Dismembered Giants: Bank Divestitures and Local Lending*

Yong Kyu Gam+

Yunqi Zhang §

This version: November 2019

Abstract

This paper studies how bank divestitures in M&As affect local credit markets. We find that combined market shares of merging banks in local mortgage markets decline following divestitures in M&A. This decline is less in mortgages to black borrowers and refinance mortgages, which rely more on relationship lending. In contrast, combined market shares of merging banks in local small business lending markets, which heavily rely on relationship lending, do not change. Divestitures incur following negative externalities: mortgage credit availability is deteriorated for minority group borrowers in M&A counties; mortgage interest rates increase more in M&A counties than those in nearby non-M&A counties; mortgages originated in M&A counties are more likely to enter foreclosure than those in adjacent non-M&A counties; and house prices in M&A counties declined more dramatically during the subprime crisis.

JEL Classifications: G20, G21

Keywords: Divestitures, M&A, Soft Information, Mortgage, Small Business Lending

---

* We thank Philip Dybvig, Chao Ma, Xiangchao Hao, Qinghua Zhang, Zhengguo Lin, Feng Wu, William Hippler, and seminar/conference participants at 8th Regional Urban Spatial Economics (RUSE) in China workshop, China Urban Scholar Forum, 24th Asian Real Estate Society (AsRES) Annual Conference, 2019 Chinese International Risk Forum (CIRF), 2019 Financial Management Association (FMA) Annual Meeting, and Southwestern University of Finance and Economics (Institute of Financial Studies and Research Institute of Economics and Management) for valuable comments and suggestions. All errors are our own.

+ Gam is affiliated with the Institute of Financial Studies, Southwestern University of Finance and Economics. gam@swufe.edu.cn

§ Zhang is affiliated with the School of Finance, Nankai University. zhangyunqi@u.nus.edu

1. **Introduction**

This paper is motivated by the prevalent use of divestitures as merger remedies in the banking industry. Bank mergers and acquisitions (M&As) increase market concentration and hurt competition, and regulators (the Department of Justice and the Federal Reserve) require antitrust divestitures to address the anti-competitive effects as follows: if both the survivor and target banks operate in the same local markets before a M&A, the banks may need to divest some of their branches to maintain competitiveness in the markets. Even in absence of such a compulsory antitrust divestiture policy, the merging banks may sell or close some of their branches if they want to cut overlapping business in local markets after bank M&As. Therefore, branch divestitures or restructuring after bank M&As could be voluntary, compulsory, or a combination of both. Due to the increasing prevalence of M&As in recent decades, branch divestitures have become a critical issue in banks.

Despite the frequent use of such divestitures in practice, academic research investigating this topic is scarce. To the best of our knowledge, evidence regarding the effects of bank divestitures on loan markets is limited. Therefore, there are still many unanswered questions. First, do divestitures successfully maintain competitiveness in the local credit markets? Branch divestitures do not necessarily transfer the loan market shares from the sellers (the merging banks) to the branch buyers because the customer relationship is not necessarily conveyed to the buyers along with the brick-and-mortar branches. Thus, branch divestitures may have differential effects on the transfer of loan market shares among banks and the credit

market competitiveness across different types of loans depending on the extent of the customer relationship. Second, if divestitures successfully transfer the loan market share from the merging banks to the buyers, how do they affect lending behavior and the real economy? The lending behavior of the buyers of those divested branches may differ from that of the original banks because these buyers are entrants with fewer customer relationships and less soft information regarding the local market than the merging banks. For example, the buyers may raise their loan interest rates by reflecting information friction for borrowers. The buyers may expand riskier loans without full understanding of local credit market risks. Change in those lending behaviors may subsequently affect the real economy via higher loan risks.

This paper attempts to answer the above questions by analyzing both mortgages and small business lending. Before answering these questions, we first confirm that there are divestitures associated with M&A events. We restrict the sample to M&A counties (in which both merging banks have branches) and adjacent non-M&A counties (which are adjacent to the M&A counties) and classify the banks into the following two types: merging banks (banks that participate in M&As) and competing banks (non-merging banks with branches in M&A counties or adjacent non-M&A counties prior to the M&A). We document that compared to competing banks, merging banks reduce the number of branches and increase divestitures and the selling of branches in M&A counties during the post-merger period.

Then, we investigate how divestitures affect loan market shares. First, we analyze the residential mortgage market. We find that competing banks expand their

mortgage originations and market shares relative to merging banks in M&A counties during the post-merger period. The dynamic analysis shows that this relative change does not occur before the M&As complete, validating the parallel pretreatment trends assumption. The effects are significant in both securitized loans and portfolio loans, which remain on the balance sheet of the originators. The county-level aggregate mortgage origination in M&A counties does not change relative to that in the adjacent counties after the M&A. These results suggest that after a bank M&A event, merging banks reduce their mortgage lending, and competing banks absorb the unmet mortgage demand in the local market. We also find that in the adjacent non-M&A counties, nearby-competing banks (non-merging banks with branches in both M&A counties and adjacent non-M&A counties prior to the M&A) face a reduction in their mortgage market shares relative to those of non-nearby-competing banks (non-merging banks with branches only in the adjacent non-M&A counties prior to the M&A) during the post-merger period, suggesting that competing banks reallocate credit resources from neighboring counties to the M&A counties.

In contrast, bank divestitures do not significantly change the local small business lending activities of either the merging or competing banks. The combined market share of the two merging banks (survivor and target) does not change after a bank M&A. This finding suggests that antitrust divestitures are ineffective in maintaining competitiveness in the small business lending market. In addition, this finding rules out the following alternative explanation for the changes in the mortgage market: merging banks are better able to forecast local economic downturns and, thus, retreat

from M&A counties. If that speculation was the case, these banks should also reduce their small business lending. However, the results contradict this possibility.

Why do antitrust divestitures fail in the small business lending market? One explanation is the relatively high loan screening costs of obtaining soft information on small business loan applicants. Due to the high cost, merging banks are reluctant to divest existing customer business loan relationships and retain such relationships in the divestitures of branches, making it difficult for competing banks to take over the market share of small business lending. This pattern is less severe for mortgages because of the retail product nature and transaction-based characteristics of mortgages, leading banks to rely heavily on hard information in loan screening. Competing banks can absorb mortgage applicants relatively quickly without incurring high costs to acquire standardized hard information, and the value of the existing relationship of mortgage lending is less than that of business lending.

To further investigate the conjecture regarding the role of relationship lending in divestitures, we examine the heterogeneities in the post-divestiture effect on mortgage originations by loan type. First, we find that the relative increases in competing banks' mortgage originations are more pronounced for home purchase mortgages than refinance mortgages. These results are consistent with the argument of relationship lending. Refinance borrowers are more likely to have an existing relationship (by borrowing mortgages) with the originators, which lessens the information asymmetry and lowers the origination and solicitation cost. Therefore, originators rely on relationship lending more for refinance mortgages than for home

purchase mortgages. The lower increase in refinance mortgages indicates that not all customer relationships are transferred to the branch purchasers along with the branches.

Second, we find that the increases in the competing banks' mortgage originations are less pronounced for black borrowers. In mortgage lending, there is statistical discrimination due to the relatively poor average loan performance of black borrowers (Munnell et al. 1996). Black applicants can alleviate this problem by providing more information to reduce the information asymmetry between them and the banks (Han 2011). Thus, it is more difficult for black applicants without an existing relationship with banks to obtain loans than black applicants with this relationship since there is less information asymmetry between the latter and the banks. If the relationship is not transferred during divestitures, black applicants are more likely to obtain loans from sellers (the merging banks) than purchasers (the competing banks), and the increase in the mortgage originations of competing banks is less pronounced for black borrowers.

We further investigate whether the transfer of mortgage market shares from merging banks to competing banks create subsequent externalities in local credit markets and economies. First, we find that after divestitures, black applicants are less likely to obtain mortgages in M&A counties than adjacent counties. These results indicate that M&A-related divestitures further aggravate racial inequality in credit availability for mortgages in M&A counties. Second, mortgage loan interest rates in M&A counties are more likely to rise after the bank M&As than the rates of

mortgages originated in adjacent non-M&A counties. The significant increase of mortgage loan interest rates in the M&A counties reflects higher information friction for new mortgage applicants as well as a surge of mortgage demands transferred from the merging banks. Third, if competing banks have less soft information regarding the local market, their ability to assess borrowers' risks is weaker than that of merging banks. Therefore, after competing banks expand their market share in the counties in which the merging banks operate, the originated loans become, on average, riskier in those counties. Using a diff-in-diff specification, we find that the increase in the foreclosure rates from loans originating before the bank M&A to loans originating after the M&A is larger in those counties with M&As than that in their adjacent counties. Consequently, the housing prices in M&A counties decrease more than those in adjacent counties during the subprime crisis period.

Subsequently, we further answer the question regarding whether the effects of divestitures are mainly driven by compulsory or voluntary divestitures. We first exploit a regression discontinuity design to test the compulsory divestiture hypothesis. For the pro forma Herfindahl–Hirschman Index (HHI) and merging banks' market shares based on the deposit volume, regulators set threshold values above which merging banks are subject to compulsory divestitures. We find that the relative increases in the competing banks' mortgage origination are higher above the threshold than below the threshold, supporting the compulsory divestiture hypothesis. In a dynamic test, the merging banks did not manipulate their deposit market share before the M&A, suggesting that there is no self-selection. Second, we

restrict the sample to markets that do not breach the threshold values and are free from compulsory divestitures and obtain results similar to those obtained using the full sample. Therefore, divestitures are driven by both the antitrust policy and merging banks' willingness to divest.

This paper makes an incremental contribution to the literature related to bank M&As. Several papers document the effects of bank M&As on the merging banks' performance and operational efficiency (Akhavein, Berger, and Humphrey 1997; Berger, Demsetz, and Strahan 1999; Berger et al. 1998; Cornett, McNutt, and Tehranian 2006). Other strands of the bank M&A literature focus on the spillover effect of bank M&As on the credit supply and bank service availability (Berger et al. 1998; Carow, Kane, and Narayanan 2003; Di Patti and Gobbi 2007; Peek and Rosengren 1998; Samolyk and Avery 2000; Scott and Dunkelberg 2003; Strahan and Weston 1998). Similarly, this paper documents the spillover effects of bank M&As but highlights the effects on the interactions between the merging banks and competing banks in terms of lending activities by the type of lending within each local market level (M&A counties and adjacent non-M&A counties). More importantly, our study documents the effects of such changes on loan interest rates, loan performance and the subsequent real outcomes; thus, our study documents a new link between bank M&As and the subprime crisis. This paper also clearly identifies the effects of branch divestitures driven by bank M&As by exploring the effect on their branch closing.

This paper is also highly related to the literature on banking relationship and

banks' information processing. We can find a large body of literature that addresses how banking relationship affect borrowers' credit availability or cost of financing (Boot and Thakor 1994; Petersen and Rajan 1994; Berger and Udell 1995; Bharath et al. 2009; Li et al. 2017). Literature also documents how banks obtain borrower-specific information (Ramakrishnan and Thakor 1984; Diamond 1984; Allen 1990; Winton 1995) and benefit from information reusability (Greenbaum and Thakor 1995). In line with the aforementioned literature, our paper highlights the importance of banks' information processing as the key channel that differentiates the effects of divestitures following bank M&As on local lending activities across different types of loans.

This paper further contributes to the literature related to racial inequality in credit availability. Numerous studies have shown that black borrowers are less likely to obtain mortgage loans (Avery, Beeson, and Sniderman 1996; Bostic 2003; Ladd 1998; Munnell et al. 1996), and one reason is statistical discrimination (Munnell et al. 1996). Thus, when there is information asymmetry between loan applicants and banks, banks assess the applicants' credit risks by the average default rates of the racial groups to which the applicants belong. Our paper contributes to the literature by showing that the spillover effects of bank divestitures in M&As exacerbate the racial gaps in mortgage lending.

Our work offers several policy implications important to policymakers and market participants. First, our results show that divestitures in bank M&As can lead to more severe racial inequality in credit availability, higher loan interest

rates, riskier loan origination, and a more fragile housing market; thus, this paper identifies several costs of banks' M&A-related divestitures. Second, the objective of compulsory divestiture is to mitigate market concentration after bank M&As. However, our results highlight that this policy is ineffective in the small business lending market, which heavily relies on banking relationship and borrower-specific soft information. Third, our results inform secondary market investors about the possible deterioration of the loan quality after bank M&As, which is important for pricing mortgage-backed securities.

