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FORMING NEW CENTRAL CITY BUSINESSES

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This study analyzes financial characteristics and differences in failure rates for three groups of central city business loan recipients: (1) Black-owned ongoing firms, (2) Black-owned de novo firms, and (3) White-owned de novo businesses. Ongoing firms have,

by definition, been functioning for at least nine months, but they have been run by their present owner (the borrower) for less than nine months; businesses in this category are most commonly "buyouts" where- by the loan is being used to finance transfer of an established firm from White to Black ownership. Whereas ongoing firms are established in the sense that a mode of operation and/or a product clearly exists at the point in time when the Black entrepreneur enters the business, de novo firms have been started from scratch less than nine months prior to the borrower's application for a loan. Discriminant analysis is used to identify and compare the factors which are important in predicting loan delinquency for Black and White entrepreneurs forming new central city businesses.

Our major concern in analyzing the results of the discriminant analysis is the effect of the de novo status on the delinquency characteristic of Black borrowers. We have found that Black ongoing firms are much less likely to fail than Black de novo firms, even when we control for the financial attributes of the borrowers. Taken at face value, this would suggest that the Small Business Administration and other lenders should focus efforts on financing ongoing Black firms. However, another aspect of the problem is the incremental contribution of de novo and ongoing firms to employment and output of

the inner city communities. One cannot conclude solely on the basis of failure rates that loans to de novo firms have been generally less "successful" than its ongoing business loans; tradeoff functions between failure rate and employment-output contribution must first be specified for the borrowing firms.

I. Introduction

This study investigates financial characteristics and differences in failure rates for samples of Black-owned and White-owned businesses formed in central city areas between 1967 and 1970. The analyses described herein utilize financial information collected from the files of Small Business Administration (SBA) regional offices in Boston, New York, and Chicago.¹

The objective of this study is to estimate a discriminant function which can effectively identify strong loan applications from urban Black entrepreneurs. Discriminant analysis will be used to identify and compare the factors which are important in predicting loan delinquency for Black and White borrowers. Results of the discriminant analysis exercises suggest that the likelihood of business failure and loan default is quite predictable; because failure is predictable, many defaults are avoidable.

The present study analyzes three groups of central city SBA loan recipients: (1) Black-owned ongoing firms, (2) Black-owned de novo firms, and (3) White-owned de novo businesses.² Ongoing firms have, by definition, been functioning for at least nine months, but they have been run by their present owner (the SBA borrower) for less than nine months; businesses in this category are most commonly "buyouts" whereby the SBA loan is being used to finance transfer of an established firm from White to Black ownership. Blacks buying business franchises are included in the ongoing category of firms (franchises were quite rare). Whereas ongoing firms are established in the sense that a mode of operation and/or a product clearly exists at the point in time when

the Black entrepreneur enters the business, de novo firms have been started from scratch less than nine months prior to the borrower's application for an SBA loan. For both ongoing and de novo firms, the borrower/entrepreneur under consideration most frequently began active business operations several months after receiving the proceeds of SBA loans. For the New York, Chicago, and Boston enterprises under consideration, only 42.6 percent of the de novo Black firms who borrowed between June, 1967, and June, 1970, were fully meeting their loan payment obligations. The comparative figures for ongoing Black and new White firms are 60.5 percent and 66.0 percent, respectively.

II. An Analysis of Loan Delinquency and Default

Using the 100 White borrowers as a comparison group, discriminant analysis was applied to the samples of Black and White borrowers to find variables which distinguish between firms who successfully repay loans and firms whose loans are seriously delinquent. Results of the discriminant analysis suggest that when we control for differences in borrower characteristics (Exhibit 1), Black ongoing borrowers still have a significantly lower loan delinquency rate than Black de novo borrowers.

The Variables

The data used for calculating values of the explanatory variables were available to loan officers before the final decision of loan approval was made; no follow-up information has been utilized. One

explanatory variable, the logarithm of the number of months the loan has been outstanding, has been included to control for the fact that older loans are more likely to be delinquent loans.

