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Regulatory Incentives and Consolidation: The Case of Commercial Bank Mergers and the Community Reinvestment Act

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Abstract

Bank regulators are required to consider a bank's record of providing credit to low- and moderate-income neighborhoods and individuals in approving bank applications for mergers and acquisitions. We test the hypothesis that banks strategically prepare for the regulatory and public scrutiny associated with a merger or acquisition by increasing their lending to low-and moderate-income individuals in anticipation of acquiring another institution. We find evidence in favor of this hypothesis. In particular, we show that the higher the percentage of the institution's mortgage originations in a given year that are directed to low- and moderate-income individuals or neighborhoods, the greater the probability that the institution will acquire another bank in the following year. Further investigation bolsters the view that this correlation is due to banks' anticipation of the public and regulatory scrutiny during the merger review process. The effect cannot be explained by other bank characteristics. The relationship is observed for acquiring banks, which are the focus of public and regulatory scrutiny, but not for the banks that are being acquired. In addition, the positive effect of lending to low- and moderate-income individuals and neighborhoods on the likelihood that a bank will acquire another bank increases over the 1991 – 1995 time frame, a period when public and regulatory scrutiny of an institution's community lending record increased. The effect of lending to low- and moderate-income individuals and neighborhoods is also largest for big banks, who face particularly intense public and regulatory scrutiny.

1. Introduction

Between 1975 and 1997 the number of commercial banks and savings associations operating in the U.S. fell by more than 40%. Bank mergers and acquisitions are largely responsible for this banking industry consolidation. For example, from 1993 to 1997, 21% of banking institutions were acquired in a merger or acquisition (Avery et al. 1999). For many industries, regulatory agencies place restrictions on the types of mergers that can take place. In the U.S., for example, the Justice Department or the Federal Trade Commission may refuse to permit mergers that are deemed to be anti-competitive. The Federal Reserve places similar constraints on bank mergers. Bank regulators are also required to consider a bank's record of providing credit to low- and moderate-income neighborhoods and individuals in approving bank mergers and acquisitions, according to the provisions of the 1977 Community Reinvestment Act (CRA). In addition to the formal regulatory review process, community groups also scrutinize bank mergers. In this paper, we consider how the potential scrutiny of their CRA lending record during a merger review affects bank behavior.[1] In particular, we test the hypothesis that banks prepare for the scrutiny associated with a merger or acquisition by increasing CRA lending in anticipation of acquiring another institution.

We find evidence in favor of this hypothesis. We show that the higher the percentage of the institution's mortgage originations in a given year that are directed to

[1] Most studies focus on the impact of CRA on bank profitability and efficiency. There has been considerable debate about the impact of CRA on bank profitability and efficiency. Studies have shown that, while lending to low-income individuals and minorities generates greater defaults, greater return volatility, higher operating costs and charge-off rates, lenders are compensated for this and generate similar rates of return compared to banks that do not specialize in loans to low- and moderate-income individuals (Beshouri and Glennon, 1996). Other researchers have also found that banks that specialize in lending to low- and moderate-income individuals are as profitable as other banks (Canner and Passmore, 1996; Malmquist, Phillips-Patrick and Rossi, 1997).

low- and moderate-income individuals or neighborhoods, the greater the probability that the institution will acquire another bank in the following year. Further investigation bolsters the view that this correlation is due to banks' anticipation of potential public and regulatory scrutiny during the merger review process. First, we use the panel aspects of the data set to show that the effect cannot be explained by other bank characteristics. In addition, the relationship is observed for acquiring banks, which are the focus of public and regulatory scrutiny, but not for merger targets, who face less scrutiny. Moreover, the positive effect of CRA lending on the likelihood that a bank will acquire another bank increases over the 1991 – 1995 time frame. This mirrors the increase in public and regulatory scrutiny of an institution's community lending record that occurred over this time period. And finally, the effect of lending to low- and moderate-income individuals and neighborhoods is also largest for big banks, who face particularly intense public and regulatory scrutiny.

In the next section, we provide some additional background information on the Community Reinvestment Act and describe the data that we analyze. Section three describes the empirical framework and our main result. In this section, we also present and interpret a series of robustness tests that lead us to conclude that our findings show that banks respond to the incentives provided by the merger review process. We discuss our conclusions and directions for future research in section four.

2. Background Information and Data

2.1 Community Reinvestment Act

Congress passed the Community Reinvestment Act (CRA) in response to concerns that banks were not meeting the credit needs of local communities. Deposit institutions were accused of redlining – that is denying credit to individuals based not on the individuals' characteristics but rather on the characteristics of their neighborhood. The CRA requires banks to meet the credit needs of the communities where they are chartered – including low- and moderate-income communities – in a way that is consistent with safe and sound lending practices. In addition to an annual review, a bank's CRA lending record is also considered when a bank seeks regulatory approval to open new branches or to acquire or merge with another banking institution.

