

The Impact of Bank Consolidation on Small Business Credit Availability

by

**Steven G. Craig and Pauline Hardee
Houston, TX**

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Executive Summary

This research examines the implications to the amount of credit available to small businesses from the rapid and pervasive changes in the banking sector. Specifically, large banks have grown as a share of the banking market, whether measured by the share of banking deposits or by the share of small business loans. This raises the concern that small business credit, which traditionally has been the province of small banks, will become significantly restricted. Using the Survey of Small Business Finance (Survey), the research presented here examines this possibility.

Our research methodology has been to use the nine Census regions, further divided into urban and rural areas, to define a banking market. We then employ the individual firm data on small firms from the Survey to ascertain the extent to which credit access varies as attributes of the credit market varies. We believe our cross-section analysis over regions can be used to extrapolate to changes over time in banking market structure, as each region contains a different banking market as measured by the extent to which large banks are important, and the extent to which large banks participate in the small business lending market. We find that credit access has been significantly reduced by banking consolidation, although actual credit balances have fallen by less. We believe this suggests that small businesses, especially those to which relationship lending is important, have a lower likelihood of using banks as a source of credit. Once these firms use a bank, however, it may be that the pricing advantages of large banks allow greater credit per borrower to be obtained. A second important attribute of our results is that we also find that small businesses have increasingly turned to non-bank sources of financing to provide credit access.

Our statistical analysis finds that small businesses receive less credit on average in regions with a large share of deposits held by the largest banks, irrespective of how debt is measured. Notable details about this primary finding are that:

*When access to credit is measured by credit limits, reductions in lending in response to greater market share by large banks is larger than when credit access is measured by actual credit balances. This means that the market for un-accessed lines of credit is potentially most affected by banking consolidation.

*Credit reductions appear more severe in total when access to credit is examined through the dichotomous decision to obtain credit, than when the amount of debt as a share of assets is used as a measure. Thus banking consolidation is more likely to affect the decision, by either the small business borrower or the banking institution, to borrow, rather than affect the actual level of debt.

*Credit reductions in areas dominated by large banks are found to occur both for firms with positive, and with negative, equity. Bank credit reductions are found to be more

severe, however, for firms with negative equity.

*Most importantly, we find that non-bank financial institutions are making up part of the credit reduction in terms of the level of credit conditional on borrowing, but not completely in the case of access to credit.

*The activity of the non-bank financial institutions appears to be especially important for firms with negative, rather than with positive, equity.

These findings are essentially mirrored when we look at the individual credit instruments of lines of credit, and other loans, although with some important exceptions. As we find for total credit limits, non-bank institutions are not able to compensate for lines of credit access reductions resulting from a greater share of large banks. Additionally, non-bank institutions are not able to make up for shortfalls in credit limit levels. In other loans, however, we find that non-bank institutions do compensate for reductions in bank credit, although the finding is stronger for credit levels than credit access.

One set of small firms that therefore seems to be affected by banking consolidations are those that use lines of credit for assurances to customers and suppliers, rather than as a source of loan funds. It is possible, therefore, that these small businesses are finding it more difficult to conduct their business with a reduced ability to access credit. This concern is accentuated because we find credit reductions are more significant for firms with positive equity, than with negative equity. Conversely, it is also possible the changes we observe in the market for small business credit do not fully reflect the market for financial insurance needed to conduct some businesses, and another market mechanism rather than traditional lines of credit has arisen which allows small business firms to fully conduct their business in competition with large and established firms.

I. Introduction¹

The goal of this paper is to examine whether the consolidation of the banking industry into larger institutions is likely to lead to reduced credit for small businesses. Since small firms are the source of most job growth in the country, and since the bulk of small business credit is primarily from banks, institutional change which results in less small business credit is a major economic issue. The importance of small banks to small businesses is shown, for example, that in 1999 small business loans were 25.5% of bank assets for institutions with less than \$1 billion in assets. On the other hand, for banks with assets over \$5 billion in assets, small business loans were only 7.85% of total assets (Ely and Robinson, 2001). If all small banks are absorbed by large institutions, and if these shares hold, the amount of credit available to small businesses potentially could plummet. These concerns are exacerbated when the change over time is examined, as the share of assets in small business loans by large banks fell over 0.75%, from 8.5% in 1994 to 7.85% in 1999, while small banks slightly increased their share of assets in small business lending (Ely and Robinson, 2001).

One reason advanced for why large banks are less likely to lend to small businesses, especially those in need of relationship credit, is that the large banks tend to rely on formal, formulaic methods for determining whether to grant credit, and the amount (Cole et. al., 2003; Berger et. al, 2002; Berger and Udell, 2002). To the extent small businesses are less able to fulfill these formal requirements, they may be less likely to obtain credit from large banks. On

¹ This research has been sponsored by the Office of Advocacy, Small Business Administration. All opinions and findings solely belong to the authors and do not indicate positions or opinions of the Small Business Administration, or indeed by anyone besides the authors. We gratefully acknowledge the helpful comments of Charles Ou, Traci Mach, Diana Hancock, and Larry Goldberg. We received able research assistance from Stephanie Botello.

the other hand, the reason underlying banking consolidation is cost savings, both through technological advances and potentially through greater risk diversification. To the extent these savings are passed on to borrowers, small businesses may benefit from banking consolidations (Mester, 1997; Ely and Robinson, 2001; Berger and Udell, 1996).

Although small banks still have the largest share of small loans to small businesses (Hoenig, 2003), some of the literature on the effects of bank consolidations has found that large banks are encroaching on this market. Specifically, big banks have been able to effectively compete by offering smaller loans to small businesses, since the smaller loans are more amenable to the credit scoring models that contribute to the consolidation cost savings (Mester, 1997; Ely and Robinson, 2001). The outstanding economic question, however, is not the size of each loan, but whether or not total credit granted to small businesses has risen or fallen. Our research addresses this question by first examining whether the probability of obtaining a loan for a small business rises as the share of large banks in a market rises. We then address the size of total credit, conditional on it being granted. Separating the decision to grant credit from the level of outstanding debt breaks the loan decision into its two separate components in an illuminating way. Specifically, it would be expected that small businesses may have more difficulty obtaining credit when the banking market is dominated by large institutions. On the other hand, because the loans may be cheaper, it might be expected that businesses would borrow more money when their loan applications are successful.² Our examination also accounts for differences in credit risk among potential borrowers, specifically by separately examining

² The average size of a loan does not really address this question, because average size is not identical to the level of debt for a firm.

firms with positive levels of equity, and those with negative levels of equity. We find much of the decrease in bank lending seen in areas where banks are larger comes from reduced access to bank credit by firms with negative equity. An interesting market response to this decrease, however, is the behavior of non-bank institutions, and we find this group has made up most of the credit losses from banks.

We, like many related papers, utilize a reduced form model to examine credit outcomes for small businesses. The model thus combines features describing both demand for credit by small businesses and the supply of credit, especially for the banking industry. The empirical tests employ the 1998 Survey of Small Business Finances (Survey) to include specific elements affecting the demand for credit by small businesses.³ The Survey has detailed information about 3,561 individual small businesses, where 2,187 of them have some level of debt from credit suppliers. We combine the Survey with data from the Federal Reserve System on bank holding companies, and with data from the FDIC Summary of Deposits. Table 1 presents the means and definitions of the variables used in our analysis.