The remainder of this paper is organized as follows. Section 2 introduces the background of bank divestitures. Section 3 describes the data and methodology. The empirical results are discussed in Section 4. We conclude in Section 5.

2. **Background**

Regulators (the Federal Reserve and the Department of Justice) require divestitures to address the anti-competitive effects of the proposed M&A (Williams 2017). In divestitures, the merging banks sell off branches to other banks to maintain their market share and the HHI of the local market at a reasonable level. The regulators monitor the divestiture and ensure the purchasers' suitability. Normally, the regulators prefer the purchaser of the divested branches to be banks that do not operate in the local market before the divestitures. The merging banks do not need to sell the branches before submitting the M&A application. Instead, the merging banks make a commitment in the application to divest branches if the M&A is

approved. An example is the divestitures in the BB&T/First Virginia merger.[1]

To illustrate how divestitures work, suppose there are four banks, i.e., A, B, C, and D. Banks A, B, and C operate in county *i*, while bank D operates in another county *j*. The market shares of Banks A, B, and C in county *i* are all one third. If bank A acquires bank B and is renamed bank AB, there are two banks in county *i* as follows: bank AB with two-thirds of the market and bank C with one-third of the market. The competitiveness in county *i* is reduced. Regulators require bank AB to sell half of its business in county *i* to bank D. Therefore, after the branch sale, there are three banks in county *i*, i.e., AB, C, and D, and each bank has one-third of the market. Thus, the market structure in county *i* remains identical to that prior to the M&A.

Merging banks sometimes do not need to sell branches even if they operate in the same local market. The regulators set threshold values for antitrust divestitures. An M&A is considered to have no anti-competitive effects if it neither raises the HHI to 1800 and above in the local market nor increases its HHI by more than 200 and does not result in a pro forma market share of the merging banks in the local market of 35% and above (Darwish 2014). The Federal Reserve provides a website called CASSIDI to compute HHI and market share. The computation is based on the most current vintage of the Survey of Deposits database by the Federal Deposit Insurance Corporation (FDIC).[2] Notably, even if the impact of an M&A exceeds these threshold values, the merging banks may still be waived from divestitures because the

[1] Please see https://www.justice.gov/archive/atr/public/press_releases/2003/201009.htm.
[2] See "Important Notes" in https://cassidi.stlouisfed.org/help.

regulators consider some "mitigating factors" that may lessen the anti-competitive effects. Overall, the *probability* of divestitures is higher if the threshold values are breached.

It is possible that merging banks plan to sell or close some of their branches even if there is no requirement by the regulators. Before an M&A, the two merging banks may have overlap in their business, which may become redundant after the M&A, and the merging banks may want to divest. We refer to this type of divestitures as voluntary divestitures.

3. **Data and Methodology**

3.1.Data Sources

We compile data from several sources as described below.

Bank Mergers and Acquisitions: To identify merging banks and M&A counties, we rely on the Federal Reserve Bank of Chicago's bank, BHC merger data and the FDIC's Summary of Deposit. The bank and BHC merger data contain information regarding the survivor and target (non-survivor) banks of the M&A and the timing of the M&A (year-month level). The Summary of Deposit includes each bank's branch-level deposit information as of June 30 that year. The location of the bank branches can be identified at the county level from these data sources. We construct an M&A dataset including the RSSD ID of the merging banks (both the survivor and target banks) and the year of the M&A. We aggregate all bank M&A events by year-county

level and assign a unique merger ID to each M&A county that experiences at least one bank M&A during the year. The same merger ID is assigned to the non-M&A counties that do not experience any bank M&A during the year and that adjoin the M&A counties.

Deposit Level: For the banks' deposit volume, we rely on the FDIC Summary of Deposit. These data provide deposit volumes at the bank branch level as of June 30 that year. In this study, we aggregate the deposit volume at the bank-county-year level or bank-FRB banking market-year level to calculate deposit market HHI.

Number of Branches, Branch Closures, and Branch Sales: For the number of bank branches in each county, we use the FDIC Summary of Deposit data. For information regarding branch closings and sales, we rely on the FDIC Report of Change. These data contain information regarding branch closings, including bank identifier (the RSSD ID), the locations of the closed branches, and the time of the closing. Therefore, we can construct a bank-county-year level dataset including the number of branches, branch closures, and branch sales.

Mortgage Origination: We obtain the bank mortgage lending origination at each county-year level from the loans reported to regulators under the Home Mortgage Disclosure Act (HMDA). This data source provides information regarding each instance of mortgage lending, including the calendar year of the loan origination, the lender who originated the mortgage and the county where the lending originated. We aggregate the mortgage origination at the bank-county-year level. The HMDA

data also include the races of the loan applicants, the types of lending (retained by the originators or securitized) and the purpose of the loans (home purchase or refinancing).

Small Business Lending: We use the small business lending data managed by the Federal Financial Institutions Examination Council (FFIEC) under the Community Reinvestment Act (CRA). Similar to the HMDA mortgage data, we can identify the calendar year of the loan origination, the bank that originated the lending and the county where the loan was originated. We aggregate small business lending at the bank-county-year level.

Loan Interest Rate: For mortgage loan interest rates, we rely on RateWatch. This data source provides branch-level interest rates for various deposit or loan products. We convert the weekly loan interest rate data to the annual frequency for each branch-level. For this study, we focus on the rates offered for the 15-year fixed rate mortgages with a size of $175,000, which is a widely referenced mortgage type (Dlugosz et al. 2019).

Mortgage Performance: We exploit a dataset containing microlevel information regarding residential mortgages collected by Blackbox Logic, which is a private data company. Blackbox Logic obtains these data from mortgage servicers and securitization trustees, and approximately 21 million mortgage loans are included in the dataset. These loans account for approximately 90% of all privately securitized mortgages that originated after January 1, 1999 in the U.S. market. The dataset

covers not only subprime but also prime and Alt-A loans. The dataset contains both mortgage origination and performance information. First, the dataset provides information regarding loan characteristics, including the loan amount, interest rate, loan term, whether it is the first lien, occupation status of the house during the loan period, borrower FICO score, loan-to-value (LTV) ratio at origination, and servicer name; the location of the property is also provided. In addition, we obtain information regarding the loan performance from January 1999 to January 2016. The dataset tracks the mortgage performance after origination, and the performance data are collected monthly. Therefore, we can accurately identify whether a mortgage entered foreclosure.

Bank-level Control Variables: For the bank-level control variables, we combine the data regarding the bank financial conditions from the quarterly call report and FDIC Summary of Deposit.

County-level Control Variables: For the county-level control variables, including population size and aggregate personal income, we rely on the U.S. Census Bureau.

Federal Markets Definition: We manually collect the geographic coverage of each federal market from CASSIDI, which is a website available to regulators and the public for performing competitive analysis. The website provides crosswalk from counties to Federal markets. Hereafter, we use "market" to refer to the federal market.

Foreclosure Laws: Foreclosures laws are a critical determinant of mortgage

origination and differ across states. We obtain information from (Ghent and Kudlyak (2011)) regarding whether a mortgage is a recourse or nonrecourse loan in a given state and whether the foreclosure process is judicial or nonjudicial.

Housing Price Index: We obtain the annual housing price index at the county level from the Federal Housing Finance Authority (FHFA).

3.2.Methodology and Sample

In this study, we examine the effect of divestitures in bank M&As on bank lending activities and the real economy by employing a series of diff-in-diff and triple diff-in-diff analyses. We introduce the baseline model and corresponding sample in this section and its various extensions along with the estimation results in Section 4.

3.2.1. Sample

Based on the data sources described in Section 3.1, we construct bank-county-year level information regarding the mortgage origination volume, small business lending volume, number of branches, branch closing and divestitures. The sample period is 1999 to 2014. Then, we merge this sample to the M&A event data introduced in Section 3.1 by a bank identifier and identify the merging banks and M&A counties (in which at least one M&A occurred during our sample period). We match the M&A counties to their geographically adjacent counties using the County Adjacency File from Census.

Thus far, a bank-county-year combination could appear in multiple M&A events since a county may be involved in difference M&As as either the M&A county or adjacent non-M&A county. Then, for each M&A event in the merged

sample, we restrict the observations to the two-year period ranging from the year prior to the M&A to the year following the M&A. We extend the sample period for the robustness tests discussed in Section 4. To further construct a clean sample, we apply the following restriction: during the pre-M&A period, neither M&A nor adjacent non-M&A counties have any bank M&A events, i.e., no branches in these counties undergo a bank M&A. During the post-M&A period, at least one bank branch in the M&A counties belongs to a bank that experienced an M&A, but there are still no bank branches that underwent a bank M&A in the adjacent non-M&A counties.

3.2.2. Baseline Model

The baseline regression model is specified as follows:

$$Y_{i,c,t,m} = \alpha_0 + \alpha_1 Compete_{i,c,t,m} \times PostMerger_{i,c,t,m} + FEs + \Gamma X_{i,c,t,m} + \varepsilon_{i,c,t,m}. \quad (1)$$

The subscripts i, c, t, and m refer to banks, counties, years, and merger IDs, respectively. We employ different sets of dependent variables ($Y_{i,c,t,m}$) related to bank branch divestitures and banks' lending activities (mortgage and small business lending) as follows: *Num_Branch, Num_Closing, Ln(Mortgage), MortgageMS, Ln(SBL)* and *SBLMS*. *Num_Branch is* the number of branches of a bank in a county as of June 30 that year. *Num_Closing* is the number of branch closings of a bank in a county in the year prior to June 30 that year. *Ln(Mortgage)* is the natural log of the

bank-county-level aggregate mortgage origination per calendar year. *MortgageMS* is a bank's mortgage market share in a county per calendar year. *Ln(SBL)* is the natural log of the bank-county-level aggregate small business lending origination per calendar year. *SBLMS* is a bank's small business lending market share in a county per calendar year.

Compete is a dummy variable that assumes the value of one for competing banks and zero otherwise (merging banks). As mentioned in Section 1, we define competing banks as non-merging banks that have branches in the M&A county (and thus compete with the merging banks). *PostMerger* is a dummy variable that assumes the value of one if year *t* is the year of the bank M&A event (the post-merger period). In our baseline regression models, we construct a two-year window consisting of the year of the pre-period and its subsequent year of the post-merger period. Both the pre- and post-merger periods have the same merger IDs for a given M&A county and its adjacent non-M&A counties. *FEs* includes the bank-county-merger ID fixed effects that control for the bank-county-level time-invariant characteristics that affect the dependent variable and year-merger ID fixed effects that control for time-varying shocks. *FEs* act as the treatment group dummy and treatment period dummy in a standard diff-in-diff regression, allowing the consideration of heterogeneities in bank behaviors across counties. Therefore, *Compete* × *PostMerger* and *FEs* constitute a diff-in-diffs specification, and the coefficient of *Compete* × *PostMerger* is the main coefficient of interest. $X_{i,c,t,m}$ includes the bank level and county-level control variables introduced in Section 3.1. In this baseline model, we consider only observations in

M&A counties.[3]

In Section 4, we extend the baseline model by incorporating triple difference-in-difference terms by considering observations in both M&A counties and adjacent non-M&A counties, aggregating the bank-county-merger level observations at the county-merger level, and exploiting the regressing discontinuity design.

3.3.Summary Statistics

Table 1 reports the summary statistics of the sample including both the M&A counties and adjacent non-M&A counties. According to the mean values, banks have 4 branches in each county, and 4.7 of 100 branches are closed each year. On average, each bank holds approximately 6.5% of the mortgage market share in each county. Banks also hold 10.6% of the small business lending in each county. The mean value (0.962) of *Compete* suggests that 3.8% of the total observations are merging banks. If we limit the sample to M&A counties, approximately 9% of the observations are merging banks. The M&A counties account for approximately 43% of the entire sample.

[Insert Table 1 about here]

4. **Empirical Analysis**

This section discusses five sets of empirical results. First, we show evidence

[3] Therefore, time-merger ID fixed effects absorb the county-level controls in the baseline model. Note that the merger ID differs across different M&A counties.

regarding bank divestitures in M&A events. Second, we investigate the changes in banks' mortgage origination following divestitures. Third, we show that small business lending is not affected by divestitures because the business lending relationship is not transferred along with the divested branches. We further support the conjecture regarding the lending relationship by examining the heterogeneities in mortgage originations. Fourth, we discuss the negative consequences of bank divestitures on racial inequality in mortgage originations, mortgage loan interest rates, mortgage performance, and housing markets. Finally, we demonstrate the causality between the antitrust divestiture policy and changes in lending by an RD-DDD specification and show that voluntary divestitures also contribute to the changes in lending in a subsample analysis.

