The Color of Money Revisited: Are Banking Regulations Effective In Reducing Racial Disparities in Home Mortgage Lending to Neighborhoods?

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Abstract

Despite existing large disparities, since the early 1990's the greatest rates of increase in homeownership have been among minority and lower-income families. Anecdotally, these trends have been attributed in part to more rigorous enforcement of federal fair lending and community reinvestment laws beginning in 1989. In particular, the Community Reinvestment Act (CRA) was enacted in 1977 to encourage banks to extend mortgage credit to the low-and-moderate income (LMI) communities within their chartered service area, with an implicit intention to also increase lending to minority communities. Nonetheless, there have been very few evaluations of whether the CRA has been effective in increasing credit to targeted areas. Using older and underutilized Home Mortgage Disclosure Act data, I create a new dataset of bank geographic lending data in California from 1981 to 2000, to explicitly test for whether the 1989 enforcement change was responsible for increases in lending to targeted neighborhoods. Further, actual regulatory rules are used to determine which banks were more targeted for enforcement. I find that while the enforcement change was effective in increasing banks' shares and levels of lending to LMI communities, the largest effects, however, were found for minority neighborhoods. Specifically, for banks that were historically below average in their lending to minority neighborhoods, in the decade following the enforcement change, their average rate of increase to minority relative to non-minority areas was 19.9%. In particular, within minority areas, the largest rates of increase are found for African-American neighborhoods. Relative to their lending to non-minority areas, the rate of increase in black areas was 37.4% for large banks and 71.8% for the largest banks. Since both enforcement of fair lending and community reinvestment legislation occurred at the same time, the pattern of findings suggest that while enforcement of the CRA has had some success, increased enforcement of federal fair lending legislation may have played a larger role or augmented the effects of the CRA in increasing credit to historically neglected neighborhoods.

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"*Negro occupancy is an unmistakable symptom of depreciation—an indication that the value of property has fallen to their economic level as well as an aid to depreciation in its last stages*." Ernest Burgess, University of Chicago sociologist, 1928.

"*Areas surrounding a location are to be investigated to determine whether incompatible racial and social groups are present, for the purposes of making a prediction regarding the probability of the location being invaded by such groups*." U.S. Federal Housing Administration Underwriting Manual, 1938.

"*The problem today is not lack of laws; it's lackluster enforcement…I'm not a statistician, but when blacks are getting their loan applications rejected twice as often as whites and, in some cities, it's three or four times as often, I conclude that discrimination is part of the problem.*" Sen. Alan J. Dixon, Chairman of U.S. Senate Subcommittee on Consumer and Regulatory Affairs (Hearing before Subcommittee on Consumer and Regulatory Affairs, quoted in the Washington Post, October 25, 1989).

1. Introduction

Homeownership rates have increased dramatically in the United States since the 1940's. From 1940 to 2000, the overall homeownership rate in the U.S. increased by a rate of 52%.[1] In recent years, the fastest increases have been among minority families. While black families still lag substantially behind white families in homeownership rates (in the year 2000, 46.3% versus 71.3%), from 1990 to 2000 the rate of increase among black families was 13.9% compared to 4.3% for white families. Anecdotally at least, these increases have been attributed to more vigorous enforcement in the 1990's of federal fair lending and community reinvestment laws. In particular, the Community Reinvestment Act (CRA) of 1977 was designed to encourage banks to increase mortgage credit to the low-to-moderate income communities in which they were chartered. An implicit intention of the law was to also increase mortgage lending in minority neighborhoods.

Nonetheless, there have been very few evaluations on whether the CRA is responsible for increases in lending to minority or low-to-moderate income (LMI) areas. Further, while researchers discuss various aspects of a post-1989 enforcement change, there has been no formal testing of its effect. And research more generally interested in the effects of CRA is limited in that comparison institutions are usually covered by other legislation with respect to the outcomes reviewed. For example, banks are compared to non-CRA covered mortgage companies, and a common outcome is minority to white

[1] Source: U.S. Census Bureau.

application denial rate ratios. The CRA, however, is explicitly concerned with banks' aggregate lending to neighborhoods rather than disparate treatment by race, which is the concern of fair lending legislation.

To address these shortcomings, I first take advantage of older and underutilized Home Mortgage Disclosure Act data for the state of California to form a new dataset from 1981 to 2000 in order to test the effects of the 1989 change in enforcement. Second, I determine which banks were more targeted by this enforcement change, and use actual CRA regulatory examination rules to further identify characteristics of banks more targeted in CRA reviews. Third, with the new dataset I create and the comparison banks I determine, I can compare banks' aggregate lending to neighborhoods that are targeted by the CRA to those that are not.

I find that the enforcement change was effective in increasing banks' shares and levels of lending to LMI communities, but to a greater extent to minority neighborhoods. Furthermore, I find the strongest effects for African-American communities. Specifically, I find that in the decade following the change in the regulatory enforcement environment, banks historically below average in their lending to LMI areas significantly increased their loan dollars to low-to-moderate income relative to upper and middle income areas, with an average rate of increase of 15.3%. Similarly, banks historically below average in their lending to minority areas significantly increased their loan dollars in minority areas relative to non-minority areas. The estimated average rate of increase for these below average banks was 19.9%.[2] Within minority areas, the largest rates of increase are found for African-American neighborhoods. Relative to their lending to non-minority areas, the rate of increase in black areas was 37.4% for large banks and 71.8% for the largest banks. Since both enforcement increased for both fair lending and community reinvestment regulation at the same time, these significant findings suggest that increased enforcement of fair lending regulations may have played a larger role than community reinvestment legislation in increasing credit to historically neglected neighborhoods.

Section 2 of this paper elaborates on why we care whether banking regulations have been effective in increasing mortgage credit to minority and LMI neighborhoods. I discuss the present state of racial disparities in homeownership, and of possible discrimination in home mortgage lending. Further, I briefly discuss the historical role of the government and

2 Hereafter I will refer to commercial banks and savings institutions collectively as "banks."

banks in racial discrimination in the home mortgage market, and the major pieces of legislation introduced to address this. I then outline how my study improves on previous literature which attempts to identify whether regulation has increased lending to historically neglected neighborhoods. Section 3 reviews the four major changes to fair lending and community reinvestment enforcement that occurred in 1989. Section 4 discusses actual CRA examination procedures in order to identify the outcomes that are reviewed, and which banks should be more affected by regulation. I then use the 1989 enforcement change and this examination framework to motivate my estimation strategy. Finally, I discuss the data I use, the formation of control groups, and sample selection issues. In Section 5 I present my results. Section 6 concludes and attempts to offer a story consistent with my findings.

2. Why Do We Care About Disparities in Mortgage Lending?

2.1 Racial Disparities and Discrimination

Recent increases in homeownership to minority, particularly black, families have been attributed in part to regulatory enforcement changes (e.g. Bostic and Surette, 2000). At present, despite recent improvements, large disparities in homeownership and wealth still exist between blacks and whites in the United States. In the most recent period of 1997 to 2003, the rate of increase among black families was 7.4% compared to 4.7% for white families. Nonetheless, in 2000, the homeownership rate was 46.3% for black households compared to 71.3% for white households. Appendix Figure 1 shows the ratio of homeownership for black to white families, and the ratio for black to white households, from 1983-2000.[3,4] In the earlier period, the ratios fall dramatically. While homeownership rates for whites are relatively stable year to year in the pre-1990 period, it drops sharply for blacks.[5] Beginning in 1990, however, the black-to-white homeownership ratios began to rise

3 Homeownership rates for families were calculated from figures provided in the yearly Current Population Reports, Series P-20, which are based on the March CPS. Unfortunately, the report was combined for 1989 and 1990, and detailed tables for 1989 were not published. Thus, the number of families by race that owned their own homes is not available for 1989. Homeownership rates for households were obtained from the Economics Statistics Division of the Census Bureau. These rates are also based on the March CPS.

4 The CPS appears to slightly overestimate homeownership rates for all groups compared to the figures provided under the decennial censuses. For example, using CPS figures in 2000 the homeownership rate for white households is 73.6 and for black families is 46.6.

5 One possibility for why black homeownership rates were decreasing in the 1980's is the age characteristics of the populations. For example, if in the 1980's the black population was younger relative to the white

dramatically, consistent with increased enforcement pressure creating more homeownership opportunities for black families and households.

While there have been improvements in wealth for minority families, they still lag substantially behind white families. From 1991 to 2000, the rate of increase in median net worth for black families was 28%, compared to a rate of increase of 22% for white families. However, the ratio of black to white net worth was still only 11% in 2000. Median net worth for black families was $7,500 compared to $68,975 for white families.[6] Controlling for income, young black families are found to hold wealth in proportionately different forms than young white families, and this difference is attributed in part to barriers in home equity accumulation (Blau and Graham, 1990). Because home ownership is the principal form of capital accumulation for families in the U.S., barriers to mortgage credit results in differences in wealth between groups. Longer term differences are also a consequence if inter-generational transfers are limited for families excluded from the mortgage market.

In sum, there are indisputably large disparities between black and white families in both homeownership and assets, which arguably result in part from historical discrimination by the federal government and banks. However, present day discrimination is said to occur only if two similar parties are treated differently based on differences in a subjective characteristic, such as race, and not on objective characteristics such as income or education. In the mortgage market, the two possible forms of discrimination are against the individual and against neighborhoods, or redlining.

Studies on racial discrimination against individuals in the home mortgage market typically focus on differences in denial rates. Older studies that find denial rates disparities by race did not however control for critical variables such as applicant credit history or neighborhood characteristics (Black et al, 1978; Schafer and Ladd, 1981). This shortcoming was remedied by the well-known “Boston Fed” study, which included a comprehensive set of applicant, loan, and property characteristics (Munnell et al, 1992 and 1996). Controlling for all the characteristics typically relevant to banks’ home mortgage loan decision, the study found that the probability of loan denial was 8.2% higher for blacks and Hispanics

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population, then the blacks would more likely form households that entered into the renter population and thus depress homeownership rates for blacks (Myers, 2001).

6 Household asset ownership figures were taken from the Current Population Reports, Series P-70, which are based on the Survey of Income and Program Participation. I adjusted figures into year 2000 dollars before calculating rates of increase.

compared to whites. Since the rejection rate for whites was 10%, this implied that the rejection rate for minorities was 82% higher than for whites. Although a slew of studies followed in response, in general the finding of significant racial differences in denial rates appears to remain.[7]

While it is well documented that neighborhoods were historically redlined, presumably contributing to present day objective differences across neighborhoods, there is less consensus on current neighborhood-based discrimination. There are two basic types of redlining studies. One is process-based studies which look at whether a loan application is treated differently, all else equal, if the property is in a minority neighborhood. Recent process-based studies using the Boston Fed data find that denial rate differences across neighborhoods by racial composition are insignificant once applicant race and credit characteristics are controlled for (Tootell, 1996; Hunter and Walker, 1996). However, another study finds that even controlling for applicant and property characteristics, applications from low-income tracts are more likely to be denied in the absence of private mortgage insurance (Tootell and Ross, 1998). Outcome based studies, on the other hand, look for evidence of redlining by examining the aggregate supply of loans to neighborhoods by racial composition. Studies that look at specific geographic areas provide mixed evidence of discrimination across neighborhoods (Bradbury et al, 1989; Shlay 1989; Schill and Wachter, 1993).[8] My current study is in some sense the opposite side of the coin to outcome based studies. Rather than examining aggregate neighborhood outcomes in order to determine whether redlining is occurring, I instead look at changes over time in these outcomes to identify whether disparate treatment of neighborhoods is decreasing due to increased enforcement.

2.2 A Brief History of Discrimination in the U.S. Mortgage Market

The CRA was enacted to address historical inequities in mortgage credit markets in the differential treatment of neighborhoods. The federal government formed two major agencies, the Home Owners Loan Corporation (HOLC) in 1933 and the Federal Housing Administration (FHA) in 1934 to address the widespread housing foreclosures of the Great

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7 See Ross and Yinger (2002) and Goering and Wienk (1996) for comprehensive reviews of the literature responding to the Boston Fed study.

8 These studies are not definitive, however, as they do not control for most borrower, property and neighborhood characteristics.

Depression (Jackson, 1985; Squires 1992). The HOLC, responsible for purchasing delinquent mortgage loans from banks and savings and loans, radically changed the mortgage industry by introducing the present day long-term mortgage loan and explicit and standardized underwriting criteria. In an effort to stimulate private sector housing construction and reduce unemployment, the FHA offered new government financed mortgage insurance. The FHA continued the HOLC's practice of explicitly considering race in its underwriting practices. Both agencies served to significantly increase homeownership opportunities for many Americans, but formally excluded certain individuals and neighborhoods from the mortgage market.

