

**CONSUMER DISCRIMINATION AND
BLACK FIRM ENTRY DETERRENCE:
SOME REPARABLE DAMAGE ESTIMATES**

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Abstract

The Theory of Restitution presumes that it is possible in principle to account for and measure deviations from racial fairness principles, that would serve as a benchmark for making restitution to black Americans, a group aggrieved and harmed by racial discrimination in the market place. To the extent that the number of black-owned firms in the market reflects, and is conditioned by consumer discrimination that redistributes surplus from black-owned firms to white-owned firms, a policy of set-asides that facilitates entry opportunities for black-owned firms can be defended as just and fair reparations. This paper estimates a limit profit model of black firm entry utilizing data from the Survey of Minority-Owned Business Enterprises. As observations on firm entry are integer-valued, parameter estimates are obtained from Poisson and Negative Binomial regressions. Consumer discrimination by white consumers is treated as an entry barrier, and estimates of the lost producers' surplus due to consumer discrimination are obtained to benchmark the potential restitution due to black Americans.

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INTRODUCTION

The Theory of Restitution articulated most recently by Richard America (1995) offers a policy recommendation of set-asides that would enable the entry of black-owned businesses into product markets. The rationale for such a policy is based upon the idea that the current racial imbalance where black-owned firms are significantly underrepresented, is caused by the past injustices inflicted on black Americans with ill-effects that have perpetuated themselves to the present. This is the context of reparations—the idea that the current economic status of black Americans merits restitution on the basis of the status quo reflecting a *coerced and manipulated diversion of income and wealth from blacks to whites*.¹ The Theory of Restitution also presupposes that it is possible in principle to account for and measure deviations from racial fairness principles, that would serve as a benchmark for making restitution to black Americans. To the extent the number of black-owned firms in the market reflects, and is conditioned by practices and behaviors, perhaps coercive, that divert benefits from black-owned firms to white-owned firms, a policy of set-asides that facilitates entry opportunities for black-owned businesses, can be defended as just and fair reparations.

In this paper, an attempt is made to quantify empirically the losses suffered by black-owned businesses as a result of consumer discrimination by white consumers against black producers. The approach to quantifying reparations in this paper differs from traditional attempts at estimating the current value of the appropriated surplus of black slaves as the basis for reparations.² Certainly, the appropriated surplus of black slaves lowered their welfare, but the demise of slavery as an institution spawned an array of sordid race-based phenomena that constrained the opportunity sets of slave descendents. If we take as se-

¹See America (1995, p. 40).

²See for example: Robert S. Browne, "The Economic Basis For Reparations To Black America", *The Review of Black Political Economy*, Winter 1993, pp. 99 - 109, Jim Marketti, "Black Equity In The Slave Industry", *Review of Black Political Economy*, Spring 1972, pp. 43 - 66, Julian Simon and Larry Neal, "A Calculation Of The Black Reparations Bill", *Review of Black Political Economy*, Winter 1974, pp. 75 - 85, Richard F. America, ed. *The Wealth of Races: The Present Value of Benefits from Past Injustices*, Westport, Greenwood Press, 1990

rious the Theory of Restitution and Oliver Cox's definition of racism, the phenomenon of consumer discrimination is a mechanism in addition to slavery, in which a surplus is wrongfully appropriated from black producers by white consumers.³ This paper represents an attempt at quantifying the surplus appropriated by whites from blacks beyond that due to the institution of chattel slavery.

This paper provides and estimates a model of black firm entry where consumer discrimination by white consumers is an entry barrier. A rudimentary limit profit model of black firm entry is used to determine the extent to which entry by black-owned firms is deterred due to consumer discrimination by whites, and to estimate the value of producers' surplus lost by black entrepreneurs as a result of consumer discrimination. The estimates of the lost producers surplus are offered as preliminary benchmarks of the restitution due black Americans, and constitute a first attempt at empirically determining the damages associated with consumer discrimination.

The remainder of this paper is organized as follows. In the first section below, consumer discrimination is treated in a context suitable for the consideration of reparations when the beliefs of white consumers result in a redistribution of producers' surplus, and black firm entry deterrence. The model to be estimated is presented in the second section. The third section describes the data and sample. In the fourth section, parameter estimates from the model are provided. As observations on firm entry are integer-valued, parameter estimates from a limit profit model are obtained from Poisson and Negative Binomial regressions. Industrial sectors are identified for which black firm entry is impeded by consumer discrimination, and estimates of the lost surplus due to consumer discrimination are obtained to provide a benchmark for restitution. The last section concludes.