The enforcement of the CRA has evolved since its passage in 1977. We concentrate on describing how the regulation has been enforced over the period that we consider in the analysis, 1991 – 1995, drawing heavily on Evanoff and Segal (1996). Since 1990, CRA ratings have been public, and congressional amendments to the Act have increased provisions for public scrutiny of banks and regulators. Regulatory agencies perform an evaluation "to assess the institution's record of meeting the credit needs of the entire community, including low- and moderate-income neighborhoods, consistent with the safe and sound operation of each institution" (Regulation BB). In particular, regulators consider five performance categories in evaluating an institution's CRA performance (see Evanoff and Segal for a detailed description):

1) Ascertainment of community credit needs
2) Marketing and types of credit offered and extended
3) Geographic distribution and record of opening and closing offices
4) Discrimination and other illegal credit practices

5) Community development

Banks are given one of four ratings based on this evaluation: outstanding, satisfactory, needs to improve or substantial non-compliance.

Banks with unsatisfactory CRA ratings are not explicitly sanctioned, although instances of illegal credit practices can be referred to the Justice Department for further legal action. Instead, regulators consider an institution's CRA record, together with other factors, when deciding whether to approve an application for a geographic expansion of facilities through a merger or acquisition, the introduction of new branches, and office change, etc. Evanoff and Segal argue that even if an application is ultimately approved, banks suffer from having a poor CRA rating or being accused of having poor CRA performance, particularly during a period of consolidation:

> For example, the application process can be significantly lengthened and complicated if community groups protest the application. In a period in which banks were aggressively expanding geographically, the potential for lost deals, delays in expansion, and negative public relations could be quite burdensome.
>
> Evanoff and Segal, 1996

Our analysis of the data is directed at evaluating whether banks respond to the explicit and implicit incentives that are incorporated into the CRA legislation by increasing community lending prior to making an acquisition.

Regulatory and public scrutiny of community lending has increased during the 1990's, culminating with the passage of amendments to CRA in 1995. These amendments call for regulators to analyze actions rather than intentions in reviewing

CRA records. The new CRA review procedures were implemented in 1996 and 1997, so they do not directly affect banks during the 1991 – 1995 period we examine. Our reading of the literature suggests that the impact of the CRA legislation during the 1991 to 1995 period was primarily via the review of bank applications for geographic expansion.

2.2 Data and Summary Statistics

In order to evaluate whether banks increase CRA lending prior to the regulatory process associated with a merger or acquisition, we need a data set that includes time-series information on CRA lending, mergers and acquisitions and bank characteristics. We combine information from three sources to create this data for the period 1990 to 1995.[2] Information on the amount of CRA lending each bank does each year comes from data filed under the 1989 amendments to the Home Mortgage Disclosure Act (HMDA). We use the Federal Reserve Board's National Information Center (NIC) database to track bank mergers and acquisitions. Additional information on bank characteristics comes from the Reports on the Condition and Income (Call Reports) that banks file with regulators each year.

We use the HMDA data to quantify the amount of CRA lending that an institution originated during a year. Each year, nearly all commercial banks, savings and loan associations, credit unions and other mortgage lending institutions (primarily mortgage banks) with assets of more than $10 million and an office in a metropolitan statistical area (MSA) are required to report on each mortgage loan application related to a one- to four-unit residence acted upon during the calendar year. We define CRA lending as the

percentage of the institution's total home mortgage originations in a year that are:

(i) to low- and moderate-income neighborhoods (Census tracts with median family income that is less than 80% of the median family income for the metropolitan statistical area (MSA)), or
(ii) to low- and moderate-income individuals (individuals whose income is less than 80% of the median family income for the MSA).

Our measure of CRA lending is based solely on home-mortgage lending because public data are only available for mortgages over the period we study. However, regulators focused a broader range of loan products during the CRA review process. During this period, banks were not required to report on other CRA-mandated activities like small business and farm loans and community reinvestment projects.[3] Our reliance on the HMDA data means that we exclude banks whose assets are less than $10 million and banks that do not have offices in an MSA. This is unlikely to lead to serious biases, since approximately 80% of all home purchase loans are covered by the HMDA data for the period we study (Avery et al., 1999).

[2] We analyze whether a bank made an acquisition during the period 1991 – 1995, but include information about CRA lending and bank characteristics in the year prior to the acquisition, so we make use of HMDA and Call Report data from 1990 to 1994.
[3] The 1995 amendments to CRA make provisions for banks to report small business and rural lending.

We use the Federal Reserve Bank Board's National Information Center (NIC) database to identify banks that were acquired and banks that acquired other banks during each calendar year. In most cases the identification of acquirers and targets was straightforward. However, in a few instances the consolidation resulted in a new organization. In such cases, the institution with the largest pre-consolidation assets was defined to be the acquirer. We identify acquirers and targets at the bank level, rather than at the bank holding company level. For example, if a bank holding company acquired another bank, all of the original affiliates of the bank holding company are defined to be acquirers in that transaction.[4]

In addition to the information on CRA lending and mergers, we also use data from the Call Reports that banks file each year. The Call Report data are used to construct important variables – total assets, capital ratios, leverage ratios – for each bank. In the analysis, we control for these key bank characteristics so that we can appropriately interpret the role of CRA lending in predicting bank behavior.

The data we analyze consist of five years of information for a little more than 4,800 banks, for a total of 24,000 bank-years. Table I documents the number of banks that acquired another bank and the number of banks that were acquired by another bank in each year of the data that we analyze. The percentage of banks that acquired another bank ranges from 8% in 1991 to a high of 11% in 1994. The percentage of banks that were the target of a merger is much smaller, ranging from 3% in 1991 to 5% in 1994.[5]

[4] The analysis is conducted at the bank level because the CRA scrutinizes activity at this level rather than at the bank holding company level. That said, our results are robust to aggregating the data by bank holding company – i.e. treating all of the members of a bank holding company as a single observation.