In particular, government appraisers prepared "residential security maps" for every city divided into neighborhoods. A detailed rating system was devised, with four categories and corresponding colors, green ("best"), blue ("still desirable"), yellow ("definitely declining"), and red ("hazardous"). Black neighborhoods were considered hazardous and thus "redlined" on city maps. One legacy of the government's intervention was that the standardized underwriting criteria introduced were subsequently adopted by banks, thus institutionalizing overt racial criteria in lending decisions.[9]

As part of the civil rights movement, the Fair Housing Act was introduced in 1968 prohibiting discrimination in all aspects of the housing market. The Equal Credit Opportunity Act was introduced in 1974 prohibiting discrimination in all credit transactions, not only those related to housing. Concern that banks were possibly redlining prompted the Home Mortgage Disclosure Act (HMDA) to be passed in 1975, mandating that banks collect and provide data on where they make their loans. When the CRA was enacted two years later, a particular concern was that banks were receiving deposit funds from urban communities but reinvesting these funds in newly forming suburban areas (Bradford and Rubinowitz, 1975). This was believed to have encouraged "white flight" to the suburbs, exacerbating racial segregation (Listoken and Casey, 1980). Under the CRA of 1977, banks were encouraged to reinvest loan funds into the LMI neighborhoods from where deposit dollars were received. Explicit consideration of lending to minority communities, however, was not included in order to ease the passage of the law.[10]

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9 Racial considerations were already informally taken into account by other mortgage industry institutions such as realtors. See Jackson (1985) for a fascinating history of the U.S. housing market in the 20th century.

10 Supporters instead used the tactic of concern for redlining in "inner city" communities. See Immergluck (2004) for a good history of the social and political circumstances surround the passage of these laws.

Despite the introduction of these four major pieces of home mortgage related legislation, up until the late 1980's, there was little enforcement "bite" to the legislation. The FHA and ECOA provided no monetary penalties for instances of discrimination, and regulators were reluctant to enforce HMDA and the CRA.[11] However, in Section 3 I discuss how both fair lending and community reinvestment enforcement significantly increased in 1989.

2.3 Why Do We Care Whether Fair Lending and Community Reinvestment Regulations are Effective?

The objective of this paper is to determine to what extent recent fair lending and community reinvestment enforcement are responsible for changes, if any, in the distribution of lending across neighborhoods by race and income. Previous literature on whether these regulations have had an effect provides some suggestive evidence of a positive effect, but they are limited in several ways.

One clear shortcoming is that they do not take advantage of the change in enforcement in 1989, even though they discuss some aspects of this change (Marisco, 1999; Apgar and Duda, 2003). Practically speaking, these studies typically do not use the older HMDA data, which previous to 1990 aggregated banks' loans to the census tract level. And in the one study which did look at pre- and post-1990 trends, the HMDA data were not combined for the two periods to conduct formal testing for an effect of enforcement (Evanoff and Segal, 1996).[12]

Another way in which previous studies can be improved is in the use of adequate control groups. For example, one study compares minority to white approval rate ratios for banks and non-CRA covered mortgage companies (Evanoff and Segal, 1996), however both entities are covered to some extent by fair lending legislation. Another study compares loans

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[11] In fact, the Urban League sued the four federal regulators in 1976 for not establishing a system of collecting and analyzing home mortgage data. Regulators also did not support the passage of the CRA. Public statements issued by the regulatory agencies subsequent to its passage indicate that regulators were concerned that banks would allocate credit to LMI communities.

[12] I can speculate as to why the older HMDA data are underutilized: 1. the older data are only available in mainframe cartridge tapes that are somewhat cumbersome to convert to a usable form, 2. bank identification numbers differ unsystematically before and after 1990, thus manual work is required to link banks across the 1989 change in enforcement, and 3. researchers were much more interested in the 1990's HMDA data, which collected home mortgage data at the application level and included such variables as race, thus facilitating research on individual discrimination which was of much greater public interest at the time of the new HMDA data's release.

to minority and LMI borrowers for banks that were downgraded in their CRA ratings to those that were not (Dahl et all, 1999). That no significant results were found is not surprising given the lack of variation in CRA ratings.

These studies also highlight that even though the effect of CRA is of interest to these studies, outcomes other than banks' actual geographic distribution of lending are looked at. Given the intent of the CRA, banks' lending across neighborhoods is the appropriate outcome if we are interested in its effect.

I improve in three distinct ways on the existing literature in identifying an effect of regulatory enforcement. First, I combine the older and newer HMDA data to be able to test the 1989 change in enforcement. Since the post-1990 HMDA data are at the micro level, and include census tract information for both approved and denied loans, I simply aggregated by bank the newer data to the census tract level using only originated loans. Second, using aspects of the 1989 enforcement change and actual CRA examination procedures, I identify which banks were more likely to be affected by enforcement. This process generates reasonable control groups to identify the effects of enforcement. Third, I compare over time affected and non-affected banks' aggregated lending across neighborhoods grouped by minority percentage or income. Using decennial Census data, I follow banks' yearly lending in California within the same neighborhoods from 1981-2000 by matching 1980 and 2000 census tracts to their 1990 counterparts tracts. In this way I can compare banks' geographic distribution of lending over time to see if the enforcement change induced increases, as the CRA had intended, to historically neglected neighborhoods.

Finally, one reason why we are particularly interested in whether the CRA has been effective is that it has been cited as one of the costliest banking regulations with which to comply (Thakor and Beltz, 1993). A survey conducted by the American Bankers Association found that the largest share of respondents, 40%, cited CRA compliance as "causing the most headaches," ahead of "other reasons combined," at 38% (ABA, 1992). In light of the explicit costs of implementing the CRA, its existence is questionable if it does not actually increase lending to intended neighborhoods.

3. A Change in 1989 to Fair Lending and Community Reinvestment Enforcement

The formal mechanism for enforcing the CRA is that banks' CRA performance is reviewed when they apply for a lender action, such as the opening or closing of a branch, or a merger. Additionally, banks' fair lending record, any actions by the Department of Justice (DOJ) and comments of community groups are also considered. Four major inter-related events converged in 1989 to improve the enforcement of both fair lending and community reinvestment regulations. First, amendments to the Fair Housing Act were implemented which gave the DOJ the authority to pursue monetary damages in instances of discrimination. Second, a series of highly publicized newspaper articles on disparate treatment of black versus white neighborhoods significantly increased media interest in racial discrimination in the housing market. Third, in turn this media interest instigated a period of intense public and policy interest, forcing the government and regulators to respond by mandating the public release of more detailed HMDA data to detect racial discrimination in home mortgage lending. Fourth, a secular increase in merger activity may have increased banks' incentives to improve their CRA performance.

3.1 Amendments to the Fair Housing Act

In March of 1989, amendments to the Fair Housing Act (FaHA) took effect such that the DOJ could bring action not only based on individual complaints, but could also seek compensatory and punitive damages. Previously, the DOJ could only pursue cases of "pattern or practice" and order injunctive relief. Thus, with these amendments, there was now actual enforcement "bite" to the existing FaHA (Lee, 1999). Appendix Figure 2a shows the number of all and race-related FaHA cases from 1981 to 2000, and Appendix Figure 2b the relief ordered for these cases.[13] Appendix Figure 2a shows a sharp increase in the number of all and race-related cases beginning in 1989, which continued until 1994. And while the FaHA prohibits discrimination in housing for a number of protected classes, such as religion, sex, dsability, familial status, or property location, Figure 2b shows that the monetary relief ordered was made up almost entirely by relief in race related cases. For the

[13] Data were provided by the U.S. Department of Justice, Civil Rights Division, Housing and Civil Enforcement Section.

race-related cases involving banks, the average asset size of these banks was $10 billion and 80% were above the $250 million asset cut-off to be considered a large institution under the CRA. This suggests that subsequent to 1989, the largest banks were the targets of DOJ action, and that these large banks faced the most pressure in instances of racial discrimination.

3.2 Media Scrutiny

In May of 1988 the Atlanta Journal and Constitution published a series or articles entitled "The Color of Money" which found that Atlanta banks were five times more likely to lend in white neighborhoods than comparable black neighborhoods (Dedman, 1988). The series later won the Pulitzer Prize in March of 1989. Appendix Figure 3 depicts the number of articles in major U.S. newspapers, magazines and journals with the word "race" in the headline and the words "banks," "discrimination," and "mortgages" within the text using a LEXIS-NEXIS news search for 1981-2000. Because coverage of different publications did not necessarily begin in 1981, the figure only provides circumstantial evidence that there was media attention devoted to stories involving race, discrimination and mortgages; nonetheless, with the available coverage, an increase in articles begins in 1989. More importantly, this media and subsequent public attention placed pressure on the federal government to respond. Following the "Color of Money" articles, from 1989 to the mid-1990's, hearings were held in Congress that lead to congressional scrutiny of regulators' enforcement efforts and major changes to existing legislation (Goering and Wienk, 1996; Immergluck, 2004).

3.3 Community Groups and Changes to HMDA and the CRA

Amendments to HMDA and the CRA were incorporated into the 1989 Financial Institution Reform and Recovery Act. First, HMDA was amended such that information for all applications, whether approved or denied, and individual characteristics such and race and income were to be collected. This was expressly to determine whether racial discrimination against individuals existed, that older HMDA data aggregated to the census tract could not address.[14] Second, but less importantly, the CRA was amended such that banks' CRA ratings were to be made public.

The CRA gives community groups the right to challenge lender applications so that an action cannot take place until the bank reaches an agreement with the community groups making the challenge. Beginning in the 1990's the Federal Reserve began to make the new HMDA data available electronically, facilitating community groups' ability to conduct their own data analysis and protest, for example, bank merger applications. Community groups subsequently became more "sophisticated" in their use of HMDA data (Belsky et al, 2000). Even in the period before 1990 there is some evidence of the effectiveness of community groups. One study on the effect of CRA protests on bank stock prices show that, between 1977 and 1991, CRA protests of bank applications produced significantly negative average excess returns, which were not reversed when the protests were resolved (Johnson and Sarkar, 1996). A later study on the effects of CRA protests on commercial banks from 1994 to 1998 show that protests increase the length of time until approval from 34 to 61 days depending on the regulator.[15] Among all applications, mergers were found to be disproportionately protested. Further, applications were most likely to be protested if the lead bank in the merger was large (Gramm, 2000). Thus, similar to DOJ targeting, large banks appear to face more enforcement pressure from community groups.

3.4 Increased Merger Activity

Finally, another change to the CRA's enforcement environment was a secular increase in merger activity concurrent with regulators' decisions to more aggressively use merger applications as a CRA enforcement tool. Between 1988 and 1997 the number of U.S. banks decreased by 30%, and the share of total nationwide assets held by the eight largest banking organizations increased from 22.3% to 35.5% (Berger et al, 1999).[16] In 1989,

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14 The early regulatory studies using the first years of this new HMDA data found significant denial rate differences by race and income (e.g. Canner and Smith, 1991 and 1992), prompting the more comprehensive collection of variables in the Boston Fed study.

15 While there was almost no effect on eventual approval, delays are costly to banks because of the costs of legal counsel and senior management time required to address the protests. Further, banks typically agree to specific future lending commitments as a part of the protest resolution.

16 Five major reasons are cited for the rapid consolidation of the banking industry in the 1990's: technological progress allowing for economies of scale, improvements in financial conditions to finance the mergers, excess capacity or financial distress of some institutions allowing them to be targets, the international consolidation of markets that creates demands for more services, and deregulation of the banking industry. See Berger et al

a CRA-based merger denial occurred for the first time in the entire history of the CRA, when the Federal Reserve denied a request for merger by the Continental Illinois National Bank and Trust Company of Chicago. On the same day it issued this merger denial, the Federal Reserve also released a policy statement outlining a more aggressive approach to CRA enforcement, including the importance of public hearings and community input in the application decision process. This statement was interpreted by bankers as a signal that banks' CRA performance would be seriously evaluated during merger applications (Mannion and Faber, 1989).

In summary, a definite change in fair lending and community reinvestment enforcement occurred for banks in 1989. In large part, the period of intense congressional and regulatory activity that followed was a response to media coverage of banks' possible racially discriminatory behavior. Consequently, banks' fair lending record for any racial discrimination was under greater scrutiny by the DOJ, by the media, and through the more detailed HMDA data. CRA performance was potentially of greater importance because of increased bank mergers and the tools available to community groups to protest those mergers. Finally, for both the DOJ and community groups, large banks appeared to be likelier targets for perceived fair lending and CRA performance deficiencies.

4. Measuring the Effects of Enforcement on Neighborhoods

4.1 Replicating the CRA Examination Process

The most important outcomes reviewed in a CRA regulatory examination are a bank's geographic distribution of its shares and levels of loans and loan dollars across census tracts grouped by income.[17,18] Specifically, for each metropolitan statistical area (MSA), the tracts within are first grouped by whether they are low, moderate, middle, or upper income.

