DISCRIMINATION IN THE SMALL BUSINESS CREDIT MARKET

David G. Blanchflower

Dartmouth College and National Bureau of Economic Research

Phillip B. Levine

Wellesley College and National Bureau of Economic Research

David J. Zimmerman

Williams College

Wednesday, October 7, 1998

Please address all correspondence to **David Blanchflower** at Department of Economics, Dartmouth College, Hanover, NH, 03755. e-mail address is blanchflower@dartmouth.edu.

We would like to thank Duane Benjamin, Robert Fairlie, Jon Skinner and Steve Venti for helpful comments and suggestions.

I. Introduction

Discrimination occurs whenever the terms of a transaction are affected by personal characteristics of the participants that are not relevant to the transaction. By far, the most commonly considered characteristics are those of race and gender. In labor markets, this might translate into equally productive workers in similar jobs being paid different salaries based on their race or gender. In credit markets – the subject of study in this paper -- it might translate into loan approvals differing across racial groups with otherwise similar financial backgrounds.

In this paper we use data from the Federal Reserve Board and the U.S. Small Business Administration to examine the existence or otherwise of discrimination in the small business credit market. Discrimination in the credit market against minority-owned small businesses can have an important effect on the likelihood that that business will succeed. Moreover, discrimination in the credit market might even prevent the business from opening in the first place. We provide qualitative and quantitative evidence supporting the view that blacks and, to a lesser degree Hispanics, are discriminated against in this market. For example, we find that black-owned firms are much more likely to report being seriously concerned with credit market problems and report being less likely to apply for credit because they fear the loan would be denied. Moreover, we find, after controlling for a large number of characteristics of the firms, that black-owned firms are substantially more likely to be denied credit than other groups. We find little or no evidence that women are discriminated against in this market.

The structure of the paper is as follows. We first briefly review the theory of economic discrimination. We then provide some background to our analyses by reviewing prior research on discrimination in credit markets. We then discuss the empirical framework employed in our analyses and describe the data used in the remainder of the paper. The following sections

examine loan denial differences by race and a series of econometric issues including potential selection biases respectively. We then provide a series of caveats to these analyses. Finally, we present our conclusions.

II. Theoretical Framework and Review of the Literature

Most recent economic analyses of discrimination draw on the analyses contained in Gary Becker's The Economics of Discrimination (1957). Becker's main contribution was to translate the notion of discrimination into financial terms. Discrimination, in this view, results from the desire of owners, workers, or customers to avoid contact with certain groups. This being the case, transactions with the undesired groups would require more favorable terms than those that occur with a desired group. Assume that the primary objective of a financial institution is to maximize their expected profits. The expected return on a loan will depend on the interest rate charged and the likelihood that a borrower defaults. The financial institution would approve any loan for which the expected return on the loan exceeded the cost of the funds to the institution. Discrimination would then result either in a) higher interest rates being charged to undesired groups having otherwise similar characteristics to the desired group, or b) requiring better characteristics (i.e. a lower expected default rate) for the undesired group at any given interest rate. In other words, the disadvantaged group might either be appraised more rigorously or, they would be given less favorable terms on the loan.

A similar connection between the likelihood of loan approval and the race of the applicant might also be found if firms employ statistical discrimination. In this case, firms use personal characteristics - such as race or gender - to infer the likelihood of default on the loan. If experience has suggested that certain groups of individuals -- defined by race or gender - are, on average, more or less likely to default, then the firm may use this information to economize on

the costs of gathering more directly relevant information. Hence discrimination would not reflect the preferences of the owner but would rather reflect an attempt to minimize costs. Empirically, the racial characteristics of the applicant could proxy for unobserved characteristics of their credit worthiness.

There has been an active debate on the question of whether banks discriminate against minority applicants for mortgages. In particular, banks were often accused of "redlining" - that is, not granting loans for properties located in certain areas. To analyze that issue, the Home Mortgage Disclosure Act was passed which required lenders to disclose information on the geographic location of their home mortgage loans. These data, while interesting, were not sufficient to assess whether or not there was discrimination in the market for mortgage loans. In 1992 researchers at the Federal Reserve Bank of Boston collected additional information from the lenders (Munnell et al., 1996). In particular, they tried to collect any information that might be deemed economically relevant to whether a loan would be approved. In the raw data whites had 10% of their loans rejected versus rejection rates of 28% for blacks and Hispanics. After controlling for the large number of variables collected to establish the credit worthiness of the borrowers (including, the amount of the debt, debt/income ratio, credit history, loan characteristics, etc.) blacks were still 7% less likely to be granted the loan. A variety of criticisms have been launched at this study (see, for example, Horne 1994; Day and Liebowitz, 1998; Harrison, 1998). Responses to these criticisms are found in Browne and Tootell (1995).

In addition to the type of statistical analysis done in the Munnell et. al (1996) study, two other approaches have been used to measure discrimination in mortgage markets. First, Federal Reserve regulators can examine a lending institution's files to try to identify any cases where a loan rejection looks suspicious. Second, audit studies have been used with paired "identical"

applicants. Such studies have also found evidence of discrimination (c.f. Cloud and Galster, 1993).

Another relevant literature concerns the severity of liquidity constraints affecting consumers in non-mortgage credit markets. A consumer is said to be liquidity constrained when lenders refuse to make the household a loan or offer the household less than they wished to borrow. (Ferri and Simon, 1997). A variety of studies have suggested that roughly twenty percent of U.S families are liquidity constrained. (cf. Hall and Mishkin, 1982; and Jappelli, 1990). As might be expected, constrained households are typically younger with less wealth and accumulated savings. (Hayashi, 1985; and Jappelli, 1990). Significantly, after including detailed control variables for the households financial characteristics, the research shows nonwhite households to be substantially more likely to be liquidity constrained (Jappelli, 1990; and Ferri and Simon, 1997).

We now turn to the more directly relevant evidence on liquidity constraints facing small businesses. Discrimination in the credit market against minority-owned small businesses can have a devastating effect on the success of that business. Further, discrimination in the credit market might even prevent them from opening in the first place. Evidence to that effect is provided in the significant literature on self-employment. Evans and Leighton (1989) and Evans and Jovanovic (1989) have argued formally that entrepreneurs face difficulties borrowing money. As in the discussion above, such individuals are labeled liquidity constrained by economists. Using data from the National Longitudinal Survey of Youth from 1966-1981 and the Current Population Surveys from 1968-1987, these authors find that, all else equal, people with greater family assets are more likely to switch to self-employment from employment. Blanchflower and Oswald (1998) studied the probability that an individual reports him or herself as self-employed.

Consistent with the existence of capital-constraints on potential entrepreneurs, their econometric estimates imply that the probability of being self-employed depends positively upon whether the individual ever received an inheritance or gift. Second, when directly questioned in interview surveys, potential entrepreneurs say that raising capital is their principal problem. Holtz-Eakin et al (1994a,b), examine flows in and out of self-employment and finds that inheritances both raise entry and slow exit. Black, de Meza and Jeffreys (1996) find that housing equity plays an important role in shaping the supply of entrepreneurs. Lindh and Ohlsson (1996) suggest that the probability of being self-employed increases when people receive windfall gains in the form of lottery winnings and inheritances.

Some evidence indicates that capital constraints for blacks are particularly large. Borjas and Bronars (1989) show that race differences in self-employment rates can arise in markets with consumer discrimination and confirm that this is the case using microdata from the 1980 Census. Another factor that may lower the attractiveness of self-employment for blacks is crowding out due to immigration. Although self-employment rates are high among immigrants, Fairlie and Meyer (1997) do not find evidence of any large negative effect of immigration on the probability of self-employment among blacks. Meyer (1990) analyzed whether low black asset levels explain much of the racial gap in self-employment. Using the 1984 Wave of Survey of Income and Program Participation (SIPP), he finds that net worth is poor at explaining transitions into self-employment from wage/salary work. In comparison, Bates (1989) finds that racial differences in levels of financial capital do have a significant effect upon racial patterns in business failure rates. Fairlie and Meyer (1996) find that racial groups with higher levels of unearned income have higher levels of self-employment.

In an important new paper Fairlie (1998) uses data from the 1968-1989 Panel Study of Income Dynamics (PSID) to examine why African-American men are one-third as likely to be self-employed as white men. The author finds that the large discrepancy is due to a black transition rate into self-employment that is approximately one half the white rate and a black transition rate out twice the white rate. He finds that capital constraints -- measured by interest income and lump-sum cash payments -- significantly reduce the flow into self-employment from wage/salary work, with this effect being nearly seven times larger for black self-employed than for white self-employed in the case of black-owned firms. Fairlie (1998) then attempts to decompose the racial gap in the transition rate into self-employment into a part due to differences in the distributions of individual characteristics and a part due to differences in the processes generating the transitions. He finds that differences in the distributions of characteristics between blacks and whites explain only a part of the racial gap in the transition rate into self-employment. In addition, racial differences in specific variables, such as levels of assets and the likelihood of having a self-employed father provide important contributions to the gap. He concludes, however, that "the remaining part of the gap is large and is due to racial differences in the coefficients. Unfortunately, we know much less about the causes of these differences. They may be partly caused by lending or consumer discrimination against blacks" (1998, p.14).

