Mortgage Lending Disparities in Metropolitan Buffalo: Implications for Community Reinvestment Policy

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Abstract. This article examines patterns of mortgage lending in metropolitan Buffalo, New York. The analysis is based on 1999-2002 HMDA data and 2000 Census data for metropolitan Buffalo. Mortgage lending patterns in census tracts are compared using descriptive statistics, GIS mapping, and multiple regression. The results from this analysis indicate that disparities in mortgage lending between census tracts are attributable to differences in: educational attainment, neighborhood socioeconomic distress, residential stability, and the age of neighborhood housing stock. It is noteworthy that after controlling for other variables, race and core city location did not significantly affect mortgage lending patterns. The findings from this analysis indicate that disinvestment is no longer confined to minority communities in core cities. Instead, it is becoming a more general phenomenon in metropolitan areas. Policy recommendations are forwarded in light of the findings from this research.

1. Community Reinvestment Policy

This article builds on past research which examines the effects of housing characteristics and neighborhood demographics on mortgage lending.[1] Much of this research has focused on the relationship between race, core city location, and disinvestment. Despite mixed results about this relationship, the thrust of the debate surrounding community reinvestment policy has focused on poor lending performance in minority communities and core city neighborhoods. This article acknowledges that disinvestment remains an acute problem for minority borrowers and declining neighborhoods in core cities, however it goes a step further and examines the degree to which disinvestment had become a more general problem for all low-income groups and aging neighborhoods across metropolitan areas. The findings from this article suggest that such a shift in mortgage lend-

ing patterns is occurring. Today, patterns of disinvestment are increasingly tied to socioeconomic distress in inner-city neighborhoods as well as in older, inner-ring suburbs and rural communities across regions. Given these changes, community reinvestment policy needs to be expanded from its current focuses on inequalities linked to race and city-suburban dichotomies, to a greater emphasis on making credit more accessible to all poor and declining neighborhoods in metropolitan areas. In essence, community reinvestment policy needs to be linked to progressive agendas which stress broader issues of economic and social justice. Broadening the focus of community reinvestment policy will allow for a more comprehensive response to urban growth patterns that drive processes like urban sprawl and neighborhood decline. These patterns, in conjunction with discrimination based on race and socioeconomic class, are underlying causes of disinvestment.

In order to make a case for broadening the scope of the community reinvestment debate, it is useful to review past research on the relationship between mortgage disparities and neighborhood characteristics. Although this research has developed incremen-

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[1] There is an expanding body of literature on subprime lending markets and predatory lending that is not discussed in this article. This literature may be of interest to readers and future researchers interested in determining if the general patterns in lending identified in this study are present in mortgage submarkets.

tally, it has culminated in an impasse concerning the exact role of race and central city location in mortgage lending. Most scholars agree that these factors play some role in the mortgage lending process, however the focus on these dimensions of the lending process has pre-empted inquiry into how broader urban development processes influence lending disparities. In early studies, researchers focused almost exclusively on overt forms of institutional racism in housing markets. Perhaps the best example of such discrimination is the practice of redlining, which involves the denial of credit to minority communities. This practice took its most overt form in the early to mid-1900s, when the National Association of Real Estate Boards (NAREB) and the Federal Housing Authority (FHA) discouraged lending in urban communities with high concentrations of minorities (Judd 1984, Massey and Denton 1993, McKenzie 1994, Squires 1994). In the years that followed, a series of legislative and social movements took place causing overt forms of institutional racism in housing markets to slowly decline. This process began with the passage of the Federal Fair Housing Act of 1968. In the wake of this legislation, a series of laws were passed at the federal, state, and local levels which aimed to remove institutional racism from mortgage lending. The Home Mortgage Disclosure Act (HMDA) of 1975 and the Community Reinvestment Act (CRA) of 1977 were among the more important laws passed during this period. These laws provided community advocates and researchers with data and enforcement mechanisms to challenge discriminatory lending policies of banks. Despite opposition from financial institutions, HMDA and CRA have been strengthened over the years due to the combined efforts of community advocates and researchers (Galster 1992b, Squires 1992, Goering and Wienk 1996, Nyden et. al. 1997, Squires 2003, Immergluck 2004).

