

# Flaws in the Use of Loan Defaults To Test for Mortgage Lending Discrimination

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## *Abstract*

*This critique examines the proposal that loan defaults can be used to test for the existence of discrimination in the mortgage approval process. The critique then shows that a test based on loan defaults is biased against finding evidence of discrimination and that some of these key biases do not arise in a direct test using loan approval data. Finally, the critique examines and rejects a similar proposal to use information on lender loss upon default to test for differential treatment during the foreclosure process.*

Recent studies by Berkovec, Canner, Gabriel, and Hannan (BCGH) (1994, 1995) have led to renewed debate concerning discrimination in mortgage lending. BCGH follow a default approach to test for discrimination, arguing that if minority borrowers are held to higher standards than nonminority borrowers, only high-quality minority loans will be approved and minority loans will have lower default rates than nonminority loans. They find that for African Americans the theoretical prediction is not supported by empirical evidence; rather, African-American borrowers have higher default rates.

Mortgage lenders cite the studies as evidence that they do not systematically discriminate against African Americans. Canner cautions, however, that this interpretation is inaccurate, because there are forms of discrimination that the studies do not address (Karr, 1995). For example, BCGH admit that the default approach cannot test for statistical discrimination, in which lenders face an economic incentive to discriminate because minority borrowers are more likely to default on loans for reasons that are unobservable at the time of loan approval. BCGH are, in essence, testing for discrimination due to prejudice, in which the lenders face a trade-off between their prejudice and bank profits and only approve minority loans that are very good risks.

This critique argues that the default approach is not a good test for discrimination due to prejudice. The first section maintains that the default approach is a poor test if the correlation between unobservable characteristics in the loan approval and default equations is small. The second section shows that the assumptions made in the default approach are inconsistent with current findings of racial differences in loan approval, such as the results

of Munnell, Browne, McEneaney, and Tootell (1992). The third section concludes that a second test conducted by BCGH, in which they test for discrimination in loan foreclosure using an analysis of lender loss upon default, suffers from many of the same problems as the default approach and argues that some of those problems could have been avoided. Finally, this critique raises the possibility that minority loans may be riskier than nonminority loans after controlling for variables that are observable at loan approval and addresses the policy issues arising from this possibility.

## Correlation Across Equations

The default approach is based on the fact that the loan approval process is likely to lead to a selected sample of approved loans. If minorities are held to a higher standard for loan approval, approved minority loans will be of higher quality with regard to characteristics observed by the lender at the time of loan approval but not measured by researchers (unmeasured characteristics). If these unmeasured characteristics are correlated with borrower default, minority loans should have lower default rates than nonminority loans after controlling for loan characteristics observed at the time of loan approval.

By the same argument, however, if there is no correlation between unmeasured characteristics and default, default rates cannot be influenced by the loan approval process. This correlation may, in fact, be very weak. Loan default is determined by many factors that arise after loan approval, such as changes in local housing and labor markets. These factors may have a much larger effect on the probability of loan default than unmeasured characteristics. Likewise, the impact of racial differences on default may consist almost entirely of differences that were not evident at the time of loan approval.

A similar argument can be applied to tests for discrimination based on loan approval data. If unmeasured characteristics are correlated with race, the loan approval-based tests may be biased. If the correlation is negligible, however, the unmeasured characteristics must have little effect on default, and their use cannot be justified by business necessity. Therefore, unexplained racial distinctions made by lenders can be interpreted as discrimination, and the existence of unmeasured characteristics does not bias the loan approval-based tests. Unfortunately, accurate estimates of this correlation are not available. Simultaneous estimations of loan approval and default equations do not exist, because no mortgage data set combines both denied loan applications and outcomes of approved loans.

## Racial Differences in Loan Approval

As stated above, the default approach tests whether minority loans have lower default rates than nonminority loans and implies that discrimination based on prejudice does not exist if minority loans have the same rate of default or a higher one. This implication is based, however, on the assumption that minority and nonminority tendencies toward defaulting are identical if there is no discrimination based on prejudice and after controlling for loan characteristics observable at the time of loan approval.<sup>1</sup> This assumption is not valid. To understand why that is so, one must first assume that there is no discrimination based on prejudice. Then one should note that Munnell et al. find lower loan approval rates for minorities after controlling for observed characteristics.