Some of the key trends can be seen in the simple means of the data. Table 1A, for example, shows the means of our key dependent variables. Of the 1,650 firms with a banking credit arrangement, the average firm has total debt equal to 62% of its assets. A smaller share of small businesses use non-bank sources of credit, as 1,168 have a credit relationship with a non-bank source of lending. These firms, however, generally have higher levels of debt, as for example shown by total debt, which amounts to 78% of assets. Our regression model attempts to sort out the causes of the differences we observe, as well as the differences that exist across the

³ The Survey is conducted under the direction of the Board of Governors of the Federal Reserve System. We use all the data publicly available from the Survey.

various regions of the country.

One cost of more detail on borrowers as provided in the Survey, unfortunately, is less detail on the supply of credit side. Specifically, the banking industry information is only available for the urban and rural areas of the nine Census regions, resulting in eighteen categories of banking industry detail. We believe, and the empirical results confirm, that the seeming loss of detail is relatively unimportant compared to the gain allowed in the Survey of using individual borrower information. Many of the geographic barriers to entry for banks, both within and between states, are much lower. Thus entry into a particular geographic market from near areas is not unlikely, suggesting a large area market definition has some merit.⁴ Further, consolidation of the banking industry coupled with technical improvements making bank interaction with customers less personable has made the definition of market area more problematic (Peterson and Rajan, 2000; Berger et. al., 2002).

An important aspect of our research is we break small business credit into its two separate decision components, access to credit and the level of credit. We explicitly examine access to credit based on whether a firm has incurred debt at all. Conditional on access, we then separately investigate the dollar amount of credit obtained by a firm. The distinction between credit access and the dollar amount of credit is potentially crucial for separating the alternative affects of banking consolidation. The concern over small business credit reduction arises because small firms may not be able to survive the loan application process. Cost savings predicated on bank consolidation would be passed through by loan pricing. Thus, conditional on

⁴ Clearly, more specific market information would allow us to test these assumptions in detail. Such a test awaits a Federal Reserve Board employee co-author, based on restrictions as to how the Survey data are made available to the research community.

surviving the loan approval process, we expect that the amount borrowed would actually rise if credit is less expensive. By separating small business credit into its two components, therefore, we are able to extract some of the information lost by the reduced form models of previous work.

To develop a more complete picture of credit to the small business sector, we examine total small business credit, not just credit from the banking industry. Thus we separate lending from the banking industry from lending by other, non-bank sources. The reason for doing so is that institutional change is not confined to the banking industry. Even if bank consolidation has resulted in less credit to small businesses from banks, it is certainly possible that other institutions such as credit unions, finance companies, brokerages, and even trade credit, have taken up any slack.

A final innovation in our work that allows the detailed examination of the source of credit is we explore several measures of firm credit. Although total debt from the balance sheet in the Survey is a broader measure of debt than aggregate credit from the separate loan sources, we find the two measures (balance sheet and aggregation by source) are inconsistent, where the aggregation over sources is greater than the presumably broader measure of debt from the balance sheet. Despite these differences, however, our results are generally similar irrespective of the measure used. We examine the separate sources to obtain additional detail over where changes in the lending market to small businesses have occurred.

Section II of the paper briefly presents our reduced form model, as well as the empirical specification. The key attributes of the model are the separation of the decision to grant credit, and the level of credit, by both banks and non-bank institutions. Section III discusses the Survey of Small Business Finance, as well as our banking industry data. The empirical results are

presented in Section IV. We find that both of our modeling innovations provide important new insight into how the supply of credit has been changing for small businesses. Specifically, we find that access to bank credit for small businesses, especially those that appear to be a higher credit risk as measured by negative equity, is much less likely in markets dominated by the largest banks. We also find, however, considerable substitution of credit supply by non-bank sources of finance, although total credit access is still somewhat reduced. We examine the individual sources of credit, and find that all of them have increased relative to banks as a source of credit. Conditional on the granting of credit, however, we find little evidence that total lending has fallen, a finding we find consistent with the lower lending costs associated with large banks. A final section summarizes and concludes.

II. Model

Our model of lending behavior is a reduced form model which combines the decision to apply for credit by a small business, and the decision to supply credit by a bank or other institution. Firms desire credit based on a host of factors dependent on their individual business, such as profit and growth, balance sheet information, the type of business they are in, and prospects for change. The supply of credit by banks depends on the probability of repayment, and the price. The trend toward consolidation in the banking industry has resulted in a dramatic reduction in the number of banks, with a concomitant increase in the size of banks. Our desire is to model not only this change, but changes in other credit supply, and changes in the demand side.

We do so by starting from a standard model, where debt for a small business in the

reduced form context is:

$$(1) \quad \text{Loans} = f(\text{bank size, bank holding co., primary bank info, firm attributes})$$

where bank size is measured by three variables, the share of banking deposits held by large banks, the share of deposits held by medium sized banks, and the share of deposits held by small banks (the omitted category). The bank holding company information is based on the institutional complexity of the holding company, rather than its size. Our three measures of holding company complexity are the share of the number of banks in a multi-bank holding company, the share of banks in a one bank holding company, with the omitted category being the share of the banks that are not in a holding company.

The data have available a wide variety of firm specific information which presumably affects both the supply of credit by banks as well as the demand for credit by firms. One set of information concerns whether a firm has a primary bank, and related questions that detail the relationship with the primary bank (primary bank info). Firm attributes, in addition to the profit and balance sheet information, include the industry of the firm, its location by census region and urban/rural, its use of trade credit and credit cards, and some (limited) credit history.

The model outlined in (1) is, of course, a reduced form model. The amount of the loans in (1) is an outcome of both the firms' decision to apply for a loan, and creditors' decision to grant a loan. The effect of large banks on the outcomes in (1) thus depends on how changes in the banking industry affects the decisions of the banks themselves, and depends on how the firms change their behavior in response (or anticipation). As discussed above, the banks' decisions depend on their ability to utilize formal and non-formal information from firms that apply.

Banks' decisions also depend on their willingness to accept exposure to small business loans. This willingness depends on other attributes of the firm, such as the firm's credit history, plus its degree of geographic and other sources of diversification. Banks can respond to their incentives by altering with which borrowers they chose to do business with, and by altering the degree of exposure to any one borrower through the loan amount.