III. Empirical Framework and Description of the Data

Disputes about discrimination typically originate in differences in the average outcomes for two groups. For example, suppose black-owned firms are less likely to be approved for a loan than white owned firms. Is such a difference due to discrimination? To answer this question it is appropriate to compare black and white firms that have similar risks of default. In effect, we want to know what fraction of the black firms' loans would have been approved if they had the same credit worthiness as the white firms. A standard approach to this problem is to statistically control for characteristics of the firms that are deemed to be relevant to the loan decision. If we compare firms that have the same likelihood of default and yet find the black firms to be less likely to be approved then it would be appropriate to attribute such a difference to discrimination.

Following in the spirit of the Munnell et al. (1996) study we estimate the following loan denial equations:

$$\text{Prob}(D_i = 1) = \beta_0 + \beta_1 * CW_i + \beta_2 X_i + \beta_3 R_i + \varepsilon_i$$

where D_i represents an indicator variable for loan denial for firm i, CW represents measures of credit worthiness, X represents other firm characteristics, and R represents the race of the firm's ownership. Within the framework of this model, evidence of discrimination would appear if β_3 is less than zero.

To test this proposition, we use national data available from the 1993 National Survey of Small Business Finances (NSSBF). These data contain substantial information regarding credit availability on a nationally representative sample of small businesses. The survey was conducted during 1994-95 for the Board of Governors of the Federal Reserve System and the U.S. Small Business Administration; the data relate to the years 1992 and 1993. The data file used here

contains 4,637 firms with less than 500 employees.[1] In the NSSBF file minority owned firms were over-sampled, but sampling weights are provided to generate nationally representative estimates. Of the firms surveyed, 12 percent are owned by blacks, 6 percent are owned by Hispanics, and 7 percent are owned by individuals of other races (mostly Asian/Pacific Islander, but some American Indian/Eskimo and mixed race).

Table 1 presents weighted sample means from these data for these four racial groups. It is apparent that the minority-owned firms were younger, smaller (whether measured in terms of sales or employment), and more likely to be located in urban areas, a sole-proprietorship and with an owner with fewer years of experience than their white counterparts. Black-owned firms were also generally less credit-worthy than firms owned by other racial groups measured by whether they had: a) been bankrupt over the preceding 7 years b) been delinquent for more than 60 days on personal or firm payments c) had legal judgments against them over the previous three years.

IV. Qualitative Evidence

Before moving on to the results of our multivariate analysis, we first report on what business owners themselves say are the main problems confronting them. Table 2 reports the results of asking specific questions about problems confronted over the 12-month period preceding the date of interview. In part 1 respondents were asked to what extent credit market conditions had been a problem. Blacks were much more likely to say that it had been a "serious" problem (31%) than Hispanics (23%) or whites (13%) or those from other racial groups (13%). Part 2 of the table reports the results for eight other designated problem areas -- i) training costs;

[1] The Median size was 5.5 and mean size was 31.6 full-time equivalent employees; 440 firms out of 4637 had 100 full-time equivalent employees or more. For further details of the NSSBF survey see Appendix A.

ii) worker's compensation costs; iii) health insurance costs; iv) IRS regulation or penalties; v) environmental regulations; vi) The American with Disabilities Act; vii) the Occupational Safety and Health Act; viii) The Family and Medical Leave Act. Differences by race are much less pronounced in these eight areas than they were in relation to credit market conditions. We also estimated a series of ordered logit equations (available on request from the authors) to control for differences across firms in their credit-worthiness, location, industry size, and the like. It is apparent from these regressions that blacks were more likely to report that credit market conditions were especially serious. Only in the case of the Family and Medical Leave Act was there a significant positive coefficient on the black dummy. The finding that black firms are largely indistinguishable from white firms in reporting a variety of problems, except for the case of credit, suggests that credit really is a problem for minority owned firms.

Part 1 of Table 3 provides supporting evidence for these results with the NSSBF with data from another entirely different survey -- the Characteristics of Business Owners Survey, 1992 which was conducted by the Bureau of the Census.[2] Firms were asked to report the impact of various kinds of costs upon their profitability. Blacks and Hispanic-owned firms report stronger negative impacts of credit market conditions, a lack of financial capital and crime. There are no strong differences by race or gender for the other reasons. Part 2 of Table 2 presents results from the same data source on the reasons why a discontinued business was unsuccessful. Multiple responses are possible. Black-owned, and to a lesser degree, Hispanic-owned firms were much more likely to report that the reason was due to the lack of access to business or personal loans or credit than was true for other races.

---

[2] For further details of the survey see the Data Appendix at the end of this report. The full Census Bureau report is available from the following Census Bureau website -- http://www.census.gov/agfs/www/cbo.html.

Table 4 reports the views of respondents on the most important issue they reported they were likely to have to confront over the 12-month period from the date of interview. Credit availability again appears to be an issue for minority firms. For blacks it was the most important reason - one in five gave this response. In contrast only 6% of white owners and 5% of Hispanics gave this answer. Whites were especially worried about health care costs. Black-owners report that they had problems with the availability of credit in the past and expected that such difficulties would continue into the future. Finally, for those firms who did apply for a loan, but were denied, they were asked why the believed their application was rejected. The majority of black-owned firms reported that they believed prejudice or discrimination was one of the reasons the loan was turned down.

V. Estimates of Differences in Loan Denial Rates by Race/Ethnicity

Evidence presented to this point indicates that minority-owned firms are more likely to be denied loans and report that their lack of access to credit significantly impairs their business. Can these differences be explained by such things as differences in size, credit-worthiness, location etc. as some have suggested in relation to the parallel work on discrimination in mortgage lending (see Horne, 1994; Bauer and Cromwell, 1994, and Yezer, Phillips and Trost, 1994)? To address this question we now turn to an econometric examination of whether the loan requests made by minority-owned firms are more likely to be denied, holding constant differences across firms.[3] As we show below, we find strong statistical evidence of discrimination in the market for small business credit.

---

[3] This is analogous to the burgeoning work on race discrimination in the mortgage market described earlier where loan denial equations are estimated (see, for example Munnell et al., 1996).

In Table 5 the results of estimating a series of loan denial probit regressions using data from the 1993 NSSBF are reported.[4] As indicated earlier, this survey has the particular advantage that it includes a number of variables that can be used to proxy an applicant's credit-worthiness. All estimates are obtained from probit models of loan denials. We report estimated derivatives from these models that can be interpreted as the effect on the probability of loan denial of an infinitesimal change in each independent continuous variable and the discrete change in the probability for dummy variables. In column 1 which contains only race and gender dummies, for instance, the coefficient of 0.426 can be interpreted as indicating that the denial rate for black-owned businesses is 42.6 percentage points higher than that for those firms in the excluded category of white-owned firms. This estimate simply replicates the raw difference in denial rates between black- and white-owned businesses reported earlier.

The remainder of Table 5 includes additional explanatory variables to hold constant differences in the characteristics of firms that may vary by race. In column 2 a number of controls are included that distinguish the credit-worthiness of the firm and the owner. Virtually all are statistically significant on a two-tailed test at the conventional 5% level of significance with the expected signs. Having been bankrupt or had legal judgments against the firm or owner raises the probability of denial; stronger sales lowers this probability. Even after controlling for these differences in credit-worthiness, black-owned firms remain 28 percentage points more likely to have their loan request denied compared to white-owned firms. The models reported in

---

[4] The 1987 NSSBF also conducted by the Board of Governors of the Federal Reserve System contains information on loan applications and denial rates. Unlike the 1993 survey, minorities are not oversampled. Also the question relates to loans made over the preceeding twelve months compared to three years in the 1993 survey so sample sizes are smaller (n=686). Denial rates are also lower by race: white-owned firms had a denial rate for loans of 22% compared with 56% for blacks, 36% for hispanics and 24% for other races. These rates are similar to those reported earlier for 1993. Unfortunately little information is available in the 1987 survey on the creditworthiness of applicants, which precludes conducting any econometric analysis.

columns 3 and 4 control for a vast array of additional characteristics of firms, including its size and age, its organizational type, the educational qualifications of the owner, whether or not it had any business lines of credit or revolving credit agreements in 1993, and its location and industry. The estimated disadvantage that black-owned firms face in obtaining credit is virtually unchanged even after including this extensive list of control variables. These firms are still about 25 percentage points more likely to have their applications denied compared to white-owned firms. We also experimented with a number of other controls including profitability, cash holdings and the value of any land owned by the firm but they never achieved significance and were omitted. The results also indicate that Asians/Pacific Islanders also had significantly higher denial rates than whites. There is no evidence that denial rates for firms owned by women or other racial groups were significantly different from the denial rates of firms owned by whites.

In the final two columns separate results are reported for white and minority-owned firms using the column 4 specification. The main differences between these two columns is the fact that the assets (-) and liabilities (+) variables are significant for non-whites but not for whites.

We next consider a series of alternative specifications to determine the extent to which our findings may be interpreted as something other than discrimination. One possibility is that black firms have higher rejection rates because minority-owned firms are more apt to be applying for working capital rather than for capital expansion, equipment purchases or other reasons. Because these latter types of loan requests are more secure, banks should be more likely to grant credit to those firms applying for that type of credit. If blacks are less likely to apply for funds for these purposes their overall loan denial rate would be higher for reasons unrelated to discrimination.

