Identifying Possible Impediments To Fair Housing In Tulsa, Oklahoma, Using Less-than-perfect Home Mortgage Disclosure Act Data

Marvin L. Cooke, Tulsa Community College

Abstract

Studies that utilize Home Mortgage Disclosure Act (HMDA) data reveal more problems than they resolve. HMDA data includes limited variables used by lenders. Even when supplemented with additional information, researchers question their results by hypothesizing additional variables that might account for race. Criteria of adequacy for utilizing HMDA data are proposed that are adequate to the planning task of identifying the effects of impediments to fair housing. While HMDA data provides questionable evidence for discrimination, it provides adequate evidence to determine if a minority population experiences impediments to fair housing. A methodology is derived from a literature review.

Purpose Of The Study

Units of government that submit a Consolidated Plan for Community Development Block Grant, Home, and Emergency Shelter Grant funds are required to certify that they are affirmatively furthering fair housing. This certification requires the unit of government to conduct an analysis of impediments to fair housing choice and to take appropriate actions to overcome the effects of any identified impediments.

One data source recommended by the Department of Housing and Urban Development to test for impediments to lending is Home Mortgage Disclosure Act (HMDA) data. Yet, as one examines studies of impediments to lending that utilize HMDA data, one encounters problems and limitations that appear to render HMDA data inadequate to the task. The HMDA data set includes only a fraction of the variables that lenders appear to use in making lending decisions. Even when researchers have the ability to supplement HMDA data with all remaining variables that seem to be used by lenders, researchers still tend to question the results by hypothesizing additional variables that might be responsible for the significance of race in lending decisions. Moreover, statistical models based on data from natural settings can only reveal patterns of association. They cannot prove the existence of discriminatory intent on the part of individuals or institutions.

The principal purpose of this study is to address these apparent problems and limitations by specifying criteria of adequacy for utilizing HMDA data that are adequate to the task of identifying the effects of impediments to fair housing as defined by federal housing regulations. A critical review of HMDA literature was conducted in order to specify criteria of adequacy and in order to build a model to explore whether or not there are differential lending outcomes based on race. This model was then utilized to test for evidence of the effects of impediments to fair housing based on race in the City of Tulsa, Oklahoma. The HMDA Public Transmittal Sheets for the Tulsa MSA for 1990 through 1994 and census tract information from the 1990 U.S. Census for Tulsa were utilized. Finally, the results for housing policy will be discussed.

Developing Criteria Of Adequacy For Identifying Effects

Many concepts and procedures of measurement in natural and social science were invented to solve practical problems rooted in social purposes (Duncan, 1984). In a like manner, the conceptualization and measurement of lending discrimination evolved in the political conflict between lending

institutions and community activists over lending disclosure.

In the original Home Mortgage Disclosure Act in 1975, HMDA data consisted of census tract level reports of the number of mortgages and the aggregate dollar amounts of lending. Instead of enabling a well-defined test for lending discrimination, this approach expanded the universe of alternative explanations that could be used to discount any findings of racial discrimination that might be found in a community.

First, lending data reported as the aggregate number of loans or dollar amounts in a census tract forces researchers (Casey, 1980; Shlay, 1989, 1989; Hula, 1991; Galster, 1992; Galster and Hoopes, 1993; Shlay et al., 1992; Perele et al., 1994; and Turner and Skidmore, 1999) to conceive of differential lending outcomes as redlining — discrimination based on the racial or economic characteristics of an area. However, Munnell et al. (1996) and Tootell (1996) have argued that redlining so conceived and measured confounds discrimination based on the racial or economic make-up of an area with discrimination based on the characteristics of individual loan applicants. If one treats the census tract as one's unit of analysis and tests for evidence of redlining, one is left with the problem of trying to interpret the evidence for redlining as discrimination against an area, a loan applicant, both, or possibly neither.