Efforts to strengthen community reinvestment policy gained momentum in 1988 when a series of articles titled "The Color of Money" was published in the *Atlanta Journal-Constitution* (Dedman 1988). These articles brought the issue of mortgage discrimination into the public eye, adding momentum to efforts to address discrimination in housing markets. The articles indicated that a gap existed in mortgage lending between African Americans and whites living in Atlanta. This lending gap placed African American neighborhoods at a disadvantage in the market for mortgage products and was offered as evidence for continued racial discrimination in mortgage lending. Although the timing of the series awakened new interest in the problem of mortgage discrimination, it also coincided with a turning point in trends related to racial discrimination in housing markets. The period following the *Atlanta Journal-Constitution* series marked the beginning of a new era in research on lending disparities. During this period, many researchers concluded that instances of overt discrimination in housing markets gradually began to decline.

One of the most cited examples of academic research dealing directly with the issue of race in the lending process, the Boston Fed Study, was conducted in the years following the *Atlanta Journal-Constitution* series (Munnell et. al. 1992, Munnell et. al. 1996, Ross and Yinger 2002). This study concluded that race was an important factor in lending decisions, although the authors argued that the role of race in the mortgage process diminished when other socioeconomic factors were considered. Since the completion of the Boston Fed Study, other researchers have reached similar conclusions. For example, a recent study by Turner, et. al. (2002) examined the results from paired testing in 1989 and 2000, and concluded that racial discrimination had begun to decline in both rental and mortgage markets.

The results from the wave of research that followed the *Atlanta Journal-Constitution* series and the Boston Fed Study revealed an impasse concerning the role of race in mortgage lending. For instance, Hula (1991) studied patterns of mortgage lending during the 1980s using aggregate data at the national level. In his analysis, he examined the effects of various population and housing characteristics on both the number and value of mortgages. Hula concluded that there was weak support for redlining based on the racial composition of neighborhoods. Shill and Wachter (1993) examined the disposition of mortgage applications in Boston and Philadelphia. The results of their research produced evidence that rejected claims that redlining was present in the two cities studied. Perle et. al. (1994) examined 1980 HMDA and census data for the City of Detroit and concluded that there was no relationship between race and mortgage lending. In the same vein, Marqulis (1998) examined lending in the City of Cleveland between 1985 and 1992, and concluded that housing conditions rather than race explained mortgage disparities.

Despite arguments to the contrary, many scholars have found support for the persistence of discrimination in American cities. For instance, Shlay (1988, 1989) found support for redlining in separate studies of Chicago and Baltimore. Likewise, Coffey and Gocker (1998) produced evidence of a noticeable credit gap between blacks and whites in selected urban counties of Ohio, as well as a gap in mortgage lending between inner-cities and suburbs. In follow-up studies to the *Atlanta Journal-Constitution* series, Wyly and Holloway (1999, 2001) found that redlining remained an issue in

Atlanta. In their research on Milwaukee, Squires and O'Connor (2001) found evidence for a persistent lending gap along the lines of race and income. Most recently, Silverman (2005a, 2005b) examined 2000 HMDA data for the City of Detroit and the metropolitan Detroit area and found that race and other variables linked to a community's socioeconomic status influenced mortgage lending.

One perspective on the debate concerning the role of housing and demographic characteristics in mortgage lending is summed up in a review of the literature by Black (1999). In this essay Black argues that, at best, evidence for mortgage discrimination and redlining is conflicting. More recently, Ross and Yinger (2002) presented an extensive summation in their examination of past research on mortgage discrimination. While agreeing with many of the findings from the Boston Fed Study, they indicate that much of the disagreement in research is attributed to limitations of available mortgage lending data and divergent research designs employed in its analysis. Their commentary on data and research design issues builds upon earlier critiques by Galster (1991, 1992a, 1993) and others.

This analysis represents an attempt to bridge the impasse in past research on mortgage disparities and chart a course for broadening the scope of community reinvestment policy. The goal of this article is to identify areas where existing policy debates focusing on lending disparities in minority communities and central city neighborhoods can be linked to new policy initiatives tied to broader urban development patterns. Accordingly, an analysis of factors correlated with mortgage lending in metropolitan Buffalo will be presented followed by recommendations for expanding community reinvestment policy. Although this research uses aggregate HMDA data and is based on a case study, it is relevant to community reinvestment issues more generally and is intended to encourage additional research.[2]

2. Methods and Descriptive Statistics

The data used for this study come from the Federal Financial Institutions Examination Council's *Home Mortgage Disclosure Act (HMDA) 1999-2002 Data Reports* and the *2000 Census of Population and Housing*

Summary Tape File 3A.[3] Independent variables were drawn from 2000 Census data for metropolitan Buffalo which is defined as the area encompassing Erie County in the State of New York. Measures of race, educational attainment, poverty, income, housing values, the age of the housing stock, and housing tenure were included in the analysis.[4] Descriptions of the variables used in the analysis are found in Table 1.