4.1.Bank M&As and Branch Divestitures

Before we investigate the effects of divestitures on lending, we provide evidence regarding divestitures in bank M&As. As mentioned in Section 2, when both merging banks operate in the same counties before a M&A, the merging banks may need to divest branches in the M&A because either regulators require such action or the merging banks aim to cut overlapping businesses to promote their operational efficiency. In our sample, 99.4% of the M&A counties have branches of both merging banks.

To test these predictions, we examine the number of sold branches, the number of branch net closings, and the change in the number of bank branches in each county surrounding the bank M&A. Table **3** reports the results. As shown in both panels of

the table, the diff-in-diff estimators in Columns 1 and 2 are negative and significant. After a bank M&A, the merging banks experience more branch sales and branch net closings than the competing banks. Consequently, the diff-in-diff estimators shown in Column 3 are positive and significant, suggesting that the number of bank branches of the competing banks in M&A or adjacent counties increases during the post-M&A period relative to that of the merging banks in M&A counties.

[Insert Table **3** about here]

Then, we explore whether the lending business is transferred along with the branches. We first analyze the residential mortgage market.

4.2.Mortgage Origination

4.2.1. Baseline Results

In Table **4**, we compare the mortgage lending activities of the merging banks with those of the competing banks prior to and following banks' M&A events. In Panel A, we compare these activities within the same M&A counties using model (1) in Section 3.2.2; in Panel B, we extend the coverage to adjacent counties. In both panels, we use the size of each bank's year-county-level aggregate mortgage origination (*Ln(Mortgage*), Column 1) and year-county-level market share (*MortgageMS*, Column 2) as our outcome variables. According to the results shown in Panel A, *Compete* × *PostMerger* is positive and significant, suggesting that mortgage originations are transferred from the merging banks to the competing banks in M&A counties during the post-merger period. In Panel B, we add a triple interaction term, i.e., *Compete* ×

PostMerger × *MergerCnty*, to the model. Notably, our bank-county-merger ID fixed effects and year-merger ID fixed effects capture the effects of the bank-county characteristics and time trends on mortgage origination. Both *Compete* × *PostMerger* and *Compete* × *PostMerger* × *MergerCnty* are positive and significant. The diff-in-diff estimators show that competing banks increase their mortgage originations and market shares compared to merging banks during the post-M&A period in both M&A and adjacent non-M&A counties. In addition, the triple interaction term highlights that competing banks in M&A counties expand their mortgage originations and market shares more than competing banks in adjacent counties.

[Insert Table **4** about here]

4.2.2. Dynamics Effect

In Table 5, we extend our analysis to the dynamic version of diff-in-diff regressions. In these analyses, we expand the event windows from 2 years to 6 years, i.e., the three years prior to and following bank M&A events. The year of the bank M&A is included during the post-M&A period. For inclusion in the sample, the merging banks cannot experience a bank merger during the 6-year window, except for during the merger year. Competing banks should not experience a bank merger during the entire 6-year window. The M&A counties should not have bank M&A events during these 6 years other than the year of the bank M&A. Therefore, the number of bank merger events and the sample size shrink compared to the baseline regressions shown in Table 4. In this dynamic version, we introduce a set of

interaction terms, i.e., Compete × PostMerger(k). PostMerger(k), where k ranges from -3 to 3, represents a set of six dummy variables corresponding to the years relative to the M&A. We define the M&A year as M&A (1). The year before the M&A (-1) is the reference category. According to the results shown in Table 5, we find no significant outcomes during the pre-M&A period, supporting the parallel trends observed before the M&A shocks. The dynamics of mortgage originations are shown as graphs in Figure 1.

[Insert Figure 1 about here]

[Insert Table 5 about here]

4.2.3. Securitization

We divide the full sample into retained mortgages (which remain on the originators' balance sheet after origination) and securitized mortgages and repeat the baseline regression described in Section 4.2.1 using the two subsamples. We report the results in Table **6**. According to the estimates of *Compete* × *PostMerger*, both types of mortgages are transferred from the merging banks to the competing banks during the post-merger period. These results suggest that the previous sections are not driven by the change in securitizations.

[Insert Table **6** about here]

4.2.4. County Aggregate

In Table **4** and Table 5, we test the effect of banks' M&As on the mortgage origination of the merging and competing banks in the M&A counties and their

adjacent areas. According to the results, a significant transfer of mortgage originations from merging banks to competing banks occurs within the same county. Subsequently, we explore the effect on county-aggregate mortgage originations in the M&A counties relative to that in their adjacent non-M&A counties. For this test, we develop a new regression model as follows:

$$\begin{aligned} Ln(Mortgage)_{c,t,m} \\ &= \alpha_0 + \alpha_1 MergerCnty_{c,t,m} + \alpha_2 PostMerger_{c,t.m} \\ &+ \alpha_3 MergerCnty_{c,t,m} \times PostMerger_{c,t.m} + \Gamma X_{c,t.m} + FEs \\ &+ \varepsilon_{c,t.m} \end{aligned} \tag{3}$$

The subscripts *c*, *t,* and *m* refer to counties, years, and merger IDs, respectively. For each M&A event, the dataset consists of observations of county aggregate mortgage originations in the year prior to or following a bank M&A event in the M&A and adjacent non-M&A counties between 1999 and 2014. *Ln(Mortgage)* is the natural log of the county aggregate mortgage origination during the calendar year. *MergerCnty* assumes a value of one for M&A counties, which are the counties where the merging banks have branches at the time of the M&A. *PostMerger* assumes a value of one during the post-merger period.

According to the results shown in Table **7**, no significant changes occur in county-level aggregate mortgage lending. This result implies that divestitures only reallocate mortgage lending across different banks within the same county while the

county-level aggregate amounts remain intact. We report the regression results of the county-level aggregate mortgage origination in Table **7**.

[Insert Table **7** about here]

4.2.5. Mortgage Resource Reallocation

We further test whether divestitures in M&As are associated with changes in the lending activities of the competing banks in the non-M&A counties adjoining the M&A counties. If competing banks expand their mortgage market shares by absorbing the unmet loan demands generated by the merging banks' divestitures, more resources of the competing banks may be reallocated to M&A counties from their neighboring non-M&A counties, which may lead to a reduction in their mortgage origination and market shares in the adjacent non-M&A counties. To test this prediction, we constructed new regression models as follows.

$$\begin{aligned} Y_{i,c,t,m} = \ & \alpha_0 + \alpha_1 NearbyCompete_{i,c,t.m} + \alpha_2 PostMerger_{i,c,t.m} \\ & + \alpha_3 NearbyCompete_{i,c,t.m} \times PostMerger_{i,c,t.m} + \Gamma X_{i,c,t.m} \\ & + FEs + \varepsilon_{i,c,t.m} \end{aligned} \qquad (3)$$

The subscripts *i*, c, *t,* and *m* refer to a bank, county, year and merger ID, respectively. We restrict the sample to observations in adjacent non-M&A counties. We introduce a new independent variable, i.e., *NearbyCompete*. This variable is a dummy variable that assumes a value of one for competing banks that have branches in both M&A counties and adjacent M&A counties and zero for competing banks that

have branches in only adjacent M&A counties. $Y_{i,c,t,m}$ includes the natural log of the mortgage origination of the bank in the county (*ln(Mortgage)*) and the bank's mortgage market share in the county (*MortgageMS*). By adding bank-county-merger and year-county-merger ID fixed effects, we compare the mortgage originations of *NearbyCompete* banks and non- *NearbyCompete* banks within the same adjacent non-M&A counties.

Table 8 reports the regression results. In Panel A of the table, we use the full samples and find that the diff-in-diff estimator, i.e., *NearbyCompete* × *PostMerger*, is negative in both columns. However, in the first column, where the natural log of mortgage originations is used as the outcome variable, the diff-in-diff estimator is significant only at the 15 percent significance level. In Panel B, we limit the samples to non-M&A counties with county-level deposit market HHI higher than 1800, and the diff-in-diff estimators in both columns become negative and significant. The county-level deposit market HHI is used to measure the extent of local competition by regulators, and markets with HHI higher than 1800 are considered "highly concentrated" (Darwish 2014).

The regression results show that the *NearbyCompete* banks that have branches in M&A counties lose their mortgage market shares to their competitors in the adjacent non-M&A counties during the post-merger period. These consequences are statistically significant if the neighboring non-M&A counties are less competitive. An explanation is that if adjacent non-M&A counties are not competitive, the *NearbyCompete* banks will not lose too much market share if they reallocate some

resources for mortgage origination from the adjacent non-M&A counties to the M&A counties.

[Insert Table **8** about here]

4.3.Small Business Lending

Subsequently, we discuss the effect of banks' M&As on banks' small business lending activities. First, we exploit the baseline model (1) introduced in Section 3.2.2, and the results are reported in Table **9**. The diff-in-diff coefficients in both columns are statistically insignificant. Thus, even after a bank M&A, there is no transfer of small business lending from the merging banks to the competing banks. This finding is quite different from the results of the banks' mortgage activities, which significantly differ between the merging and competing banks during the post-merger period.

[Insert Table **9** about here]

Then, we more clearly compare the changes in mortgage originations with those in small business lending following divestitures in Table **10**. In this test, we combine the banks' county-aggregate mortgage and small business lending. For each bank-county-year, there are two observations, i.e., aggregate mortgage lending and aggregate small business lending. We extend the baseline model by considering a dummy variable, i.e., *Mortgage*, that assumes a value of one for mortgage lending and zero for small business lending. We interact this dummy variable with the existing

independent variables. According to the results, the triple interaction, i.e., *Mortgage* × *Compete* × *PostMerger*, is positive and strongly significant, suggesting that the post-merger effects on banks' mortgage lending activities are much more significant than the effects on small business lending activities.

The different responses of small business lending and mortgage lending to divestitures could be explained by the different information acquisition costs during the loan screening processes of the two markets. For mortgages, banks usually heavily rely on hard information, such as the collateral value and the borrowers' credit scores and income levels, while screening loan applicants. Thus, loan screening and the information acquisition costs of mortgage lending are relatively low because of the retail and transaction-based lending nature of this type of lending. Even without any previous banking relationship, mortgage loan applicants can obtain new mortgage loans from any bank because hard information regarding the applicants is easily available to banks.

In contrast, business lending, including small business loans, incurs relatively high information acquisition costs to obtain soft information. For this type of lending, banks need to collect sufficient soft information about the solvency status and future performance of the borrowers. This information is usually not clearly identified by hard information, such as firms' financial or accounting information. Additionally, the loan size in small business lending is larger than that in mortgages, suggesting that the cost of loan screening for small business lending could be higher.

In divestitures, it is costly for banks to reduce loan types that may incur high screening costs or loans to borrowers whose soft information has been sufficiently accumulated by the bank. Thus, merging banks are reluctant to reduce small business lending, which usually requires more soft information during screening. Additionally, given the sudden increase in loan demands after bank M&As in the local market, it is easier for competing banks to expand lending with less screening or lower information acquisition costs, such as mortgage loans. Therefore, the transfer of market shares from merging banks to competing banks following divestitures is more significant in mortgage lending than small business lending.

These results rule out the alternative explanation that the changes in the merging banks' mortgage market share are driven by unobserved local economic fundamentals. It is possible that merging banks become more powerful after M&As and become better at forecasting economic trends. These banks downsize mortgage lending and retreat from counties in which they identify local economic risk. If this hypothesis is true, these banks should also retreat from the small business loan market, which is also affected by the local economy. Our results contradict this prediction.

The results also indicate that the anti-trust branch divestiture policy is ineffective in the small business lending market. The DoJ and Federal Reserve aim to use antitrust divestitures to maintain the market concentration after M&As. However, in our sample, the policy does not prevent the local small business lending market from becoming more concentrated after M&As as follows: two independent

banks are merged into one, but the market share of each remains intact. Merging banks can achieve this by retaining loan officers with rich customer relationships in the branch divestitures or recalling such loan officers to the local headquarter or allocating them to other branches they plan to retain long before the divestitures to avoid regulators' monitoring.

[Insert Table **10** about here]

4.4.Further Investigation of the Lending Relationship

We provide further evidence supporting the above argument that the lending relationship plays a role in divestitures. In this section, we analyze the changes in mortgage originations separately by loan purpose and the race of the borrowers. In these analyses, we run subsample regressions and compare the results between subgroups. Furthermore, we add new dummy variables that identify the incremental differences in mortgage originations for each subcategory. We report the results in Table **11**. In Panel A, we classify mortgages by the loan purpose, i.e., loans for home purchases and loans for refinancing. In Panel B, we generate subsamples of white borrowers and black borrowers. According to the estimated results of *Compete* × *PostMerger*, all types of mortgages are transferred from the merging banks to competing banks during the post-merger period. However, the intensities of the effects differ by the mortgage type.

