the log amount of the small business loans originated annually by each bank. All control variables are as of the end of the prior year. *Log GDP* is the log of the national real gross domestic product (in billions of chained 2012 dollars, seasonally adjusted). *Log No. States, Loans* is the log of the number of states with reported bank lending activity. *Log No. Insurance Subsids.* is the log of the number of domestic insurance subsidiaries in the bank's organizational structure. Other control variables, (*Log Assets, Avg. ROA, Z-Score, Equity to Assets, Deposits to Assets*) are included in all specifications. Standard errors are clustered by bank.

	Log(SBL), Bank Level					
	Geographic Diversification			Business Line Diversification		
	(1)	(2)	(3)	(4)	(5)	(6)
Log No. States, Loans	0.114*** (0.0241)	0.123*** (0.0241)	0.100*** (0.0246)			
Log No. States × Log GDP		-1.003*** (0.233)	-0.870*** (0.228)			
Log No. Insurance Subsids.				0.123** (0.0527)	0.209*** (0.0521)	0.135*** (0.0518)
Log No. Insur. × Log GDP					-1.040*** (0.321)	-0.989*** (0.315)
Log GDP		0.638** (0.293)			0.575* (0.312)	
Additional Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes	No	No	Yes
Observations	6223	6223	6223	6223	6223	6223
Adjusted R^2	0.824	0.813	0.826	0.823	0.811	0.824

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table IX: Shocks to Diversification and Small Business Lending

The table presents the results of the specification in Equation (5) for the effect of diversification on small business lending following deregulation. $\text{Log}(SBL)$, *Bank-County Level* is the log amount of the small business loans originated annually. In Panel A, *Treat* is a dummy variable equals one for banks that operated in a state with a change in deregulation and zero otherwise. This sample uses a window around 18 different deregulatory shocks (two years before shock to four years after). See Table A.2 for the list of the specific shocks. In Panel B, *Treat* equals one for banks that acquired insurance subsidiary in each cohort year and zero if they do not acquire an insurance subsidiary. This sample uses four cohorts following the deregulation. *Post* is an indicator variable equals one for years following the diversification year and zero for the pre-diversification period. $\text{Log}(Loans)$, *Bank-County Level* is the log amount of the small business loans originated annually. All control variables are as of year before the shock and interacted with *Post*. Standard errors are clustered by bank.

Panel A: Geographic Diversification				
	Log(SBL), Bank-County Level			
	(1)	(2)	(3)	(4)
Treat \times Post	0.188** (0.0851)	0.0891*** (0.0341)	0.195** (0.0833)	0.101*** (0.0353)
Log Assets \times Post		0.0116 (0.0196)		-0.00418 (0.0156)
SBL to Loans \times Post		-1.323*** (0.263)		-1.364*** (0.330)
Loan Growth \times Post		-0.100 (0.125)		-0.119 (0.130)
Z-Score \times Post		-0.000572 (0.00146)		-0.000183 (0.00144)
Average ROA \times Post		7.007 (21.47)		4.795 (21.79)
Equity to Assets \times Post		-1.092 (1.561)		-1.199 (1.580)
Deposits to Assets \times Post		-0.438 (0.437)		-0.751 (0.544)
Cohort by Bank-County Fixed Effects	Yes	Yes	Yes	Yes
Cohort by Year Fixed Effects	Yes	Yes	No	No
Cohort by County-Year Fixed Effects	No	No	Yes	Yes
Observations	2037867	1206548	1972776	1118704
Adjusted R^2	0.782	0.797	0.777	0.791

