

Racial Discrimination In Hire/Purchase Lending In Apartheid South Africa

by

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Abstract

A partial-observability model finds evidence of racial discrimination by retailers of consumer durables in apartheid South Africa. In particular, black households are 13 percentage points more likely to demand a hire/purchase loan but not to have one supplied than are other households, all else equal.

Keywords: Consumer finance, disequilibrium models, racial discrimination, truncated and censored models, South Africa

I. The Scope and Structure of Hire/Purchase Lending

One goal of the Reconstruction and Development Programme (RDP) is to provide access to financial markets to all South Africans. After savings deposits, the most common formal financial product used by black South Africans are hire/purchase agreements between households and retailers of consumer durables such as televisions or furniture. Hire/purchase loans are also the most common formal loan used by rural households, poor households, and female-headed households (Schreiner, Graham, and Coetzee). Therefore, understanding the structure of hire/purchase lending may inform the RDP's attempts to extend the frontier of formal lending.

Even though hire/purchase agreements are legally structured as rental agreements, they are equivalent to conventional installment loans. For example, a borrower may agree to make rental payments of 120 Rands per month for 12 months for a wardrobe with a cash price of 1,000 Rands. Although there is no explicit interest rate, the implicit effective interest rate is about 73% per year.¹ If the borrower misses a payment, then the lender may repossess the wardrobe. Unless a fee is paid, the borrower loses the wardrobe and the accumulated equity implicit in any payments made before falling into arrears.

On the supply side, there are at least two reasons why lenders are willing to supply small, short loans. First, hire/purchase loans are well-secured because they generate their own collateral. Second, hire/purchase loans generate high yields and are profitable.

¹ The cash price is the equivalent of the principal of a loan, and the periodic rental payments are the equivalent of the installment payments of a loan. The periodic effective interest rate is the periodic discount rate that would make the present value of the inflow of the loan principal followed by periodic outflows of the loan installments be zero. The annual effective interest rate is the periodic effective interest rate multiplied by the number of periods in a year.

On the demand side, there are at least three reasons why households accept the stringent terms and high interest rates of hire/purchase loans. First, there is a strong demand for consumer durables. Second, many households who cannot qualify for other types of loans nevertheless have cash flows sufficient to qualify for hire/purchase loans. Third, some households may not realize that hire/purchase loans carry very high effective interest rates.

In South Africa, the Usury Act (No. 73 of 1968) limits the interest rate on loans greater than 6,000 Rands. At the end of 1993, this ceiling was about 26 percent per year. As illustrated above, however, the effective interest rates on hire/purchase loans can easily exceed this limit. This does not necessarily mean that hire/purchase lenders are usurious. Because most of the per-loan costs of lending are fixed, the per-Rand costs of small, short loans exceed those of large, long loans (Adams, Graham, and Von Pischke, 1984). Thus, hire/purchase loans reach black, poor, rural, and female-headed households precisely because their legal structure allows them to charge cost-covering interest rates without incurring social disapproval nor legal difficulties.

II. Possible Policy Implications of This Investigation

The study asks if, during the waning months of apartheid, a potential customer's race affected hire/purchase lending. Each of the two possible outcomes has policy implications.

The first possible outcome is a lack of statistical evidence that race affected hire/purchase lending. This would imply that hire/purchase lending embodies a technology and a market structure that reaches relatively poor households regardless of race. The policy implication is that if lenders can make well-secured loans and can circumvent legal and social impediments to charging interest rates high enough to cover the costs of supplying small, short loans, then the natural forces of competition and the market may circumvent artificial political institutions such as

apartheid. If there is competition and non-discrimination, then profits do not imply exploitation.

Relaxing or repealing the Usury Act would make supplying small, short loans more socially acceptable and more profitable. This could increase the availability of credit cards or bank loans for purchases of consumer durables, further increasing competition, lowering interest rates, and increasing the number of households with access to loans for consumer durables.