(1999) for a review of the literature on the intensified consolidation in the financial services sector. In California, the state on which my findings are based, interstate banking restrictions were lifted in 1987.

17 CRA examination procedures are found in the Federal Financial Institutions Examination Council's "Community Reinvestment Act Examination Procedures for Small Institutions" (1995) and "Community Reinvestment Act Examination Procedures for Large Retail Institutions" (1997). It should be noted that, in continuation of the reforms that began in 1989, an effort was made to reduce the paperwork burden of CRA regulation and explicitly codify and make uniform examination procedures across the four regulatory agencies. Formal proposals for a streamlined CRA were introduced in 1993 and again in 1994. The final version was adopted in 1995, to be implemented beginning in January of 1996 for small banks and in July of 1997 for large banks.

18 Interviews were also conducted with Federal Reserve Bank of New York Compliance Examinations staff.

The income determination is made by comparing the tract's median family income to the entire MSA's median family income.[19] Consideration is made of the number of owner-occupied housing units in each tract to account for mechanical differences in loan demand.

Examiners treat each Metropolitan Statistical Area (MSA) within which a bank has a branch as a distinct lending market. They prepare a "performance context" to determine the MSA's demographic characteristics, market trends, local economic conditions, and demand for credit. For large banks the review of demographic characteristics is necessary to identify to what extent LMI tracts exist in the MSA to which to lend. For a small bank it is undertaken to determine whether its service area is large enough to make an actual review by geographic income distribution meaningful. A bank's CRA performance is then compared to "similarly situated" banks based on size, geographic market and product offerings. A bank is also compared relative to its own record.

Taking into account these CRA examination procedures and aspects of the enforcement change allows us to identify 3 reasonable bank comparison groups. Given the size of the banks targeted by the DOJ for fair lending and by community groups for CRA in instances of merger, we would expect that large banks are more greatly affected by increased enforcement. Similarly, large banks are always reviewed in CRA examinations for their geographic distribution of lending, while small banks are reviewed only if the location of their service area warrants it.

In this vein, banks that were already in LMI and minority areas before the 1989 enforcement change should be more greatly affected than those banks that were not.[20]

Finally, since under examination procedures banks are compared to similarly sized banks within their geographic markets, we would expect that banks with previously lower lending to minority and LMI neighborhoods relative to their peers to increase their lending to these neighborhoods.

Since the CRA only explicitly addresses lending to low-to-moderate income areas, if we see significant changes across these bank comparison groups in lending to LMI relative to non-LMI areas, this supports the hypothesis that changes to CRA enforcement were

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19 LMI tracts are those at 80% or below of MSA median family income.

20 It is an empirical question whether banks subsequently close their branches in LMI areas to avoid complying with the CRA. However, recall that the opening and closing branches requires regulatory approval and initiates review of a bank's CRA record. Furthermore, to the extent that you believe CRA enforcement is at least somewhat effective, banks are also examined under the CRA for their record of opening and closing branches.

effective. However, since the CRA does not explicitly examine lending across tracts grouped by race, and if minority and LMI tracts are not equivalent, then significant increases found across banks in their lending in minority relative to non-minority neighborhoods supports the hypothesis that changes in fair lending enforcement were important.

4.2 Identification & Estimation

Using the 1989 enforcement change, as well the banks which I believe were more greatly affected, I look at differences in banks' lending across tracts grouped by both income and race within MSA's. Consistent with CRA examination procedures, the outcomes of interest are banks' shares and levels of lending. I use two regression models to look for evidence of an effect of enforcement.

The first looks at banks' yearly total lending separately for each tract grouping. The estimation is run separately for banks' lending to each tract grouping, e.g. minority, non-minority, LMI, or non-LMI. Here I interact a post-1989 dummy with dummies for affected banks. This captures descriptively the changes in total lending to a specific tract group across the 1989 enforcement change for the affected banks relative to un-affected banks. Specifically, the first model is:

$$y_{imt} = ?_1 * CRA89_t * \boldsymbol{bankcharacteristics}_{im} + ?_2 * marketcontrol_t + \mu_{imt}, \qquad [1]$$

where i indexes banks, m indexes MSA's, and t indexes time. The outcome y_{imt} is either the share of a bank's total loan dollars to the tract grouping of the particular estimation, or the total loan dollars to that tract grouping, for each bank i, in MSA m, in year t. $CRA89_t$ is a dummy equal to 1 if year is after 1989. $?_1$ captures the effect of a vector of pre-period bank characteristics of being "*large*," "*below average*" in lending to the targeted tract group, or having a branch "*presence*" in the targeted tract group, on lending to the tract group after the enforcement change. $?_2$ capture the effects of market controls on yearly lending in the tract group. Again, the separate estimations allow for differences in how different tract groups respond to market forces. For example, individuals in non-minority tracts may be more responsive to mortgage rates than those in minority tracts.

The error term is:

$$\mu_{imt} = a_i + t_t + s_m{*}t + e_{imt} \qquad [2]$$

Bank fixed effects a_i capture time-invariant unobserved characteristics of banks within neighborhoods. Since lending to each tract group is estimated separately, banks predispositions towards each tract group are allowed to differ. For example, some banks may already be comfortable engaging with minority or LMI neighborhoods, while other banks may be risk averse to interacting with unfamiliar communities. Year effects t_t account for period effects that are also allowed to affect each tract group differently. In years of economic downturn, minority individuals may be more sharply affected financially, decreasing the demand for loans in minority neighborhoods. MSA specific trends s_m are included to capture trends in lending to the tract group in the local market, independent of the change in CRA enforcement. Finally, the idiosyncratic component is captured by e_{imt}.

This first model is used primarily to depict the patterns of lending across the different tract groupings for affected banks. However, if lending for the affected banks increased in all the tract groupings, including non-CRA targeted tracts, this obscures the extent to which enforcement had an effect. Thus, the second regression model uses a panel where banks' total yearly lending to the different tracts groups are stacked. Here I interact the post-1989 dummy with the affected bank dummies, *and* with a dummy for whether the yearly total lending is to, for example, minority (LMI) tracts. In this case the excluded tract group would be non-minority (non-LMI) tracts. This *triple interaction* effectively identifies the effect of the enforcement change by comparing, across the 1989 enforcement change, affected banks to non-affected banks' lending, across targeted and non-targeted tract groupings. Specifically, the regression model is:

$$\begin{aligned} y_{ijmt} = {} & \boldsymbol{\beta_1}{*}CRA89_t{*}\boldsymbol{bankcharacteristics_{im}} + \beta_2{*}tractgroup_j \\ & + \boldsymbol{\beta_3}{*}\, CRA89_t{*}\boldsymbol{bankcharacteristic_{im}}{*}tractgroup_j \qquad [3] \\ & + \beta_4{*}marketcontrol_t{*}tractgroup_j + \beta_5{*}marketcontrol_t{*}tractgroup_{-j} + \mu_{ijmt}\,, \end{aligned}$$

where *j* indexes tract groups. You may think of targeted tract group *j* as minority (LMI) tracts, and non-targeted tract group –*j* as non-minority (non-LMI) tracts. Here $\boldsymbol{\beta_1}$ captures the level effects of the vector of pre-period bank characteristics. $ß_2$ captures the overall level of lending to tract group *j* relative to tract group *–j*. This addresses that base levels of lending are substantially lower in LMI neighborhoods. $ß_4$ and $ß_5$ capture the effects of market controls that are allowed to differ for the two tract groups.

The coefficients of interest are $\boldsymbol{ß_3}$, which captures the effects to banks' lending in the period after 1989 relative to the period before, for banks we expect are more greatly affected by enforcement relative to banks that are less affected, in the targeted tract group relative to the non-targeted tract group. We expect to find the individual coefficients within $\boldsymbol{ß_3}$ to be positive. For example, in the years after 1989 compared to the years before, compared to other banks formerly below average banks should increase their lending to minority tracts relative to their lending in non-minority tracts.

The error term is decomposed as follows:

$$\mu_{ijmt} = a_{ij} + t_{jt} + s_{jm}*t + e_{ijmt} . \qquad [4]$$

Included are tract group specific bank fixed effects a_{ij}, tract group specific year effects t_{jt}, and within MSA tract group specific trends s_{jm}. This specification of the error term is meant to capture the "performance context" that examiners take into account in their CRA reviews. Basically, this is equivalent to equation [2], where I now explicitly allow the effects of unobservables to differ between tract groups, since lending to the different tract groups are included as distinct observations. Finally, the idiosyncratic component is captured by e_{ijmt}.

The implicit assumption is that the unobserved time-varying characteristics of banks are uncorrelated with the period after 1989 and the pre-period bank characteristics. This assumption, however, fails for instance if all banks that were large in the pre-period decide, completely independent of wanting to improve their CRA performance, in the after period to hire new managers who are in-turn oriented towards increasing the banks' CRA targeted lending. This scenario is not implausible if new (perhaps younger) managers are more forward looking and have a desire to tap into new markets. In this case, the coefficient within $\boldsymbol{ß_3}$ on the effect for large banks would be biased upward. But it would be an extreme assumption to think that these new managers were not hired in part specifically to help improve banks' CRA lending. I believe the distinct pattern of the effects presented in

Section 5 alleviates some concern that effects for large banks are due only to unobserved changes within banks unrelated to enforcement.

It is less plausible to think that below average banks, both large and small, compared to above average banks, undergo management changes in the post 1989 period that do not stem from wanting to improve their CRA performance. Finally, while banks already with a presence in LMI or minority areas may be predisposed towards lending in these areas, as discussed, these tendencies should be captured by the time-invariant bank fixed effects.

4.3 Data & Sample

To implement the estimation I use Home Mortgage Disclosure Act data collected for the state of California for the period 1981 through 2000. For the 1990's data, I combine home purchase and refinance loans together in order to match to the 1980's data, which were only collected in the combined form, and then aggregate individual banks' lending to the census tract level. This data manipulation allows me to test the effect of the 1989 enforcement change that previous studies on CRA's effectiveness have not been able to..

Arbitrarily choosing 1987 as a base year before the CRA enforcement change from which to begin my sample selection of banks initially yielded 472 commercial and savings banks in that originated at least one home purchase or refinance loan. From these I kept those banks which remained open until 1991 to span the enforcement change and for which I could manually match to their 1990 identification numbers.[21,22] Then I collected branch location data in order to determine the MSA's in which these banks operated, keeping only those banks for which branch locations could be found. Ultimately, 328 banks were retained in my sample, yielding 619 bank/MSA combinations. For each bank, combinations were formed for only the MSA's in which a bank had a branch in 1987.

4.3.1 Comparison Banks

First, I attempted to make reasonable size groupings for these sample banks. I first determined, using all, including non-sample, banks with active home purchase and refinance

[21] Bank close dates were determined by manually collecting bank histories from the FDIC's Institution Directory website.

[22] With the exception of banks regulated by the Office of Thrift Supervision, HMDA bank identification numbers used in the 1990s are not systematically related to their 1980's identification numbers. For the rest I attempted to manually match using their names and addresses when reported.

lending in the MSA, loan level percentile cutoffs for each MSA. I did this for each year from 1985 to 1989. For each year, banks were divided into four quartiles, with the exception of the last quartile, which was further broken down into *large* and *very large*.[23] A size was assigned to the sample banks for each year for each MSA in which they had a branch, and averaged over the five years. I categorize large banks as size 4, and the largest banks as size 5. So if in a particular MSA a bank had an average size over the 5 years of 4.5 then it is considered a size 5, or *very large*, bank, while a bank with an average size of below 3.5 is considered a *small* bank. These average size assignments are what I use in the estimations when controlling for a sample bank's pre-enforcement change size. Appendix Figure 4 shows loan level percentile cutoffs averaged over MSA's over the 1985-1989 period. It shows that loan levels are very low for the three smallest groupings, are substantially greater for the *large* banks, and rise sharply for the *very large* banks. Thus it appears my method of categorization does capture actual pre-period size differences between banks. Because banks typically grew after 1989 rather than shrank, my effects for the *large* size banks may be underestimated since some will be categorized as *small* in the pre-period.[24]

The second key categorization I make is whether a bank was historically below average in lending to minority or LMI neighborhoods. Since banks are compared relative to their same-sized peers within an MSA, I consider banks within their MSA specific size group to determine whether they were below average. First, for each of the five size groupings described above, I determine the average shares of loans to minority tracts, and the average share of loans to LMI tracts, over all, including non-sample, banks in an MSA, for each year from 1985-1989.[25] I then assign dummies to the sample banks for whether they are below

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23 Specifically, the five size groups are: 1. the 25th percentile or less, 2. between 25th to 50th percentile, 3. between 50th to 75th percentile, 4. between 75th to 95th percentile, and 5. between 95th and 99th percentile.