A complete list of the explanatory variables used in the discriminant analysis is as follows.³

Credit rating:	A "good" credit rating means that no more than one instance of minor delinquency appears on the personal credit report of the borrower. Credit rating = 0 if the credit rating is bad, credit rating = 1 if not. ⁴
Owner's net worth:	Owner's total personal tangible assets minus total liabilities.
Net worth/total assets:	The ratio of the owner's net worth to the owner's total assets.
Owner's income:	Includes wages, salary, net rental income, dividends, and so on.
Experience:	Owner's years of managerial experience in any capacity.
Log time:	The logarithm of the number of months the loan has been outstanding.
Type of borrower:	Borrower type = 0 for a borrower starting a firm de novo, borrower type = 1 for ongoing firms.

Exhibit 1 presents summary statistics which describe the above variables for each of the three groups of firms under consideration. Black de novo borrowers are clearly weaker than White borrowers in terms of the borrower traits summarized in Exhibit 1, and Black ongoing borrowers are generally weaker than Whites.⁵

Hypothesized Relationships

1. The size of the entrepreneur's net worth is inversely related to the probability of delinquency; owners with high personal net worth can rely to some extent upon net worth if their business is in danger of failure.
2. Entrepreneurs with good credit histories will be less likely to be delinquent on their loan repayment obligations.
3. The size of the entrepreneur's income is inversely related to the probability of default. Because personal income consists almost entirely of returns to human capital (both quality and quantity), personal income is a useful proxy for the entrepreneur's human capital inputs into the business under consideration.
4. The number of years of managerial experience is inversely related to the probability of default. In this context, we consider experience as a proxy for management competence.
5. The size of net worth to total assets of the owner is inversely related to the probability of default.
6. An ongoing firm is less likely to be in default than a de novo firm. This hypothesis is important in the context of the alternative strategies for development of Black businesses.

While all of these hypotheses reflect an assumption of *ceteris paribus*, it is impossible to have *ceteris paribus* changes in certain interdependent variables. In the following analysis, loans that are either current or paid in full are called "good" loans; those over 60 days delinquent are called "bad" loans. Because loans in the 30 to 60 day range are not necessarily good or bad loans, they have been excluded from the discriminant analysis exercises.

Empirical Results

Discriminant Function for Black New Firms

<u>Variable</u>	<u>Coefficient</u>
Credit Rating	0.8313615
Net Worth	0.0000020
Net Worth/Total Assets	0.2253697
Income	0.0000976
Experience	0.0451206
Time	-0.2500798
De Novo	-0.4398531

Test for equality of group means: $F = 18.15$; F statistic is significant at the 0.01 level, implying that the group mean vectors are significantly different.

Black New Firms - Group Mean Vectors

	<u>Group Good</u>	<u>Group Bad</u>
Credit Rating	0.91	0.66
Net Worth	15,952.16	6,305.66
Net Worth/Total Assets	0.61	0.49
Income	11,358.47	6,812.17
Experience	6.84	3.18
Time	2.29	2.69
De Novo	0.44	0.61
Number of Observations	138	127

The statistic used to test the significance of the difference between the group mean vectors has an F distribution and, as reported above, this test shows that group vectors corresponding to the samples of good and bad loans are significantly different. The discriminating power of each individual explanatory variable can only be expressed in relative terms; ranked from relatively strongest to relatively weakest, the order is (1) income, (2) credit rating, (3) experience, (4) de novo dummy, (5) log time, (6) net worth to total assets, and (7) net worth. The explanatory variable coefficients all have the hypothesized sign but the net worth variable appears to be a trivial discriminator.⁶

Discriminant Function for White New Firms

<u>Variable</u>	<u>Coefficient</u>
Credit Rating	0.7574333
Net Worth	-0.0000002
Net Worth/Total Assets	0.6439111
Income	0.0000085
Experience	0.0215384
Time	-0.0799703
De Novo	-0.0693846

Test for equality of group means: $F = 5.08$; F statistic is significant at the 0.01 level, implying that the group mean vectors are significantly different.

White New Firms - Group Mean Vectors

	<u>Group Good</u>	<u>Group Bad</u>
Credit Rating	0.95	0.78
Net Worth	44,651.78	7,411.30
Net Worth/Total Assets	0.71	0.49
Income	13,152.35	6,799.37
Experience	9.95	4.03
Time	2.77	3.02
De Novo	0.70	0.75
Number of Observations	66	32

In contrast to the Black borrowers, the net worth to total assets variable is highly significant in explaining loan delinquency for White borrowers. Also, experience and credit rating are more important for White borrowers than for Black borrowers, and income is less important. Net worth appears to be relatively insignificant in predicting delinquency for White firms, and the sign of the net worth variable is opposite to that which was hypothesized. Also, in contrast to the results for Black borrowers, the de novo firm dummy variable is found to be relatively insignificant for the White borrowers.