Regarding the subgroup regressions by the loan purpose shown in Panel A, both types of mortgages transfer from the merging banks to competing banks during

the post-merger period. However, mortgages for home purchases are more likely to transfer from merging banks to competing banks after M&A events, which we can identify not only by comparing the diff-in-diff coefficients between Columns 1 and 2 but also by observing the negative and statistically significant triple interaction term *Compete* × *PostMerger* × *Refinance* in Column 3. In this interaction term, *Refinance* is a dummy variable that is equal to one if the mortgage is originated for the purpose of refinancing and zero otherwise (home purchase purpose). Notably, we control for the bank-county-merger-refinance fixed effects. The different intensities of the banking relationships required for these two mortgage types can be the driving force. For refinancing mortgages, banks have maintained existing relationships with borrowers and collected their soft information. In this situation, it is costly for both banks and borrowers to terminate the existing banking relationship and initiate new relationships with other banks. Therefore, merging banks are reluctant to reduce mortgages for refinancing given the needs of divestiture, and competing banks originate more home-purchase loans when they take over the market share of the merging banks.

According to the regression results shown in Panel B of Table **11**, the diff-in-diff estimators *Compete* × *PostMerger* are positive and significant in both Columns 1 (for white borrowers) and 2 (for black borrowers). Thus, mortgages to both racial groups are transferred from merging banks to competing banks during the post-merger period. However, the severity of the effects differs between the two racial groups. The magnitude and significance of the diff-in-diff estimators of mortgages to

white applicants (Column 1) are larger than those of mortgages originated to black applicants (Column 2). In the third column, we introduce a new dummy, i.e., *Black,* that assumes a value of one if the loans are originated to black borrowers. We interact this dummy variable with other terms. Notably, we control for the bank-county-merger-black fixed effects. We find that the triple interaction term, i.e., *Compete* × *PostMerger* × *Black*, is negative and statistically significant. Thus, the mortgages originated to black borrowers are less likely to transfer from merging banks to competing banks in M&A counties during the post-merger period.

Regarding the different impacts of bank M&As on mortgage originations to applicants of different races, the literature shows that statistical discrimination exists due to the relatively poor average loan performance of black borrowers (Munnell et al. 1996). Black applicants can alleviate this problem by providing more information to reduce the information asymmetry between them and the banks (Han 2011). Thus, it is more difficult for black applicants without an existing relationship with banks to obtain loans than black applicants with this relationship since there is less information asymmetry between the latter and the banks. If the relationship is not transferred during divestitures, black applicants are more likely to obtain loans from the sellers (the merging banks) than from the purchaser (the competing bank), and the increase in the mortgage originations of the competing banks is less pronounced for black borrowers.

[Insert Table **11** about here]

The results described in this section indicate that in divestitures, the merging banks consider the value of the lending relationship and divest different type of loans differently, supporting our argument regarding small business lending markets.

4.5.Negative Consequences

4.5.1. Racial Inequality in Mortgage Lending

In Table **12**, we compare banks' mortgage originations to black borrowers in M&A counties with those in adjacent non-M&A counties during the post-merger period. We find that the diff-in-diff estimator (*PostMerger* × *MergerCnty*) is statistically insignificant, but the triple interaction term (*PostMerger* × *MergerCnty* × *Black*) is negative and statistically significant. The insignificant diff-in-diff coefficient implies that the banks in M&A counties do not expand their mortgage origination to white borrowers relative to the banks in adjacent non-M&A counties during the post-merger period. However, the negative triple interaction term suggests that the banks in M&A counties reduce their mortgage lending to black borrowers compared to those in adjacent non-M&A counties during the same period. Thus, divestitures in M&As are associated with more severe racial inequality in mortgage lending.

[Insert Table **12** about here]

4.5.2. Effects of Divestitures on Loan Interest Rates

As a next step, we examine how bank branch divestiture affects interest rates of mortgage loans. For this test, we compare annual averages of branch-level loan

interest rates for 15-year fixed rate mortgages with a size of $175,000 originated in M&A counties with those originated in their adjacent non-M&A counties. Table **13** reports the regression results. We find that the diff-in-diff estimator (*PostMerger* × *MergerCnty*) is positive and statistically significant. This result implies that new borrowers of mortgage loans in the M&A counties are more likely to assume higher loan interest rates relative to those in the adjacent non-M&A counties after the bank M&A. This regression result reflects the possibility that the competing banks in the M&A counties face higher information friction for new mortgage applicants, leading to higher loan interest rates for those borrowers. Also, this result can be partially driven by a surge of mortgage demands for the competing banks, transferred from the merging banks.

[Insert Table **13** about here]

4.5.3. Effects of Divestitures on Loan Risks

Hard information is insufficient to reflect a borrower's riskiness. Borrowers with good hard information may be riskier, and borrowers with poor hard information may be less risky. We have shown that entrants extend mortgage credit by relying on hard information more than soft information. These banks may mistakenly accept loan applications by risky borrowers with good hard information and reject applications from safe borrowers with poor hard information. Therefore, as the market share is transferred from merging banks to competing banks, the quality of the loans originated by the competing banks in M&A counties who have

less soft information can worsen. In addition, the foreclosure of loans originated by competing banks could spill over to those originated by merging banks in M&A counties by lower housing prices or social norm of morality (Campbell, Giglio, and Pathak 2011; Guiso, Sapienza, and Zingales 2013). As a result, the average foreclosure risk of loans originated in M&A counties is expected to increase after M&As relative to those in non-M&A counties.

We construct a loan-merger level sample to test this hypothesis. First, we match the loan characteristics at origination to the foreclosure status based on the information in the Blackbox Logic database introduced in Section 3.1. Thus, we obtain a loan-level sample in which each loan has one observation regarding the loan characteristics at origination and a foreclosure dummy. Loans in the sample were originated between 1999 to 2014. Then, we merge this sample to M&A events by the county FIPS codes where each M&A event includes a unique merger ID, the FIPS codes of the M&A county and adjacent counties, and the year of the M&A. Therefore, loan j could appear in multiple M&As since the county in which loan j was originated may be involved in difference M&As. Then, for each M&A event in the merged sample, we restrict the observations to the period ranging from the three years prior to and three years following the M&A event.

To obtain consistent estimates, we use ordinary least squares (OLS) to estimate the following difference-in-differences specification to test this hypothesis:

$$Y_{j,m} = \alpha_0 + \alpha_1 MergerCnty_{j,m} \times Post_{j,m} + \Gamma X_{j,m} + FEs + \varepsilon_{j,m} \quad (4)$$

where j and m refer to loans and merger IDs. The dependent variable is a foreclosure dummy, i.e., $Y_{j,m}$, that equals 1 if the property of the mortgage was foreclosed by the end of the sample period (Jan 31st, 2016) and 0 otherwise. $MergerCnty_{j,m}$ equals 1 if the loan was originated in a county with an M&A and 0 if the loan was originated in an adjacent county. $Post_{j,m}$ equals 1 if the loan was originated after the M&A and 0 otherwise regardless of whether the loan was originated in an M&A county or its adjacent non-M&A counties. In addition to the year-merger ID fixed effects and county-merger ID fixed effects, the interaction term *MergerCnty* × *Post* captures the effects of bank M&As on the credit risk of the originated loans. Table 14 displays the results. The increase in the foreclosure rates from loans originated prior to a bank M&A to loans originated following an M&A is 2.2% (0.006 divided by 0.268) higher in the counties experiencing the bank M&A than that in their adjacent non-M&A counties.

[Insert Table **14** about here]

4.5.4. Housing Prices

Subsequently, we investigate how bank divestitures affect local housing prices. We found that divestitures lead to riskier mortgage originations and deteriorating foreclosure rates. Therefore, we expect the M&A counties to have more severe decreases in housing prices during housing market crashes since

foreclosures lead to lower housing prices (Campbell, Giglio, and Pathak 2011).

We construct a county-year-merger level sample consisting of the housing price index available from the Federal Housing Finance Authority (FHFA). We first construct a sample of annual housing price index at the county-level and then merge this index to M&A events by county FIPS codes such that each M&A event includes a unique merger ID, the FIPS codes of the M&A county and the adjacent counties, and the year of the M&A. Then, for each M&A event in the merged sample, we restrict the observations to the period ranging from the year of the M&A event to 2012 when the housing prices ceased to decline. For inclusion in our sample, the M&A event should occur no later than 2005to ensure a sufficient number of pre-crisis observations. To get a clean sample, we further limit the sample to non-M&A counties that did not have M&A before 2013 and M&A counties that did not have M&A between 2005 and 2012. In this sample, the average housing price index decreased by 48.44 from 304.2309 in 2007 to 255.79 in 2012).

Then, we estimate the following difference-in-differences specification to test this hypothesis:

$$HPI_{c.t,m} = \alpha_0 + \alpha_1 MergerCnty_{c,t,m} \times Crisis_{c,t,m} + FEs + \varepsilon_{c,t,m}, \quad (5)$$

where *c, t,* and *m* refer to counties, years, and merger IDs, respectively. $HPI_{c,t,m}$ is the housing price index in county *c* at year *t*. $MergerCnty_{c,t,m}$ equals 1 if county *i* is the county that underwent the M&A in M&A *m* and 0 otherwise. $Crisis_{c,t,m}$ equals 1

if year t is greater than or equal to 2008. *FEs* includes county-merger ID fixed effects that control for the county-level year invariant characteristics that affect housing prices and year-merger ID fixed effects that control for time-varying shocks. $MergerCnty_{c,t,m} \times Crisis_{c,t,m}$ and *FEs* constitute a difference-in-differences specification.

Table 15 displays the results. The housing price index in counties that underwent bank M&As prior to the subprime mortgage crisis decreases by 5.81.96 more than that in adjacent non-M&A counties, corresponding to 13.3% (6.44/48.44) of the drop in housing price from 2007 to 2012. These results support the argument that bank divestitures aggravate housing market crashes.

[Insert Table **15** about here]

4.6.Underlying Driving Factors of Divestitures

4.6.1. Regression Discontinuity Design

As mentioned in Section 2, regulators assessing the competitive effects in their review of an M&A application focus on markets in which the effects of the proposed M&A on HHI and market shares exceed certain threshold values. This feature allows us to exploit a regression-discontinuity-diff-in-diff design (RD-DDD) to show the causal relationship between anti-trust divestitures and changes in lending if banks do not self-select into the below-threshold-value group.

First, for each M&A event, we compute the market-merger level pro forma post-M&A HHI, the merging banks' market share and the pro forma changes in

market-level HHI using SoD data that have been merged with FRB market data as described in Section 3.1.

One concern is that merging banks may self-select into the below-threshold group to avoid compulsory divestitures by reducing their deposit market share before the M&A application. However, merging banks may not self-select if the benefit of being waived from compulsory divestiture is insufficient to offset the cost of downsizing deposits ahead of time (which is forgoing some profits). Our RD-DDD is based on the assumption that merging banks do not divest before M&As. Figure 2 and Table 16 display the regression results of the dynamics of banks' FRB banking market shares for deposits. We do not find difference in the pre-trend of branch divestitures between merging banks and competing banks, providing evidence that contradicts the hypothesis of banks' self-selection into the below-threshold group and validating our RD-DDD specification.

[Insert Figure 2 about here]

[Insert Table 16 about here]

Then, we merge the dataset constructed above to the bank-year-county-merger level datasets of mortgage lending and small business lending described in Sections 4.2 and 4.3. We restrict the sample to M&A counties in which the pro forma deposit market HHI does not increase by 200 to 1800 as a result of bank merger events. We further limit the sample to counties in which the merging banks' pro forma market shares range between 30 and 40 percent. Regulators focus on counties with pro forma

merging banks' market share higher than 35 percent. Therefore, merging banks are more likely to divest in these counties to meet the regulatory requirements, and we expected to observe a discontinuity in the change in the dependent variables at the 35 percent threshold value.

