The Effects of the Community Reinvestment Act on Local Communities [*]

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ABSTRACT

  This paper seeks to address questions about the effects of the Community Reinvestment Act on local communities.

    Concerns about the availability of credit to lower-income communities and borrowers and to small businesses and farms are longstanding. The Community Reinvestment Act (CRA) of 1977 was enacted to address those concerns. This paper addresses questions about the effects of the CRA on local communities. To identify the marginal effects of the CRA, the analysis compares economic circumstances in neighborhoods (census tracts) that are at the margin of focus of the law; that is, those areas just above and just below the relative income threshold used to distinguish lower-income areas from others. The primary focus is on changes in neighborhood outcomes between 1990 and 2000.

    Results are mixed and difficult to interpret. On the one hand, the analysis indicates that consistent with a favorable effect of the CRA, census tracts just below the threshold had larger increases in homeownership, higher growth in owner-occupied units, and lower vacancy rates than would have been predicted on the basis of changes in census tracts just above the threshold. Moreover, there is evidence of an elevated level of CRA-related lending in the lower-income census tracts. On the other hand, when the process is reversed and the changes for the census tracts just above the threshold are predicted on the basis of changes in the lower-income cohort, the higher-income census tracts do no worse than would be predicted–a finding inconsistent with a favorable impact of the CRA. Alternative specifications and tests failed to resolve this inconsistency.

Key words: Community Reinvestment Act, local communities, lower-income lending

INTRODUCTION

Concerns about the availability of credit to low- and moderate-income (lower- income) communities and individuals and to small businesses and farms are longstanding and have been addressed by many types of government programs and initiatives. Some government programs provide subsidies or other inducements to creditors, borrowers, or third parties (for example, community-based organizations) in order to increase lending to these targeted populations. Other initiatives seek to promote access to credit by increasing consumer and creditor knowledge about the use and availability of credit. Government regulation also seeks to bolster such lending. The Community Reinvestment Act (CRA) of 1977 is one such regulation.

The CRA arose from concerns that banking institutions (commercial banks and savings associations) were, in some instances, failing to adequately seek out and help meet the credit needs of viable lending prospects in all sections of their local communities. It was maintained that the failure to meet these credit needs accelerated the process of economic decay and inhibited private revitalization efforts in many areas.

The CRA directs the federal regulators of federally-insured banking institutions to encourage such institutions to help meet the credit needs of their local communities, including those of lower-income areas, in a manner consistent with their safe and sound operation. Regulators routinely assess the performance of each institution in serving the credit needs of its local community and take that record into account when acting on applications for mergers and acquisitions. Results of CRA assessments are made available to the public both by the federal regulators and the regulated institutions.

Banking institutions have responded to the CRA by establishing special programs and products, training their staffs to better respond to community credit needs, and working with community organizations, public entities, and others. Banking institutions have modified their CRA-related activities as they have gained experience in how to create and conduct programs that address the needs of their ever changing communities. Banking institutions also have modified their activities in response to comments and suggestions growing out of the CRA assessment or banking application processes.

Community organizations and others often seek to have regulated institutions modify their CRA-related activities to help address the credit needs of their local communities. These parties sometimes obtain changes in the CRA-related activities of banking organizations by working with the institution to establish new programs or products. Community organizations and others also sometimes pressure banking institutions to change their CRA-related activities by filing protests or comments in connection with banking applications or by drawing media attention to concerns they have about a banking institution's CRA performance.

A considerable body of research has emerged over the past few years focusing on the effects of the CRA on banking institutions, primarily with regards to the profitability and performance of their CRA-related lending activities.[2] Available research indicates that CRA-related lending has had little effect (either positive or negative) on the profitability of such institutions, as most CRA-related lending is at least marginally profitable.[3] In addition, a number of studies have sought to evaluate the changes in the volume of lending activity that may be associated with the

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[2] Avery, Robert B., Raphael W. Bostic and Glenn B. Canner (2000), "CRA Special Lending Programs," _Federal Reserve Bulletin_ 86, pp. 711-31; Board of Governors of the Federal Reserve System (2000), "The Performance and Profitability of CRA-Related Lending," report to the Congress; Canner, Glenn B., Elizabeth Laderman, Andreas Lehnert, and Wayne Passmore, "Does the Community Reinvestment Act (CRA) Cause Banks to Provide a Subsidy to Some Mortgage Borrowers?," _Finance and Economics Discussion Series_, Board of Governors of the Federal Reserve System, No. 19 (2002); Canner, Glenn B. and Wayne Passmore, "The Community Reinvestment Act and the Profitability of Mortgage-Oriented Banks," _Finance and Economics Discussion Series_, Board of Governors of the Federal Reserve System, No. 7 (1997); Malmquist, David, Fred Phillips-Patrick, and C. Rossi, "The Economics of Low-Income Mortgage Lending," _Journal of Financial Services Research_, vol. 11 (1997), pp. 169-88; Canner, Glenn B. and W. Passmore, "The Relative Profitability of Commercial Banks Active in Lending in Lower-income Neighborhoods and to Lower-income Borrowers," Proceedings of the 32nd Annual Conference on Bank Structure and Competition, May 1996, pp. 531-554; Knight, George, "A Solid Foundation for Affordable Lending," _Mortgage Banking_ (1996), pp. 69-76; Meeker, Larry and Forest Meyers, (1996), "Community Reinvestment Act Lending: Is it Profitable?," _Financial Industry Perspectives_, Federal Reserve Bank of Kansas City, pp. 13-35; Elmendorf, Fritz. and K.C. Brough, "Consumer Bankers Association Affordable Mortgage Survey," Consumer Bankers Association, Arlington, Virginia (1995); Board of Governors of the Federal Reserve System, (1993) "Report to the Congress on Community Development Lending by Depository Institutions."

[3] Evidence from the Federal Reserve's July 2000 report to the Congress on _The Performance and Profitability of CRA-Related Lending_ is somewhat more nuanced in its findings. The study found that experiences differed across institutions and across loan products. For example, the vast majority of institutions reported their CRA-related community development lending activities were at least marginally profitable regardless of institution size. At the same time, about one-quarter of the institutions and about two-fifths of the larger banking institutions reported that their CRA special lending programs were at best marginally unprofitable.

CRA.[4] The available research suggests that the CRA may have resulted in the extension of additional credit, although the magnitude of such effect is a matter of debate.

In recent years, a number of commentators have questioned whether the CRA is still necessary.[5] They argue, for example, that advances in information technology and the lifting of regulatory restrictions governing banking activities have removed impediments to lending, and that today's lending markets are sufficiently competitive to ensure that all creditworthy applicants receive credit. As evidence, they cite substantial growth in recent years in mortgage lending to lower-income borrowers and neighborhoods, driven largely by lending institutions not covered by the CRA and by CRA-covered institutions in communities where they do not have CRA responsibilities.

Others, however, believe that the CRA is still necessary.[5] They contend that lending markets still have impediments that prevent some creditworthy borrowers from receiving credit. Those with this view point to the relatively low levels of lending in lower-income neighborhoods, despite the recent growth in such lending, and argue that factors such as racial or neighborhood-

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[4]For a discussion of the growth in CRA-related lending in recent years and the role of different types of institutions, see, Apgar, William and Mark Duda, "The Twenty-Fifth Anniversary of the Community Reinvestment Act: Past Accomplishments and Future Regulatory Challenges," *Economic Policy Perspectives,* Federal Reserve Bank of New York, (forthcoming); Zinman, Jonathan, "Do Credit Market Interventions Work? Evidence from the Community Reinvestment Act", mimeo, Federal Reserve Bank of New York, September 2002; Avery, Robert, B., Raphael W. Bostic, Paul S. Calem, and Glenn B. Canner (1999), "Trends in Home Purchase Lending: Consolidation and the Community Reinvestment Act," <u>Federal Reserve Bulletin</u> 85, pp. 81-102; Bostic, Raphael W. and Breck Robinson (forthcoming), "Do CRA Agreements Influence Lending Patterns?" <u>Real Estate Economics</u>.; Evanoff, Douglas and Laurence Segal, "CRA and Fair Lending Regulations: Resulting Trends in Mortgage Lending," *Economics Perspectives*, December 1996, pp. 17-42; Joint Center for Housing Studies (2002), The 25th Anniversary of the Community Reinvestment Act: Access to Capital in an Evolving Financial Services System, (Cambridge, MA: Harvard University); LaCour-Little, Michael, "Does the Community Reinvestment Act Make Mortgage Credit More Widely Available? Some New Evidence Based on the Performance of CRA Mortgage Credits," paper presented at the mid-year meetings of the *American Real Estate and Urban Economics Association*, June 1998; Schwartz, Alex, "Bank Lending to Minority and Low-Income Households and Neighborhoods: Do Community Reinvestment Agreements Make a Difference," *Journal of Urban Affairs*, 20(3), pp. 269-301.
[5]For example, see Gunther, Jeffrey W.(2000),"Should the CRA Stand for Community Redundancy Act," *Regulation* 23 (3), pp. 56-60,

[5]Goldberg, Debby (2002), "The Community Investment Act and the Modernized Financial Services World," <u>ABA Bank Compliance</u> January/February, pp. 13-19.

based discrimination and informational asymmetries or externalities still adversely affect credit availability.[6]

In the more than 25 years since the CRA was enacted, little research has been conducted, and no consensus has emerged on the socio-economic effects of the CRA on local communities. In large part, this is because it is difficult both conceptually and empirically to make such an assessment. It is always difficult to assess what would have taken place in the absence of a law or regulation. The CRA does not exist in a vacuum; many changes have taken place over the years that effect the same markets as those targeted by the CRA. In particular, the conceptual challenge that must be overcome is to develop a technique to assess the *marginal* effect of the CRA.[7]

In this paper, we develop a conceptual framework and implement empirical tests to study the effects of the CRA on neighborhoods that are the primary focus of the CRA, as measured by neighborhood outcomes including, for example, homeownership rates and home values. The tests rely on the assumption that the marginal effects of the CRA, if any, can be detected by comparing outcomes in two groups of neighborhoods; those whose relative incomes place them just above the threshold of focus of CRA coverage and those whose relative income place them just below that threshold. Our primary set of tests compares changes in neighborhood outcomes over 1990 and 2000 across the two cohorts, and relates their relative performance to measures of CRA activity. These tests provide evidence on whether a variety of CRA-related regulatory changes during the 1990s, including disclosure of CRA performance ratings and substantial changes in the implementing regulations, had an effect on neighborhood outcomes. Another set of tests evaluates neighborhood outcomes as of the year 2000 relative to whether the income of the neighborhood was above or below the threshold of CRA focus prior to 2000. The latter tests do not try to determine when the CRA may have had an effect, but rather whether such an effect has occurred over the 25 years since the law was enacted.

