

Credit Access for High-Risk Borrowers in Financially Concentrated Markets: Do SBA Loan Guarantees Help?

George W. Haynes

ABSTRACT. The Small Business Administration's (SBA) loan guarantee program was established to correct financial capital market inefficiencies and improve small business access to financial capital. However, the SBA loan guarantee program has been criticized for its failure to improve the performance of financial capital markets available to small businesses. This study considers the financial capital market failure created by lenders' monopoly power (specifically, financial market concentration) in financial capital markets. Based on this potential market failure, a model is derived to evaluate the behavior of lenders and borrowers in financial capital markets. Using the National Survey of Small Business Finance, this study compares the financial characteristics of small business borrowers with and without SBA loan guarantees, and provides a qualitative assessment of the SBA's ability to correct financial capital market inefficiencies. When considering only the interaction between borrower quality and the degree of financial market concentration, high-risk borrowers in high concentration financial markets have a higher probability of receiving an SBA loan guarantee than low-risk borrowers in low concentration financial markets. However, when other factors influencing the demand for financial capital are included in the model, only the borrower attributes (credit risk and age) are significant. While the SBA loan guarantee program appears to partially mitigate the effects of the market failure caused by financial market concentration for high-risk borrowers, the program appears to be better designed to address borrower risk, rather than credit market failure.

Introduction

Since its inception in 1932, the Reconstruction Finance Corporation (RFC) and its successor, the Small Business Administration (SBA), have faced almost continual criticism for their inability to

satisfy one major goal – that of correcting inefficiencies in the financial capital market facing small businesses. Based on the same basic criticism, the Reagan administration recommended eliminating the SBA and transferring its functional responsibilities to the Department of Commerce in 1986. In Elisabeth Rhyne's book entitled *Small Business, Banks and SBA Loan Guarantees: Subsidizing the Weak or Bridging a Credit Gap*, the author considers the Reagan administration criticism of the SBA and suggests that the SBA's failure to achieve its goal is a design problem. She describes the design problem facing the SBA loan guarantee program in the following statement:

"... the (SBA loan guarantee) program is not really designed to address credit market failures. In the first place, the guarantee mechanism is not directed against structural problems, such as term deposits and high administrative costs. It is directed against credit risk, a borrower attribute" (Rhyne, 1988, p. 97).

Rhyne (1988) suggests that the SBA loan guarantee is designed to address credit risk, rather than credit market failure. This study empirically tests this notion using a new comprehensive data set on small business finance, the 1988 National Survey of Small Business Finance (NSSBF).

The SBA survived the 1980s amid criticism that it was unsuccessful in achieving its goals and costly to U.S. taxpayers. The very existence of the SBA over the past three decades has hinged on the perception that its Section 7 (a) loan guarantee program was instrumental in correcting financial market inefficiencies. Based on the estimated \$250 to \$300 million annual cost to taxpayers and the perception that the program provided no useful function in correcting market failures, the Reagan administration recommended that the SBA be dismantled. Eleventh-hour support by the American

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Department of Health and Human Development,
Montana State University,
Bozeman, MT 59717

Bankers Association saved the SBA from elimination in 1986; however the basic claim of the Reagan administration attack remained untested because representative data on small businesses wasn't available in the public domain.

The SBA has remained an important source of credit for small businesses. During the period from 1982 to 1988, total loan guarantees grew from \$1.764 billion to \$3.005 billion; the average percentage of the loan guaranteed decreased from 85.8 percent to 80.6 percent; and in nominal terms, the average size of an SBA loan guarantee grew from \$146,714 to \$200,521 (Table I). The percentage of total guaranteed loans held by the SBA has ranged from 1.8 percent in 1987 to 5.1 percent in 1985. In 1988, the year the NSSBF was conducted, the SBA had 3.1 percent of the total number of government guaranteed loans, or just over 1 percent of the total dollar amount of all guaranteed loans outstanding (OMB, 1990).

This study examines which borrowers are chosen to receive Section 7 (a) loan guarantees and assesses the efficacy of the loan guarantee program in correcting the market failure caused by financial market concentration. Financial market concentration arises when a lender, or group of lenders, has a sufficiently large share of the credit market to influence the price of loans. Based on empirical evidence suggesting that financial market concentration leads to higher prices for financial services, this study addresses the success of the SBA loan guarantee program in providing

access to credit for high-risk borrowers in highly concentrated financial markets. Three pertinent questions underlie this question and they are as follows:

- Do small business borrowers in highly concentrated financial markets have a higher probability of receiving an SBA loan guarantee than small business borrowers in less concentrated financial markets?
- Do high-risk small business borrowers have a higher probability of receiving an SBA loan guarantee than lower-risk small business borrowers?
- Do high-risk small business borrowers in highly concentrated financial markets have a higher probability of receiving an SBA loan guarantee than other small business borrowers?

The next section summarizes previous literature on market failure and the interface between lenders, borrowers, and the SBA.