Table 1. Independent and Dependent Variables Used in the Analysis

Variable Label	Variable Description
Independent:	
Black	Proportion of Population that is Black by Census Tract
Less than a High School Diploma	Proportion of the Population 25 yrs and Older with Less than a High School Education by Census Tract
Median HH Income	1999 Median Household Income by Census Tract ($)
Below Poverty	Proportion of the Population with 1999 Income Below the Poverty Level by Census Tract
Public Assistance Income	Proportion of Households with Public Assistance Income in 1999
Median Housing Value	Median Value of Owner-Occupied Housing Units by Census Tract
Same Housed since 1995	Proportion of Population Over 5 Years of Age in the Same House Since 1995
Built Before 1950	Proportion of Housing Units Built Before 1950
Vacant	Proportion of Housing Units Vacant by Census Tract
Owner Occupied	Proportion of Occupied Housing Units Owner Occupied by Census Tract
Census Tracts In Buffalo	Dummy Variable 1= Census Tract Located in the City of Buffalo, 0 = Census Tract Located outside of City of Buffalo
Dependent:	
NUMBRATIO	Ratio of the Number of Home Purchase Loans Originated to Home Purchase Loans Denied in 1999-2002 by Census Tract (home purchase loans include conventional, FHA, FSA/RHA, and VA)

Sources: see Appendix 1

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[2] The use of aggregate HMDA data precludes the analysis of characteristics of individual loan applicants. As a result, factors linked to lending decisions that are in response to community characteristics can only be considered in this analysis. Further research is necessary to determine if these factors are mediated by the characteristics of individual loan applicants.

[3] It should be noted that the HMDA data used in this study was coded by 1990 census tracts. As a result, the 2000 census data was recoded along 1990 tract lines so it would be consistent with the HMDA data for the analysis.

[4] The independent variables used in this analysis were selected in order to replicate multivariate models used in past research on mortgage discrimination.
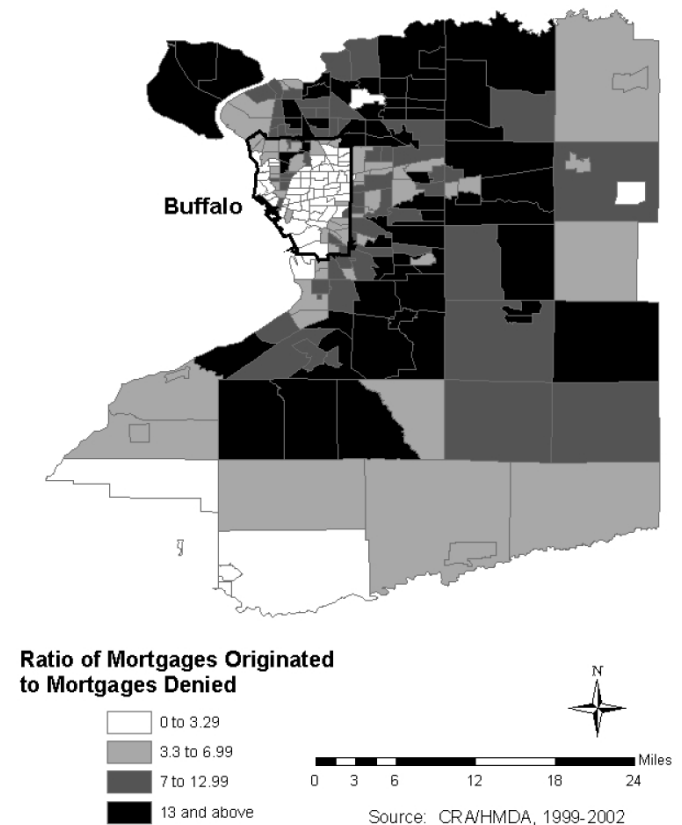
The dependent variable examined in this analysis was constructed using information from 1999-2002 HMDA data for metropolitan Buffalo. The dependent variable was the ratio of mortgages originated to mortgages denied (conventional, FHA, FSA/RHA, and VA) at the census tract level. Using a ratio produced a more refined dependent variable compared to those found in past research where only mortgage approval rates are examined.[5] The use of a ratio had the advantage of creating a standardized measure of institutional lending decisions which controls for deviations in the volume of loans across census tracts. A description of the dependent variable used in the analysis is found in Table 1.