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[6]For statistics on the volume of home purchase lending across neighborhoods of differing incomes, see the Federal Financial Institutions Examination Council (FFIEC), Press Release, August 1, 2002.

[7]This was the approach developed in a earlier assessment of the effects of the CRA on banking institutions. See. Avery, Robert B., Raphael W. Bostic,, and Glenn B. Canner, "Assessing the Impact of the CRA on Banking Institutions," proceedings of the Conference on Changing Financial Markets and Community Development," April 5-6, 2001, pp 301-319.

The remainder of the paper is structured in the following way. The next section provides a brief overview of the CRA, focusing on how the law has been implemented over the years. The following section highlights some of the more important environmental developments over the past decade or so that complicate an assessment of the effects of the CRA. This is followed by discussions of the different ways the CRA may affect local communities, and the analytical tests developed for evaluating the effects of the CRA on local communities. The next sections discuss the data used in the analysis and the empirical results. We conclude by noting limitations of our research and presenting a summary discussion.

BACKGROUND ON THE CRA

The CRA calls upon the federal banking supervisory agencies to use their authority to encourage each banking institution to help meet local credit needs in a manner consistent with safe and sound operation by (1) assessing the institution's record of meeting the credit needs of its entire community, including lower-income neighborhoods, and (2) considering the institution's CRA performance when assessing an application for a charter, deposit insurance, branch or other deposit facility, office relocation, or merger or acquisition.[8]

The Congress did not intend for the CRA to result in government-imposed credit allocation. The expectation, rather, was that banking institutions would be proactive in seeking out and serving viable lending opportunities in all sections of their communities. At the same time, it was expected that lending activities would be undertaken in a manner consistent with the safe and sound operation of banking institutions.[9] The regulations that implement the CRA reflect these goals. They provide for flexibility and direct that the CRA performance of banking institutions be evaluated in the context of the specific circumstances faced by each institution.

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[8]The federal banking supervisory agencies are the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the Office of the Comptroller of the Currency, and the Office of Thrift Supervision.
[9]The CRA does not cover credit unions and other types of financial institutions. For a more expansive overview of the history of the CRA and of the issues associated with it, see Garwood, Griffith L. and Dolores S. Smith (1993), "The Community Reinvestment Act: Evolution and Current Issues," *Federal Reserve Bulletin* 79, pp. 251-67.

The CRA Before 1995

Implementation and enforcement of the CRA has evolved through a series of regulatory and legislative actions. To implement the CRA, in 1978, the supervisory agencies adopted joint regulations that reflected two principles that continue today to mark the administration of the CRA. First, the regulation should not require covered institutions to allocate credit according to government-issued edicts. Second, banking institutions should be free to meet their CRA obligations in different ways reflecting the specific needs of their communities and their own capabilities.

To apply the CRA, the regulatory agencies identified twelve factors against which the agencies would periodically assess the performance of banking institutions.[10] The agencies also adopted uniform examination procedures. Over the decade of the 1980s, the regulatory agencies provided a variety of guidance to regulated institutions clarifying their obligations under the CRA. In August 1989, the Congress amended the CRA to require the public release of examination evaluations and corresponding CRA performance ratings.[11] This amendment placed added pressure on banking institutions to achieve at least a minimum level of compliance with the CRA in order avoid the potential adverse publicity associated with the public release of a less than satisfactory CRA performance rating.

The geographic focus of CRA. From their inception, the regulations that implement the CRA have focused on the geographic distribution of credit extensions, weighing heavily lending activities in lower-income neighborhoods within a banking institution's CRA assessment area(s). Generally, CRA assessment areas are the areas in which an institution operates its branches and deposit-taking ATMs and any surrounding areas in which it originated or purchased a substantial portion of its loans. For purposes of CRA performance evaluations, a lower-income neighborhood (typically a census tract), is one where the median family income of the neighborhood was less than 80 percent of the median family income for the broader area (such

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[10]For a listing of the twelve assessment factors see, Garwood and Smith (1993), "The Community Reinvestment Act: Evolution and Current Issues."

[11]Guidelines were also published in April 1990 to detail expected performance requirements and provide information about how examiners would evaluate institutions. See the FFIEC announcement, "Guidelines for Disclosure of Written Evaluations and Revised Assessment Rating System."

as a metropolitan statistical area or the nonmetropolitan portion of a state) as measured in most recent decennial census.

Because information about the income characteristics of census tracts is derived from the decennial census, classification of a census tract by its relative income only occurs once every 10 years. Thus, each time results of the decennial census are released (roughly two years after it is collected), each census tract is placed into one of the broad income classifications for CRA enforcement purposes and remains in that classification for the next 10 years.[12] This procedure has important implications because the income characteristics of a census tract may change greatly over the course of a decade as the composition of its population shifts, but the CRA review process largely ignores such changes.

Data to measure CRA performance. Although CRA performance evaluations have always considered the activities of banking institutions across a broad spectrum of lending products, most public attention has focused on residential mortgage lending. In no small part, this is due to the availability of information on such lending made public pursuant to the Home Mortgage Disclosure Act (HMDA). From its inception in the mid-1970s, HMDA has required banking institutions to disclose the number and dollar amount of their residential lending activity across census tracts in metropolitan statistical areas (MSAs). Consequently, these data have been routinely used by banking institutions, bank regulators, and members of the public to help evaluate CRA performance.

Congress amended HMDA, first in 1989 and then in 1991, substantially expanding its scope and coverage.[13] Most importantly, HMDA now requires covered institutions to disclose information about the disposition (approved, denied, withdrawn, and so on) of each application for a home loan, as well as information about the applicant's income, race, ethnicity, and gender.

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[12]In addition to the lower-income classification, which is actually subdivided into a low and moderate income components, census tracts are grouped into two other income categories--middle-income and upper--income areas. The former have median family incomes in the range 80 percent to 120 percent of the median family income of the broader area, the latter 120 percent or more. Census tract income classification is set for each 10-year period following the release of the census and only changes if the boundaries of the broader area, such as the MSA, are changed by the Office of Management and Budget.

[13]For details see, Canner, Glenn B. and Dolores S. Smith, (1992), "Expanded HMDA Data on Residential Lending: One Year Later," *Federal Reserve Bulletin*, 78, pp. 801-824.

The coverage of HMDA was also substantially expanded to include the lending activities of mortgage companies, both affiliated with and independent of banking institutions.

From the expanded HMDA data, it is possible to measure lending activity by census tract and borrower income group over time. It is also possible to distinguish lending undertaken by institutions covered by the CRA, both within their CRA assessment areas and in other locations, from that of lenders not covered by the law, specifically independent mortgage companies and credit unions. In particular, the expanded coverage of HMDA provides an opportunity to quantify not only the lending activities of a given institution, but to aggregate activity across lenders and to derive various statistics, such as the market share of lending activity accounted for by CRA-covered institutions in a given census tract.

Finally, the expansion of HMDA data to include information on the race and ethnicity of applicants has had an important effect by allowing enhanced opportunities to evaluate the compliance of lending institutions with the nation's fair lending laws. These data, and the evaluations drawn from them, have led banking institutions and regulators to focus more attention on fair lending matters. Because minority households and neighborhoods with high concentrations of minority residents are relatively more likely to have lower incomes, there is a nexus between increased attention on fair lending and CRA-related activities.[14]

The Changes to CRA in 1995

In response to concerns voiced about CRA implementation, the banking agencies issued regulations in April 1995 to revise the CRA evaluation process and make it more objective and performance-oriented. The 1995 regulations provide distinct performance evaluation tests for three categories of banking institutions--large retail, small retail, and wholesale or limited-purpose institutions.[15] To promote consistency of assessments, the statute and implementing

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[14] Although the CRA does not focus on race or ethnicity directly, one factor considered in CRA evaluations is compliance with the fair lending laws. An institution that violates the substance of these laws is likely to find it more difficult to obtain a satisfactory or better CRA rating.