Literature review and background

An extensive body of literature has been generated about the relationship between lenders and borrowers and public policy intervention. This literature review is divided into two segments. The first segment summarizes literature assessing claims of price discrimination against small business firms. The second segment summarizes literature evaluating the costs and benefits of

TABLE I
New direct and guaranteed loans disbursed by the SBA and federal government, 1982-88

Item	1982	1983	1984	1985	1986	1987	1988
SBA Loan Guarantees							
Gross (× \$1 million)	1,764	2,470	2,904	2,810	2,563	2,764	3,005
SBA portion only (× \$1 million)	1,514	2,104	2,466	2,317	2,127	2,238	2,423
Percentage of the loan guaranteed	85.8	85.2	84.9	82.4	83.0	81.0	80.6
Number of loan guarantees	12,020	15,358	16,945	15,434	14,204	14,530	14,984
Average size of the loan guaranteed	\$146,714	\$160,533	\$171,348	\$182,072	\$180,456	\$190,227	\$200,521
Total number of government guaranteed loans	85,810	78,043	73,316	55,481	89,580	151,671	96,439
Percent of guaranteed loans held by the SBA	2.1	3.2	4.0	5.1	2.9	1.8	3.1

Sources: SBA Loan Profiles, Fiscal Year 1990 (U.S. Small Business Administration, Office of Assistance), Report 17; and Office of Management and Budget, Special Analyses, Budget of the United States Government, Fiscal Years 1983-1989 (U.S. Government Printing Office, 1983-89). Tables F-9 (1984), F-15 (1985), F-20 (1986, 1987), and F-19 (1988 and 1989).

intervention by the SBA in the financial capital market aimed at correcting the problems caused by real price discrimination in the market.

When added costs can't be identified to warrant higher loan offer prices, then real price discrimination exists. Real price discrimination can emanate either from noncompetitive behavior on the part of lender because of some degree of market power held by the lender, or from incomplete markets, arising from imperfect information being supplied by either the borrower or lender. In either case, financial resources are being allocated inefficiently and a market failure may exist.

When some degree of market power exists in the financial credit market, the lender can set prices. Empirical evidence suggests that higher prices for financial services exist in financially concentrated markets (Edwards, 1964; Scott, 1977; Rhoades and Rutz, 1982; Bell and Murphy, 1969; Hannan, 1979; Berger and Hannan, 1989; Rhoades, 1983; Silber and Polakoff, 1970; and Buck, Friedman and Dunkelberg, 1991). Both Edwards (1964) and Scott (1977) confirmed a positive relationship between lender concentration and loan interest rates for small firms. In the years that followed this simple explanation of the impact of concentration on loan prices paid by small firms another explanation arose suggesting that the threat of entry from banks in nearby markets was more important than concentration within the market in raising loan prices (Hannan, 1979). Banks in concentrated markets were suspected of limit pricing, which is a pricing regime designed to discourage entry by other banks. Under the Reagan administration, antitrust cases based on market concentration effectively disappeared. In fact, subsequent research argues that the benefits of concentration possibly outweighed the costs (Savage, 1983). Larger lenders may bring more innovation and more products to the market. In addition, banks that were having a difficult time competing with many lenders in the market, might grow to be stronger banks with less competition and bring more stability to the local banking market. If market power exists, the lending institution may exercise its pricing advantage by clustering services together, hence making it more difficult for the firm to determine the price of each service offered (Whitehead, 1982; Elliehausen and Wolken, 1990). In addition to the adverse effects

on firms using financial services, higher information and resource costs may be incurred by the community when a monopolist dominates the market (Rhoades, 1983).

In addition to market failures caused by the market power held by lenders, a market failure may occur because of the information gap between borrowers and lenders. Potential borrowers may have the incentive to understate their default risk when applying for a loan, hence asymmetric information exists in this market. The existence of asymmetric information, where the lender is unable to differentiate between "honest" and "dishonest" borrowers, gives the lender the incentive to ration credit to high-risk borrowers, rather than simply charge them higher prices (Jaffee and Modigliani, 1969; Jaffee and Russell, 1976; Stiglitz and Weiss, 1981; Myer and Majluf, 1984). If the criterion chosen to determine who receives a loan is based on characteristics of the business unrelated to its financial performance, then the potential for discrimination exists. The theoretical literature of Jaffee and Modigliani (1969), Jaffee and Russell (1976) and Stiglitz and Weiss (1981) carefully assesses the decision of lenders to either offer higher priced loans or ration credit to small business borrowers.

If a market failure exists, then some public policy intervention is often warranted to correct the market failure. Intervention into the financial market has occurred with direct loans or grants and indirect loan guarantee programs administered by the Small Business Administration. Substantial discussion has been generated to determine if SBA programs offer subsidies to borrowers and lenders, effectively crowd out borrowers unassisted by the programs and impose relatively high direct costs on U.S. taxpayers (Fried, 1983; Bosworth, Carren and Rhyne, 1987; Rhyne, 1988; Mandel, 1990; Rappaport and Wyatt, 1990; Price Waterhouse, 1992).

The next section develops the conceptual model.