Second, discrimination in lending is probably best tested as a rate of loan approval (Benston, 1981; Ingram and Frazier, 1982; Leven and Sykuta, 1994; Munnell et al., 1996; Tootell, 1996). By reporting only the number and aggregate dollar amount of loans, the total number of loan applications required to calculate a loan rate is missing. Typically, Casey (1980), Shlay (1988, 1989), Hula (1991), Galster (1992), Shlay et al. (1992), and Perle et al. (1994) used either the quantity of lending in number of loans originated or aggregate dollars of loans originated as the dependent variable in their studies. As they noted in various ways, the quantity of lending in a census tract must be standardized by the number of housing units or the number of owner-occupied units in a census tract. Notably, Shlay (1989) found that most studies used the log of the standardized lending volume because such models better fit the data in terms of the R^2 criterion. This would point to a rate embedded in lending volume as a dependent variable. Without a loan rate, a low loan volume found in a minority area could be countered by the argument that few persons applied for loans rather more loan applications were rejected.

Third, if lending volume is reported by census tract, a model to test whether the racial composition of a census tract affects lending must control for the housing and population characteristics that might affect lending decisions (Shlay, 1988, 1989; Hula, 1991; Galster and Hoopes, 1993; Perle et al., 1994). The problem with interpreting the effects of these variables is created by confounding the effects of characteristics of loan applicants and of areas of applicant properties when both are embedded in variables that are measures of characteristics of census tracts. Some variables — such as the percent of vacant or vacant for sale single family detached units — seem to be most related to the characteristics of an area. Other variables — such as the median household income of a census tract — are characteristics of both an area and individual loan applicants. This creates an indeterminacy that opens the interpretation of findings to challenge. As Tootell (1996) notes, this indeterminacy can only be resolved by including in the same model both variables measuring characteristic of census tracts and variables measuring characteristics of individuals.

Finally, if one uses HMDA data organized by census tracts and fits models of lending outcomes utilizing population and housing characteristics by census tract to make inferences about individual discrimination, one immediately is open to being challenged on the grounds of an ecological fallacy.

In 1989, Congress passed amendments to the HMDA that required lenders to re-

port the following: the location of properties for which loans were applied; the location of properties for which loans were approved; type, purpose, and amount of loan; race, sex, and income of applicant; race and sex of coapplicant; and reason for loan denials. On the one hand, the new HMDA data set allows one to calculate loan approval rates for areas and to model the odds of loan approval for individual applicants. It provides some individual loan applicant variables as well as census tract information to allow one to test for both redlining and individual discrimination in lending. On the other hand, the data set provided in HMDA data still does not provide a comprehensive set of variables used by lenders to assess the loan worthiness of a loan applicant (Casey, 1980; Benston, 1981; Ingram and Frazier, 1982; Leven and Sykuta, 1994; Turner and Skidmore, 1999). Two articles (Munnell et al., 1996; Tootell, 1996) published from a Boston Federal Reserve Bank study conducted in 1992 included over forty variables used by lenders obtained from the Boston Federal Reserve Bank's own survey to supplement HMDA data. Although both of these studies found differential outcomes based on race, they represent studies that cannot be conducted from HMDA data alone. A researcher using HMDA data is still left with an incomplete data set that leaves a finding of differential outcomes based on race still open to challenge on the basis of a spurious relationship between race and lending practices.

In response to the Boston Federal Reserve Bank study, Becker (1993) questioned the validity of studies of loan approval or denial rates by noting that underwriters determine lending criteria based on loan default rates. In response, Ross and Yinger (107-127 in Turner and Skidmore, 1999) observed that the default approach would still have potential problems of biased findings if all variables that influenced default were not included in the study. Furthermore, there are no guarantees that the factors included in underwriting criteria are necessarily used by the lender at the time of loan approval or denial. They conclude that the loan denial approach can yield an acceptable test of the hypothesis that discrimination exists in the mortgage market.

Every study is open to methodological challenge. One can always claim that there might be some variable missing from a model that renders the resulting relation between dependent and independent variables spurious. Within the universe of available methods and data, methodological criticism makes practical sense. However, one often hears or reads methodological challenges that ask for additional data or modifications to methods that are beyond what is practically available to a researcher. At some point, such lines of questions become what Toulmin (1970, p. 205) called a limiting question:

> . . . the way of answering suggested by the form of words employed will never completely satisfy the questioner, so that he continues to ask the question even after the resources of the apparent mode of reasoning have been exhausted.