A REPARATIONS CONTEXT FOR CONSUMER DISCRIMINATION

In his classic *Caste, Class, and Race* Oliver Cox defines racism as *a social attitude propagated among the public by an exploiting class for the purpose of stigmatizing some group as inferior so that the exploitation of either the group itself or its resources may*

³See Oliver C. Cox, *Caste, Class and Race*, Doubleday, New York, 1948

*both be justified.*⁴ This definition easily extends to consumer discrimination—a belief by white consumers that the goods produced by black and white producers are not perfect substitutes. The source of this belief could indeed be based on the presumed inferiority of black relative to white producers, lowering the price that white consumers are willing to pay for goods/services produced by black firms. Does consumer discrimination constitute a departure from some fairness criterion that ought to be remedied? In a market where black and white firms are identical, allocative efficiency requires that both firms should have the same rate of return on invested capital in equilibrium. A reasonable fairness criterion for the allocation of producers' surplus is therefore the equalization of producers' surplus for identical firms. Fairness is compromised if consumer discrimination results in a redistribution of surplus from black-owned firms to white-owned firms, that are otherwise identical.

A simple, yet instructive example of how consumer discrimination can redistribute producer's surplus from black to white firms can be demonstrated within the model of Price (1995). Suppose the highest price a white consumer is willing to pay for one unit of output from a white producer is \$2, and that the lowest price that either a white or black producer can charge is \$1. We can compare the allocation of producers' surplus from two benchmark equilibria: (1) An equilibrium where consumers have a taste for discrimination and (2) An equilibrium where consumers do not have a taste for discrimination. In equilibrium, producers' surplus is $v = p^*q^* - \sum(p^* - p_i^l)$, where p^* is the market clearing price, q^* is the market clearing quantity sold, and p_i^l is the lowest price at which the firm is willing to sell the i^{th} unit of output. Let \mathbf{V} be a vector of producers' surplus, we can define an equilibrium producers' surplus allocation:

$$S^\theta = \{\mathbf{V}^l : v \in R^+, \theta \in [0, 1]\} = (v_w, v_b)$$

where θ is the probability that the consumer cohort has a taste for discrimination, and v_w (v_b) is producers' surplus for a white (black) firm. For the duopoly game under consideration the benchmark equilibrium allocations are: $S^1 = (2, 0)$, and $S^0 = (1, 1)$.⁵

⁴See Cox (1948 p. 393).

⁵For the model of duopolistic competition in Price (1995), the equilibrium surplus allocations are

A comparison of the equilibrium surplus allocations reveals that although the total surplus is identical, consumer discrimination redistributes producers' surplus to the white firm. Moreover, since the allocation S^1 represents an equilibrium in which one white firm serves the entire consumer cohort in the market, consumer discrimination also results in black firm entry deterrence. Thus, in addition to redistributing producers' surplus, consumer discrimination is an entry barrier for the black firm.

If allocation S^1 characterizes a market, a context for reparations to the black firm can be established by appealing to a reasonable welfare criterion. A criterion of equal returns to equal factors could be established on the basis of a social planning problem where the objective is to minimize the differences in producers' surplus that accrue to identical producers in the output market. Suppose for example, an ideal social planner has the task of minimizing $W = f(v_w, v_b) = (v_w - v_b)^2$, with the requirement that $v_w > 0$, and $v_b > 0$. In this scenario, $S^0 = (1,1)$ solves the minimum of W . A status quo featuring anything other than the allocation S^0 is therefore suitable for a welfare improving intervention that equalizes producers' surplus. Given S^1 as a status quo, two welfare improving interventions are: (1) Taxing the incumbent white firm at a rate of \$1 and distribute it to the blockaded black firm, and (2) Subsidize the entry of the black firm.⁶ In either case, the interventions can be viewed as reparations to the black firm that are warranted given the egalitarian objectives of the social planner.

A relevant question is to what extent does the allocation $S^0 = (1,1)$ encompass justice and fairness. Binmore (1995), extending the theory of justice developed by Rawls (1972), has argued that an equilibrium is a fair social contract if the equilibrium outcomes represent strategies that would leave no player in a game of morals an incentive to appeal to the original position. The basic idea is that in some original position, rational players behind a veil of ignorance concerning their status and identity in an actual economy, will have an incentive to agree to a social contract that incorporates fairness in regard to economic outcomes—inequality based on say race, will not be an attractive principle if you yourself

based upon two Nash equilibria, first when $\theta = 1$, and then where $\theta = 0$; in which both the white and black firm charge a low price, which in this example is \$1.

⁶The subsidy option is considered in Price (1995)

might end up as a member of a subordinated racial minority trying to compete with a dominant racial majority in markets. It is in this context in which the fairness of an equilibrium outcome can be assessed.⁷ A test for the fairness of an equilibrium is simply whether or not players would have committed to the strategies supporting the equilibrium in some original position. If not, any intervention that changes the status quo from a unfair to a fair outcome is defensible. Thus, if allocation S^1 is not an equilibrium in some game of morals, and S^1 is, any intervention that alters the status quo to S^0 is just and fair.