Yet the evidence reported in columns 1 and 2 of Table 6 indicates that blacks remain at a similar disadvantage regardless of the type of credit they are applying for. Separate regressions are reported here which depend upon whether the main purpose of the loan was for working capital or for other reasons using the NSSBF data. The specification used in column 4 of Table 5 is applied here. No matter whether the reason for the loan application is to raise working capital or not, denial rates for blacks are significantly higher ceteris paribus than they are for whites. The size of the effects of being black in columns 1 and 2 are of similar orders of magnitude and are not significantly different from each other at the 5% level of significance.

An important consideration in interpreting the results reported so far is whether or not we have adequately controlled for differences in credit-worthiness of firms. If black owned firms are less creditworthy and we have failed to adequately capture those differences even with our extensive set of control variables, then we would be inappropriately attributing the racial difference in loan denial rates to discrimination. The next several specifications are designed to determine the sensitivity of our results to this concern.

First, we considered whether black-owned firms are treated differently from white-owned firms when requesting credit from other sources, including suppliers and credit-card companies. We use data from the NSSBF, which also asks respondents whether they had been denied trade credit from a supplier.[5] A concern with this question is that firms who had not applied are grouped in with those who applied and received it. Application rates are likely to vary by race.[6]

---

[5] The exact wording of the question was "has any supplier that offers trade credit to business customers denied a request by your firm for trade credit -- yes or no?"

[6] Interestingly the current use of trade credit varied only a little by race. Respondents were asked if the firm purchased any goods or services on account duringb 1993 rather than pay for them before or at the time of delivery: 64.8% of white-owned firms answered in the affirmative compared with 60.7% for blacks; 55.1% for Hispanics and 55.7% for other races

Subject to these caveats the results are not without interest. Overall 6.2% of applicants answered in the affirmative. Once more there are considerable differences by racial group. 5.7% of whites answered positively compared with 13.5% of blacks, 6.4% for other races and 10.2% of Hispanics. In column 3 of Table 6 we modeled the probability of a request for a trade credit application being denied on the full sample of 4480 observations – only firms with missing values are deleted. If minority-owned firms really are less credit-worthy, then other types of creditors also may be reluctant to provide them with credit. On the other hand, if they approve credit requests at roughly the same rate regardless of the owner's race, then perhaps the disadvantage that black-owned firms face when they apply for loans from financial institutions is more likely attributable to discrimination. Results of this analysis suggest that black-owned firms are only 3 percent more likely to be denied trade credit compared to white-owned firms after controlling for observable firm characteristics, which is very small compared to the 25 percent difference observed in financial loan applications.[7] This finding can be interpreted in one of two ways. Firms' trading partners may also discriminate against minority-owned firms, but only a little. Alternatively, if trade credit is granted without any discrimination, then this 3 percent estimate indicates the extent to which our measures of creditworthiness fail to capture differences between white and minority-owned firms. Either way, the gap between this estimate and that obtained regarding the loan decisions of financial institutions' strengthens our conclusion that these institutions treat minority-owned firms unfairly.

[7] One shortcoming in this analysis is that the survey question only identifies firms that were denied credit, but does not identify those firms who sought that form of credit. In our analysis, we are pooling together those who obtained this form of credit with those who never tried to get it. If black-owned firms were less-likely to apply for such credit, the share of them that were denied would be downward biased relative to white-owned firms.

In columns 1 and 2 of Table 7 we examine the probability of a firm using either a business credit card (column 1) or a personal credit card (column 2) to finance business expenses in 1993[8]. In neither case could we find any evidence that black-owned firms were less likely to have access to such cards. We also had information available on the maximum amount that could be billed to these accounts and could find no significant differences by race in a regression that modeled the amount that could be charged. The absence of any race effects were also found when we modeled the typical balance remaining on these cards that were remaining at the end of a typical month.

The final approach we undertook to determine whether our model adequately controls for differences in credit worthiness was to compare our measures to the information requested on a bank's small business loan application form. To do this, we went to one of our local banks and obtained an application, which, at this institution, was relevant for any business loan in which under $100,000 was requested. There are two parts to the application, one addressing the characteristics of the firm itself and one dealing with the owner's personal finances. Regarding the firm, the bank requests the following: (a) type of business, (b) years in business, (c) number of full-time employees, (d) annual sales, (e) organization type (corporation or proprietorship), (f) owner's share, (g) assets and liabilities, (h) minority-ownership, (i) whether the business is a party to any lawsuit, and (j) whether any back taxes are owed. Regarding the owner's personal finances, the application form asks for: (a) assets and liabilities, (b) sources and levels of income, and (c) whether the owner has any contigent liabilities.

---

[8] Blanchflower, Evans and Oswald (1998a) use these same data to examine the role of credit cards and find that the presence of business credit cards enhances employment growth. Blanchflower, Evans and Oswald (1998b) used data from various Surveys of Consumer Finances to show that credit cards reduced households' transactions balances.

These criteria seem to match reasonably closely the information available to us in the NSSBF. The particular strength of the survey is the detail available on the firm, which covers all of the information requested on at least this one bank's loan application form. Less detail is available for the owner of the firm. We have no direct information regarding the owner's assets, liabilities, and income, which would be necessary to determine the personal collateral available should the firm default on its obligation. However, we have a tremendous amount of detail regarding the characteristics of the owner that are frequently used as correlates of these factors, like their education and experience. In addition, we have data on the owner's financial history, including whether or not they have been delinquent on previous loan payments, have judgements rendered against them, or have gone bankrupt in the past seven years. Moreover, the firms in the survey typically have been in existence for a number of years, with a mean and median age of 15 and 12 years, respectively. Only 14.5 percent are less than five years old and only 4.1 percent are less than three years old. One might expect a bank to weigh the firm's characteristics more heavily among older firms than newer ones. Therefore, the data available to us would appear to provide a reasonably accurate picture of a small business's creditworthiness, as measured by financial institutions, particularly for the older firms.

This comparison between the information available to us and that requested on the bank application form is somewhat limited by the fact that this form is only used for loans of $100,000 or less, which represents about the median loan level requested in our NSSBF data. It is possible that loan requests of greater than that amount require more stringent checks of creditworthiness that are not available to us in these data and could introduce a bias into our analysis. To investigate this possibility, in column 3 of Table 7 we re-estimated the specification for column 4 of Table 5 for loans of under $100,000 and in column 4 for those applying for higher amounts.

In these separate specifications, the coefficients on the race variable were virtually identical (0.24 for larger loan requests and 0.26 for smaller ones) and were insignificantly different from each other.

In addition, the fact that the NSSBF data provides all of the firms' characteristics requested on this loan application suggests that our model may better control for the credit-worthiness of loan applicants among older firms than younger ones. This is because a bank making a loan to a reasonably new firm may make its entire decision based upon the finances of the owner him/herself and place little weight on the firm's limited track record. To examine this hypothesis, in columns 5 and 6 respectively of Table 7 we re-estimated the model separating firms according to whether they had been in existence for more or less than 12 years (the median age). After controlling for our measures of credit-worthiness, we find that younger black-owned firms are 31 percent more likely to have their loan application denied compared to 22 percent for older black-owned firms. Although the point estimate is somewhat smaller for the older firms, it is still substantial. Moreover the two point estimates are not statistically significantly different from each other.

Although most of our analysis has addressed whether minority and white-owned firms are treated equally in terms of their probability of loan denial, another way that differential treatment may emerge is through the interest rate charged for approved loans. Discrimination may be apparent if banks approve loans to equally credit-worthy minority and white-owned firms, but charge the minority-owned firms a higher rate of interest.[9] Therefore, we estimated model specifications analogous to those reported previously for loan denials, but now the dependent

[9]The size of the loans requested by, or granted to, white and minority-owned firms are not statistically significantly different.

variable represents the interest rate charged for firms whose loans were approved. In these models, we also control for whether the loan carried a fixed or variable interest rate since fixed rate loans charge a premium to cover their additional risk. The results of this analysis, reported in Table 7, indicate that black-owned firms pay rates of interest that are 1 percentage point higher than white-owned firms after controlling for differences in credit-worthiness.

The results in Table 7 strengthen our belief that we have adequately controlled for the credit-worthiness of firms.

VI. Loan Approval Rates versus Access to Credit

One potential bias in previously reported findings is that those firms who applied for a loan may not be representative of all firms who desire credit. If discrimination against firms that needed credit, but chose not too apply is more pervasive than against loan applicants, then the estimated gap in loan approval rates between equally credit-worthy white and minority-owned firms will understate the degree to which minority-owned firms are shortchanged.

In fact, a prima facie case can be made that this form of selection bias may be present. Evidence from the NSSBF indicates that black- and Hispanic-owned firms were almost three and two times as likely, respectively, to report that they did not apply for a loan even though they needed credit because they thought they would be rejected (22.5 percent of white-owned businesses, 41.7 percent of firms owned by Hispanics, and 60.8 percent of black-owned businesses).[10] Moreover, 18 percent of these black-owned firms reported prejudice as the reason that they feared rejection compared to only five percent for Hispanic-owned firms and two

---

[10] Even after controlling for differences in the size, age, sales in the preceding year, location, industry and credit worthiness of the business, black- and Hispanic-owned firms are roughly twice and 50 percent more likely to report that they did not apply for a loan because they believe they will be rejected.

percent for white-owned firms.[11] If these minority-owned firms had applied for credit and were rejected because of discrimination, estimates of racial disparities only based upon loan applicants would be understated.