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table IX–Continued

Panel B: Business Line Diversification				
	Log(SBL), Bank-County Level			
	(1)	(2)	(3)	(4)
Treat × Post	0.200** (0.0926)	0.289*** (0.0849)	0.272* (0.154)	0.355*** (0.134)
Log Assets × Post		0.0444 (0.0335)		0.0758 (0.0657)
SBL to Loans × Post		-0.687 (0.566)		-0.358 (0.924)
Loan Growth × Post		0.134 (0.208)		0.130 (0.276)
Z-Score × Post		0.00429** (0.00214)		0.00742** (0.00327)
Avg. ROA × Post		-1.924 (25.85)		7.286 (29.67)
Equity to Assets × Post		0.356 (2.222)		-2.764 (2.787)
Deposits to Assets × Post		1.989*** (0.496)		2.737*** (0.858)
Cohort by Bank-County Fixed Effects	Yes	Yes	Yes	Yes
Cohort by Year Fixed Effects	Yes	Yes	No	No
Cohort by County-Year Fixed Effects	No	No	Yes	Yes
Observations	102113	85080	65707	50028
Adjusted R^2	0.788	0.789	0.765	0.762

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table X: Small Business Lending, County Level

The table presents the results of the specification in Equation (6) for the effect of diversification on county level aggregated small business lending following deregulation. *Log(SBL)*, *Agg. County Level* is the log amount of the small business loans originated annually at the county level. In Panel A, *Treat* is the county-level average of banks that operated in a state with a change in deregulation. This sample uses a window around 18 different deregulatory shocks (two years before shock to four years after). See Table A.2 for the list of the specific shocks. In Panel B, *Treat* is the county-level average of banks that acquired an insurance subsidiary in each cohort year. This sample uses four cohorts following the deregulation. *Treat* and all other control variables are aggregated at the county level as of the year before the shock. We weight each bank by its county-level loans from the year before the sample window. *Post* is an indicator variable equals one for years following the diversification year and zero for the pre-diversification period. Standard errors are clustered by bank.

Panel A: Geographic Diversification				
	Log(SBL), Agg. County Level			
	(1)	(2)	(3)	(4)
Treat × Post	0.0154*** (0.00192)	0.0320*** (0.00198)	0.0147*** (0.00234)	0.0253*** (0.00250)
Log Assets × Post		-0.0123*** (0.00334)		0.00392 (0.00420)
SBL to Loans × Post		-1.206*** (0.176)		-1.876*** (0.194)
Loan Growth × Post		0.100** (0.0473)		-0.0103 (0.0515)
Z-Score × Post		-0.00445*** (0.000715)		-0.00206*** (0.000778)
Average ROA × Post		2.348 (9.473)		2.280 (10.47)
Equity to Assets × Post		0.389 (0.634)		0.858 (0.714)
Deposits to Assets × Post		0.300*** (0.0522)		-0.108* (0.0623)
Cohort by County Fixed Effects	Yes	Yes	Yes	Yes
Cohort by Year Fixed Effects	Yes	Yes	No	No
Cohort by State-Year Fixed Effects	No	No	Yes	Yes
Observations	384775	370865	384446	370556
Adjusted R^2	0.947	0.948	0.952	0.953

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table X–Continued

Panel B: Business Line Diversification				
	Log(SBL), Agg. County Level			
	(1)	(2)	(3)	(4)
Treat × Post	0.0455*** (0.0148)	0.0606*** (0.0166)	0.0861*** (0.0195)	0.0939*** (0.0215)
Log Assets × Post		-0.0117 (0.00863)		0.0282** (0.0124)
SBL to Loans × Post		-0.0696 (0.405)		0.664 (0.559)
Loan Growth × Post		-0.00654 (0.0945)		0.0290 (0.115)
Z-Score × Post		0.00372*** (0.00125)		-0.00202 (0.00185)
Avg. ROA × Post		-69.24*** (15.69)		-81.64*** (20.90)
Equity to Assets × Post		1.523 (1.335)		-0.217 (1.701)
Deposits to Assets × Post		-0.0198 (0.105)		-0.135 (0.132)
Cohort by County Fixed Effects	Yes	Yes	Yes	Yes
Cohort by Year Fixed Effects	Yes	Yes	No	No
Cohort by State-Year Fixed Effects	No	No	Yes	Yes
Observations	62811	62811	62708	62708
Adjusted R^2	0.753	0.753	0.772	0.772

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table XI: Diversification Shocks and Employment, County Level