The analysis of Rabin (1993) suggests that in the duopoly game considered above, the equilibrium surplus allocation $S^0 = (1,1)$ is a fair equilibrium, and in the spirit of Binmore (1995)—a fair social contract. Rabin’s results show, among other things, that any Nash equilibrium that is a mutual-max outcome is also a fairness equilibrium.⁸ It turns out that for the white and black firms competing in the duopoly game above, the Nash equilibrium of each firm charging a low price results in the equilibrium surplus allocation $S^0 = (1,1)$, which is also a mutual-max outcome.⁹ Of course, consumer discrimination prevents the black firm from actually earning a producers’ surplus. In this context, any intervention that implements the social planning outcome of $S^0 = (1,1)$, that minimizes the differences in producers’ surplus between identical firms is consistent with fairness and justice.

A LIMIT PROFIT MODEL OF BLACK FIRM ENTRY

The analysis above implies that for black-owned firms, consumer discrimination is an

⁷Binmore’s (1995) notion of the original position is that of individuals disappearing behind a veil of ignorance, where they negotiate about an equilibrium in the game of morals not knowing what or who they will be, a slave or slaveholder for example. The fairness conventions that are negotiated can be based on fairness notions prevalent in the cultures we actually observe and live in. Thus, it can be argued that a market outcome where identical factors earn identical returns is compatible with contemporary democratic egalitarian notions of fairness—at least to economists.

⁸Rabin (1993) defines a mutual-max outcome as an outcome in which given the other person’s behavior, each person maximizes the other’s material payoffs.

⁹While Price (1995) do not characterize the Nash equilibrium as mutual-max, the Nash equilibrium consists of the same strategies that would result if the players proceeded to maximize each other’s material pay-off.

entry barrier. More specifically, consumer discrimination is an entry barrier in the sense that a black firm cannot enter the market and achieve the post-entry profit level that the white incumbent firm enjoys. When $\theta = 1$, consumer discrimination lowers the price that black firms receive relative to the identical white incumbent.¹⁰ For the incumbent white firm this suggests that prior to the entry of the black firm, it is earning a limit profit, defined as a rate of profit permanently sustainable against entrants. Limit profit models assume that entry by new firms is feasible only when expected post entry profit is greater than limit profit¹¹. For the case of black firm entry we have:

$$E_i = \phi(\pi_i^e - \pi_i^*)$$

where E_i is observed black firm entry in market i , ϕ is the entry response coefficient, π_i^e is expected post entry profit in market i , and π_i^* is the limit rate of profit in market i . The limit rate of profit is unobserved, however it will be a function of relevant entry barriers.¹² Given consumer discrimination, a plausible specification for the limit rate of profit for incumbent white firm is $\pi_i^* = \alpha_o + \alpha_1\theta$, where α_o is a constant, and θ is the probability that the consumer cohort has a taste for consumer discrimination. A priori, the most general prediction from this model is that $\partial E_i / \partial \theta = -\phi \alpha_1 < 0$, or black firm entry is a decreasing function of the degree of consumer discrimination in a market.

An econometric specification for the above theory model of black firm entry is:

$$E_i = \beta_0 + \beta_1 \pi_i^e + \beta_2 \theta + \epsilon$$

¹⁰Empirical support for the idea that consumer discrimination deters the entry of black-owned firms has been provided by Borjas and Bronars (1989). Their results show that, interestingly, consumer discrimination lowers the return to self-employment for high ability minorities, resulting in less able minorities negatively selecting into self-employment.

¹¹For an overview of limit profit models of firm entry see: Paul Geroski, Richard J. Gilbert, and Alexis Jacquemin, *Barriers To Entry And Strategic Competition*, Harwood Academic Publishers, 1990

¹²See Geroski, Gilbert and Jacquemin (1990)

where $\beta_0 = -\phi \alpha_0$, $\beta_1 = \phi$, $\beta_2 = -\phi \alpha_1$, and ϵ is a stochastic error term. While Ordinary Least Squares (OLS) seems an attractive method to estimate the parameters of the model, OLS fails to accommodate the discrete nature of the endogenous entry variable. As observations on entry are naturally integer-valued, appropriate alternatives to OLS are the Poisson regression model, and its extension, Negative Binomial regression¹³. In this paper, observations on black firm entry will be viewed as being generated by a Poisson probability distribution, and a regression model will be formulated by specifying the expected value of the distribution as a deterministic function of exogenous variables. If the mean-variance restriction of the Poisson model is not valid, a Negative Binomial regression model will also be estimated. Both of these models are described in the appendix.

DATA AND SAMPLE

Data on black-owned firms were obtained from the Census Bureau's 1992 Survey of Minority-Owned Business Enterprises (SMOBE), available on CD-ROM.¹⁴ This survey reports on approximately 621,000 black-owned firms across 3 types of legal organization, and 10 industry classifications.¹⁵ To the extent that consumer discrimination is more likely by white consumers when they can identify the race of firm owners, a reasonable sample selection criterion for an empirical model of black firm entry given consumer discrimination, is that the firms should be in industries in which it is relatively easy for the customer

¹³For an application of Poisson Regression in the context of firm entry See: Gregory N. Price, "The Determinants of Entry for Black-owned Commercial Banks", *Quarterly Review of Economics and Finance*, Fall 1995, pp. 289 - 303, William F. Chappel, Mwangi S. Kimeni, and Walter J. Mayer, "A Poisson Probability Model of Entry and Market Structure With An Application To U.S. Industries During 1972-77", *Southern Economic Journal*, April 1990, pp. 918 -927

¹⁴See 1992 Economic Census: Survey of Minority-Owned Business Enterprise, U.S. Department of Commerce, Economics and Statistics Administration, Washington DC.