Conceptual model

Based on the goals espoused by the SBA, a successful loan guarantee program would assist high-risk borrowers and borrowers in markets plagued by some market failure (i.e., financial

market concentration). While the SBA could carefully screen each applicant and directly allocate loan guarantees to these borrowers, typically the SBA's decision to grant a loan guarantee is made by the lender, rather than the SBA. If the lender is the key decision maker in granting loan guarantees, then the conceptual model must capture the incentives given to lenders to recommend the purchase of SBA loan guarantees by borrowers. When a financial instrument is introduced into the market by a government agency, the price charged for the instrument may be established to defer transaction costs incurred by the lender and the SBA. When the initiation fee (and interest rate cap) is set by the agency, the instrument may be under- or over-priced. The conceptual model suggests that the pricing of SBA loan guarantees and the degree of financial market concentration, independent of any screening action taken by the SBA directly, provides the incentive for the SBA to allocate loan guarantees to high-risk borrowers and borrowers in financially concentrated markets.

The acquisition of an SBA loan guarantee requires the participation of three parties: the SBA, the borrower, and the lender. The SBA does not deal directly with the borrower, but indirectly through a private lender. The appropriate financial data is presented by the borrower to the lender for review. Based on the lender's evaluation, one of three courses of action are possible: (1) the lender may decide to finance the loan without an SBA loan guarantee; (2) the lender may provide financing conditional upon obtaining an SBA loan guarantee; or (3) the lender may reject the loan. If the lender approves the loan based on the SBA's willingness to provide a loan guarantee, then the lender must help the borrower prepare an SBA loan application. The SBA requires current or pro forma income and balance sheet statements on the business, financial statements on the proprietor, partners, or shareholders owning 20 percent or more of the firm, documented collateral for the loan, and a statement indicating the amount and purpose of the loan. Upon completion of the application, the SBA reviews the loan. The review process initiated by the SBA varies with the classification of the lender submitting the loan request. If the lender uses the program frequently enough to be classified as a preferred lender, then no SBA

review is required. For less frequent users of the program, the review process may take from two to fourteen days.

Since over 90 percent of all loan guarantee applications are approved by the SBA, the evaluation procedures employed by the lender are the most important. Loan scoring methods and financial ratio analysis are the most widely used procedures for evaluating loan and borrower quality. If the loan is approved, the SBA charges the lender a 2 percent initiation fee and it agrees to guarantee up to 90 percent of any loan less than \$155,000 and up to 85 percent of any loan exceeding \$155,000. The borrower must also pledge sufficient collateral to secure the loan and be willing to personally guarantee the note.

Once the loan is initiated, loan payments are made to the lender and the SBA has minimal contact with the borrower unless a loan default occurs. Approximately 9 percent of all loans guaranteed by the SBA default, resulting in a net loss of around 3.7 percent of all loans outstanding each year (Mandel, 1990). In comparison, the net loss for commercial banks in 1987 was 1.2 percent on all loans outstanding (Mandel, 1990). The relatively high net loss rate is the result of a higher default rate and lower recovery rate than commercial banks. Loan default and administrative expense subsidies paid by the U.S. taxpayers exceed \$250 million annually (Price Waterhouse, 1992).

The SBA-guaranteed portion of the loan can be sold to other investors through the SBA's secondary market program. When the secondary market sale is complete the interest rate risk on the loan is passed on to the investor and the default (or credit) risk is borne by the federal government, through the SBA loan guarantee program. The lender retains only the risk associated with the unguaranteed portion of the loan and the responsibility to service the loan (i.e., collect loan payments and disburse them to the investors.) In 1987, approximately 40 percent of the loans guaranteed by the SBA were sold to the secondary market (Rhyne, 1988).

In this study, the recommendations offered by lenders are dependent upon whether the SBA loan guarantee is properly priced and the degree of financial market concentration. Using this taxonomy, two relevant cases are considered: (1)

perfectly competitive, and (2) non-competitive financial markets.

1. Perfect competition case

If the market for financial capital is perfectly competitive, where SBA loan guarantees are properly priced for high- and low-risk borrowers, any single lender would have no incentive to recommend that borrowers purchase an SBA loan guarantee, rather than some other guarantee or other form of income insurance. In this case, the price of the SBA loan guarantee would be greater than or equal to the expected loss of the lender and it would simply compete against other private loan guarantees and income insurance in the market.

However, the SBA has chosen to set a flat fee (and cap the interest rate charged) for all loan guarantees based on the average default risk of all SBA loan guarantee recipients, such as P_a in Figure 1. A flat fee of 2 percent of the loan amount is assessed to initiate the loan and the interest rate is capped at 2.75 percentage points over the prime rate. The flat fee and interest rate cap are invariant to borrower quality. While low-risk borrowers would find this interest rate a relatively high price to pay, high-risk borrowers would likely find it a relatively low rate. Based on a flat fee scheme (and interest rate cap) for pricing loan guarantees, the SBA effectively under-prices the loan guarantee to high-risk borrowers by charging them P_a , rather than P_h (and overprices the loan guarantee to low-risk borrowers by charging them P_a , rather than P_l). If Congress doesn't limit the dollar amount of SBA loan guarantees distributed each

year, the supply of SBA loan guarantees is perfectly elastic. Under a pricing scheme differentiating borrowers by quality, all borrowers would face supply curve S for SBA loan guarantees (Figure 1). Under this scenario, a two price equilibrium would exist in the market for SBA loan guarantees. High- and low-risk borrowers would be charged P_h and P_l , respectively. At P_h the high-risk firm is willing to pay a higher price because of their relatively high risk of default. At P_l , the low-risk firm is willing to pay the relatively low price for the loan guarantee.