The table presents the results of the specification in Equation (6) for the effect of bank diversification on county-level employment following deregulation. $\text{Log}(\text{Employment})$, *Agg. County Level* is the log number of jobs related to non-farm self-employment. In Panel A, *Treat* is the county-level average of banks that operated in a state with a change in deregulation. This sample uses a window around 18 different deregulatory shocks (two years before shock to four years after). See Table A.2 for the list of the specific shocks. In Panel B, *Treat* is the county-level average of banks that acquired an insurance subsidiary in each cohort year. This sample uses four cohorts following the deregulation. *Treat* and all other control variables are aggregated at the county level as of the year before the shock. We weight each bank by its county-level loans from the year before the sample window. *Post* is an indicator variable equals one for years following the diversification year and zero for the pre-diversification period. Standard errors are clustered by bank.

Panel A: Geographic Diversification				
	Log(Employment), Agg. County Level			
	(1)	(2)	(3)	(4)
Treat \times Post	0.00620*** (0.00109)	0.00440*** (0.00105)	0.00239** (0.00117)	0.00126 (0.00118)
Log Assets \times Post		0.00248 (0.00163)		0.00260 (0.00187)
SBL to Loans \times Post		-0.0521 (0.0683)		-0.0269 (0.0756)
Loan Growth \times Post		0.0293* (0.0177)		0.00488 (0.0195)
Z-Score \times Post		-0.00106*** (0.000267)		-0.000587** (0.000291)
Average ROA \times Post		9.860*** (3.714)		5.864 (3.906)
Equity to Assets \times Post		-0.133 (0.247)		-0.172 (0.273)
Deposits to Assets \times Post		-0.0265 (0.0281)		-0.0227 (0.0308)
Cohort by County Fixed Effects	Yes	Yes	Yes	Yes
Cohort by Year Fixed Effects	Yes	Yes	No	No
Cohort by State-Year Fixed Effects	No	No	Yes	Yes
Observations	394877	394877	394731	394731
Adjusted R^2	0.993	0.993	0.993	0.993

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table XI–Continued

Panel B: Business Line Diversification				
	Log(Employment), Agg. County Level			
	(1)	(2)	(3)	(4)
Treat × Post	0.00367*** (0.00112)	0.00188* (0.00108)	0.00279** (0.00133)	0.000843 (0.00129)
Log Assets × Post		0.00254** (0.00101)		0.00591*** (0.00111)
SBL to Loans × Post		0.0211 (0.0372)		0.00262 (0.0427)
Loan Growth × Post		0.0570*** (0.00851)		0.0390*** (0.00978)
Z-Score × Post		-0.000745*** (0.000118)		-0.000507*** (0.000125)
Avg. ROA × Post		4.487*** (1.524)		0.0419 (1.583)
Equity to Assets × Post		0.152 (0.111)		-0.103 (0.125)
Deposits to Assets × Post		-0.00275 (0.0137)		-0.0246 (0.0155)
County Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	No	No
State-Year Fixed Effects	No	No	Yes	Yes
Observations	194902	194902	194870	194870
Adjusted R^2	0.995	0.995	0.995	0.995

Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Appendix

Table A.1: Different Aspects of Diversification

List of 40 largest BHCs in 2007, sorted by total assets.