The loan process that results in equation (1) includes both parts of the loan process, the decision to obtain debt at all, and concerning the amount of debt. To the extent the bank determines the level of debt, it might be expected that these two separate decisions would be part of the same process, in which case estimation of (1) via a Tobit procedure would be appropriate. On the other hand, there are reasons to consider that the decision to take on debt at all may have separate components than the decision concerning the level of debt. While the bank decision process might be consistent with the Tobit procedure (whether to accept a borrower as a customer and the loan amount), the demand for debt by firms may not. For example, small businesses may respond to the banking environment by considering whether they want to deal with a large, impersonal institution, or instead with an alternative type of organization. Thus we also examine whether the each step in the loan approval process needs to be modeled separately. That is, we first model the outcome as to whether a firm takes on debt, either from a bank or from an alternative financial source, as:

$$(2) \quad \text{Debt?} = f(\text{bank size, bank holding co., primary bank info, firm attributes})$$

where Debt? indicates the outcome of a zero/one decision by a firm to apply for and accept debt, as well as by a bank to accept a loan application. We use the identical vector of explanatory

variables as in equation (1). Also as in (1), this equation captures the results of a reduced form outcome dependent on the decision of a small firm to apply for debt, and the decision by a bank to approve that application. The difference from (1), however, is that we can test (2) on all of the firms in the sample from the Survey.⁵ Thus our methodology allows an alternative test to simply testing debt levels, which is that firms without debt may make an explicit decision to forego debt. The key, of course, is whether the decision to forego debt is identical to the decision on how much debt to assume. The outcome about the level of debt, conditional on loan application and approval, is:

$$(3) \quad \text{DebtAmt} = f(\text{bank size, bank holding co., primary bank info, firm attributes})$$

where DebtAmt is the amount of debt. The empirical question is whether the sign and magnitude of the coefficients in (3) are equivalent to the sign and magnitude of the coefficients in (2). If they are, then a strategy of estimating equation (1) is valid, using all of the firms in the sample.⁶ Conversely, however, if (1) is estimated while omitting firms without debt, this is equivalent to equation (3), and the information in equation (2) is lost. To avoid the loss of information from excluding firms without debt, therefore, we separately estimate both equation (2) and equation (3).

One reason the results of the decision to grant credit and the actual level of credit may differ is that the two equations may depend differently on the relative importance of demand

⁵ The tables present the results of the dichotomous choice from (2) using a linear probability model. An alternative is to estimate (2) using a Probit model. The results from Probit estimation of (2) are virtually identical to those in the tables.

⁶ Typically (1) would be estimated as a Tobit model, which explicitly assumes the process to have debt is identical to the process about how much debt to assume.

characteristics of borrowers compared to the supply characteristics of banks. It might be expected, for example, that equation (2) will more fully depend on the risk preferences of banks compared to (3), as the decision about whether to make a loan is crucially dependent on the ability of the borrower to repay. The level of lending in (3) of course has the same concern by the banks, but it also interacts with the level of debt demanded by the firm. If large banks are able to offer a pricing advantage compared to smaller banks, then even if large banks grant loans to fewer firms than small banks, they may lend more to each borrower because of the demand for loans by borrowers.⁷

III. Data

The data in this project comes from two sources. We have detailed information on the banking industry and the Survey data on individual borrowers from federal bank regulatory agencies. The key attribute of the data is the link between the geographic description of the banking market and the individual firms of the Survey. We are able to identify the nine Census regions, further distinguished by whether the firm is in a rural or urban area. Thus the variation in our banking industry data is the eighteen distinctions of region and urban.

There are two sets of variables we use to describe the extent of banking industry consolidation. One is the level of bank deposits, the other is the extent of holding company participation. We define large banks as those with more than \$5 billion in assets, and middle

⁷ This process may be offset by the possibility that the technological advantage of big banks may be for smaller denomination loans, see Levonian (1997), Mester (1997), and Ely and Robinson (2001).

size banks as those with between \$1 billion and \$5 billion in assets.⁸ Thus small banks are those with less than \$1 billion in assets.

The other set of variables we use to describe the banking industry is the share of banks that are within a holding company. As discussed above, the reason holding company status may affect bank lending behavior is the extent to which loan officers have individual discretion, and the extent to which they are required to follow formulaic rules. As an alternative, however, we distinguish between holding companies on the basis of the extent of their bank holdings. Specifically, our hypothesis is that holding companies that cover more than one state and have more than one bank are likely to be more restrictive concerning loan officer behavior than holding companies with a single bank.⁹ Conversely, however, we do not expect large differences between one bank holding company behavior and banks unaffiliated with a holding company.¹⁰ Our three categories are therefore multi-bank holding companies (MBHC), one bank holding companies (OBHC), and banks without a holding company (the omitted category).¹¹

We measure debt of the firms in the Survey through two methods. One, we use the direct

⁸ We experimented with alternative delineations between large, middle, and small sized banks. The results are robust with respect to most variation in the lines of demarcation, with the exception that if small banks are defined as particularly large then the distinctions we discuss below by bank size become indistinct. We view this sensitivity as supportive of the thrust of our results.

⁹ Keeton (1996, 97) and Goldberg and White (1997) find such effects for multi-bank holding companies, while Stein (2002) does not.

¹⁰ One bank holding companies may be able to more aggressively pursue certain opportunities, such as acquisitions, income tax advantages, and greater flexibility in repurchasing shares. These advantages, however, appear unlikely to change lending behavior.

¹¹ We also explore separating whether all of the banks within a holding company are within a single state. This distinction turns out to be unimportant, and we collapse it within the multi-bank holding company variable.

loan measure on the balance sheet. For 646 firms (out of 2251 that report debt), however, this measure is inconsistent with the sum of debt from individual sources. For almost 30% of these firms, in fact, it is smaller than debt from other sources. Theoretically, this is not possible because conceptually total debt on the balance sheet may include debt from sources not individually listed, but should include all debt from the individually listed sources.¹² Thus we estimate our equations relating bank industry structure to loans using two separate measures of debt. One is the loan variable from the balance sheet (loans), the other is the total credit from the sum of alternative sources. There are actually two potential debt measures from the sum of sources method, credit limits (CLim) or credit balances (CBal). The difference, of course, is the debt available from current lines of credit but not yet drawn down. The means and definitions of the data are presented in Table 1.

Using the data from the individual credit sources further allows us to estimate a fourth equation, which is equation (3) on DebtAmt for each of the loan sources individually, rather than in aggregate. We focus on both lines of credit and other loans. Other loans include all sources outside of the separately listed categories, and include loans from the owner. We look at these two separate categories since they are where the disparity in lending patterns between banks and other institutions is greatest, and provides the most new information compared to the aggregate debt results.

IV. Results

We estimate equations (2) and (3) with respect to all three measures of total debt by each

¹² Examples include debt from shareholders, relatives, or other individuals.

firm in the Survey. The first measure is the total loan information from the balance sheet. Second, we use the aggregated levels from each of the separate credit sources for the total credit limit available to each firm, as well as the total outstanding debt balance. Our goal in estimating these equations is to determine how the level of each credit instrument responds to differences in banking structure across Census regions and across urban and rural areas.¹³ To separate access to credit from the level of credit available for each borrower, we disaggregate total debt into its two separate components, the decision to grant credit, and the total size of the loan balance. Both decisions are expected to show differences depending on the structure of the banking market, but the estimated effects of banking industry structure may manifest itself in different ways.¹⁴ This is at least in part because the reduced form nature of our estimates suggests both differences in the supply of credit, and differences in the demand for credit, may manifest themselves differently in the two different steps. For example, improvements in pricing may alter the amount of debt firms are willing to assume given their line of credit available, but borrowing firms or bank credit access decisions may differ based on the ability and willingness of borrowers to accommodate the more structured lending practices, such as credit scoring, that accompany bank consolidation. All of the regressions are estimated using weighted least squares, where the weights adjust the Survey sample to reflect the universe of small businesses in the US.