A map depicting quartiles for the dependent variable by metropolitan Buffalo census tracts is presented in Figure 1. This map shows that mortgage disparities are spatially concentrated in the City of Buffalo, the core city of the metropolitan area. It is noteworthy that on average the value of the dependent variable decreased in census tracts as the proportion of the population that was African American increased. For the dependent variable, the percentage of the population that was black in each respective quartile of the metropolitan area was 50%, 7%, 5%, and 2%. It is also noteworthy that on average the value of the dependent variable increased in as the proportion of tracts located in the City of Buffalo decreased. For the dependent variable, the percentage of census tracts located in the City of Buffalo in each respective quartile of the metropolitan area was 80%, 35%, 17%, and 6%.

Along with mapping the spatial distribution of the dependent variable, descriptive statistics were generated for each of the variables used in the analysis. This information is summarized in Table 2. This table displays descriptive statistics for metropolitan Buffalo and descriptive statistics for census tracts where the value of the dependant variable is further subdivided into quartiles for the metropolitan area. This was done so that groups of census tracts with different levels of lending performance could be compared. The most noticeable contrast in Table 2 is between the second column and the last three columns. The second column represents means for census tracts where the ratio of mortgages originated to mortgages denied ranged from 0 to 3.29. The last three columns represent means for census tracts where the ratio of mortgages originated to mortgages denied are 3.3 or

higher. An analysis of variance (ANOVA) revealed that statistically significant (p>.05) differences existed between the second column and the last three columns of Table 2 for all of the independent variables used in the analysis. The only exception was for the variable measuring the proportion of the population living in the same house since 1995. In this case, the ANOVA showed a statistically significant (p>.05) difference between the second, forth, and fifth columns. In short, the demographic characteristics displayed in the last four columns of Table 2 suggest that poor lending performance is associated with increases in the proportion of the population that is: African American, living below the poverty level, receiving public assistance, without a high school education, and earning a median household income below the mean for the metropolitan area. Likewise, an examination of housing characteristics for these four columns reveals that mortgage lending performance is associated with increases in the proportion of housing units that are: built before 1950, vacant, occupied by renters, experiencing turnover in occupancy, and with median values below the mean for the metropolitan area.

Ratio of Mortgages Originated to Mortgages Denied

- 0 to 3.29
- 3.3 to 6.99
- 7 to 12.99
- 13 and above

Source: CRA/HMDA, 1999-2002

Figure 1. 1999-2002 HMDA Data by Metro Buffalo Census Tract.

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[5] This analysis focuses on loans originated rather than the total number of loans approved in order to discount the possible effects of double counting duplicate applications for the same property in the analysis. This decision was made in response to the organization of HMDA data, which includes categories for loans "approved but not accepted" and "applications withdrawn."

Table 2. Descriptive Statistics for Metropolitan Buffalo and Means for NUMRATIO
           by Metropolitan Buffalo Quartile

	Metro Buffalo	**NUMRATIO:**			
		0-3.29 (N=59)	3.3-6.99 (N=58)	7-12.99 (N=60)	> 13 (N=60)
Summary Information:					
Total Population	948,254	180,267	206,690	250,979	306,364
Total Households	380,890	71,053	84,986	104,953	119,141
Total Housing Units	415,110	88,250	92,857	110,484	123,436
Independent Variables:					
Black	.1577	.5012	.0645	.0511	.0155
Less than a High School Diploma	.2027	.3187	.2276	.1540	.1049
Median Household Income ($)	36,988	21,979	32,115	40,136	55,474
Below Poverty	.1457	.3155	.1458	.0876	.0444
Public Assistance Income	.0502	.1240	.0448	.0253	.0093
Median Housing Value ($)	80,247	45,241	72,960	87,858	119,452
Same House since 1995	.6183	.5707	.6015	.6472	.6755
Built Before 1950	.4704	.7050	.5369	.4033	.2404
Vacant	.0934	.1856	.0986	.0548	.0356
Owner Occupied	.6252	.4600	.5941	.6686	.7808
Census Tracts in Buffalo	.3734	.8028	.3519	.1667	.0600
Dependent Variable:					
NUMBRATIO	9.03	1.68	5.10	9.38	19.69