[5] This result is an artifact of our treatment of each bank in a holding company as a single observation. The acquisition of a single bank by a bank holding company will lead to more acquirers than targets, since each bank in the bank holding company will be considered to have made an acquisition in this case. Recall that the results are robust to treating all of the members of a bank holding company as a single institution.

Table II summarizes the data for the whole sample of bank-years and separately for acquiring banks and banks that were acquired. As we would expect, acquiring banks are much larger – total assets of the average acquiring bank are 2.3 times larger than that of the average target bank. Acquiring banks are also more likely to be part of a bank holding company, 97% versus 78% for targets of mergers. Loans to low- and moderate-income individuals and neighborhoods make up a similar share of acquirer and target loan originations. Approximately 1/3rd of all mortgage loans fall into this category. The vast majority of CRA loans are made to low- and moderate-income areas, rather than to individuals. Acquirers have a slightly higher ratio of loans to total assets compared to target banks: 60% versus 58%. Target banks make a higher share of home-mortgage loans compared to acquiring banks: 57% versus 52%.

3. Empirical Framework and Results

In this section, we present tests of our central hypothesis: that banks anticipate the regulatory and public scrutiny associated with a merger or acquisition and increase CRA lending in advance of acquiring another institution. We also present a number of other estimates to examine the robustness of the results and to assess whether they are in fact driven by bank reaction to regulatory incentives.

3.1 Main Finding

Our main finding is presented in the columns headed "No Individual Bank Controls" in Table III. This column reports maximum likelihood logit estimates of the likelihood that a bank acquires another bank in a given year as a function of CRA lending

in the previous 12 months, controls for bank characteristics, also measured in the year prior to the data on acquisitions, and year controls. Specifically, the estimation chooses parameters (β, γ, and λ) to maximize:

$$\ln L = \sum_{A_{it}=1} \ln \mathrm{F}(CRA_{it-1}\beta + X_{it-1}\gamma + Y_t\lambda) + \sum_{A_{it}\neq 1} \ln(1 - \mathrm{F}(CRA_{it-1}\beta + X_{it-1}\gamma + Y_t\lambda))$$

$$\text{where } \mathrm{F}(z) = \frac{e^z}{(1+e^z)}.$$

The dependent variable, A_{it}, is equal to one if bank i made an acquisition in year t and is equal to zero otherwise. The vector X_{it-1} includes bank size (measured as the log of total assets), an indicator variable that is equal to one if the bank is a member of a bank holding company, and the bank's capital to asset ratio. The vector Y_t contains indicators for each year from 1991 to 1994. The most recent year that our data covers, 1995, is the omitted category. We estimate this equation for the 23,481 bank-years (4,670 banks) where the banks either made an acquisition or did nothing. In other words, we eliminate banks that were acquired from the estimation. This gives us the appropriate comparison group: acquire versus do not acquire, rather than acquire versus do not acquire or be acquired. As a result, the 925 banks that were targets of an acquisition are not used in the estimation.[6]

[6] The findings are virtually identical if we do not exclude the 925 banks that were acquired.

We find that large banks are significantly more likely to acquire other banks. Increasing assets from $585 million (the average for all banks) to $1570 million (the average for acquiring banks) would increase the probability of an acquisition in the next calendar year by about 2 percentage points, a 20% increase in the average probability of making an acquisition. The capital-asset ratio does not have a significant effect on the likelihood of making an acquisition. Banks that are part of a bank holding company are 10 percentage points more likely to make an acquisition than their counterparts that are not part of a bank holding company. Acquisitions were approximately one percentage point less likely in 1991 and 1992 and one percentage point more likely in 1994 compared to 1995.

The probability of an acquisition is also significantly influenced by the percentage of the bank's mortgage originations that went to low- or moderate-income individuals and areas in the preceding calendar year. The results indicate that moving a bank from the 25th percentile to the 75th percentile of the CRA lending distribution would lead to a 0.76 percentage point increase in the average probability of an acquisition in the following year.[7] This is an increase of 2.3% relative to the observed probability of an acquisition. To achieve an equivalent increase in the probability of an acquisition, total assets of the average bank would have to increase by 43% or 252 million dollars.

[7] The bank at the 25th percentile of the CRA lending distribution makes 16.7% of its home mortgage loans to low- and moderate-income individuals or areas. At the 75th percentile, 48.5% of home mortgage loans go to low- and moderate-income individuals or areas.

This finding suggests that banks increase community lending prior to making an acquisition and that the effect is economically significant. The rest of this section is concerned with establishing whether the correlation between CRA lending and future acquisitions can be attributed to a desire on the part of the bank to ensure that the public and regulatory review of its acquisition plans go smoothly.

3.2 Robustness and Interpretation

3.2.1 Other bank characteristics

An alternative explanation for the finding that CRA lending predicts future acquisitions is that banks with high CRA lending happen to be more likely to make acquisitions for some reason that has nothing to do with the regulatory and public scrutiny associated with an acquisition. For example, maybe urban banks have higher CRA lending and are also more likely to make acquisitions. Or perhaps retail banks have higher CRA lending and are also more likely to acquire other banks. Another possibility is that more efficient banks do more CRA lending and are also more likely to make acquisitions. We address these possibilities by taking advantage of the panel nature of the data set and including bank fixed-effects in the estimation. The fixed effects control for time-invariant bank specific characteristics. These estimates provide an answer to the question: If a bank *increases* CRA lending, does the likelihood that it makes an acquisition go up? In contrast, the first estimate shows that banks with higher *levels* of CRA lending have a greater likelihood of making an acquisition, compared to other banks.