24 As a rough check of whether my size categorizations are correct, I looked at readily available balance sheet data for commercial banks (CALL Reports). Banks with assets of greater than $250 million are considered large by CRA standards. For the 233 commercial banks in my sample, I used their total assets to assign a dummy for small or large for each year from 1985 through 1989. These dummies were then averaged over the five years to determine an average overall asset size. I then compare these asset size dummies to assignments using my same procedure to make the MSA rankings, however, assigning banks a size for their entire CA, rather than MSA, lending. According to this method, 84% of my sample banks were assigned correctly. For those that were not, 86% (33/38) were incorrectly assigned as "small" by the percentile ranking procedure when they were actually "large" according to their total assets. Thus, any mis-assignment of bank size more likely biases results for the effect of bank size downward. However, to the extent that we only care about a bank's size ranking within an MSA, as a whole the banks appear to be assigned correctly.

25 It should be noted that I also made these *below average* rankings using unadjusted loan dollars, loan dollars adjusted by tract median housing value, loan dollars adjusted by tract median family income, and loan levels adjusted by owner-occupied housing units,. The different outcomes yielded highly similar rankings.

average in the year, within their size group, within an MSA. These dummies were then averaged over the five years. This categorization was done with respect to both a bank's minority and its LMI tract lending. If a bank had an average *below average* ranking for its lending to minority tracts of greater than .5, it is considered below average in lending to minority tracts. Similarly if it had an average *below average* ranking for its lending to LMI tracts of greater .5 it is considered below average in lending to LMI tracts. I consider tracts that have a minority population at 50% or greater of the tract's total population to be minority.

Finally, whether a bank was already operating in minority or LMI areas was determined using its 1987 branches. Branch addresses were manually collected, geocoded, and then matched to their 1990 census tract.[26] If a bank had at least one branch in a minority tract, then it is considered to have had *presence* in minority areas. Similarly if it had at least one branch in an LMI tract, then it is considered to have had a *presence* in LMI areas.

Appendix Table 1 shows means for these pre-period controls by the bank pre-period size, for the 619 sample bank/MSA combinations. About 78% of the bank/MSA combinations are *small*. Similar shares of banks in each size group had at least one branch in minority or LMI areas, ranging from 44-60% in minority areas, and 59-64% in LMI areas. However, on average the larger the bank the more likely it had a minority or LMI branch. *Small* banks are more likely to be *below average* in their lending to minority tracts, with the share considered below average at 67%, compared to 65% for the *large* and 48% for the *very large* banks. Similarly, *small* banks tend to be *below average* in their lending to LMI tracts, with the share considered below average at 74%, compared to 66% for *large* and 48% for the *very large* banks. In all, across bank size and within each size group there appears to be sufficient variation in our key controls.

4.3.2 Sampling Issues

Some features of my sample and possible sample selection issues should be discussed before proceeding to the estimations. With regard to the sample, two features should be noted. The first concerns the treatment of banks, particularly small banks, that have no lending to a tract group within an MSA for a given year. I keep these observations in my

[26] Branch locations were manually collected using the discontinued Rand McNalley 1987 Commercial Banks and Thrift Institution Branch Directories.

sample and include a zero value for lending to that tract group for the year. Second, if a bank closes, I no longer include it in the sample. Thus one bank may be followed, for example, from 1981 through 1995, while another is followed from 1985 through 1998.

This leads to two issues regarding the selection of banks into the sample. First, there is a concern that banks that closed during the 1987-1991 selection window may have closed because of the enforcement change. If this were the case then the remaining banks are different in some unobservable way and were better able to respond to the change. However, of the 55 banks that closed during the window and were not acquired by banks remaining in the sample, 43 were savings and loans, 91% of which either closed down completely for financial reasons, or were acquired with financial assistance by a non-sample bank. This is consistent with the savings and loans insolvency crisis culminating in 1989 which resulted largely from mismanagement, fraud, and corruption (Hayes, 1989; White, 1991). Thus it appears that is was not because of the CRA that these banks were not included in the sample.

The second sample selection issue is with respect to whether banks that never made it into the sample or banks that were in the sample but closed were actually acquired by other sample banks in order to improve their CRA outcomes. In this case “above average” banks may be acquired so that the acquiring banks mechanically improve their CRA-targeted lending without making any substantive changes to their behavior. Forty-two of the banks that never made it into the sample were acquired by 28 banks in the sample. Interestingly, while acquirees tended to be below average in their lending to minority and LMI tracts, acquirers tended to be above average in their lending to LMI tracts, and had a lower share below average in lending to minority tracts. I also looked at the distance from, for each MSA, the overall average share among all same-sized banks in lending to minority tracts and found that acquired banks on average were further below the cutoff than acquiring banks. For in-sample banks that closed, 96 banks were eventually acquired by 53 other in-sample banks. *Small* and *very large* in-sample banks later acquired tended to be very similar to their acquiring banks. *Large* acquired in-sample banks, on the other hand, were much more likely to be below average in their CRA-targeted lending than their acquirees, and had greater average distances from MSA averages in lending to targeted areas. Since they tended to be similar or worse in their CRA-targeted lending, overall it appears that out-of-sample banks and in-sample banks that were absorbed or reabsorbed into the sample were acquired for purely expansionary purposes rather than to improve sample banks' CRA performance.

4.3.3 Census Tract Characteristics

Because I will compare lending by banks to different tract groups, Appendix Table 2 shows 1990 California census tract characteristics. Panel a shows tracts grouped by minority percentage, while Panel b groups tracts by income. Of the 5,858 California census tracts, 31% were minority. Within minority tracts, the largest share was mixed raced tracts, at 19% of all California tracts. The next largest share was black tracts, at 5% of all tracts. Within non-minority tracts, the largest share, 48%, was middle-income, while within minority tracts the largest share, 46%, was moderate income. It is not always the case that LMI tracts are minority tracts. Overall, 41%, of tracts was middle income and 33% were LMI. Within LMI tracts 39% were non-minority, and within the lowest income tracts 49% were non-minority. Non-LMI and non-minority tracts tend to have more owner-occupied housing units, higher median housing value, and higher median family income.

5. Results

5.1 Baseline Findings

5.1.1 Shares of Loan Dollars

Table 1 shows estimation results for banks' share of total loan dollars distributed across different tract groupings. The loan dollars were first adjusted by tract median family income to account for any mechanical differences in loan dollars to different tract groups.[27] Each column of each panel is a separate estimation. The numbers shown are coefficients on the banks' share of lending in the post-1989 period (*CRA89*=1) interacted with the bank's pre-period characteristics. These are the $?_1$'s of equation [1]. Since the outcome is banks' share of total loan dollars, any increase in share in one group must result in a decrease in share in another group. Thus, across the first four columns the coefficients should sum to zero. Given an increase in CRA-enforcement pressure after 1989, we would expect that the

[27] Loan dollars for the years 1980, 1990 and 2000 were adjusted using the median family income of the respective census year. For the years between 1980 and 1990 and between 1990 and 2000, median family income values were interpolated using the decennial figures. I did not make adjustments using median housing value because there were a greater number of missing values in the three censuses.

share of loan dollars to decrease for the lower percentage minority (middle and upper income) tracts, and increase for the higher percentage minority (low and moderate income) tracts.

In these estimations, the outcome is at the bank, MSA, year level. Included in each estimation are bank fixed effects, year effects, and MSA specific trends as specified in equation [2]. The market controls included are the annual average of the monthly U.S. 30 year fixed rate mortgage rate, as a measure of the cost of mortgage credit, and the yearly deviation of California home sales from trend, as a measure of business cycles. Since the share of loan dollars to each tract grouping is estimated separately, the bank fixed effects, year effects, MSA trends, and market controls are therefore allowed to have different effects for each tract group.[28]

Panel a shows tracts grouped by percentage minority. The last column shows the share of banks' loan dollars to minority tracts (the sum of the lending in columns 3 and 4). While we see the expected pattern in general, and overall the shares to minority tracts increased in the after period for all of our affected banks, these increases are significant for only the banks which already had a *presence* in minority tracts, with an increase in share of 1.5%. Effects are strongest for the lowest, or 75-100%, minority tracts. For shares of loan dollars to tracts grouped by income, the increase in shares of lending to LMI tracts are generally positive, however, the effect is only significant for those banks that were previously *below average* in lending to LMI tracts. The last column of Panel b shows that *below average* banks increased their share of loan dollars to LMI tracts by 2.3%. Thus, while shares appear to be increasing in the CRA-targeted tracts for our affected banks, in general the effects are not strong.

We may think of looking at shares as something equivalent to looking at how the slices of a bank's pie of loan dollars are distributed across tract groups. However, if the overall pie is growing, the targeted tracts may be getting larger slices, even if these slices are not proportionately much bigger. Below I look at banks' level of loan dollars distributed across different tract groupings.

[28] In this and all the estimations presented, standard errors are clustered by bank/MSA to allow for serial correlation over time for a bank within an MSA.

5.1.2 Levels of Loan Dollars

Table 2 shows coefficients from estimations on the log of banks' level of adjusted loan dollars, using the same tract groupings as Table 1.[29] The first four columns include the same controls as those used in Table 1, the only difference being the outcome. Thus, here the coefficients show the estimated rate of increase in loan dollars in the after period to the particular tract group for each affected bank characteristic.

For lending amongst tracts grouped by minority percentage, we see an almost monotonic increase in the rate of increase with increasing minority percentage. Figure 1 shows the coefficients of Table 2, panel a, graphically, with levels of significance indicated. Here we see that for the largest banks, the rate of increase in the lowest percentage minority tracts was 16.8%, while in the highest percentage minority tracts it was 81.6%. Furthermore, while the rates of increase are also positive for the lowest percentage minority tracts, they are typically not significantly so. On the other hand, the rates of increase are generally greatest for the highest percentage minority tracts, and have the strongest significance.

The key estimation in Table 2, however, is shown in the last column. This estimation corresponds to the regression model shown in equation [3]. Here, the data considers banks' logged adjusted loan dollars to the two broad tract group categories of minority and non-minority as separate observations. Bank fixed effects, year effects, and MSA specific trends are included specific for each tract grouping, as specified in equation [4]. The effects of the market controls are also allowed to differ for each tract grouping. The coefficients shown are the estimated effects for the triple interaction of *CRA89*, with the bank characteristic, and a dummy for whether the banks' loan dollars was to the targeted, in this case minority, tract group. These are the $\boldsymbol{\beta_3}$'s of equation [3] which should capture the effect of enforcement.

29 In order to log the outcomes, I used a very small number in instances where banks had no lending to a tract group. This follows some microfinance literature on household expenditure surveys that use the value "1" when no income is spent on a particular good, and 1 is small relative to household income. In practice, I arbitrarily used .75 of the smallest value found within the entire sample over all the years in bank total loan amount adjusted by median family income to a tract group. The eventual number logged in instances of no lending to a tract group was .0000014. In the event that this procedure leads to unstable results, I also plan to re-run the estimations using non-logged adjusted loan amounts; with these new coefficients I will then calculate rates of increases using the affected banks' pre-period MSA average outcomes. I will also run a linear probability model on the decision to lend at all. If the coefficients on the affected bank characteristics are insignificant then I may be able to run estimations on the logged amounts where I drop the non-lenders altogether.

The last column of Panel a shows that the effect was significant for all four of the affected bank characteristics. The relative rate of increase compared to their lending in non-minority areas for *large* banks was 20.2%, for *very large* banks 28.3%, for banks historically *below average* banks in their lending to minority tracts 19.9%, and for banks that already had a *presence* in minority areas 12.3%. For the first three affected bank characteristics the effect is significant at the 1% level, and for the last at the 5% level.

Panel b shows the rate of increase of banks' adjusted loan dollars to tracts grouped by income. The corresponding Figure 2 graphically shows that the rate of increase increases monotonically for *large* and *very large* banks as tract income decreases. For both the banks historically *below average* in lending to LMI tracts and those with already with a *presence* in LMI tracts, the rate of increase is greatest for the moderate income tracts. In terms of an effect attributable to enforcement, however, while the rate of increase was greater in LMI relative to non-LMI tracts for all the affected bank characteristics, the last column shows that the effect was significant only for the banks that were historically *below average* in lending to LMI tracts.

Overall it appears that enforcement has had a greater effect in increasing lending levels to minority than to LMI neighborhoods. To identify which groups within minority tracts were most affected, in the following section I present similar estimations for the minority tracts only, grouped by both majority race and by income.