¹⁵The legal forms of organization are: (1) Individual proprietorships, (2) Partnerships, and (3) Subchapter S corporations. The industry classifications are: (1) Agricultural Services, Forestry, and Fishing, (2) Mining Industries, (3) Construction Industries, (4) Manufacturing Industries, (5) Transportation, Communications, and Utilities, (6) Wholesale Trade, (7) Retail Trade, (8) Finance, Insurance, and Real Estate, (9) Service Industries, and (10) Unclassified Industries.

to identify the race of the firm owner. From the SMOBE data, it was determined that the following industrial classifications consisted of firms in which it is relatively easy for white customers to identify the race of the firm owners: (1) Construction Industries, (2) Transportation, Communications and Utilities, (3) Wholesale Trade, (4) Retail Trade (5) Finance, Insurance and Real Estate, and (6) Service Industries.

The need for a measure of expected profitability restricted the sample further to only those firms with paid employees. For firms with paid employees, the SMOBE data reports on Sales and Receipts and Annual payroll, and the difference between the two is a reasonable proxy for firm profitability. The relevant market in which a black-owned firm operates was presumed to be a Metropolitan Statistical Area (MSA). As defined by the Bureau of the Census, an MSA is an integrated economic and social unit with a population nucleus of at least 50,000 inhabitants.¹⁶

For the industrial classifications under consideration, 286 MSA level observations on Black-owned firms were obtained from the SMOBE data. For a given MSA, some of the industrial classifications had zero counts. This is ideal for estimating a Poisson regression model of firm entry, as zero is a natural outcome of the econometric specification. Moreover, to the extent that a given MSA reports no black-owned firms in a given industrial classification, estimates of the model will provide empirical insights into the factors that deter the entry of black-owned firms. As Chappel, Kimenyi and Mayer (1990) have argued, it is those markets in which no entry occurs that reveal the configuration of limit profits and other characteristics that make entry exclusion possible.

EMPIRICAL RESULTS

To estimate an empirical limit profit model of black firm entry the following two assumptions are made:

Assumption 1: Black firm entry is proportional to the number of incumbent black-owned

¹⁶If an MSA has a population of 1 million or more, it is further subdivided into a Primary Metropolitan Statistical Area (PMSA), which consists of a large urbanized county or cluster of counties with strong internal economic and social links separate from its parent MSA.

firms in a given market.

Assumption 2: Consumer discrimination is proportional to the expected value of the difference between the profit of a white-owned firm and a black-owned firm, conditioned on the number of white consumers in a market.

The first assumption is necessary given the limitations of SMOBE data in identifying black firms that are new entrants. The 1992 SMOBE data only provide counts of firms, and there is no way to discern what percent of the counts in the current data represent firms that did not exist in the previous census. In principle one could take the differences in firm counts from the 1992 and previous SMOBE data. However, the ten year lag in the information would obscure any changes in those structural characteristics that may have changed on dissimilar basis over time, across the various industrial classifications. In entry deterrence models, the structural characteristics (e.g. economies of scale, technological advantages) of a market are potentially important in explaining entry. If they are changing over time, their effects are difficult if not impossible to isolate. A cross-sectional approach in which assumption 1 is invoked is therefore useful in determining the extent to which black firm entry is conditioned by stable structural factors. To the extent that consumer discrimination confers an advantage on incumbent white-owned firms, it too can be viewed as a structural factor, and its effects are probably best captured in a cross-section.

The second assumption is necessary to operationalize, in some sense, the idea of consumer discrimination. If one makes an auxiliary assumption that black consumers do not discriminate against black producers, then in a given market, the price that utility maximizing white consumers are willing to pay for goods/services produces by white-owned and black-owned firms respectively is given by $p = MU$ and $p + \delta = MU$; where p is the market price, δ is the marginal disutility of purchasing from a black-owned firm, and MU is marginal utility. Thus, in equilibrium, a white consumer with a taste for discrimination is only willing to purchase goods/services from a black producer at a price discounted by δ . In equilibrium, for normalized unit output, the difference between the profit of a white-owned firm and a black-owned firm, conditioned on a white consumer with a taste discrimination is given by:

$$E(\pi_w - \pi_b | \theta) = \delta > 0 \quad (1)$$

where E is the expected value operator, π_w = the profit of a white-owned firm, π_b is the profit of a black-owned firm, and θ is the probability that a consumer has a taste for discrimination.