We exploit the following DDD model:

$$
\begin{aligned}
Y_{i,c,t,m} = \; & \alpha_0 + \alpha_1 Compete_{i,c,t,m} \times PostMerger_{i,c,t,m} \\
& + \alpha_2 Compete_{i,c,t,m} \times High_{i,c,t,m} \\
& + \alpha_3 PostMerger_{i,c,t,m} \times High_{i,c,t,m} \\
& + \boldsymbol{\alpha_4 Compete_{i,c,t,m} \times PostMerger_{i,c,t,m} \times High_{i,c,t,m}} \\
& + \alpha_5 PostShare_{i,c,t,m} + \alpha_6 Compete_{i,c,t,m} \times PostShare_{i,c,t,m} \\
& + \alpha_7 Postmerger_{i,c,t,m} \times PostShare_{i,c,t,m} \\
& + \alpha_8 Compete_{i,c,t,m} \times PostMerger_{i,c,t,m} \times PostShare_{i,c,t,m} \\
& + FEs + \Gamma X_{i,c,t,m} + \varepsilon_{i,c,t,m}
\end{aligned}
\tag{6}
$$

The subscripts *i*, c, *t,* and *m* refer to banks, counties, years, and merger IDs, respectively. $Y_{i,c,t,m}$ includes *Ln(Mortgage)* and *Ln(SBL). High* assumes a value of one if the pro forma market shares of the merging banks as a result of the bank M&A increase from below 35 percent to at least 35 percent and zero otherwise. *PostShr* is the pro forma market shares of the merging banks as a result of the bank M&A. Thus, in this RDD, *PostShr* is used as the running variable, and *High* represents the threshold.

The results of these RDDs are reported in Table 17. According to Column 1 in this table, we find that *Compete* × *PostMerger* is positive and significant, suggesting that mortgage originations are more likely to transfer from merging banks to competing banks within M&A counties. However, the negative and significant coefficients of the triple interaction, i.e., *Compete* × *PostMerger* × *PostShr*, show that this likelihood is mitigated as the pro forma market shares of merging banks increase. In this RDD, the most striking result is that *Compete* × *PostMerger* × *High* is positive and significant, suggesting that if merging banks' pro forma market shares after bank M&As exceed the threshold in the regulator's review, there is a significant increase in the effect of the bank M&A on the mortgage originations of the merging and competing banks. Thus, a compulsory divestiture can be a key driver underlying the effect of a bank M&A on the mortgage origination of the merging banks.

In contrast, we cannot find any significant result in terms of small business lending in Column 2. Both *Compete* × *PostMerger* and *Compete* × *PostMerger* × *High* are nonsignificant. As discussed in Sections 4.1 to 4.3, banks' M&As and compulsory divestitures have differential effects on the mortgage origination and small business lending of the merging banks and competing banks in M&A counties during the post-merger period.

[Insert Table **17** about here]

4.6.2. Sub-samples for non-review

In the previous section, we show that compulsory divestitures can be possible drivers leading to the transfer of mortgage originations from merging banks to

competing banks in the same M&A counties during the post-merger period. Finally, we examine whether the same phenomena can be observed even if the merging banks and M&A markets are not subject to compulsory divestitures. If we find similar regression results in these sub-samples, the merging banks' divestiture needs could be another driver underlying the consequences. To test this prediction, we limit the samples to M&A counties that are not subject to regulators' review for anti-trust remedies. The sample includes M&A counties belonging to the FRB banking market in which the pro forma deposit market HHIs are lower than 1800 and the pro forma market shares of merging banks are less than 35 percent as a result of bank M&As. We report the results in Table 18. We find that the diff-in-diff estimator of mortgage origination, i.e., *Compete* × *PostMerger*, is positive and significant (Columns 1), which is similar to the results obtained in the baseline regressions shown in Table **4**. However, the diff-in-diff coefficient of small business lending (Column 2) is insignificant. These findings are also similar to those obtained in our baseline regressions shown in Table 9.

Based on the results shown in Table 18, we can conclude that the merging banks' restructuring needs are also key drivers underlying the change in mortgage originations in both the merging and competing banks in M&A counties during the post-merger period along with the compulsory divestitures initiated by the regulatory agency.

[Insert Table **18** about here]

5. **Conclusion**

This paper examines the effects of bank divestitures in M&As on the loan market and real economy. We first find that merging banks are more likely to divest their branch offices immediately after an M&A, supporting the association between bank divestitures and M&As. Then, we find that the combined market shares of the merging banks in the mortgage market decline relative to those of the merging banks following divestitures, suggesting that the market share of merging banks in the mortgage market are transferred to the competing banks following divestitures. The decrease in loans to black borrowers and refinance loans, which rely more on relationship lending, is lower. In contrast, the combined market shares of the merging banks do not change in local small business lending markets, which require more customer relationships, suggesting that the changes in local lending are not driven by unobserved local economic fundamentals and that the transfer of the market share is more pronounced in loans requiring less customer relationships. In addition, divestitures are associated with several negative externalities. Racial inequality in the mortgage market becomes more severe. Loan interest rates of mortgages originated in M&A counties are higher than those in the adjacent non-M&A counties. The mortgages originated after M&As in the M&A counties were more likely to enter foreclosure than those in the adjacent non-M&A counties, and the housing price in the M&A counties also declined more dramatically during the subprime crisis.

We further demystify the causes of divestitures. We exploit RD-DDD and find that the increases in the competing banks' mortgage origination are more pronounced

above the threshold of compulsory divestiture. We rule out self-selection by a dynamic test in which the merging banks did not manipulate their deposit market share before the M&A. In addition, the transfer of mortgage market share persists after we restrict the sample to markets that do not breach the threshold values and are free from compulsory divestitures. Therefore, these results suggest that divestitures are driven by both the antitrust policy and the merging banks' willingness to divest.

Our paper contributes to the literature related to merger remedies, soft information, relationship banking, racial inequality, and bank M&As. In addition, our paper provides important insight for policy making and investment strategy. We show that divestitures in M&As can lead to more severe racial inequality, higher loan interest rates, riskier mortgage origination, and more fragile housing markets. These are the costs of divestitures, and policy makers should consider these issues when making and implementing antitrust policies. Second, in the small business lending market, the policy of compulsory divestiture is ineffective. Third, our results call attention to the increasing loan risks made by bank M&As, which is informative to mortgage buyers or mortgage-backed security (MBS) investors.

The conclusions of this paper inspire some new research topics. For example, this paper sheds light on several costs of antitrust divestitures. Thus, a following question is how to quantify the costs and incorporate them into policy making. In addition, negative externalities result from the fact that business relationships are not transferred along with the divested branches. Therefore, it is critical to design

an effective mechanism to ensure that business relationships are transferred with the branches. These are potential ideas for future research.

References

Akhavein, Jalal D, Allen N Berger, and David B Humphrey. 1997. "The effects of megamergers on efficiency and prices: Evidence from a bank profit function." *Review of Industrial Organization* no. 12 (1):95-139.

Allen, Franklin. 1990. "The market for information and the origin of financial intermediation." *Journal of Financial Intermediation* no. 1 (1):3-30.

Avery, RB, PE Beeson, and MS Sniderman. 1996. "Accounting for racial differences in housing credit markets." *Mortgage Lending, Racial Discrimination, and Federal Policy, edited by John Goering and Ron Wienk (Washington: Urban Institute Press)*:75-142.

Bharath, S.T., Dahiya, S., Saunders, A. and Srinivasan, A., 2009. Lending relationships and loan contract terms. *The Review of Financial Studies*, *24*(4), pp.1141-1203.

Berger, Allen N, Rebecca S Demsetz, and Philip E Strahan. 1999. "The consolidation of the financial services industry: Causes, consequences, and implications for the future." *Journal of Banking & Finance* no. 23 (2-4):135-194.

Berger, Allen N, Anthony Saunders, Joseph M Scalise, and Gregory F Udell. 1998. "The effects of bank mergers and acquisitions on small business lending." *Journal of Financial Economics* no. 50 (2):187-229.

Berger, A.N. and Udell, G.F., 1995. Relationship lending and lines of credit in small firm finance. *Journal of business*, pp.351-381.

Bhattacharya, Sudipto, and Anjan V Thakor. 1993. "Contemporary banking theory." *Journal of Financial Intermediation* no. 3 (1):2-50.

Boot, Arnoud WA. 2000. "Relationship banking: What do we know? ." *Journal of Financial Intermediation*.

Boot, Arnoud WA, Stuart I Greenbaum, and Anjan V Thakor. 1993. "Reputation and discretion in financial contracting." *The American Economic Review*:1165-1183.

Boot, A.W. and Thakor, A.V., 1994. Moral hazard and secured lending in an infinitely repeated credit market game. *International economic review*, pp.899-920.

Bostic, Raphael W. 2003. "A test of cultural affinity in home mortgage lending." *Journal of Financial Services Research* no. 23 (2):89-112.

Burke, Jim. 1997. "Divestiture as an antitrust remedy in bank mergers." *Federal Reserve Board FEDS Paper* no. 98-14.

Campbell, John Y, Stefano Giglio, and Parag Pathak. 2011. "Forced sales and house prices." *American Economic Review* no. 101 (5):2108-31.

Carow, Kenneth A, Edward J Kane, and Rajesh Narayanan. 2003. How have borrowers fared in banking mega-mergers? : National Bureau of Economic Research.

Cornett, Marcia Millon, Jamie John McNutt, and Hassan Tehranian. 2006. "Performance changes around bank mergers: Revenue enhancements versus cost reductions." *Journal of Money, Credit, and Banking* no. 38 (4):1013-1050.

Darwish, Nisreen H. 2014. "Keeping Banking Competitive: Evaluating Proposed Bank Mergers and Acquisitions." *Chicago Fed Letter* (322):1.

Di Patti, Emilia Bonaccorsi, and Giorgio Gobbi. 2007. "Winners or losers? The effects of banking consolidation on corporate borrowers." *The Journal of Finance* no. 62 (2):669-695.

Diamond, Douglas W. 1984. "Financial intermediation and delegated monitoring." *The Review of Economic Studies* no. 51 (3):393-414.

Dlugosz, J., Gam, Y.K., Gopalan, R. and Skrastins, J., 2019. Decision-making delegation in banks. *Available at SSRN 3155683*.

Ghent, Andra C, and Marianna Kudlyak. 2011. "Recourse and residential mortgage default: evidence

from US states." *The Review of Financial Studies* no. 24 (9):3139-3186.
Gorton, Gary, and Andrew Winton. 2003. "Financial intermediation." In *Handbook of the Economics of Finance*, 431-552. Elsevier.
Greenbaum, Stuart I, and Anjan V Thakor. 1995. *Contemporary financial intermediation*: Dryden Press.
Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2013. "The determinants of attitudes toward strategic default on mortgages." *The Journal of Finance* no. 68 (4):1473-1515.
Han, Song. 2011. "Creditor learning and discrimination in lending." *Journal of Financial Services Research* no. 40 (1-2):1-27.
Ioannidou, Vasso, and Steven Ongena. 2010. "Time for a change: Loan conditions and bank behavior when firms switch banks." *The Journal of Finance* no. 65 (5):1847-1877.
Ladd, Helen F. 1998. "Evidence on discrimination in mortgage lending." *Journal of Economic Perspectives* no. 12 (2):41-62.
Li, Y., Lu, R. and Srinivasan, A., 2019. Relationship bank behavior during borrower distress. *Journal of Financial and Quantitative Analysis*, *54*(3), pp.1231-1262.
Munnell, Alicia H, Geoffrey MB Tootell, Lynn E Browne, and James McEneaney. 1996. "Mortgage lending in Boston: Interpreting HMDA data." *The American Economic Review*:25-53.
Osinski, F David, and Jeremy Sandford. 2018. "Merger remedies: A retrospective analysis of Pinnacle/Ameristar." *Working Paper*.
Peek, Joe, and Eric S Rosengren. 1998. "Bank consolidation and small business lending: It's not just bank size that matters." *Journal of Banking & Finance* no. 22 (6-8):799-819.
Petersen, M.A. and Rajan, R.G., 1994. The benefits of lending relationships: Evidence from small business data. *The journal of finance*, *49*(1), pp.3-37.
Pilloff, Steven J. 2002. "What's happened at divested bank offices? An empirical analysis of antitrust divestitures in bank mergers." *Board of Governors of the Federal Reserve System (US). (No. 2002-60).* .
Rajan, Raghuram G. 1992. "Insiders and outsiders: The choice between informed and arm's‐length debt." *The Journal of Finance* no. 47 (4):1367-1400.
Ramakrishnan, Ram TS, and Anjan V Thakor. 1984. "Information reliability and a theory of financial intermediation." *The Review of Economic Studies* no. 51 (3):415-432.
Samolyk, Katherine, and Robert B Avery. 2000. "Bank consolidation and the provision of banking services: The case of small commercial loans." *Working Paper*.
Santos, Joao AC, and Andrew Winton. 2008. "Bank loans, bonds, and information monopolies across the business cycle." *The Journal of Finance* no. 63 (3):1315-1359.
Schenone, Carola. 2010. "Lending relationships and information rents: Do banks exploit their information advantages?" *The Review of Financial Studies* no. 23 (3):1149-1199.
Scott, Jonathan A, and William C Dunkelberg. 2003. "Bank mergers and small firm financing." *Journal of Money, Credit, and Banking* no. 35 (6):999-1017.
Srinivasan, Anand. 2014. "Long run relationships in banking." *Foundations and Trends® in Finance* no. 8 (2):55-143.
Strahan, Philip E, and James P Weston. 1998. "Small business lending and the changing structure of the banking industry." *Journal of Banking & Finance* no. 22 (6-8):821-845.
Tenn, Steven, and John M Yun. 2011. "The success of divestitures in merger enforcement: Evidence from the J&J–Pfizer transaction." *International journal of industrial organization* no. 29 (2):273-282.
Williams, Emily. 2017. "Monetary Policy Transmission and the Funding Structure of Banks." *Working Paper*.
Winton, Andrew. 1995. "Delegated monitoring and bank structure in a finite economy." *Journal of Financial Intermediation* no. 4 (2):158-187.