5.2 Lending Among Minority Tracts

5.2.1 Shares of Loan Dollars to Minority Tracts

Table 3a presents estimations on the shares of lending to minority tracts distributed across the majority race of the tracts. I define a tract to have a majority race if that race comprises 50% or greater of the tract's minority population, otherwise, I consider it to be a "mixed" race tract. Panel 1 shows coefficients for estimations where the outcome is a bank's share of loan dollars to that tract group to the bank's total loan dollars. The outcome used in the estimations shown in Panel 2 is the bank's share of loan dollars to the tract group to the bank's total loan dollars to *minority* tracts. Again, these are the $\mathbf{?}_3$'s of equation [1]. We see that banks' share of total loan dollars increased significantly in black tracts for *very large* banks, at 6 percentage points, and for banks with a minority branch *presence*, at 3 percentage points. As a share of banks' minority tract lending, we see banks significantly redistributing their loan dollars away from Asian tracts and shifting them significantly, but by a lesser amount, to black tracts. For example, the largest banks shifted 3.7% of their minority tract loan dollars away from Asian tracts, while shifting 1.5% to black tracts. The rest of the minority tract dollars from Asian tracts were allocated to mixed tracts, with 1.4%, and Hispanic tracts, with .8%.

Table 3b shows minority tract loan dollars distributed across tract income groupings. We see that as a share of both banks' total loan dollars and minority tract dollars only, affected banks significantly shifted away from upper income tracts and instead shifted towards moderate income tracts.

5.2.2 Levels of Loan Dollars to Minority Tracts

In Table 4a I present estimations for the outcome of logged adjusted loan dollars for minority tracts categorized by majority race. Panel 1 shows how lending levels increase in each group for the affected bank characteristics. For the *large* and *very large* banks, we see the greatest rates of increase in loan dollars to black tracts. The rate of increase in black tracts for *large* banks was 47.4%, and for the *very large* banks was 99.9%. The rate of increase for *below average* banks was largest and significant only for their lending to mixed tracts, at 20.1%. Similarly, while the rates of increase were significant for all the minority tract groupings, the greatest increase for banks with a minority branch *presence* was to mixed tracts at 33.2%.

In panel 2 I present estimations similar to the estimation in the last column of Table 2. Again tract group specific bank effects, year effects, and MSA trends are included. And market controls are allowed to differ for the minority tracts groups and for the non-minority tracts. Here, however, I test the rate of increase in loan dollars to the particular majority minority race tract group relative to loan dollars to non-minority tracts. These coefficients correspond to the β_3's of equation [3] and capture the effect of enforcement for these minority tracts stratified by majority race. For the *large* and *very large* banks the effects are greatest for the black tracts. The rate of increase for *large* banks to black tracts relative to non-minority tracts was 37.4% and for the *very large* banks was 71.8%. The relative rate of increase for large banks was also significant for mixed tracts, and for the very large banks significant for all the remaining minority tracts groupings, but less significantly so for the Asian tracts. Figure 3 depicts the coefficients graphically.

Table 4b presents estimations for the minority tracts stratified by income. Panel 1 shows that, for all four affected bank characteristics, rates of increase are largest and uniformly significant at the 1% level for banks' loan dollars to moderate income minority tracts. The rates of increase were also significant in the low and middle income minority tracts for the *large* and *very large* banks, and for the banks that already had a minority branch *presence*.

Panel 2 presents estimations which test whether banks' rate of increase in these minority income tract groupings are significant relative to their lending to these tracts' same income non-minority counterparts. Again the coefficients correspond to the $ß_3$'s. With the exception of the relative lending in upper income tracts, significant differences are found mainly for the *large* and *very large* banks. Furthermore, the relative rates of increase are greatest for the low income tracts. Relative to their lending in non-minority low income tracts, the rate of increase in loan dollars to minority low-income tracts by *large* banks was 29.1% and for *very large* banks 106%. For moderate income tracts, the relative rates of increase were 28.3% and 44.5% for *large* and *very large* banks, respectively. Figure 4 shows graphically the coefficients for Table 4b, Panel 2.

5.3 Alternative Specifications

The outcomes for the specifications discussed above in all cases used loan dollars. I also ran estimations using loan volume. Instead of loan amounts adjusted by tract median family income, I use loan levels adjusted by tract owner-occupied housing units. While the results were qualitatively the same, however, the coefficients were larger for estimations using shares of loans rather than shares of loan dollars. This stronger effect using loan volume is evidence that banks actually took the time to process more CRA-targeted loans, even though these loans were of smaller size.

Since my tract groupings by minority percentage were arbitrary quartiles of percentage minority, I also ran estimations where I instead divided tracts into roughly equal-sized groups. Since about one third of the tracts were 0-20% minority, another third was 20-45% minority, and the last third was 45-100% minority, I made another grouping where tracts that were 45-100% minority are considered "minority tracts." Thus, more tracts were considered minority with this arbitrary grouping. The estimations in this case yielded slightly weaker results. This is reassuring in that the expected effects were stronger when in fact there was a greater percentage minority in the tracts.

I also ran the estimations discussed in Sections 5.1 and 5.2 where I instead restricted the period to be between 1985 and 1995 rather than 1980 and 2000. This is to account for possible mean reversion, where all banks converge toward the average since they are compared to their peers. Further, tract designations are based on 1990 census tracts, yet California census tracts are becoming increasingly minority. Lending in later years may be categorized as to non-minority tracts when in fact by 2000 these tracts may have actually become minority. Both these concerns suggest that the original estimations would give underestimated results. These restricted estimations yield the same qualitative results, however, the effects were larger and in a number of cases had greater significance.

6. Conclusions

This paper contributes to our understanding of whether increased regulatory enforcement has been successful in reducing disparities in lending across neighborhoods. By taking advantage of the enforcement change in 1989, utilizing older HMDA data, and by explicitly considering how banks are examined by regulators, I provide strong evidence that banks did change their behavior subsequent to the enforcement change.

Specifically, I find that both banks below average in lending to LMI areas and banks below average in lending to minority areas increased their lending to these communities, providing some evidence that enforcement changes to community reinvestment regulation have had some overall effect. However, the effects are larger and more uniformly significant for banks' lending to minority than to LMI neighborhoods. Within minority areas, the largest effects are found for lending to black neighborhoods, and these effects are significant for large banks. Further, greater increases to LMI areas depend on the minority percentage of the LMI tracts. For large banks, greater increases are found in minority low-to-moderate income areas relative to non-minority low-to-moderate income areas.

That the results for lending to minority areas are strongest and at times only significant for large banks when these areas are stratified by race lend support to the idea that fair lending concerns are more important for these banks. Large banks potentially have the most to lose from the negative publicity of any perceived race-based discrimination. They are the main targets in DOJ actions and by community groups in merger applications.

In a series of discussions with bankers, regulators, and community groups on the CRA, participants noted that, "Fair lending litigation terrifies lenders" (Belsky et al, 2000: 11).[30]

Since enforcement of both fair lending and community reinvestment legislation increased at the same time, these findings suggest that while enforcement of community reinvestment regulation has had some effect, changes in fair lending enforcement have played a bigger role. This is consistent with Tootell (1996) and Freeman and Hamilton (2002). The first study finds that once applicant race is controlled for, there is little evidence of discrimination against neighborhoods. The second finds that the portion of homeownership differences between blacks and white attributable to non-observable factors decreased over the 1990's. My results are in line with these studies if fair lending improvements increased lending opportunities for minority individuals, which in turn increased lending to minority areas. Thus, changes in banks' behavior towards individuals are more important in increasing credit towards neighborhoods.

[30] Harvard's Joint Center for Housing studies held 11 discussions on the CRA in four cities from February to April 2000.

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Table 1: SHARE of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level)

a. Tracts Grouped by MINORITY PERCENTAGE

Independent Variables *CRA89**	**0-25% Minority Tracts**	**25-50% Minority Tracts**	**50-75% Minority Tracts**	**75-100% Minority Tracts**	**Minority Tracts**
large	0.026	-0.028	0.001	0.001	0.002
	(0.010)***	(0.008)***	(0.006)	(0.005)	(0.008)
very large	0.005	-0.021	-0.004	0.02	0.016
	(0.013)	(0.011)*	(0.007)	(0.008)***	(0.010)
below average in minority tracts	-0.004	-0.001	-0.004	0.009	0.005
	(0.011)	(0.009)	(0.008)	(0.005)	(0.009)
branch presence in minority tracts	-0.005	-0.01	0.006	0.008	0.015
	(0.010)	(0.008)	(0.006)	(0.005)*	(0.007)**
Observations	8075	8075	8075	8075	8075
R-squared	0.5	0.35	0.25	0.46	0.46

b. Tracts Grouped by INCOME

Independent Variables *CRA89**	**Upper Income Tracts**	**Middle Income Tracts**	**Moderate Income Tracts**	**Low Income Tracts**	**LMI Tracts**
large	0	0.001	-0.002	0	-0.002
	(0.010)	(0.008)	(0.006)	(0.003)	(0.006)
very large	-0.032	0.02	0.012	0.001	0.013
	(0.014)**	(0.011)*	(0.008)	(0.003)	(0.009)
below average in LMI tracts	-0.022	-0.001	0.021	0.001	0.023
	(0.012)*	(0.010)	(0.008)**	(0.003)	(0.009)**
branch presence in LMI tracts	-0.016	0.009	0.005	0.003	0.008
	(0.011)	(0.010)	(0.006)	(0.002)	(0.007)
Observations	8075	8075	8075	8075	8075
R-squared	0.38	0.36	0.3	0.16	0.31

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 1 for more detail). LMI or minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.

2. Each column of each panel is a separate regression. Bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls. In all estimations, standard errors are clustered at the bank/MSA level. The coefficients measure the effect of the bank characteristic in the post-1989 period (i.e. the effect of *CRA89*bank characteristic*).

3. I define minority tracts to be tracts with a 50% or greater minority population. Upper income tracts are tracts with median family income (MFI) at 120% or more of MSA MFI, middle income tracts have 80-120%, moderate income tracts have 50-80%,and low income tracts have less than 50% of MSA MFI. Low-to-moderate (LMI) tracts are those with MFI at 0-80% of MSA MFI.

Table 2: Logged LEVELS of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level, loan dollars adjusted by tract median family income)

a. Tracts Grouped by MINORITY PERCENTAGE

Independent Variables *CRA89**	0-25% Minority Tracts	25-50% Minority Tracts	50-75% Minority Tracts	75-100% Minority Tracts	Minority vs. Non-Minority Tracts
large	0.109	0.062	0.185	0.335	0.202
	(0.097)	(0.098)	(0.096)*	(0.108)***	(0.070)***
very large	0.168	0.207	0.36	0.816	0.283
	(0.156)	(0.158)	(0.149)**	(0.208)***	(0.098)***
below average in minority tracts	-0.072	0.072	0.156	0.115	0.199
	(0.093)	(0.094)	(0.091)*	(0.094)	(0.073)***
branch presence in minority tracts	0.153	0.201	0.313	0.426	0.123
	(0.094)	(0.094)**	(0.089)***	(0.094)***	(0.062)**
Observations	8075	8075	8075	8075	16150
R-squared	0.73	0.75	0.74	0.71	0.72

b. Tracts Grouped by INCOME

Independent Variables *CRA89**	Upper Income Tracts	Middle Income Tracts	Moderate Income Tracts	Low Income Tracts	LMI vs. non-LMI Tracts
large	0.102	0.039	0.17	0.221	0.061
	(0.094)	(0.095)	(0.091)*	(0.097)**	(0.054)
very large	0.189	0.321	0.442	0.792	0.14
	(0.153)	(0.155)**	(0.174)**	(0.207)***	(0.090)
below average in LMI tracts	0.195	0.291	0.362	0.347	0.153
	(0.097)**	(0.096)***	(0.095)***	(0.080)***	(0.065)**
branch presence in LMI tracts	0.316	0.373	0.377	0.234	0.023
	(0.100)***	(0.097)***	(0.091)***	(0.077)***	(0.058)
Observations	8075	8075	8075	8075	16150
R-squared	0.73	0.73	0.73	0.69	0.72

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 1 for more detail). LMI or minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.
2. Each column of each panel is a separate regression. In all estimations, standard errors are clustered at the bank/MSA level.
3. For columns 1-4, bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls.
4. For the last column, tract group specific bank fixed effects, year effects, and MSA specific trends are included in each estimation. The market controls are allowed to differ for the two tract groups. The coefficients show the rate of increase in the CRA targeted tract group relative to their non-targeted counterpart. They correspond to the β_3's of equation [3].
5. I define minority tracts to be tracts with a 50% or greater minority population. Upper income tracts are tracts with median family income (MFI) at 120% or more of MSA MFI, middle income tracts have 80-120%, moderate income tracts have 50-80%,and low income tracts have less than 50% of MSA MFI. Low-to-moderate (LMI) tracts are those with MFI at 0-80% of MSA MFI.