The empirical model of black firm entry to be estimated specifies the limit profit rate as:

$$\pi^* = \alpha_o + \alpha_1 CONCEN + \alpha_2 DISCRIM$$

where $CONCEN$ is the market share of white incumbents in a given MSA, and $DISCRIM$ is an index of consumer discrimination in a given MSA.¹⁷ For a given MSA, the value of $DISCRIM$ is posited to be based on the relationship in (1), and is measured empirically as an index based on the predicted value from the auxiliary regression:

$$\ln PROF_w - \ln PROF_b = \beta_1 WHITE + \epsilon \quad (2)$$

where $\ln PROF_w$ is the natural logarithm of white firm profitability, $\ln PROF_b$ is the natural logarithm of black firm profitability, $\ln CONCEN$ is the natural logarithm of the market share of white incumbents, and $WHITE$ is the size of the white population in the MSA. Expected profitability (π_i) is proxied by the average of the difference between the value of shipments and annual payroll for black-owned firms ($PROF$).¹⁸ The limit profit model of black firm entry estimated is based on the following specification in a Poisson and/or Negative Binomial regression model:

$$\lambda_i = \exp(\beta_o + \beta_1 PROF + \beta_2 CONCEN + \beta_3 DISCRIM + \beta_4 \ln BPOP) \quad (3)$$

¹⁷ $CONCEN$ was constructed from the SMOBE data for each of the 372 MSAs, and for each industrial classification. It was constructed by computing the ratio of white firm sales to total sales. Population data for the construction of $DISCRIM$ was obtained from U.S. Census Population data for MSA's.

¹⁸These two items are the only revenue and cost data reported in the SMOBE data.

where $\beta_o = -\phi \alpha_o$, $\beta_1 = \phi$, $\beta_2 = -\phi \alpha_1$, $\beta_3 = -\phi \alpha_2$, and λ_i is the expected value of black firm entry in the i^{th} MSA. Because $(\pi_i - \pi^*)$ may be an imperfect signal for entry, the log of a market's black population (lnBPOP) is added to indicated the presence of disequilibrium, and profitable entry opportunities for black firms.

Table 1 reports summary statistics for the dependent and independent variables in the sample. The sample includes 46,257 black-owned firms, constituting 7.4 percent of the 620,912 black-owned firms reported in the 1992 SMOBE. Of the 620,912 black-owned firms reported on in the SMOBE, only 10 percent have paid employees. The sample thus consists of approximately 74 percent of all black-owned firms with paid employees. For the black-owned firms in the sample, approximately 51 percent are in the Service sector, which mirrors the proportion of all black-owned firms in the Service sector; 54 percent, as reported in the 1992 SMOBE.

Tables 2 - 7 report the results of Poisson and Negative Binomial regression specifications of equation (3) for the six industry classifications under consideration.¹⁹ The Negative Binomial estimates are relevant whenever the mean-variance restriction of the Poisson specification is invalid. To test for the adequacy of the Poisson specification, the Poisson results also report the value of v , based on an auxiliary regression test for mean-variance equality suggested by Cameron and Trivedi (1990).²⁰ If v is significant, the null hypothesis

¹⁹The results from the auxiliary regression in equation (2), used to compute the index of consumer discrimination was (t-statistic in parenthesis):

$$\ln\text{Prof}_w - \ln\text{Prof}_b = .329 \times \text{WHITE} \\ (2.85)^*$$

The square root of this value was used to facilitate convergence in the Poisson and Negative Binomial regressions.

²⁰If dependent variable Y_i follows a Poisson distribution, then in a Poisson Regression, $E[Y_{ij}] = \lambda(X_i, \beta)$. Cameron and Trivedi (1990) show that a test for mean-variance equality is based on the hypothesis test: $H_o: \text{var}(Y_{ij}) = \lambda_i$ versus the alternative $H_a: \text{var}(Y_{ij}) = \lambda_i + v g(\lambda_i)$, where $g(\lambda_i)$ is specified to equal 1, λ_i , or λ_i^2 . A test for mean-variance equality is a t-test for the significance of v in the auxiliary regression: $\sum w_i g(\lambda_i) [(Y_{ij} - \lambda_i)^2 - Y_{ij} - v g(\lambda_i)] = 0$, where $\sum w_i g(\lambda_i)$ is a weight based on a consistent estimate of β , such as its fitted value.

of mean-variance equality is rejected, and the Negative Binomial regression with mean-variance dispersion is a suitable alternative specification. For expository purposes, both the Poisson and Negative Binomial results are reported for all the industries in the sample, but the significance or insignificance of v from the auxiliary regression will determine which specification is relevant.²¹

In each regression, the dependent variable is the number of black-owned firms. For the Poisson regressions, the coefficients are significant and have plausible signs in every industry except for Transportation/Communications/Utilities and Wholesale Trade. Otherwise the coefficient on DISCRIM is positive and significant, suggesting that black firm entry increases with respect to increases in consumer discrimination. For all industries except Transportation/Communications/Utilities and Wholesale Trade, the Poisson regressions indicate that the probability of black firm entry increases with respect to expected profitability, and decreases with respect to concentrated market shares, and most importantly given the focus of this paper—black firm entry decreases with respect to increases in consumer discrimination.