The fixed-effects results are found in the columns of Table III that are headed "Individual Bank Controls". Figure 1 summarizes the effect of CRA lending on the probability of future acquisitions for the fixed effect estimate. In addition to the explanatory variables that were included before, this estimate also includes a control variable for every single bank. As a result, banks that made no acquisitions between 1991 and 1995 and banks that made an acquisition in every year of the sample are dropped from the estimation. The fixed effect fully explains the acquisition patterns for these banks. We are left with a sample of 4,510 bank-years (902 banks).

Past CRA lending is a significant and important predictor of future acquisitions even when we control for bank fixed effects. This rules out the possibility that the association between CRA lending and future acquisitions is driven by some other time-invariant bank characteristic that was not captured in the estimates that did not include bank fixed effects. The likelihood of making an acquisition would increase by 3.3 percentage points if a bank were to go from the 25th percentile to the 75th percentile of CRA lending.[8] This is equivalent to an 8% increase in the overall likelihood of making acquisition for these banks.

3.2.2 Targets

Regulatory and public scrutiny is typically more focused on acquiring banks than on the banks that they acquire. If the relationship between CRA lending and future acquisitions is driven by a desire to prepare for the regulatory and public scrutiny associated with a merger, then we would expect to see no relationship between CRA

lending and the probability of being acquired by another bank. Because merger targets typically face much less scrutiny, they will have lower incentives to increase CRA lending prior to being acquired. This hypothesis is explored in Table IV.

This table presents logit estimates of the probability of being the target of a merger for the 22,051 bank-years (4,410 banks) where the banks was either acquired or no transaction took place. We eliminate bank-years where the bank made an acquisition from the estimation. Banks with higher capital to asset ratios are less likely to be acquired and members of a bank holding company are more likely to be acquired. Banks are less likely to be acquired in 1991 and 1992 and more likely to be acquired in 1994 relative to 1995. CRA lending has no statistical or substantive impact on the likelihood of being the target of a merger. This finding bolsters the argument that the anticipation of public and regulatory scrutiny drives the link between CRA lending and future acquisitions.

3.2.3 Year

In the introduction, we argue that public and regulatory scrutiny of a bank's CRA lending record has become more intense over the 1991 to 1995 time period that we study. If the connection between CRA lending and future acquisitions is due to bank anticipation of the public and regulatory scrutiny associated with a merger, then the effect of CRA lending on the probability of future acquisitions should increase through time. We test this hypothesis in Table V. This table presents logit estimates of the probability of acquiring another bank as a function of the control variables discussed above.

[8] For the sample that is used in producing the fixed-effects results, this is equivalent to going from 20% to 43% of home mortgage originations being directed toward to low- and moderate-income individuals or

In addition, the effect of CRA lending is allowed to vary by year. Separate coefficients are estimated to capture the effect of CRA lending in 1990 on acquisitions in 1991, of CRA lending in 1991 on acquisitions in 1992 and so on. CRA lending in 1990 and 1991 does not have a significant impact on the probability of an acquisition in the following years. However, the effect of CRA lending is significant and increasing from 1992 to 1994. Moving a bank from the 25th to the 75th percentile of the CRA lending distribution in 1992 would increase the average probability of an acquisition by 0.89 percentage points in 1993. For acquisitions in 1994, the effect is 1.24 percentage points and for 1995 it is 1.30 percentage points.[9] The size of the CRA effect is not statistically different across the 1992 – 1994 time period. However, the effect of CRA lending in 1992, 1993 and 1994 is significantly larger than the effect of CRA lending in 1990 and 1991. Figure 2 summarizes the effect of a 25% increase in CRA lending on the probability of future acquisitions for each year.

The evidence that the association between CRA lending and future acquisitions is stronger when regulatory and public attention is more intense provides additional evidence that it is this scrutiny that leads banks to increase CRA lending prior to making acquisitions.

3.2.4 Size

Public and regulatory scrutiny is particularly intense for big banks that make acquisitions. To the extent that the relationship between CRA lending and acquisitions is driven by a desire to prepare for this scrutiny, we would expect that CRA lending will

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areas.

have a larger impact on the probability of an acquisition for big banks compared to smaller banks. We explore this possibility in Table VI. This table reports the results of logit estimates of the probability of an acquisition as a function of the same independent variables as the previous estimates, with one exception. In this estimate the impact of CRA lending is allowed to vary with the size of the bank. Separate coefficients for CRA lending are estimated for each asset quartile.