Based on this pricing scheme, the SBA has given lenders the incentive to recommend loan guarantees to high-risk borrowers. Hence, one would expect high-risk borrowers to have a higher probability of holding an SBA loan guarantee than low-risk borrowers in all financial markets.

2. Non-competitive (financially concentrated) financial market case

While SBA loan guarantee pricing may give lenders the incentive to recommend SBA loan guarantees, the lender in a non-competitive market (hereafter called a monopoly lender) may appear to be more risk averse. This apparent risk aversion is manifest by the lender requiring borrowers to either limit their credit risk and/or pay higher loan prices.

In the first instance, lenders in highly concentrated markets are able to protect monopoly rents by requiring borrowers to acquire loan guarantees or pledge additional collateral to reduce the credit risk of the loan. If lenders in highly concentrated markets manifest their market power by forcing borrowers to reduce their credit risk, one would expect borrowers in highly concentrated markets to have a higher probability of holding an SBA loan guarantee.

If lenders in highly concentrated markets manifest their market power by charging higher loan prices, one would expect the mix of borrowers to change toward a higher percentage of high-risk borrowers. This mix of borrowers changes because the lender would attract higher-risk firms who were willing to pay the higher rate, discourage lower risk firms who would choose not to take the loan because they can acquire less expensive financing elsewhere, and encourage all

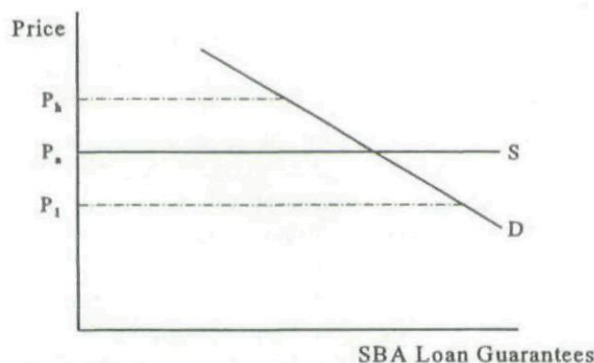


Fig. 1. Demand and supply of SBA loan guarantees.

firms to invest in riskier projects (Stiglitz and Weiss, 1981). While the increased loan interest rate will increase the gross revenue to the lender, it will also increase the average default risk of borrowers in the lender's portfolio. Since the SBA loan guarantee is under-priced for these high-risk borrowers and the monopoly lender will attract a higher percentage of high-risk borrowers, the monopoly lender will have a higher probability of recommending an SBA loan guarantee to a high-risk borrower than lenders in more competitive markets.

This section has considered the actions of lenders in markets characterized by some degree of financial market concentration facing SBA loan guarantees that are under-priced for high-risk borrowers. The next section will operationalize the ideas presented in the conceptual model and propose methods of determining which borrowers hold SBA loan guarantees.

Empirical model

Given the descriptive nature of this study, the empirical model briefly describes the National Survey of Small Business Finance (NSSBF) and presents an empirical model to test the hypotheses outlined in the conceptual model section.

Data

This study employs the 1988 NSSBF, a survey conducted by the Federal Reserve Board and the SBA. Since the primary area of interest for the principal investigators designing this survey was the relationship between the market structure and the use of financial services, the data set provides measures of financial market concentration and detailed financial information on 3,404 randomly selected small businesses throughout the United States. In addition, a separate sample of 390 small businesses receiving SBA loan guarantees in 1986 was interviewed using the same survey instrument. Since the SBA sample included only businesses receiving loan guarantees in 1986, only those small businesses acquiring loans after December 31, 1985 were included in this study. Assuming that the Dun's Market Identifier population of businesses with loans received since 1985 is the correct population of small businesses, new

sample weights were derived to integrate the two samples and allow the statistical inference to be extended to a population of 1,283,684 businesses. The population includes 6,969 businesses with SBA loan guarantees, hence the final target population will include 6,969 and 1,276,715 businesses with and without SBA loan guarantees, respectively. All statistical results reported in this study use these population weights.

Model

This section defines each dependent and independent variable, discusses methods of empirically measuring them, and presents a formal empirical model for testing the hypotheses generated from the conceptual model. The primary dependent variable is a dichotomous variable indicating whether the business has an SBA loan guarantee, or not. The primary independent variables are those chosen to measure the conceptual model notions of financial market concentration and business quality.

Since high-risk borrowers may be discriminated against when credit is rationed, an appropriate measure of borrower quality is crucial. Embodied in this measure of quality must be the same criterion used by lenders to assess borrower quality, since lenders are the ones ultimately determining the quality of the borrower. Borrower quality is often evaluated by assessing the repayment history and the character of the loan applicant. Unfortunately neither of these characteristics are directly available in this data set. The closest measure available in the data set is financial statement information, which measures the personal wealth and the financial stability of the business. This study measures business quality by using an Altman Z statistic derived from the financial statement information provided in the NSSBF.

Altman has proposed numerous models to assess the probability of business failure. While the Altman business scoring models primarily have been designed to predict business failures for publicly traded manufacturers, Altman has proposed a business scoring model for private, non-manufacturing businesses (Altman, 1983). This study involves manufacturers, comprising 15 percent of the SBA and 10 percent of the DMI sample. Non-manufacturers are separated among

mining and construction, transportation, communication, utilities, wholesale and retail trades, finance, insurance, real estate, and service. Altman refers to this model as the Z"-Score model.

