Market Power and Relationships in Small Business Lending*

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November 20, 2006

Abstract

The empirical research literature regarding the effects of market structure on small business lending has yielded ambiguous results. This paper empirically tests for the presence of countervailing effects of increases in market concentration on small business loan volume. Countervailing effects would be expected if both the traditional Structure, Conduct, Performance (SCP) paradigm of industrial organization and a paradigm whereby market power benefits the formation of lending relationships (the relationship hypothesis), are at work. Using Community Reinvestment Act (CRA) data on small loans to small businesses, it is found that, on average, across MSAs, SCP effects dominate. But, as predicted by the relationship hypothesis, the negative effects of increases in concentration on small business loan volume are weaker, the greater the presence of young firms and the higher the business failure rate. Relationship effects due to business failure appear to come from highly concentrated MSAs. Endogeneity concerns are further addressed with the estimation of a regression that separates out the effects of changes in the number of lenders from the effects of changes in the sum of squared deviations of market shares.

JEL Codes: G21, L11, D82

Key Words: Banking, Market Structure, Asymmetric Information, Small Business Lending

*The views expressed herein are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of San Francisco or the Federal Reserve System. I would like to thank Rob Valletta, Mark Doms, and Jim Wilcox for very helpful comments. I thank Paul Schwabe and Jin Oh for valuable research assistance.

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1 Introduction

Small businesses are a vital part of the U.S. economy. According to the Small Business Administration, small businesses employ roughly half of the nation's workers. In addition, it is thought that small business investment plays an important role in business cycle fluctuations.

Evidence from the Federal Reserve's 1998 Survey of Small Business Finances suggests that bank financing is very important for small businesses, especially for young firms (Robb (2002)).[1] In addition, it appears that the lending process can become disrupted as a result of bank mergers; a 2004 survey indicated that among small businesses that have gone through a merger with their bank, 26 percent switched their banking business to another institution (Julavits (2004)).

This paper investigates how small business loan volumes are affected by small business lending market structure. In other bank product markets, notably mortgage lending and retail deposit markets, researchers have found empirical evidence that higher market concentration is positively and significantly correlated with higher prices and/or higher bank profits. (See, for example, Rosen (2003), Pilloff and Rhoades (2002), Rhoades (1992), and Berger and Hannan (1989).)[2].

Results regarding the relationship between market structure and small business lending have been more ambiguous. Studies of the effect of bank size on small business lending have tended to suggest that larger banks, and, by extension, more concentrated markets, are associated with less small business lending. In contrast, direct studies of the relationship between market structure and small business loan volumes have found that more concentrated markets are associated with more small business lending (Zarutskie (2003) and DeYoung et al. (1999)). Studies of the effects of bank mergers on small business lending have yielded mixed results.

This paper empirically tests for the presence of two kinds of effects of increases in concentration on the volume of small business lending, using MSA level data collected from bank reports filed in compliance with the Community Reinvestment Act (CRA). The first effect is the traditional

[1] A 2004 survey by the National Federation for Independent Business Research Foundation suggested that small businesses as a whole do not rank the ability to obtain credit high among their concerns. However, the same survey also suggested that young small businesses are more concerned about financing than older small businesses. (Marcuss (2004)).

[2] Some researchers have even linked weak competition in banking markets to real outcomes, not just financial effects (Cetorelli (2004); Cetorelli and Strahan (2004); Garmaise and Moscowitz (2004); and Rajan and Zingales (1998))

Structure Conduct Performance (SCP) effect of industrial organization, whereby an increase in market concentration decreases competition and, thereby, small business loan volume. The second is a "relationship effect,"as modeled by Petersen and Rajan (1995): in a world with asymmetric information and moral hazard, an increase in market power increases banks' incentives to form lending relationships with young firms with relatively poor prospects.

I find that, on average, across MSAs, SCP effects dominate. But, as predicted by the relationship hypothesis, the negative effects of increases in concentration on small business loan volume are weaker, the greater the presence of young firms in the MSA and the higher the firm failure rate. However, results also suggest that while SCP effects and relationship effects associated with firm age are the same no matter the level of concentration, relationship effects associated with firm failure appear only in highly concentrated markets. Estimates based on an alternative specification that uses the number of lenders and the sum of squared deviations of market shares instead of the HHI support the view that the presence of SCP effects is not merely the result of endogeneity bias.

2 Related Literature

Two broad strands of literature relate to the relationship between market structure and the volume of small business lending. One strand examines the effects of banking industry consolidation, either indirectly, through studying the role of bank size in small business lending, or directly, through studying the effects of mergers. Numerous researchers have found that larger banks are less likely to lend to small businesses than smaller banks, which lends at least qualitative support to the SCP hypothesis (Avery and Samolyk (2004), Sapienza (2002), Berger et al. (2001), and Levonian and Soller (1996)). However, studies of the effects of mergers on small business lending have yielded mixed results, with some evidence that mergers reduce lending to small businesses and other evidence of the opposite. Sapienza (2002) and Avery and Samolyk (2004) find that it is important to take account of the sizes of the merging banks. Similarly, Berger et al. (1998) emphasize the importance of the time horizon, stressing that short-run effects of mergers may differ from long-run effects.

Two papers have examined directly the effects of market concentration on small business loan

volumes, as I do in this paper. These papers suggest that, in contrast to SCP, there is a positive correlation between concentration and small business lending. Zarutskie (2003) used balance sheet and income statement data, including information on bank loans, as reported by a sample of young, small corporations to the IRS. She found that increases in concentration, measured using deposits at branches in the MSA in which the firms were headquartered, were associated with increases in the firms' ratios of bank debt to assets. However, this effect disappeared after the enactment of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. DeYoung et al. (1999) focused on the tendency of young banks to make small business loans and how that tendency changes as a bank ages. However, among their results was the finding that young, small banks make more loans under $1,000,000 when deposit market concentration increases in the MSA in which the bank is headquartered.

Both Zarutskie and DeYoung et. al. cite a theoretical model presented by Petersen and Rajan (1995) in support of their empirical findings. In Petersen and Rajan's model, asymmetric information and moral hazard generate a need for banks to build relationships with borrowers, yielding what I will call a "relationship effect" of increases in market concentration.

Petersen and Rajan model two types of young firms—high quality young firms, who can choose between a safe project with a certain but low return, or a risky project, with an uncertain, but higher, return. In contrast, low quality young firms have no prospect of success at all; all of the projects of low quality young firms return nothing. The quality of a firm is unknown to a bank, but the probability of its being high quality is known.