The perception of prejudice, however, among these firms does not necessarily imply that selection bias is present. Those firms that failed to apply because they feared rejection may have had similar loan denial rates as other minority-owned firms with comparable levels of credit-worthiness that did apply. If those firms chose to apply for a loan, differences by race in the combined denial rate of the actual and potential applicants would be the same as we have estimated for the observed sample of applicants.

More formally, suppose that loan denial rates for equally credit-worthy white- and minority-owned firms that applied for credit are θ^w and θ^m, respectively; the measure of discrimination employed in the previous analysis is $\theta^m - \theta^w$. Now suppose that firms which are equally credit-worthy, but chose not to apply for a loan because they feared rejection, would have been denied at the rates θ^w and ψ^m for white- and minority-owned firms, respectively. Among the white-owned firms, the denial rate is identical regardless of whether the firm chose to apply or not, conditional upon credit-worthiness. Among minority-owned firms, however, those who were afraid to apply may have been denied at a higher rate (perhaps because of their greater propensity to locate in the central city or other factors that are related to their race, but unrelated to credit-worthiness) compared to other minority-owned firms. Then the correct representation of the disadvantage faced by minority owned firms is $[\eta\theta^m + (1-\eta)\psi^m] - \theta^w$, where ηrepresents

---

[11] The other reasons given, including too little collateral, poor credit history, and poor balance sheet, are comparable across groups (firms could report more than one reason).

the share of minority-owned firms desiring credit that submitted an application. Our earlier findings are biased if θ^m is not equal to ψ^m.

One approach that is frequently employed to address such a problem is to estimate a "Heckman-correction" that would formally model the application process in conjunction with the loan outcome for those who applied. The difficulty with this methodology in the present context is that it is only correctly implemented when some variable is present that is correlated with a firm's decision to apply for a loan, but is independent of the financial institution's decision to approve or deny the request. Unfortunately, the NSSBF data does not appear to contain any variables that would satisfy these conditions, so we are unable to implement this methodology.[12]

As an alternative that answers a different, but related question, we consider the ability of firms to get credit among those who desired it, regardless of whether or not they applied. This amounts to analyzing access to credit rather than loan approval and includes in the denominator those firms that needed credit but did not apply because they feared rejection. If differences by race in this rate among all firms who needed credit are greater than differences by race in the rate of denial among loan applicants, then this would indicate that black- and Hispanic-owned firms have even less access to credit than an analysis of loan applicants would indicate.

We conducted several statistical exercises to determine whether or not sample selection bias is present in the results presented earlier and found that Hispanics, but not blacks, do suffer greater discrimination than an analysis of just loan applicants would suggest. To motivate this

---

[12] The only variable that we felt potentially could meet these conditions in the NSSBF data is the distance between a firm and the nearest financial institution. If greater distance reduced a firm's information regarding the availability of funds, it might be related to the decision to apply for a loan. On the other hand, the credit-worthiness of the firm should be independent of its location and should be unlikely to enter into the approval process. Unfortunately, we did not find a direct relationship between distance to the nearest financial institution and the probability of applying for a loan. This may be due to the fact that few firms are located more than a very short distance from the nearest financial institution.

issue, we first separate firms into four distinct categories.

a) Firms that applied for credit in the past three years but were never denied (n=1455 unweighted or 31.4% [24.5%] of the sample).

b) Firms that applied for credit in the past three years and were denied at some time, (n=552 unweighted or 11.9% [9.9%] of the sample.

c) Firms who did not apply for credit in the past three years because they were afraid they would have denied had they applied (n=640 unweighted or 13.8% [14.6%] of the sample).

d) Firms who did not need additional credit in the past three years (n=1988 unweighted or 42.9% [51.1%] of the sample).[13]

The fact that the owner of a firm reported that they did not apply for a loan may have been due to the fact that they were less credit-worthy and confused prejudice with being a bad risk. In fact, evidence does suggest that making loans to these firms would have been riskier. To examine this possibility we estimated the mean value of the same measures of credit-worthiness included in the regressions in Table 5. Results of this exercise for a subset of these measures are reported in Table 9. As expected, firms that are approved for loans have better characteristics than firms that are denied. Those firms that did not need any additional credit are in as good or even better condition. The firms that did not apply because they were afraid they would be rejected certainly had some reason for concern because these results indicate they were much less credit-worthy compared to those whose loan requests were approved. Given these circumstances, what one would like to know is the probability that two firms with identical degrees of credit-worthiness are likely to fail to apply for a loan fearing they would be denied.

Table 10 models the probability that a firm would be discouraged from applying for a

[13] Numbers in square parentheses are the weighted proportions.

loan for fear of being turned down. It is clear that the size of the race effects diminish as one moves to the right and allow for other influences that are correlated with race. However, controlling for the size, age, sales in the preceding year, location, industry and credit worthiness of the business fails to remove the influence of being black-owned.[14] The remaining effect in columns 3 and 4 is highly significant and quantitatively substantial. The main conclusion from the Table is that even after controlling for differences in credit-worthiness, black- and Hispanic-owned firms are roughly 25 per cent and 13 percent less likely to apply for a loan because they believe they will be rejected.

The analysis reported so far has been designed to indicate that sample selection bias may be a problem, but a more direct test of this hypothesis is warranted. Recall that the problem we are concerned with is that those black-owned and Hispanic-owned firms that did not apply for loans may have done so because they had even a greater probability of being turned down compared to that of the firms that did apply (all else equal). If so, the differential between denial rates *among applicants* between white and minority-owned firms would be understated. Black- and Hispanic-owned firms are less-likely to apply for a loan than white-owned firms because they feared rejection, even after holding constant any differences that exist in their credit-worthiness. If these firms had applied for a loan would that application have been denied at a higher rate, all else equal. To address this issue we treat those firms that did not apply because they feared rejection as if they *did* apply and had been rejected. This amounts to an analysis of the rates of "denial" among all firms who needed credit. If differences by race in the rate of

---

[14] Measured by 5 variables which identify whether in the preceding three years there had been any judgments rendered against the owner; whether the firm or the principal owner had been 60 or more days delinquent and whether the owner had declared bankruptcy over the preceding seven years and whether the firm had a line of credit.

denial among all firms who needed credit are greater than differences by race in the rate of denial among loan applicants, then this would indicate selection bias. It would indicate that black- and Hispanic-owned firms have even less access to credit than an analysis of loan applicants would indicate. Of course, one would want to hold constant all other characteristics of the firms and owners, including credit-worthiness before drawing conclusions from such an analysis. This can be accomplished by estimating a regression model comparable to the one reported in Table 5 for the sample of firms that applied for a loan, except that this analysis would consider all firms seeking credit and treat those who did not apply for fear of being denied as denials. If this analysis shows that black- or Hispanic-owned firms were even more likely to be denied access to credit, holding constant all other characteristics of the firm than was found in Table 5, then this would indicate sample selection bias if one just considered the pool of loan applicants.

To test this proposition, we estimate a regression model comparable to the one reported in Table 5 for the sample of firms that applied for a loan, except that this analysis considers all firms seeking credit and treats those who did not apply for fear of rejection as denials. The sample excludes firms in the fourth category above that did not need additional credit in the preceding three years. The results, reported in Table 11, are consistent with the previous analysis; we find that selection is not much of an issue for black-owned firms. Regardless of whether we consider denial rates among applicants or denial rates among firms that desired additional credit, black-owned firms are roughly 25 percent less likely to obtain credit. For Hispanic-owned firms, however, selection bias is evident. Among the pool of loan applicants, Hispanic-owned firms are not statistically significantly more likely to be denied than other firms with the same characteristics. The previously statistically insignificant result for Hispanics in Table 5 now becomes significant in Table 11 once the selection bias has been accounted for.

Among the pool of firms seeking additional credit, Hispanic-owned firms are 12 percent more likely to be denied access to credit, and this difference is statistically significant.

VII. Caveats

The results presented indicate that black-owned firms particularly face obstacles in obtaining credit that are unrelated to their credit worthiness. Although the obvious explanation for these findings is that these firms are discriminated against, we raise a few factors worth considering before one can draw definitive conclusions.

First, as in any regression-based study, this analysis hinges upon the proposition that all the factors that are related to loan denial rates by race have been included in our statistical model. If, for example, blacks possess some unobservable characteristic that makes them less creditworthy, then our statistical finding would overstate the extent of discrimination. Although such an omitted variable bias is always a possibility, we have included an extensive array of information on firm characteristics and it is not clear what additional information would be pertinent in examining loan decisions. In addition, we have estimated alternative specifications that address other forms of credit that firms receive and different subgroups of banks and in each case the results are consistent with our interpretation that discrimination exists in this market. Finally, we have also supplemented the regression estimates with alternative, more qualitative approaches, which all suggest the possibility of discrimination in lending.

It is conceivable that the reason why blacks are more likely to have their loans denied is that the firms that they own are inherently less profitable than the ones owned by whites. There are two counters to this argument. First, modeling a firm's profitability normalized either by equity or employment shows no evidence of racial differences.[15] Second, controlling for a firm's

[15] Results not reported. This is true with or without controls for industry, location, creditworthiness and all of the

profitability does not change the race coefficients significantly in the loan denial equations reported earlier.