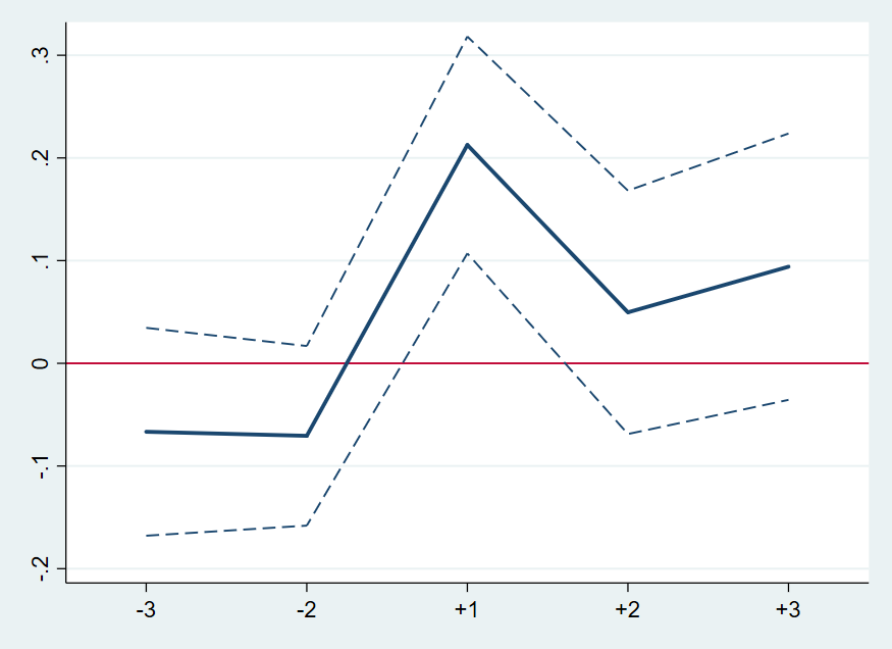
Appendix: Variable Definition

Variable	Definition	Level
Key dependent variable		
Num_Branch	Number of bank branches in the county as of June 30 of each year	Year-County-Bank
Num_NetClosing	Number of net closing of bank branches in the county during a year prior to June 30 of each year	Year-County-Bank
Num_Divestiture	Number of divestitures of bank branches in the county during a year prior to June 30 of each year	Year-County-Bank
Ln(Mortgage)	Natural log of bank-county level aggregate mortgage origination for the year	Year-County-Bank
MortgageMS	Bank's market share of county aggregate mortgage origination for the year	Year-County-Bank
Ln(SBL)	Natural log of bank-county level aggregate small business lending origination for the year	Year-County-Bank
SBLMS	Bank's market share of county aggregate small business lending origination for the year	Year-County-Bank
Key independent variable		
PostMerger (dummy)	Dummy that takes the value of one for the post-period.	Merger ID-Year
Compete (dummy)	Dummy that takes the value of one for the competing banks, zero otherwise (merging bank). Competing banks are the non-merging banks that have branches in the M&A county or its adjacent non-M&A counties at the time of bank M&A event.	Merger ID-bank
MergerCnty (dummy)	Dummy that takes the value of one for the M&A county, which is the county where the merging banks have branches at the time of M&A	Merger ID-county
Ln(Total assets)	Natural log of bank's total assets	Year-Bank
Ln(Total deposits)	Natural log of bank's total deposits	Year-Bank
BHC	Dummy that takes a value of one for the bank that is affiliated in a bank holding company	Year-Bank
Small	Dummy that identifies a bank with total assets of less than $2 billion	Year-Bank
Local	Dummy that identifies a bank that collects more than 65 percent of its deposits from a given county.	Year-Bank
HHI	Herfindahl-Hirschman Index for a county-level deposit market	Year-County
Ln(Population)	Natural log of county's population	Year-County
Ln(Personal Income)	Natural log of county's personal income	Year-County
Unemployment rate	Unemployment rate	Year-County

Figure 1: Banks' mortgage origination in the M&A counties (dynamics)

The graph plots the point estimates and 95% confidence intervals of the coefficients for the interaction term, *Compete*·*PostMerger*(*k*), where *k* ranges from -3 to +3. The year before the bank M&A (-1) is the omitted category. The first graph uses mortgage amounts and the second graph employs mortgage market share as the outcome variables.

a. Mortgage amount



b. Mortgage market share

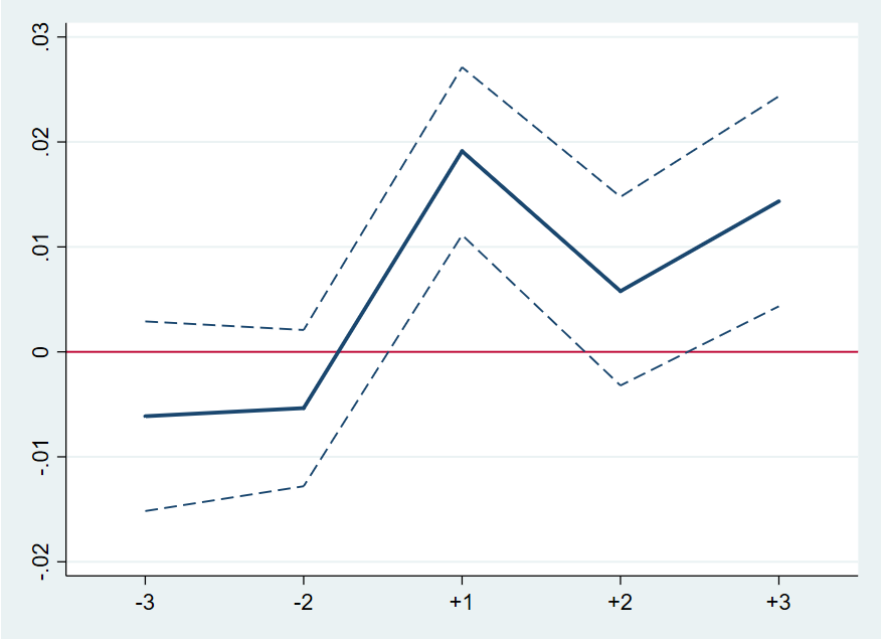


Figure 2: Banks' FRB banking market shares for deposits in the M&A counties (dynamics)

The graph plots the point estimates and 95% confidence intervals of the coefficients for the interaction term, *Compete*·*PostMerger*(*k*), where *k* ranges from -3 to +3. The year before the bank M&A (-1) is the omitted category. The first graph uses the FRB banking market shares for deposits as the outcome variables.

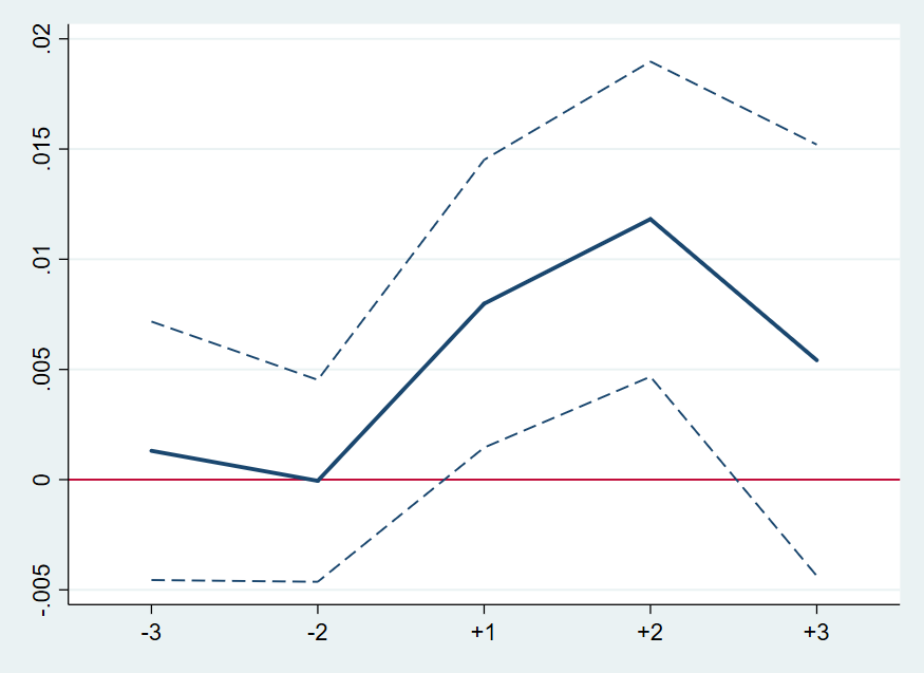


Table 1: Summary statistics

This table reports summary statistics for key dependent and independent variables in analyses of the effect of banks' merger and acquisition (M&A) on branch divestitures and lending activities of the merging banks and the competing banks' in the local market around the time of the bank M&A. Variable definitions are provided in the appendix.

				Percentile Distribution		
	N	Mean	S.D.	25th	Median	75th
Key dependent variable						
Num_Branch	136062	3.971	6.654	1.000	2.000	4.000
Num_NetClosing	136130	0.019	0.691	0.000	0.000	0.000
Num_Divestiture	136130	0.005	0.335	0.000	0.000	0.000
Ln(Mortgage)	76228	8.678	1.763	7.567	8.708	9.834
MortgageMS	76228	0.065	0.094	0.006	0.027	0.085
Ln(SBL)	43984	8.713	1.575	7.792	8.823	9.801
SBLMS	43984	0.106	0.125	0.023	0.061	0.140
Key independent variable						
PostMerger (dummy)	76228	0.500	0.500	0.000	0.500	1.000
Compete (dummy)	76228	0.962	0.191	1.000	1.000	1.000
MergerCnty (dummy)	76228	0.430	0.495	0.000	0.000	1.000
Control variable						
Ln(Total assets)	72133	14.959	2.988	12.471	14.082	17.532
Ln(Total deposits)	72133	14.696	2.906	12.283	13.849	17.103
BHC	76228	0.893	0.309	1.000	1.000	1.000
Small	72133	0.539	0.498	0.000	1.000	1.000
Local	76158	0.320	0.466	0.000	0.000	1.000
HHI(county)	76228	0.186	0.098	0.124	0.162	0.219
Ln(Population)	76228	11.957	1.211	11.088	11.969	12.874
Ln(Personal Income)	76228	15.512	1.343	14.507	15.494	16.568

Table 2: Univariate test results

This table reports the results of univariate tests for the null hypotheses that differences in variables between the merging banks and the competing banks in local markets are equal to zero. Statistical significance at the 10%, 5%, and 1% levels is denoted by *,** and ***, respectively.