Table 3a: SHARE of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level)
for MINORITY TRACTS ONLY

a. MINORITY Tracts Grouped by MAJORITY MINORITY RACE								
Independent	**1. Share of Bank TOTAL Loan Dollars**				**2. Share of Bank MINORITY Tract Loan Dollars**			
Variables *CRA89**	**Asian Tracts**	**Black Tracts**	**Hispanic Tracts**	**Mixed Tracts**	**Asian Tracts**	**Black Tracts**	**Hispanic Tracts**	**Mixed Tracts**
large	-0.003	0.001	0.001	0.004	-0.023	0.013	0	0.01
	(0.003)	(0.002)	(0.002)	(0.006)	(0.008)***	(0.005)**	(0.006)	(0.010)
very large	0.001	0.006	0.004	0.006	-0.037	0.015	0.008	0.014
	(0.004)	(0.003)**	(0.003)	(0.008)	(0.010)***	(0.008)**	(0.007)	(0.011)
below average	0.002	-0.001	0.001	0.002	-0.024	0.004	0.007	0.013
in minority tracts	(0.004)	(0.002)	(0.002)	(0.008)	(0.008)***	(0.005)	(0.007)	(0.010)
branch presence	0.002	0.003	0.001	0.008	-0.008	0.01	0.013	-0.014
in minority tracts	(0.003)	(0.002)**	(0.002)	(0.006)	(0.008)	(0.006)*	(0.007)*	(0.009)
Observations	8075	8075	8075	8075	5507	5507	5507	5507
R-squared	0.36	0.55	0.34	0.29	0.56	0.51	0.42	0.56

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 1 for more detail). A minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.

2. Each column of each panel is a separate regression. Bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls. In all estimations, standard errors are clustered at the bank/MSA level. The coefficients measure the effect of the bank characteristic in the post-1989 period (i.e. the effect of *CRA89*bank characteristic*).

3. Minority tracts are tracts with a 50% or greater minority population. A tract is considered to have a majority minority race if that race is 50% or greater of the minority population.

4. In panel 2, observations were dropped if there were no lendings at all to minority tracts.

Table 3b: SHARE of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level)
for MINORITY TRACTS ONLY

b. MINORITY Tracts Grouped by INCOME								
	1. Share of Bank TOTAL Loan Dollars				**2. Share of Bank MINORITY Tract Loan Dollars**			
Independent Variables *CRA89**	**Upper Income Tracts**	**Middle Income Tracts**	**Moderate Income Tracts**	**Low Income Tracts**	**Upper Income Tracts**	**Middle Income Tracts**	**Moderate Income Tracts**	**Low Income Tracts**
large	-0.004	0.003	0.003	0.001	-0.013	-0.008	0.015	0.007
	(0.002)**	(0.005)	(0.004)	(0.003)	(0.006)**	(0.011)	(0.011)	(0.007)
very large	-0.005	0.005	0.013	0.004	-0.025	-0.014	0.024	0.014
	(0.003)*	(0.006)	(0.006)**	(0.003)	(0.006)***	(0.014)	(0.014)*	(0.008)*
below average in minority tracts	-0.008	0	0.011	0.003	-0.024	0.004	0.023	-0.002
	(0.003)***	(0.006)	(0.006)*	(0.003)	(0.006)***	(0.012)	(0.012)*	(0.007)
branch presence in minority tracts	0	0.006	0.005	0.001	-0.01	0.001	-0.003	0.011
	(0.002)	(0.005)	(0.005)	(0.002)	(0.006)	(0.011)	(0.012)	(0.007)
Observations	8075	8075	8075	8075	5507	5507	5507	5507
R-squared	0.3	0.3	0.3	0.17	0.5	0.31	0.38	0.32

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 1 for more detail). A minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.

2. Each column of each panel is a separate regression. Bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls. In all estimations, standard errors are clustered at the bank/MSA level. The coefficients measure the effect of the bank characteristic in the post-1989 period (i.e. the effect of *CRA89*bank characteristic*).

3. Minority tracts are tracts with a 50% or greater minority population. A tract is considered to have a majority minority race if that race is 50% or greater of the minority population. Upper income tracts are tracts with median family income (MFI) at 120% or more of MSA MFI, middle income tracts have 80-120%, moderate income tracts have 50-80%,and low income tracts have less than 50% of MSA MFI. Low-to-moderate (LMI) tracts are those with MFI at 0-80% of MSA MFI.

4. In panel 2, observations were dropped if there were no lendings at all to minority tracts.

Table 4a: Logged LEVELS of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level, loan dollars adjusted by tract median family income)
for MINORITY TRACTS ONLY

a. MINORITY Tracts Grouped by MAJORITY MINORITY RACE								
Independent	**1. Within Tract Group**				**2. Relative to Non-Minority Tracts**			
Variables *CRA89**	**Asian Tracts**	**Black Tracts**	**Hispanic Tracts**	**Mixed Tracts**	**Asian vs Non-Min**	**Black vs Non-Min**	**Hisp vs Non-Min**	**Mixed vs Non-Min**
large	0.117	0.474	0.224	0.296	0.03	0.374	0.147	0.261
	(0.112)	(0.114)***	(0.090)**	(0.099)***	(0.106)	(0.116)***	(0.106)	(0.073)***
very large	0.516	0.999	0.739	0.472	0.283	0.718	0.471	0.334
	(0.194)***	(0.222)***	(0.195)***	(0.173)***	(0.159)*	(0.168)***	(0.143)***	(0.102)***
below average	0.064	0.025	0.001	0.201	0.044	0.038	0.049	0.178
in minority tracts	(0.087)	(0.093)	(0.084)	(0.095)**	(0.101)	(0.112)	(0.096)	(0.076)**
branch presence	0.168	0.169	0.276	0.332	-0.128	-0.13	0.008	0.07
in minority tracts	(0.090)*	(0.094)*	(0.077)***	(0.093)***	(0.095)	(0.104)	(0.089)	(0.067)
Observations	8075	8075	8075	8075	16150	16150	16150	16150
R-squared	0.74	0.72	0.73	0.74	0.78	0.8	0.8	0.73

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 1 for more detail). A minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.
2. Each column of each panel is a separate regression. In all estimations, standard errors are clustered at the bank/MSA level.
3. For columns 1-4, bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls.
4. For column 5-8, tract group specific bank fixed effects, year effects, and MSA specific trends are included in each estimation. The market controls are allowed to differ for the two tract groups. The coefficients show the rate of increase in the CRA targeted tract group relative to its non-CRA targeted counterpart tracts. They correspond to the β_3's of equation [3].
5. Minority tracts are tracts with a 50% or greater minority population. A tract is considered to have a majority minority race if that race is 50% or greater of the minority population.

Table 4b: Logged LEVELS of Bank Loan Dollars to Tract Group
(at bank, MSA, and year level, loan dollars adjusted by tract median family income)
for MINORITY TRACTS ONLY

b. MINORITY Tracts Grouped by INCOME								
	1. Within Tract Group				2. Relative to Same Income Non-Minority Tracts			
Independent Variables *CRA89**	**Up Inc Minority Tracts**	**Mid Inc Minority Tracts**	**Mod Inc Minority Tracts**	**Low Inc Minority Tracts**	**Up Inc Min vs Up Inc Non-Min**	**Mid Inc Min vs Mid Inc Non-Min**	**Mod Inc Min vs Mod Inc Non-Min**	**Low Inc Min vs Low Inc Non-Min**
large	0.194	0.272	0.326	0.281	0.017	0.291	0.283	0.291
	(0.113)*	(0.102)***	(0.099)***	(0.100)***	(0.125)	(0.084)***	(0.083)***	(0.109)***
very large	0.372	0.6	0.653	0.804	0.083	0.392	0.445	1.062
	(0.286)	(0.175)***	(0.174)***	(0.208)***	(0.264)	(0.134)***	(0.137)***	(0.233)***
below average in minority tracts	-0.1	0.184	0.297	0.081	-0.1	0.089	0.056	0.043
	(0.091)	(0.098)*	(0.089)***	(0.075)	(0.113)	(0.091)	(0.086)	(0.091)
branch presence in minority tracts	0.134	0.315	0.357	0.23	-0.21	0.058	0.102	0.213
	(0.100)	(0.094)***	(0.088)***	(0.081)***	(0.111)*	(0.083)	(0.073)	(0.086)**
Observations	8075	8075	8075	8075	16150	16150	16150	16150
R-squared	0.65	0.72	0.73	0.68	0.75	0.72	0.68	0.64

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

1. *CRA89* is a dummy equal to 1 if year is greater than 1989. Bank characteristics "*large*," "*very large*,"and "*below average*" are pre-period categorizations determined using within MSA yearly averages taken over 1985-1989 (refer to the Notes of Appendix Table 2 for more detail). A minority tract branch "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987.
2. Each column of each panel is a separate regression. In all estimations, standard errors are clustered at the bank/MSA level.
3. For columns 1-4, bank fixed effects, year effects, and MSA specific trends are included in each estimation. The U.S. yearly average 30-year fixed rate mortgage interest rate and the yearly deviation of California home sales from trend are also included as market controls.
4. For column 5-8, tract group specific bank fixed effects, year effects, and MSA specific trends are included in each estimation. The market controls are allowed to differ for the two tract groups. The coefficients show the rate of increase in the CRA targeted tract group relative to its non-CRA targeted counterpart tracts. They correspond to the $ß_3$'s of equation [3].
5. Minority tracts are tracts with a 50% or greater minority population. Upper income tracts are tracts with median family income (MFI) at 120% or more of MSA MFI, middle income tracts have 80-120%, moderate income tracts have 50-80%,and low income tracts have less than 50% of MSA MFI. Low-to-moderate (LMI) tracts are those with MFI at 0-80% of MSA MFI.

Appendix Table 1
Summary Statistics: Sample Bank Pre-Period Characteristics

Bank Characteristic	Small	Large	Very Large
Minority Branch Presence	0.44	0.50	0.60
	(0.50)	(0.50)	(0.50)
Low-to-Moderate Income Branch Presence	0.59	0.63	0.64
	(0.49)	(0.49)	(0.49)
Below Average in Lending to Min Tracts	0.67	0.65	0.48
	(0.44)	(0.48)	(0.51)
Below Average in Lending to LMI Tracts	0.74	0.66	0.48
	(0.47)	(0.48)	(0.51)
N (MSA/Bank Combinations)	480	114	25

Standard errors in parentheses.

Notes:
1. Pre-1989 within MSA bank size groupings were determined using yearly total bank conventional home purchase and refinance loans for each MSA in which the bank had a branch in 1987. For each year from 1985 to 1989, banks were categorized to be below the 75th percentile ("*small*"), 75-95th percentile ("*large*"), or 95-99th percentile ("*very large*"). These yearly catergorizations were then averaged over the years 1985 to 1989 to determine a bank's "pre-period" size group.
2. Low-to-moderate income (LMI) or minority tract "*presence*" in the pre-period is assumed if at least one branch existed in those tracts in 1987. I define minority tracts to be those with a minority population greater than or equal to 50% of the tract's total population. Using Department of Housing and Urban Development definitions, LMI tracts are those with median family income at 80% or less of MSA median family income.
3. To determine if a bank was below average in its lending to minority tracts in the pre-period, for each of the bank size groups (established in Note 1) in each MSA, the average share of bank lending to minority tracts was first determined for each year from 1985-1989. Yearly within MSA and within size group "below average" dummies were then created for each bank with a branch presence in the MSA. Next, these dummies were averaged over 1985-1989. Finally, banks with an average dummy of .5 or greater were then considered to be "*below average*" in lending to minority tracts. A similar process was used to determine whether banks were below average in their lending to LMI tracts in the pre-period.