Another potential criticism is that this study has examined loan denial rates rather than loan default rates; some have claimed that the latter provides a more appropriate strategy for identifying discrimination. For example, if banks only approve loans for relatively good black firms then black firms should exhibit relatively low default rates. Such an approach has several significant shortcomings that are detailed in Browne and Tootell (1995). For instance, one problem is that it relies on the distribution of default probabilities being similar for black and white applicants meeting the acceptance standard used for white firms.

In addition, many of the criticisms levied against Munnell et al. (1996) may be relevant here as well. That work has been attacked because of the fragility of the results. Yet these criticisms appear to have been effectively countered by two of the authors (see Browne and Tootell, 1995). It is also not obvious that the criticisms directed towards that research are applicable to the results presented here. Importantly, our reported estimates appear to be highly stable to changes in econometric specification. Moreover, the absolute size of the raw racial differences found in the mortgage study are considerably smaller than those observed in this study regarding business credit.[16] Although some of the difference in denial rates between the races in both studies appear to be due to differences in the characteristics of the applicants, even after controlling for these differences the gap in denial rates in the small business credit market is

---

other controls used in the various denial equations. There is some evidence of a negative race effect in an equation where profits are normalized by sales but this is an inappropriate and certainly unusual normalization.

[16] In the Boston Fed study 10% of white's mortgage applications were loans rejected compared with 28% for blacks; loan denial rates for business credit in this study were 26.9 percent and 65.9 percent for white- and black-owned firms respectively.

considerably larger than that found in the mortgage market.[17] The finding of a larger effect in the mortgage market is perhaps to be expected given the existence of a sophisticated resale market for home loans that does not appear to exist for business loans. The larger size and significance of the effects found in this report reduces the possibility that the observed differences can be explained away by some quirk of the econometric estimation procedure.

VIII. Conclusions

The analysis presented above examined the discrepancy between minority- and white-owned firms in loan denial rates that appears in national data. We found significant evidence that black-owned businesses and, to a lesser extent, Hispanic-owned firms face impediments to obtaining credit that go beyond observable differences in their credit worthiness. This differential would traditionally be attributed to discrimination. We found little or no evidence that female-owned firms are discriminated against in this market.

Our results appear to be very insensitive to such changes in econometric specification. The estimated effects are substantial and considerably larger than those found in the analysis of discrimination in mortgage markets. In addition it is worth noting that controlling for a wide range of factors related to the firms credit worthiness has a significantly smaller impact on the measured effect of race than in the mortgage context. Estimates fall by roughly two thirds in mortgage markets but by less than a half in business credit markets when controls are included. It is interesting to speculate on why this might be the case. Two plausible explanations suggest themselves as to why discrimination in the market for loans to small firms would be greater than that for home loans. First, many mortgages are sold in the secondary market and a substantial fraction of mortgage lenders have little intention of keeping the loans they make. This added

[17] The ceteris paribus gap between blacks and whites is 25 percentage points in denial rates between the races in the

"distance" in the transaction might reduce the likelihood of discrimination. As Day and Liebowitz, (1998) point out "economic self-interest, therefore, should reduce racial discrimination in this market more completely than in many others" (p.6). A highly sophisticated secondary market for loans to small firms does not exist. Second, the presence of special programs and regulatory incentives to encourage banks and others to increase their mortgage lending to minorities gives these groups some advantages in obtaining a mortgage. Additional research might seek to provide alternative explanations.

Qualitative evidence indicates that minority-owned firms are much more likely to state that they were discouraged from applying for loans because they feared being turned down. When asked why they did not apply for a loan or why their application was denied, a significant proportion of blacks were likely to report that it was due to prejudice or discrimination. When asked what they expect to be the main problem facing them in the following three years black-owned firms are much more likely to say credit constraints than is the case for other racial groups.

Quantitative evidence supports a conclusion of discrimination. Loan denial rates are significantly higher for black-owned and Hispanic-owned firms than for white-owned firms even after differences in an extensive array of measures of credit-worthiness and other characteristics that were statistically held constant. The problem of sample selection bias strengthens the case for discrimination, especially for Hispanic-owned firms. Overall, the evidence is very strong that minority-owned firms are disadvantaged in the market for small business credit.

---

small business credit market compared with 7 percentage points in the mortgage market.

References

Bates, T., (1989): "The Changing Nature of Minority Business: A Comparative Analysis of Asian, Nonminority, and Black-Owned Businesses," The Review of Black Political Economy, pp. 25-42.

Bauer, P.W. and B.A. Cromwell (1994). "A Monte Carlo examination of bias tests in mortgage lending", Federal Reserve Bank of Cleveland, Economic Review, 30(3), pp. 27-40.

Bendick, M., C. Jackson, and V. Reinoso (1994). "Measuring Employment Discrimination Through Controlled Experiments", Review of Black Political Economy, 23(1), Summer, pp. 25-48.

Blanchflower, D.G., Evans, D.S. and A.J. Oswald (1998a). 'Credit cards and entrepreneurs', working paper, National Economic Research Associates, Cambridge, MA.

Blanchflower, D.G., Evans, D.S. and A.J. Oswald (1998b). 'Credit cards and consumers', working paper, National Economic Research Associates, Cambridge, MA.

Blanchflower, D.G. and A.J. Oswald, 'What makes an entrepreneur?', Journal of Labor Economics, January, 16(1) pp. 26-60 1998.

Borjas, George J. and Stephen Bronars, S. (1989). "Consumer discrimination and self-employment', Journal of Political Economy, 97, pp. 581-605.

Browne, L. E. and G. M.B. Tootell, (1995). "Mortgage Lending in Boston-A Response to the Critics", New England Economic Review, pp. 53-78, September-October.

Calem, P. amd L. Mester (1995). "Consumer behavior and the stickiness of credit card interest rates", American Economic Review, December, 85(5), pp. 1327-36.

Cloud C. and G. Galster, (1993). "What Do We Know about Racial Discrimination in Mortgage Markets", Review of Black Political Economy, Summer, 22(1), pp. 101-120.

Cole, R.A. and J. D. Wolken, (1995). "Financial Services Used by Small Businesses: Evidence from the 1993 National Survey of Small Business Finances", Federal Reserve Bulletin, vol. 81, July, pp. 630-67.

Cole, R.A., R. L. Woodburn, and J. D. Wolken, (1996). "Bank and Nonbank Competition for Small Business Credit: Evidence from the 1987 and 1993 National Surveys of Small Business Finances", Federal Reserve Bulletin, vol. 82, November, pp. 938-95.

Cox, D. and T. Jappelli (1990). "Credit rationing and private transfers: evidence from survey data", Review of Economics and Statistics, 72, pp. 445-54.

Cox, D. and T. Jappelli (1993). "The effect of borrowing constraints on consumer liabilities",

Journal of Money, Credit and Banking, 25, pp. 197-213.

Day, T.S. and S.J. Liebowitz (1998). "Mortgage lending to minorities: where's the bias?", Economic Inquiry, XXXVI, January, pp. 3-28.

Evans, D. and Leighton, Linda (1989), 'Some empirical aspects of entrepreneurship', American Economic Review, 79, pp. 519-535.

Evans, D. and B. Jovanovic, (1989), 'An estimated model of entrepreneurial choice under liquidity constraints', Journal of Political Economy, 97, pp. 808-827.

Fairlie, R.W. (1998). "The absence of the African-American owned business: an analysis of the dynamics of self-employment", Journal of Labor Economics, forthcoming.

Fairlie, R. W., and B. D. Meyer (1996): "Ethnic and Racial Self-Employment Differences and Possible Explanations," Journal of Human Resources, 31(4), pp. 757-793.

Fairlie, Robert W., and Bruce D. Meyer (1997): "Does Immigration Hurt African-American Self-Employment," University of California, Santa Cruz Working Paper.

Ferri, G. and P. Simon (1997). "Constrained consumer lending: exploring business cycle patterns using the Survey of Consumer Finances", working paper, Princeton University.

Fix, M. and R. Struyk, (1993). Clear and Convincing Evidence, American Enterprise Institute Press, Washington, D.C..

Hayashi, F. "The Effect of Liquidity Constraints on Consumption: A Cross-sectional Analysis," Quarterly Journal of Economics; 10(1), February 1985, p.p. 183-206.

Godley, A. (1996). "Jewish soft loan societies in New York and London and immigrant entrepreneurship, 1880-1914", Business History, 38(3), July, pp. 101-116.

Guiso, L., T. Jappelli, and D. Terlizzese (1996). "Income risk, borrowing constraints and portfolio choice", American Economic Review, March, 86(1), pp. 158-172.

Harrison, G.W. (1998). "Mortgage lending in Boston: a reconsideration of the evidence", Economic Inquiry, XXXVI, January, pp.29-38.

Hayashi, F. (1985). "The effect of liquidity constraints on consumption: a cross-sectional analysis", Quarterly Journal of Economics, February, 100(1), pp. 183-206.

Holtz-Eakin, D., Joulfaian, D., and R.S., Harvey (1994a), 'Entrepreneurial decisions and liquidity constraints', Journal of Political Economy, 102, pp.53-75.

Holtz-Eakin, D., Joulfaian, D., and R.S., Harvey (1994b), 'Sticking it out: entrepreneurial survival and liquidity constraints', Rand Journal of Economics, 25(2), pp. 334-347, Summer.

Horne, D. (1994). "Evaluating the role of race in mortgage lending", FDIC Banking Review, 7(1), Spring/Summer, pp 1-15.

