Residential Segregation and the Transformation of Home Mortgage Lending

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This article shows that, after decades of inequality, the 1990s saw sudden and dramatic increases in lending to low income and minority groups. Drawing in part on the work of Williams, Nesiba and McConnell (2005), we argue that government deregulation, industry restructuring and government-insured loans all fueled this growth by increasing the sources of loans to minorities. We further argue that this increased lending had small but perceptible effects on residential segregation. But, the transformation of the home mortgage industry also gave rise to new lenders who were quite unlike the old. We contend that the nature of lending was even more important than the amount: some lenders and types of lending had much more of an impact on residential segregation than did others. Specifically, loans from traditional lenders tended to decrease segregation. Conversely, loans from subprime and manufactured housing lenders that specialized in serving low income and minority markets either had no statistically significant effect on segregation or even increased it.

Introduction

Black-white residential segregation continues to be high in most metropolitan areas in the United States. Historically, segregated housing was legally supported by federal policies, lenders, realtors and private homeowners. Their practices included "redlining" neighborhoods, using racial covenants and simply denying loans based on the borrower's race.

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the 1990s. Drawing in part on the work of Williams, Nesiba and McConnell (2005), we argue that government deregulation, industry restructuring and government-insured loans all fueled this growth by increasing the sources of loans to minorities. We further argue that this increased lending had small, but perceptible, effects on residential segregation. But, the transformation of the home mortgage industry also gave rise to new lenders who were quite unlike the old. We contend that the nature of lending was even more important than the amount: some lenders and types of lending had much more of an impact on residential segregation than did others.

Using data garnered from the Home Mortgage Disclosure Act as well as 1990 and 2000 U.S. census data, this study asks, has racial segregation declined as a result of lowered lending barriers to minority homeowners? Has increased home mortgage lending to blacks had beneficial effects on segregation regardless of the type of home mortgage loan? Or, for example, is lending from traditional sources more influential than lending from sources that specialize in serving low income and minority markets[1]? How have loans specifically intended to increase homeownership among first-time homebuyers affected segregation changes[2]? In addressing these questions, we investigate and discuss the larger contextual effects of race and wealth on levels of spatial race-based segregation in housing across regions during the 1990s.

Lending & Segregation

This section explores the theoretical and historical relationships between home mortgage lending and residential segregation, ending with a discussion of the theoretical arguments for the impact of changes in home lending patterns on residential segregation. On the one hand, as barriers to homeownership went down, residential segregation might be expected to decline with them. At the same time, the nature of this new lending to minorities was often very different than the lending that preceded it. This new lending may have increased homeownership in minority areas but not reduced segregation.

The History of Lending & Segregation

The racial segregation of U.S. cities today is inextricably linked with the government and private sector policies of the past. The Federal Housing Administration has insured 34 million properties since its inception in 1934, but critics contend that it has often fostered racial inequality in homeownership along the way. In its 1938 Underwriting Manual to banks'

loan officers, the FHA explicitly contended that neighborhood stability depended on houses in an area not being "invaded" by "incompatible racial and social groups." The FHA ensured higher levels of racial segregation by color-coding maps to indicate areas' credit worthiness, "redlining" racially mixed – and thus less desirable – neighborhoods (Farley and Frey 1994).

Along with color-coding neighborhoods, the FHA further restricted blacks in their housing options by financially backing residential projects that had restrictive covenants associated with them that prevented nonwhites from purchasing homes in white neighborhoods. This excluded blacks from most suburban areas by preventing them from accessing federally insured mortgage markets. Between 1946 and 1959, "less than 2 percent of all the housing financed with the assistance of federal mortgage insurance was made available to blacks." (Judd 1991:742) Coupled with the fact that the FHA insured very little inner-city housing (Judd 1991), the overt discrimination found in the housing market meant many black families were left out of the post World War II home buying boom and prevented from moving from the city to the suburbs.

Most of the FHA tactics used to keep black and white residences separate were declared illegal or abandoned decades ago, but the policies that replaced them sometimes had serious problems of their own (Gotham 2002). The well-intentioned 1968 Housing Act produced spectacular failures. The law required the FHA to finally shoulder the risk of making loans in inner-city areas. But, the programs were plagued by corruption and mismanagement. In exchange for a kickback, dilapidated homes would receive inflated appraisals from unscrupulous appraisers. Banks would make risk-free loans to low-income families who would then find that they could not afford the maintenance on their substandard homes. The FHA would foreclose, the houses would sit empty for years, and the neighborhoods they were in subsequently deteriorated.

Differential treatment with non-FHA loans by private-sector lenders has also been well documented, with study after study showing that blacks have been far less likely to be approved for home mortgage loans than whites. Gotham (1998) examined Kansas City and found that minority applicants had a higher rejection rate than white applicants, with higher-income minorities being rejected at higher rates than lower-income whites. Meyers and Chan (1995) found that denial rates were 12 percentage points higher for black applicants than for white applicants even after controlling for borrower and loan characteristics as well as the borrower's predicted credit risk. In the famous Boston Fed study, Munnell and colleagues (1996) collected data on all the variables that lenders themselves identified as being important for their decisions. They found that black applicants in Boston were 60 percent more likely than white applicants with similar

background and creditworthiness to get rejected. After reviewing criticisms of the Boston Fed Study and doing their own re-analysis of the data, Ross and Yinger (1999:82) concluded that, "In our view, the Boston Fed Study builds a prima fascia case for discrimination, and no scholar has come close to showing that the observed intergroup differences in loan approval in Boston can be justified in business terms."

The impact of this inequality in lending has been well documented. For example, in a study of Baltimore, Shlay (1987) concluded that racial composition played a large and independent role in explaining disparities in residential mortgage distribution among neighborhoods. Dedman (1988) discovered that from 1981 through 1986, Atlanta financial institutions made five times as many home loans per 1,000 housing units in white neighborhoods as in black neighborhoods having a similar income level. Studies of several other cities have also shown large racial differences in home mortgage lending across neighborhoods (see Nesiba 1996, for a review). Based on such research, Massey and Denton (1993) conclude that despite the diverse array of characteristics that have been controlled in different studies, one result consistently emerges: black and racially mixed neighborhoods receive less credit, fewer federally insured loans, fewer home improvement loans and less total mortgage money than socioeconomically comparable white neighborhoods.