The Altman Z"-Score model is specified as follows:

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

where

- X_1 = working capital/total assets;
- X_2 = retained earnings/total assets;
- X_3 = earnings before interest and taxes (EBIT)/total assets; and,
- X_4 = net worth/total liabilities.

Working capital is calculated by subtracting current liabilities from current assets. Retained earnings is calculated by subtracting any initial cash contributions made by the current owners from total equity. EBIT and net worth are taken directly from the NSSBF. However, EBIT does not adjust for differences in accounting methods employed by corporate and non-corporate small businesses in calculating net operating profits.

Given the limits imposed on the Altman Z statistic when using it for small businesses, each of the variables used in the Altman Z calculation are used as proxies for business performance in this study. Each of these financial ratios are used by lenders to assess the short and long run viability of small businesses.

The second primary variable of interest measures financial market concentration. Financial market concentration is caused when lenders in a financial market have a sufficiently large market share to influence the price of financial services, including loan prices. Financial market concentration can arise when a single lender serves a market, such as in a rural area, or when the financial market is controlled by a group of lenders owned by a small number of separate business entities. In the rural market there simply may not be enough business for another lender to enter the market. In urban markets, the rapid expansion of bank holding companies has allowed major banks to acquire smaller lenders, hence decreasing the level of competition within the market. Ideally, a measure of financial market concentration would capture the ability of lenders in a market to influence loan prices. Unfortunately, no direct

measures of the pricing influence of lenders were available. However, the traditional measure of market concentration, the Herfindahl deposit index, is available and used in this study.

The Herfindahl index measures the degree of deposit concentration in the market where the firm is located. The Herfindahl index is calculated by summing the squared market shares of each lender in the market. It is derived from information collected annually by the Federal Reserve Board (FRB) on the share of deposits held by each lender in a market. The FRB has provided two Herfindahl indices, however neither measure is a perfect measure of a lender's ability to influence loan prices. The first index is based on the share of the deposits held only by the banks in the market. The second index is based on the share of deposits held by banks and savings and loans in the market. Both of these indices measure the degree of financial market concentration based on the deposits, not the loans, held by the lender. Therefore, use of these Herfindahl indices in this study assumes that deposit and loan shares are highly correlated. In addition, while a Herfindahl index number is derived for each market, the FRB was willing to provide only a qualitative variable (high, medium and low) for use in this study.

In this model, the demand for financial capital is held constant, therefore the control variables capture other factors that may cause the demand for financial capital (and subsequently the demand for SBA loan guarantees) to change. When attempting to model the financial capital market for small businesses, non-financial characteristics of the firm are employed as control variables. In this model, the firm control variables include the following: size, age, industrial classification, business organization type, management option chosen, census region location, rural-urban location and the gender and race of the business owner.

The primary model uses the bank and savings and loan concentration measure and the business quality measure Altman Z. An interaction term is derived from the concentration and business quality measure to identify high-risk firms in high concentration markets. The other business quality variables are used in testing the robustness of the model. The empirical model, using a logistic regression routine, will estimate the probability

that the borrower holds an SBA loan guarantee, where the dependent variable is a dichotomous variable indicating whether the borrower holds an SBA loan guarantee or not. The following model is employed to test the hypotheses suggested in the conceptual model:

$$\begin{aligned} \text{SBA} = & \alpha_0 + \alpha_1 \text{ Business quality} \\ & + \alpha_2 \text{ Financial market concentration} \\ & + \alpha_3 \text{ Business risk and financial market} \\ & \text{concentration dummy} \\ & + \alpha_4 \text{ Firm characteristics} + \varepsilon \end{aligned}$$

This regression identifies the characteristics that distinguish small businesses with SBA loan guarantees from other small businesses. This study focuses on three variables in this regression model: (1) business quality; (2) financial market concentration; and (3) the business risk and financial market concentration dummy. The conceptual model suggests that the SBA should attract lower quality (higher risk) businesses, hence the coefficient α_1 is expected to be negative. The SBA is expected to attract businesses in highly concentrated financial markets, therefore the coefficient α_2 should be positive. And finally, if the SBA is expected to attract high-risk borrowers in high concentration markets, then the coefficient α_3 should be positive.

The next section reports the results of empirically testing these three hypotheses.

Results

In this section borrowers with and without SBA loan guarantees are profiled and these borrowers are analyzed to determine if high-risk borrowers and those residing in high concentration financial markets have a higher probability of receiving an SBA loan guarantee than other borrowers.