[15] While large retail and small retail institutions are evaluated primarily based on their performance in their assessment areas, wholesale and limited purpose institutions may be evaluated based on their performance nationwide, so long as they have adequately addressed the needs of their assessment areas. Each institution may also choose, as an alternative, to be evaluated under a "strategic plan" option in which the institution identifies and seeks to meet measurable objectives. See Federal Reserve, Press Release (1995).

regulations establish ratings criteria and four ratings categories: "Outstanding," "Satisfactory," "Needs to improve," and "Substantial noncompliance." Historically, nearly all banking institutions have received a rating of "Satisfactory" or better.

For large retail banking institutions, the current regulations establish three performance tests– lending, investment, and service.[16] The regulations, however, do not establish specific lending, investment, or service thresholds for obtaining a particular CRA performance rating. The lending test involves the measurement of lending activity for a variety of loan types, including home mortgage, small business and small farm, and community development loans.[17] Among the factors considered are the geographic distribution of lending, the distribution of lending across different borrower income groups, the extent of community development lending, and the use of innovative or flexible lending practices to address the credit needs of lower-income geographies (census tracts) or individuals.[18] The investment test considers a banking institution's qualified investments that benefit the institution's assessment area or a broader statewide or regional area that includes its assessment area. The service test considers the scope of an institution's system for delivering retail banking services and judges the extent of its community development services and their degree of innovativeness and responsiveness.[19] Under the current rules, lending is more heavily weighted than investments or services, so that

[16]Under the regulation, a "large" banking institution is generally defined to be an independent institution with assets of $250 million or more or an institution of any size if owned by a banking institution holding company with assets of $1 billion or more. The CRA regulations include additional provisions not discussed in the text. For example, smaller banking institutions have a more streamlined evaluation process. For a more complete discussion of these provisions, see Board of Governors (2000).

[17]Under the revised CRA regulations, larger banking institutions must report information on the number and dollar amount of their small business, small farm, and community development lending each year. For the reporting of business loans, the maximum loan size reported is $1 million; for the reporting of farm loans, the maximum loan size reported is $500,000. The regulation defines a community development loan as any loan whose primary purpose is community development and includes such loans as those for affordable housing, multifamily residential housing for low- and moderate- income households and other loans that promote economic development by financing small businesses or stabilizing low- or moderate-income areas.

[18]Borrower income categories follow the same groupings as those for neighborhoods but rely on the borrower's income relative to that of the concurrently measured median family income of the broader area (metropolitan statistical area or nonmetropolitan portion of the state).

[19]For the investment test, a qualified investment is a lawful investment, deposit, membership share, or grant that has community development as its primary purpose. For the service test, among the assessment criteria are the geographic distribution of an institution's branches and the availability and effectiveness of alternative systems for delivering retail banking services, such as automated teller machines, in lower-income areas and to lower-income persons.

an institution may not receive a "Satisfactory" or "Outstanding" rating unless it is rated at least as "Satisfactory" on lending.[20]

As noted, the regulations that implement the CRA are quite specific in their focus on targeted communities and populations. Specifically, CRA assessment examinations heavily weigh lending by covered institutions to borrowers (of any income) in lower-income neighborhoods within their CRA assessment area.[21] Similarly, examinations place great weight on lending to lower-income borrowers in their assessment area regardless of the income level of the neighborhood.

While the lending test tends to be quite quantitative, the service test is less so. One aspect of the service test that is be quantified relates to the number and distribution of branch offices in a banking institution's CRA assessment area and the distribution of those offices across neighborhood arrayed by their income.

The changes to the CRA regulations in 1995 were substantial and may have caused creditors to modify their CRA-related activities. In particular, the more quantitative and performance oriented approach to CRA enforcement may have caused creditors to focus greater activity on extensions of credit and the establishment of branch offices in targeted areas and less on other activities. Consequently, in assessing the effects of the law on local communities, it is important to recognize this possibility.

ASSESSING THE EFFECT OF THE CRA

Determining the effects of the CRA on local communities is difficult. As noted, the CRA was enacted over two decades ago, and may, in principle, have had its largest and most measurable effects on the activities of banking institutions and the local communities they serve

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[20]A large banking institution's performance under the three performance tests is evaluated by examiners in the context of information about the institution and its community, competitors, and peers.

[21]In general, CRA compliance examinations focus on the number and dollar amount of lending in a banking institution's CRA assessment area(s). More specifically, examiners determine the geographic distribution of lending measured by the proportion of total activity in the assessment area(s), the dispersion of that lending, and the number and amount of such lending in lower, middle and upper income geographies. A similar analysis focuses on lending to borrowers in different income groupings. As noted, the lending test also considers the number and amount of community development lending, and a banking institution's use of innovate and flexible lending practices in helping to meet the credit needs of lower-income populations.

in the period shortly after it became law. Unfortunately, little direct evidence is available to test this hypothesis.

Assessments of the effects of the CRA are further complicated by changes in the market and regulatory environment that may differentially effect communities targeted by the CRA but that are unrelated to the law itself. Many of these changes have taken place over the past decade or so and potentially confound analysis of the effects of the CRA on local communities.

Prominent among the market and regulatory factors that may influence an assessment of the effects of the CRA are: (1) regulatory requirements established in the early 1990s on Fannie Mae and Freddie Mac to meet government established goals regarding the purchase of loans extended to lower-income populations and in lower-income areas, (2) greater attention to fair lending responsibilities that may have encouraged creditors to focus more attention on minority borrowers and areas with relatively high concentrations of minority residents, (3) technological changes that have lowered the costs of extending credit benefitting relatively more households with lower levels of savings, (4) the emergence of risk-based pricing in the mortgage market and, consequently, rapid growth of the subprime mortgage lending that has provided credit access to millions of previously credit-constrained households, and (5) a variety of government and private initiatives, such as reduced insurance premiums and more relaxed qualification standards for FHA-insured loans, and tax credits in support of redevelopment initiatives, to name only a few.[22]

Although each of these developments has the potential to confound an analysis of the effects of the CRA, we believe a well-designed test can minimize such concerns. Most importantly, as will be discussed below, these potential confounding factors generally cut across neighborhood income categories, and a test focusing on changes at the margin of CRA's geographic focus mitigates or may even overcome any need to deal empirically with these factors.

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[22]Congress established three affordable housing goals that the GSEs must meet: (1) a low- and moderate-income goal, which targets borrowers with less-than-median-income, (2) a special affordable goal, which targets very low-income borrowers and low-income borrowers living in low-income census tracts, and (3) a geographically-targeted or underserved areas goal, which targets low-income and high-minority neighborhoods. Within metropolitan areas, underserved areas are census tracts where (1) median income of families in the tract does not exceed 90 percent of the metropolitan area median income or (2) minorities comprise 30 percent or more of the residents and the median income of families in the tract does not exceed 120 percent of area median family income.

Differing Responses to the CRA

In thinking about how the CRA might influence the activities of banking institutions and ultimately their local communities, one can imagine several distinct possibilities. The different potential responses to the law by banking institutions have very different implications for the communities they serve.

First, the CRA may have very little influence on the activities of regulated institutions. Banking institutions may not undertake any type of special activities in response to the law and continue to serve the credit needs of their communities as they did before the law took effect. In this scenario, the CRA would result in little if any change in the volume or sources of credit in any areas, or in the geographic distribution of banking offices. As a consequence, the CRA per se would have virtually no influence on local communities.

Second, banking institutions may respond to the CRA by focusing more activity in neighborhoods that receive relatively greater weight in CRA performance evaluations, but such activities are accomplished primarily by enhanced staff training, greater community outreach and marketing and other similar activities but with no changes in the pricing of loans or changes in credit underwriting standards. This type of response to the CRA may cause a shift in the sources of credit in targeted areas as banking institutions take market share from institutions not covered by the law, but will result in no net change in lending activities at the market level. This type of response alone is likely to have no demonstrable effect on local communities, although banking institutions may receive higher CRA performance ratings as the measures of their activity in areas targeted by the CRA improve.

Third, banking institutions may respond to the CRA by offering financial incentives to borrowers from targeted communities by either reducing prices for credit (including transaction costs) or by easing credit standards. Here the law is likely to have two effects: first, as above, banking institutions should account for a relatively larger share of lending activity in areas targeted by the CRA and second, unlike the case above, there are likely to be demonstrable effects on the local communities themselves. The precise nature of the effects on local communities may be complex, and highly dependent on the nature of the banking institution response to the CRA.

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If creditors lower loan prices to borrowers in targeted communities in response to the CRA, but do not modify existing credit standards, it will increase the demand for credit by increasing the number of borrowers who can satisfy either monthly payment or transaction cost constraints and will cause a redistribution of wealth from the owners of banking institutions or other bank customers to the targeted borrowers. Because of the price subsidy, more prospective borrowers qualify for credit with the result that the demand for the product being purchased with the credit, for example, owner-occupied homes, will increase. Higher prices for homes will result in a potential financial windfall to existing homeowners and may create a better environment for homeownership in the local community by increasing expectations about future returns to homeownership. In particular, increased lending activity may enable market participants to overcome externalities, such as information problems tied to a paucity of real estate activity, that may adversely effect the local community.[23]

If the CRA subsidy takes the form of a loosening of credit standards, however, the results may be more complex. Initially, more prospective borrowers may qualify for credit, boosting the quantity demanded for the product being purchased with the credit, and, as before, resulting in higher prices for homes and a better environment for homeownership in the local community. However, it is likely some of the additional borrowers who qualified under the more relaxed credit standards will default on their loans, possibly leading to increased foreclosures, elevated vacancy rates, and possible offsetting adverse effects on the value of the subject properties and on those of surrounding housing units.