Since the assumption is that these findings do not arise as a result of lender prejudice, this critique offers two alternative sources for the findings:

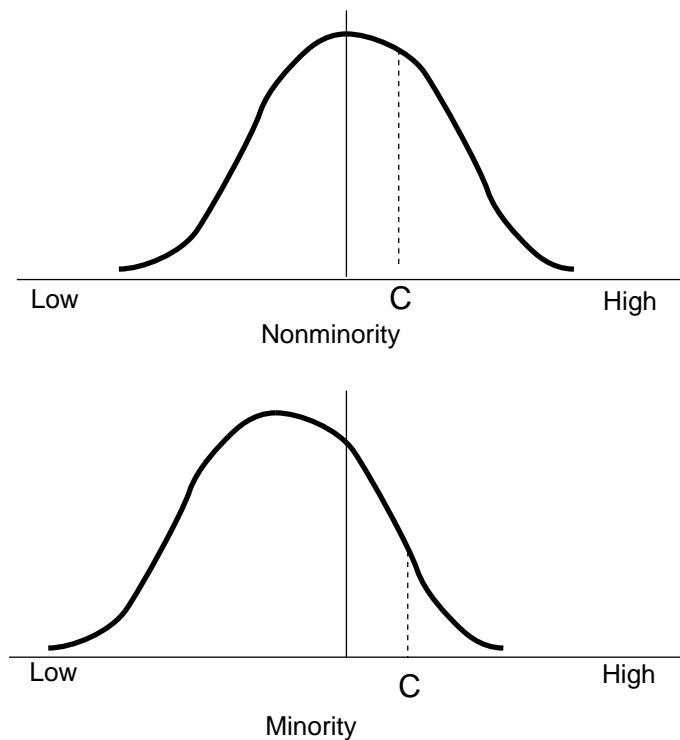
- Unmeasured characteristics that are correlated with race and predict loan default (omitted-variable bias).

- Unobserved characteristics that are correlated with race, explain default, and provide lenders with an economic incentive to discriminate (statistical discrimination).<sup>2</sup>

For the first alternative, one should assume that the findings of Munnell et al. are due to omitted-variable bias. The resulting distribution of minority and nonminority unmeasured characteristics is illustrated by figure 1. In this situation minority loan applications are less likely to be approved, because the average quality of minority loans is lower for unmeasured characteristics. Since it is assumed that there is no discrimination due to prejudice, observationally identical minority and nonminority borrowers are held to the same standard (C) on unmeasured characteristics, nonminority loans are more likely to be approved, and the resulting nonminority loans have a higher average quality level after controlling for observed characteristics. Under these conditions, nonminority loans should have lower, not equal, default levels, which contradicts the basic assumption of the default approach and biases it away from finding discrimination due to prejudice (see Ross, forthcoming).

**Figure 1**

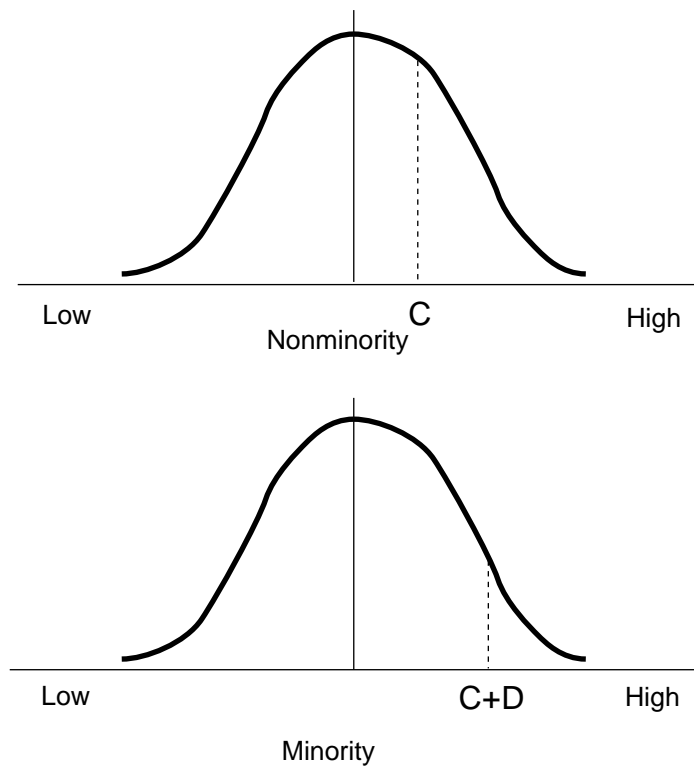
Distribution of Unmeasured Characteristics for Loan Application Quality:  
Case of Omitted-Variable Bias



For the second alternative, one should assume that there are no systematic racial differences in unmeasured characteristics and that the findings of Munnell et al. are due to statistical discrimination. In other words, there are unobserved characteristics that create an economic incentive for lenders to hold minorities to a higher standard. The result is shown in figure 2, in which the distribution of minority and nonminority loan quality is identical but minority loans are held to a higher standard (C+D). Statistical discrimination raises the average quality of approved minority loans, but the unobserved characteristics directly lower the quality of approved minority loans. Since there is no reason to believe that these two effects would cancel each other out, minority and nonminority samples of approved loans may not have the same average quality in regard to unobserved characteristics. The assumption that minority and nonminority default rates are equal when there is no discrimination due to prejudice is again contradicted.