The relationship between CRA lending and the probability of future acquisitions is driven by banks whose assets are in the upper half of the distribution. For banks in the lowest quartile of assets, CRA lending actually has a significantly negative effect on the probability of future acquisitions. CRA lending has no significant effect on acquisitions for banks in the second asset quartile. CRA lending has a significant and positive effect for banks in the third and fourth asset quartile. For banks in the third asset quartile, going from the 25th to the 75th percentile of the CRA lending distribution will lead to a 0.89 percentage point increase in the probability of an acquisition. The effect for banks in the highest asset quartile is significantly larger. For these banks, a similar increase in CRA lending is associated with an increase in the probability of an acquisition of 2.29 percentage points.[10] The effect of a 25% increase in CRA lending on the probability of an acquisition for banks in each asset quartile is also summarized in Figure 3. The evidence presented in Table VI and summarized in Figure 3 reinforces the view that

[9] The 25th percentile of the CRA lending distribution went up from 15% in 1992 to 20% in 1994. The 75th percentile increased from 46% to 50% over the same time period.

[10] While the 25th percentile of the CRA lending distribution is fairly similar across asset quartile, ranging from 15.4% to 17.7%, the 75th percentile decreases with bank size. For the first asset quartile it is 60% and for the highest asset quartile it is 37.5%. So for the third asset quartile, a 27.4 percentage point increase in CRA lending is associated with a 0.89 percentage point increase in the likelihood of making an acquisition in the following year. For banks in the highest asset quartile, a 19.8 percentage point increase in CRA lending produces a 2.29 percentage point increase in the probability of an acquisition in the following year.

banks prepare for the public and regulatory attention associated with an acquisition by increasing CRA lending in anticipation of making an acquisition.

4. Conclusions and Directions for Future Research

We present evidence that banks increase CRA lending in anticipation of the regulatory and public scrutiny associated with making an acquisition. The results cannot be explained by other bank characteristics, and they are strongest for banks that face the most public and regulatory scrutiny. In addition to being statistically significant, the results are also economically important. At a minimum, moving from the 25th to the 75th percentile of the distribution of CRA lending is associated with a 0.8 percentage point increase in the likelihood of making an acquisition in the following year. The total assets of the average bank would have to increase by 43%, or 252 million dollars, to achieve an equivalent increase in the probability of an acquisition. For the marginal banks, the fixed effect estimates are the most relevant, because this sample excludes banks that make acquisitions in every year and banks that make no acquisitions over the sample period. The fixed effects estimates indicate that the same change in CRA lending would lead to a 3.3 percentage point increase in the likelihood of an acquisition.

The findings suggest that enforcement of the Community Reinvestment Act provisions will be particularly effective during periods of consolidation in the banking industry. The effectiveness of the regulation is likely to vary with the likelihood of future acquisitions, or more generally, with the likelihood that banks will need regulatory approval for expansion into new geographic areas or into new activities. For example under the provisions of the Gramm-Leach Bliley Act (1999), banks that wish to expand their activities into insurance and/or security underwriting will need to seek regulatory

approval. Regulators are required to consider a bank's record of community lending in deciding whether to allow the bank to expand their activities, in much the same way that regulators currently consider CRA lending in reviewing applications for geographic expansion via mergers and acquisitions.

The desirability of providing incentives to lend to low- and moderate-income individuals and areas via the merger review process depends on the interplay of many complicated issues that go far beyond the scope of this paper. These issues include the factors that motivate mergers in the first place and the impact of CRA lending on bank profitability and efficiency. Our findings suggest that the link between CRA lending and acquisitions acts as a tax on mergers.[11] The significance of this tax is a matter of some debate. If bank consolidation is desirable from society's perspective, then this tax is costly in that it raises the costs of consolidation for acquirers and indirectly protects inefficient banks that would be acquisition targets. Further, making cost-effective loans to low- and moderate-income individuals and areas may require banks to invest in additional costly activities that increase their expertise in lending to this segment of the population. On the other hand, evidence suggests that the CRA loans originated by banks are relatively profitable and contribute positively to bank profitability.[12] Moreover, any benefits society receives from increasing CRA lending also must be considered in this context. It is left for future research to determine if the benefits of CRA lending outweigh the costs of linking the enforcement of the CRA to the merger review process.

[11] The "tax" interpretation does not rely on an assumption that CRA loans lose money. However, making cost-effective loans to low- and moderate-income individuals and areas may require banks to invest in activities that increase their expertise in lending to this segment of the population.

[12] Survey evidence is reported in "The Performance and Profitability of CRA-Related Lending" *Report by the Board of Governors of the Federal Reserve System, submitted to the Congress pursuant to section 713 of the Gramm-Leach-Bliley Act of 1999*.