The non-financial characteristics of borrowers with and without SBA loan guarantees are profiled in Table II. These two types of borrowers are similar sized companies, employing 14 to 15 workers on average. The firms with SBA loan guarantees were significantly younger businesses. The legal organization chosen by the two types of borrowers is very similar with over 60 percent of all small businesses being incorporated. Nearly all of the small businesses interviewed are managed by an owner. The SBA appears to grant

TABLE II
Summary of the primary interest and control variables

Description	SBA mean or percent	DMI mean or percent
<i>Control variables</i>		
Number of employees	14.8	15.5
Number of years owned	7.3	11.7
Type of Legal organization:		
Sole proprietorship	32%	31%
Partnership	6	8
Corporation, sub-chapter S	14	14
Corporation	48	47
Management: owner-manager	88	89
Industrial classification:		
Mining and construction	5	16
Manufacturing	15	10
Transportation, communications, utility	3	4
Wholesale trade	9	11
Retail trade	35	25
Finance, insurance, real estate	1	6
Service	31	28
Census Region:		
North east	16	27
North central	31	23
South	23	32
West	31	18
Metropolitan status: urban	67	76
Gender of majority owner:		
male	89	87
Race of majority owner:		
minority	13	8
<i>Banks and savings & loans concentration</i>		
Low/medium level of concentration	75	83
High level of concentration	25	17

a relatively low percentage of loan guarantees to mining and construction companies, while firms engaged in manufacturing and retail receive a relatively high percentage of loan guarantees. A higher percentage of the firms with SBA loan guarantees are located in the North Central and Western regions, and a lower percentage are found in the South and North East regions. A smaller percentage of firms with SBA loan guarantees are located in urban areas. Male borrowers receive 89 percent of the SBA loan guarantees, while they represent about 87 percent of the total number of

small businesses. The SBA loan guarantees are granted to a larger share of minorities (13 percent) than they represent in the population of small businesses (8 percent). Based on both financial concentration measures, firms with SBA loan guarantees appear to reside in more concentrated financial markets.

The financial characteristics of borrowers with and without SBA loan guarantees are profiled in Table III, where the mode and mean values of the Altman Z"-Score and financial ratios are reported for borrowers with and without SBA loan guarantees. When comparing the means, the firms with SBA loan guarantees appear to be higher risk businesses. The mean Altman Z"-Score for firms with SBA loan guarantees is significantly lower than for firms without SBA loan guarantees. Altman recommends that any firm with a Z-score greater than 2.6 is classified as a low-risk firm. Hence,

firms in this study are above the cut-off on average. Thirty-four (34) percent of the SBA borrowers and 20 percent of the non-SBA borrowers are classified as high-risk. In addition, the retained earnings to total assets ratio and net worth to total liabilities ratio are both significantly lower for the firms with SBA loan guarantees. This evidence would suggest that the SBA loan guarantee program attracts higher risk borrowers.

This univariate analysis indicates that borrow risk, not financial concentration, matters when allocating SBA loan guarantees. However, this study considers all borrowers defined by credit risk and financial market concentration. Table IV considers the proportion of borrowers, defined by credit risk and financial market concentration, who receive SBA loan guarantees. Medium risk borrowers in high concentration markets have the highest probability of receiving an SBA loan

TABLE III
Altman Z" score and financial ratio summary

Description	SBA		DMI	
	Mode	Mean	Mode	Mean
Altman Z score	2.31	2.88**	4.00	5.82
Working capital/total assets	0.10	0.14	0.00	0.16
Retained earnings ^b /total assets	0.07	-0.03*	0.00	0.21
Operating profits/total assets	0.07	0.19	0.00	0.34
Net worth/total liabilities	0.31	0.75*	1.00	1.76
Debt to equity ratios	1.31	2.02	1.00	1.37

** The SBA and DMI means are different at the 10 percent level of significance.

^b Retained earnings is total equity minus capital contributions by the owners.

TABLE IV
Proportion of low-, medium-, and high-risk small businesses located in low- and high- concentration financial markets with SBA loan guarantees

Business risk	n	Financial market concentration		All ^a
		Low	High	
High	403	0.031	0.043	0.034
Medium	253	0.025	0.061	0.030
Low ^b	1016	0.013*	0.019	0.014
All	1672	0.018	0.029	0.020

^a Based on a logistic regression model, high-risk small businesses have a higher probability of receiving an SBA loan guarantee than low-risk small businesses.

^b High-risk small businesses located in high concentration financial markets are compared with all other small businesses. Based on a logistic regression model, the proportion of SBA loan guarantees held is significantly different from the high-risk, high concentration case at the 10 percent level of confidence when denoted by an asterisk (*).

guarantee (6.1 percent), while low-risk borrowers in low concentration markets have the lowest probability of receiving an SBA loan guarantee (1.3 percent). When using a logistic regression model to determine if the interaction between borrower risk and financial market concentration matters, high-risk borrowers in high concentration markets were more likely to receive an SBA loan guarantee than only one other type of borrower, that being low-risk borrowers in low concentration markets.

When controlling for other borrower characteristics, another series of logistic regressions was employed to determine if borrower risk and financial market concentration were significant determinants of the probability of holding an SBA loan guarantee. When examining the borrower risk and financial concentration variables as reported in Table V, the following results are generated:

- Borrowers in highly concentrated financial markets do not have a higher probability of obtaining an SBA loan guarantee than borrowers in less concentrated financial markets;
- High-risk borrowers have a significantly higher probability of obtaining an SBA loan guarantee than low-risk borrowers in all markets; and,
- High-risk borrowers in high concentration financial markets do not have a higher probability of obtaining an SBA loan guarantee than other small business borrowers.