The adequacy of the Poisson regressions depends on the equality of the mean and variance of the dependent variable. If this restriction is not appropriate, and the variance exceeds the mean, there is overdispersion. One consequence of overdispersion is that the estimated standard errors may be spuriously small, rendering exogenous variables significant that may otherwise be insignificant.²² A Negative Binomial regression model accounts for overdispersion by specifying the variance in a compound Poisson distribution as $\text{Var}(\lambda) = E(\lambda)[1 + \nu E(\lambda)]$, where E is the expected value operator.²³ For the Poisson regressions, v is significant in every industry except for Retail Trade and Service. Thus, a Negative Binomial specification is a plausible alternative to the Poisson in the other industries. For the Negative Binomial Regressions, the coefficients have plausible signs. More importantly, the coefficient

²¹In particular, when v is significant in the Poisson regression, inferences will be based on the Negative Binomial regression.

²²See A. Colin Cameron and Pravin K. Trivedi, "Econometric Models Based On Count Data: Comparisons And Applications Of Some Estimators And Tests", *Journal of Applied Econometrics*, January 1986, pp. 29 - 53.

²³See Cameron and Trivedi (1986).

on DISCRIM is negative and significant in every case except for the Finance/Insurance/Real Estate, and Service industries.

Evaluating the appropriate regressions, governed by the significance of v in the Poisson regressions, the results in tables 2 -7 indicate that consumer discrimination is a barrier to black firm entry in every industry except the Finance/Insurance/Real Estate and Service industries. The significant and negative coefficient of DISCRIM indicates that the expected value of black-firm entry is lowered by consumer discrimination. The theoretical model considered above revealed that when black firm entry is deterred by consumer discrimination, the surplus of the deterred black firm is captured by the incumbent. Social welfare is lower in the sense that identical factors (firms) do not realize identical returns, and black firms lose the opportunity to earn a return. What is the value of this surplus? In Table 8, estimates of the producers' surplus lost by black firms as a result of consumer discrimination are provided. Assuming that producers' surplus is proportional to firm profits, table 8 reveals that the black-owned firms in the sample lost 5.6 billion dollars of producers' surplus as a result of consumer discrimination. The results also reveal that for the industrial sectors where consumer discrimination is relevant, a total of 835 black-owned firms had their entry deterred.

CONCLUSION

Taking the Theory of Restitution and Oliver Cox's definition of racism as serious, this paper estimated the effect that consumer discrimination by white consumers against black producers has on deterring the entry of black-owned firms. As an entry barrier, consumer discrimination was found to deter black firm entry in four industrial sectors identified in the SMOBE. The results show that in 1992, consumer discrimination resulted in the loss of 5.6 billion dollars of black producers' surplus. To the extent that 1992 is representative of the structure that generates consumer discrimination, a one hundred year benchmark estimate of at least 560 billion dollars can be assigned to the damages caused by consumer discrimination. The results of this paper therefore provide a provisional and preliminary dollar value of at least 560 billion dollars in restitution, per 100 years, that is due to black

Americans as a result of damages incurred from consumer discrimination.

A case for reparations to black Americans follows from a theoretical framework in which given consumer discrimination, an ideal social planner solves the problem of equalizing the returns to identical black and white duopolists. As consumer discrimination deters black firm entry, and redistributes producers's surplus from black to white firms, any intervention that equalizes the surplus is consistent with egalitarian welfare objectives that encompass justice and fairness. The empirical estimates of the lost surplus provided in this paper are therefore a benchmark of reparable damages suffered by black entrepreneurs as a result of consumer discrimination.

The estimates of the lost producers' surplus are reparable damage estimates in the sense that they were derived from an approach consistent with the Theory of Restitution.²⁴ Among other things, the Theory of Restitution implies that it is possible to (1) Specify fair standards for economic relations between groups and individuals, and (2) Estimate deviations from fairness that results in the unjust enrichment of a dominant group, which would serve as a basis for some policy intervention that would ameliorate the status of a historically subordinated group. The results reported here satisfy these two conditions. To the extent that identical returns to identical factors is a reasonable fairness criterion for a democratic society, consumer discrimination by white consumers against black producers is a departure from fairness since it allows white incumbent producers to appropriate the surplus that would be earned by black producers. In this sense, the estimates of the damages reported here serve as a benchmark of the expenditure required of any policy intervention designed to provide just and fair restitution to black Americans. In the case of enabling black Americans the opportunity to enter and compete in product markets, such policy interventions could include but not be limited to tax-financed set-asides that facilitate the entry black-owned businesses into product markets. The required expenditure could be based on the damage estimates reported here.