As Massey and Denton (1993) note, a major consequence of housing inequality has been racial segregation and the problems associated with it. Pervasive discrimination systematically channels money away from integrated areas, causing blacks to be the most spatially isolated population in U.S. history. Residential segregation, in turn, has also led to class segregation for blacks. This racial and class segregation builds "mutually reinforcing and self-feeding spirals of decline into black neighborhoods." (Massey and Denton 1993:2) Massey and Denton therefore conclude (p. viii) that "racial residential segregation is the principal structural feature of American society responsible for the perpetuation of urban poverty and represents a primary cause of racial inequality in the United States."

The Transformation of Home Mortgage Lending

Inequalities in home mortgage lending developed and have persisted over several decades. However, in the 1990s, there were sudden and dramatic changes. During the decade, the gap in lending rates between white and traditionally underserved families decreased substantially. There were 640,000 minority homebuyers in 1991 compared to 1.3 million in 1999 (U.S. HUD 2001). Although minorities account for only 24 percent of the nation's total population, they made up 40 percent of new homeowners

between 1994 and 1999 (U.S. HUD 2000b). While whites only experienced an increase of 33.1 percent of home purchase loans between 1993 and 1999, blacks' proportion of total mortgage lending rose by 118.9 percent (Federal Financial Institutions Examination Council 2000). As a result, the year 2000 saw record high homeownership rates for central cities (51.9 percent) and blacks (47.3 percent) (HUD 2000b).

Why did these changes occur? One key factor may have been an increase in government-insured lending by the Federal Housing Administration. The FHA has historically been a source of funding for first-time homebuyers, and its role with minority homebuyers increased during the 1990s. In 1997-1999, the FHA financed 27 percent of the homes purchased by African-American and minority families, compared to only 20 percent in 1991-1993 (HUD 2001).

Williams et al. (2005:184) suggest that another critical factor may have been changes in the banking industry:

> "[As James Campen (1998) notes] prior to 1975, the finance industry was highly compartmentalized, with different types of institutions providing specific services and only limited competition with each other. Thrift institutions provided three-fifths of all home mortgage loans. By the 1990s, however, lending institutions were far less specialized, and thrifts were only the third largest provider of home mortgages, behind mortgage companies and commercial banks. These changes largely resulted from banking deregulation, which in turn increased the range of products and services that banks and other financial institutions could offer, eliminated interest rate ceilings, and greatly expanded the geographical areas in which individual companies could operate. As a result, the banking industry became far more competitive."

As Williams et al. (2005) further note, this competition did not simply consist of more lenders; rather, there were new types of lenders, including lenders who specialized in making subprime and manufactured housing loans to low income and minority markets. Subprime lending has historically referred to loans where a borrower has a blemished (or non-existent) credit record and a lender makes a higher fee, higher interest rate loan to compensate for the greater risk of delinquency and higher costs of loan servicing and collection. Manufactured homes, also often called mobile homes, are built in factories, transported to a location on

its own wheels, and installed semi-permanently to the location with steel straps (Bradley 1997; Consumer Reports 1998). The low cost of these homes makes them attractive to lower-income borrowers. In 2000, the average cost (not including land) of a manufactured home was $46,400. The average cost of site-built homes in 2000 (again excluding land) was $159,524 (Manufactured Housing Institute 2004).

Both of these types of lending grew substantially during the 1990s. The United States Department of Housing and Urban Development (U.S. HUD 2000c) estimates that home mortgage subprime lending went from $20 billion in 1993 to $150 billion in 1998. Similarly, manufactured housing enjoyed a rebirth in the 1990s, accounting for nearly a quarter of all new single-family housing starts during the decade (Manufactured Housing Institute 2004). Low income and minority homeownership was especially affected by subprime and manufactured housing lending. Williams et al. (2005) estimate that these specialized lenders accounted for as much as half of the increase in home purchase loans made to underserved markets between 1993 and 2000.

Why did specialized lending flourish during the 1990s? Williams et al. (2005) argue that banking deregulation and a lack of consumer protection played critical roles. Their paper develops their argument in depth, but the most relevant highlights are summarized here. In the Boston Fed Study (Munnell et al. 1996:27), the researchers stated, "It is assumed that both the mortgage rate and the rate at which lenders borrow are set by competition in the industry. Since the choice variable for the lender is not the interest rate but whether to grant the mortgage at all, mortgage applications are accepted or rejected at the mortgage market rate." While that assumption may have been true in the early 1990s when the authors collected their data, it is certainly not true today. Rather than be rejected, as they have been in the past, many borrowers now can get a loan, if they are willing to go to lenders who offer higher interest rates and/or buy cheaper forms of housing.

Williams et al. (2005) further note that banking deregulation caused many traditional lenders to abandon inner-city neighborhoods, and higher-priced subprime lenders moved in to take their place. Also, a lack of effective regulation made it possible for some lenders to expand their business by engaging in predatory and abusive practices. These include negative amortization, where payments are structured so they do not even cover interest; prepayment penalties that keep borrowers from refinancing at lower rates; excessive fees; loan flipping, where creditors pressure borrowers to repeatedly refinance their loans and pay additional points (often because they cannot afford the payments on their previous loans); and asset-based lending, where the loan is based not on the ability

to repay but on the equity in one's home[3]. Based on such developments, Williams et al. (2005:201) conclude that:

> "In short, the apparent progress of the past decade is not all that it seems. The old inequality, which denied many access to homeownership, has slowly diminished. The result has been record growth in the rates of homeownership for minorities and other members of underserved markets. But for many of these homeowners, a new inequality has replaced the old. This new inequality is characterized by less desirable loan terms, exposure to predatory practices, and a lack of consumer protection. While we might reasonably argue that the new inequality is better than the old, we must not lose sight of the fact that it is inequality nonetheless: recent gains in homeownership for underserved markets have come at a price."