There is a fourth possibility which is a variant on the second and third options described above. Here, the CRA may or may not have an impact on neighborhood outcomes as delineated in the preceding two options. However, instead of an increased market share for CRA-covered institutions in lower-income neighborhoods, the CRA might work through different channels. For example, banking institutions may provide community development funds to third party

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[23]For further information see, William C. Gruben, Jonathan A. Neuberger, and Ronald H. Schmidt, "Imperfect Information and the Community Reinvestment Act," Federal Reserve Bank of San Francisco, *Economic Review*, vol. 3 (Summer 1990), pp. 27-46; William W. Lang and Leonard I. Nakamura, "A Model of Redlining," *Journal of Urban Economics*, vol. 33 (1993), pp. 223-34; and Paul S. Calem, "Mortgage Credit Availability in Low- and Moderate-income Minority Neighborhoods: Are Information Externalities Critical?,"*Journal of Real Estate Finance and Economics, vol.* 13 (1996), pp. 71-89.

partners who actually originate loans. Alternatively, banking institutions may satisfy their CRA obligations though loan purchases rather than originations. Each of these possibilities could lead to changes in neighborhood outcomes without a change in the market share of banking institutions.

The role of CRA agreements and CRA performance evaluations

Two factors in particular may lead banking institutions to focus additional resources on certain parts of their local CRA assessment areas. First, banking institutions sometimes enter into CRA agreements and partnerships with community-based organizations. Sometimes these agreements arise from pressure placed on banking institutions in advance of or during applications for mergers or acquisitions; other times the institutions seek out partners to enhance their community lending activities. Such agreements are often seen as a way for banking institutions to extend the reach of the activities and better serve the credit needs of their local communities.[24] If the activities undertaken as a result of these agreements help overcome market impediments in the targeted areas, they may have effects on the community targeted by the program. If such agreements simply result in a reallocation of resources from one area to another, perhaps by causing banking institutions to subsidize borrowers in targeted areas, the effects on the local community will, as before, depend on the nature of the subsidy.

Second, in order to meet their CRA obligations, banking institutions must achieve a rating of at least satisfactory in their CRA performance assessment. Compliance with the law does not require an institution to achieve a higher rating. Nonetheless, some banking organizations may seek to achieve an "outstanding" CRA rating because they believe it is in their best interests. If such an organization seeks an outstanding rating by subsidizing borrowers from targeted areas, it may effect the local community, but it is not necessarily a consequence of the requirements of the CRA.

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[24]Evidence that CRA agreements may boost lending is presented in, Bostic, Raphael B. and Breck L. Robinson, "What Makes CRA Agreements Work? A Study of Lender Responses to CRA Agreements," paper prepared for the Federal Reserve System conference titled "Sustainable Community Development: What Works, What Doesn't and Why," (March 27-28, 2003).

SETTING UP THE TESTS

Assessing the socio-economic effects of a law, such as the CRA (or its implementing regulation) is difficult because one cannot observe what activity would have taken place in its absence. Banking institutions extended credit in the lower-income portions of their communities and to lower-income borrowers before the CRA was enacted. Whether more such credit is now available because of the law (its marginal effect on credit availability) as well as its effects on local communities is a matter of debate. Moreover, in seeking to measure the effects of the CRA on local communities, one must be mindful not to confound these effects with those of other factors such as the substantial growth of subprime lending, greater focus on fair lending concerns, or the responses of Fannie Mae and Freddie Mac to their Congressionally-established affordable housing goals.

In this paper we attempt to address both of these difficulties by making use of the neighborhood relative income threshold that distinguishes census tracts that are the focus of CRA attention from those that are not. The basic approach seeks to identify the marginal effect of CRA by assessing differences in neighborhood conditions across two cohorts of census tracts: those whose relative median family income is just below the 80 percent threshold (CRA-eligible census tracts) and those just above the 80 percent threshold (not CRA-eligible census tracts).[25] To enhance comparability of the cohorts, we restrict the sample to only include census tracts that are within a relatively narrow range of the threshold.

The analysis focuses on comparing *changes* in several different neighborhood outcome measures (such as the homeownership rate or median values for owner-occupied homes) over the period 1990 to 2000 across the two cohorts of census tracts. This approach can provide direct evidence on whether the substantial changes in the CRA regulatory environment during the 1990s (for example, public disclosure of CRA examination ratings and implementation of performance-oriented CRA evaluations) has had identifiable effects. More generally, it allows for an assessment of the relationship between neighborhood trends and the CRA. It permits an evaluation of the potential impact of the CRA using specific quantitative measures of CRA activity that are available only for the 1990s (for example, the share of lending undertaken by

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[25]In this paper, we restrict attention only to census tracts that are in MSAs.

banking institutions with differing CRA examination ratings and the share of mortgage loans to lower-income borrowers or in lower-income neighborhoods by CRA-covered institutions in their assessment areas).

The statistical tests for this *changes analysis* are implemented in several steps. First, regression equations are estimated for changes in neighborhood outcomes, restricting the regression sample to census tracts that were just above the threshold of CRA-eligibility in 1990. The regression equations capture the impact of initial (1990) economic and demographic characteristics of the neighborhoods using an array of census tract-level explanatory variables. In addition, the regressions control for MSA-level fixed effects by including a dummy variable for the MSA each census tract is located in.

The second step uses the estimated regression equations to predict changes in neighborhood outcomes for a cohort of census tracts that were just below the threshold of CRA-eligibility in 1990. This step, in effect, removes the impact of any initial differences in census tract or MSA characteristics for the two cohorts from the outcome measures for the CRA-eligible cohort. It expresses outcomes for the CRA-eligible cohort as differences relative to the not CRA-eligible cohort in the same MSA. Finally, we evaluate whether the differences (residuals) are in any way related to measures of CRA-related activity, such as substantial lending by banking institutions with outstanding CRA performance ratings in a market.

Essentially, this approach compares changes in outcomes across the two cohorts controlling for any differences in their 1990 characteristics. By including MSA-level fixed effects in the regression equations, we are also removing any across-MSA variation. In effect, CRA-eligible tracts are compared with not CRA-eligible tracts *within their own MSA*.

A potential limitation of this approach is that the greatest effects of the CRA on local communities may have occurred in the period immediately following its enactment, or during the 1980s, and that little change related to the CRA has occurred since that time. To evaluate this possibility, we also undertake an additional set of statistical tests that relate the *levels* of neighborhood outcome variables for the year 2000 to whether the census tract was CRA-eligible at any time prior to 2000. This set of tests (the *levels analysis*) is intended to reveal the cumulative effects that the CRA may have had on local communities since its enactment,

although we believe that it may be more difficult to isolate the impact of CRA in this context because there is no accounting for a neighborhood's initial conditions as in the change analysis.

A necessary condition for conducting the statistical tests is being able to obtain information for all years in a common geographic boundary. Since neighborhood conditions are evaluated at the census tract level, all measures of neighborhood characteristics must be geographically consistent, regardless of the time period to which they pertain. Unfortunately, the boundaries of many census tracts change with the release of each decennial census. Lending data for the sample period is only available using 1990 tract definitions. Consequently, it was decided to use 1990 census tract geographies as the unit of observation for the analysis and to obtain information from the 1980 and 2000 censuses on this basis.[26] Thus, the unit of observation for our study is a census tract as defined by its boundaries in 1990, but with population, housing, and economic characteristics measured in 1980, 1990 and 2000.

Outcome regression models: changes analysis

The primary set of tests focuses on *changes* in neighborhood outcome measures over the period 1990-2000. The first step in the analysis is to estimate regression equations relating these changes to 1990 census tract characteristics for a cohort of census tracts just above the relative income threshold for CRA-eligibility as of 1990 .

Sample restrictions. The sample for the changes analysis is restricted to census tracts that were defined as part of MSAs throughout the 1993-2000 period and had 1990 relative median incomes between 70 percent and 90 percent of their respective MSA median family income. This restriction is applied to enhance comparability between the CRA-eligible and not CRA-eligible cohorts used in the analysis.

We exclude census tracts with very small numbers or percentages of one-to-four family units; specifically, fewer than 100 units or less than 20 percent of all units (now evaluated as of 1990), and census tracts with missing values for any of the dependent or independent variables. In addition, we restrict the sample to census tracts where the proportion of owner-occupied one-

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[26]The data sources appendix provides more detail about the process used to maintain consistent census tract boundaries over time.

to-four family units was between 20 percent and 90 percent of total housing units as of 1990. The latter restrictions are adopted to exclude census tracts which were predominantly multi-family rental and those that by 1990 had already achieved a very high rate of homeownership. Finally, we exclude census tracts with extreme outlier values for percentage change in the median home value or the number of owner-occupied units. Specifically, we exclude census tracts where the percentage change in either of these measures was less than -50 or greater than 200. This latter exclusion reduced the sample of census tracts by less than 2 percent, and had only a small effect on the mean values of the measures used in the statistical analysis.