The second possible outcome is the presence of statistical evidence that race affected hire/purchase lending. The policy implication depends on the way race affected hire/purchase lending. On the one hand, there may have been statistical discrimination: lenders were not bigots, but race may be correlated with economic characteristics which are unobserved by the lender but which are correlated with creditworthiness. In this case, the solution is to develop information technology so that it is more profitable to observe all characteristics correlated with the creditworthiness directly rather than to use race as a proxy for unobserved characteristics.

On the other hand, lenders may have been bigots and, because competition and the profit motive were weaker than prejudice, market forces were not the remedy. In this case, the solution is more difficult. If economic incentives were sufficient, then there would not have been no discrimination in the first place.

There are at least two ways to combat prejudice, given that hearts and habits are not completely subject to laws nor to economic incentives. The first way is by relaxing or repealing the Usury Act, making lending for consumer durables more attractive to the competitors of hire/purchase lenders. Eventually, competition should drive bigots out of business (Becker).

The second way is by removing all traces of the race of an applicant from the written credit application. Although race is not explicitly recorded on written applications for

hire/purchase loans, applications do include the applicant's address, the applicant's name, and, in many cases, the names of parents and relatives. Given the linguistic, cultural, and ethnic history of South Africa as well as the geographic implications of apartheid, a person's race is often easily guessed from an address or a surname. Although written applications are usually evaluated by someone who has not met the applicant, the loan application provides enough information to guess the applicant's race.² Removing obvious clues to a borrower's race from written applications would make being bigoted more difficult.

There is evidence that hire/purchase lenders discriminated against black households. Controlling for economic factors that affect creditworthiness (and thus supply) and for factors that affect desire for consumer durables (and thus demand), black households are 13 percentage points more likely to desire a hire/purchase loan but not to have one than are other households.³

Some black households without hire/purchase loans are just as creditworthy as some other households with hire/purchase loans. The RDP could facilitate the extension of the frontier of formal loans to black households by relaxing or repealing the Usury Act and thereby increasing the competition faced by the suppliers of hire/purchase loans, and by removing obvious clues to a potential borrower's race from written loan applications.

III. Characteristics of Loan Markets Affecting the Detection of Discrimination

A model used to detect discrimination should incorporate at least five fundamental characteristics of loan markets. First, observed debt depends on both demand by borrowers and

² Of course, the name and address of the potential borrower must be recorded by the lender, but the evaluator does not need this information.

³ *Other households* encompasses coloured, Indian, and white households.

on supply from lenders. To observe a hire/purchase loan, the household must desire a consumer durable and be willing to borrow, and the lender must be willing to supply the loan. If a disproportionately high demand leads to a high proportion of black households having hire/purchase debt even in the face of discrimination, then ignoring demand could incorrectly fail to find evidence of discrimination.

Second, loans are rationed, even in equilibrium (Stiglitz and Weiss, 1981). For this paper, *rationing* is defined as when the price and contractual terms do not fully adjust to equalize supply and demand. The main cause of rationing in loan markets is, of course, default; prudent lenders will not meet the demand of non-creditworthy borrowers. In addition, asymmetric information may lead to signaling, learning, and enforcement costs so high that the potential transaction never takes place. It also may be prohibitively costly for suppliers of hire/purchase loans to tailor interest rates and other contractual terms to the circumstances of individual borrowers.

Third, both borrower and lender have veto power, and either may ration the other. Under *demand rationing*, the demander is unwilling to borrow as much as the supplier would like to lend. *Supply rationing* is the converse. Both types of rationing are not infrequent with hire/purchase loans. For example, the households whom the lender is likely to perceive as creditworthy are exactly those households who are most willing and able to pay cash.

Fourth, rationing by either borrower or lender may take two forms. Under *loan rationing*, no loan is transacted although one party would have preferred a transaction. Under *amount rationing*, a loan is transacted but the loan is smaller than one party would have liked. In the case of hire/purchase loans, there is loan rationing because some customers pay cash even though the retailer would like to lend to them and because some customers are denied credit even though

they would like to borrow. There is also amount rationing, but this study ignores this.

Fifth, not all creditworthy households wish to hold debt at all times. Consumer durables are purchased infrequently. Therefore, even creditworthy households who are willing to borrow to finance consumer durables will not hold hire/purchase debt at all times.