The variables--credit rating, net worth, net worth to total assets, income, experience, log time, and de novo--have been used to estimate a discriminant analysis classification equation which classifies each group of the sample observations into one of two groups, good or bad loans. For the samples of borrowers under consideration, the group variance-covariance matrices (corresponding to the good and bad loan groups) are significantly different; accordingly, "quadratic" classification rules are used in this study.⁷ Overall, the discriminant analysis classification exercises (Exhibit 2) classified 200 of the 265 Black firms correctly. Of the 133 Black firms classified as good, 103, or 77.4 percent, were in fact good loans. Although classification of White firms was 69.4 percent correct, the small sample size upon which the White discriminant function is based (group bad has 32 observations) does weaken the model's reliability.

Our major concern in analyzing the results of the discriminant analysis is the effect of the de novo status on the delinquency characteristic of Black borrowers. We have found that Black ongoing firms are much less likely to fail than Black de novo firms, even when we control for the financial attributes of the borrowers. Taken at face value, this would suggest that SBA and other lenders should focus efforts on financing ongoing Black firms. However, another aspect of the problem is the incremental contribution of de novo and ongoing firms to employment and output of the inner city communities.⁸ One cannot conclude solely on the basis of failure rates that SBA loans to de novo firms have been generally less "successful" than its ongoing business loans; tradeoff functions between failure rate and employment-output contribution must first be specified for the borrowing firms.

Exhibit 1

Summary Statistics on Black De Novo, Black Ongoing, and White New Firms

		Mean	Standard Deviation		
Owner's Net Worth:					
	Black De Novo	\$10,433	\$ 14,080		
	Black Ongoing	11,872	18,810		
	White New	32,969	150,810		
Owner's Net Worth/Total Assets:					
	Black De Novo	0.434	1.135		
	Black Ongoing	0.607	0.384		
	White New	0.638	0.335		
Owner's Income:					
	Black De Novo	\$ 9,079	\$ 5,808		
	Black Ongoing	9,273	4,734		
	White New	10,993	15,939		
Experience (year):					
	Black De Novo	5.07	6.66		
	Black Ongoing	5.02	6.55		
	White New	7.94	8.73		
Credit History:					
		<u>Absolute Frequency</u>	<u>Relative Frequency</u>		
	Black De Novo				
	Bad	28	19.9%		
	Okay	113	80.1%		
	Black Ongoing				
	Bad	26	20.2%		
	Okay	103	79.8%		
	White New				
	Bad	10	10.0%		
	Okay	90	90.0%		
Loan Repayment Status:					
		1	2	3	4
	De Novo Black	60(42.6%)	3(2.1%)	16(11.3%)	62(44.0%)
	Ongoing Black	78(60.5%)	2(1.6%)	16(12.4%)	33(25.6%)
	New White	66(66.0%)	2(2.0%)	9(9.0%)	23(23.0%)

- 1 = No delinquency problem; current or paid in full.
 2 = Presently between 30 and 60 days delinquent.
 3 = Presently over 60 days delinquent but still carried as an active loan.
 4 = In liquidation (with litigation generally being instituted against the borrower) or charged off as an uncollectable loan.

Exhibit 2

Classification Results

A. Classification Results for Black Firms

	<u>Actual</u>	<u>Prediction</u>			
		<u>Number of Loans</u>		<u>Percent</u>	
		<u>Good</u>	<u>Bad</u>	<u>Good</u>	<u>Bad</u>
Good	138	103	35	77.4%	26.5%
Bad	<u>127</u>	<u>30</u>	<u>97</u>	<u>22.6%</u>	<u>73.5%</u>
	265	133	132	100.0%	100.0%

B. Classification Results for White Firms

	<u>Actual</u>	<u>Prediction</u>			
		<u>Number of Loans</u>		<u>Percent</u>	
		<u>Good</u>	<u>Bad</u>	<u>Good</u>	<u>Bad</u>
Good	66	37	29	97.4%	48.3%
Bad	<u>32</u>	<u>1</u>	<u>31</u>	<u>2.6%</u>	<u>51.7%</u>
	98	38	60	100.0%	100.0%