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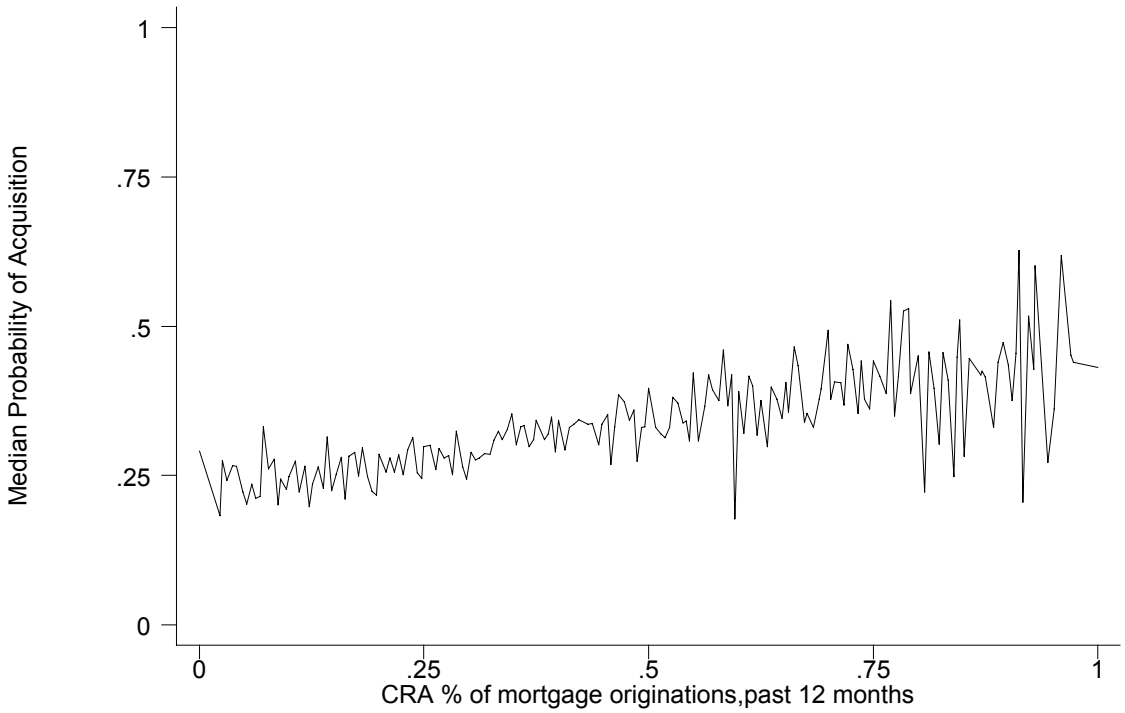

Figure 1: Impact of CRA Lending on the Probability of Acquisition, Controlling for Bank Fixed Effects

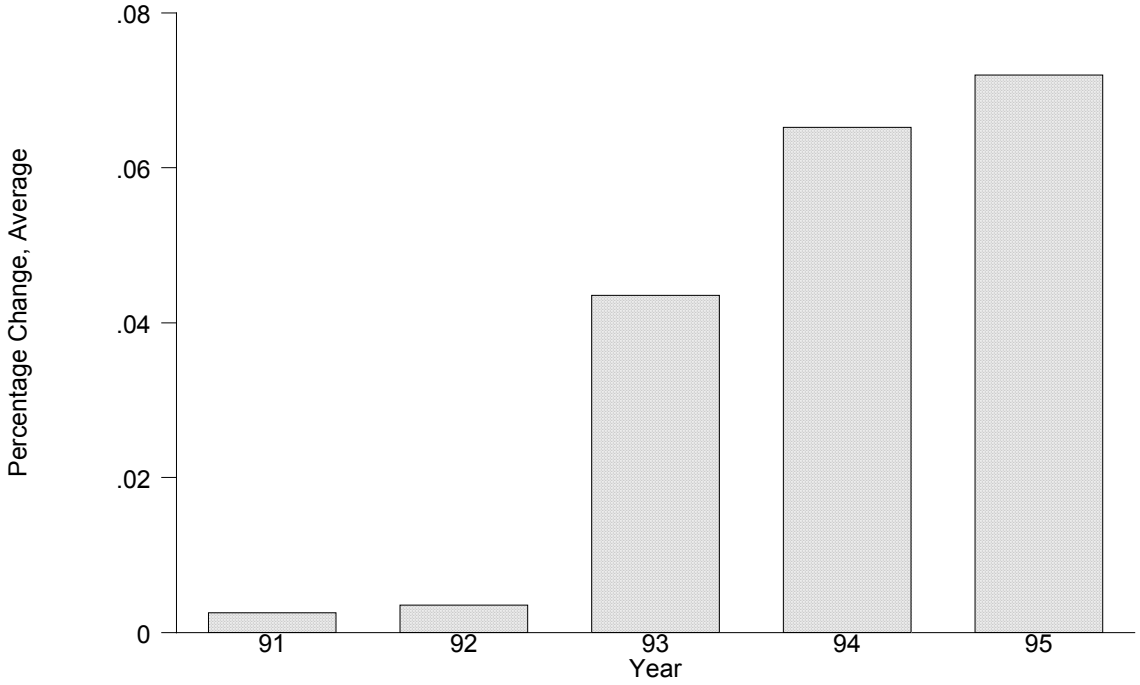

Figure 2: Impact of a 25% Increase in Prior Year CRA Lending on the Probability of Acquisition, by Year