One advantage of using as our debt measure the sum of debt from all sources is that we

¹³ The loan detail is not available separately for the balance sheet information, since our other debt measures are the aggregate of the detail. Similarly, the breakdown of the loan source between banks and other institutions is not available except through the individual source data.

¹⁴ And in fact, we find significant differences in the coefficients in the two separate loan components, indicating the two processes should not be statistically combined.

are able to separately examine borrowing from banks, and borrowing from all other institutions. This attribute of the estimation strategy allows a comparison of the impact of banking changes on total small business debt, and it allows us to segment differences in banking structure from the impacts of responses to other institutional behavior. To further understand potential differences in the debt markets, all of the debt models are examined for two subsamples of the data, firms with positive levels of equity, and those with negative equity. One reason this breakdown is interesting is the negative equity firms would appear to have a higher demand for the relationship type of banking arrangements that are the comparative advantage of small banks. Thus to the extent bank structure affects bank credit available to small businesses, it is the negative equity firms for which the changes might be expected to be most apparent.

A. Total Small Business Credit and Large Banks

Table 2 presents the key results for both the decision to take on debt (Panel A), and its level (Panel B), as a function of the bank industry variables.¹⁵ The regression results for all variables in the regressions from Tables 2 through 4 are presented in the appendices. We find our results are more representative of most small businesses when we limit the data in the credit level regressions by omitting firms with debt above ten times their assets, which thus omits 69 of the 3,561 original firms.¹⁶ Finally, we discuss results for two specific types of debt to reinforce

¹⁵ 2,118 firms are coded as one (have debt) for Panel A, and 1,343 as zero (no debt). For Panel B, only the 2,118 firms with debt are used in the regression.

¹⁶ Equivalently, this eliminates 69 of the 2,187 firms with debt. We experimented with other lines to omit firms with large debt and little assets. All of our experiments, including pooling tests on the omitted firms, indicate that firms with very high ratios of debt to assets are fundamentally different than the remaining set of firms. We picked a ratio that eliminated the

the general pattern that emerges from our analysis.

Of the three definitions of debt used in the regression results, we concentrate on the sum of the debt instruments definitions (credit limits and credit balances). In Table 2, however, we show results using the definition of debt from the balance sheet. Despite the inconsistencies in the data discussed above, a comparison of the Panel A results from Table 2 to those in Table 3 (credit limits) or Table 4 (credit balances) shows very similar results for credit access (the dichotomous decision shown in Panel A). That is, the signs, magnitudes, and level of statistical significance from all three definitions are very similar with respect to the banking structure. As we show below, however, these results mask some of the effects of banking structure because they show total debt, not debt by each institutional source.

The level of debt results presented in Panel B, in contrast, differ substantially depending on the definition of debt used. Specifically, the balance sheet definition shows areas with a greater share of the banking market controlled by large banks grant less total debt to firms with positive equity than do banks in areas with a smaller concentration of large banks. Areas with a greater share of banking assets controlled by medium banks are found to grant smaller debt to firms with negative equity. In both cases, the results suggest that areas with a larger share of small banks have larger bank debt for their small businesses. These results are not apparent with either of the individually based credit definitions (balances or limits). Further, results with respect to banks in holding companies also differ substantially with respect to debt level definitions. We are not able to attribute an explanation for why results differ substantially for debt levels, especially given the similarity across debt definitions of the results with respect to credit access. We can only proceed by noting the difference, and suggesting that the credit

fewest observations while preserving the qualitative results.

access results may ultimately be more reliable than the debt level results.

Of the 3,561 firms in the data set, 2,118 have some level of debt.¹⁷ In panel A of Table 2, we see that using total loans from the balance sheet information, as the share of banking deposits held by the largest banks rises, there is a statistically significant drop in the number of small businesses that choose to take on debt. The coefficient in the total loans regression is -1.92, is -2.48 in the credit limit regression, and is -1.50 in the credit balance regression, although this latter coefficient is significant only at marginal levels. Thus areas that have a greater share of banking assets held by the largest banks have small businesses that are less likely to be carrying debt, holding constant other variables that describe the nature of small businesses. The tables in the Appendix present the coefficient results for all of the variables in the estimated models.

Panel B of the tables shows that the decision to grant credit is more impacted by bank size than is the level of debt. Using the balance sheet definition of debt as in Table 2 yields a negative coefficient on big banks, but the standard error is larger than the coefficient. The estimated coefficients on the debt levels do not allow a judgement in Tables 3 or 4.

Thus the overall impression from these results is that large banks appear to cause a reduction in whether small firms use credit to facilitate their activities. On the other hand, we speculate that the improvements in pricing may affect the demand, so that among firms that are able to borrow, these small firms choose to borrow somewhat more than had they used smaller banks.¹⁸ To gain insight into the aspects of small businesses that are foregoing debt, we separately examine firms with positive and negative equity on their balance sheets. We might

¹⁷ Within our debt to asset constraint.

¹⁸ This is the type of distinction that makes the Tobit estimates less interesting than

expect firms with negative equity to be relatively poor credit risks in a credit scoring model, and thus the negative equity firms may be more reliant on relationship lending decisions. The question we next address is therefore whether the relatively poor risk firms are disproportionately affected by large banks.

In Panel A of Table 2 we find that positive equity firms have a larger probability of not incurring debt in areas dominated by large banks than are the negative equity firms. That is, the -2.44 coefficient is statistically significantly less than zero for the positive equity firms, and is much more negative than the -.20 and insignificant coefficient estimated for the negative equity firms. The level of loans in Panel B also shows positive equity firms with less debt in areas with a larger market share for big banks, with a statistically significant coefficient of -2.02. The negative equity firms show a much more negative, but very imprecisely estimated effect. These results are duplicated for the other two loan measures, both credit limits and credit balances. For the credit limits of Table 3, we find areas dominated by big banks cause a significantly lower probability of obtaining credit, with a coefficient of -2.37 for the positive equity firms, about the same as for the negative equity firms. The amount of debt conditional on borrowing, however, shows negative and insignificant effects of bank market share for both positive and negative equity firms. These results are replicated for credit balances, with a -1.77 coefficient on big banks for positive equity firms, and an insignificantly negative coefficient for the negative equity firms. The point estimates on the level of credit balances, conditional on credit access, are actually estimated to be positive for big banks, although with very large standard errors.