**Figure 2**

Distribution of Unmeasured Characteristics for Loan Application Quality:  
Case of Statistical Discrimination



In fact, Ross (forthcoming) examines this possibility for loan defaults. The author assumes that lenders hold minorities to a higher standard in order to equalize the expected propensity to default, finds that the relative decrease in minority defaults resulting from statistical discrimination is smaller than the existing difference resulting from unobservable

characteristics, and concludes that the default approach is biased away from finding discrimination due to prejudice.<sup>3</sup>

The intuition behind this conclusion is that the lender holds minority loans to a standard that exactly cancels out the racial differences in loan quality. These racial differences, however, affect loan default directly, while statistical discrimination affects loan default by creating a selected sample of loans. The two shifts in loan quality are the same size, but one shift enters the default process through a selection bias term. If the unobservable variables are distributed normally, the slope of this selection term is less than 1, and the effect of statistical discrimination on default is less than the impact of existing racial difference on default due to unobservable characteristics.

## Foreclosure and Lender Loss

The default approach may also be biased because lenders may act to foreclose minority loans more aggressively than nonminority loans. BCGH examine this possibility using a lender loss approach, which is very similar to the default approach. They argue that if lenders foreclose more quickly on minority loans, then minority defaults should exhibit lower lender loss, because a quick foreclosure tends to limit losses on defaulted loans. They estimate a model of lender loss, do not find lower minority losses, and conclude that lenders do not foreclose more quickly on minority loans. In other words, they conclude that lenders do not discriminate against minorities in the loan foreclosure process.

However, the foreclosure decision is based on all of the information available to the lender when the loan is actually at risk of default. If lenders discriminate against minorities in foreclosure, minority loans must have lower losses after controlling for all characteristics available at the time of foreclosure. BCGH have estimated the wrong model by including only information available at the time of loan approval. If minorities have worse experiences on average after loan approval, minority defaults may result in larger loan losses. The omission of these observable, postloan approval characteristics biases the lender loss approach away from finding discrimination in the foreclosure process.

In addition, BCGH estimate the race coefficient for the sample of defaulted loans, but the lender loss approach is based on the argument that the default process creates a *selected* sample of defaulted loans. In the default approach, the effect of the approval process on loan default cannot be directly estimated; however, the selection effect in the lender loss approach is estimable. The effect can be found by estimating both the race coefficient in a model of potential lender loss for all approved loans and the race coefficient in a model of actual lender loss for defaulted loans. The selection effect due to the default process is the difference of these two race coefficients. However, BCGH have only estimated the race coefficient for actual lender loss. If minority loans have higher potential lender loss for approved loans, BCGH's approach is biased away from finding discrimination in foreclosure.<sup>4</sup>

As discussed above, a key problem in any examination of loan default is the inability to distinguish between racial differences in borrower propensity to default and in lender propensity to foreclose. This problem also pervades any attempt to analyze lender loss. It is very difficult to separate the effects of lender and borrower behavior when default, by its very nature, results from a failed negotiation between the borrower and the loan officer.<sup>5</sup> This problem can be resolved only by a detailed analysis of the behavior of borrowers and lenders when a loan is at risk of default.

## Fair Lending and Statistical Discrimination

The preceding pages raise the possibility that African Americans are more likely to default on loans and that these defaults may result in larger lender losses. If this possibility is true, it gives lenders an economic incentive to use race as a signal of possible high-risk loans and also to be more selective in approving African-American loan applications and more aggressive in foreclosing on these loans. As noted earlier, such behavior is called statistical discrimination and is illegal.

However, both the default and lender loss approaches will fail to find evidence of discrimination when lenders have an economic incentive to discriminate. If performance-based analyses such as these are used to justify lender behavior, lenders may practice statistical discrimination with impunity. This situation leaves Federal regulators with a choice of one of the following short-term policy options:

- Enforce the statutes that prohibit any form of discrimination by examining the loan approvals, as is currently being done.
- Allow lenders to use race as a signal of high default risk and hold minorities to higher standards.
- Subsidize African-American loans in order to compensate lenders for racial differences in loan outcomes, thus eliminating the economic incentive for discrimination.