Lending and Segregation Today: An Unclear Picture

Given that racial inequality in lending has led to residential segregation in the past, it seems reasonable to speculate that increased lending to minorities is now decreasing segregation. Theoretically, greater access to credit increases the variety of neighborhood choices available to the borrower. Further, the new lenders that appeared during the 1990s may not have had the same racial biases that the old lenders did. Hence, for blacks, new lenders and increased lending may have opened housing markets and neighborhoods previously denied to them. Thus, the first hypothesis states that *where lending has increased to blacks, integration has also increased.*

There are, however, several reasons for believing that segregation could be resistant to increases in credit access. In particular, the nature of the lending that minorities received may not have facilitated integration. The following discussion focuses on two areas: government-insured lending and specialized lending.

Government Insured Lending

Home mortgage loans fall under two general categories: government-insured and conventional. Seventy-five percent of all homes are bought using conventional loans. The government insures some loans so that lenders of these loans do not incur debt if foreclosure occurs. This arrangement is meant to encourage lenders to help first-time and

especially lower-income homebuyers purchase a home. Home seekers with less money upfront are often offered FHA loans, because they require lower down payments and allow higher housing expense-to-income ratios than do conventional loans. One outcome of this form of lending is that, in attempting to service populations with historically lower levels of homeownership, FHA lending is highest in minority and low-income neighborhoods.

Although FHA lending is concentrated among minorities, and became even more so during the 1990s, there are at least two reasons for believing that FHA loans may not have as much impact on residential segregation as do conventional loans. First, FHA lending is disproportionately concentrated in minority neighborhoods, even after controlling for factors such as income. Specifically, the rate of FHA loans is almost twice as high in high income minority neighborhoods as in low income white neighborhoods, suggesting a stronger relationship between FHA lending and the neighborhood's racial composition than the neighborhood's income composition (Bradford 1998). Neither the level of minority populations' less solid credit histories nor the income gap between black and white households fully explain the discrepancies between the levels of FHA loans received by black and white borrowers (Bradford 1998). Even during the initial contact between home seeker and real estate agent, minority applicants are advised more often than white applicants to use lenders who produce a high number of FHA loans (Bradford 1998). Therefore, income and other loan qualifications do not fully explain the disproportionate levels of FHA lending in predominantly minority or racially changing neighborhoods compared to predominantly white neighborhoods.

Critics also contend that the FHA provides lower quality loans compared to conventional loans. The government's 100 percent insurance against loss lowers FHA lenders' risk, decreasing the incentive to write sound underwriting guidelines to help prevent defaulting on the loan (Wyly and Holloway 1999). Typically, the mortgage industry blames poor underwriting – and not borrower risk – if an area experiences distinct patterns of default during the loans' first year of performance. Testifying before the Subcommittee on Housing and Community Opportunity of the House Banking and Financial Services, Bradford (1998) noted disparities in FHA foreclosure rates across Chicago neighborhoods and concluded that there must be an "extreme concentration of poor quality underwriting only in minority areas."

If FHA loans consistently produce higher default rates than conventional loans and are disproportionately concentrated in minority communities, increasing black homeownership through these loans may not help

decrease segregation levels. Therefore, the second hypothesis states that *increases in traditional conventional loans are more effective than increases in FHA loans in reducing levels of segregation.*

Specialized Lending

There are also reasons for believing that loans by specialized lenders will have a limited impact on residential segregation. As Matthew Lee (1999) of the Inner City Press notes, subprime marketing is disproportionately concentrated in minority census tracts. Further, Williams et al. (2005) found that at every income level, residents of minority neighborhoods were far more likely than others to receive their loans from a subprime lender. Because subprime lenders are highly active in minority neighborhoods, the impact of their increased lending to blacks might be the maintenance, rather than the reduction, of neighborhood segregation by race.

Manufactured housing lending may also have a limited impact on residential segregation. A manufactured home's residential location is largely predetermined by land-use restrictions. Many municipalities discriminate against manufactured housing communities through restrictive zoning. These land-use policies limit individuals' and developers' abilities to place manufactured homes in more urban and suburban areas. Manufactured homes also get disproportionately placed in rural areas, because, in part, rural areas offer cheaper land on which to place manufactured homes. Increases in manufactured housing lending, then, may not help integrate neighborhoods.

In addition to subprime lenders' targeting certain geographic areas and manufactured homes' own geographic restrictions, the higher interest rates and fees provided by specialized lenders increase the cost of buying a home. Saddled with these less favorable terms, blacks may find it more difficult than whites to purchase homes in costlier neighborhoods.

The higher foreclosure rates associated with subprime loans may further affect their impact on residential segregation. Speaking in 2000 before the House Committee on Banking and Financial Services, William Apgar noted that there had been a recent doubling of foreclosure rates, with subprime lenders accounting for a large share of the increase. Apgar warned that "these foreclosures not only ruin the financial future of individual families, they threaten to destabilize entire communities." Deteriorating neighborhoods lead to lower property values, making integration even more difficult to achieve. Neighborhoods with high proportions of defaulted loans discourage white home seekers whose real estate brokers show them other neighborhoods.

So, although increases in subprime lending and mortgages for manufactured housing have had a positive impact on blacks' home-

ownership rates, the disproportionate concentration of subprime loans in minority neighborhoods and the restricted placement of manufactured housing suggests that the source of lending will affect the impact of that lending on integrating neighborhoods. The less favorable terms, greater costs and higher foreclosure rates associated with these loans may also limit their ability to reduce segregation. If so, increases in loans from traditional lenders will have a more significant impact on changing segregation levels than loans from specialized lenders. Thus, the third hypothesis is that *increases in lending from traditional (i.e., regular) lenders is more effective than increases in lending from specialized (i.e., subprime or manufactured housing) lenders in reducing levels of segregation in neighborhoods.*

In summary, increased lending to minorities may lead to decreases in residential segregation. But, there are good reasons for believing that not all types of lending will be equally effective. Increases in FHA and specialized lending to minorities that is disproportionately concentrated in minority neighborhoods may serve to maintain residential segregation rather than alleviate it. Further, loans with less favorable terms and higher foreclosure rates may also have less impact, or even a negative impact, in integrating neighborhoods.