Jappelli, T. (1990). "Who is credit constrained in the U.S. economy?", Quarterly Journal of Economics, February, 105(1), pp. 219-234.

Lindh T., and H.Ohlsson (1996). "Self-employment and windfall gains: Evidence from the Swedish lottery", Economic Journal, 106: (439), pp.1515-1526, November.

Longhofer, S. (1996). "Discrimination in Mortgage Lending: What Have We Learned?," Economic Commentary, Federal Reserve Bank of Cleveland, August 15.

Meyer, B. (1990): "Why Are There So Few Black Entrepreneurs?," National Bureau of Economic Research, Working Paper No. 3537.

Mishkin, F., and R. Hall, (1982)" The sensitivity of consumption to transitory income: estimates from panel data on households", Econometrica; 50(2), March, pp. 461-81.

Munnell, A.G.M.B Tootell, L.E. Browne and J. McEneaney (1996). "Mortgage lending in Boston: interpreting HMDA data", American Economic Review, March, 86(1), pp. 25-53

Paxson, C. (1990). "Borrowing constraints and portfolio choice", Quarterly Journal of Economics, May, 105(2), pp. 535-43.

Yezer, M.J., R.F. Phillips and R.P. Trost (1994). "Bias in estimates of discrimination and default in mortgage lending; the effects of simultaneity and self-selection", Journal of Real Estate Finance and Economics, 9(3), pp. 196-215.

Table 1. Means

	All	White	Black	Other races	Hispanics
Loan denial rates	.288	.269	.659	.400	.359
Female owned	.26	.25	.23	.33	.28
Total employment	8.493	8.75	6.18	6.71	6.73
Firm age	14.28	16.42	11.99	10.22	12.92
$1992 Sales	1001330	4522723	777374	936533	1055417
$1992 Assets	488844	2076624	316287	611382	399576
$1992 Liabilities	284587	1284593	173975	303172	188301
Sole proprietor	.432	.417	.621	.476	.571
Partnership	.083	.081	.042	.078	.081
S corporation	.203	.213	.097	.185	.091
C Corporation	.284	.289	.241	.260	.256
Line of credit	.257	.264	.213	.149	.275
Owner yrs exprnce	18.9	19.4	15.8	14.7	15.4
<=8th grade	.018	.015	.010	.035	.075
9-11th grade	.028	.028	.026	.033	.033
High school grad	.234	.238	.155	.166	.301
Some college	.253	.254	.356	.214	.208
College graduate	.263	.261	.254	.306	.269
Postgraduate	.203	.205	.203	.245	.114
ENC	.159	.168	.156	.084	.056
ESC	.045	.045	.115	.028	.013
MATL	.153	.159	.111	.099	.132
MNTN	.058	.060	.020	.032	.052
NENG	.069	.074	.025	.026	.050
PACIFIC	.182	.164	.181	.413	.307
SATL	.148	.148	.229	.127	.118
WNC	.081	.088	.051	.020	.023
WSC	.100	.090	.108	.164	.245
Judgments	.051	.043	.150	.092	.093
Firm delinquent	.190	.185	.328	.144	.249
Personally delinquent	.134	.120	.366	.179	.223
Bankrupt past 7yrs	.027	.025	.051	.038	.036
In an MSA	.789	.775	.903	.889	.889

Table 2. Problems firm experienced during preceeding year.

Part 1. Question -- "How much of a problem was credit market conditions to the firm during the last 12 months?". (%)

	White	Black	Hispanic	Other	All
Not a problem	67	43	59	66	66
Somewhat of a problem	20	26	18	21	20
Serious problem	13	31	23	13	14

Part 2. Question -- "How much of a problem was a) training costs b) Worker's compensation costsc) Health insurance costs d) IRS regulation or penalties e) Environmental regulations f) Americans with Disabilities Act g) Occupational Safety and Health Act h) Family and Medical Leave Act to the firm during the last 12 months?".

% responding the issue was a "serious problem"

	White	Black	Hispanic	Other	All
Training costs	7	7	6	4	7
Worker's compensation costs	21	19	30	29	22
Health insurance costs	32	38	45	35	33
IRS regulation or penalties	12	17	17	14	12
Environmental regulations	8	6	7	11	8
Americans with Disabilities Act	3	4	3	4	3
Occupational Safety and Health Act	5	4	4	6	5
Family and Medical Leave Act	3	5	3	5	3

Source: National Survey of Small Business Finances, 1993.

Table 3. Results from the Characteristics of Business Owners Survey: 1992

Part 1. Impact upon the business's profitability

	All	Blacks	Hispanics	Other Races	Women	Non-Minority Men
a) Health insurance costs						
Minor negative impact	22.2	14.0	17.2	20.5	21.4	22.9
Strong negative impact	25.0	22.6	24.4	16.9	24.9	25.4
b) Credit market conditions						
Minor negative impact	16.2	15.0	16.0	16.4	15.9	16.2
Strong negative impact	15.0	19.6	16.7	15.0	17.8	13.4
c) IRS regulations or penalties						
Minor negative impact	23.2	17.3	21.8	20.8	21.8	24.2
Strong negative impact	19.6	21.0	20.3	14.5	16.1	21.0
d) Environmental regulations						
Minor negative impact	20.4	15.2	20.1	18.6	16.5	21.6
Strong negative impact	12.3	8.1	11.7	13.8	10.2	13.2
e) The Americans With Disabilities Act						
Minor negative impact	9.6	7.7	10.1	11.2	9.0	9.7
Strong negative impact	4.4	3.6	3.5	7.6	3.7	4.5
f) The Occupational Safety and Health Act (OSHA)						
Minor negative impact	17.3	13.9	14.3	17.1	13.1	18.7
Strong negative impact	9.0	6.3	9.7	10.0	8.1	9.5
g) Lack of financial capital						
Minor negative impact	25.2	19.5	22.1	20.0	25.5	25.6
Strong negative impact	30.7	46.4	38.1	33.3	32.9	29.0
h) Crime						
Minor negative impact	26.5	29.4	27.6	29.8	25.8	26.6
Strong negative impact	9.2	20.6	16.5	19.9	9.3	7.9

Notes: Reported are the percentages of those responding to the relevant question. For items a-f the other options available were "strong positive impact", "minor positive impact" and "neutral". For items g and h the other option was "neutral"

Part 2. Reason why a discontinued business was unsuccessful (%)

	All	Blacks	Hispanics	Other Races	Women	Non-Minority Men
Inadequate cash flow or low sales	71.7	63.4	67.1	67.6	70.2	73.7
Lack of access to business credit	8.2	15.5	8.8	6.1	9.3	7.3
Lack of access to personal credit	3.3	8.4	5.8	6.4	3.3	2.7
Other	71.7	69.3	68.3	75.9	75.8	69.3

Source for parts 1 and 2: Characteristics of Business Owners Survey: 1992. Table 1. p21.

Table 4. Answers to the question “What do you think will be the most important issue affecting your firm over the next 12 months?” (%).

	White	Black	Hispanic	Other	All
Credit availability	6	21	5	4	6
General government regulation	3	2	3	3	3
Environmental rules, EPA	3	1	3	3	3
Health care, health insurance	22	12	14	15	21
Insurance mandates (not health)	2	1	2	1	2
Spending cuts	*	*	-	1	*
Taxes, tax policy	6	3	8	4	6
Workman's compensation, OSHA	3	2	3	4	3
Other specific regulation issue	3	3	3	1	3
General U.S. business conditions	11	9	14	17	12
International economy	1	*	3	1	1
State or region's economy	2	1	3	3	2
Economy (general)	3	2	4	3	3
Inflation	1	*	1	*	1
Unemployment	1	1	1	*	1
Economic growth and growth policies	0	-	-	1	*
High interest rates	6	2	3	4	5
Scarcity of government or SBA loans	*	1	-	*	*
Competition from other countries	*	-	-	-	*
Competition from other firms	2	2	2	7	2
Declining or troubled industry	2	1	1	0	1
Costs of conducting business	3	4	4	4	3
Crime or illegal immigration	*	1	1	0	*
Labor force problems	3	4	6	4	3
Legal or tort issues	*	1	*	-	*
Weather, acts of God	1	-	*	1	1
No issues or problems	3	2	3	5	3
Profits, cash flow, expansion, sales	10	20	10	12	10
Other firm-specific problem .	2	3	1	2	2
Number of observations (unweighted)	3383	424	323	258	4388