Petersen and Rajan argue that banks with more market power can better afford to set the low interest rates that are required to get high quality young firms to invest in safe projects rather than gambling the bank's money on risky projects. This is because banks with more market power can better compensate for the low initial interest rate with a high rate in subsequent periods, when the bank knows more about the firm and its projects.[3] Because banks with more market power are more likely to be able to engage in this intertemporal cross-subsidization, they can better afford to lend to young firms with a higher probability of being low quality. Banks with market power can

[3]Formally, Petersen and Rajan model this gain in knowledge by requiring that all period-two projects are safe projects.

make their expected payoff from lending to firms that turn out to be high quality high enough to compensate for the losses that will come from lending to firms that turn out to be low quality.

Petersen and Rajan used firm-level data from the Survey of Small Business Finances and categorical deposit market concentration measures to show that, as concentration in the MSA where the small business is headquartered increases discontinuously from perfectly competitive levels, interest rates for loans to young firms decline. They also find that, as firms age, the effect of concentration on interest rates becomes less negative and then becomes positive. They point out that, strictly speaking, their theoretical model does not necessarily predict their empirical results. Their model predicts that concentration should be negatively correlated with loan rates only for the lowest quality young firms, not necessarily for the average quality young firm. They do not examine interest rates for the lowest quality young firms. In contrast, I will include measures of small business quality as well as age in my analysis, allowing me to do just that.

In their empirical work, Petersen and Rajan find relationship effects, for younger small businesses. But, although they don't highlight the point, their results also reveal the presence of SCP effects, for older small businesses. The empirical presence of two countervailing effects of increases in concentration on small business lending is consistent with the presence of ambiguity in the empirical results of the related literature overall.

One of the purposes of this paper is to investigate whether the same dichotomy of effects of increases in concentration that appeared in Petersen and Rajan's work, for discrete changes in concentration and firm level data, can be found for continuous changes in concentration and MSA level data. It is at an aggregated level that analysis of the competitive effects of proposed bank mergers and acquisitions takes place.[4] And, if effects differ depending on the age of the small business, what are they on average for MSAs? As Petersen and Rajan point out, their regression estimates, all of which incorporate full age-concentration interaction effects, do not say whether, in highly concentrated markets, the lower interest rates for younger firms are outweighed by higher interest rates for older firms.

In addition, do effects differ also by the quality of the small business and, to adhere even more

[4]The Federal Reserve analyzes the competitive effects of proposed bank mergers using Federal Reserve Banking markets. For urban areas, these markets often are comparable to MSAs.

closely to the theoretical model as presented by Petersen and Rajan themselves, by whether the small business is both young and poor quality? Finally, do aggregate effects differ depending on the level of concentration.

3 Data

I will address these questions using measures of concentration based on small business loans, not deposits. The distinction is important because smaller banks have a larger ratio of small business loans to assets than do larger banks. In addition, smaller banks tend to have a larger ratio of deposits to assets. Therefore, banks' small business lending shares will not, in general, equal their deposit market shares. In contrast to DeYoung et al. (1999), who use loans under $1 million to any business, I use CRA reported loans under $1 million to businesses with revenues under $1 million, thereby focusing on small loans to small businesses.[5] Small loans to small businesses are the appropriate focus for tests for the presence of relationship effects associated with market concentration. Borrowers in my sample include partnerships and sole proprietorships, as well as older firms, and banks are of all sizes and ages.

I use a repeated cross section of CRA small business lending data for 2003 and 2004, and analysis of the effect of concentration on the volume of small business lending is at the Metropolitan Statistical Area (MSA) level. On the CRA report, banks give the number and total dollar amount of loans less than $1,000,000 to businesses with gross annual revenues less than $1,000,000 (small business loans).[6] Banks report loan totals by census tract of the headquarters of the borrower or by the census tract where the majority of the funds are being used. I aggregate from the census tract level to the MSA level.[7] Commercial and industrial loans (loans for a business purpose that are not secured by real estate), commercial real estate loans (loans that are secured by commercial

[5] DeYoung et al. (1999)use data on loans under $1,000,000 from the Call Report, not from the CRA.

[6] During the period under study here, only banks with assets of at least $250 million and banks that were in a holding company with at least $1 billion in assets reported on the CRA. Therefore, following previous research, for banks that do not meet the CRA reporting requirement criteria, I have estimated small business lending by MSA by using Call Report data. Specifically, I have allocated total small business lending as reported on the Call Report to different MSAs in proportion to the bank's share of the bank's total deposits in that MSA.

[7] MSA designations use the 2003 Office of Management and Budget definitions. If the MSA has Metropolitan Divisions within it, the analysis is at the Metropolitan Division level.

real estate), and loans through a business credit card all are considered business loans for CRA reporting purposes.[8] Consistent with prior research, I exclude the loans of credit card banks from my sample.[9]

The Hirschman-Herfindahl Index (HHI) is a measure of market concentration and is the sum of squared market shares, where the market shares are expressed as percents. As mentioned above, in contrast to prior research, I measure market shares for the HHI using small loans to small businesses

The number of small businesses is included as a control for small business loan demand. The number of businesses, by revenue category, MSA, and year, is from Dun and Bradstreet. I also include the population of the MSA, average annual payroll employment growth for the MSA from 1995 to 2000, and average annual payroll employment growth from year $t-2$ to year $t+1$ as demand controls.[10] All of these control variables are meant to reduce the standard errors of the estimated equations. Small business counts and population also are controls for market size. The regression equation needs controls for market size because, empirically, the HHI is highly negatively correlated with market size, and market size is of course positively correlated with the dependent variable.

Payroll employment growth should help reduce possible downward bias of the coefficient on concentration by helping to control for general economic conditions. MSAs where employment is growing more quickly may have small businesses that are growing more quickly and therefore

[8]Banks report business credit card lines of credit , whether drawn on or not, on the CRA. In contrast, personal credit card lines of credit, even if used for business purposes (for example, lines through a small business owner's personal credit card), are not reported on the CRA.

[9]I define credit card banks to include commercial banks that have a ratio of total consumer loans to assets of at least 0.5 and a ratio of personal credit card loans to total consumer loans of at least 0.9, as of the fourth quarter of 2003. (As of the fourth quarter of 2001, the mean ratio of credit card loans to consumer loans across all banks reporting on the Call Report was 0.03, the median less than 0.01.) The definition of a credit card bank also includes any bank that has a ratio of personal credit card loans to consumer loans of at least 0.9 and meets at least one of the following criteria: it is reported by the Nilson Report as being among the top 50 banks in terms of credit card loans outstanding in 2003 or its main activity, as indicated by the Federal Reserve's National Information Center, is credit card issuance.