Rank	Bank Name	Total Assets (\$ Bil.)	No. States, Lending	No. States, Deposits	No. Domestic Insurance Subsid.
1	CITIGROUP	2188	54	18	60
2	BANK OF AMERICA	1721	54	31	31
3	JPMORGAN CHASE & CO.	1562	51	24	8
4	WACHOVIA	782.9	51	22	23
5	WELLS FARGO & COMPANY	575.4	52	23	64
6	U.S. BANCORP	237.6	52	26	9
7	BANK OF NEW YORK MELLON	197.8	29	1	6
8	SUNTRUST BANKS	179.6	51	12	6
9	CAPITAL ONE FINANCIAL	150.6	22	6	5
10	NATIONAL CITY	150.4	46	8	16
11	REGIONS FINANCIAL	141.0	48	16	23
12	PNC FINANCIAL SERVICES GROUP	139.0	44	10	3
13	TRUIST FINANCIAL	132.6	42	12	26
14	FIFTH THIRD BANCORP	111.0	35	10	3
15	KEYCORP	99.57	44	14	8
16	NORTHERN TRUST	67.61	20	17	1
17	M&T BANK	64.88	26	8	4
18	COMERICA INCORPORATED	62.76	45	5	3
19	MARSHALL & ILSLEY	59.86	46	9	3
20	HUNTINGTON BANCSHARES	54.63	35	6	8
21	ZIONS BANCORPORATION	52.95	45	10	3
22	COMMERCE BANCORP	49.37	25	9	1
23	POPULAR	44.41	44	8	4
24	FIRST HORIZON	37.02	43	17	10
25	SYNOVUS FINANCIAL	33.02	37	5	5
26	NEW YORK COMMUNITY BANCORP	30.60	49	2	4
27	COLONIAL BANCGROUP	25.97	27	5	4
28	ASSOCIATED BANC-CORP	21.59	28	3	4
29	BOK FINANCIAL	20.90	33	8	3
30	W HOLDING COMPANY	17.93	1	1	1
31	WEBSTER FINANCIAL	17.21	9	4	3
32	FIRST BANCORP	17.19	2	3	2
33	FIRST CITIZES BANCSHARES	16.23	22	14	1
34	COMMERCE BANCSHARES	16.21	50	5	2
35	TCF FINANCIAL	16.07	13	7	3
36	FIRST NATIONAL OF NEBRASKA	16.02	52	8	4
37	FULTON FINANCIAL	15.92	14	5	2
38	CITY NATIONAL	15.89	25	3	1
39	FBOP CORPORATION	14.97	29	4	1
40	NEW YORK PRIVATE BANK & TRUST	14.36	11	2	2

Table A.2: Geographic Diversification Shocks

This table presents the 18 different geographic shocks used in Sections IV and V. *Age Restriction Change* indicates that a state lowered the age restriction for banks that can be acquired. *Individual Branch Change* indicates that a state loosened restrictions on acquiring individual bank branches. *De Novo Branching Change* indicates that a state loosened restrictions on the opening of new branches. See Krishnan, Nandy, and Puri (2014) for a more detailed discussion of the specific regulations.

State	Year	Age Restriction Change	Individual Branch Acquisition Change	De Novo Branching Change
Arizona	2001	No	Yes	No
Georgia	2002	Yes	No	No
Hawaii	2001	Yes	Yes	Yes
Illinois	2004	Yes	Yes	Yes
Indiana	1998	Yes	No	No
Kentucky	2000	Yes	No	No
Montana	2001	Yes	Yes	Yes
New Hampshire	2000	No	Yes	Yes
New Hampshire	2002	Yes	No	No
North Dakota	2003	Yes	Yes	Yes
Oklahoma	2000	Yes	Yes	Yes
Tennessee	1998	No	Yes	No
Tennessee	2001	No	No	Yes
Tennessee	2003	Yes	No	No
Texas	1999	Yes	Yes	Yes
Utah	2001	No	No	Yes
Vermont	2001	Yes	No	Yes
Washington	2005	No	Yes	Yes

Table A.3: Pre-Trends and Geographic Diversification, Financial Crisis

Effect of treatment compared to 2005 as benchmark year.

	Log(Loans) (1)	Loans to 07 Assets (2)
Treat × 2006	0.0225 (0.0197)	0.0186* (0.0108)
Treat × 2007	0.0935*** (0.0270)	0.0722*** (0.0161)
Treat × 2008	0.134*** (0.0353)	0.113*** (0.0246)
Treat × 2009	0.117*** (0.0414)	0.111*** (0.0322)
Treat × 2010	0.0930* (0.0507)	0.0975** (0.0408)
Bank Fixed Effects	Yes	Yes
Year-Quarter Fixed Effects	Yes	Yes
Observations	4174	4001
Adjusted R^2	0.979	0.669

Standard errors in parentheses. * p<.10, ** p<.05, *** p<.01