An econometric model designed to detect discrimination must distinguish between rationing and discrimination, between demand rationing and supply rationing, between loan rationing and amount rationing, and between the absence of debt and the inability to acquire debt.

Discrimination is defined as providing smaller loans and/or providing loans with more stringent terms to borrowers who are identical with respect to creditworthiness but who differ with respect to characteristics unrelated to creditworthiness, such as race. Discrimination is related to rationing in that discrimination is supply rationing correlated with race.⁴

This paper is concerned with discrimination in the form of supply-loan rationing correlated with race. That is, lenders may refuse to supply a loan to black households who are otherwise equivalent to other households who are supplied with a loan.

IV. Hypothesis and Data

The null hypothesis is that hire/purchase lenders did not discriminate against black households. The data set is derived from a comprehensive survey of a nationwide random sample of 8,848 households during August-December of 1993, the last months of apartheid (May *et. al.*, 1995; Project For Statistics On Living Standards and Development, 1994). The survey collected all the variables observed by hire/purchase lenders.

⁴ Supply rationing that is random or that is correlated with economic criteria is not discrimination.

The dependent variable was taken as the presence or absence of hire/purchase debt. Independent variables may affect only demand, only supply, or both demand and supply. Table I classifies the regressors by inclusion in supply, in demand, or in both.⁵

On the demand side, some variables influence demand because they influence repayment ability without influencing supply because they are not observed by the lender. In particular, the lender cannot observe the amount of monthly payments to informal creditors, the existence of other formal debts, or the employment status of non-applying household members.

Several demographic variables influence demand but not supply because they proxy for the life-cycle stage of the household and thus for the demand for consumer durables. These variables do not influence supply because the lender does not care why a consumer durable is purchased, but rather cares only about the existence of ability and willingness to repay a hire/purchase loan. In particular, the age of the head of the household, the size of the household, and the recent migratory status of the household are likely to influence demand because younger, larger, and newer households are likely to have higher demands for consumer durables.

Some economic characteristics influence supply but not demand because they affect the ability to signal repayment capacity without necessarily affecting actual repayment capacity. In particular, applications for hire/purchase loans gather information on the employment status of the borrower and enough information to enable checking for past defaults with a credit bureau. Thus the employment of the household head and home ownership may proxy for having a formal credit history without necessarily affecting actual creditworthiness.

⁵ The means of the independent variables classified by black households, other households, all households, and monthly expenditure quintile is available from the authors.

Monthly expenditure influences both supply and demand because it proxies for cash flow and thus repayment capacity. Some demographic variables are also likely to influence both supply and demand. The location of a household affects transactions costs for both the borrower and the lender. The sex of the household head may influence demand because female-headed households are usually single-parent or older households. Sex may affect supply via discrimination, although that issue is not addressed here. Finally, race may affect supply through discrimination, and it may affect demand through cultural habits or other effects of the legacy of apartheid.

V. Specifying a Model to Test For Discrimination

It is appropriate to test for discrimination via supply-loan rationing correlated with race with a partial-observability model because the observed absence of debt at the time of a survey could be explained by any of the following unobserved events:

- *No rationing.* Neither borrower nor lender desires a transaction, or the borrower is uncreditworthy;
- *Demand-loan rationing.* Households are unwilling to borrow, but retailers are willing to lend;
- *Supply-loan rationing.* Retailers are unwilling to lend, but households are willing to borrow;
- *Purchase infrequency.* The household is willing to borrow and the retailer is willing to lend, but it happens that the household did not borrow on hire/purchase recently enough that it had not completed payments by the time of the survey..

Of course, if it is observed that a household does have a monthly payment for hire/purchase debt, then it is known that the household was willing to borrow, the retailer was willing to lend, and the household financed the purchase of consumer durable with a hire/purchase agreement recently enough that it had not completed payments at the time of the survey.

Let DL^* be a household's unobserved demand for a hire/purchase loan, where the household demands a loan if DL^* is unity. Define SL^* analogously for supply. QL , the observed

existence of a hire/purchase loan, is unity if both DL^* and SL^* are unity.