In addition, I define as credit card banks these banks that are reported by the Nilson Report as being among the top 50: Chase Manhattan Bank U.S.A., N.A., DE (ratio of credit card loans to consumer loans of 0.8) and MBNA America Bank, N.A., DE (0.7).

Finally, based on conversations with representatives of the following institutions or state government supervisory agency representatives, I exclude these additional "business credit card" banks: MBNA America Delaware, N.A., DE; Universal Financial Corporation, UT; Mill Creek Bank, UT; Advanta Bank Corp., UT; Volvo Commercial Credit Corp., Utah, UT; Wright Express FS Corp., UT; Pitney Bowes Bank, UT; and Capital One, F.S.B., VA.

[10]MSA population figures are estimates for year t.

seeking more bank financing. At the same time, MSAs where employment is growing more quickly may attract bank entry, which would tend to decrease concentration. Employment growth from 1995 to 2000 is a relatively long-term average that excludes the March-November 2001 recession. Employment growth from year $t-2$ to $t+1$ reflects more current economic conditions as well as incorporating a forward looking element to capture small firms' views of likely business prospects into the near-term future.

I also include the size of small businesses and the age of small businesses as demand-side control variables. Bitler et al. (2001) present evidence from the Federal Reserve System's Survey of Small Business Finances (SSBF) that small businesses with annual revenue greater than $50,000 are more likely to have a bank relationship. (The size of small businesses also is a scale variable.) In addition, the SSBF indicates that small businesses with a current owner tenure of more than four years are more likely to have a bank relationship.[11] I use the Dun and Bradstreet business counts by revenue subcategory of under $1,000,000 and the Dun and Bradstreet business counts by revenue, current owner tenure, MSA, and year to measure small business size and age, respectively. I also use the Dun and Bradstreet business counts by years since incorporation, MSA, and year to measure firm age.[12]

I include a number of variables to test for the presence of relationship effects. As just mentioned, firm age variables are included as demand-side control variables. When I am testing for relationship effects, these variables also enter interacted with concentration. The proxies for firm quality that I use are the MSA unemployment rate, the MSA business failure rate, and a dummy variable indicating whether the MSA is in the bottom quartile of the MSA median family income distribution. I derive the business failure rate from the Dun and Bradstreet data.[13]

To address remaining concerns regarding the possible endogeneity of market concentration, I also estimate equations which exclude the HHI, but include the number of lenders and the sum of

[11] It is noted that the Survey of Small Business Finances definition of a small business is fewer than 500 employees, rather than the CRA definition of annual revenue less than $1,000,000.

[12] The Dun and Bradstreet data do not include information on years since incorporation for small businesses, only for all businesses.

[13] The Dun and Bradstreet data give business counts by years since incorporation category, MSA, and year. The category indicating the youngest firms is firms zero to four years old. By assuming constant annual business formation rates and failure rates for each MSA between 2000 and 2004, I am able to use the business counts in 2003 and 2004 and the number of businesses that are zero to four years old in 2004 to back out the firm failure rate for each MSA.

squared deviations of market shares separately. I discuss this further in the next section.

Sample statistics are shown in Table 1.

4 Regression Specifications

4.1 Baseline Regressions

The dependent variable, SBL, is the log of the dollar volume of small business loans. All variables are measured at the MSA level for year t. The main baseline regression, estimated using OLS, is:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 SB + \beta_3 LGSB + \beta_4 POP + \beta_5 PEG9500 \\ + \beta_6 PEG3Y + \beta_7 FIRM\ AGE + \epsilon, \end{aligned} \tag{4.1}$$

where $HHI$is the Hirschman-Herfindahl Index, SB is the log of the number of small businesses, $LGSB$ is the proportion of small businesses with gross annual revenue of at least \$50,000, POP is the log of population, $PEG9500$ is the average annual employment growth rate from 1995 to 2000, $PEG3Y$ is the average annual employment growth rate from year $t-2$ to year $t+1$, and $FIRM\ AGE$ is the proportion of small businesses with current owner tenure of less than five years or the proportion of all businesses incorporated less than five years.

To test for robustness of the results to inclusion of firm quality variables, a second baseline regression includes, in addition to the variables in equation (4.1), $FIRM\ QUALITY$:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 SB + \beta_3 LGSB + \beta_4 POP + \beta_5 PEG9500 \\ + \beta_6 PEG3Y + \beta_7 FIRM\ AGE + \beta_8 FIRM\ QUALITY + \epsilon. \end{aligned} \tag{4.2}$$

$FIRM\ QUALITY$ is the unemployment rate, the firm failure rate, or a dummy variable indicating that the MSA is in the lowest quartile for median family income.

4.2 Tests for relationship effects

I estimate three types of regression equations to test for the presence of relationship effects. The first type tests for the presence of relationship effects due solely to firm age. In their paper, Petersen and

Rajan tested for the presence of relationship effects due solely to firm age. This type of regression takes the form:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 SB + \beta_3 LGSB + \beta_4 POP + \beta_5 PEG9500 \\ + \beta_6 PEG3Y + \beta_7 FIRM\ AGE + \beta_8 \left(FIRMAGE\right)\left(HHI\right) + \epsilon. \end{aligned} \tag{4.3}$$

The second type of regression tests for the presence of relationship effects due to firm age and to firm quality. This type of regression takes the form:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 SB + \beta_3 LGSB + \beta_4 POP + \beta_5 PEG9500 \\ + \beta_6 PEG3Y + \beta_7 FIRM\ AGE + \beta_8 \left(FIRMAGE\right)\left(HHI\right) \\ + \beta_9 FIRM\ QUALITY + \beta_{10} \left(FIRMQUALITY\right)\left(HHI\right) + \epsilon. \end{aligned} \tag{4.4}$$