Methods and Data

This study examines how characteristics of MSAs, and of the home mortgage lending that occurred within them, affected the changes in racial residential segregation that occurred between 1990 and 2000. To test the hypotheses, this study uses an ecological model similar to that used by Farley and Frey (1994). Farley and Frey evaluated the effects of a metropolitan area's historical, social, and economic characteristics on changes in racial residential during the 1980s. This study extends their work by also assessing the impact of different types of home mortgage lending. The data primarily come from two sources: 1992 through 1999 Home Mortgage Disclosure Act data and 1990 and 2000 census data.

HMDA Loan Records and Census Data

Starting in 1990, the Home Mortgage Disclosure Act required most lenders in metropolitan areas to provide information on every home mortgage application they received[4]. HMDA loan application registers provide a rich source of data on the type of loan (i.e., conventional or government-insured), the dollar amount of the loan, the final disposition of the application (e.g., approved, rejected), and the race of the applicant(s).

The HMDA data also includes key information on census tracts, which is linked with the corresponding 1990 and 2000 census data. The data do not explicitly identify loans as being subprime or manufactured housing. However, HUD (2000a) has compiled lists of lenders who specialize in such loans making such classification possible.

The U.S. Bureau of the Census conducts a census of the population through interviews and/or questionnaires of every household in the United States. The Census 1990 Summary Tape Files and 2000 Summary Files include neighborhood demographic measures needed to assess the effects on segregation changes of population characteristics and changes of the 331 U.S. MSAs and PMSAs.[5] The census data provide MSA measures for many neighborhood and borrower characteristics (e.g., population sizes, region, year housing built, and black and white households' incomes). This study also makes use of the Lewis Mumford Center's measures for MSAs' dissimilarity scores between black and white household as well as counts for the total population and the white, black, Asian and Hispanic subpopulations (www.albany.edu/mumford/census/).

Sample Selection

The sample is restricted in various ways. This study analyzes originated home purchase loans for owner-occupied housing in U.S. MSAs with valid tract coding for both 1990 and 2000. HMDA data does not adequately cover non-MSAs, and census data on MSAs are more openly available than non-MSA data. The data sets' compatibility allows us to merge them into a data file with complete records for the times and areas studied. The 2000 U.S. Census definitions identify MSA boundaries, which were then reconfigured into 1990 metropolitan boundaries to match those of 2000. Analysis was conducted on only those MSAs that existed in both 1990 and 2000. As only originated loans actually lead to homebuying, the sample excludes loan applications that were denied, withdrawn or closed because of incompleteness[6].

Like Farley and Frey (1994), we also restrict the sample to those MSAs with substantial black populations, where substantial is defined as having either 20,000 or more black residents or having blacks make up at least 3 percent of the MSA's population in 2000. It is difficult to examine segregation in areas which have few blacks. Further, MSAs with large black populations have historically experienced more persistent segregation levels (Farley and Frey 1994), so limiting the sample in this way strengthens the findings on reasons for segregation declines. After restricting the data according to these criteria, the sample includes 237 of the original 331 U.S. MSAs[7].

Variables

A complete description of all variables appears in Appendix A. Below is an explanation of the dependent variable and the lending and non-lending variables that are included in the analysis[8].

Dependent Variable

The dependent variable is the changes in the index of dissimilarity between 1990 and 2000. The index of dissimilarity assesses how evenly two populations are distributed between the geographic components of a larger area (i.e., between census tracts of an MSA). We subtracted the 1990 degree of dissimilarity between black and white households from 2000's[9]. Therefore, a positive value for the dependent variable indicates an increase in an MSA's segregation level, while a negative value suggests integration is taking place.

The independent variables include both lending and non-lending measures.

Non-lending MSA Measures

Testing classical economic theories, we create a variable to assess the proportionate increase in blacks' average household incomes as a percent of whites' over the decade. An MSA's regional location provides the context within which other MSA traits can impact segregation. The relative increase in the amount of housing available varies across MSAs, allowing some areas of the United States greater capacity for altering the race-based urban landscape. The amount of recently available housing stock is operationalized as housing units built during the past decade as a percentage of the entire available housing in that MSA in 1990.

The size and growth rates of an MSA's population and subpopulations are also potential indicators of changes in race-based residential segregation. Per Farley and Frey's study (1994), we logarithmically transformed the total population living in the MSA at the beginning of the decade (1990, in this case) to measure its size. Two variables were constructed to control for the effect of relative growth rates of racial groups. The first growth rate indicator controls for the difference between the average annual growth rates of MSAs' black and white populations. The measure for the difference in black-white growth rates indicates positive growth if the black population grew at a faster rate than the white population and negative growth in the reverse. The second growth rate indicator controls for the difference between the average annual growth rate of MSAs' black and other racial minorities populations. This measure indicates a positive

change if the combined populations of other racial groups grew at a faster annual rate than blacks over the 10-year period.

As an indicator of neighborhood preferences, and again following Farley and Frey's earlier work (1994), this study controls for the effect of white-black exposure on segregation changes. The exposure index measures the degree of *potential* not actual interaction between members of two groups, but implications about the latter are often made from the findings (Massey and Denton 1988). If an MSA's white residents prefer more integrated neighborhoods, higher levels of whites' exposure to black neighbors at the beginning of the decade would bring about larger decreases in segregation levels by decade's end. Conversely, if whites feel uncomfortable around minorities, greater exposure to blacks could lead them to seek out more segregated communities.

Lending Measures

This study operationalizes the effects of types of lending in three different ways. First, it looks at overall lending without regards to race. This identifies what effects types of lending in general had on racial segregation, but it does not make clear how racial changes and differences in lending affected segregation. Therefore, the second operationalization reveals how the absolute percentage changes in types of mortgage loans received by blacks affected racial segregation. This shows how segregation changed as the sources of loans to blacks changed. The third lending variable measures the relative growth of different types of lending to blacks compared to the growth in white lending. This shows how relative racial changes in the sources of loans affected segregation. Further, because the hypotheses suggest that the source and form of the loan may affect lending increase's impact on changing segregation levels, each set of lending variables is organized by type of loan and lender. Loans are broken into government-insured (FHA) and uninsured (conventional). As there is also interest in studying how the rise in specialized lenders (compared to traditional lenders) affects segregation levels, after categorizing loans as FHA and conventional, loans are disaggregated into conventional loans by lender type (i.e., subprime, manufactured housing and traditional lenders).