Panel A: Pre-merger	Competing bank		Merging bank		Mean Diff	(t-stat)
	Mean	Median	Mean	Median		
Key dependent variable						
Num_Branch	3.791	2.000	9.394	6.000	-5.604***	(-37.64)
Num_NetClosing	-0.007	0.000	0.111	0.000	-0.118***	(-8.47)
Num_Divestiture	0.005	0.000	0.013	0.000	-0.008	(-1.02)
Ln(Mortgage)	8.654	8.677	9.739	9.811	-1.084***	(-22.98)
MortgageMS	0.065	0.026	0.102	0.061	-0.037***	(-14.25)
Ln(SBL)	8.649	8.768	9.530	9.628	-0.881***	(-19.36)
SBLMS	0.105	0.060	0.151	0.108	-0.047***	(-12.61)
Control variable						
Ln(Total assets)	14.926	14.002	15.744	15.383	-0.819***	(-10.19)
Ln(Total deposits)	14.665	13.777	15.453	15.167	-0.788***	(-10.08)
BHC	0.888	1.000	0.962	1.000	-0.074***	(-8.86)
Small	0.545	1.000	0.351	0.000	0.194***	(14.51)
Local	0.330	0.000	0.176	0.000	0.154***	(12.28)
HHI	0.187	0.163	0.175	0.157	0.013***	(4.68)
Ln(Population)	11.942	11.956	12.215	12.243	-0.274***	(-8.42)
Ln(Personal Income)	15.480	15.462	15.761	15.781	-0.281***	(-7.80)

Table 2: Continued

Panel B: Post-merger	Competing bank		Merging bank		Mean	(t-stat)
	Mean	Median	Mean	Median	Diff	
Key dependent variable						
Num_Branch	3.832	2.000	8.888	6.000	-5.057***	(-34.18)
Num_NetClosing	0.005	0.000	1.194	0.000	-1.189***	(-72.74)
Num_Divestiture	0.003	0.000	0.088	0.000	-0.084***	(-12.17)
Ln(Mortgage)	8.628	8.660	9.510	9.619	-0.882***	(-18.79)
MortgageMS	0.063	0.026	0.087	0.048	-0.024***	(-9.80)
Ln(SBL)	8.672	8.776	9.608	9.670	-0.936***	(-20.86)
SBLMS	0.101	0.058	0.146	0.109	-0.045***	(-12.78)
Control variable						
Ln(Total assets)	14.918	13.991	16.065	15.879	-1.147***	(-13.75)
Ln(Total deposits)	14.655	13.767	15.766	15.580	-1.111***	(-13.69)
BHC	0.893	1.000	0.969	1.000	-0.076***	(-9.31)
Small	0.550	1.000	0.313	0.000	0.237***	(16.97)
Local	0.323	0.000	0.144	0.000	0.179***	(14.37)
HHI	0.185	0.160	0.176	0.157	0.009***	(3.44)
Ln(Population)	11.952	11.968	12.227	12.256	-0.275***	(-8.47)
Ln(Personal Income)	15.523	15.507	15.808	15.826	-0.285***	(-7.92)

Table 3: Banks' branch divestitures in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on numbers of branches, numbers of branch net-closing and numbers of branch divestitures of merging banks and competing banks in the M&A counties (and their adjacent non-M&A counties) around the time of bank M&A. The dataset consists of two observations - the year prior to or following a bank M&A - for the merging banks and the competing banks in the M&A and adjacent non-M&A counties in 1997-2014. The M&A county is the county where the merging banks have branches at the time of M&A. The non-M&A county is the county where the merging banks have no branch at the time of M&A. *Num_Branch* is the number of branches of the bank in the county as of June 30. *Num_NetClosing* is the number of branch net closing of the bank in the county during the year prior to June 30. *Num_Divestiture* is the number of branch divestitures of the bank in the county during the year prior to June 30. *Compete* takes the value of one for the competing banks, zero otherwise (for the merging banks). *PostMerger* takes the value of one for the post-period. *MergerCnty* takes the value of one for the M&A county, which is the county where the merging banks have branches at the time of M&A. The regression includes a set of control variables for bank characteristics (*Ln*(*Total assets*), *Ln*(*Total deposits*), *BHC*, *Small,* and *Local)* and market (county) characteristics (*HHI, Ln(Population),* and *Ln(Personal Income)*). The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Panel A: observations in the merger county			
Dep. var.	*Num_ Divestiture*	*Num_ NetClosing*	*Num_ Branch*
Compete × PostMerger	-0.079***	-1.044***	0.671***
	(-3.54)	(-15.33)	(11.99)
Bank-County-Merger ID FE	YES	YES	YES
Year-Merger ID FE	YES	YES	YES
Bank and county controls	YES	YES	YES
Observations	49100	49100	49082
Adjusted R^2	-0.168	0.248	0.991
Mean DV	0.011	0.053	5.439

Table 3: Continued

Panel B: observations in the merger county and its adjacent counties			
	Num_ Divestiture	*Num_ NetClosing*	*Num_ Branch*
Compete × PostMerger	-0.080***	-1.038***	0.600***
	(-3.51)	(-15.75)	(11.61)
Compete × PostMerger × MergerCnty	-0.004	-0.001	0.051***
	(-0.75)	(-0.13)	(6.11)
Bank-County-Merger ID FE	YES	YES	YES
Year-Merger ID FE	YES	YES	YES
Bank and county controls	YES	YES	YES
Observations	129792	129792	129724
Adjusted R^2	-0.080	0.290	0.992
Mean DV	0.005	0.019	3.971

Table 4: Banks' mortgage origination in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on mortgage origination of merging banks and competing banks in the M&A counties (and their adjacent non-M&A counties) around the time of the bank M&A. The dataset consists of two observations on mortgage originations of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A and adjacent non-M&A counties in 1999-2014. *Ln(Mortgage)* is a natural log of bank-county aggregate mortgage origination during the calendar year. *MortgageMS* is the bank's market share of mortgage origination in the county during the calendar year. *Compete* takes the value of one for the competing banks, zero otherwise (for the merging banks). *PostMerger* takes the value of one for the post-period. *MergerCnty* takes the value of one for the M&A county, which is the county where the merging banks have branches at the time of M&A. The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Panel A: observations in M&A counties		
Dep. var.	*Ln(Mortgage)*	*MortgageMS*
Compete × PostMerger	0.302***	0.015***
	(10.89)	(9.31)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	30990	30990
Adjusted R^2	0.879	0.904
Mean DV	8.961	0.046

Table 4: Continued

Panel B: observations in M&A counties and its adjacent counties		
Dep. var.	*Ln(Mortgage)*	*MortgageMS*
Compete × PostMerger	0.261***	0.012***
	(9.55)	(6.82)
Compete × PostMerger × MergerCnty	0.042***	0.003***
	(3.96)	(5.54)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	72063	72063
Adjusted R^2	0.889	0.900
Mean DV	8.678	0.065

Table 5: Banks' mortgage origination in the M&A counties (dynamics)

This table examines the effect of banks' merger and acquisition (M&A) on mortgage origination of merging banks and competing banks in the M&A counties around the time of the bank M&A. Observations are bank-county-year for merging banks and competing banks in the M&A counties in a 6-year window centered on the M&A event. *PostMerger (k),* where *k* ranges from -3 to 3, are a set of six dummy variables that represent the years relative to the M&A year. The year before the M&A (-1) is the reference category. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Panel A of Table 6.

Dep. var.	*Ln(Mortgage)*	*MortgageMS*
Compete × PostMerger (-3)	-0.067	-0.006
	(-1.29)	(-1.33)
Compete × PostMerger (-2)	-0.071	-0.005
	(-1.58)	(-1.41)
Compete × PostMerger (-1)	Reference	Reference
Compete × PostMerger (1)	0.213***	0.019***
	(3.95)	(4.69)
Compete × PostMerger (2)	0.050	0.006
	(0.82)	(1.26)
Compete × PostMerger (3)	0.094	0.014***
	(1.42)	(2.81)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	10008	10008
Adjusted R^2	0.850	0.868
Mean DV	8.866	0.068

Table 6: Securitization and Banks' mortgage origination in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on mortgage origination of merging banks and competing banks in the M&A counties around the time of bank M&A by types of mortgages. The dataset consists of two observations on mortgage originations (by types) of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A counties in 1999-2014. In Panel A, mortgages are decomposed to mortgages for home purchase purpose and mortgages for refinancing purpose. *Refinance* is a dummy that is equal to one if the mortgage is originated for the purpose of refinancing, zero otherwise (home purchase purpose). In Panel B, mortgages are decomposed to the mortgages retained by the originating banks and the mortgages sold. *Sold* is a dummy that takes a value of one if the mortgages are sold, zero otherwise (retained). The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Panel A of Table 6.

Origination by type (retained vs. securitized)		
Dep. var.	*Ln(Mortgage)*	
	Retained	*Sold*
Compete × PostMerger	0.283***	0.165***
	(9.52)	(4.45)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	31738	14374
Adjusted R^2	0.821	0.850
Mean DV	8.407	8.921

Table 7: County aggregate mortgage origination in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on county aggregate mortgage origination in the M&A counties relative to their adjacent non-M&A counties. The dataset consists of two observations on county aggregate mortgage originations of the year prior to or following a bank M&A event for the M&A and adjacent non-M&A counties in 1999-2014. *Ln(Mortgage)* is a natural log of county aggregate mortgage origination during the calendar year. *MergerCnty* takes the value of one for the M&A county, which is the county where the merging banks have branches at the time of M&A. *PostMerger* takes the value of one for the post-period. The regression includes a set of control variables for market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Dep. var.	*Ln(Mortgage)*
MergerCnty × PostMerger	-0.006
	(-0.61)
County-Merger ID FE	YES
Year-Merger ID FE	YES
County controls	YES
Observations	9608
Adjusted R^2	0.977
Mean DV	10.734

Table 8: Banks' mortgage origination in the adjacent non-M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on mortgage origination of competing banks in non-M&A counties adjoining to the M&A counties around the time of the bank M&A. The dataset consists of two observations on mortgage origination of the year prior to or following a bank M&A for the competing banks and their nearby banks in adjacent non-M&A counties in 1997-2014. The competing banks have branches in the adjacent M&A counties, but their nearby banks have no branches in the adjacent M&A counties. *Ln(Mortgage)* is a natural log of bank-county aggregate mortgage origination during the calendar year. *MortgageMS* is the bank's market share of mortgage origination in the county during the calendar year. *NearbyCompete* takes a value of one for the competing banks which have branches in the adjacent M&A counties, zero otherwise (no branches in the M&A counties). *PostMerger* takes the value of one for the post-period. The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in all adjacent non-M&A counties for each M&A event. In Panel B, the samples are limited to the non-M&A counties where deposit market HHI is higher than in 1800 as of pre-period (concentrated market). Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Panel A: full samples		
Dep. var.	*Ln(Mortgage)*	*MortgageMS*
NearbyCompete × PostMerger	-0.028	-0.005***
	(-1.45)	(-4.00)
Bank-County-Merger ID FE	YES	YES
YearCounty-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	19199	19199
Adjusted R^2	0.858	0.874
Mean DV	8.379	0.091

Panel B: non-M&A counties with HHI > 1800 as of pre-period		
Dep. var.	*Ln(Mortgage)*	*MortgageMS*
NearbyCompete × PostMerger	-0.047*	-0.006***
	(-1.84)	(-2.76)
Bank-County-Merger ID FE	YES	YES
YearCounty-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	10644	10644
Adjusted R^2	0.819	0.816
Mean DV	8.156	0.116

Table 9: Banks' small business lending origination in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on small business lending originations of merging banks and competing banks in the M&A counties (and their adjacent non-M&A counties) around the time of the bank M&A. The dataset consists of two observations on small business lending of the year prior to or following a bank M&A for merging banks and competing banks in the M&A and adjacent non-M&A counties in 1997-2014. *Ln(SBL)* is the natural log of bank-county level aggregate small business lending origination during the calendar year. *SBLMS* is the bank's market share of small business lending origination in the county during the calendar year. *Compete* takes the value of one for the competing banks, zero otherwise (for the merging banks). *PostMerger* takes the value of one for the post-period. *MergerCnty* takes the value of one for the M&A county, which is the county where the merging banks have branches at the time of M&A. The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Dep. var.	*Ln(SBL)*	*SBLMS*
Compete × PostMerger	-0.035	-0.000
	(-1.57)	(-0.17)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	18745	18745
Adjusted R^2	0.891	0.904
Mean DV	9.168	0.080

Table 10: Banks' mortgage and small business lending origination in the M&A counties

This table examines the effect of banks' merger and acquisition (M&A) on the mortgage and small business lending originations of merging banks and competing banks in the M&A counties (and their adjacent non-M&A counties) around the time of bank M&A. The dataset consists of two observations on mortgage originations and small business lending origination of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A and adjacent non-M&A counties in 1999-2014. *Ln(Loan)* is a natural log of bank-county aggregate loan origination (mortgage or small business lending) during the calendar year. *LoanMS* is the bank's market share of loan origination (mortgage or small business lending) in the county during the calendar year. *Mortgage* is a dummy variable that takes a value of one if the loan is mortgage lending, zero otherwise (small business lending). The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Tables 5 and 10.