Appendix Table 2

1990 California Census Tract Mean Characteristics

a. Tracts Grouped by Minority Percentage							
Tract Characteristic	**All**	**Non-Min**	**Minority**	**Asian**	**Black**	**Hispanic**	**Mixed**
Upper Income	0.27	0.39	0.06	0.23	0.09	0.01	0.03
Middle Income	0.41	0.48	0.31	0.43	0.20	0.25	0.32
Moderate Income	0.22	0.12	0.46	0.24	0.42	0.61	0.48
Low Income	0.11	0.02	0.18	0.10	0.29	0.13	0.17
Owner-Occ Hs Units	986	1,168	731	983	634	628	723
Median Housing Value	198,690	230,766	157,152	227,512	132,964	151,586	150,411
Median Family Income	40,900	48,423	30,425	42,400	28,718	27,946	28,897
Tract MFI to MSA MFI	0.99	1.17	0.74	0.96	0.69	0.68	0.73
Total Population	5,080	5,106	5,679	5,592	4,396	5,810	6,005
Total Tracts	5,858	3,805	1,819	222	290	174	1,133
Share of Total Tracts	1.00	0.65	0.31	0.04	0.05	0.03	0.19

b. Tracts Grouped by Income							
Tract Characteristic	**All**	**LMI**	**Non-LMI**	**Low**	**Moderate**	**Middle**	**Upper**
Non-Minority	0.65	0.35	0.83	0.49	0.35	0.76	0.93
Minority	0.31	0.61	0.17	0.51	0.65	0.24	0.07
Asian	0.04	0.04	0.04	0.04	0.04	0.04	0.03
Black	0.05	0.11	0.02	0.14	0.09	0.02	0.02
Hispanic	0.03	0.07	0.01	0.04	0.08	0.02	0.00
Mixed	0.19	0.39	0.10	0.30	0.43	0.15	0.02
Owner-Occ Hs Units	986	500	1219	147	673	1137	1342
Median Housing Value	198,690	119,124	236,825	63,166	146,466	191,324	305,945
Median Family Income	40,900	21,425	50,234	9,362	27,320	40,834	64,514
Tract MFI to MSA MFI	0.99	0.52	1.22	0.22	0.66	0.99	1.56
Total Population	5,080	4,636	5,293	2,723	5,571	5,471	5,023
Total Tracts	5,858	1,898	3,960	623	1,275	2,388	1,572
Share of Total Tracts	1.00	0.32	0.68	0.11	0.22	0.41	0.27

Notes:

1. In some cases, information was not available for a tract and thus total shares do not sum to 1.

Figure 1: Estimated Average Rate of Increase in Yearly Adjusted Loan Dollars Post-1989, by Tract Minority Percentage and Pre-period Bank Characteristic

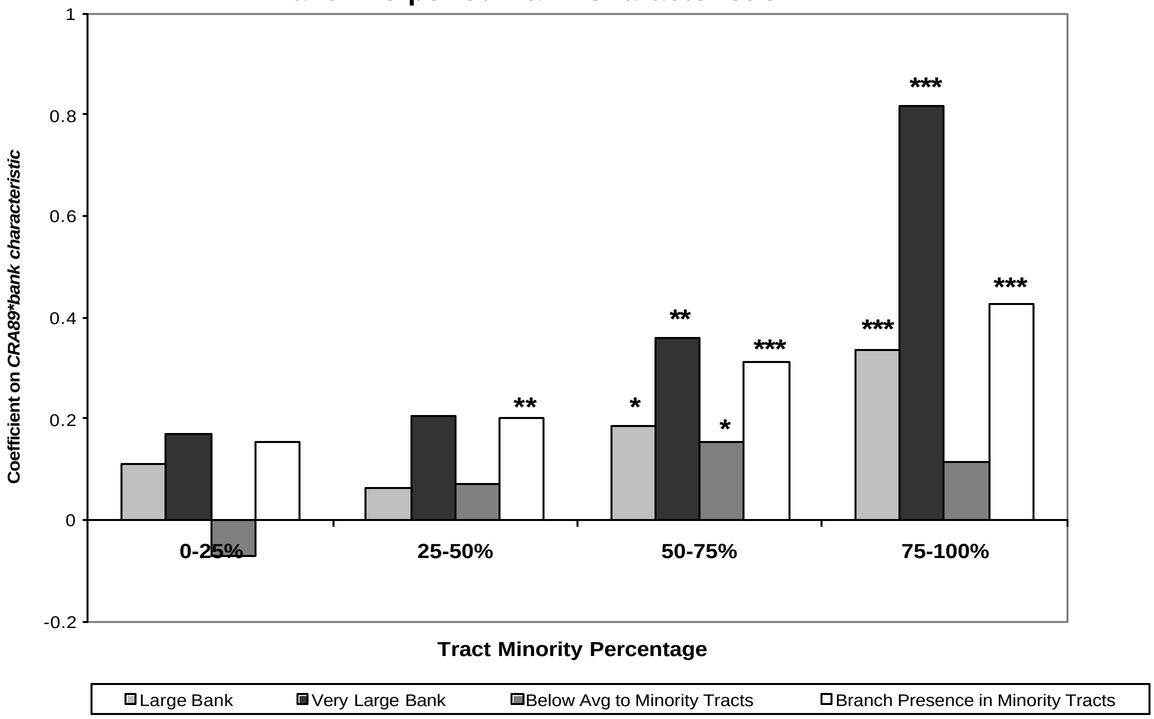


Figure 2: Estimated Average Rate of Increase in Yearly Adjusted Loan Dollars Post-1989, by Tract Income Group and Pre-period Bank Characteristic

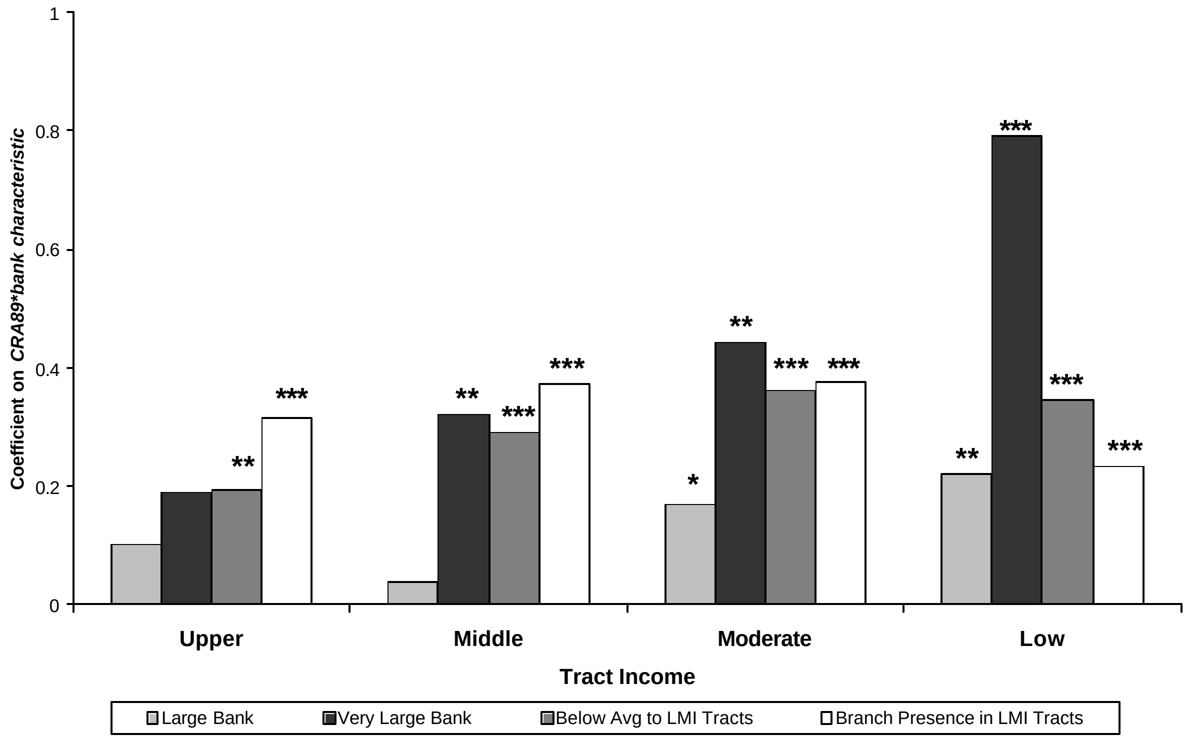


Figure 3: Estimated Average Rate of Increase in Yearly Adjusted Loan Dollars, Post-1989, to Minority Tracts by Majority Race Relative to Non-Minority Tracts, by Pre-period Bank Characteristic

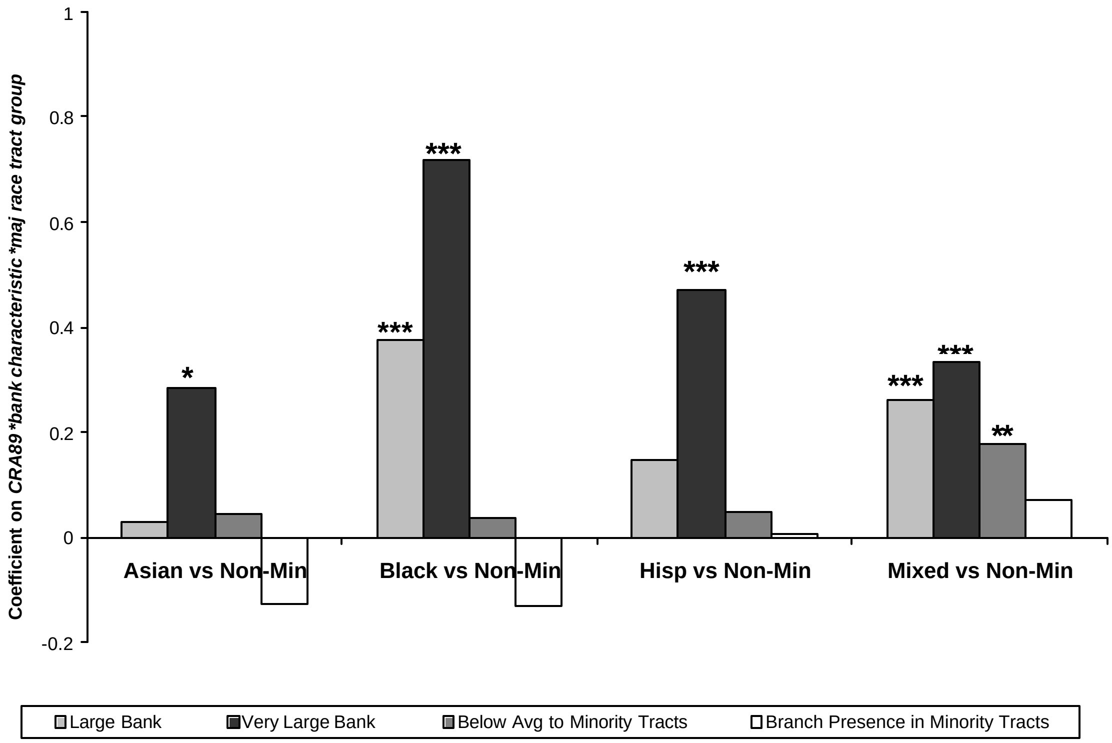
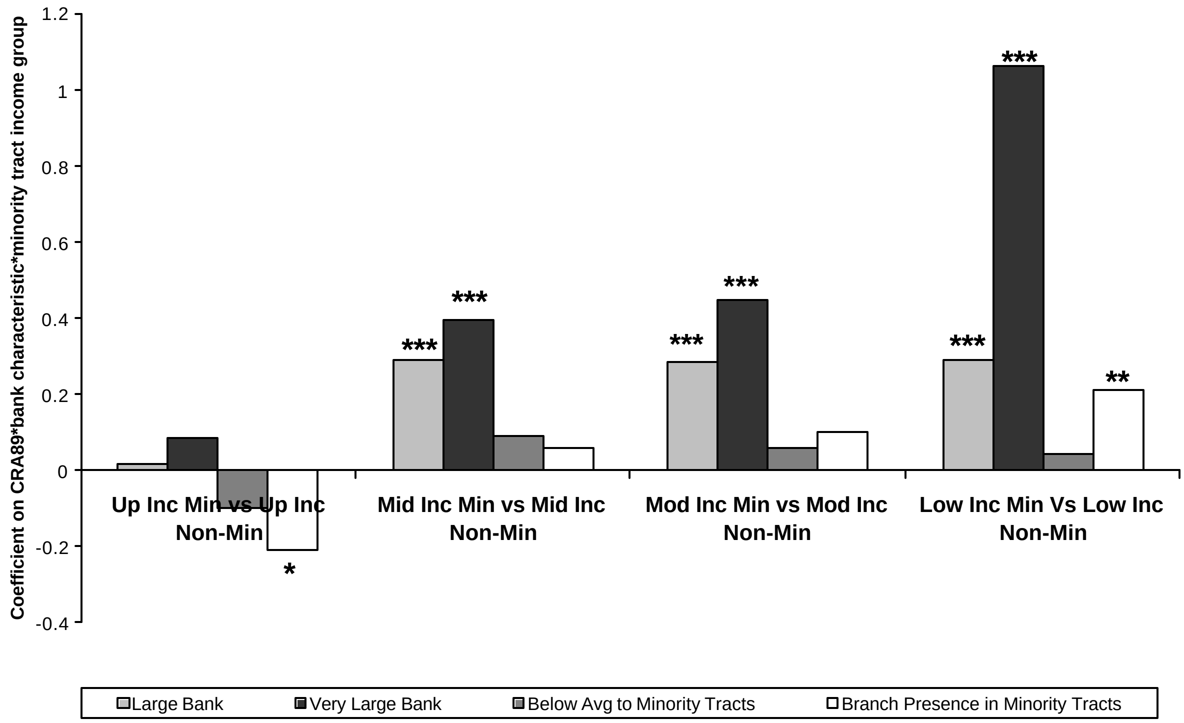
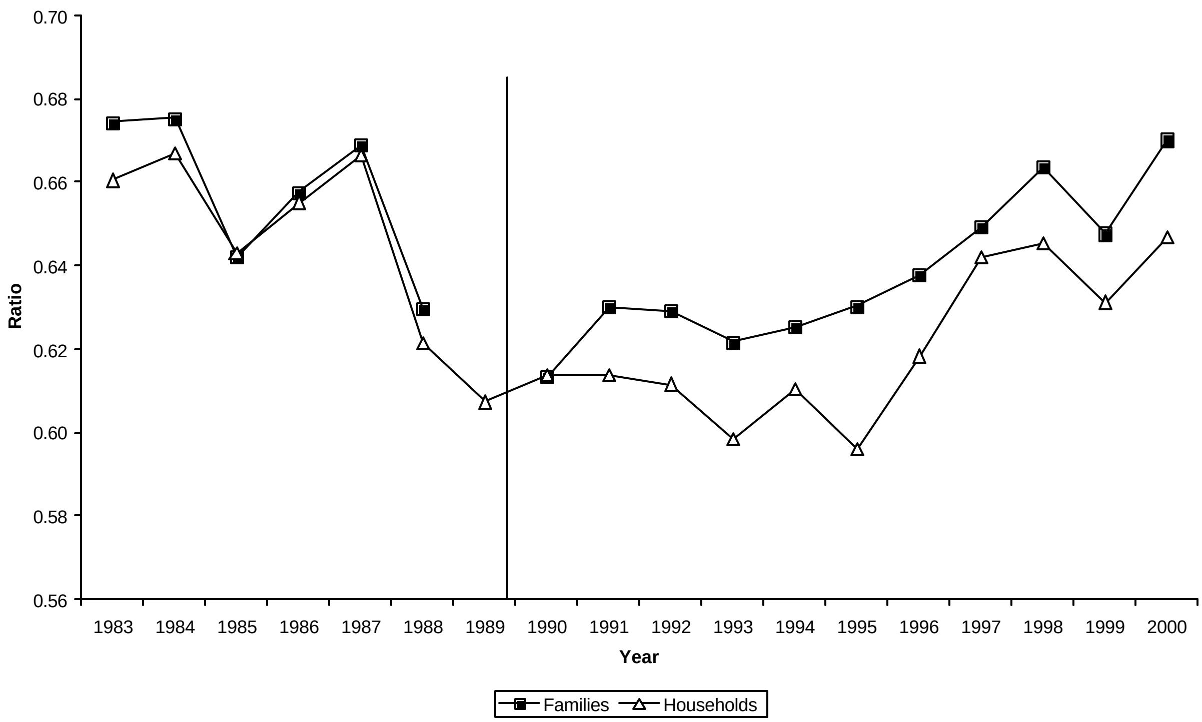