When assessing the effects of the primary interest and control variables included in the logistic regression, a small business borrower in a highly concentrated financial market has the same probability of receiving an SBA loan guarantee as a borrower in a less concentrated market, *ceteris paribus*; a high-risk borrower has a higher probability of receiving an SBA loan guarantee than a low-risk borrower, *ceteris paribus*; and, a business owned for a longer period of time by the current owner has a lower probability of receiving an SBA loan guarantee than a younger business, *ceteris paribus* (Table V).

These results have some degree of qualitative significance because they reveal an SBA loan guarantee program that is focused on a socially desirable target, specifically high-risk small businesses in all financial markets. Given its qualitative significance, the robustness of this model was

TABLE V
Determinants of the probability of holding an SBA loan guarantee
(Dependent variable = SBA*)

Variable ^b	Parameter estimate	Standard error	p-value
Intercept	-2.6472*	1.0024	0.0083
Concentration - bank and S & L	0.4993	0.5946	0.4011
Quality - Altman Z"-score	-0.1066*	0.0424	0.0120
High risk, high concentration dummy	-0.2863	0.7864	0.7158
Number of employees	-0.0012	0.0059	0.8356
Number of years owned	-0.0524*	0.0279	0.0605
Organization - partnership	-0.5292	0.8179	0.5177
Organization - corporation, sub-chapter S	-0.4086	0.6002	0.4960
Organization - corporation	0.0348	0.4378	0.9367
Owner-manager	-0.2014	0.5664	0.7221
Mining and construction	-1.1686	0.8378	0.1631
Manufacturing	0.4870	0.5733	0.3956
Transportation, communications, and utility	-0.1991	1.0146	0.8445
Wholesale trade	-0.3395	0.6799	0.6175
Retail trade	0.0169	0.4489	0.9699
Finance, insurance, real estate	-2.5271	2.2968	0.2712
North east	-0.8243	0.5652	0.1447
North central	-0.1567	0.4714	0.7397
South	-0.7849	0.5008	0.1171
Urban	-0.1686	0.4836	0.7273
Male owner	0.6288	0.5796	0.2780
Minority owner	0.2755	0.5548	0.6195
- 2 log likelihood	296.27		

* SBA loan guarantee recipients are assumed to comprise 2 percent of the population of all small business borrowers.

^b The categorical variables left out include the following: sole proprietorship, hired manager, service industry, West region, female owner, rural location, and non-minority owner.

* Significant at the 10 percent level.

tested using different business quality measures, including each of the components of the Altman Z"-Score and the debt to equity ratio (Table VI). In all cases, the borrower quality coefficient has the hypothesized sign, and it is statistically significant at the 10 percent level of significance in the retained earnings to total assets and net worth to total assets models. In all cases, the financial concentration coefficient is positive as hypothesized, however it is statistically insignificant. In general, these robustness tests support only the hypothesis that higher risk borrowers have a

TABLE VI
Determinants of the probability of holding an SBA loan guarantee using other business risk measures^a
(Dependent variable = SBA^b)

Variable ^c	Parameter estimate	p-value	Parameter estimate	p-value	Parameter estimate	p-value	Parameter estimate	p-value	Parameter estimate	p-value
Intercept	-2.8344	0.0045*	-3.0189	0.0024*	-2.6901	0.0073*	-2.6093	0.0083*	-2.9667	0.0029*
Concentration – bank and S & L	0.3325	0.5136	0.3544	0.4876	0.3264	0.5250	0.3995	0.4291	0.3292	0.5165
Quality – working capital to TA	-0.5044	0.4800								
Quality – retained earnings to TA			-0.5685	0.0945*						
Quality – EBIT to TA					-0.6838	0.1329				
Quality – net worth to TA							-0.3350	0.0353*		
Quality – debt to equity ^d									0.0434	0.3839
Number of employees	-0.0004	0.9427	0.0000	0.9946	-0.0007	0.9026	-0.0014	0.8141	-0.0006	0.9109
Number of years owned	-0.0641	0.0220*	-0.0517	0.0675*	-0.0662	0.0195*	-0.0535	0.0535*	-0.0632	0.0241*
Organization – partnership	-0.5452	0.5043	-0.6139	0.4538	-0.4364	0.5934	-0.6247	0.4461	-0.5341	0.5124
Organization – corporation, sub-S	-0.0674	0.9079	-0.1939	0.7419	-0.1799	0.7606	-0.3208	0.5847	-0.0402	0.9449
Organization – corporation	0.2176	0.6135	0.1652	0.7037	0.1635	0.7058	0.0278	0.9495	0.2181	0.6126
Owner-manager	-0.1935	0.7304	-0.1425	0.8010	-0.2234	0.6912	-0.1384	0.8056	-0.1859	0.7405
Mining and construction	-1.2454	0.1363	-1.1855	0.1573	-1.2701	0.1279	-1.2659	0.1299	-1.2467	0.1355
Manufacturing	0.4754	0.4107	0.4969	0.3886	0.3229	0.5705	0.4649	0.4186	0.4298	0.4527
Transportation, communications, and utility	-0.2372	0.8141	-0.1820	0.8573	-0.3117	0.7576	0.0209	0.9837	-0.1450	0.8862
Wholesale trade	-0.2416	0.7275	-0.3020	0.6570	-0.4766	0.4832	-0.3954	0.5601	-0.3387	0.6172
Retail trade	0.1211	0.7922	0.0084	0.9851	-0.0584	0.8966	0.0117	0.9790	0.0598	0.8935
Finance, insurance, real estate	-2.4031	0.2953	-2.3420	0.3075	-2.5089	0.2749	-2.4242	0.2913	-2.4008	0.2958
North east	-0.9620	0.0872*	-0.9283	0.0985*	-0.9170	0.1036	-0.8670	0.1255	-0.9643	0.0867*
North central	-0.2599	0.5774	-0.2431	0.6028	-0.1962	0.6757	-0.1619	0.7301	-0.2393	0.6079
South	-0.8384	0.0932*	-0.8539	0.0874*	-0.7881	0.1166	-0.8145	0.1035	-0.8337	0.0950*
Urban	-0.2888	0.5450	-0.2299	0.6313	-0.2499	0.6034	-0.2090	0.6597	-0.2746	0.5637
Male owner	0.5321	0.3537	0.5497	0.3388	0.6071	0.2927	0.5323	0.3558	0.5154	0.3705
Minority owner	0.1416	0.7967	0.1610	0.7688	0.2786	0.6160	0.1435	0.7952	0.1249	0.8208
- 2 log likelihood		303.22		301.07		301.04		296.86		303.00
p-value		0.216		0.141		0.141		0.056		0.208