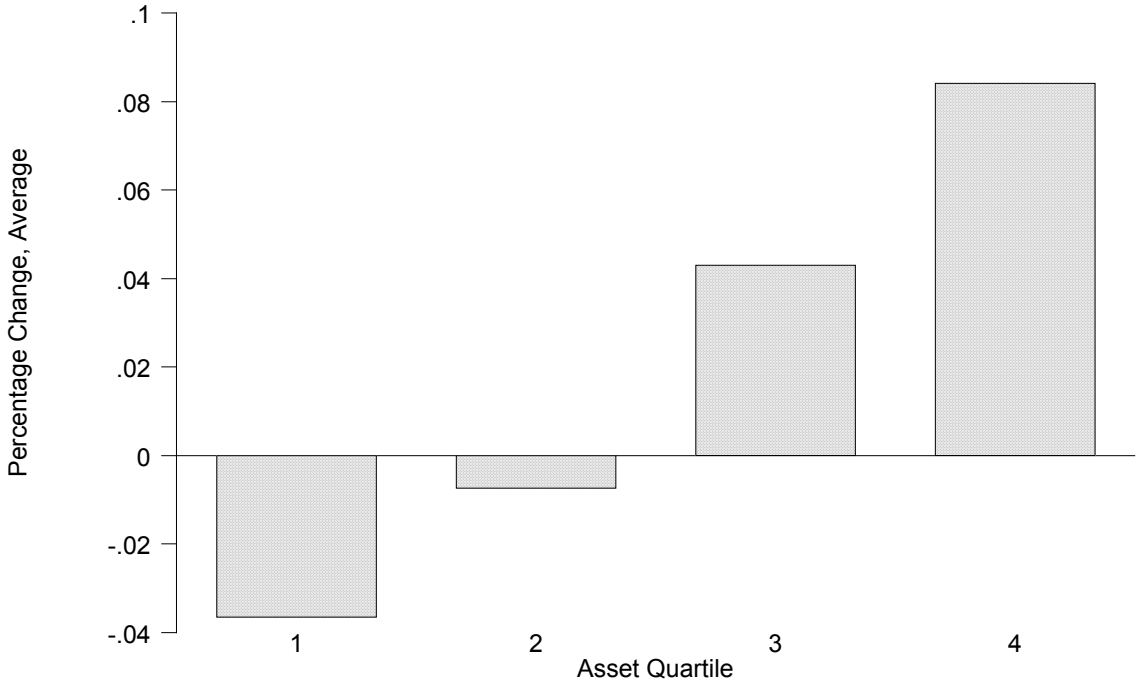

Figure 3: Impact of a 25% Increase in Prior Year CRA Lending on the Probability of Acquisition, by Bank Size

Table I
Number of Bank Acquirers and Targets by Year

The sample includes banks for which the following information could be matched: home mortgage originations reported under the Home Mortgage Disclosure Act (HMDA), balance sheet information from the Call Reports and merger information from NIC. A bank is considered an acquirer if the bank or its holding company made an acquisition in a given year. Similarly a bank is defined to be a target of an acquisition if the bank or its holding company were acquired in a given year.

	All Banks	Acquirers		Targets	
Year	Number	Number	% of Sample	Number	% of Sample
1991	4854	402	8.3%	144	3.0%
1992	4862	400	8.2%	173	3.6%
1993	4997	519	10.4%	201	4.0%
1994	4859	553	11.4%	228	4.7%
1995	4906	481	9.8%	179	3.7%

Table II
Summary Statistics for Bank Acquirers and Targets, 1991 - 1995

The table presents the sample means of each characteristic for all bank-year observations and for acquirer and target sub-samples. The CRA-eligible share of originations is the percentage of a bank's home mortgage originations that are made to low- or moderate-income individuals or neighborhoods. This information is reported under HMDA. The rest of the information reported in the table comes from the Call Reports. Mortgage loans are loans for the purchase of dwellings with up to four units.

	All Banks	Acquirers	Targets
Total Assets ($ millions)	584.9	1568.9	670.6
Total Loans/ Total Assets	0.58	0.60	0.56
Capital-Asset Ratio	0.084	0.079	0.076
Percentage affiliated with a Bank Holding Company	69%	97%	78%
CRA-eligible Percentage of Originations	34%	35%	34%
Mortgage Loans as a Percentage of Total Loans	60%	52%	57%
Number of Sample Banks	24,478	2,355	925

Table III

Logit Estimates of the Probability of Making an Acquisition

The table presents logit estimates of the probability of making an acquisition in the current calendar year as a function of the CRA eligible share of originations in the previous year, bank size (log of total assets) in the previous year, the ratio of capital to assets in the previous year and a variable that is equal to one if the bank is a member of a Bank Holding Company (BHC). In addition, the estimates include controls for years. The dependent variable is equal to one if the bank or its holding company made an acquisition in the calendar year. The sample includes bank-year observations from 1991 to 1995. *** Indicates significance at the 1% level. ** Indicates significance at the 5% level, and * indicates significance at the 10% level.

	No Individual Bank Controls			Individual Bank Controls		
	[1]			[2]		
	Coefficient	Z-statistic	dy/dx	Coefficient	Z-statistic	dy/dx[1]
CRA-eligible share of originations	0.477 ***	4.71	0.024	0.482 **	2.19	0.103
Log (Total Assets)	0.422 ***	28.34	0.021	-0.180	-1.24	-0.038
Capital-Asset Ratio	-1.166	-1.09	-0.059	12.050 ***	3.94	2.564
BHC affiliation indicator	2.665 ***	19.77	0.104	0.612	1.47	0.115
Year = 1991	-0.174 **	-2.28	-0.008	-0.610 ***	-5.10	-0.120
Year = 1992	-0.181 **	-2.39	-0.009	-0.560 ***	-5.05	-0.111
Year = 1993	0.110	1.54	0.006	-0.086	-0.87	-0.018
Year = 1994	0.190 ***	2.69	0.010	0.106	1.11	0.023
Constant	-9.726 ***	-36.39				
Pseudo R-squared	14.9%			4.3%		
Observed frequency of acquisitions	9.8%			41.5%		
Fixed Effects	No			Yes		
Number of Observations[2]	23,481			4,510		

[1] For the estimate that includes individual bank controls, dy/dx is calculated setting the individual bank effect equal to zero.