Let $X_i, i=D, S$, be vectors of independent variables influencing supply or demand.

Identification requires that $X_D \neq X_S$. Finally, assume that supply and demand have random elements $\epsilon_i, I=DL^*, SL^*$, that are independent and normally distributed.⁶ Formally,

$$DL^* = \begin{cases} 1 & \text{if } \beta'_{DL} X_D + \epsilon_{DL} > 0, \\ 0 & \text{otherwise} \end{cases},$$

$$SL^* = \begin{cases} 1 & \text{if } \beta'_{SL} X_S + \epsilon_{SL} > 0, \\ 0 & \text{otherwise} \end{cases},$$

$$\epsilon_{DL}, \epsilon_{SL} \sim \text{Normal}(0,1),$$

$$QL = \min(DL^*, SL^*), \text{ and}$$

$$\begin{aligned} \text{Prob}(QL = 1) &= \text{Prob}(DL^* = 1) \text{Prob}(SL^* = 1) \\ &= \text{Prob}(\beta'_{DL} X_D > 0) \text{Prob}(\beta'_{SL} X_S > 0). \end{aligned}$$

The probability of observing a monthly payment for hire/purchase debt is the product of the probability that the borrower demanded a loan recently enough not to have completed payments at the time of the survey and the probability that the lender was willing to supply a loan.

The probability of supply-loan rationing is the probability that the household demanded a loan and that the lender was unwilling to supply one, that is, $\text{Prob}(DL^*=1)\text{Prob}(SL^*=0)$.

Discrimination is estimated as the influence of race on the supply-loan rationing. This is simply the difference between the probability of supply-loan rationing for a black household and the probability of supply-loan rationing for an other household, all else equal:

$$[\text{Pr}(DL^* = 1)\text{Pr}(SL^* = 1) | \textit{Black household}] - [\text{Pr}(DL^* = 1)\text{Pr}(SL^* = 1) | \textit{Other household}].$$

⁶ This model can be seen as a disequilibrium model with limited dependent variables. Abowd and Farber (1982) assume uncorrelated error terms, while Poirier (1980) allows for correlation. The results here do not differ significantly between the two assumptions.

To our knowledge, this specification is unique in that, using cross-section survey data, it considers both supply and demand, the disequilibrium nature of loan markets, and the existence of rationing. The models of racial discrimination in lending of Munnell *et. al.*, Leece, Duca, Avery, and Maddala and Trost use different data or omit at least one of these considerations.

Discrimination is statistically significant if race has a statistically significant effect on the estimated probability of supply-loan rationing. Discrimination is economically significant if race has a meaningfully large estimated effect on supply-loan rationing.

VI. Results and Conclusions

The estimation results of the partial-observability model appear in Table I. Most coefficients, in particular those on race, expenditure, and employment, are highly statistically significant, and all statistically significant coefficients have the expected sign.

Table I also contains the estimated effects of each regressor on the probability of supply-loan rationing. The average effect of race over all observations is 13 percentage points. The size of this effect suggests that discrimination is economically significant. The average standard error is 7 percentage points, suggesting that discrimination is also statistically significant.⁷

Results available from the authors indicate that the probability of supply-loan rationing is 75 percent for black households and 14 percent for other households. Of the 75 percentage points for black households, race accounts for 13 and economic factors account for 61.

⁷ The asymptotic standard errors of the changes in the probabilities were calculated by the delta method. The distribution of the ratio of the average estimated effect to its average standard error is unknown, and so statements about significance are not rigorous.

All else equal, black households are 13 percentage points more likely to demand a hire/purchase loan but not to have one supplied to them than are other households. Although the model cannot rule out the possibility that at least some of this result is due not to bigotry but rather to some correlation of race with characteristics correlated with creditworthiness but unobserved by lenders, the great size of the effect suggests that retailers in South Africa during apartheid did discriminate against blacks when supplying hire/purchase loans.