By continuing methodological criticism in the mode of a limiting question, the questioner is asking for a level of certainty that does not exist within practical parameters. At that point, the criticism becomes an ad hominem argument.

In Cosmopolis, Toulmin (1990, p. 137) suggested a different level of adequacy in the following statement:

> Our revised account may or may not stand up to further factual examination, but at least it is based on circumstantial observations and plausible interpretations.

Here, Toulmin claims that, although always open to challenge in the face of further evidence, a study is adequate if it is consistent with the available evidence and if the interpretation of the available evidence is plausible. While such criteria of adequacy cannot guarantee certainty, they provide guidelines for the practical use of experience.

For the purpose of this study, Toulmin's criteria of adequacy means that one can test for the possible presence of differential lending activity based on race, sex, and other characteristics using the best data available to any researcher: the HMDA Public Transmittal Sheet records. Most researchers would not be able to use the methodology used in the Boston Federal Reserve Bank study either because they might not be able to get the cooperation from lending institutions in the same manner as a branch of the Federal Reserve Bank or because they might not be able to fund such a survey. While there are methodological reasons for believing that studies based on HMDA and census data alone might overstate the presence of differential lending activity based on race, there are no studies that conclusively demonstrate that the overstatement is directionally an incorrect statement (Turner & Skidmore, 1999). Furthermore, Toulmin's approach obligates the researcher to use the best approach of modeling and testing available to one. Beyond this, a reasonable methodological challenge to a study is practically moot.

The real challenge to a study alluded to by Toulmin is a substantial challenge to the adequacy of a study provided by further factual examination. In this case, it would mean that someone would have to conduct another study and argue that it provided evidence of a different outcome. Within the limits of plausible interpretations and circumstantial evidence proposed by Toulmin, one can review studies of redlining for plausible interpretations and use HMDA data as evidence to build a test model for differential outcomes in lending based on race.

As noted earlier, statistical models can only demonstrate association among variables. Even if all practically available variables are used to model lending decisions, only statistical relations are demonstrated. One is not proving discrimination — intentional or unintentional — on the part of lending institutions. However, it is not necessary to demonstrate discrimination or even the source of an impediment to fair housing to meet the certification to affirmatively further fair housing because the purpose of the analysis is to overcome the effects of impediments. All one must do is provide evidence of an effect of an impediment to fair housing by demonstrating that a statistically significant differential lending outcome associated with race, sex, or other indicators of protected populations exists.

This finding may be spurious or caused by intervening variables. But if all relevant variables are appropriately included in a model, one can control for such prior or intervening variables. Given the limited variables in HMDA data and U. S. Census data, all relevant variables are probably not available. But, if one is simply testing for differential outcomes or effects associated with indicators of populations, it is not necessary to control for all possible spurious or intervening variables. Even if one assumes that the relation between an indicator of a protected class and lending outcome is cause by an unknown prior or intervening variable not included in the model, the prior or intervening variable and the indicator of a protected class are associated. The effect of prior or intervening variables on lending outcomes is tied to the indicator of a protected class. Whether indicators of a protected class or other associated variables are the truly significant factors associated with differential lending outcomes, the effect is that the protected class experiences an impediment to lending. Having established that, it is still important to identify the nature of the impediments to fair housing affecting a population as accurately as possible in order to develop policies that are effective in furthering fair housing.

Building the Model

To build a model based on HMDA data, Munnell et al. (1996) and Tootell (1996) have identified two categories of independent variables to test for differential outcomes based on race: (1) those associated with characteristics of census tracts containing properties for which loan applications

are being made and (2) those associated with the individual characteristics of loan applicants and their households. Studies (Shlay, 1988, 1989; Hula, 1991; Galster and Hoopes, 1993); Perle et al., 1994) that examined the characteristics of census tracts most often found the following variables to be statistically significant in predicting loan approval: the median family income, the percent of owners who had lived in a different house five years ago, the percent of vacant or vacant for sale single family detached units and condominiums, the percent of households composed of married families with children under eighteen years of age, and the percent of owner occupied units. Less often median home value was found statistically significant. Another variable that could have relevance for a census tract is the median age of housing. Several researchers (Casey, 1980; Benston, 1981; Ingram and Frazier, 1982; Leven and Sykuta, 1994) treated the age of a house in terms of depreciation and housing condition. However, the age of a house could also be considered in terms of taste. These independent variables for census tract characteristics were included in the model in this study.