Following Petersen and Rajan's theoretical model, which emphasizes that relationship effects pertain to firms that are young and low quality, the third type of regression takes the form:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 SB + \beta_3 LGSB + \beta_4 POP + \beta_5 PEG9500 \\ + \beta_6 PEG3Y + \beta_7 FIRM\ AGE + \beta_8 FIRM\ QUALITY \\ + \beta_9 YLQ + \beta_{10} \left(YLQ\right)\left(HHI\right) + \epsilon, \end{aligned} \tag{4.5}$$

where YLQ is a dummy variable indicating that the MSA is in the top quartile for $FIRM\ AGE$ and, when $FIRM\ QUALITY$ is the unemployment rate or the firm failure rate, is also in the top quartile for $FIRM\ QUALITY$. (Recall that $FIRM\ AGE$ and $FIRMQUALITY$ actually measure youth and low quality, increasing in value as firms become younger and as their quality deteriorates, respectively.) When $FIRM\ QUALITY$ is a dummy variable indicating whether or not the MSA is in the lowest quartile for median family income, YLQ requires that that dummy variable equals one. Note that, in addition to YLQ, I include both $FIRM\ AGE$ and $FIRM\ QUALITY$ by themselves. This is because, as will be seen from the results shown below, $FIRM\ AGE$ and $FIRM\ QUALITY$ are almost always statistically significant. YLQ is included by itself in addition to in interaction with HHI so that any intercept shift resulting from YLQ being equal to one is not

erroneously attributed to a change in the slope with respect to HHI. In addition, the inclusion of YLQ by itself is analogous to the inclusion of $FIRM\ AGE$ and $FIRM\ QUALITY$ by themselves in equations (4.3)and (4.4).

4.3 Tests for differential effects by concentration level

Marginal effects of increases in concentration on small business lending may be different in unconcentrated or moderately concentrated markets than in highly concentrated markets. For example, if there are very many lenders in the market and concentration is relatively low, one might suspect that small increases in concentration would affect small business lending very little, either through SCP or through relationship effects.

To test for differences in effects by level of concentration, I estimate a set of regressions using a dummy variable indicating whether the market is "highly concentrated," as defined by the Department of Justice. This dummy variable, $HIHHI$, is one if $HHI >= 1,800$. The specification to test for differences in average effects is:

$$\begin{aligned} SBL = \alpha + \beta_1 HHI + \beta_2 HIHHI + \beta_3 (HHI)(HIHHI) + \beta_4 SB + \beta_5 LGSB \\ + \beta_6 POP + \beta_7 PEG9500 + \beta_8 PEG3Y + \beta_9 FIRMAGE + \epsilon. \end{aligned} \tag{4.6}$$

The second specification allows for full FIRM AGE and firm quality interaction effects:

$$\begin{aligned} SBL = \alpha &+ \beta_1 HHI + \beta_2 HIHHI + \beta_3 (HHI)(HIHHI) + \beta_4 SB + \beta_5 LGSB \\ &+ \beta_6 POP + \beta_7 PEG9500 + \beta_8 PEG3Y + \beta_9 FIRMAGE \\ &+ \beta_{10} (FIRM\ AGE)(HHI) + \beta_{11} (FIRM\ AGE)(HIHHI) \\ &+ \beta_{12} (FIRMAGE)(HHI)(HIHHI) + \beta_{13} FIRMQUALITY \\ &+ \beta_{14} (FIRM\ QUALITY)(HHI) + \beta_{15} (FIRM\ QUALITY)(HIHHI) \\ &+ \beta_{16} (FIRM\ QUALITY)(HHI)(HIHHI) + \epsilon. \end{aligned} \tag{4.7}$$

4.4 Tests of share distribution effects by concentration level

As mentioned in the last section, the inclusion of the demand control variables PEG9500 and PEG3Y should help reduce possible downward bias of the coefficient on concentration.

To address remaining concerns regarding the possible endogeneity of market concentration, I also estimate equations which exclude the HHI, but, using the formula for the HHI, include the number of lenders and the sum of squared deviations of market shares separately. Changes in the distribution of market shares, holding the number of lenders constant, may be less subject to endogeneity concerns. In particular, Ericson and Pakes (1995) present a model of industry dynamics in which entry, exit, investment, and idiosyncratic shocks result in equilibria with heterogeneous firm sizes. Different shocks in different markets could provide an exogenous source of variation in concentration, even if the number of lenders is held constant.[14]

To separate out the effects of changes in the number of lenders from changes in deviations of market shares from the mean, I use the formula for the HHI:

$$HHI = \sum_{i=1}^{n} x_i^2, \tag{4.8}$$

where x_i is the market share of bank i, expressed as a percent, in a market with n lenders, and note that the sum of squared deviations of market shares from the mean is:

$$\sum_{i=1}^{n} (x_i - \overline{x})^2 = \sum_{i=1}^{n} \left(x_i^2\right) - n\overline{x}^2 = HHI - \frac{10,000}{n}. \tag{4.9}$$

The regression to test the for the average effect of changes in the sum of squared deviations on small business loan volume is:

$$\begin{aligned} SBL = \alpha + \beta_1 SSD + \beta_2 SCALE\ FACTOR + \beta_3 SB + \beta_4 LGSB + \beta_5 POP \\ + \beta_6 PEG9500 + \beta_7 PEG3Y + \beta_8 FIRM\ AGE + \epsilon, \end{aligned} \tag{4.10}$$

[14] Correlations between HHI and $PEG9500$ (-.19) and between SSD and $PEG9500$ (-.15), for example, are both relatively low, but not completely negligible. However, within number of lender quartiles, the correlations between SSD and $PEG9500$ are neither as large nor even consistently negative. From smallest to largest MSA, by number of lenders, these correlations are -.01, -.13, .06, and .11.

where SSD is the sum of squared deviations of the banks' market shares from the mean and $SCALE\ FACTOR$ is $10,000/n$.

I also estimate a set of equations with full firm age and quality interaction effects:

$$\begin{aligned} SBL = {} & \alpha + \beta_1 SSD + \beta_2 SCALE\ FACTOR + \beta_3 SB + \beta_4 LGSB + \beta_5 POP \\ & + \beta_6 PEG9500 + \beta_7 PEG3Y + \beta_8 FIRM\ AGE \\ & + \beta_9 (FIRM\ AGE)(SSD) + \beta_{10} (FIRM\ AGE)(SCALE\ FACTOR) \\ & + \beta_{11} FIRM\ QUALITY + \beta_{12} (FIRM\ QUALITY)(SSD) \\ & + \beta_{13} (FIRM\ QUALITY)(SCALE\ FACTOR) + epsilon. \end{aligned} \tag{4.11}$$

5 Regression Results

5.1 Baseline Results

Regression results for equations (4.1) and (4.2) show that, on average, HHI has a negative and almost always at least marginally statistically significant effect on small business loan volumes. (Table 2.) Controlling for just firm age (columns I and II), a 100 point increase in the HHI decreases small business loan volume by about half a percent. The one exception to statistical significance of the HHI coefficient in Table 2 is in column III, where firm quality is measured by the unemployment rate. As will be seen in Table 6, however, when the coefficient on HHI is allowed to vary by both years since incorporation and the unemployment rate, the coefficient on HHI by itself is statistically significant.