Notes: * = less than 0.5%

Table 5. Denial of loan request regressions

	(1)	(2)	(3)	(4)	(5) Whites	(6) Non-whites
Black	.426	.277	.249	.258	-	-
	(10.87)	(6.69)	(5.99)	(5.85)		
Asian/Pacific Islanders	.2071	.161	.128	.104	-	-.144
	(3.90)	(3.02)	(2.42)	(1.92)		(1.41)
Native Americans	-.051	-.152	-.143	-.101	-	-.488
	(0.35)	(1.17)	(1.07)	(0.70)		(3.06)
Hispanic	.113	.061	.055	.034	-	-.184
	(2.33)	(1.27)	(1.15)	(0.69)		(2.03)
Woman owns >50%	.073	.039	.029	.018	.023	.093
	(2.54)	(1.36)	(1.00)	(0.62)	(0.76)	(1.02)
Owner years experience		-.003	-.001	-.002	-.001	-.007
		(2.58)	(1.14)	(1.51)	(0.54)	(1.38)
Owners share of business		.001	.000	.000	.000	-.003
		(1.96)	(0.73)	(0.12)	(0.60)	(1.51)
Judgments		.142	.131	.129	.143	.231
		(2.83)	(2.61)	(2.50)	(2.36)	(1.91)
Firm delinquent		.177	.182	.201	.199	.163
		(6.54)	(6.63)	(7.04)	(6.73)	(1.90)
Personally delinquent		.160	.145	.143	.140	.248
		(4.41)	(3.97)	(3.86)	(3.37)	(2.74)
Bankrupt past 7yrs		.208	.169	.154	.254	-.142
		(3.10)	(2.57)	(2.30)	(3.21)	(0.88)
Line of credit			-.109	-.104	-.099	-.097
			(4.90)	(4.50)	(4.20)	(1.29)
Total 1990 employment			.0002	.0002	.0000	.002
			(1.14)	(1.05)	(0.36)	(1.74)
Firm age			-.001	-.000	.000	-.007
			(1.11)	(0.38)	(0.42)	(1.20)
In an MSA			.094	.087	.097	-.235

			(3.71)	(3.25)	(3.92)	(1.86)
New firm since 1990			.108	.128	.157	.075
			(2.56)	(2.93)	(3.34)	(0.59)
Partnership			-.077	-.085	-.075	-.211
			(1.64)	(1.81)	(1.61)	(1.30)
S-Corporation			-.018	-.028	-.027	.025
			(0.54)	(0.84)	(0.80)	(0.23)
Corporation			-.041	-.048	-.022	-.188
			(1.26)	(1.44)	(0.63)	(1.92)
$1992 Sales (*$10^8$)		-.439	-.332	-.382	-.296	.604
		(3.62)	(2.52)	(2.63)	(2.29)	(0.43)
$1992 Assets (*$10^8$)		-.168	.109	.195	.283	-23.20
		(0.65)	(0.42)	(0.69)	(1.11)	(2.53)
$1992 liabilities (*$10^8$)		.716	.217	.139	-.752	21.60
		(1.80)	(0.54)	(0.33)	(0.20)	(2.10)
Owner education dummies	-	-	5	5	5	5
Area dummies	-	-	-	8	8	8
Industry dummies	-	-	-	60	60	60
N	2007	2007	2007	1986	1627	345
Pseudo R^2	.0606	.1408	.1634	.1938	.1782	.2688
Chi^2 (81)	143.0	332.5	385.8	454.7	310.8	128.6
Log likelihood	-1109.0	-1014.3	-987.6	-945.4	-716.9	-174.9

Notes: excluded category =whites. Dependent variable =1 if reported was rejected for the most recent loan application that occurred over the preceding three years, 0 otherwise. t-statistics in parentheses. Native Americans = American Indians and Alaskan Eskimo. Method of estimation is dprobit in STATA.

Source: 1993 National Survey of Small Business Finances

Table 6. Denial of loan request regressions by type and source of loan

	(1) **Working capital**	(2) **Other reasons**	(3) **Trade credit**
Black	.290	.176	.032
	(5.08)	(2.40)	(2.88)
Asian/Pacific Islanders	.023	.179	.010
	(0.34)	(1.99)	(0.73)
Native Americans	-	-.118	-.032
		(0.74)	(1.06)
Hispanic	-.016	.078	.029
	(0.23)	(1.04)	(2.08)
N	1064	894	4480
Pseudo R^2	.2301	.2181	.1941
Chi^2 (81)	293.4	227.3	471.0
Log likelihood	-490.8	-407.2	-977.9

Notes: excluded category =whites. Equations also include 5 owner education dummies, 8 area dummies, 60 industry dummies plus all of the controls reported in Table 5. Method of estimation Probit. Dependent variable =1 if reported was rejected for the most recent loan application that occurred over the preceding three years, 0 otherwise. t-statistics in parentheses. Native Americans =American Indians and Alaskan Eskimo. Source: 1993 National Survey of Small Business Finances

Table 7. Validation Checks

	(1) Business credit card	(2) Personal credit card	(3) Loans •$100,000	(4) Loans >$100000	(5) Firm age •12yrs	(6) Firm age >12 yrs
Black	.035	.002	.241	.263	.310	.218
	(1.33)	(0.07)	(4.28)	(3.40)	(5.15)	(3.16)
Asian/Pacific Islanders	-.102	-.009	.180	-.013	.169	.021
	(3.42)	(0.07)	(2.32)	(0.17)	(2.32)	(0.23)
Native Americans	.050	-.008	-.063	-	-.059	-
	(0.60)	(0.09)	(0.34)		(0.31)	
Hispanic	.032	-.036	.027	.013	.043	.065
	(1.02)	(1.17)	(0.44)	(0.16)	(0.61)	(0.94)
N	4628	4635	1046	917	1062	883

Notes: excluded category =whites. Method of estimation dprobit in STATA. t-statistics in parentheses.

Dependent variable is 1 if loan application approved, 0 if denied in columns 1-4. In column 5 and 6 it is 1 whether the firm used business credit cards to finance business expenses in 1993 and in column 6 it is 1 whether the firm used the owners' personal credit card(s) cards to finance business expenses in 1993, zero otherwise. Sample consists of all firms that had applied for loans in columns 1 -4 and all firms in the final two columns.

Controls are as in column 4 of Table 5.

Native Americans =American Indians and Alaskan Eskimo.

Table 8. Interest rate (%) charged on most recent loan

	(1)	(2)
Black	.922	1.029
	(3.88)	(3.76)
Asian/Pacific Islanders	.633	.456
	(2.22)	(1.49)
Native Americans	-.471	-.470
	(0.61)	0.67)
Hispanic	.693	.493
	(2.79)	(1.89)
Fixed interest loan	.837	.499
	(7.72)	(4.25)
	(7.73)	
Additional controls	No	Yes
N	1455	1455
R^2	.0747	.1744
F	16.68	3.09
Root MSE	1.9979	1.9459

Notes: excluded category =whites. Method of estimation Ordinary least squares. t-statistics in parentheses. Additional controls in column 2 include 5 owner education dummies, 8 area dummies, 60 industry dummies plus all of the other controls reported in Table 5. Native Americans =American Indians and Alaskan Eskimo. Sample consists of firms who had applied for a loan and had the application approved. Other controls includes all the other variables in Table 5 – coefficients not reported as insignificantly different from zero.

Table 9: Measures of Credit-Worthiness, by Category of Firm (%)

	Did Not Need More Credit	Applied and Approved	Applied and Denied	Did Not Apply - Feared Rejection
Owner's Years of Experience	19.9	18.9	16.9	16.4
Judgements Against Firm	3.1	2.9	9.7	12.7
Firm Delinquent	9.8	18.1	39.3	39.0
Personally Delinquent	7.7	8.0	28.8	32.2
Bankrupt in Past 7 Years	1.1	1.3	5.1	9.0

Table 10. Did not apply for loans fearing denial regressions

	(1)	(2)	(3)	(4)
Black	.3981	.299	.270	.262
	(16.57)	(11.82)	(10.73)	(10.13)
Asian/Pacific Islanders	.094	.088	.054	.041
	(3.49)	(3.22)	(2.04)	(1.48)
American Indian/Alaskan Eskimo	.135	.052	.046	.036
	(1.76)	(0.70)	(0.63)	(0.50)
Multiple/mixed	.3268	.240	.202	.276
	(0.98)	(0.71)	(0.61)	(0.82)
Hispanic	.2228	.174	.158	.149
	(7.89)	(6.14)	(5.62)	(5.17)
Woman owns >50%	.0394	.017	.011	.001
	(2.33)	(1.01)	(0.66)	(0.09)
Owner years experience		-.004	-.002	-.002
		(5.71)	(2.41)	(2.57)
Owners share of business		.0005	.0003	.0002
		(2.03)	(1.02)	(0.67)
Judgments		.134	.135	.130
		(4.22)	(4.26)	(4.07)
Firm delinquent		.253	.244	.251
		(13.30)	(12.79)	(12.83)
Personally delinquent		.151	.141	.139
		(6.63)	(6.23)	(6.12)
Bankrupt past 7yrs		.310	.290	.301
		(6.83)	(6.38)	(6.49)
Line of credit			-.054	-.053
			(3.67)	(3.54)
Total 1990 employment			.0002	.0003
			(0.80)	(1.45)
Firm age			-.002	-.002
			(3.02)	(2.56)

In an MSA			.066	.064
			(3.99)	(3.68)
New firm since 1990			.009	-.000
			(0.37)	(0.00)
Partnership			-.008	-.022
			(0.26)	(0.69)
S-Corporation			.026	.014
			(1.26)	(0.68)
Corporation			.041	.030
			(2.11)	(1.53)
$1992 Sales (*$10^8$)			-.542	-.655
			(3.34)	(3.79)
$1992 Assets (*$10^8$)			-1.08	-1.13
			(2.51)	(2.57)
$1992 liabilities (*$10^8$)			1.50	1.53
			(3.01)	(3.04)
Owner education dummies	-	-	-	5
Area dummies	-	-	-	8
Industry dummies	-	-	-	60
N	4635	4635	4635	4627
Pseudo R^2	.0625	.1708	.1877	.2062
Chi^2 (81)	329.3	900.3	989.1	1085.1
Log likelihood	-2470.2	-2184.7	-2140.3	-2088.9

Notes: excluded category =whites. Dependent variable =1 if reported was rejected for the most recent loan application that occurred over the preceding three years, 0 otherwise. t-statistics in parentheses. Native Americans = American Indians and Alaskan Eskimo. Method of estimation is dprobit in STATA.