^a Since the interaction dummy variable for high-risk businesses in high concentration financial markets was insignificant, it was deleted from the robustness test models.

^b* Significant at the 10 percent level.

^c The categorical variables left out include the following: sole proprietorship, hired manager, service industry, West region, female owner, rural location, and non-minority owner.

^d The sign on the debt to equity ratio variable is expected to be positive because higher debt to equity ratios are associated with high risk businesses.

higher probability of receiving an SBA loan guarantee than lower risk borrowers.

The next section discusses the major results and the implications of this study for the current SBA loan guarantee program.

Summary and conclusions

This research has addressed only one SBA program, the SBA's loan guarantee program; and one goal espoused by the SBA, correcting inefficiencies in the financial capital market facing small businesses. This research clearly shows that SBA borrowers are higher risk borrowers than non-SBA borrowers, and the borrowers in highly concentrated financial markets don't appear to have a higher probability of receiving an SBA loan guarantee than borrowers in less concentrated financial markets. On the surface, these results appear to lend empirical support to Rhyne's basic notion that the SBA loan guarantee is better designed to address borrower risk, rather than financial market failures. However, the SBA loan guarantee program effectively distinguishes between high-risk borrowers in high concentration financial markets and low-risk borrowers in low concentration financial markets. This result suggests that the SBA loan guarantee does mitigate the effect of financial market failure.

The conceptual model presents a compelling argument suggesting that the SBA loan guarantee "automatically" satisfies the equity goal of allocating more financial capital to high-risk businesses and the efficiency goal of allocating more financial capital to borrowers in markets dominated by a few lenders. The empirical testing of the conceptual model conclusively supported the equity goal by suggesting that high-risk borrowers do have a significantly higher probability of receiving an SBA loan guarantee than low-risk borrowers, *ceteris paribus*. The empirical model lends its support to the efficiency goal in one instance. High-risk borrowers in high concentration financial markets were significantly more likely to obtain an SBA loan guarantee than low-risk borrowers in low concentration financial markets. This results mitigates some of the criticism levied by Rhyne by confirming that the SBA loan guarantee program appears to effectively distinguish between the two extremes of

low-risk, low financial market concentration and high risk, high financial concentration. This result is tacit confirmation of the SBA loan guarantee program's success in reaching high-risk borrowers in inefficient financial markets.

Identifying and measuring financial market inefficiencies is a difficult task. Market power held by lenders is only one of many possible causes of financial market inefficiency. Programs, such as the SBA's loan guarantee, easily find themselves facing criticism from public policy makers because they are unable to adequately show that their program helps to correct inefficiencies in the market. To accommodate the demands of the public policy makers, these programs attempt to show that their clientele and market are somehow different. The SBA borrower is different in two important respects: they are younger and less financially stable businesses. In addition, when considering high- and low-risk borrowers, the markets penetrated by the SBA loan guarantee program are distinguishable from other financial capital markets by the level of financial market concentration.

While this study has carefully examined the relationship between the borrower and the SBA in different financial markets, no information was available to assess the motivation of the lender to recommend a borrower to the SBA. Since the SBA would seldom work with a borrower directly, the decision to pursue an SBA loan guarantee often resides with the lender. Further research is needed to identify which lenders, rather than which borrowers, use the SBA loan guarantee program.

This profile leaves the SBA loan guarantee program with a limited number of attributes to sell to the public policy makers. The significant differences they are able to confidently sell are borrower attributes only. These borrower attributes are related to credit risk, not attributes which may engender calls for less discrimination against women or minorities in financial capital markets. This study poses an identity crisis for the SBA loan guarantee program, primarily because it fails to clearly distinguish SBA borrowers from other borrowers in the market. While this study should assure policy makers that the program can distinguish between the polar extremes of high risk and high financial concentration and low-risk and low financial concentration, it only tacitly suggests that

the program can potentially correct financial market inefficiencies.

Note

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