Two approaches have been developed to define the racial composition of a census tract for purposes of testing for differential lending outcomes. Most studies based on data organized by census tracts define race as the percent of minority population in a census tract. However, Shlay (1989), Galster (1992), and Masset et al. (1994) have argued for the importance of reflecting racial tipping and transitional neighborhoods. In Tulsa, the percent of owner occupied units in which African Americans reside gradually increases from none to fifteen percent. Then, the distribution jumps to thirty-three percent and rapidly increases to one hundred percent. The census tracts containing thirty-three percent or more African American households among owner-occupied units are contiguous and will be entered in the model as a categorical independent variable assigned a value of 1 if the census tract is in the African American area and 0 if it is not.[1] Surrounding the African American area is a boundary area containing four of the five census tracts with ten to fifteen percent African American households among owner-occupied units and 23 of the 39 non-African American census tracts with median household incomes in the same income range as the African American area ($8,583 to $22,773). Census tracts in the boundary area are contiguous and will be entered in the model as a categorical independent variable assigned a value of 1 if the census tract is in the boundary area and 0 if it is not.[2]

Studies (Casey, 1980; Benston, 1981; Ingram and Frazier, 1982; Leven and Sykuta, 1994; Munnell et al., 1996; Tootell, 1996) that examined the characteristics of individual loan applicants and their households tended to focus on loan-to-income, loan-to-value, credit history, consumer history, mortgage history, tenure in current employment, tenure of coapplicant in current employment, occupation, years to loan maturity, annual rate of loan, life of the dwelling without major rehabilitation, first time buyer, private mortgage insurance approval, special programs, and secondary market loan. However, most of these variables are not available in HMDA data. Therefore, an indicator variable for the applicant's race (1 if African American, 0 if not), sex (1 if female, 0 if not), and number of applicants (1 if an applicant and coapplicant, 0 if applicant only) and continuous variables for the applicant's income and loan to income ratio were used to model loan approval for the individual applicant.

Since the decision to originate a loan is a dichotomous, categorical outcome, a logistic regression model (Nester et al., 1989; Agresti, 1990; Menard, 1995; Long, 1997) was developed to test for differential outcomes based on race with lending outcome as the dependent variable. If a loan was originated or approved but not accepted, the loan outcome variable was assigned a value of 1. If the loan was denied by the financial institution, the loan outcome variable

was assigned a value of 0. Rather than using the ordinary least squares method of fitting a model that is common with continuous, normally distributed dependent variables, logistic regression models — including the models fitted in this study — tend to use maximum likelihood estimators to fit a model because of the distribution of the dichotomous outcome variable.

In a critique of redlining studies, Shlay et al. (1992) observed that housing markets are local in nature. Galster and Hoopes (1993) demonstrated this by showing that different models fit lending behavior in different cities. Therefore, a model cannot necessarily be fully specified before the fact of the study. Accordingly, a comparative approach to the study of redlining that explores all suggested approaches to modeling the relation between race and lending outcomes needs to be used to explore the exact nature of the distribution of lending effects by race, sex, and other areas covered by the requirement for an analysis of impediments to fair housing choice. Therefore, four different models in which the natural logarithm of the odds of loan approval are a function of independent variables were fitted and are reported in Table 1. First, a model with the racial composition of a census tract defined as the percent of minority population in the census tract, with no interactions, and with all other dependent variables was fitted. Next, a similar model was fitted, but it used the racial composition of a census tract defined by an indicator variable for census tracts in the African American area and an indicator variable for census tracts in the boundary area. Finally, using these two schemes, two more models were fitted with additional independent variables reflecting the interaction of the area racial composition variable(s) with other census tract variables and the interaction of the race of the loan applicant with other variables associated with individual loan applicants.