More specifically, the first set of variables deals with lending without regards to race. For each category of loan and lender type, the number of loans made from 1992 through 1999 is divided by the total number of all loans. For example,

percentage of all homebuyers' loans that were conventional during this period= (# conventional loans in 1992+1993+…1999) / (# all loans in 1992+1993+…1999).

These operations were performed on each form of lending and then transformed into percentages. The resulting lending indicators measure the effect on variation in changes in segregation based on the type of loans received by an MSA's population of homebuyers.

The second set of lending constructs measures the absolute percent changes in mortgage loans received by black homebuyers 1992-1994 and 1997-1999. To test for increases in black lending between the beginning and end of the decade the percent of all lending received by black homebuyers was calculated from 1992 through 1994 and from 1997 through 1999. The percent change in all loans made to black homebuyers was computed by first subtracting the percent of all loans received by blacks from 1992 through 1994 from the percent made from 1997 through 1999. Dividing this figure by the percent of loans made in the beginning period (1992-1994) and multiplying it by 100 transformed the result into a measurement of percent change. For example,

percent change in lending to black homebuyers = [(# of loans to blacks during 1997, 1998, and 1999 - # of loans to blacks during 1992, 1993, 1994) / # of loans to blacks during 1992, 1993, 1994] *100 .

Operations are conducted for each type of lending, so as to measure the effect on segregation of increases in black homeownership due to FHA and conventional loans and from subprime, manufactured housing and traditional lenders.

The third set of lending indicators measure relative growth of lending to blacks compared to growth in white lending between the same time periods. In addition to absolute increases in black lending, shrinking the lending gap between black and white homebuyers may increase neighborhood options and thus the potential for racial integration. To test this, variables were created to assess changes in the percent of lending growth to black vs. white homebuyers between the beginning and end of the decade. Similar to standard variable construction for measuring changes in the general socioeconomic status of blacks relative to whites, ratios of black-to-white lending amounts for the first (1992-1994) and second (1997-1999) time periods were constructed and then, for each MSA, the first ratio was substracted from the second. The following formula illustrates how relative lending to blacks compared to whites was computed for all lending and by type of lending:

relative lending to blacks compared to whites for all lending and by type of lending = [(loans to blacks during 1997, 1998, 1999 / loans to whites during 1997, 1998, 1999) - (loans to blacks during 1992, 1993, 1994 / loans to whites during 1992, 1993, 1994)].

This provides an indicator for assessing how increased lending to black families, over time moving closer and closer to parity with white families, can help bring about the free market envisioned by many classical economic theorists.

Methods

In order to understand how lending affected residential segregation, one also needs to consider how other characteristics of MSAs affected segregation; that is, consider the "metropolitan context" when framing the research (Massey and Denton 1987, 1988; Taueber and Taueber 1965). The models therefore include such variables as region, changes in the black-white income gap across time, growth rate differences between blacks and whites and between other minorities and blacks, recent housing construction, total population size and whites' exposure to black neighbors, on change in degrees of dissimilarity from 1990 through 2000. After these ecological characteristics are controlled for, the analysis looks at how characteristics of the lending within MSAs affected their residential segregation.

The analytic strategy is as follows. First, descriptive statistics on home mortgage lending during the 1990s are presented. These statistics show that there were strong racial differences in the types of loans received, and that specialized lending grew in importance as the decade wore on. Second, baseline models include all the nonlending measures (e.g., region, black-white population growth.) Table 3 then adds lending measures to the models, while still controlling for the non-lending measures. Finally, to assess the relative importance of different variables, Table 4 provides a concise presentation of the standardized coefficients for the most critical variables identified by earlier analyses.

Results

Descriptive Statistics on Home Mortgage Lending During the 1990s

Table 1 describes, by race, the types of lenders borrowers dealt with and the kinds of loans they received. These figures are consistent with other national statistics. Most loans in the sample are conventional (74%), followed by FHA (19%), VA and FmHa (6 %), The government does not insure the majority of home mortgage loans for any of the groups studied, but there are significant differences by race. While half of all loans to black homeowners are conventional (49%), conventional loans make up a far greater proportion of all loans received by whites (78%). FHA loans make up 39 percent of blacks' loans and only 16 percent of whites' loans.

Table 1: Home Mortgage Lenders and Loans by Race

	All Homeowners (% of all loans)	Black Homeowners (% of all black loans)	White Homeowners (% of all white loans)
Type of Lenders			
Subprime	577,583 (2.9%)	84,384 (5.8%)	371,163 (2.4%)
Manufactured Housing	664,165 (3.4%)	51,159 (3.5%)	547,525 (3.5%)
Traditional	18,464,284 (93.7%)	1,313,686 (90.6%)	14,546,181 (94.1%)
Total	19,706,032 (100%)	1,449,229 (99.9%)	15,464,869 (100%)
Type of Loans			
Conventional	14,662,255 (74.4%)	714,510 (49.3%)	12,051,170 (77.9%)
FHA	3,821,470 (19.4%)	560,315 (38.7%)	2,509,527 (16.2%)
VA/FmHa	1,222,306 (6.2%)	174,386 (12.0%)	904,171 (5.9%)
Total	19,706,031 (100%)	1,449,211 (100%)	15,464,868 (99.9%)

Note: Figures in this table are based on individual loans from the 1992 through 1999 HMDA records (before being aggregated into MSA-level data). They reflect the breakdown of each type of lending received by the total, black and white population of homebuyers.

Traditional lenders make the vast majority of all loans (94%), but again there are differences by race. During the 1990s, subprime lenders provided 5.8 percent of blacks' loans compared to 2.4 percent of whites' loans. But, even more critically, between the beginning and end of the 1990s, subprime lending's rapid expansion played a critical role in increased lending to black homebuyers. By 1999 the proportion of black borrowers receiving loans from subprime lenders was six times what it was in 1992 (from 1.9 percent to 12 percent). So, while subprime lending comprised a relatively small proportion of all loans to black homebuyers, changes in black homeownership between the beginning and end of the decade had much to do with increases in subprime lending activity during the decade. As the rate of black loans from specialized lenders increased, the proportion from traditional lenders decreased significantly. By way of contrast, manufactured housing was equally used by blacks and whites. As Williams et al. found (2005), racial disparities did not seem to be a major characteristic of manufactured housing lending during the 1990s.