Dependent variables. Five measures of change in neighborhood outcomes between 1990 and 2000 are used in the statistical analysis: (1) the change in the homeownership rate for one-to-four family units, defined as the number of owner-occupied one-to-four family units divided by the total number of one-to-four family units, (2) the percentage change in the number of owner-occupied units, (3) the change in the vacancy rate, (4) the change in crime rate as measured by the percentage change in an index of the incidence of crime, and (5) the percentage change in median value of owner-occupied one-to-four family units. To the extent that the CRA results in increased availability of credit, the first three measures are the most likely to be favorably impacted, and therefore are obvious choices for testing for an impact of the CRA.[27] The price of housing is affected by access to credit; however, there is ambiguity as to what the net effect may be on the *median* neighborhood home value. On the one hand, increased access to credit might lead to expansion of lower-priced housing and thus lead to a lower median value in a neighborhood. On the other hand, demand for housing might increase across the whole spectrum of borrowers in a lower-income neighborhood, and thus may increase the median house value. Crime, while indeed a measure of neighborhood quality, could only indirectly be affected by changes in access to credit.

Independent variables. As noted previously, the regression equations control for a number of census tract demographic, economic, and housing characteristics as of 1990., and MSA fixed

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[27] In the earlier discussion, it was noted that the CRA could lead to long-run unfavorable changes in neighborhood outcomes, such as homeownership, if increased and subsidized access to credit ultimately resulted in elevated loan defaults and foreclosures. In the changes analysis, we are assuming that the 1993-2000 sample period is too short (with a particularly favorable housing environment) to observe these long run adverse outcomes.

effects.[28] The census tract demographic characteristics include measures of the distribution of population age, household size, race, and ethnicity. Additional economic characteristics include the proportion of total housing units that are one-to-four family unit properties, relative median family income, and the proportion of the former that are single-family. We control for relative median family income non-linearly by allowing a slope change at a relative income of 85 percent.

The 1990 values of all of the dependent variable also are included in each regression, along with an indicator for central city versus suburban census tract location. Finally, we control for the proportion of CRA-eligible borrowers in each census tract, measured as the proportion of borrowers receiving a home purchase or refinancing loan in the census tract during 1993-1999 with incomes less than 80 percent of the MSA median family income. We add this control variable so that we can better isolate the potential effects of CRA-related activities at the neighborhood level.

Analysis for the residual differences

After estimating the regression models for changes in outcomes using the subsample of census tracts just above the CRA threshold as of 1990, we apply the models to predict changes in outcomes in census tracts with relative median incomes between 70 percent and 80 percent and calculate residuals and determine their statistical significance. We also investigate the relationship between the regression residuals and several measures of CRA-related activity.

Specifically, we evaluate the residuals in relation to five measures of CRA-related activity: (1) the share of all one-to-four family mortgage lending in the census tract during 1993-1999 by banking institutions whose CRA assessment areas include the census tract, (2) the share of such mortgages by banking institutions with outstanding CRA performance ratings (in the year the loan was made) whose assessment areas include the census tract, (3) the share of such mortgages made to CRA-eligible borrowers by banking institutions in their CRA assessment areas, (4) the share of such mortgages made to CRA-eligible borrowers by banking institutions with outstanding CRA ratings, and (5) an indicator variable for whether a lower-income census tract

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[28] NECMAs are used in New England. The geographic boundaries of MSAs are those holding in 2000.

is located in a county subject to a CRA agreement, specifically related to home lending, between a banking institution and a community organization.[29,30]

Outcome regression models: levels analysis

A second set of tests relies on estimation of regression equations relating the *levels* of neighborhood outcome variables to indicators of neighborhood CRA-eligibility as of 1980 or 1990.

Sample restrictions. We restrict attention to census tracts were defined as part of MSAs throughout the 1993-2000 period and had 2000 relative median incomes between 70 percent and 90 percent of their respective MSA median family income.[31] We focus on census tracts in this income range because, for a given 2000 median income, there is likely to be considerable heterogeneity with respect to prior year CRA-eligibility. As in the changes analysis, we exclude census tracts that have very small numbers or percentages of one-to-four family units; specifically, fewer than 100 units or less than 20 percent of all units; however, here the determination is made based on 2000, rather than 1990, values.

Dependent Variables. Four outcome measures for each census tract are used: (1) the homeownership rate for one-to-four family units, (2) the median value of owner-occupied one-to-four family units, (3) the vacancy rate, and (4) the crime rate, measured by an index of the incidence of crime.

Independent variables. The regression models relate the outcome measures to three indicators of prior-year census tract CRA-eligibility: eligible only in 1980, eligible only in 1990,

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[29]We measure mortgage lending activity beginning with the 1993 HMDA data because that is the first year the data collection included comprehensive coverage of independent mortgage companies. These companies constitute an important part of the residential mortgage market, and calculations of market shares excluding these companies would create serious distortions. We used 1999 as the final year for counting mortgage activity because the 2000 decennial census was conducted in April 2000 and consequently 1999 lending seems the most appropriate end point. The data exclude mortgages for home improvement loans and mortgages for multi-family properties. The market share figures used in the analysis are the average shares for the seven year period, with each year counting equally. This is done to insure that years with an unusual level of activity are not given undue influence. For robustness checks, we also conducted the statistical analysis including the 2000 lending data and home improvement loans. Neither inclusion had a measurable effect on the results.
[30]CRA agreements include those established during or after 1990.
[31]To be consistent with the analysis used for the changes analysis, 1990 census tract geographies are used to determine the unit of analysis. Characteristics, however, are measured as of 2000.

or eligible in both 1980 and 1990. Since 1990 geographies are used as the unit of observation, the 1990 eligibility variable is measured exactly. We used our estimate of 1980 median family income for the census tract to determine CRA-eligibility; however, because census tracts may have split, the classification of the tract may be in error in a few cases. The regression equations control for the distribution of population age, household size, race, and ethnicity within each census tract, the relative median family income of the census tract, the proportion of total tract housing units that are one-to-four family unit properties, and the proportion of the latter that are single-family, all measured as of 2000. An indicator for central city versus suburban census tract location and MSA fixed effects are included as well.

Description of the regression samples.

Data sources for the statistical analysis are described in the Appendix. The sample for the changes analysis includes observations from about 8,300 census tracts.[32] Of these, nearly 4,800 had census tract median income between 80 percent and 90 percent of their MSA median and thus were not CRA-eligible as of 1990. These census tracts were used to estimate the outcomes regressions. The remaining 3,500 census tracts, with median income between 70 percent and 80 percent of their MSA median, were CRA-eligible. Coefficients from the outcome regressions were used to calculate residuals for these census tracts. These residuals can be thought of as differences in the outcome variables between the CRA-eligible and not CRA-eligible census tracts adjusted for any differences in their initial 1990 conditions.

Mean values and standard deviations of all variables included in the changes analysis by CRA-eligibility cohort are shown in table 1a. There are only relatively small differences in the 1990 mean values for most of the independent variables across the two cohorts of census tracts. This is consistent with our maintained belief that, other than CRA-eligibility in 1990, these two cohorts would be quite similar, and thus appropriate for a natural experiment for the effects of the CRA. Nevertheless, there are few instances where there are some notable differences. Most notably, the mean proportion of the population that was minority in 1990 was higher in the

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[32]Census tracts from 12 smaller MSAs were dropped from the analysis because they did not have census tracts in both the 70-79 percent and the 80-89 percent relative income ranges.

CRA-eligible census tracts (a mean of nearly 35 percent) than in the not CRA-eligible cohort (a mean of about 25 percent). Obviously, by construction, median family incomes are higher in the not CRA-eligible cohort. Also, the initial (1990) values of some of the dependent variables, particularly homeownership rates and median home values, were higher on average, and the crime index lower in the not CRA-eligible cohort.

The sample for the levels analysis includes observations from about 8,650 census tracts with 2000 relative incomes between 70 percent and 90 percent of their respective MSA median. Mean values and standard deviations of the dependent and independent variables of the outcome regression equations for this analysis are shown in table 1b. Overall, 39 percent of the census tracts met the prior-year CRA-income eligibility threshold for at least one of the decades between 1980 and 2000; 7 percent were CRA-eligible in 1980 but not in 1990; 16 percent were eligible in 1990 but not 1980; and 16 percent were eligible in both years. About 60 percent of the sample census tracts were not CRA-eligible at any time.

RESULTS OF THE CHANGES AND LEVELS ANALYSES

Results of the changes analysis

The changes analysis seeks to assess whether the CRA has influenced changes in neighborhood outcomes over the 1990-2000 period by comparing the cohort of census tracts that were just above the threshold of CRA-eligibility in 1990 to the cohort of CRA-eligible census tracts. If there were no differences in initial conditions in the two cohorts, the differences in the simple means of the outcome variable would be a direct measure of the potential effects of the CRA.

As shown in table 1a, these simple mean differences do not appear to be consistent with either a large or consistently favorable effect of the CRA. Changes in homeownership, crime, and the number of owner-occupied units are all less favorable for the CRA-eligible cohort, although these cohort differences are quite small and swamped by the within-cohort variation (as indicated by the reported standard deviations.) On the other hand, median home values and vacancy rates both show slightly more favorable outcomes for the CRA-eligible cohort.

The outcome regression equations are designed to adjust the gross mean differences for differences in the initial conditions in the two cohorts of census tracts. The equations are estimated using the not CRA-eligible cohort and are used to calculate predicted changes-in-outcomes for the CRA-eligible cohort, which are then compared to the actual changes-in-outcomes for the latter cohort. Results from the regressions are shown in table 2. In general, coefficient magnitudes and signs in these regressions are consistent with *a priori* expectations. Results from comparison of the mean actual and predicted changes-in-outcomes for the CRA-eligible cohort are shown in table 3.