The thrust of this evidence, therefore, is that credit access in markets dominated by big banks tends to be lower for small businesses than in markets with a relatively larger share of

segmenting the two distinct parts of the problem (see note 6).

small banks. The drop in credit access seems to be partially offset by the level of debt, in that we find much more precise estimates for the negative effect of big banks for credit access than for credit levels. While our Panel A results are generally robust with respect to the definition of firm debt used, we find that total debt as defined by the sum of credit limits from the individual debt types yield regressions with quite similar coefficients to the balance sheet definition, while the credit balance definition seems to generally yield lower coefficients in absolute value that are also less precisely estimated. As with the distinction between credit access and debt levels, we speculate at least some of the difference between credit limits and credit balances is the behavior of the small firms. That is, to the extent changes in bank supply affect the credit limits offered by banks, pricing considerations may affect the extent to which the lines of credit are utilized.¹⁹

The other potentially interesting results are the effect of bank holding company affiliation. Holding bank size constant, we find that affiliation with a multi-bank holding company (MBHC) is likely to result in more small business firms using debt. These results hold for all three of our debt measures, they hold for positive and negative equity firms, and they are statistically significant compared to banks without a holding company affiliation- although not compared to holding companies with only one bank. Despite the greater access, however, we find that the amount of loans is not necessarily higher for those firms obtaining credit. The measure of loans by the balance sheet shows that positive equity firms obtain more credit as a

¹⁹ These results would also seem to suggest that areas dominated by large banks see fewer loan applications, or approve a lower percentage, than in areas with a higher proportion of small banks. The results also suggest that loan size grows somewhat to these more selective bank clients, consistent with pricing advantages accruing to consolidated banks. Such an interpretation, however, awaits more precise data on loan size, but certainly suggests examining loan sizes without also examining which firms are able to obtain credit would miss an important element in the story for how banking consolidation has affected small business credit (Levonian,

share of their assets than banks without holding companies, but that the large drop among negative equity firms causes total loans to be smaller when more banks are associated with holding companies. These results do not appear to hold for the other two measures, however, as there are no significant effects of holding companies estimated on credit limits, or credit balances.

B. Banks vs. Non-Bank Lending Institutions

The results presented in Tables 2 through 4 suggest that the structure of the banking market is important for access to credit by small businesses, and that there are different effects for access to credit compared to the level of credit conditional on access. In this section we present results which show how bank lending itself has changed. We then compare the changes in bank lending to the response of non-banking institutions. That is, as the banking market has changed, brokerage houses, credit unions, and other small business lenders have also changed their behavior. The purpose of this section, therefore, is to attempt to ascertain where in the financial markets the changes we estimate have occurred. In order to compare the source of lending, we are not able to use the balance sheet reporting of small firm debt levels in the Survey. Thus we will rely on the final two measures of small firm debt, the overall credit limits and the total credit balances, in both cases obtained in the Survey from the detailed breakdown by loan source.

Tables 3A and 3B present results for how the banking market structure affects credit limits, with Table 3A showing the results for banks exclusively, while Table 3B presents the

non-bank responses to changes in the banking market. Tables 4 A and B present identical specifications, but using the credit balance definition of debt.²⁰

Overall, we see that the general credit access results appear to be due to a reduction in loan access by banking institutions. Table 3A shows that fewer small businesses have access to credit from banks, as the statistically significant -2.78 coefficient in Panel A indicates banks themselves are the source of credit access reduction. While stronger point estimates are apparent for negative than positive equity firms, they are not statistically different from each other. The credit balance measure shown in Panel A of Table 4A shows the identical qualitative picture, although the coefficients are less precisely estimated.

Panel B of Tables 3A and 4A tell a related, but very different story. Specifically, we see that non-bank access to credit in markets dominated by large banks has grown, especially for firms with negative equity. Both credit limits and credit balances with non-banks are estimated to be significantly more frequent with the negative equity firms. On the other hand, the positive equity firms may even be using non-bank financial institutions less in markets with many large banks, although this result is imprecisely estimated with the credit limit definition of Table 3A.

Unlike the overall debt results, separating bank from non-bank behavior is illustrative of how debt levels conditional on access depend on the banking market structure. For banks, Panel A of Table 3B shows that credit limits are lower in areas with a concentration of large banks for firms with negative equity. The generally flat results in the overall regression (Table 3, Panel B) arise because non-bank activity is found to almost exactly offset the reduction in bank credit for the negative equity firms as seen in Panel B. These results are broadly replicated in the credit

²⁰ Detailed regression results for all the variables are available from the authors on

balance regressions of Table 4B, although somewhat less precisely, and with the non-banks actually over-compensating the reduction in bank activity in areas dominated by large banks. None of the responses to large banks, however, are observed for firms with positive equity. Unlike the negative equity firms, access to credit and the level of credit are found to be generally insensitive to bank market structure.

On balance, the regression results presented show that banking market changes have been important for access to credit by small businesses, but perhaps the largest changes are in the source of credit, rather than in the amount of credit availability. We find that banking markets dominated by big banks leads to reduced bank credit for small businesses, especially those marginal risk firms where non-quantitative information obtained by small banks might be important. Non-bank financial institutions, however, appear to be addressing this reduction.

C. Individual Credit Instruments

The individual debt instrument data from the Survey include lines of credit (limits and balances), other loans, equipment loans, capital leases, mortgage loans, and motor vehicle loans. Regression models such as we have estimated above show that only lines of credit, and other loans, respond in a statistically significant way to banking structure, although the qualitative results are generally supportive of the thrust of the results we have discussed to this point. Both lines of credit and other loans can include unsecured loans, and thus include relationship lending. To the extent we observe that small business credit has been restricted in the results discussed in the previous section, we would expect to see such trends accentuated in the individual loan categories. Further, the key question in terms of total small business credit is whether non-bank

request.

institutions have been able to make up the overall observed credit gap.

Table 5 presents the regression results using credit limits reported in the Survey for lines of credit. The results are for all firms, Panel A is the dichotomous decision to have a line of credit, and Panel B shows results using the level of credit limits as a share of assets. The first column of Panel A corresponds to the first column of Panel A of Table 3, except that Table 5 pertains only to lines of credit. The second column of Panel A of Table 5 corresponds to the first column of Panel A of Table 3A, showing the dichotomous decision to obtain lines of credit from banks. The third column of Table 5 is similar, except it pertains to the first column of Table 3B, the dichotomous decision to obtain lines of credit from non-bank financial institutions. Panel B of Table 5 is similar, except for the amounts of lines of credit as a share of assets, and so correspond to the first column of Panel B of Table 3, 3A, and 3B.

The results for the lines of credit in Table 5 are very similar, in direction, magnitude, and significance, to those in the first column of corresponding Tables 3. We see in Table 5 that firms in areas with a large share of the banking market held by big banks are less likely to have a line of credit than otherwise similar firms in areas with fewer big banks. The reduction in access to lines of credit is in activity with banks, and we see that non-banks are not making up the shortfall.

Similarly, in Panel B of Table 5 we see that small businesses in areas dominated by big banks also have a lower credit limit, as a share of assets, than do small businesses in areas with less big banks. Again, the reduction from banks is not being made up by non-bank financial institutions.

Thus the lines of credit results reinforce the overall results, illustrating that big banks are

associated with reduced credit for small businesses. Both the decision to allow access to credit, and the level of credit that firms are utilizing is shown to be reduced in areas with a high share of banking assets controlled by big banks. Interestingly, the credit balance results of Table 6 also mirror the credit balance results of the Tables 4, showing that utilization of available credit is not as sensitive to the structure of the banking market as is the granting of credit. These results together indicate it is unused Lines of credit which are suppressed by big bank dominance of the banking market.