Sources: see Appendix 1

When comparing Figure 1, and Table 2, it becomes apparent that many of the census tracts in the metropolitan area with poor lending performance are located in the City of Buffalo. Although some of the census tracts in the suburban ring of the metropolitan area have poor lending performance, the City of Buffalo is where disparities in mortgage lending appear to be concentrated. For instance, 80% of the census tracts in the lower quartile for the dependent variable are located in the City of Buffalo, while only 6% of the census tracts in the upper quartile are located there. In order to examine these patterns in greater detail, and identify variables that have a significant effect on lending patterns, a regression model was run comparing the independent variables to the dependent variable used in the analysis. The results of this analysis are discussed in the next section of this article.

3. Multivariate Analysis

Initially, bivariate and multivariate regression analysis was conducted using the independent and dependent variables identified in Table 1. After ex-amining the regression model for the metropolitan area, it was discovered that several of the independent variables were highly intercorrelated. The intercorrelated variables for the model included: Median Houshold Income, Below Poverty, Public Assistance Income, Median Housing Value, Vacant and Owner Occupied. The presence of intercorrelated variables impeded the ability to draw accurate inference regarding the effects of those variables on the dependent variable. To address this issue, the intercorrelated variables were subjected to principal component factor analysis. Through this analysis, a single component was extracted for the model. This component explained 77% of the variance in all of the intercorrelated variables.[6] This component, NSED, functioned as a measure of neighborhood socioeconomic distress at the metropolitan level. It was entered into a regression model along with the remaining independent variables.

The results of the multivariate analysis are shown in Table 3. The unstandardized and standarized mul-

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[6] Since only one component was extracted with an Eigenvalue greater than 1, verimax rotation could not be performed.

tivariate regression coefficients for the effects of the independent variables on the dependent variable are reported in the model found in Table 3. The model focuses on the ratio of mortgages originated to mortgages denied for the entire metropolitan area and it includes a dummy variable controlling for census tract location in the City of Buffalo.

Table 3. Regression Model for the Effects of Population and Housing Characteristics on NUMRATIO

Variable Label	Metropolitan Buffalo
Black	.209
	(.007)
Less than a High School Diploma	-11.353+
	(-.146)
NSED	-4.444***
	(-.502)
Same House since 1995	-16.205**
	(-.202)
Built Before 1950	-7.251**
	(-.229)
Census Tracts in Buffalo	1.808
	(.101)
Constant	23.876***
R^2	.377***

Sources: see Appendix 1

+p<.10, *p<.05, ** p<.01, ***p<.001. Standardized coefficients (β) are in parentheses below unstandardized coefficients.

NSED is a component extracted using factor analysis for all census tracts in metropolitan Buffalo. This component accounts for 77% of the variance in Median Household Income, Below Poverty, Public Assistance Income, Median Housing Value, Vacant and Owner Occupied. The variables Median Household Income and Below Poverty were highly influential (they had factor scores above 0.8).

Selected findings from the model in Table 3 should be highlighted. First, an examination of the standardized coefficients indicates that neighborhood socioeconomic distress had the strongest influence on the ratio of mortgages originated to mortgages denied in a census tract after applying statistical controls. Although the effects of individual dimensions of neighborhood socioeconomic distress could not be separated from one and other, the combined effects of these variables had a significant influence on mortgage lending patterns.[7] The regression coefficient for the NSED component was significant at the .001 level. The regression component for the NSED component also had a negative value indicating that decreased poverty rates and increased median household income in a neighborhood was correlated with improved mortgage lending. In addition to neighborhood socioeconomic distress, residential stability[8] and the age of the housing stock in a census tract had significant effects on the ratio of mortgages originated to mortgages denied after applying statistical controls. The regression coefficient for each of these variables was significant at the .01 level. It is also noteworthy that a census tract's educational attainment level had a moderately significant effect on mortgage lending. The regression coefficient measuring educational attainment was significant at the .10 level. This measure indicated that increases in residents without a high school diploma were correlated with poor lending performance.

The results of this analysis indicate that after controlling for other factors, an increase in neighborhood socioeconomic distress was correlated with a decrease in the ratio of mortgages originated to mortgages denied in the metropolitan area. Similarly, an increase in both residential stability and the proportion of the housing stock built before 1950 was correlated with a decrease in the ratio of mortgages originated to mortgages denied in the metropolitan area. There was also some evidence that neighborhoods characterized by low levels of educational attainment were correlated with poor lending performance.