The coefficients on most of the demand control variables are highly statistically significant and of the expected sign. However, the sign on small business size is, unexpectedly, negative. This may indicate a substitution effect, wherein larger small businesses are more likely to have other financing options besides bank loans.[15] Similarly, the negative coefficient on the three-year employment growth rate may be due to greater opportunity for alternative financing options in stronger economies. There also is anecdotal evidence that small businesses may lose employees to

[15] This is not inconsistent with the SSBF, as long as access to non-bank sources of credit increases more than access to bank credit as a small business grows.

larger businesses in economic booms.[16].

The coefficients on owner tenure, years since incorporation, unemployment, the firm failure rate, and the median family income variable all are negative and statistically significant, lending support to their roles as age and quality measures for purposes of empirical tests for relationship effects. The negative signs on the age variables also are consistent with the SSBF.

5.2 Relationship Effects

Consistent with Petersen and Rajan, as the proportion of young firms in the MSA increases, the marginal effect of an increase in concentration on the volume of small business lending becomes less negative and eventually turns positive. (Table 3.)For example, using owner tenure to measure firm age, concentration increases the volume of small business lending if more than about 11% of the small businesses have a current owner tenure of less than five years. About 29% of the MSAs meet this criterion. But, at the sample mean for owner tenure, an increase in concentration decreases small business loan volume–a 100 point increase in HHI decreases lending about 0.4%.

There also is some evidence that, controlling for the number of small businesses, increases in concentration may indeed be associated with a greater proportion of young small businesses. Numerically, the opposite result is found for the smaller, more concentrated markets, but the differences between within-subsample means in those cases are not statistically significant. When the difference of means is statistically significant, for the third quartile, it is the right sign. (Table 4.)

When firm quality also is allowed to influence the coefficient on concentration, the relationship effect due to age remains and an additional statistically significant relationship effect, due to the firm failure rate, also appears. (Tables 5 and 6.) Now, using owner tenure to measure firm age, the estimates in column II of Table 5 indicate about 33% of the MSAs see increases in small business loan volumes with increases in market concentration.

Given the above results, it is not surprising that statistically significant relationship effects due to firms being young and low quality also are evident. (Tables 7 and 8.)

[16]In reference to the San Francisco BayArea: ". . . the slow but steady growth in the Bay Area is ideal for small firms, which have trouble hiring qualified people when the job market gets too hot and employees start eyeing corporate jobs with fatter paychecks and richer benefits." (Abate (2005))

5.3 Differential Effects by Level of Concentration

There is no statistically significant difference between the average effects of increases in concentration in markets that are highly concentrated versus those that are not. In addition, when full firm age and quality interaction effects are allowed, there is no statistically significant difference in age-related relationship effects by HHI level. (Table 9.)

However, relationship effects due to the firm failure rate are marginally statistically significantly stronger when HHI is at least 1,800 than when it is below that level. (Table 9 shows results for relationship effects using years since incorporation to measure firm age. Results using owner tenure are qualitatively similar, including the sign and level of statistical significance of the coefficient on the firm failure rate interacted with HHI and $HIHHI$.) Not only is the coefficient when HHI is high statistically significantly greater than when it is not, it turns out that the coefficient when HHI is high is statistically significantly greater than zero, at the one percent level. (Not shown.) As seen in Table 9, the coefficient on the firm failure rate interacted with HHI is not statistically significantly greater than zero when HHI is less than 1,800. Therefore, it appears that the quality-related relationship effects seen in the sample overall are due to effects present only when HHI is high.

The lack of a statistically significant difference in average effects of HHI between higher and lower HHI markets may be partially due to sample differences pertaining to firm age. As seen in Table 4, when the number of small businesses is not held constant, the proportion of young firms appears to be higher in less concentrated markets. With apparently equal relationship effects due to firm age in lower versus higher HHI markets, this sample difference would tend to make the average effect of increases in concentration on small business lending less negative in lower versus higher HHI markets. It turns out that the mean firm failure rate is very nearly the same in lower (.024) versus higher (.022) HHI markets, and the difference is not statistically significant. Given this near equality in firm failure rates, the presence of an extra relationship effect, due to firm quality, when the HHI is at least 1,800, counteracts any tendency, just noted, for relationship effects due to firm age to be stronger, and therefore for average HHI effects to be less negative, when the HHI is less than 1,800 than when it is higher.

5.4 Share Distribution Effects

As explained above, I estimate effects of increases in the sum of squared deviations of market shares on small business lending only as a robustness check on the findings indicating the presence of statistically significant SCP effects.

Using the baseline specification of equation (4.10), the coefficient on SSD is positive but not statistically significant. However, when full interaction with relationship effects is allowed, the coefficient on SSD turns negative and becomes marginally statistically significant when either the firm failure rate or median family income are used as firm quality proxies.[17] (Table 10. Results using owner tenure to measure firm age are not shown in Table 10. When owner tenure is used instead of years since incorporation, only the specification using the firm failure rate shows a statistically significant coefficient on SSD, but it is significant at the one percent level.)

The presence of negative and statistically significant coefficients on SSD in some specifications supports the view that the SCP effects seen when HHI is used to measure market concentration are not merely due to a negative correlation between HHI and omitted factors that increase the demand for small business loans. Such correlations would be most likely to work through bank entry and exit, and these specifications control for the number of lenders. The statistical significance of the coefficient on SSD is notable, given that equation (4.11) does not have as much structure imposed on it as the regressions with HHI. As can be seen from equation (4.9), the specifications with HHI are equivalent to specifications with SSD and $SCALE\ FACTOR$ in which the coefficients on those two variables are restricted to be the same and the two variables are thus simply summed and collapsed into one variable, HHI.

6 Conclusion

OLS regressions for MSAs for 2003 and 2004 show that, on average, increases in concentration, as measured by small loans to small businesses, have a negative and statistically significant effect on

[17] With years since incorporation used to measure firm age and the firm failure rate used to measure firm quality, the estimates in Table 10 indicate that an increase in SSD, holding $SCALE\ FACTOR$ constant, would decrease small business loan volume in about 39% of the MSAs.

small business loan volumes. This indicates the presence of a traditional structure, conduct, performance effect from increasing market concentration. A number of demand-side control variables, including, in particular, two employment growth rates, are included in the regression to try to control for possible endogeneity of the HHI. In addition, estimation of an alternative specification, using the number of lenders and the sum of squared deviations of market shares instead of the HHI, further supports the view that the presence of statistically significant SCP effects is not solely due to endogeneity bias.