Table 2: Unstandardized Multivariate Regression Coefficients for Non-lending Characteristics on Segregation Changes

	β	*t*
Intercept	-5.72	-2.31
Black-White Income Ratio	-.03	-1.07
Region		
Northeast	2.13*	2.81
Midwest	.43	.67
West	1.14	1.85
Recent Housing Construction	-.01	- .60
MSA Population (logged)	-.11	- .26
Black-White Growth	.22*	2.72
Other-Black Growth	- .03	-1.05
White-Black Exposure Index	.31**	6.75
Adjusted R^2	.23	
N = 237		

**$p < .01$ *$p < .05$ (two-tailed tests)

Multivariate Analyses

The multivariate models are presented in tables 2 through 4. We include the nonlending (control) variables in all regressions but only show their unstandardized coefficients in Table 2, as the effects of nonlending characteristics change very little when lending measures are introduced. Table 3 shows unstandardized regression coefficients for the effects of all lending measures. In discussing Table 3, we refer to panel A, B or C for lending without considering differences by race, absolute changes in lending to black homeowners, and changes in black compared to white lending rates, respectively. Lending measures are entered individually into separate models, because some of them are too highly correlated to include in one model. For example, the constructs for regular and manufactured lending have a very high and statistically significant Pearson correlation. When entered into the same multivariate regression model, multicollinearity becomes problematic. Table 4 presents the standardized coefficients for all statistically significant variables. This eases the comparisons of the relative impacts of lending and nonlending variables on segregation changes.

Although the effects of lending are operationalized differently in each panel of Table 3, the statistically significant coefficients are all consistent with the major hypotheses. That is, the significant effects indicate that

Table 3: Unstandardized Multivariate Regression Coefficients for Lending Characteristics on Segregation Changes

	β	*t*
A. Lending to All Homebuyers 1992-1999		
Conventional	.020	1.087
FHA	-.031	-1.287
Subprime	-.171	-1.236
Manufactured Housing	.127**	2.510
Traditional	-.106*	-2.066
Conventional Subprime	-.278	-1.608
Conventional Manufactured Housing	.129**	2.494
Conventional Traditional	.008	.423
B. Absolute Changes in Lending from 1992/94 to 1997/99		
All loans	-.019*	-2.176
Conventional	-.008	-1.487
FHA	-.002	-.748
Subprime	.000	.320
Manufactured Housing	.000	-.662
Traditional	-.026**	-2.651
Conventional Subprime	.000	.656
Conventional Manufactured Housing	.000	-.075
Conventional Traditional	-.012	-1.700
C. Relative Changes in Lending 1992/94 to 1997/99		
All loans	-.121	-1.388
Conventional	-.205*	-2.191
FHA	.007	.606
Subprime	.001	.153
Manufactured Housing	-.019	-.922
Traditional	-.073	-.749
Conventional Subprime	.001	.154
Conventional Manufactured Housing	-.020	-.987
Conventional Traditional	-.197	-1.567
Average Adjusted R^2	.22	

**$p < .01$ *$p < .05$ (two-tailed tests)

Note: Each model includes all control variables and one lending measure at a time. Panel A presents multivariate regression coefficients for the percent each type of lending comprised all lending throughout the decade. In Panel B, the coefficients show the net effects of lending changes to black homebuyers from each type of lending 1992-1994 and 1997-1999. Panel C presents multivariate regression coefficients for the effects of changes in the black/white lending gap.

conventional loans, or loans from traditional lenders, tend to decrease segregation. No other lending measures contributed significantly to changes in segregation levels. In particular, the different types of specialized lending either did not have statistically significant effects or had effects that increased segregation.

Specifically, Panel A in Table 3 looks at the effects of overall lending, without distinguishing between how the types of loans received differed by race. From these results, it appears that where lending for manufactured homes comprised a larger portion of an MSA's total lending, the degree of black-white segregation rose from 1990 through 2000. For each additional percentage of loans from manufactured housing, an MSA's segregation index rises .127 points. On the other hand, each additional percentage of total lending from traditional lenders decreases segregation levels by .106 degrees. Meanwhile, higher proportions of subprime lending do not significantly affect segregation levels between black and white households. This suggests that traditional lending encourages integration, lending for manufactured homes inhibits integration, and subprime lending does little to change segregation levels between black and white households.

Again looking at Panel 3A, neither higher proportions of government-insured (FHA) loans nor uninsured (conventional) loans has an impact on changed segregation levels among MSAs. Hence, the form of lending does not seem to help explain variation among MSAs' changes in segregation during the 1990s, at least when racial differences in the sources of loans are not considered.

Table 3's Panel B presents results for increases in lending to black homebuyers. In general, increased lending to black homebuyers between the beginning and end of the 1990s helps explain decreased segregation levels. Panel 3B shows that the effect of increases in black homeownership from all loans (pooled together) is significant in explaining variation among MSAs' decreased segregation levels. Net of other MSA characteristics, greater increases in black lending shares lead to more substantial integration between black and white households. A 1 percent increase in loan shares to black homebuyers significantly decreased segregation by .019 percentage points. This suggests that when blacks' homebuying power increases, blacks are able to move into areas that were previously predominantly white.

As expected, increases in black homeownership through traditional lenders were more effective than those from specialized lenders in decreasing black/white segregation levels. A one percent increase in traditional lending to black homebuyers decreases black/white residential segregation by .03 degrees ($b = -.03$, $p < .01$). The effects of increases in specialized lending are virtually zero.

How does the growth in home mortgage loans going to blacks compared to whites' increases affect segregation levels? Panel C of Table 3 shows regression results for blacks' compared to whites' lending increases. In those areas where conventional loan shares to blacks increased relative to whites, segregation levels declined. For every additional percent increase in conventional loans received by black compared to white homebuyers, the segregation index decreased by .2 points ($p < .05$). Shrinking the black-white lending gap through conventional loans does help decrease segregation levels. Relative increases in lending in the form of government-backed loans, on the other hand, does not help integrate MSAs. The net effect of percentage increases in FHA lending to blacks does not significantly explain intra-metropolitan decreases in dissimilarity between black and white households. This finding lends some support to the idea that only by increasing certain loans to blacks to the point of parity with whites will increased black homeownership lead to integrated neighborhoods.