There are some limitations of the results reported here. First, the rudimentary specification of the limit profit model of black firm entry may be omitting some important variables. In Tables 2 - 7, the estimated sign on the constant is always positive, but a priori the

²⁴See America (1995).

expectation was $\beta_o = -\phi \alpha_o < 0$. Notwithstanding the negative coefficient on DISCRIM, this suggests that there are other variables, not discernible and/or available in the SMOBE data, that influence the entry deterring limit rate of profit, and consequently, the entry of black-owned firms. Second, the model of black firm entry considered here ignores the historicity of interracial relations between black producers and white consumers in organized markets. In this sense the estimated damages are not accrued damage estimates based on a long history of adversarial relations between black producers and white consumers in the market place. The structure of consumer discrimination in say 1892, could have been different from what it was in 1992. A third limitation is that the model of black firm entry was estimated for only those black-owned firms that had paid employees. Approximately 90 percent of the black-owned firms in the SMOBE data had no paid employees. To the extent that consumer discrimination significantly deters entry of these type of firms, the results here may not capture the full extent of consumer discrimination.²⁵ Finally, the SMOBE data does not include data on black-owned firms that are organized as 1120 subchapter C corporations. Boston (1995) estimates that these type of black-owned firms account for approximately 50 percent of the revenue and employment of all black-owned firms. As in the case of firms without paid employees, to the extent that consumer discrimination deters the entry of these type of black-owned firms, the results reported here may not capture the full impact of consumer discrimination on the entry of black-owned firms. Given these limitations, the reparable damage estimates provided here should be cautiously interpreted as preliminary and provisional.

²⁵Although black-owned firms with paid employees accounted for approximately 10 percent of all black-owned firms, they account for 70 percent of gross receipts to black-owned firms. This suggests that in terms of lost producers' surplus due to consumer discrimination, estimates from a model based on data for only firms with paid employees provides reasonably representative results. See: *Survey of Minority-Owned Business Enterprises*, U.S Department of Commerce, 1992.

APPENDIX
Poisson and Negative Binomial Regression Models

In a Poisson regression model of black firm entry, the discrete endogenous entry variables are viewed as being generated by the probability distribution:

$$Prob(E_i = n) = \frac{e^{-\lambda_i} \lambda_i^n}{n!}$$

where E_i is observed black firm entry in market i , $n = 0,1,2,\dots,N$, $e = 2.71828$, and $\lambda_i =$ expected value and variance of E_i . A regression model is formulated by specifying λ_i as a function of a vector exogenous variables X , with unknown parameter vector β :

$$\ln \lambda_i = \beta' X$$

Estimation of the parameters in a Poisson regression are obtained by maximizing the following log-likelihood function with respect to β :

$$L(\beta) = \sum [-\lambda_i + \beta' X E_i - \ln E_i!]$$

The Negative Binomial regression model extends the Poisson model without the mean-variance equality constraint. In a Negative Binomial regression the endogenous entry variables are viewed as being generated by the probability distribution:

$$Prob(E_i = n | \epsilon) = \frac{e^{\lambda_i \exp(\epsilon)} \lambda_i^n}{n!}$$

where $\exp(\epsilon)$ has a gamma distribution with mean one and variance α . In general, as Cameron and Trivedi (1986) note, the Negative Binomial model is a specific compound Poisson distribution where the expected value of the Poisson parameter can vary with respect to its variance linearly. Estimation of the parameter in a Negative Binomial regression proceeds by using the parameters of the Poisson regression as starting values, and compute the overdispersion parameter ν on the basis of the following auxiliary regression:

$$\frac{(E_i - \lambda_i)^2}{\lambda_i} - 1 = \nu \lambda_i + w_i$$

where w_i is a stochastic error term. Both the Poisson and Negative Binomial regressions for the model of black firm entry were estimated with LIMDEP 6.0 econometric software.

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Table 1
Summary Statistics

| <i>Variable</i> | <i>Mean</i> | <i>Standard Deviation</i> |
|---|-------------|---------------------------|
| <i>Number of Black-owned Firms:</i> <i>Construction</i> | 22.59 | 44.95 |
| <i>Number of Black-owned Firms:</i> <i>Transportation, Communications, Utilities</i> | 9.83 | 23.64 |
| <i>Number of Black-owned Firms:</i> <i>Wholesale Trade</i> | 4.42 | 13.49 |
| <i>Number of Black-owned Firms:</i> <i>Retail Trade</i> | 32.34 | 69.22 |
| <i>Number of Black-owned Firms:</i> <i>Finance, Insurance, Real Estate</i> | 9.27 | 24.48 |
| <i>Number of Black-owned Firms:</i> <i>Service Industries</i> | 83.29 | 181.73 |

Table 2
Construction Industry

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | 2.61 (61.46)* | 2.61 (6.83)* |
| β_1 | .1881 (82.02)* | .1881 (8.45)* |
| β_2 | -1.69 (-143.65)* | -1.69 (-7.11)* |
| β_3 | -.0003 (-7.63)* | -.0008 (-3.46)* |
| β_4 | .027 (7.13)* | .027 (.660) |
| ν | 1.01 (7.17)* | 1.09 (19.48)* |
| <i>Log-Likelihood</i> | -26589.58 | -1198.08 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level.