For all five outcome measures, we observe a statistically significant gap between actual and predicted results. It turns out that accounting for the effects of the differing initial conditions does alter our initial qualitative conclusions regarding potential CRA effects, but not consistently across all five measures. These adjusted differences are not materially different from the gross mean differences across the two cohorts in the case of the vacancy rate and crime outcome measures: changes in crime are higher than predicted and changes in vacancy smaller than predicted. However, the adjustments lead to the CRA-eligible cohort having higher average changes in homeownership and the number of owner-occupied units than in the other cohort, rather than the less favorable average outcomes suggested by the gross mean differences. Our measure of home values also changes sign, but here in the less favorable direction. CRA-eligible census tracts now appear to have less growth in home values than the higher-income cohort.

In sum, three of the controlled tests, those for homeownership, vacancy, and number of owner-occupied units, are consistent with the CRA having a favorable influence on neighborhoods, and two, for crime and home values, are inconsistent with such an effect of the CRA. The results for homeownership, number of owner-occupied units and home values are driven entirely by the adjustments implied by the changes-in-outcomes regressions; the gross differences for these outcome measures between the two cohorts all have the opposite sign of the adjusted differences. Thus, for example, the gross mean change in the homeownership rate of the CRA-eligible cohort is lower than that of the not CRA-eligible cohort. However, the outcomes regression implies that it should be even lower than it is, resulting in a statistically significant and positive adjusted difference. If this finding is attributable to the CRA, the policy

implication would be that increases in homeownership are lower in the CRA-eligible census tracts, but that they would be even lower were it not for the CRA.

Before drawing firm conclusions regarding the effects of the CRA, though, two additional issues need to be addressed. First, are the results we observe related to measures of CRA activity? Second, are the results robust?

There is some mild evidence that the CRA-eligibility threshold matters in terms of the intensity of lending activity by CRA-covered institutions. Therefore, it is reasonable to infer that the patterns with respect to changes in neighborhood outcomes may bear some relation to the CRA. Netting out cross-MSA differences, the market shares of lending by banking institutions with *outstanding* CRA ratings, in their assessment areas during 1993-1999, was .37 percentage points higher in the CRA-eligible cohort in the sample than in the not CRA-eligible cohort (table 4). The difference is even larger (.48 percentage points) when calculated for lower-income borrowers. The pattern is reversed (albeit with a somewhat lower magnitude), however, for banking institutions with *satisfactory* ratings.

This evidence however, does not directly relate CRA lending to neighborhood outcomes. A more comprehensive analysis of patterns of lending activity in the CRA-eligible cohort in our sample suggests that the relationship between the CRA and neighborhood outcomes may be quite complex and not subject to an easy interpretation, particularly with respect to direction of causality. Specifically, the market share of CRA-covered institutions in CRA-eligible census tracts is *highest* in MSAs where the relative performance of the CRA-eligible cohort is *poorest* when compared with the not CRA-eligible cohort. Moreover, this pattern holds with respect to all five outcome measures. This pattern may be a consequence of non-CRA covered lenders reducing their activity in neighborhoods experiencing negative shocks within our sample period, while CRA-covered lenders remain active. It is not clear is to what extent, if any, the presence of the CRA-covered lenders mitigate the adverse effects of the shocks.

On the other hand, the market share of *outstanding* rated CRA-covered institutions in CRA-eligible census tracts is also higher than average MSAs where the relative performance of the CRA-eligible cohort is *strongest* when compared with the not CRA-eligible cohort, again with respect to all five measures. One possibility is that increased CRA activity led to both an

increased market share of these institutions and to more favorable neighborhood outcomes. It is also possible, however, that the increased market share is simply local institutions moving their business to areas with exogenously driven positive outcomes.[33]

We find little evidence that CRA agreements influence neighborhood outcomes. Census tracts in the CRA-eligible cohort in counties where there were CRA agreements in force generally fare no differently than otherwise comparable tracts in markets where there are no agreements. One exception to this is a higher than predicted increase in home values in CRA-eligible tracts in counties where there were CRA agreements.

The second question is robustness. We conducted a set of tests to investigate the robustness of the results of the changes analysis. First, to investigate whether our results depend upon the choice of the particular two cohorts that we used, we narrowed the relative median income range that we considered to census tracts with relative incomes between 75 percent and 85 percent. Results were qualitatively unchanged with the exception of the crime rate which no longer shows any differences in either the adjusted or gross means of the cohorts.

Second, we reversed the procedure used to adjust for initial differences in the two cohorts. Specifically we used the CRA-eligible cohort to predict outcomes for the not CRA-eligible cohort. Here, there is a strong indication that most of the results are not robust. Homeownership, which showed a positive and statistically significant impact of the CRA, now shows a negative impact, but the difference between predicted and actual means is not statistically significant. Growth in the number of owner-occupied units shows a statistically significant impact of the CRA, although the sign does not change. The impact of the CRA for the crime measure also changes sign, implying that CRA-eligibility is associated with more favorable changes in crime. The impacts implied for home values and vacancies are not qualitatively changed.[34]

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[33]The pattern of a higher market share of CRA-covered banking institutions in CRA-eligible census tracts experiencing both extremely positive or negative shocks relative to not CRA-eligible tracts persists when restricted to loans to lower-income borrowers. It also appears that the relative shocks are related to the overall MSA effect. That is, when the MSA as a whole does a lot better (or worse) than expected, this effect is amplified in the lower-income census tract which do even better (or even worse).

[34] We also explored the effects of a number of other changes to the analysis. Specifically, we redid the analysis weighting census tracts by their number of one-to-four unit properties first using 1990 counts and again using 2000 counts. We also conducted a "pooled" analysis where the first stage regression was estimated using both cohorts.

Results of the levels analysis.

The levels analysis is intended to reveal the cumulative effects that the CRA may have had on local communities since its enactment. The results of the outcome regressions for the levels analysis are shown in table 5. The results for the CRA-eligibility indicators are mixed. CRA-eligibility in 1980 and in both 1980 and 1990 appear to be positively related to 2000 median home values; CRA-eligibility in just 1990 does not. This suggests that the CRA may have had a positive impact on home values in census tracts that were CRA eligible in 1980, whether they remained CRA-eligible thereafter or not. All three CRA-eligibility indicators measures are associated with lower crime rates. However, all three measures are associated with lower homeownership rates and higher vacancies.

We also conducted tests to investigate the robustness of the results for the levels analyses. We repeated the analysis with a broader sample of census tracts--those with relative median incomes between 60 percent and 100 percent--to determine how sensitive results are to the exclusion of census tracts that have undergone large changes. Specifically, the wider band allows for the inclusion of census tracts that were CRA-eligible but experienced substantial increases in income by 2000 and, similarly, census tracts that were not CRA-eligible but experienced a substantial decline in income. Use of the wider band did not qualitatively change results. We also added two measures of prior trends in each census tract--the 1980 to 1990 percent changes in total housing units and median income--and allowed for non-linear relationships to relative median income. These additions did not materially affect the results.

CONCLUSIONS AND FUTURE RESEARCH

The CRA was enacted over 25 years ago in response to concerns that banking institutions were sometimes failing to adequately seek out and help meet the credit needs of viable lending prospects in all sections of their local communities. Although a considerable body of research has emerged over the years on the performance and profitability of CRA-related lending activities and their effect on banking institutions, little research has focused on the effects of the law on local communities.

None of these changes had any material effect one the conclusions..

It is difficult to evaluate the effects of the CRA on local communities because it is hard to know what would have occurred in the absence of the law. Moreover, in seeking to measure the effects of the CRA on local communities, one must take care not to confound the potential effects of the CRA with those of other factors, such as a changing regulatory or economic environment.

In this paper we attempt to address both of these difficulties. Specifically, we evaluate the impact of the CRA on neighborhood outcomes by testing for differences in neighborhood changes and outcomes in the subset of census tracts that are most likely to reveal any marginal effect of the law; that is, census tracts just below and just above the income threshold for CRA attention. We also examine whether observed differences are related to measures of CRA-related mortgage lending activity. We use the neighborhood as the unit of observation to be consistent with the historic focus of the regulations that implement the law.

Results are mixed and could potentially provide support for very different views of the effects of the CRA. One view is that the CRA does matter and contributes to favorable outcomes for lower-income neighborhoods. In support of this view, our changes analysis indicates that the CRA-eligible census tracts had higher homeownership rates, higher growth in owner-occupied units, and lower vacancy rates than would have been predicted on the basis of changes in the not CRA-eligible census tracts. These results were statistically significant, and, arguably, these are the outcome measures most directly tied to access to mortgage credit. Moreover, there is evidence that CRA activity contributed to these results. The market share of mortgage lending of banking institutions with outstanding CRA ratings lending in their assessment areas is higher in the CRA-eligible cohort than the cohort just above the eligibility threshold.

An alternative view holds that the CRA does not have a significant impact on lower-income neighborhoods. In support of this view, results for two of our outcome measures–crime and median home values–indicate that lower-income neighborhoods actually fared worse than would have been predicted. Moreover, the results for homeownership and growth of owner-occupied units, which show a favorable outcome for the CRA, are not robust. When the process is reversed and the changes for the census tracts just above the threshold are predicted on the basis of changes in the lower-income cohort, the higher-income census tracts do no worse than would

be predicted–a finding inconsistent with a favorable impact of the CRA. Finally, although the market share of mortgage lending of banking institutions with outstanding CRA ratings is somewhat higher in the CRA-eligible census tracts, the market share of banking institutions with satisfactory ratings is actually lower.