The analysis discussed above shows that increasing levels of lending to black homebuyers does help integrate neighborhoods. The final question, then, is how important is lending compared to other factors in contributing to decreases in segregation? Table 4 presents the standardized coefficients for each statistically significant variable based on the same series of regression models described above, in which each lending measure was separately added to the base model of control variables.

As shown in Table 4, lending has the smallest effect on changing segregation compared to most of the other statistically significant characteristics included in the multivariate regressions. No matter what type of lending, its impact is consistently smaller than that of all other statistically significant non-lending characteristics. Location in the Northeast compared to the South, faster growing black compared to white populations, and a higher degree of white exposure to black neighbors inhibits the integration process. Historical processes involved in creating segregated residential communities in the northeastern MSAs left a legacy of hostility toward blacks that may still be actively present. These findings also suggest that exposure to blacks and growing black populations may make whites uncomfortable and cause them to seek out more segregated communities[10].

Regardless of its relatively small impact, the fact that lending significantly decreases segregation provides evidence that increasing black lending can alter the racial landscape of neighborhoods. The evidence also shows that race-based disparities in the types of lending received weaken the overall impact of increased lending to black homebuyers.

Table 4: Standardized Multivariate Regression Coefficients for Significant MSA Characteristics on Segregation Changes

	Standard β
Nonlending Characteristics	
Region	.225
Northeast	
Black-White Growth, 1990-2000	.186
White-Black Exposure Index, 1990	.501
Lending Characteristics	
Lending to All Homebuyers (1992 through 1999)	
Manufactured Housing	.209
Traditional	-.168
Conventional Manufactured Housing	.209
Absolute Changes in Lending to Black Homebuyers (1992/94 to 1997/99)	
All Loans	-.133
Traditional	-.158
Relative Changes in Lending to Black Homebuyers (1992/94 to 1997/99)	
Conventional Loans	-.097

Discussion

There is no question that changes in home mortgage lending have raised black homeownership rates to the highest levels ever experienced in the United States. Much less clear, however, are the effects these changes have had on residential segregation. As the barriers to black homeownership have slowly started to come down, have the barriers to integrated neighborhoods started falling with them?

As hypothesized, this study finds that, where lending to black homebuyers has increased, segregation between black and white households has often decreased. With increased credit suddenly available to them, black homebuyers may be more able to purchase homes in neighborhoods that were once unavailable to them.

But, the results also provide evidence that increased lending in and of itself need not decrease segregation. Increases in some lending leads to significant declines in segregation, while increases in other forms of lending increase black homeownership without integrating communities. FHA loans and subprime lending are geographically concentrated in predominantly minority neighborhoods. Land use restrictions cause manufactured housing to be geographically constrained as well. Traditional lenders and conventional loans offer better loan terms and conditions than specialized lenders and FHA loans. Although increasing loans to

black homebuyers expands their homeownership options, the sources and types of loans through which the majority of these increases have occurred (i.e., from subprime lenders and FHA loans) are those that have no significant impact on changing segregation levels. The limited and problematic lending choices offered by the home mortgage industry to low income and minority markets reduces the potential of increased black homeownership to foster integration. These results suggest that a wider distribution of loan services based solely on qualifications rather than race of the borrower or neighborhood would contribute more positively to segregation declines in U.S. cities.

In fairness, it should be noted that the effects of lending on segregation during the 1990s were modest compared to the effects of the non-lending variables. However, recent and dramatic developments in home mortgage lending provide reason to believe that the changes that began in the 1990s may be having even more pronounced effects early in the 21st century than they were at the end of the 20th century. The rise in subprime lending has continued; and, as of this writing, there is growing concern about the consequences of this growth. As Samuelson (2007) notes, as of March 2007 about 14 percent of mortgages were subprime, and 13 percent of these were at least 30 days overdue. Thanks, in part, to subprime lending, foreclosure rates rose 42 percent in 2006, and it is estimated that a million Americans will face foreclosure in 2007 (Springen 2007). Not surprisingly, both regional studies (Goldstein 2007) and national statistics (Associated Press 2007) show that foreclosure rates are disproportionately high among subprime borrowers.

It is much too early to assess the effects of recent developments. In Fall 2007, the President, Congress and private industry were all contemplating ways to deal with the housing problem. If their actions are successful, they might stem the tide of foreclosures. They might even result in a fairer and more equitable lending system, in which minorities and low income groups can receive the same kinds of affordable loans that are offered to others. Conversely, if specialized lenders are forced from the marketplace and traditional lenders retrench in their efforts to serve low income and minority markets, recent progress may be stalled or even reversed.

But, as things now stand, many subprime borrowers are losing their homes, and the deteriorating and destabilized neighborhoods that result are unlikely to foster integration. In the absence of effective action, the findings suggest that persistent or even increasing levels of segregation may be one of the most important long-term consequences of the current home lending crisis.

Notes

1. HMDA data is supplemented by data that delineates loan records as being from regular, subprime or manufactured housing lenders. For this study, we refer to regular lenders as traditional. The term "specialized lenders" includes subprime and manufactured housing lenders, but we investigate each type of lender's distinct effects on changing segregation rather than as one group.

2. HUD services loans through the FHA that the government insures against lender loss. FHA intends their loans to primarily service low-income and minority first-time homebuyers. This study compares the effect of FHA loans to that of conventional (or uninsured) loans. The vast majority of conventional loans come from the three lenders defined in the previous footnote.

3. Williams et al. (2005) also note that manufactured housing sometimes suffers from installation and safety problems, abusive landlords, and a lack of consumer protection.

4. HMDA data is available for every year starting in 1990, when most lenders were required to provide some demographic information on the borrowers and areas as well as data on the loan itself for every home mortgage application received. However, the variable definitions remain most consistent from 1992 onward, thus the dataset includes loan records from 1992 through 1999.