Source: 1993 National Survey of Small Business Finances

Table 11. Denial of loan request regressions - includes those who need credit but didn't apply for fear of refusal.

	(1)	(2)	(3)	(4)
Black	.437	.332	.275	.282
	(14.17)	(9.50)	(7.39)	(7.22)
Asian/Pacific Islanders	.283	.244	.169	.152
	(6.47)	(5.31)	(3.45)	(2.92)
American Indian/Alaskan Eskimo	.163	.032	.003	.009
	(1.37)	(0.25)	(0.02)	(0.06)
Hispanic	.268	.218	.159	.127
	(6.93)	(5.28)	(3.63)	(2.78)
Woman owns >50%	.120	.077	.047	.040
	(4.47)	(2.72)	(1.63)	(1.31)
Owner years experience		-.005	-.002	-.002
		(4.75)	(1.41)	(1.67)
Owners share of business		.002	.001	.0004
		(6.62)	(1.69)	(0.92)
Judgments		.158	.143	.132
		(3.37)	(2.93)	(2.62)
Firm delinquent		.167	.177	.193
		(6.42)	(6.50)	(6.79)
Personally delinquent		.213	.165	.163
		(6.38)	(4.70)	(4.50)
Bankrupt past 7yrs		.274	.235	.248
		(4.87)	(3.99)	(4.08)
Line of credit			-.279	-.282
			(12.29)	(11.83)
Total 1990 employment			-.0001	-.0000
			(0.52)	(0.01)
Firm age			-.002	-.002
			(1.49)	(1.28)
In an MSA			.149	.145

			(5.34)	(4.84)
New firm since 1990			.115	.125
			(2.80)	(2.92)
Partnership			-.134	-.141
			(2.62)	(2.66)
S-Corporation			-.069	-.074
			(2.02)	(2.07)
Corporation			-.071	-.077
			(2.18)	(2.23)
$1992 Sales (*$10^8$)			-.519	-.618
			(3.14)	(3.43)
$1992 Assets (*$10^8$)			.119	.283
			(0.36)	(0.80)
$1992 liabilities (*$10^8$)			.242	.104
			(0.48)	(0.20)
Owner education dummies	-	-	-	5
Area dummies	-	-	-	8
Industry dummies	-	-	-	60
N	2647	2646	2646	2638
Pseudo R^2	.0859	.1714	.2444	.2714
Chi^2 (81)	313.1	624.3	890.1	985.8
Log likelihood	-1665.1	-1508.7	-1375.8	-1323.0

Notes: excluded category =whites. Dependent variable =1 if reported was rejected for the most recent loan application that occurred over the preceding three years, 0 otherwise. t-statistics in parentheses. Native Americans = American Indians and Alaskan Eskimo. Method of estimation is dprobit in STATA.

Source: 1993 National Survey of Small Business Finances

Mean of dependent variable (weighted) = .500

Source: 1993 National Survey of Small Business Finances

Data Appendix

A. The 1993 National Survey of Small Business Finances

The 1993 National Survey of Small Business Finances provides information about a nationally representative sample of small businesses in the United States. The survey was conducted during 1994-95 for the Board of Governors of the Federal Reserve System and the U.S. Small Business Administration. The target population is the population of all for-profit, non-financial, non-farm business enterprises that had fewer than 500 employees and were in operation as of year-end 1992. The sample was drawn from firms listed on the Dun's Market Identifier file as of November, 1993. The DMI list, containing nearly 10 million businesses, is broadly representative of all businesses but does not include many of the newest start-up firms or the self-employed individuals filing business tax returns. In contrast, the Internal Revenue Service reports that for 1991 about 20 million individuals filed business tax returns, including about 13 million sole proprietorships, of which about 3 million reported less than $2,500 in annual receipts. The public use dataset contains 4,637 firms. These firms represent 4.99 million small businesses.

The sample was a stratified random design with over sampling to ensure the ability to estimate separately the reporting domains by employment size groups, urban or rural location, and in census regions. The specific sampling strata were five employment-size groups (0-19, 20-49, 50-99, 100-499, unknown), nine Census regions (East North Central, East South Central, Middle Atlantic Mountain, New England, Pacific, South Atlantic, West North Central and West South Central), and urban or rural location. In addition, three minority partitions of firms likely to be owned by Asians, Blacks, and Hispanics were extracted from the Dun's frames prior to sampling to create samples of minority-owned businesses (see [2] for details). Each of the minority partitions was proportionately stratified by urban or rural location. Because the larger and minority-owned firms are small percentages of the population of small businesses but are of special interest to researchers, the survey over sampled larger firms (20 to 499 employees), as well as Black-owned, Asian-owned, and Hispanic-owned firms to ensure sufficient numbers for analyses of these groups.

Businesses were contacted in advance of the survey to determine eligibility, verify addresses, and identify a contact person. Not all businesses were eligible (i.e., met the target-population definition). Some businesses could not be contacted, some failed at least one of the eligibility criteria (e.g., not in business, for profit, etc.), and some had erroneous frame data. The eligibility rate of sampled businesses averaged about 60 percent.

The average duration of the telephone interviews was fifty minutes. assisted telephone interviews, which were conducted by Price Waterhouse. The survey was voluntary. The response rate was about 50 percent.

The survey collected the following types of information from each business:

-Demographic information on the owners and characteristics of the firm, such as the industry to which it belongs, age, and type of organization (sections A, B, C, and D of the questionnaire).

-An inventory of the firm's deposit and savings accounts, capital leases, credit lines, mortgages, motor vehicle loans, equipment loans, other loans, and selected other financial products. For each of these services, the supplier of the service was also identified (sections E, F, and G of the questionnaire).

-Information about the characteristics of the financial service suppliers: type (e.g., bank, individual), location vis-a-vis the firm, method of conducting business, number of years the firm has done business with the supplier, and reasons for choosing the source (sections H and J of the questionnaire and section I of the codebook).

-Experience in the past three years in applying for credit (section J of the questionnaire).

-Data from each firm's income statement and balance sheet (sections P, R, and S of the questionnaire).

-Information on the recent credit history of the firm and its owners (section U of the questionnaire).

Generally, the reference period for the survey data is 1993. However, the income statement and balance sheet data were collected for fiscal year 1992 because that date was the time of the last complete set of financial statements for most firms. Sales and employment data were collected for 1992 and for 1990.

The NSSBF does not use an equal-probability sample design, so that the weights play a critical role in interpreting the survey data. The weights included with this data set are based on the original weights computed by Price Waterhouse. As is true of all surveys, there is some amount of missing data for nearly every NSSBF question. An attempt has been made to impute most missing values. The general model used to perform imputations in the NSSBF is a randomized regression model. The methodology employed is similar to that used in the first-stage procedures of the Survey of Consumer Finances. Multiple-categorical response questions (e.g., check all responses that apply) were converted to a series of yes-no responses, and then each of these yes-no responses was estimated using a randomized linear-probability model (i.e., randomized regression where the dependent variable takes on one of two values). Not all variables lend themselves to estimation by regression. In particular, questions that evoked single discrete categorical responses (e.g., type of source) are typically imputed using a randomized hot-deck procedure.

Further details of the survey may be found in Cole, R.A. and J. D. Wolken, (1995) and Cole, R.A., R. L. Woodburn, and J. D. Wolken, (1996). Additional documentation, codebooks and data are available for download on the web page of the Federal Reserve Board of Governors at the following address -- http://www.bog.frb.fed.us/pubs/oss/oss3/nssbftoc.htm.

B. Characteristics of Business Owners Survey, 1992

The Characteristics of Business Owners (CBO) Survey provides basic economic, demographic, and sociological data on the characteristics of minority, women, and non-minority male business owners and their business activi-ties. The data were collected by the Bureau of the Census through a statistically chosen mail sample survey and were combined with administrative records data, which were originally obtained for use in the 1992 Economic Census. Any business which filed an IRS form 1040, Schedule C (individual proprietor-ship or self-employed person); form 1065 (partnership); or form 1120S (subchapter S corporation) in 1992 is included in the survey universe. A subchapter S corporation is a special IRS designation for legally incorporated businesses with 35 or fewer shareholders who, because of tax advan-tages, elect to be taxed as individual shareholders rather than as corporations. The 1992 CBO survey used five sampling frames: 1) Hispanic; 2) Black; 3) Other minority (Asians and Pacific Islanders, American Indians, and Alaska Natives); 4) Women; and 5) Nonminority male. Each business was eligible for sampling from exactly one CBO frame, to which they were assigned in the following order of precedence: Hispanic, other minority, Black, women, and nonminority male. For tabulation purposes, women-owned businesses sampled in the Hispanic, other minority, or Black frames were used to produce the estimates for women-owned businesses. The five frames were stratified by state, industry division, and receipts size class before sample selection. The total sample size was 116,557 owners, approximately evenly distributed among the five sampling frames.

Additional documentation, codebooks and results are available for download on the web page of the Bureau of the Census at the following address:- http://www.census.gov/agfs/www/cbo.html