Interestingly, the model indicates that despite the tendencies displayed in the summary statistics (see Table 2), both race and core city census tract location were not significantly correlated with the ratio of mortgages originated to mortgages denied after applying statistical controls.[9] This is an important finding given the concentration of African Americans in cen-

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[7] The NSED component accounts for 77% of the variance in Median Household Income, Below Poverty, Public Assistance Income, Median Housing Value, Vacant and Owner Occupied. The variables Median Household Income and Below Poverty were highly influential; each had factor scores above 0.8. In the regression model where the NSED component was entered, the coefficient had a negative value. This indicated that rising poverty and declining income were inversely related to the dependent variable.

[8] The proportion of residents living in the same home since 1995 is used as a measure of residential stability in this analysis.

[9] In the regression model where the NSED component was entered the coefficients for race and core city location were positive and not significant. This indicates that after removing the effects of other variables, race and core-city location were no longer influential. The apparent negative effects of these variables that may be inferred from Table 2 are attributable to other variables in the model.

sus tracts with poor lending performance, and the concentration of such tracts in the City of Buffalo. This result indicates that in metropolitan Buffalo, variables related to resident tenure, the age of housing stock and neighborhood socioeconomic distress - rather than race and core city location- are contributing to dissimilarities in mortgage lending. An R-square value of .377 was reported for the model. This indicated that 37.7% of the variance in the number of mortgages received across census tracts in the metropolitan area was attributed to the variables used in this model.

4. Policy Implications

The findings from this analysis suggest that mortgage products are not readily available in metropolitan Buffalo's declining, poor neighborhoods. On the surface, this pattern seems to impact African Americans in the urban core disproportionately, but a closer examination reveals a more general disadvantage across the metropolitan area which is shared by all of its ageing, low-income neighborhoods.

On the surface, these findings suggest that metropolitan Buffalo, and other metropolitan areas, would benefit from the development of new lending products that assist low-income residents in becoming homeowners. These findings also suggest that there is a need for new lending products that support efforts to rehabilitate older properties and reassemble sites in neighborhoods in order to stimulate neighborhood revitalization and new development. Despite the need for such lending products, it is also necessary for policymakers to consider reforms to HMDA and CRA legislation that would encourage community reinvestment and neighborhood revitalization across metropolitan areas, as well as reverse development patterns that have contributed to urban sprawl and neighborhood decline.

The findings from this analysis support existing efforts to strengthen community reinvestment policies aimed at addressing discrimination in mortgage lending and reversing central city decline. However, they also suggest that a community reinvestment strategy focused predominately on racial disparities and disinvestment in central cities is too limited to address the impact of broader urban development patterns on metropolitan areas. There is a need for policies that are both reactive to past forms of disinvestment, and proactive in curbing emerging forms of disinvestment in inner-ring suburbs, rural areas, and across regions. In order to address new demands brought on by metropolitan-wide community reinvestment needs, community reinvestment policies must place a stronger emphasis on the lending disparities linked to limited

residential mobility, aging housing stock, and neighborhood socioeconomic distress. In other words, community reinvestment policy should become linked to progressive agendas focused on economic justice at a societal level and neighborhood revitalization at a regional level. Community reinvestment cannot be restricted to issues associated with housing finance. Instead, the community reinvestment debate needs to include a dialogue concerning the restructuring of urban development patterns, the focus of economic development activities, and the priorities governing local land use and community development decisions.

A number of initiatives would fit under the umbrella of an expanded community reinvestment policy. One core issue would be linking fair housing efforts to lending and urban development activities at the metropolitan level. In part, this would mean that any lending activities and new development in a metropolitan area would have to be linked to a progressive agenda which emphasizes grassroots empowerment, economic justice and neighborhood revitalization. This could take a number of forms, such as: traditional community reinvestment agreements, an expanded use of inclusionary zoning requirements, bank and developer contributions to housing trust funds, linkages to economic development and local hiring agreements, and the development of new lending products targeting low-income groups and declining neighborhoods. In a more general sense, this would mean that the values that drive urban development would have to shift toward a greater emphasis on promoting equity and sustainability through credit and investment decisions, as well as increasing the role of the general public in decision-making surrounding economic and community development activities.

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