Table 7 shows the results of estimating our model for the Other Loans category. It is identical in structure to the line of credit tables discussed above. Like Table 3, it shows that banks in areas dominated by large banks are less likely to grant loans to small businesses (-0.97 in column 2 of Panel A). Unlike Table 3, however, it also shows that non-banks are making up at least some of the reduction in other loans, as the total coefficient, while still negative, is insignificant (-0.47). We also see that non-bank financial institutions over-compensate the reduction in the level of credit, so that the level of other loans to assets is actually higher for non-banks in areas dominated by large banks (1.80 in the third column).²¹

V. Summary and Conclusion

We have found that small businesses receive less credit on average in regions with a large share of deposits held by the largest banks. This finding is true for total debt on the balance sheet of the small firms in the Survey of Small Business Finance, and is also found when debt is measured by summing over the individual credit instruments. We find larger apparent reductions

²¹ It remains an issue for future research to determine how much of the observed changes are due to the altered pricing in the alternative institutions supplying credit.

when access to credit is measured by credit limits, rather than by actual credit balances. The credit reductions appear more severe in total when access to credit is examined through the dichotomous decision to obtain credit, than when the amount of debt as a share of assets is used as a measure. Credit reductions in areas dominated by large banks are found to occur both for firms with positive, and with negative, equity. Bank credit reductions are found to be more severe, however, for firms with negative equity. Finally, we find that non-bank financial institutions are making up part of the credit reduction in terms of the level of credit conditional on borrowing for the negative equity firms, but not completely in the case of access to credit.

These findings are essentially mirrored when we look at the individual credit instruments of lines of credit, and other loans, although with some important exceptions. As we find for total credit limits, non-bank institutions are not able to compensate for credit access reductions resulting from a greater share of large banks in lines of credit. Additionally, non-bank institutions are not able to make up for shortfalls in credit limit levels. In other loans, however, we find that non-bank institutions do compensate for reductions in bank credit, although the finding is stronger for credit levels than credit access.

One question of interest raised by this set of findings, but not yet answered, is the economic importance of reduced access to credit, despite much more modest findings concerning the level of credit. One set of small firms that therefore seems to be affected by banking consolidations are those that use lines of credit for assurances to customers and suppliers, rather than as a source of loan funds. It is possible, therefore, that these small businesses are finding it more difficult to conduct their business with a reduced ability to access credit. Conversely, it is also possible that the changes in the market for small business credit we observe here do not

fully reflect the market for financial insurance needed to conduct some businesses, and another market mechanism rather than traditional lines of credit has arisen which allows small business firms to fully conduct their business in competition with large and established firms.

A related element of our findings is that the reductions in credit are found to be more significant for firms with positive equity, than for firms with negative equity. We find, for example, that firms with positive equity have statistically significantly lower levels of debt in areas dominated by large banks when measured by the balance sheet (Table 2), when measured by credit limits (Table 3), and when measured by credit balances (Table 4). Thus another aspect of research into changes in financing of small business is the role of equity as a source of capital, compared to debt. While non-banks appear to be making significant inroads into the market to supply capital to small businesses with negative equity, it may be that equity sources of capital are filling this role for small businesses with positive equity.²²

It is possible that the changes in the banking industry, and the resulting changes in small business finance, may be efficient. The traditional advantage cited for small banks is they are better able to utilize informal sources of information to determine the level of credit to supply to small borrowers. As small banks have been absorbed by larger institutions, non-bank suppliers of credit may be beginning to fulfill the role of supplying debt to small businesses. In addition, it is possible that some sources of equity financing have become less expensive than debt financing, especially for firms with positive levels of equity. The Survey of Small Business Finances appears to be a fruitful source for examining how changes in the banking market has affected credit availability, and credit levels, for small businesses. Our results show that the

²² It is also possible that sample selection issues are important for these distinctions, another research topic that awaits access to the detailed banking data.

changes are ongoing, but that there is reason to believe that markets are transforming to replace the traditional role fulfilled by small, relationship intensive banking institutions.

REFERENCES

- Berger, A., and G.F. Udell, 2002, "Small Business Credit Availability and Relationship Lending: The Importance of Bank Organizational Structure," Economic Journal, forthcoming.
- Berger, A., N. Miller, M. Petersen, R. Rajan, and J. Stein, 2002, "Does Function Follow Organizational Form? Evidence From the Lending Practices of Large and Small Banks," NBER Working Paper No. 8752.
- Berger, Allen N., Lawrence G. Goldberg and Lawrence J. White, 2001, "The Effects of Dynamic Changes in Bank Competition on the Supply of Small Business Credit," European Finance Review, 5, 115-139.
- Berger, A. N., A. Saunders, J. M. Scalise and G. F. Udell, 1998, "The effects of bank mergers and acquisitions on small business lending," Journal of Financial Economics, 50, 187-229
- Berger, Allen N. and Gregory F. Udell, 1996 "Universal Banking and the Future of Small Business Lending", Finance and Economic Discussion Series, number 95-21, Division of Research and Statistics, Division of Monetary Affairs, Federal Reserve Board, Washington, D.C.
- Berger, Allen N. and Gregory F. Udell (1995), "Relationship Lending and Lines of Credit in Small Firm Finance," Journal of Business 68 (3), 351-381
- Berger, A. N., A. K. Kashyap and J. M. Scalise, 1995, "The Transformation of the U.S. Banking Industry: What a Long, Strange Trip it's Been," Brookings Papers on Economic Activity, 2, pp. 55 - 218.
- Bitler, Marianne, Alicia M. Robb and John D. Wolken, 2001, "Financial Services Used by Small Businesses: Evidence from the 1998 Survey of Small Business Finances," Federal Reserve Bulletin, April, 183-204.
- Cole, R. A., 1998, "The Importance of Relationships to the Availability of Credit", Journal of Banking and Finance, 22, August, 959-977.
- Cole, R.A., L.G. Goldberg, and L.J. White, 2003, "Cookie-Cutter versus Character: The Micro Structure of Small Business Lending by Large and Small Banks," Journal of Financial Quantitative Analysis, forthcoming.
- Cole, Rebel A. and John D. Wolken, 1996, "Bank and Nonbank Competition for Small Business Credit: Evidence from the 1987 and 1993 National Survey of Small Business Finances", Federal Reserve Bulletin, November, 983-995.