Figure 4: Estimated Average Rate of Increase in Yearly Adjusted Loan Dollars, Post-1989, to Minority Tracts by Income Relative to Same Income Non-Minority Tracts, by Pre-period Bank Characteristic

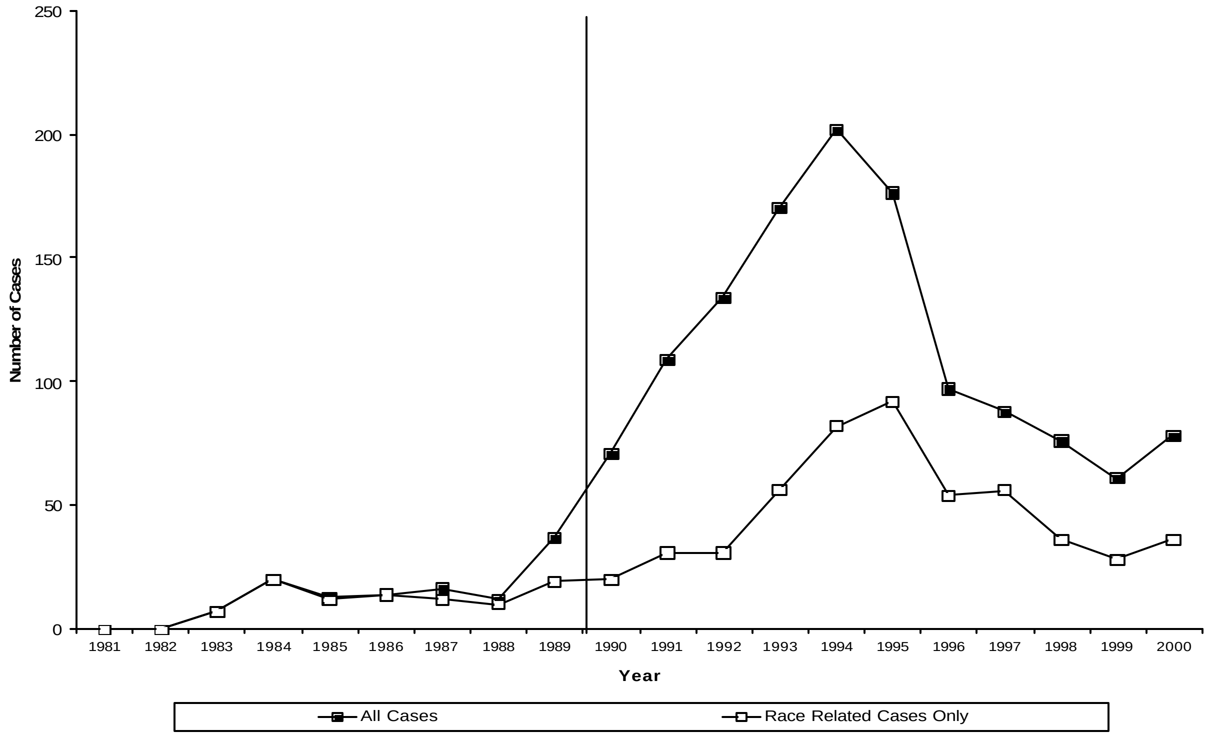


Appendix Figure 1
U.S. Black to White Homeowership Ratios

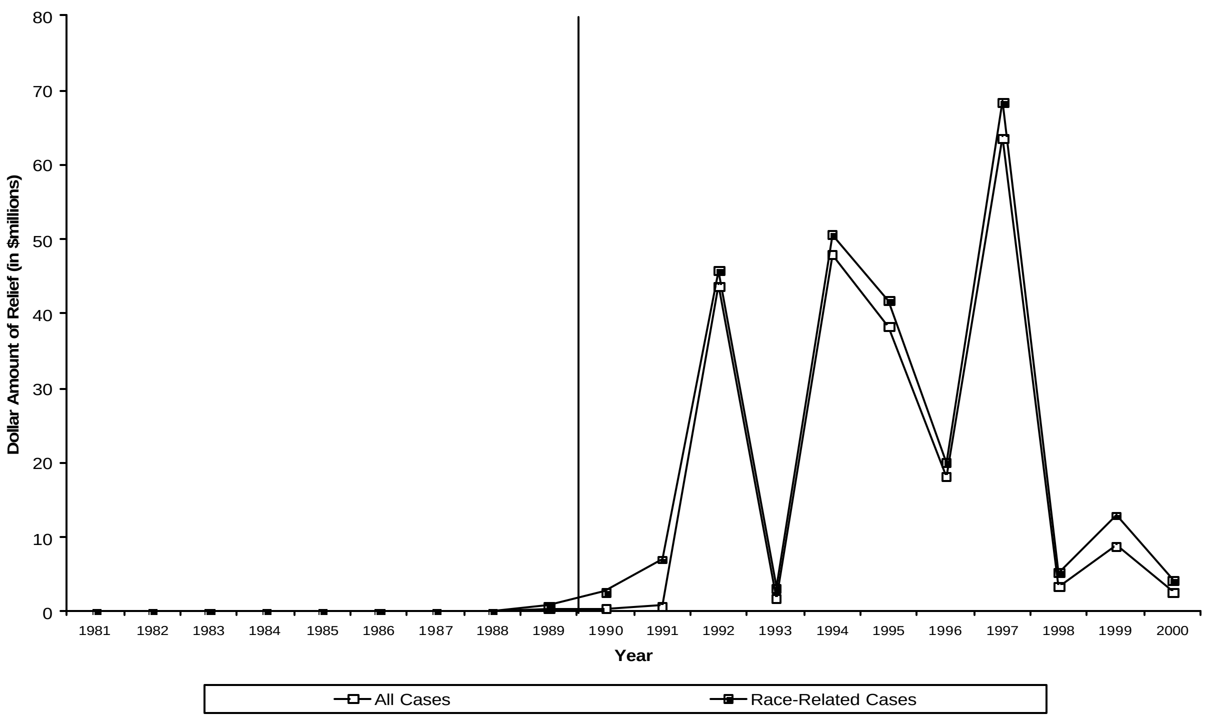


Notes:
1. Homeownership rates for families were calculated from figures provided in the yearly Current Population Reports, Series P-20, which are based on the March CPS. The report was combined for 1989 and 1990, and detailed tables for 1989 were not published. Thus, the number of families by race that owned their own homes is not available for 1989.
2. Homeownership rates for households were provided by the Economics and Statistics Division of the U.S. Census Bureau. They are also based on the March CPS.
3. The March CPS appears to overestimate homeownership rates for all groups compared to the figures provided under the decennial censuses.

Appendix Figure 2a
All Cases Filed under the Fair Housing Act

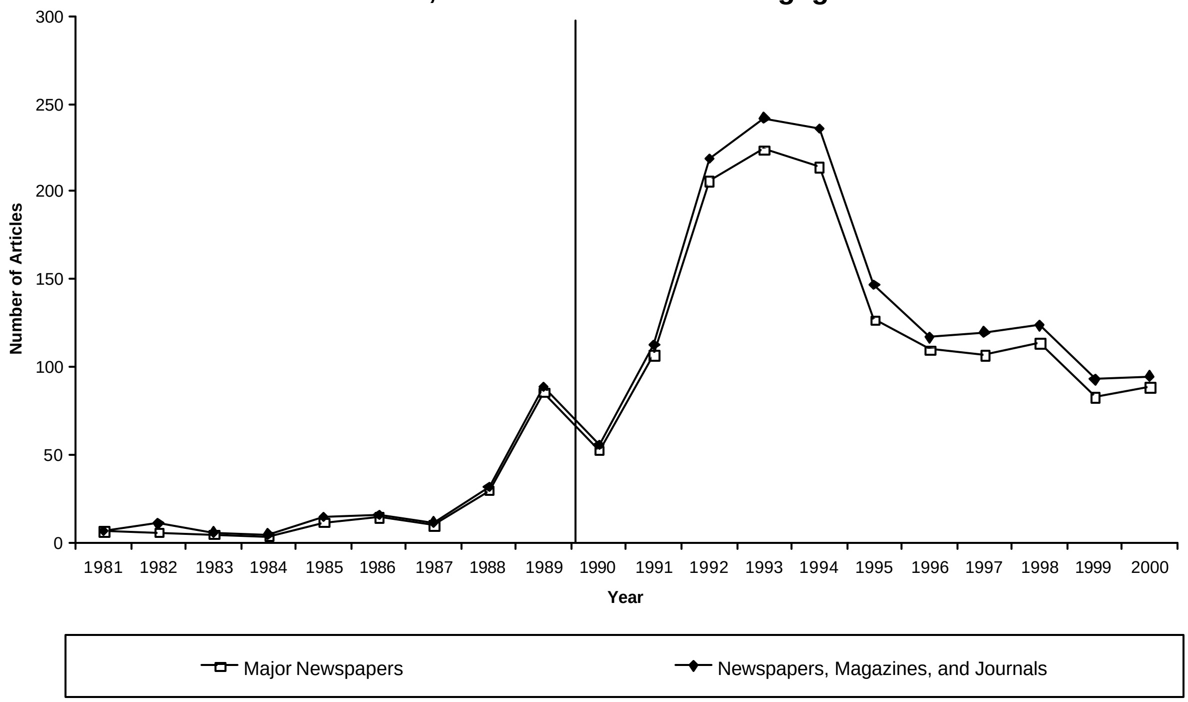


Appendix Figure 2b
Dollar Amount (in $millions) of Relief Ordered for Cases Filed under the Fair Housing Act



Note: Data were provided by the U.S. Department of Justice, Civil Rights Division, Housing and Civil Enforcement Section.

Appendix Figure 3
Number of Nexis-Lexis Articles on Race, Banks, Discrimination and Mortgages



Note: LEXIS-NEXIS news search for the word "race" in the headline and the words "banks," "discrimination," and "mortgages" within the text.

Appendix Figure 4
Percentile Cutoffs for Yearly CA Home Purchase and Refinance Loans, Averaged over 1985-1989 and Across MSA's