Regression results also suggest the presence of relationship effects in connection with increases in market concentration. The idea here, from Petersen and Rajan (1995), is that banks with more market power can better afford to take a gamble on young firms with poor prospects because such banks can raise their interest rates in subsequent periods. If firms are young enough or firm failure rates are high enough, as they are for part of the sample, increases in concentration may increase small business loan volume. It appears, however, that it is just the highly concentrated markets that are contributing to the existence of relationship effects in connection with firm quality.

The SCP effects seen on average appear to have some economic significance, at least when judged in relation to the effects of the other important economic conditions variable, employment growth. On average, an HHI increase of 100 decreases lending about 0.5%. (Table 2, Columns I and II.) However, this decrease in loan volume is comparable to that engendered by a similar magnitude decrease (about one-seventh of a standard deviation) in the 1995-2000 payroll employment growth rate—between 0.9% and 1.3%, as indicated by the same regression estimates.

If a given reduction in bank loans has differential effects for younger/poorer quality small businesses than for older/higher quality small businesses, then the welfare implications of the results presented here are unclear. For example, if younger firms (or firms with poorer prospects if concentration is high) are more dependent on bank loans than are older, survivor firms, the average reduction in small business loan volume that arises when concentration increases may hide a net decline in overall welfare even when there are relatively few young firms. On the other hand, if an insufficient proportion of young firms is destined to survive, anyway, reductions in bank financing for such firms may not, in fact, be as detrimental to welfare as reductions in bank financing for

established, successful small businesses.

Despite these caveats, the results presented in this paper suggest that the exercise of regulatory policy affecting concentration in bank small business lending likely is of at least a small amount of real consequence and that, although, in most instances, the traditional concerns with market power that arise out of SCP should predominate, regulators should be aware of the possibility of countervailing benefits for young small businesses or those with relatively poor prospects.

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Table 1: Sample Statistics

	mean	standard deviation
small business loans ($000)	291,010	423,244
concentration	1,488	741
number of small businesses	16,839	30,112
small businesses with rev.>$50,000 (proportion of whole)	.784	.035
population	640,462	1,133,295
average annual payroll employment growth rate, 1995-2000	.022	.012
average annual payroll employment growth rate, year t-2 to t+1	.009	.016
owner tenure < 5 years (proportion of all small businesses)	.073	.07
incorporated < 5 years (proportion of all businesses)	.124	.037
unemployment rate	5.689	1.619
failure rate	.024	.019
median family income ($)	55,969	9,816
25th percentile of median family income ($)	49,200	

Table 2: Dependent variable: ln(small business loans)

	I	II	III	IV	V
firm quality measure	n/a	n/a	unemployment rate	failure rate	low income
Observations	718	718	718	718	718
Adjusted R^2	.817	.822	.841	.824	.823
HHI	$-5.4x10^{-5}$**	$-.4.97x10^{-5}$**	$-3.15x10^{-5}$	$-.4.9x10^{-5}$**	$-.4.6x10^{-5}$*
	$(2.58x10^{-5})$	$(2.54x10^{-5})$	$(2.4x10^{-5})$	$(2.52x10^{-5})$	$(2.53x10^{-5})$
ln(small bus's)	.369***	.401***	.225***	.418***	.351***
	(.064)	(.064)	(.063)	(.064)	(.066)
lg small bus's	-2.08***	-2.94***	-1.83***	-3.03***	-3.11***
	(.564)	(.579)	(.558)	(.575)	(.579)
ln(population)	.492***	.488***	.646***	.475***	.529***
	(.068)	(.066)	(.065)	(.066)	(.066)
payroll emp. growth, 1995-2000	5.04***	7.35***	6.07***	6.95***	6.96***
	(2.58)	(1.66)	(1.57)	(1.65)	(1.66)
payroll emp. growth, t-2 to t+1	-2.68**	-1.33	-2.81**	-1.44	-.661
	(1.19)	(1.22)	(1.16)	(1.21)	(1.23)
owner tenure < 5 yrs	-.472*				
	(.271)				
incorporated < 5 yrs		-2.65***	-1.81***	-2.18***	-2.61***
		(.585)	(.559)	(.597)	(.582)
firm quality			-.093***	-2.9***	-.112***
			(.01)	(.858)	(.04)
intercept	4.14***	4.8***	3.96***	4.92***	4.88***
	(.454)	(.437)	(.421)	(.435)	(.436)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 3: Dependent variable: ln(small business loans)

	I	II
Observations	718	718
Adjusted R^2	.819	.823
HHI	$-1.07x10^{-4}$***	$-2.43x10^{-4}$***
	$(3.23x10^{-5})$	$(8.2x10^{-5})$
ln(small bus's)	.378***	.41***
	(.064)	(.064)
lg small bus's	-2.07***	-2.94***
	(.561)	(.576)
ln(population)	.494***	.484***
	(.067)	(.066)
payroll emp. growth, 1995-2000	4.93***	7.24***
	(1.58)	(1.65)
payroll emp. growth, t-2 to t+1	-2.87**	-1.52
	(1.19)	(1.22)
owner tenure $<$ 5 yrs	-1.86***	
	(.579)	
(owner tenure $<$ 5 yrs)(HHI)	$9.36x10^{-4}$***	
	$(3.45x10^{-4})$	
incorporated $<$ 5 yrs		-4.92***
		(1.09)
(incorporated $<$ 5 yrs)(HHI)		$1.62x10^{-3}$***
		$(6.55x10^{-4})$
intercept	4.11***	5.05***
	(.452)	(.447)

Standard errors in parentheses.
**(***) Statistically significant at 5(1) percent level.

Table 4: Percent of Businesses Incorporated Less Than Five Years

Number of Small Businesses	
lowest quartile	
HHI<mean HHI=2,032	10.8
HHI>=mean HHI=2,032	10.5
second quartile	
HHI<mean HHI=1,632	11.7
HHI>=mean HHI=1,632	11.6
third quartile	
HHI<mean HHI=1,417	12.8
HHI>=mean HHI=1,417	13.9*
highest quartile	
HHI<mean HHI=877	13.6
HHI>=mean HHI=877	14.4

*Statistically significant difference of means, at 10 percent level.