NOTES

1. Central city areas analyzed in this study were defined to include those counties which were dominated by the city under consideration. For New York City, city boundaries coincide exactly with the boundaries of the central counties. For Chicago and Boston, the central counties used to define the central city area, Cook County and Suffolk County, respectively, encompass the entire cities and small parts of the surrounding metropolitan areas. Previously published works have utilized the data source compiled by Timothy Bates (upon which the present analysis is based) to investigate SBA financing of Black enterprise, but these earlier works focused primarily upon existing rather than new businesses. These studies, authored by Timothy Bates, include (a) "An Econometric Analysis of Lending to Black Businessmen," Review of Economics and Statistics (August 1973); (b) "Financing Black Enterprise," Journal of Finance (June 1974); (c) Black Capitalism: A Quantitative Analysis (New York: Praeger, 1973).

To avoid repetition, this study excludes data on borrowers who had been actively running their own businesses prior to applying for an SBA loan or loan guarantee.

Existing businesses have, by definition, been run continuously by the same owner for at least nine months prior to filing a loan application (which is the primary data source for this study and all of the studies listed above) with the SBA. The distinction between new and existing businesses arises because available data describes past operations of the latter in great detail while data on the former is limited. See Black Capitalism: A Quantitative Analysis, pp. 38-41, for an exhaustive analysis of the differences in data availability.

2. SBA has supported (through direct loans or loan guarantees) buyouts of White businesses by Black businessmen. However, SBA has generally not supported buyouts by White businessmen of either White or Black businesses. As a result, the White sample of 100 firms mainly consists of de novo businesses. Our sample of 270 new Black firms contains 141 de novo businesses and 129 ongoing firms. Financial information was collected by individually examining loan files of the borrowers in local SBA offices. The relevant sampling procedures are described in Black Capitalism: A Quantitative Analysis, pp. 35-37; or "Financing Black Enterprise," pp. 758-60. These works indicate that the final sample of Blacks forming new businesses contained 273 observations. Subsequent data checks showed that three of these firms had received two loans each, one under the entrepreneur's name and one under the firm's name. Because no business was to be included more than once, the sample was reduced appropriately to 270 observations.

3. A more detailed description of these variables appears in Black Capitalism: A Quantitative Analysis, pp. 39-41.
4. While the explanatory variables are assumed to belong to multivariate normal populations, it has been shown that functions with dichotomous variables can be used efficiently for discriminant analysis. See E. A. Gilbert, "On Discrimination Using Qualitative Variables," Journal of the American Statistical Association (December 1968): 1399-1412.
5. For Black de novo borrowers versus White borrowers, the t-ratios relevant to testing the null hypothesis of no difference between mean values for the Exhibit 1 variables are:

net worth	1.49
net worth to total assets	2.01
income	1.15
experience	2.76
credit rating	2.21

Thus the null hypothesis can be rejected (at the .05 level) in favor of the alternative hypothesis of significantly larger mean values for the net worth to total assets, experience, and credit rating of White borrowers.

For Black ongoing borrowers versus White borrowers, the corresponding t-ratios are:

net worth	1.39
net worth to total assets	0.65
income	1.04
experience	2.79
credit rating	2.27

The null hypothesis is rejected in favor of the alternative hypothesis of greater mean values for the experience and credit rating (at the .05 level) of White borrowers.

6. The discriminating power of net worth is perhaps compromised by the presence of multicollinearity amongst the explanatory variables. The simple correlation between net worth and income is .449, between net worth and experience, .260. Other simple correlations between explanatory variables are quite low (.171, for example, between income and experience). Ranked from relatively strongest to weakest, explanatory variables for White firms were (1) credit rating, (2) net worth to total assets, (3) experience, (4) income, (5) time, (6) net worth, and (7) de novo.
7. For the Black businesses the group dispersion matrices (corresponding to the good and bad loan groups) are significantly different ($F = 9.70$) at the one percent significance level. For the White businesses the group dispersion matrices are significantly different ($F = 8.89$) at the one percent level. For a detailed discussion of classification rule selection see "An Econometric Analysis of Lending to Black Businessmen," pp. 274-75.

8. An SBA study of 593 minority group business borrowers reports that, "firms which were new when their loans were made averaged four new jobs, while previously ongoing firms averaged two new jobs." Small Business Administration, Study of Minority Borrowers and Firms Prior and Subsequent to SBA Assistance (Washington, D.C., 1974), p. 5.