5. The Mumford Center uses Census 2000 Summary File 1 (SF-1) and 1990 Summary Tape File 1 (STF-1), which report the characteristics for nine major race and Hispanic or Latino groups. As the focus of this study is on addressing changes in black-white segregation levels, we use "White alone" and "Black or African American alone" as the race groupings in this analysis. We use data from 2000 Census Summary File 3 (SF-3) and 1990 Census Summary Tape File 3 (STF-3) to create blacks' and whites' household income measures for the populations' relative changes in socioeconomic status and age of housing stock in an MSA (Census websites, 2002).

6. Also, between 1992 and 1999, 963,291 loans (4.7%) made in this sample of MSAs were missing race identification and are thus excluded from the aggregated data set.

7. A complete list of MSAs used is available upon request.

8. Farley and Frey (1994) found segregation changes in the 1980s vary according to MSAs' region, functional specialization, recent housing construction, and whites' exposure to blacks. For our models, we recreate all of Farley and Frey's measures for 1990-2000 except indicators for an MSA's functional specialization and age. Unfortunately, the Census data necessary to measure an MSA's age and functional specialization were not available from the Census Bureau's tables when we did this analysis. Farley and Frey did not find an MSA's age significantly affects changing segregation levels but that "retirement" and "military communities" had significantly different segregation level changes from "diversified" areas of functional specialization.

9. The Mumford Center posts their computations for the 1990 and 2000 indices of dissimilarity for the 331 Census-defined U.S. MSAs, which we incorporate as this study's dependent variable. Mumford's calculations compare Non-Hispanic blacks to the reference group, Non-Hispanic Whites.

10. In their study of changes in residential segregation during the 1980s, Farley and Frey (1994) found similar relationships except the effect of black population growth was not statistically significant. They explained their findings by arguing (p.39) that the effect of region reflected "the proliferation of small suburbs with traditions of hostility toward blacks. Litigation against discriminatory practices is also hampered in these regions, because court orders often apply only to a particular suburb." They further concluded (p. 40) that "most whites are uncomfortable when numerous blacks enter their neighborhoods."

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Appendix A. Definitions of Measures

General MA Characteristics[a]	
Change in Black-White Dissimilarity Index, 1990 to 2000	Degree of segregation between black and white households in 2000 minus the 1990 score. A negative value for this measure indicates decreased segregation levels. Literally, this variable indicates the degree change in the proportion of the black population who would need to move to another tract for that MSA to be experiencing complete integration.
Change in Black-White Income Ratio, 1990 to 2000	Relative economic positions of blacks and whites are determined by blacks' median household income as a proportion of whites'. We measure an MSA's change in this indicator by subtracting the 1989 from the 1999 black/white ratio.
Average MSA Population (logged),1990	Total population of the MSA in 1990 (logged).
Black-White Growth Rates, 1990 to 2000	Average annual growth rate of the black minus white populations between 1990 and 2000.
Other-Black Growth Rates, 1990 to 2000	Average annual growth rate of the other minus black populations between 1990 and 2000.
Recent Housing Construction	% increase in occupied housing units constructed during the 1990s.
White-Black Exposure Index, 1990	Degree of white exposure to black neighbors in 1990. This measure indicates the potential for contact between white and black residents in an MSA. Literally, this exposure index calculates whites' proportion of black neighbors.
Lending Characteristics[b] *Percent of lending, 1992 through 1999*	
Conventional Loans	% of all loans that were conventional between 1992 and 1999.
Subprime Lenders	% of all loans from subprime lenders between 1992 and 1999.
Manufactured Housing Lenders	% of all loans from manufactured housing lenders between 1992 and 1999.
Traditional Lenders	% of all loans from subprime lenders between 1992 and 1999.
Conventional Loans, Subprime Lenders	% of all loans that were conventional and from subprime lenders between 1992 and 1999.
Conventional Loans, Manufactured Housing Lenders	% of all conventional loans from manufactured housing lenders between 1992 and 1999.
Conventional Loans, Traditional Lenders	% of all loans that were conventional and from traditional lenders between 1992 and 1999.

Appendix A *continued*

Absolute changes in loan shares, 1992-94 to 1997-99	
All Loans	% change in loan shares to black homebuyers between 1992-1994 and 1997-1999.
Conventional Loans	% change in conventional loan shares to black homebuyers between 1992-1994 and 1997-1999.
FHA Loans	% change in FHA loan shares to black homebuyers between 1992-1994 and 1997-1999.
Subprime Lenders	% change in subprime loan shares to black homebuyers between 1992-1994 and 1997-1999.
Manufactured Housing Lenders	% change in MH loan shares to black homebuyers between 1992-1994 and 1997-1999.
Traditional Lenders	% change in traditional loan shares to black homebuyers between 1992-1994 and 1997-1999.
Conventional Loans, Subprime lLenders	% change in conventional subprime loan shares to black homebuyers between 1992-1994 and 1997-1999.
Conventional Loans, Manufactured HousingH Lenders	% change in conventional MH loan shares to black homebuyers between 1992-1994 and 1997-1999.
Conventional Loans, Traditional Lenders	% change in conventional traditional loan shares to black homebuyers between 1992-1994 and 1997-1999.
Relative changes in lending, 1992-94 to 1997-99	
All Loans	Black homebuyers' loan shares as a proportion of whites' in 1997-1999 minus 1992-1994.
Conventional Loans	Black homebuyers' conventional loan moneys as a proportion of whites' in 1997-1999 minus 1992-1994.
FHA Loans	Black homebuyers' FHA loan moneys as a proportion of whites' in 1997-1999 minus 1992-1994.
Subprime Lenders	Black homebuyers' subprime loan moneys as a proportion of whites' in 1997-1999 minus 1992-1994.
Manufactured Housing Lenders	Black homebuyers' MH loan moneys as a proportion of whites' in 1997-1999 minus 1992-1994.
Conventional Loans, Subprime Lenders	Black homebuyers' conventional subprime loan moneys as a proportion of whites' 1997-1999 minus 1992-1994
Conventional Loans, Manufactured Housing Lenders	Black homebuyers' conventional MH loan moneys as a proportion of whites' in 1997-1999 minus 1992-1994.
Conventional Loans, Traditional Lenders	Black homebuyers' conventional traditional loan share as a proportion of whites' in 1997-1999 minus 1992-1994.