Table 5: Dependent variable: ln(small business loans)

	I	II	III
firm quality measure	unemployment rate	failure rate	low income
Observations	718	718	718
Adjusted R^2	.84	.827	.82
HHI	$-8.93x10^{-5}$	$-1.42x10^{-4}$***	$-9.92x10^{-5}$***
	$(6.61x10^{-5})$	$(3.51x10^{-5})$	$(3.48x10^{-5})$
ln(small bus's)	.203***	.404***	.327***
	(.063)	(.064)	(.066)
lg small bus's	-1.17**	-2.45***	-2.28***
	(.535)	(.561)	(.564)
ln(population)	.662***	.475***	.537***
	(.065)	(.067)	(.069)
payroll emp. growth, 1995-2000	4.56***	4.86***	4.58***
	(1.48)	(1.56)	(1.59)
payroll emp. growth, t-2 to t+1	-3.81***	-3.01***	-2.3*
	(1.12)	(1.17)	(1.2)
owner tenure $<$ 5 yrs	-1.56***	-1.06*	-1.84***
	(.545)	(.62)	(.583)
(owner tenure $<$ 5 yrs)(HHI)	$7.29x10^{-4}$**	$6.26x10^{-4}$*	$9.87x10^{-4}$***
$(3.24x10^{-4})$		$(3.73x10^{-4})$	$(3.47x10^{-4})$
firm quality	-.102***	-8.04***	-.065
	(.022)	(2.23)	(.101)
(firm quality)(HHI)	$2.84x10^{-6}$	$2.81x10^{-3}$**	$-2.63x10^{-5}$
	$(1x10^{-5})$	$(1.28x10^{-3})$	$(5.28x10^{-5})$
intercept	3.41***	4.53***	4.21***
	(.448)	(.458)	(.463)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 6: Dependent variable: ln(small business loans)

	I	II	III
firm quality measure	unemployment rate	failure rate	low income
Observations	718	718	718
Adjusted R^2	.842	.827	.824
HHI	$-2.19x10^{-4}$**	$-2.49x10^{-4}$***	$-2.45x10^{-4}$***
	$(9.9x10^{-5})$	$(8.11x10^{-5})$	$(8.23x10^{-5})$
ln(small bus's)	.233***	.426***	.357***
	(.063)	(.063)	(.066)
lg small bus's	-1.84***	-3.03***	-3.11***
	(.557)	(.571)	(.577)
ln(population)	.641***	.477***	.529***
	(.065)	(.066)	(.068)
payroll emp. growth, 1995-2000	5.97***	6.93***	6.89***
	(1.57)	(1.64)	(1.66)
payroll emp. growth, t-2 to t+1	-3**	-1.81	-.856
	(1.16)	(1.2)	(1.23)
incorporated $<$ 5 yrs	-3.77***	-3.83***	-5***
	(1.03)	(1.12)	(1.08)
(incorporated $<$ 5 yrs)(HHI)	$1.41x10^{-3}$**	$1.23x10^{-3}$*	$1.7x10^{-3}$***
	$(6.19x10^{-4})$	$(6.75x10^{-4})$	$(6.53x10^{-4})$
firm quality	-.099***	-7.57***	-.093
	(.022)	(2.12)	(.099)
(firm quality)(HHI)	3.39x106−6	$2.87x10^{-3}$**	$-1.29x10^{-5}$
	$(9.97x10^{-6})$	$(1.21x10^{-3})$	$(5.17x10^{-5})$
intercept	4.22***	5.1***	5.13***
	(.446)	(.445)	(.452)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 7: Dependent variable: ln(small business loans)

	I	II	III
firm quality measure	unemployment rate	failure rate	low income
Observations	718	718	718
Adjusted R^2	.84	.822	.82
HHI	$-4.25x10^{-5}$**	$-7.08x10^{-5}$***	$-6.89x10^{-5}$***
	$(2.5x10^{-5})$	$(2.63x10^{-5})$	$(2.67x10^{-5})$
ln(small bus's)	.201***	.408***	.335***
	(.063)	(.065)	(.067)
lg small bus's	-1.19**	-2.49***	-2.3***
	(.536)	(.565)	(.564)
ln(population)	.655***	.462***	.512***
	(.065)	(.068)	(.069)
payroll emp. growth, 1995-2000	4.64***	4.93***	4.37***
	(1.48)	(1.59)	(1.59)
payroll emp. growth, t-2 to t+1	-3.7***	-2.76**	-2.09*
	(1.13)	(1.17)	(1.2)
owner tenure $<$ 5 yrs	-.554**	-.17	-.31
	(.263)	(.292)	(.279)
firm quality	-.101***	-3.47***	-.09**
	(.01)	(.94)	(.043)
lowest quartile for firm age and quality	-.116 7 -.216**	-.449***	
	(.118)	(.105)	(.174)
(lowest quartile for firm age and quality)(HHI)	$1.2x10^{-4}$*	$1.55x10^{-4}$**	$2.07x10^{-4}$***
	$(6.69x10^{-5})$	$(6.42x10^{-5})$	$(8.33x10^{-5})$
intercept	3.47***	4.59***	4.41***
	(.433)	(.462)	(.458)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 8: Dependent variable: ln(small business loans)

	I	II	III
firm quality measure	unemployment rate	failure rate	low income
Observations	718	718	718
Adjusted R^2	.842	.826	.826
HHI	$-4.4x10^{-5}$*	$-6.82x10^{-5}$***	$-6.07x10^{-5}$***
	$(2.47x10^{-5})$	$(2.61x10^{-5})$	$(2.61x10^{-5})$
ln(small bus's)	.225***	.422***	.352***
	(.063)	(.064)	(.066)
lg small bus's	-1.9***	-3.1***	-3.1***
	(.579)	(.574)	(.574)
ln(population)	.645***	.476***	.525***
	(.065)	(.066)	(.067)
payroll emp. growth, 1995-2000	6.02***	7.01***	6.31***
	(1.57)	(1.64)	(1.66)
payroll emp. growth, t-2 to t+1	-3.08***	-1.57	-.562
	(1.17)	(1.21)	(1.23)
incorporated $<$ 5 yrs	-1.88***	-1.98***	-2.08***
	(.579)	(.639)	(.6)
firm quality	-.098***	-2.54***	-.066
	(.01)	(.923)	(.042)
lowest quartile for firm age and quality	-.158	-.286***	-.633***
	(.126)	(.104)	(.178)
(lowest quartile for firm age and quality)(HHI)	$1.58x10^{-4}$**	$1.64x10^{-4}$***	$2.17x10^{-4}$***
	$(7.27x10^{-5})$	$(6.01x10^{-5})$	$(8.38x10^{-5})$
intercept	4.07***	4.92***	4.88***
	(.423)	(.437)	(.435)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 9: Dependent variable: ln(small business loans)