Panel A: observations in the merger county		
Dep. var.	*Ln(Loan)*	*LoanMS*
Compete × PostMerger	-0.017	0.002
	(-0.77)	(0.90)
Mortgage × Compete × PostMerger	0.336***	0.016***
	(9.04)	(6.24)
Bank-County-Merger ID-Mortgage FE	YES	YES
Year-Merger ID-Mortgage FE	YES	YES
Bank and county controls	YES	YES
Observations	31558	31558
Adjusted R^2	0.885	0.901
Mean DV	9.370	0.072

Table 10: Continued

Panel B: observations in the merger county and its adjacent counties		
Dep. var.	*Ln(Loan)*	*LoanMS*
Compete × PostMerger	-0.017	0.003
	(-0.71)	(1.08)
Compete × PostMerger × MergerCnty	0.011	0.001
	(0.90)	(0.59)
Mortgage × Compete × PostMerger	0.314***	0.013***
	(8.52)	(4.45)
Mortgage × Compete × PostMerger × MergerCnty	0.025	0.002*
	(1.32)	(1.89)
Bank-County-Merger ID-Mortgage FE	YES	YES
Year-Merger ID-Mortgage FE	YES	YES
Bank and county controls	YES	YES
Observations	70390	70390
Adjusted R^2	0.900	0.903
Mean DV	8.945	0.091

Table 11: Banks' mortgage origination in the M&A counties (by types of mortgages)

This table examines the effect of banks' merger and acquisition (M&A) on mortgage origination of merging banks and competing banks in the M&A counties around the time of bank M&A by types of mortgages. The dataset consists of two observations on mortgage originations (by types) of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A counties in 1999-2014. In Panel A, mortgages are decomposed to mortgages for home purchase purpose and mortgages for refinancing purpose. *Refinance* is a dummy that is equal to one if the mortgage is originated for the purpose of refinancing, zero otherwise (home purchase purpose). In Panel B, Mortgages are decomposed to mortgage originations to white people and those to black people. The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Panel A of Table 6.

Panel A: by loan purpose (home-purchase vs. refinancing)			
Dep. var.	*Ln(Mortgage)*		
	Home purchase	*Refinancing*	*Both*
Compete × PostMerger	0.374***	0.264***	0.374***
	(12.41)	(8.58)	(12.41)
Compete × PostMerger × Refinance			-0.110***
			(-3.48)
Bank-County-Merger ID FE	YES	YES	NO
Year-Merger ID FE	YES	YES	NO
Bank-County-Merger ID-Refinance FE	NO	NO	YES
Year-Merger ID-Refinance FE	NO	NO	YES
Bank and county controls	YES	YES	YES
Observations	29141	29387	58528
Adjusted R^2	0.843	0.851	0.847
Mean DV	8.183	8.360	8.272

Table 11: Continued

Panel B: by borrower race (black vs. white)			
Dep. var.	*Ln(Mortgage)*		
	White	*Black*	*Both*
Compete × PostMerger	0.284***	0.204***	0.284***
	(9.74)	(4.26)	(9.65)
Compete × PostMerger × Black			-0.079*
			(-1.67)
Bank-County-Merger ID FE	YES	YES	NO
Year-Merger ID FE	YES	YES	NO
Bank-County-Merger ID-Black FE	NO	NO	YES
Year-Merger ID-Black FE	NO	NO	YES
Bank and county controls	YES	YES	YES
Observations	31459	10468	41927
Adjusted R^2	0.878	0.733	0.879
Mean DV	8.674	6.449	8.124

Table 12: Banks' mortgage origination in the M&A counties by race

This table compares banks' mortgage origination to black borrowers between M&A counties and their adjacent non-M&A counties. The dataset consists of banks' county-aggregate mortgage originations to black borrowers as well as those to white borrowers in the year prior to or following a bank M&A event for the banks (both merging and non-merging banks) in the M&A counties and their adjacent non-M&A counties in 1999-2014. Black is a dummy variable that takes a value of one if the borrowers of the mortgages are black people. In these tests, we limit samples to the counties where FRB banking market HHIs are lower than 1800 (competitive market). The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Table 3.

Dep. var.	*Ln(Mortgage)*	
	(1)	(2)
Black	-3.370***	
	(-71.46)	
Black × PostMerger	0.078*	
	(1.93)	
MergerCnty × Black	0.168***	
	(3.07)	
PostMerger × MergerCnty	0.017	0.008
	(0.83)	(0.41)
PostMerger × MergerCnty × Black	-0.152***	-0.109*
	(-3.19)	(-1.87)
Bank-County-Merger ID FE	YES	NO
Year-Merger ID FE	YES	NO
Bank-County-Merger ID-Black FE	NO	YES
Year-Merger ID-Black FE	NO	YES
Bank and county controls	YES	YES
Observations	39660	39660
Adjusted R^2	0.833	0.886
Mean DV	7.959	7.959

Table 13: Interest rates of mortgages in the M&A counties and adjacent counties

This table examines the effect of banks' merger and acquisition (M&A) on interest rates of mortgages originated in the M&A counties relative to their adjacent non-M&A counties. The dataset consists of two observations on bank branch level annual average of mortgage loan interest rates of the year prior to or following a bank M&A event for the M&A and adjacent non-M&A counties in 1999-2014. *MortgageRate* is branch level annual average of loan interest rates for 15-year fixed rate mortgage with a size of $175,000. *MergerCnty* takes the value of one for branches in the M&A county, which is the county where the merging banks have branches at the time of M&A. *PostMerger* takes the value of one for the post-period. The regression includes a set of control variables for bank and market (county) characteristics, which are the same as in Table 3. The coefficients on these variables are not reported for compactness. Same Merger IDs are assigned to observations in the M&A county and its adjacent non-M&A counties for each M&A event. Standard errors are clustered at the branch level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Dep. var.	*MortgageRate*
MergerCnty × PostMerger	0.010**
	(2.43)
Branch-Merger ID FE	YES
Year-Merger ID FE	YES
Bank and county controls	YES
Observations	50027
Adjusted R^2	0.982
Mean DV	4.051

Table 14: The default risk of M&A counties and adjacent counties

This table reports the loan-level regression examining the effect of banks divestitures on the default risk of mortgages originated around the time of bank M&A in the M&A counties compared to those originated from adjacent counties. The M&A county is the county where the merged banks have branches at the time of M&A. The sample period (origination date) is from January 1, 1999, to December 31, 2014. The performance information is up to January 1, 2016. For each M&A county and its adjacent counties, mortgages originated three years prior to or following a bank M&A are included. The dependent variable (*Foreclosure*) is a dummy which equals 1 if the mortgage entered foreclosure property was foreclosed and 0 otherwise. *Post* equals 0 if the mortgage was originated before the M&A and 1 otherwise. Standard errors are clustered at the year by merger id level. The t-statistics are reported in parentheses. The mean dependent variable is reported at the bottom to assess marginal effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Dep. var.	Foreclosure risk
MergerCnty × Post	0.006**
	(2.08)
Interest rate at origination	-0.005***
	(-29.73)
Ln(original balance)	-0.024***
	(-13.73)
Frist lien	-0.098***
	(-34.62)
Low doc	0.001
	(0.42)
Non-owner occupied	0.083***
	(33.53)
FICO score	-0.001***
	(-47.58)
LTV at origination	0.001***
	(27.50)
Judicial	0.057**
	(2.77)
Single Family	-0.027***
	(-15.40)
Ln(Per capita income)	0.021
	(0.62)
Ln(County population)	0.063***
	(3.54)
HHI	-0.051**
	(-2.19)
County-Merger ID FE	YES
Year-Merger ID FE	YES

Observations	4583813
Adjusted R^2	0.155
Mean DV	0.268

Table 15: Housing boom and bust in M&A counties and adjacent counties

This table reports the county-year level regression examining the effect of banks' divestitures on the housing price in the M&A counties compared to those originated from adjacent counties. The sample period is from 2002 (the first M&A in our data) to 2012. For each M&A county and its adjacent counties, observations from the first M&A of the county-pair to 2012 are included. We consider only county pairs in which the first bank M&A in the M&A county was prior to 2008. *Crisis* equals 0 for the period from the first M&A to 2007 and 1 for the period from 2008 to 2012. The dependent variable (HPI) is the annual FHFA housing price index at the county level. The average $\Delta HPI_{2007,2012}$ is the difference between the mean HPI of 2007 and the mean HPI of 2012. Standard errors are clustered at the year by merger id level. The t-statistics are reported in parentheses. The mean dependent variable is reported at the bottom to assess marginal effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Dep. var.	HPI
MergerCnty × Crisis	-6.443***
	(-4.94)
Ln(Per capita income)	40.874***
	(3.38)
Ln(County population)	-9.559
	(-0.55)
Unemployment rate	-0.887*
	(-1.65)
County-Merger ID FE	YES
Year-Merger ID FE	YES
Observations	3520
Adjusted R^2	0.992
Average $\Delta HPI_{2007,2012}$	-48.44

Table 16: Banks' FRB banking market shares for deposits in the M&A counties (dynamics)

This table examines the effect of banks' merger and acquisition (M&A) on the FRB banking market level deposit market shares of the merging banks and the competing banks in the M&A counties around the time of the bank M&A. Observations are branch-year for merging banks and competing banks in the M&A counties in a 6-year window centered on the M&A event. *FRBDepositMS* is the bank's market share of deposits in the FRB banking market as of June 30. *Compete* takes the value of one for the competing banks, zero otherwise (for the merging banks). *PostMerger (k),* where *k* ranges from -3 to 3, are a set of six dummy variables that represent the years relative to the M&A year. The year before the M&A (-1) is the reference category. *PostMerger* takes the value of one for the post-period. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses.

Dep. var.	*FRBDepositMS*	
	(1)	(2)
Compete × PostMerger (-3)	0.001	0.001
	(0.44)	(0.44)
Compete × PostMerger (-2)	-0.000	-0.000
	(-0.02)	(-0.02)
Compete × PostMerger (-1)	Reference	Reference
Compete × PostMerger	0.009**	
	(2.38)	
Compete × PostMerger (1)		0.008**
		(2.40)
Compete × PostMerger (2)		0.012***
		(3.24)
Compete × PostMerger (3)		0.005
		(1.09)
Branch-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	9984	9984
Adjusted R^2	0.949	0.949
Mean DV	0.091	0.091

Table 17: Banks' mortgage and small business lending origination in the M&A counties (discontinuity around FRB review threshold for anti-trust remedies)

This table examines the effect of banks' merger and acquisition (M&A) on the mortgage and small business lending originations of merging banks and competing banks in the M&A counties around the threshold of the FRB review for anti-trust remedies. The dataset consists of two observations on mortgage originations and small business lending origination of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A counties in 1999-2014. We limit samples to M&A counties that belong to the FRB banking market where the pro forma deposit market HHIs do not increase by 200 to 1800 as a result of the bank M&A. *High* takes a value of one if the pro forma market shares of the merging banks as a result of the bank M&A increase from below 35 percent to at least 35 percent, zero otherwise. *PostShr* is the pro forma market shares of the merging banks as a result of the bank M&A. We further limit samples to M&A counties that belong to the FRB banking markets where the merging banks' pro forma market shares as a result of the bank M&A are between 30 and 40 percent. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Tables 4 and 9.

Dep. var.	*Ln(Mortgage)*	*Ln(SBL)*
Compete × PostMerger	2.361**	-1.104
	(2.06)	(-1.37)
Compete × PostMerger × High	0.620**	-0.116
	(2.49)	(-0.68)
Compete × PostMerger × PostShr	-6.001*	3.623
	(-1.85)	(1.55)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	1973	1237
Adjusted R^2	0.867	0.886
Mean DV	8.919	9.309

Table 18: Banks' mortgage and small business lending origination in the M&A counties (not subject to FRB review for anti-trust remedies)

This table examines the effect of banks' merger and acquisition (M&A) on mortgage and small business lending originations of merging banks and competing banks in the M&A counties that are not subject to FRB review for anti-trust remedies around the time of bank M&A. The dataset consists of two observations on mortgage originations and small business lending origination of the year prior to or following a bank M&A event for the merging banks and the competing banks in the M&A counties in 1999-2014. We limit samples to the M&A counties that belong to the FRB banking market where the pro forma deposit market HHIs are lower than 1800 and the pro forma market shares of merging banks are less than 35 percent as a result of the bank M&A. Standard errors are clustered at the bank-county level. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, ** and ***, respectively. *t*-statistics are in parentheses. All other specifications are the same as in Tables 4 and 9.

Dep. var.	*Ln(Mortgage)*	*Ln(SBL)*
Compete × PostMerger	0.315***	0.001
	(7.19)	(0.03)
Bank-County-Merger ID FE	YES	YES
Year-Merger ID FE	YES	YES
Bank and county controls	YES	YES
Observations	14578	9181
Adjusted R^2	0.879	0.889
Mean DV	8.911	9.138