- Ely, D., and K. Robinson, 2001, "Consolidation, Technology and the Changing Structure of Bank's Small Business Lending," Economic and Financial Review, Federal Reserve Bank of Dallas, First Quarter, 23-32.
- Goldberg, L. G. and R. DeYoung 1999, "Youth, adolescence and maturity at banks: Credit availability to small businesses in an era of banking and consolidation," Journal of Banking and Finance, 23, Feb., 463-492.
- Goldberg, L.G. and L. J. White, 1998, "De nova banks and lending to small businesses: an empirical analysis," Journal of Banking & Finance, 22, August, pp.851-867.
- Haynes, B.W., C. Ou and R. Berney, 1999, "Small business borrowing from large and small banks", in J.L. Blanton, A. Williams and S.L.W. Rhine, ed.: Business Access to Capital and Credit, Federal Reserve System, 287-327.
- Jayaratne, J. and John Wolken ,1999, "How Important are Small Banks to Small Business Lending? New Evidence from a Survey of Small Firms", Journal of Banking and Finance, 23, Feb., 427-459.
- Keeton, W. R., 1995, "Multi-Office Bank Lending to Small Businesses: Some New Evidence," Federal Reserve Bank of Kansas City Economic Review, second quarter.
- Keeton, W. R., 1996, "Do Bank Mergers Reduce Lending to Businesses and Farmers? New Evidence from Tenth District States," Federal Reserve Bank of Kansas City Economic Review, 3rd.
- Levonian, M. E., 1997, "Changes in Small Business Lending in the West," Federal Reserve Bank of San Francisco Economic Letter.
- Mester, L., 1997, "What's the Point of Credit Scoring?," Federal Reserve Bank of Philadelphia Business Review, September/October, 3-16.
- Nakamura, L. I., 1994, "Small borrowers and the survival of the small bank: Is mouse bank Mighty or Mickey?" Federal Reserve Bank of Philadelphia Business Review, Nov-Dec., 3 - 16.
- Peek, J. and E. Rosengren, 1996, "Small Business Loans Credit Availability: How Important is Size of Lender?" in A. Saunders and I. Waler, eds, Universal Banking: Financial System Design Reconsidered,. Chicago, IL: Irwin
- Peek, J. and E. Rosengren, 1998, "Bank consolidation and small business lending: It=s not just bank size that matters," Journal of Banking and Finance 22, Aug. 799-819.

- Petersen, Mitchell A. and Raghuram G. Rajan, 2000, "Does Distance Still Matter? The Information Revolution in Small Business Lending", NBER Working Paper Series, # 7685, National Bureau of Economic Research, May.
- Petersen, Mitchell A. and Raghuram G. Rajan, 1994, "The benefits of Firm-Creditor Relationships: Evidence from Small Business Data," Journal of Finance, 49, March, 3-38.
- Rauch, James A. and Jill M. Hendrickson, 2003, "Local Market Structure and Small Bank Risk: Is there a Connection?" Journal of Entrepreneurial Finance and Business Ventures, forthcoming.
- Stein, Jeremy C., 2002, "Information production and capital allocation: Decentralized vs. Hierarchical firms," Journal of Finance, forthcoming
- Strahan, Phillip E and James P. Weston, 1998, "Small business lending and the changing structure of the banking industry," Journal of Banking & Finance, 22, August, 821-845.

TABLE 1: MEANS OF THE VARIABLES

Dependent Variables	Definition	n	Mean	Std Error
Loans/Assets	Loans as a share of assets; from balance sheet	3561	1.18	10.57
Credit Limits/Assets	Credit limits from all sources as a share of assets	3561	1.63	15.93
Credit Balance/Assets	Credit balance from all sources as a share of assets	3561	1.21	12.30
L/C Limit/Assets	Lines of Credit limits as a share of assets	3561	0.53	7.91
L/C Balance/Assets	Lines of Credit balance as a share of assets	3561	0.11	1.36
Other Loans/Assets	Other Loans as a share of assets- includes from owner	3561	0.13	3.44
Equipment Loans/Assets	Equipment loans as a share of assets	3561	0.09	1.78
Mortgages/Assets	Mortgages as a share of assets	3561	0.54	9.56
Capital Leases/Assets	Capital leases as a share of assets	3561	0.07	1.42
Motor Vehicle Loans/Assets	Motor vehicle loans as a share of assets	3561	0.27	6.30
Independent Variables				
		n	Mean	Std Error
Primbank	Firm's Primary Financial Institution is a Bank; Dummy variable	3561	0.88	0.33
Monprime	Months with Primary bank	3561	93.00	99.17
Personpb	Do banking via Personal Interface	3561	0.72	0.45
FIRM'S REASON FOR USE OF PRIMARY BANK				
WhyCredit	Credit or Experience	3561	0.04	0.18
WhyChara	Bank Characteristics & Offerings	3561	0.39	0.49
WhyTerms	Account terms	3561	0.04	0.21
WhyRelat	Ongoing Relationship with bank	3561	0.29	0.45
HQSamepb	Primary bank is in same area as firm's HQ	3561	0.80	0.40
HQDis_pb	Primary bank's distance from firm's HQ	3561	14.41	119.77
FIRM'S OTHER BANK-RELATED VARIABLES				
Hrdfnrec	Firm produces hard financial records	3561	0.22	0.41
Numbsour	Number of financial sources	3561	2.28	1.67
Big Banks	Big banks proportion of deposits in MSA or rural Census Region	3561	0.78	0.06
Med Banks	Medium banks proportion of deposits in MSA or rural Census Region	3561	0.10	0.03
MBHC	Multi-bank Holding Company banks' proportion of total banks in region	3561	0.24	0.07
OBHC	One-bank Holding Company banks' proportion of total banks in region	3561	0.38	0.08
HHI3_BT	HHI—1999 Herfindahl index for local bank market—MSA or rural county. includes 100% bank, 50% Savings & Loans: 1-3 index, 3 concentrated	3561	2.19	0.72
Pcbank	Firm uses a P.C. for Banking, 0,1 dummy variable	3561	0.16	0.37
FIRM ATTRIBUTES--CREDIT HISTORY				
Usepercc	Firm Uses Owners' Personal Credit Cards to pay business expenses	3561	0.43	0.50
perccpd	Business Expenses on Personal Credit Card Paid	3561	0.32	0.47
Usebuscc	Firm Uses Business Credit Cards	3561	0.40	0.49
busccpd	Business Credit Card Paid	3561	0.35	0.48
bankrupt	Firm or owner declared Bankruptcy during past 7 years	3561	0.02	0.16
delinper	Principal Owner has No Delinquency on Personal Debt over past 3 years	3561	0.88	0.32
delinbus	Firm has No Delinquency Business Debt over past 3 years	3561	0.86	0.35
judgemnt	Judgments filed against owner over past 3 years	3561	0.04	0.19
homeownr	Firm's principal owner is a Homeowner	3561	0.89	0.32
use_tc	Firm Used Trade Credit in Past Year	3561	0.66	0.47
pdlatetc	Paid Trade Credit Late in Past Year	3561	0.30	0.46
deny_tc	Denied Trade Credit	3561	0.06	0.23
DB_SCORE	D&B Score:1-5, 1=best	3561	2.97	1.04
mrlappvd	Firm has Most Recent Loan Approved	3561	0.22	0.42
mrldeny	Firm has Most Recent Loan Denied	3561	0.07	0.26
usecking	Firm Uses Checking Account	3561	0.95	0.22
useSVing	Firm Uses Savings Account	3561	0.25	0.43
usecompu	Firm uses computer	3561	0.80	0.40
FIRM ATTRIBUTES--LOCATION				
MSA	MSA indicator = 1 if Metropolitan Statistical Area, dummy var =1 if in an MSA	3561	0.78	0.41
cr1	Census Region 1	3561	0.04	0.20
cr2	Census Region 2	3561	0.12	0.33
cr3	Census Region 3	3561	0.14	0.34
cr4	Census Region 4	3561	0.08	0.27
cr5	Census Region 5	3561	0.18	0.38