If the first option is followed, banks will be forced to incur the additional default costs associated with minority loans. These costs will be passed on to borrowers and possibly to depositors in the form of higher mortgage interest rates and lower interest payments on deposits. If the second option is followed, the additional default costs will fall primarily on African-American households, because they will be denied mortgages more often and their mortgages will be foreclosed more rapidly. The third option will spread the cost broadly by using tax dollars to eliminate a lender's economic incentive to discriminate.

I believe that the first option is the only reasonable choice. The third option is not politically feasible, and the second contradicts a basic principle of equal treatment in our society. Regardless of whether a protected class performs badly *on average*, an institution cannot exclude an *individual* on the basis of race, ethnicity, or gender if that individual is qualified on the basis of observable characteristics.

I believe that compromising on this principle would do great harm. A basic notion of fairness in this Nation is that people should be judged on their accomplishments, not punished for the actions of others in their race or ethnic group. In addition, the cause of racial differences in rates of default is unknown. These differences may arise because of discrimination in other sectors of the economy, which increases the probability that African-American borrowers will experience adverse outcomes after loan approval. If so, is it fair to discriminate against an individual on the basis of unobservable differences that may occur because of expected discrimination? It may seem unfair to force homeowners and depositors to bear the costs associated with more frequent African-American loan defaults, but it is the only feasible option unless society is willing to pay for that cost directly with public dollars.

## Summary and Conclusions

The correlation between unobservable characteristics in the loan approval and default equations is the key to understanding current disagreements over discrimination in mortgage markets. If the correlation is very low, lenders have little excuse for excluding

minorities on the basis of characteristics that have not been well specified and do not explain loan performance. If the correlation is high, the sample selection caused by the loan approval process could be substantial, and the default approach may provide some insights concerning the nature of discrimination. At present, however, no data set exists that allows the estimation of this correlation.

Even if the correlation is high, the default approach may be a biased test of discrimination due to prejudice. If such discrimination exists, it may be hidden by racial differences in default rates. Such differences may be caused by unmeasured characteristics observed by the lender. Alternatively, unobserved racial differences in loan quality may exist. Even if all lenders maximize their profits by engaging in statistical discrimination, racial differences in default rates may remain and may hide discrimination due to prejudice.

Finally, an analysis of loan foreclosure using lender loss suffers from the same flaws as the default approach. This lender loss approach cannot distinguish between differential treatment in foreclosure and racial differences in propensity to default. Loan default and/or foreclosure is a negotiated process, and the significance of racial default differences will remain a mystery until the nature of this negotiation is explored in detail.

The most important result of BCGH is their careful documentation of racial differences in loan default. These differences should be of concern to policymakers, because defaults may impose large costs on minority borrowers and a high minority propensity toward defaulting may create an incentive for lender discrimination that government policy cannot overcome. BCGH make no attempt, however, to explain the origin of the default differences, and without such an explanation nothing about the nature of lending discrimination can be learned from default rates. This omission is even more disturbing when combined with attempts by others to use their study as a justification for racial differences in the loan approval process.

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## *Notes*

1. Specifically, the default approach assumes that default rates are equal if minority and nonminority loan applicants are held to the same standard. This is the same as an assumption that there is no discrimination due to prejudice as long as prejudice does not result in entirely random actions of loan denial without regard to the borrower's qualifications. Munnell et al. use a statistical framework, which also assumes that discrimination is not random.
2. This discussion is not intended to address the issues of endogeneity raised by Rachlis and Yezer (1993).
3. Ross (1994) observes that loan performance approaches are biased for discrete dependent variables such as loan default, because the approval process affects the estimated coefficients through both the mean and the variance of the error distribution. As a result, the author examines a performance approach based on a continuous index of

loan profitability. If the variance bias identified is large, the default approach is hopelessly flawed. Alternatively, if the variance bias is small, the author's analysis for a profitability index also applies to the default approach, and that approach is biased away from finding discrimination due to prejudice.

4. A similar procedure for loan profitability is presented in Ross (1994).
5. The same concern applies to Yezer, Phillips, and Trost (1994), who argue that loan terms are endogenous and conclude that this fact biases approval-based tests for discrimination towards finding discrimination. This result arises, however, because the author's approach intrinsically views loan terms as being chosen freely by the borrower rather than as the result of a negotiation between the borrower and the loan officer.

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