[2] For the estimate that does *not* include individual bank controls, the sample excludes bank-year observations when the bank was the target of an acquisition. The estimate that includes individual bank controls also excludes bank-year observations when the bank was the target of an acquisition. The fixed effects estimate also drops banks when there is insufficient variation to estimate a fixed effect -- that is banks that never made an acquisition during the sample period and banks that made an acquisition in every year of the sample period are dropped.

Table IV

Logit Estimates of the Probability of Being the Target of an Acquisition

The table presents logit estimates of the probability of being the target of an acquisition in the current calendar year as a function of the CRA eligible share of originations in the previous year, bank size (log of total assets) in the previous year, the ratio of capital to assets in the previous year and a variable that is equal to one if the bank is a member of a Bank Holding Company (BHC). In addition, the estimates include controls for years. The dependent variable is equal to one if the bank or its holding company was acquired during the calendar year. The sample is made up of bank-year observations from 1991 to 1995. *** Indicates significance at the 1% level. ** Indicates significance at the 5% level, and * indicates significance at the 10% level.

	Coefficient		Z-Statistic	dy/dx
CRA-eligible share of originations	0.009		0.06	0.000
Log (Total Assets)	0.009		0.33	0.000
Capital-Asset Ratio	-15.442	***	-9.82	-0.534
BHC affiliation indicator	0.443	***	5.32	0.014
Year = 1991	-0.446	***	-3.79	-0.014
Year = 1992	-0.241	**	-2.14	-0.008
Year = 1993	-0.013		-0.12	-0.000
Year = 1994	0.203	*	1.93	0.007
Constant	-2.280	***	-6.31	
Pseudo R-squared	2.3%			
Fixed Effects	No			
Number of Observations[1]	22,051			

Notes

[1] The sample excludes bank-year observations when the bank made an acquisition.

Table V
Logit Estimates of the Probability of Making an Acquisition,
The Impact of CRA by Year

The table presents logit estimates of the probability of making an acquisition in the current calendar year as a function of the CRA eligible share of originations in the previous year, bank size (log of total assets) in the previous year, the ratio of capital to assets in the previous year and a variable that is equal to one if the bank is a member of a Bank Holding Company (BHC). The impact of CRA lending is allowed to vary by year. In addition, the estimates include controls for years. The dependent variable is equal to one if the bank or its holding company made an acquisition in the current calendar year. The sample is made up of bank-year observations from 1991 to 1995. *** Indicates significance at the 1% level. ** Indicates significance at the 5% level, and * indicates significance at the 10% level.

	Coefficient		Z-Statistic	dy/dx
CRA-eligible share of originations				
CRA in 1990	0.036		0.15	0.002
CRA in 1991	0.046		0.19	0.002
CRA in 1992	0.559	***	2.65	0.028
CRA in 1993	0.781	***	3.71	0.039
CRA in 1994	0.816	***	3.67	0.041
Log (Total Assets)	0.422	***	28.33	0.021
Capital-Asset Ratio	-1.140		-1.07	-0.057
BHC affiliation indicator	2.662	***	19.74	0.104
Year = 1991	0.088		0.65	0.005
Year = 1992	0.090		0.65	0.005
Year = 1993	0.216		1.60	0.011
Year = 1994	0.209		1.50	0.011
Constant	-9.856	***	-35.29	
Pseudo R-squared	15.0%			
Fixed Effects	No			
Number of Observations[1]	23,481			

Notes
[1] The sample excludes banks that were the target of an acquisition.

Table VI
Logit Estimates of the Probability of Making an Acquisition,
The Impact of CRA by Bank Size

The table presents logit estimates of the probability of making an acquisition in the current calendar year as a function of the CRA eligible share of originations in the previous year, bank size (log of total assets) in the previous year, the ratio of capital to assets in the previous year and a variable that is equal to one if the bank is a member of a Bank Holding Company (BHC). The impact of CRA lending is allowed to vary with bank size, where bank size is captured by quartiles of total assets. In addition, the estimates include controls for years. The dependent variable is equal to one if the bank or its holding company made an acquisition in the current calendar year. The sample includes of bank-year observations from 1991 to 1995. *** Indicates significance at the 1% level. ** Indicates significance at the 5% level, and * indicates significance at the 10% level.

	Coefficient		Z-Statistic	dy/dx
CRA-eligible share of originations				
CRA for lowest asset quartile	-0.381	**	-2.08	-0.019
CRA for second asset quartile	-0.092		-0.57	-0.004
CRA for third asset quartile	0.577	***	4.27	0.028
CRA for highest asset quartile	1.462	***	9.70	0.072
Log (Total Assets)	0.299	***	14.74	0.015
Capital-Asset Ratio	-1.194		-1.11	-0.058
BHC affiliation indicator	2.648	***	19.63	0.100
Year = 1991	-0.137	*	-1.79	-0.006
Year = 1992	-0.153	**	-2.00	-0.007
Year = 1993	0.130	*	1.81	0.007
Year = 1994	0.196	***	2.77	0.010
Constant	-8.261	***	-26.41	
Pseudo R-squared	15.47%			
Fixed Effects	No			
Number of Observations[1]	23,481			

Notes
[1] The sample excludes banks that were the target of an acquisition.

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