Several adjustments were made to the data to control for variables not included in the model, to increase comparability between African American loan applicants and non-African American loan applicants, and to ensure the linear nature of continuous independent variables. First, to control for the possible effects of census tracts being in the central city versus suburbs and to control for the natural growth of areas of new construction versus areas of existing housing, only census tracts and loan applications in the City of Tulsa in census tracts with fewer than ten building permits issued for new residential construction in either 1990 or 1991 were included in the data set.[3] Second, since the middle four standard deviations of income of African American loan applicants were contained under $70,000, only loan applicants with incomes under $70,000 were included in the data set. Since the loan to income ratio increased geometrically for loan applicants with incomes of $10,000 or less, only loan applicants with incomes over $10,000 were included in the data set. Since loans originated or approved but not accepted and loan applications denied are the only lending actions that clearly imply an active lending decision, loan applications withdrawn by applicants or closed for incompleteness were excluded. Finally, only loan applications to purchase homes that were owner-occupied as principal dwellings were considered. The final data set included 2,270 cases.

Findings

From Table 1, the measure of multiple association between independent variables and the dependent variable, R_L^2, is relatively weak. The proportional reduction in the absolute value of the log-likelihood measure is as follows: 0.073 for Models 1 and 2, 0.080 for Model 3, and 0.095 for Model 4. If one were to select the best fitting model based on R_L^2, it would be Model 4. The measure of the proportion each model reduces error of classification of cases, (p, is moderate. The proportional reduction in the error of classification of cases is 0.371 for Model 1, 0.378 for Model 2, 0.392 for Model 3, and 0.405 for Model 4.

TABLE 1
Four Logistic Regress Models of Factors Affecting the Lending Decision

CHARACTERISTICS OF APPLICANTS							
Model 1		MODEL 2		MODEL 3		MODEL 4	
Variable	Re-gression Coefficient	Variable	Re-gression Coefficient	Variable	Re-gression Coefficient	Variable	Re-gression Coefficient
African Am. Appli cant indicator	-0.7472*	African Am. Appli cant indicator	-0.6878*	African Am. Appli cant indicator	-0.2774	African Am. Appli-cant indicator	-0.4217
				Interaction of African Am. applicant indicator with.		Interaction of African Am. applicant indicator with.	
				Sex Ind.	-1.3365*	Sex Ind.	-1.3367*
				Two app. Ind.	-1.7217*	Two app. Ind.	-1.9376*
				Income	0.0358	Income	0.0524*
				Loan to inc.	-0.1894	Loan to inc	-0.2386
Sex Indicator	0.2737*	Sex Indicator	0.2664	Sex Indicator	0.3863*	Sex Indicator	0.3857*
Two applicants indicator	-0.2716*	Two applicants indicator	-0.2692*	Two applicants indicator	-0.1582	Two applicants indicator	-0.1734
Income	0.0380*	Income	0.0378*	Income	0.0369*	Income	0.0368*
Loan to income	0.3480*	Loan to Income	0.3312*	Loan to Income	0.3707*	Loan to Income	0.3565*
Minorities per thou-sand hse	-0.0005	African Am. census tract indicator	-0.4660	Minorities per thou-sand hse.	-0.0029	African Am. census tract indicator	5.5216
				Interaction of Minorities per thousand hse. with:		Interaction of African American indicator with:	
				Median family income	-0.0000	Median family income	0.0000
				Owners	-0.0000	Owners	-0.0144

If one were to select the model that most improved the efficiency of classification of cases as approved or rejected loans, it would be Model 4. While the magnitude of the measure of multiple association and of efficiency of classification are similar for all four models, the ordering of the four models by goodness of fit and by efficiency of classification is the same. Therefore, Model 4 will be deemed to be the best fitting model.