Does the weight of the evidence provide more support for one view over another? Advocates for a positive impact of the CRA would further point out that the unfavorable finding regarding crime is not robust to limiting the sample to a narrower margin around the CRA-eligibility threshold, and the unfavorable finding regarding median value is open to reinterpretation. In particular, if the effect of the law is to enable marginal borrowers to own homes–with home values at the low end of the spectrum–then median home values may actually fall. Moreover, advocates for a positive impact of the CRA would point out that because CRA-eligible census tracts are given special "treatment," it is appropriate to use the "untreated", not CRA-eligible tracts to estimate the equation used to adjust for differences in initial values, and thus, the lack of robustness is mitigated.

Advocates for the view that the CRA has had no impact would respond by pointing out that the gross differences in outcomes are small and dwarfed by within group variations, and for three out of the five measures, simple means differences show less favorable changes for the CRA-eligible cohort. They would also point out that the levels equations and links to our CRA measures also show inconsistencies and lack of a clear-cut relationship.

We believe that the tests we have developed offered a real potential to provide a definitive evaluation of the effects of the CRA on outcomes in lower-income neighborhoods. Unfortunately, as the above discussion shows, the evidence does not provide a clear-cut answer. One explanation for the lack of a clear-cut result could be limitations in the design of the tests. The tests rely on the premise that because the CRA has historically targeted lower-income neighborhoods as defined by census tracts, that these are the appropriate units of observation. However, it may be the case, that in practice, compliance with the law focuses more on lower-income borrowers or groupings of neighborhoods that can cut across census tracts both above and below the CRA-eligibility threshold. This may occur because an individual census tract is simply too small to effectively target. If so, then our tests might fail to detect the real impact of the law.

It should be pointed out that even if the tests provided a definitive answer to the impact of the CRA on housing-related outcomes in lower-income census tracts, the analysis of the CRA impact would still be incomplete. CRA performance evaluations consider more than mortgage lending. They also consider the level of services provided in the community and community development activities. It is possible that branch location and service decisions or community development lending activities influence non-mortgage or owner-occupied housing outcomes, which are not measured here. For example, CRA-related community development or small business lending activities may result in commercial development and additional employment opportunities in the community that might not otherwise have occurred.

Further research will seek to address some of these limitations. For example, we will explore the effects of the service test by looking at the role of branch office location in neighborhood outcomes. We will also look at additional CRA activity measures including small business and multi-family property lending, and purchased loans and their associated outcome measures. Finally, we will explore the impact of changing the unit of analysis to the borrower or larger neighborhood groups.

APPENDIX: DATA FOR THE ANALYSIS

The foundation for the empirical analysis of this study is a coordinated set of information derived from a number of different data sources. Information from these sources are combined to provide data on: (1) the home lending activities by banking institutions and other mortgage lenders across census tracts (characterized by their income relative to that of the median family income for their MSA) and borrowers (grouped by their income relative to that of the median family income for their MSA) (2) the census tracts that constitute the CRA assessment areas of institutions subject to the CRA and the county locations of banking institution branch offices, (3) the population, housing, crime rate, income, employment and other socio-economic characteristics of census tracts, (4) the census tracts in counties subject to housing-related CRA agreements with community-based organizations, and (5) the CRA examination ratings for banking institutions. Where appropriate, values of variables are expressed in inflation-adjusted terms using the Consumer Price Index to convert to April 2000 dollars (the time of the 2000 Decennial census).

Mortgage lending information

Information on residential mortgage lending activities is derived from annual filings by banking institutions and other mortgage lenders under the provisions of the Home Mortgage Disclosure Act (HMDA).[35] The HMDA data include information on the number and dollar amount of mortgage loans extended in each census tract by type of loan (conventional, FHA-insured, VA-guaranteed) and purpose (home purchase, refinancing, home improvement and multifamily). The data also include information about the borrower's income, race, and ethnicity. These data are used to construct our census-tract level measures of the market share of home lending for CRA-covered institutions and others and the percentage of CRA-eligible borrowers.

CRA assessment areas and branch office locations

The CRA assessment areas of banking institutions for the period 1990-2000 were approximated using information on branch locations derived from the Summary of Deposit

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[35]HMDA data are from the FFIEC. See, www.ffiec.gov. For details about the provisions of HMDA see Regulation C of the Federal Reserve Board at the Federal Reserve's public website: www.federalreserve.gov.

reports filed with the Federal Deposit Insurance Corporation and the Branch Office Survey filed with the Office of Thrift Supervision. The branch location reports include the county and MSA of each deposit-taking branch office.   For purposes of the analysis, it was assumed that for large banking institutions their CRA assessment area was composed of the MSAs (in New England NECMAs were used) where their branch offices were located and, for smaller institutions, the CRA assessment areas were the counties where their offices were located.

Population, economic and housing characteristics

Information on the population, economic, and housing characteristics of all U.S. census tracts comes primarily from the 1980, 1990, and 2000 decennial U.S. Censuses of Population and Housing. We used two transitional data sets in order to create consistent time-invariant geographic boundaries for the analysis. The first was obtained from Claritas and configures the 1980 Census of Population and Housing demographics into 1990 census tract geographies. We used the Transitional Census 2000 data product obtained from PCi Corporation to overlay 2000 census demographic information onto 1990 census tract boundaries. These two overlays allow measurement of changes in census tract population, housing, and economic characteristics within constant geographic boundary designations over the 1980-2000 period. Both transitional data bases use census data at the block level to allocate population and housing and economic characteristics to maintain time invariant census tract boundaries.

Information on the incidence of crime by census tract for 1990 and 2000 was obtained from CAP Index.[36] CAP Index's crime index model is designed to measure the risk of personal and property crimes for any specific address or location in the United States. The model is based upon the relationship that exists between an area's "Social Disorder" and the amount of crime that takes place in that location.[37] The crime data underlying the model is derived from police reports, crime victim reports, self-reports, and corporate loss reports. CAP Index scores are based upon uniform and identical data for every location in the United States.

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[36]For further information see the web site address of CAP Index; www.capindex.com.
[37]"Social Disorder" is measured by analyzing roughly two dozen demographic variables including; population, housing, mobility, economic, and educational data as known indicators of crime. The racial and ethnic composition of an area is not included in the calculations of the CAP Index. The information used to derive the CAP Index is updated annually. CAP Index provides 90 Crime Vulnerability Assessment scores for each location scored, providing present-day scores, as well as past and projected comparisons, based upon national, state, and county averages.

CRA agreements with *community organizations*

Information on individual CRA agreements between banking organizations and community organizations was obtained from Neighborhood Community Reinvestment Corporation.[38] The information includes a detailed description of the geographic areas (counties and MSAs) subject to the agreements, the date the agreement was established, its duration, a description of the product focus of the agreement (for example, home lending, small business lending and so on), and whether the agreement focuses on lower income borrowers or lower income census tracts. These data were assembled in order to identify the census tracts in counties subject to CRA agreements related to home lending activities.

CRA examination ratings

Information on the CRA examination ratings of banking institutions were obtained from the federal supervisory agencies. The data include the ratings of each institution for the period 1990-2000. It is assumed that the first rating received applies to the period 1990 to the time of the first rating. For some institutions, there may be a gap of several years between 1990 and their first CRA examination rating.

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[38]NCRC is a trade association of more than 800 community groups and local public agencies that focuses on CRA-related issues. Each year, NCRC updates its list of all CRA agreements known to NCRC by surveying its membership and reviewing media accounts of CRA agreements. NCRC publishes its list in CRA Commitments, which also reviews innovative provisions of CRA agreements in the areas of home mortgage, small business, and community development lending and other CRA-related investments. More information on NCRC can be obtained via their website at http://www.ncrc.org

1a. Sample description: changes analysis

| Characteristic | Census tracts group (relative income)[1] | | | |
| | 70-79 | | 80-89 | |
	Mean	Standard deviation	Mean	Standard deviation
Dependent variables (1990-2000 change in values)				
Home ownership rate (percentage point difference)	0.03	6.2	0.29	5.5
Median value of owner-occupied units (percentage change)	8.61	30.2	8.08	28.8
Crime rate index (percentage change)	0.45	11.6	0.21	12.5
Vacancy rate (all housing units, percentage point difference)	-0.76	4.4	-0.71	3.9
Owner-occupied units (percentage change)	8.13	23.5	11.40	24.1
Independent variables (1990 values)				
Home ownership rate	59.38	14.8	66.40	14.2
Median value of owner-occupied units (2000 dollars, in thousands)	105.70	75.2	118.01	79.6
Crime rate index (100 equals national avg.)	108.11	114.5	71.21	80.7
Vacancy rate (all housing units)	8.77	6.8	7.68	6.9
Number of owner-occupied units	752.68	484.1	889.9	470.1
Percent of population over age 65	13.32	7.0	13.79	6.9
Percent of population under 18	25.39	6.3	24.41	5.9
Persons per household	2.73	0.8	2.67	0.5
Percent of minority population	34.86	30.6	24.61	26.4
Relative median income (percent)	75.26	2.9	85.12	2.8
Percent of 1-4 family units that are 1 unit properties	66.47	27.8	72.45	26.0
Percent of total units that are 1-4 family units	74.15	19.9	74.97	18.6
Central city indicator (1 or 0)	0.59	0.5	0.47	0.5
Percent change in total housing units (1980-1990)	10.8	34.2	16.39	60.7
Percent change in median income (1980-1990)	-1.77	18.8	0.79	18.2
Measures of CRA activity				
Percent of CRA-eligible borrowers (1993-1999 average)	47.28	16.4	40.94	14.9
Percent of mortgages originated by CRA-covered banks (1993-1999 average)	38.65	14.5	39.46	14.9
Indicator for CRA agreement (1 or 0, post-1990)	0.24	0.4	--	--
Percent of loans originated by outstanding-rated bank (1993-1999 average)	19.33	9.3	19.14	9.1
Percent of CRA-eligible borrower loans originated by outstanding rated bank (1993-1999 average)	19.59	10.7	19.27	10.3
Percent of CRA-eligible borrower loans originated by any CRA-eligible bank (1993-1999 average)	38.18	14.8	38.85	14.8
Memo: Number of census tracts		3522		4784