Whatever the motivations behind supply-loan rationing correlated with race, it can be reduced by enabling other forms of consumer credit to compete more effectively with hire/purchase loans. The best way to do this is by relaxing or repealing the Usury Act so that small, short loans are more profitable and more respectable. Small, short loans are costly, but they are the loans demanded by households beyond the frontier of formal lending in South Africa.

If bigotry accounts for at least some of the supply-loan rationing associated with race, then formal loans may be extended to more households by removing obvious clues to a potential borrower's race from the written loan application for hire/purchase loans. In particular, there is no reason why a loan evaluator needs to know an applicant's surname or address, data that may reveal an applicant's race.

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Table I: Partial Observability Model For Joint Desire to Borrow/Lend:

Estimated Coefficients and Statistical Difference From Zero, and Average Estimated Change in Probability of Supply Loan Rationing Caused By a Change In an Independent Variable and Average Standard Error

| Variable | Demand | | Supply | | Supply Loan Rationing: Effect on Pr(D=1)Pr(S=0) | |
|---|--------|----------|--------|----------|--|-----------|
| | Coef. | p-value | Coef. | p-value | Ave. Effect | Ave. S.E. |
| Common to Demand and Supply | | | | | | |
| Black (dummy) | 0.96 | 0.00 *** | -1.07 | 0.00 *** | 0.13 | 0.07 |
| Female Head (dummy) | 0.28 | 0.04 ** | -0.16 | 0.02 ** | 0.03 | 0.02 |
| Rural (dummy) | 0.26 | 0.15 | 0.03 | 0.67 | 0.03 | 0.02 |
| 1 Exp. Quintile (Poorest) (dummy) | 1.91 | 0.06 * | -4.44 | 0.00 *** | 0.23 | 0.09 |
| 2 Exp. Quintile | 1.09 | 0.02 ** | -1.04 | 0.00 *** | 0.17 | 0.09 |
| 3 Exp. Quintile | 1.04 | 0.00 *** | -0.64 | 0.00 *** | 0.17 | 0.08 |
| 4 Exp. Quintile | 0.32 | 0.01 *** | -0.26 | 0.05 * | 0.06 | 0.03 |
| Regressors Unique to Demand | | | | | | |
| Constant | -1.53 | 0.00 *** | | | 0.01 | 0.01 |
| Adults in Primary Labor Market | 0.12 | 0.03 ** | | | 0.03 | 0.02 |
| Adults in Secondary Labor Market | 0.29 | 0.03 ** | | | 0.00 | 0.00 |
| Log (Monthly Informal Debt Payment) | 0.03 | 0.00 *** | | | 0.01 | 0.01 |
| Non-hire/purchase Formal Debt (dummy) | 0.10 | 0.31 | | | -0.10 | 0.05 |
| Household Head Age ≥ 65 (dummy) | -0.93 | 0.00 *** | | | -0.04 | 0.02 |
| Household Head 36 < Age ≤ 64 (dummy) | -0.47 | 0.00 *** | | | -0.01 | 0.01 |
| Childless (dummy) | -0.10 | 0.27 | | | 0.01 | 0.01 |
| Adult Equivalents | 0.33 | 0.00 *** | | | 0.01 | 0.01 |
| Migrated in past 5 years (dummy) | 0.15 | 0.17 | | | 0.01 | 0.01 |
| Regressors Unique to Supply | | | | | | |
| Constant | | | 0.78 | 0.00 *** | -0.03 | 0.01 |
| Employed Head (dummy) | | | 0.17 | 0.01 *** | 0.00 | 0.02 |
| Non-mortgage, Non-hire/purchase Formal Debt | | | -0.00 | 1.00 | 0.00 | 0.00 |
| Log (Equity in Home) | | | -0.02 | 0.03 ** | 0.00 | 0.00 |
| Mortgage (dummy) | | | 0.20 | 0.12 | -0.04 | 0.02 |
| Own Home (dummy) | | | 0.12 | 0.15 | -0.02 | 0.01 |

Log-likelihood: -2513.2, n=6018

*** Significant at .01, ** Significant at .05, * Significant at .10