	I	II	III	IV	V
firm quality measure	n/a	n/a	unemployment	rate failure rate	low income
Observations	718	718	718	718	718
Adjusted R^2	.817	.832	.841	.834	.823
HHI	$-7.63x10^{-5}$	$-5.5x10^{-5}$	$-3.8x10^{-5}$	$-1.04x10^{-4}$	$-1.62x10^{-4}$
	$(6.75x10^{-5})$	$(6.55x10^{-5})$	$(2.82x10^{-4})$	$(1.79x10^{-4})$	$(1.81x10^{-4})$
HIHHI	-.089	-.058	.14	-.058	-.094
	(.147)	(.144)	(.681)	(.52)	(.525)
(HHI)(HIHHI)	$4.23x10^{-5}$	$2.13x10^{-5}$	$-1.69x10^{-4}$	$-9.28x10^{-5}$	$-3.7x10^{-5}$
	$(7.95x10^{-5})$	$(7.74x10^{-5})$	$(3.59x10^{-4})$	$(2.59x10^{-4})$	$(2.62x10^{-4})$
owner tenure $<$ 5 yrs	-.442				
	(.278)				
incorporated $<$ 5 yrs		-2.64***	-2.83*	-3.5**	-4.11**
		(.592)	(1.6)	(1.79)	(1.68)
(incorporated $<$ 5 yrs)(HHI)			$4.94x10^{-4}$	$8.22x10^{-4}$	$8.96x10^{-4}$
			$(1.24x10^{-3})$	$(1.38x10^{-3})$	$(1.31x10^{-3})$
(incorporated$<$5 yrs)(HIHHI)			1.77	2.33	.679
			(3.89)	(4.22)	(4.12)
(incorporated$<$5 yrs)(HHI)(HIHHI)			$1.52x10^{-4}$	$-3.63x10^{-4}$	$-4.39x10^{-4}$
			$(1.89x10^{-3})$	$(2.06x10^{-3})$	$(2x10^{-3})$
firm quality			-.079	-.079	-.184
			(.054)	(.054)	(.233)
(firm quality)(HHI)			$-1.08x10^{-5}$	-2.85	$5.62x10^{-5}$
			$(4.07x10^{-5})$	(4.01)	$(1.66x10^{-4})$
(firm quality)(HIHHI)			-.067	-12.2*	.082
			(.08)	(7.07)	(.332)
(firm quality)(HHI)(HIHHI)			$2.94x10^{-5}$	$6.59x10^{-3}$*	$-7.05x10^{-5}$
			$(4.55x10^{-5})$	$(3.79x10^{-3})$	$(1.9x10^{-4})$
intercept	4.25***	4.84***	4.05***	5.02***	5.03***
	(.503)	(.468)	(.557)	(.503)	(.508)

All specifications include number of small businesses, small business size, population, and two payroll employment growth rate variables as controls. Coefficients on these variables and statistical significance of these coefficients are qualitatively similar to those seen in previous specifications.
Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.

Table 10: Dependent variable: ln(small business loans)

	I	II	III	IV	V
firm quality measure	n/a	n/a	unemployment rate	failure rate	low income
Observations	718	718	718	718	718
Adjusted R^2	.827	.833	.848	.838	.834
ssd	$1.52x10^{-5}$	$2.36x10^{-5}$	$-9.55x10^{-5}$	$-1.71x10^{-4}$*	$-1.71x10^{-4}$*
	$(2.72x10^{-5})$	$(2.68x10^{-5})$	$(1.34x10^{-4})$	$(1.03x10^{-4})$	$(1.05x10^{-4})$
scale factor	$-1.18x10^{-3}$***	$-1.21x10^{-3}$***	$-1.3x10^{-3}$**	$-1.19x10^{-3}$***	$-1.04x10^{-3}$***
	$(1.73x10^{-4})$	$(1.7x10^{-4})$	$(6.01x10^{-4})$	$(4.06x10^{-4})$	$(4.19x10^{-4})$
ln(small bus's)	.315***	.347***	.204***	.359***	.325***
	(.063)	(.062)	(.062)	(.062)	(.064)
lg small bus's	-1.78***	-2.65***	-1.72***	-2.83***	-2.82***
	(.549)	(.562)	(.547)	(.556)	(.567)
ln(population)	.424***	.421***	.578***	.427***	.454***
	(.066)	(.065)	(.065)	(.064)	(.068)
payroll emp. growth, 1995-2000	3.49**	5.98***	5.05***	5.85***	5.82***
	(1.56)	(1.62)	(1.55)	(1.6)	(1.64)
payroll emp. growth, t-2 to t+1	-2.16*	-.631	-2.23**	-.949	-.348
	(1.16)	(1.18)	(1.16)	(1.17)	(1.21)
owner tenure < 5 yrs	-.386				
	(.263)				
incorporated < 5 yrs		-2.78***	-3.68***	-4.27***	-4.51***
		(.567)	(1.04)	(1.13)	(1.09)
(incorporated < 5 yrs)(ssd)			$8.62x10^{-4}$	$6.41x10^{-4}$	$1.43x10^{-3}$*
			$(8.1x10^{-4})$	$(8.44x10^{-4})$	$(8.41x10^{-4})$
(incorporated < 5 years)(scale factor)			$2.72x10^{-3}$	$4.17x10^{-3}$	$2.24x10^{-4}$
			$(3.22x10^{-3})$	$(3.52x10^{-3})$	$(3.35x10^{-3})$
firm quality			-.091***	-2.8	-.028
			(.025)	(2.38)	(.114)
(firm quality)(ssd)			$3.13x10^{-6}$	$5.5x10^{-3}$***	$7.13x10^{-5}$
			$(1.37x10^{-5})$	$(1.36x10^{-3})$	$(5.92x10^{-5})$
(firm quality)(scale factor)			$3.21x10^{-6}$	-.017***	$-3.77x10^{-4}$
			$(7.17x10^{-5})$	$(5.83x10^{-3})$	$(2.74x10^{-4})$
intercept	5.54***	6.22***	5.38***	6.39***	6.33***
	(.49)	(.47)	(.488)	(.47)	(.489)

Standard errors in parentheses.
*(**)(***) Statistically significant at 10(5)(1) percent level.