The variables in Model 4 that are statistically significant at the .05 level or better as assessed by the Wald statistic are: sex, loan to income, income, owners per thousand households in the census tract containing the property, families per thousand households in the census tract containing the property, median age of housing in the census tract containing the property, the boundary census tract indicator, and interactions

TABLE 1
(continued)

				Movers	0.0000	Movers	0.0069
				Median age of housing	0.0000	Median age of housing	-0.0622
				Median value of hse	0.0000	Median value of hse	0.0002
				Families	0.0000	Families	-0.0047
				Vacant for sale	-0.0000	Vacant for sale	0.0047
		Boundary census tract indicator	-0.1312			Boundary census tract indicator	10.8959*
						Interaction of Boundary Indicatory with:	
						Median family income	-0.0000
						Owners	-0.0067
						Movers	-0.0160*
						Median age of housing	-0.0044
						Median value of hse	0.0000
						Families	-0.0048
						Vacant for sale	-0.0008
Median family income	-0.0000	Median family income	-0.0000	Median family income	-0.0000	Median family income	-0.0000
Owners	0.0022*	Owners	0.0022*	Owners	0.0024*	Owners	0.0039*
Movers	0.0005	Movers	0.0005	Movers	0.0005	Movers	0.0011
Median age of housing	0.0121	Median age of housing	0.0144*	Median age of housing	0.0091	Median age of housing	0.0150*
Median value of hse	0.0000	Median value of hse	0.0000	Median value of hse	-0.0000	Median value of hse	-0.0000
Families	-0.0019*	Families	-0.0018*	Families	-0.0020*	Families	-0.0023*
Vacant for sale	-0.0011	Vacant for sale	-0.0005	Vacant for sale	-0.0011	Vacant for sale	-0.0025
R_L^2: 0.073 ρ: 0.371		R_L^2: 0.073 ρ: 0.378		R_L^2: 0.080 ρ: 0.392		R_L^2: 0.095 ρ: 0.405	

* Wald statistic is significant at the .05 level.

of African American applicant indicator by the applicant sex indicator, African American applicant indicator by the indicator for two applicants, African American applicant indicator by the applicant's income, and the boundary census tract indicator by the number of owners in the census tract containing the property who had lived in a different house five years ago per thousand owners.

As Munnell et al. (1996) and Tootell (1996) found, the race of the applicant rather than the racial composition of the area in which a property is to be purchased is the racial variable that affects loan outcome. However, unlike Munnell and Tootell, the race of the applicant interacts with the sex of the applicant, the number of persons making the application, and the income of the applicant. These interactions could reflect some of the other variables from the Boston Federal Reserve Bank study used by Munnell et al. (1996) and Tootell (1996). All other variables being equal, sole loan applicants that are African American females are predicted to be more likely than any non-African American applicant to receive loan approval with incomes over $25,510 and less likely with incomes less than $25,510. African American applicants that have two persons applying for the loan with a male as the principal applicant — all other variables being equal — are predicted to be more likely than any non-African American applicant to receive loan approval with incomes over $36,980 and less likely under that income. African American male applicants who are sole applicants are predicted to be more likely than any non-African American applicant to receive loan approval over the entire income range in this study. They are predicted to be almost twice as likely as any non-African American to receive loan approval at the lowest income ($11,000) and thirty-seven times more likely at the highest income ($69,000). These findings are in the opposite direction of the findings of Cloud and Galster (1993) and Yinger (1995), who found that African Americans have comparable loan approval rates to non-African Americans in lower income ranges and lower loan approval rates in higher income ranges. However, Turner and Skidmore (1999) report that reversed results were found between two different regions of the country even when paired tester methods were used.

If one examines the African American population of loan applicants, thirty-two percent are sole male applicants, thirty percent are sole female applicants, thirty-four percent are two applicants with the male as the principal applicant, and four percent are two applicants with the female as the principal applicant. All other variables being equal, sole-African American male applicants are predicted to be almost four times more likely than sole-African American female applicants to receive loan approval. Sole-African American female applicants are predicted to be almost twice as likely to receive loan approval as two applicants with the male as the principal applicant. Since none of the models in Table 1 include variables measuring credit history or debt to income and since households with more persons at the same income level tend to have more expenditures (U. S. Department of Labor, Bureau of Labor Statistics, 1993), this ordering is possibly reflective of increased debt associated with children and increased household size.