Table 3
Transportation Communications, and Utilities

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | 2.23 (37.56)* | 2.23 (5.93)* |
| β_1 | .0110 (4.0)* | .0110 (.601) |
| β_2 | -.0113 (-35.13)* | -.0114 (-4.42)* |
| β_3 | .0004 (8.03)* | -.0006 (-1.95)** |
| β_4 | .0362 (5.19)* | .0362 (.7770) |
| ν | 1.01 (11.79)* | 1.42 (16.74)* |
| <i>Log-Likelihood</i> | -6783.61 | -874.25 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level. A double asterisk denotes significance at the .05 level.

Table 4
Wholesale Trade

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | 3.21 (35.78)* | 3.21 (8.56)* |
| β_1 | .0601 (15.28)* | .0605 (3.31)* |
| β_2 | -.3238 (-25.46) | -.3238 (-3.63)* |
| β_3 | .0004 (7.22)* | -.0014 (-5.73)* |
| β_4 | .0680 (8.01)* | .0679 (1.92)** |
| ν | 1.02 (64.39)* | .8823 (29.39)* |
| <i>Log-Likelihood</i> | -2390.992 | -1343.19 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level. A double asterisk denotes significance at the .05 level.

Table 5
Retail Trade

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | 7.41 (303.11)* | 7.41 (26.16)* |
| β_1 | .2955 (153.43)* | .2950 (16.14)* |
| β_2 | -3.54 (-134.21)* | -3.53 (-22.64)* |
| β_3 | -.0009 (-212.35)* | -.0065 (-59.26)* |
| β_4 | .1719 (240.23)* | .1718 (169.01)* |
| ν | 1.06 .5870 | 1.0 (27.01)* |
| <i>Log-Likelihood</i> | -10759.09 | -2843.32 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level.

Table 6
Finance, Insurance, and Real Estate

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | .1627 (1.09) | .0498 (.0701) |
| β_1 | .0944 (14.59)* | .1179 (3.69)* |
| β_2 | -.4987 (-43.72)* | -.4976 (-2.58)* |
| β_3 | -.5966 (-5.29)* | -.0011 (-1.39) |
| β_4 | .1546 (10.22)* | .1612 (2.01)* |
| ν | 1.02 (8.38)* | 2.83 (10.99)* |
| <i>Log-likelihood</i> | -3983.34 | -921.25 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level.

Table 7
Service Industries

| | <u>Poisson Regression</u> | <u>Negative Binomial Regression</u> |
|-----------------------|---------------------------|-------------------------------------|
| <u>Parameter</u> | <u>Estimate</u> | <u>Estimate</u> |
| β_0 | 2.86 (56.34)* | 2.91 (3.68)* |
| β_1 | .0899 (37.62)* | .1105 (2.84)* |
| β_2 | -.9322 (-69.63)* | -.9332 (-2.87)* |
| β_3 | -.0001 (-.8270) | -.0001 (-.2040) |
| β_4 | .1132 (23.72)* | .0876 (.9660) |
| ν | 1.03 (1.59) | 3.22 (13.89)* |
| <i>Log-Likelihood</i> | -28074.12 | -2446.18 |
| <i>Sample Size</i> | 286 | 286 |

Notes: t-statistics are in parentheses. A single asterisk denotes significance at the .01 level.

Table 8
Lost Surplus Estimates

| <u>Industry</u> | <u>θ_0</u> | <u>θ_1</u> | <u>$exp(\theta_1 - \theta_0)$</u> | <u>Number of deterred entrants</u> | <u>Lost surplus(millions of dollars)</u> |
|--|------------------------------|------------------------------|--|------------------------------------|--|
| <i>Construction</i> | 3.74 | 3.47 | .76 | 217 | 825 |
| <i>Transportation, Communications, Utilities</i> | 2.58 | 2.38 | .81 | 232 | 561 |
| <i>Wholesale Trade</i> | 4.36 | 3.89 | .62 | 177 | 1079 |
| <i>Retail Trade</i> | 9.59 | 9.28 | .73 | 209 | 3114 |

Notes:

θ_1 is the value of the parameter vector when there is no consumer discrimination ($\beta_3 = 0$). θ_0 is the value of the parameter vector given consumer discrimination ($\beta_3 > 0$). In both cases, the value of the parameter vector is evaluated at the mean value of the exogenous variables for each industry. The value of $exp(\theta_0 - \theta_1)$ is the number of black-owned firms, on average, that are deterred from entering a given industrial sector, as a result of consumer discrimination. The number of deterred entrants is simply the product of $exp(\theta_0 - \theta_1)$ and the sample size. The lost surplus estimate is obtained by multiplying the average profit of black-owned firms in each industry by the number of black-owned firms deterred from entering as a result of consumer discrimination.