1. Income in 1990 as a percentage of MSA family median income.

1b. Sample description: levels analysis

| | Sample statistic | |
| | Mean | Standard deviation |
Characteristic		
Dependent variables (2000 values)		
Home ownership rate	65.49	15.1
Median value of owner-occupied units (in thousands of dollars)	113.90	68.1
Crime rate index (100 equals national average)	80.48	101.7
Vacancy rate (all housing units)	6.89	5.6
Independent variables (2000 values)		
Percent of population over age 65	13.17	6.7
Percent of population under 18	24.87	5.8
Persons per household	2.68	0.7
Percent of minority population	37.60	29.1
Relative median income (percent)	80.50	5.8
Percent of 1-4 family units that are 1 unit properties	71.50	25.1
Percent of total units that are 1-4 family units	75.27	18.3
Central city indicator (1 or 0)	0.52	0.5
CRA-eligibility indicators		
CRA-eligible only in 1980 (1 or 0)	0.07	0.3
CRA-eligible only in 1990 (1 or 0)	0.16	0.4
CRA-eligible in both 1980 and 1990 (1 or 0)	0.16	0.4
MEMO		
Number of census tracts[1]		8645

1. Census tracts are included in the sample if their 2000 median family income was between 70 percent and 90 percent of their respective MSA median family income.

2. Outcome regression results (change)

	Dependent variables									
	Change in home ownership rate		Percentage change in median home value		Change in crime rate		Change in vacancy rate		Percentage change in owner-occupied units	
Variables	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
1990 Census tract characteristics[1]										
Home ownership rate	-0.16***	0.01	0.06*	0.03	-0.05*	0.02	-0.03***	5.9E-3	0.01	0.04
Median value of owner-occupied units (in 2000 dollars)	1.3E-3	2.4E-3	-0.08***	7.5E-3	9.9E-4***	4.5E-6	2.7E-5	1.5E-3	-0.02*	9.9E-3
Crime rate index (100 equals national avg.)	-2.6E-3*	1.3E-3	4.0E-3	4.1E-3	1.5E-3	2.5E-3	3.7E-4	8.0E-4	-6.5E-3	5.5E-3
Vacancy rate (all housing units)	0.04**	0.01	0.27***	0.04	0.19***	0.03	-0.28***	8.3E-3	0.46***	0.06
Number of owner-occupied units	7.0E-4***	1.8E-4	-1.3E-3*	5.8E-4	7.0E-4*	3.5E-4	-3.3E-4**	1.1E-4	2.1E-3**	7.7E-4
Percent of population over age 65	0.7***	0.02	-0.28***	0.05	0.08**	0.03	0.06***	9.4E-3	0.11*	0.06
Percent of population under 18	0.19***	0.02	-0.30***	0.06	0.45***	0.04	0.02*	0.01	1.08***	0.08
Persons per household	0.99***	0.17	0.69	0.54	1.92***	0.32	-0.13	0.10	4.61***	0.71
Percent of minority population	-0.02***	4.5E-3	-0.04**	0.01	-0.01	8.6E-3	9.8E-4	2.8E-3	-0.12***	0.02
Relative median income (percent)	0.13*	0.05	-0.52**	0.17	0.04	0.10	-0.06*	0.03	0.25	0.22
Median income, slope change at 85%	-0.14	0.09	-0.03	0.29	-0.16	0.18	0.07	0.06	-0.37	0.39
Percent of 1-4 family units that are 1 unit properties	0.04***	5.4E-3	0.03	0.02	0.06***	0.01	0.01***	3.3E-3	-0.02	0.02
Percent of total units that are 1-4 family units ...	-3.9E-3	5.0E-3	0.14***	0.02	-0.01	9.6E-3	0.02***	3.1E-3	-0.24***	0.02
Central city indicator (1 or 0)	-0.54**	0.17	-0.74	0.54	-1.98***	0.32	0.02	0.10	-0.99	0.71
Percent change of total housing units, 1980-90.	5.9E-3***	1.2E-3	-2.8E-4	3.8E-3	0.01***	2.3E-3	-2.4E-3**	7.4E-4	0.08***	5.1E-3
Percent change in median family income, 1980-90	8.2E-3	5.2E-3	0.24***	0.02	0.06***	0.01	5.0E-3	3.2E-3	0.13***	0.02
Percent of CRA-eligible borrowers (1993-1999 average)	-0.06*	7.5E-3	-0.63***	0.02	-0.17***	0.01	-7.5E-4	4.6E-3	-0.48***	0.03

1. Fixed effects for each MSA were included in the regressions but data not shown.

The symbols *, **, and *** denote statistical significance at the 90, 99, and 99.9 percent levels.

3.   Predicted versus actual values (change regression)

Mean values	Dependent variables				
	Change in home ownership rate	Percentage change in median home value	Change in crime rate	Change in vacancy rate	Percentage change in owner-occupied units
	Mean	Mean	Mean	Mean	Mean
Predicted	-.502	9.136	-.792	-.472	6.036
Actual	.030	8.608	.451	-.757	8.127
Difference	.532***	-.528**	1.243***	-.285***	2.091***
Standard Error	(.075)	(.241)	(.145)	(.047)	(.319)
. . . . .					

The symbols *, **, and *** denote statistical significance at the 90, 99, and 99.9 percent levels.

4. Market Share of one-to-four family home purchase and refinance loans, by institution type and census tract by relative median family income, 1993-1999

(percent, adjusted for MSA differences)

Institution type	Income level of census tract[1]				All census tracts	70-80 (percent)	80-90 (percent)
	Low income	Moderate income	Middle income	Upper income			
Outstanding rated banking institutions in their assessment areas	18.79	19.30	18.90	20.01	19.36	19.23	18.87
Satisfactory rated banking institutions in their assessment areas	15.82	18.17	18.91	19.67	19.08	18.49	18.83
Total banking institutions in their assessment areas...	34.62	37.47	37.81	39.68	38.44	37.72	37.70
Banking institutions outside their assessment areas	20.80	23.43	25.92	27.98	26.37	23.90	24.83
Non CRA-covered institutions	44.58	39.10	36.27	32.33	35.20	38.37	37.47
Total	100	100	100	100	100	100	100
Memo: Percent of loans	1.39	10.38	50.57	37.66	100	5.66	9.81

1. Low income: less than 50 percent of MSA median income; moderate income: 50 percent to 80 percent of MSA median; middle income: 80 percent to 120 percent of MSA median; and upper income: 120 percent or more of MSA median.
Source: Home Mortgage Disclosure Act data, 1993-1999.

5. Outcome regression results (levels)

Independent variables	Home ownership rate		Median home value		Crime rate		Vacancy rate	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
2000 Census tract characteristics[1]								
Percent of population over age 65	0.53***	0.02	-860.61***	71.90	-0.66***	0.17	0.08***	0.01
Percent of population under 18	0.66***	0.02	-1847.27***	95.60	-0.65**	0.22	-4.9E-3	0.01
Persons per household	0.51***	0.15	-2180.98***	624.48	0.38	1.41	-0.24**	0.09
Percent of minority population	6.0E-3	4.8E-3	-138.85***	20.22	1.57***	0.05	-6.3E-3*	2.8E-3
Relative median income (percent)	0.33***	0.02	1082.39***	69.54	-0.13	0.16	-0.02*	9.6E-3
Percent of 1-4 family units that are 1 unit properties	0.40***	5.5E-3	-177.05***	23.06	0.03	0.05	-2.7E-3	3.2E-3
Percent of total units that are 1-4 family units	-0.09***	5.6E-3	-435.14***	23.43	-0.40***	0.05	-0.02***	3.2E-3
Central city indicator (1 or 0)	0.39*	0.21	57.38	897.79	-4.37*	2.03	-0.24*	0.12
Indicators of CRA-eligibility								
CRA-eligibility only in 1980	-3.84***	0.34	3817.76**	1441.59	13.33***	3.27	2.16***	0.20
CRA-eligibility only in 1990	-3.40***	0.25	-1083.94	1055.22	23.00***	2.39	1.22***	0.15
CRA-eligibility in both 1980 and 1990	-7.00***	0.26	2924.11**	1079.24	50.25***	2.45	3.49***	0.15
R^2	0.62		0.22		0.21		0.10	

1. Fixed effects for each MSA were included in the regressions but data not shown.

The symbols *, **, and *** denote statistical significance at the 90, 99, and 99.9 percent levels.