All of the studies reviewed for this study and the interpretation of the findings of this study to this point have adopted a ceteris paribus strategy to test for the unique contribution of race to loan approval rates. However, when one examines the significant variables other than race for Model 4, one finds that the mean level of several variables for African Americans and for non-African Americans are not similar. While African American loan applicants have average incomes of $27,920, non-African American loan applicants have average incomes of $34,280. In African American census tracts, there is an average of 595 owner occupied units per thousand occupied. In non-African American census

tracts, there is an average of 696 owner occupied units per thousand occupied households.

For African American loan applicants and for applicants for housing in African American census tracts, these differences in the average level of these variables are significant. If the average income of African American applicants were the same as non-African American applicants, the predicted odds of loan approval for African American loan applicants would be seventy-six percent higher. If home ownership were as concentrated in African American census tracts as in non-African American census tracts, the predicted odds for loan approval for a property in an African American census tract would be fifty percent higher.

Policy Implications And Conclusion

The populations that seem to experience diminished lending outcomes in this study cannot be described by single variables alone. Therefore, housing policies cannot be built on simple income or racial categories. To address the situation in Tulsa, one would need to target housing assistance for home ownership to female, African American sole loan applicants with incomes less than $25, 510 and to African American applicants that have two persons applying for the loan with incomes less than $36,980. Depending on the number of persons in the household, assistance provided under the definition of low to moderate income families under Department of Housing and Urban Development guidelines may not be available to those applicants on the upper end of these income categories.

Although a policy addressed to these two populations of loan applicants might resolve the problem of diminished lending outcomes for these populations ceteris paribus, these populations of loan applicants do not exist ceteris paribus as individuals alone. They exist in racially and economically segregated communities (Shevsky and Bell, 1955; Berry and Kasarda, 1977). As noted above, African Americans as a population have lower mean incomes than non-African

Americans. Home ownership in predominantly African American census tracts is lower than in predominantly non-African American census tracts. To address the problem of diminished lending outcomes in the predominantly African American area, one would need to develop policies to increase the income levels of African Americans or to offset the lower income levels with lending programs to address the problem of lower incomes. Similarly, home ownership programs need to be targeted for the predominantly African American area to addressed the diminished lending outcomes associated with lower concentrations of home ownership in that area.

Finally, the approach of this study implies a different policy approach to addressing effects of impediments to fair housing choice than that implied in the literature reviewed for this study. Most of the literature reviewed for this study focused on finding evidence for discrimination in lending. Focusing on this legally threatening issue invites a demand for a level of certainty that is not practically possible. It encourages a proliferation of speculation about potential variables not included in a model as alternative hypotheses explaining evidence of discrimination. It leads to a ceteris paribus approach that ignores differences in populations that have real effects on racially and economically segregated neighborhoods. In its extreme form, it leads to a possible justification of differential lending treatment by identifying default rates uniquely attributable to race. The approach suggested in this study shifts the emphasis to identifying populations that experience differential outcomes or effects with respect to lending. Policies and programs can be crafted to assist populations overcome effects without necessarily addressing causes that are difficult to specify. By adopting this approach, the problems of unattainable levels of certainty and limited access to variables can be addressed.

Notes

1 The census tracts excluded from consideration for this reason in this study, using the 1980 census tract numbering configuration, are: 10, 50.02, 67.04, 73.06, 73.07, 74.03, 75.05, 76.01, 76.03, 76.04, 76.05, 76.06, 76.07, 90.05, and 101.

2 The predominantly African American area includes census tracts 2, 5, 6, 7, 8, 9, 57, 61, 62, 79, 80.02, and 91.01.

3 The census tracts include (in 1980 configuration): 1, 3, 4, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 46, and 80.01. The exceptions falling outside of the edge of the predominantly African American area are census tracts 31, 34, 35, 48, 49, 50.01, 59, 67.01, 68.01, 69.05, 71.01, 81, 86, 88, 90.02, and 90.04.

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