TABLE 1: MEANS OF THE VARIABLES

Dependent Variables	Definition	n	Mean	Std Error
cr6	Census Region 6	3561	0.06	0.23
cr7	Census Region 7	3561	0.11	0.31
cr8	Census Region 8: Census Region 9 is the omitted category	3561	0.07	0.25
	FIRM ATTRIBUTES--INDUSTRY TYPE			
sic1	SIC code	3561	0.11	0.31
sic2	SIC code	3561	0.05	0.21
sic3	SIC code	3561	0.06	0.24
sic4	SIC code	3561	0.04	0.20
sic5	SIC code	3561	0.27	0.44
sic6	SIC code	3561	0.06	0.24
sic7	SIC code	3561	0.23	0.42
sic8	SIC code: SIC 9 is the omitted category	3561	0.18	0.39
	FIRM ATTRIBUTES--OTHER			
soleprop	Sole Proprietor: 0,1 dummy variable	3561	0.49	0.40
corp	Corporation: 0,1 dummy variable; Partnership is the omitted category	3561	0.54	0.50
C_FAGE	Age of Firm in years	3561	14.44	12.11
C_NOW	Number of owners, if more than one	3561	6.16	69.78

Table 1A: DATA MEANS SHOWING BANK VS NON-BANK CREDIT

<i>Dependent Variable</i>	Source of Small Business Financing	
	<i>Banks1</i>	<i>Non-Banks2</i>
% Have Loans ³	0.90	0.94
Loans/Assets	0.62	0.78
% Have Credit Limits ³	1.00	1.00
Limit/Assets	0.77	0.80
% Have Credit Balance ³	0.90	0.98
Balance/Assets	0.53	0.65
% Have Line of Credit ³	0.71	0.52
Lines of Credit/Assets	0.38	0.26
% Have Other Loans ³	0.20	0.28
Other Loans/Assets	0.05	0.12

Notes:

1. There are 1,650 firms that use banks in the data set with positive equity and debt/equity ≤ 10 .
2. There are 1,168 firms that use non-bank sources of finance in the data set, with positive equity and debt/equity ≤ 10 .
3. The reported percentages are the share of firms with this type of credit that obtain credit from banks, or non-banks.

Table 2: Loans/Assets: Banking Structure Results¹

[Measured from balance sheet information]

PANEL A: DICHOTOMOUS DECISION TO ACCEPT DEBT²

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-1.92* (.98)	-2.44* (1.12)	-0.20 (1.79)
Med Banks ⁵	1.21 (1.38)	1.60 (1.57)	0.06 (2.54)
MBHC ⁶	3.23* (0.89)	3.90* (1.02)	0.69 (1.59)
OBHC ⁷	2.38* (1.06)	3.22* (1.22)	-0.96 (1.88)
n	3,561	2,730	831
R ² (Adj)	0.30	0.32	0.25

PANEL B: LEVEL OF DEBT (as a share of assets)³

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-4.01 (5.36)	-2.02* (0.83)	-13.25 (17.69)
Med Banks ⁵	-19.90* (7.38)	0.18 (1.15)	-63.34* (25.02)
MBHC ⁶	-7.86* (4.77)	2.23* (0.75)	-34.43* (15.44)
OBHC ⁷	-6.86 (5.73)	2.00* (0.90)	-26.92 (18.58)
n	2,118	1,578	538
R ² (Adj)	0.08	0.16	0.20

Notes:

1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.

Data include loans from the balance sheet, and from all sources.

2 Panel A represents results for the bank structure variables using a linear probability model on all firms.

The remaining results are included in the appendix.

3 Panel B results are GLS estimates on firms with positive credit/assets < 10.

4 Share of deposits held by banks with assets > \$5 billion.

5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.

6 Share of total banks within Multi-bank holding companies.

7 Share of total banks within a One-bank holding company.

8 The data include all firms with positive credit/assets < 10.

9 The data only include firms with positive net equity.

Table 3: Total Credit Limits/Assets: Banking Structure Results¹

[Measured from the sum of all sources of credit]

PANEL A: DICHOTOMOUS DECISION TO ACCEPT CREDIT²

<i>Independent Variables</i>	All Firms	Positive Equity ⁸	Negative Equity
Big Banks ⁴	-2.48* (0.96)	-2.37* (1.09)	-2.29 (1.93)
Med Banks ⁵	0.58 (1.35)	0.72 (1.52)	0.45 (2.74)
MBHC ⁶	3.27* (0.87)	3.26* (0.99)	2.92* (1.71)
OBHC ⁷	3.05* (1.04)	3.09* (1.18)	2.24 (2.03)
n	3561	2730	831
R ² (Adj)	0.55	0.37	0.32

PANEL B: LEVEL OF CREDIT (as a share of assets)³

<i>Independent Variables</i>	All Firms	Positive Equity ⁸	Negative Equity
Big Banks ⁴	-0.73 (3.80)	-0.91 (2.77)	-0.42 (11.20)
Med Banks ⁵	1.19 (5.23)	3.26 (3.82)	2.73 (15.84)
MBHC ⁶	1.68 (3.38)	1.14 (2.50)	2.09 (9.77)
OBHC ⁷	1.80 (4.06)	1.20 (2.99)	3.90 (11.76)
n	2,118	1,578	538
R ² (Adj)	0.05	0.02	0.10

Notes:

1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.

2 Panel A results are from a linear probability model on all firms in the data (see text).

3 Panel B results are weighted least squares, and include all firms with positive levels of credit/assets < 10.

4 Share of deposits held by banks with assets > \$5 billion

5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.

6 Share of total banks within Multi-bank holding companies.

7 Share of total banks within a One-bank holding company.

8 The data only include firms with positive net equity.

**Table 3A: Dichotomous Decision to Accept Credit Limits^{1, 2}
Banks Compared to Non-Bank Financial Institutions**

[Measured from the sum of all sources of credit]

PANEL A: BANKS⁷

<i>Independent Variables</i>	All Firms ⁹	Positive Equity ¹⁰	Negative Equity
Big Banks ³	-2.78* (1.00)	-2.18* (1.10)	-4.71* (2.27)
Med Banks ⁴	1.41 (1.40)	2.23 (1.55)	-1.69 (3.23)
MBHC ⁵	4.26* (0.90)	4.44* (1.00)	3.23 (2.02)
OBHC ⁶	3.49* (1.08)	3.16* (1.20)	4.05* (2.38)
n	3,561	2,730	831
R ² (Adj)	0.26	0.29	0.21

PANEL B: NON-BANK FINANCIAL INSTITUTIONS⁸

<i>Independent Variables</i>	All Firms ⁹	Positive Equity ¹⁰	Negative Equity
Big Banks ³	-0.07 (0.84)	-1.04 (0.93)	3.37* (1.89)
Med Banks ⁴	-1.23 (1.18)	-2.42* (1.30)	3.36 (2.70)
MBHC ⁵	-0.25 (0.76)	0.007 (0.84)	-1.06 (1.68)
OBHC ⁶	-0.35 (0.91)	0.13 (1.01)	-1.77 (1.99)
n	3,561	2,730	831
R ² (Adj)	0.39	0.38	0.43

Notes:

- 1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.
- 2 These results are from a linear probability model on all firms in the data (see text).
- 3 Share of deposits held by banks with assets > \$5 billion
- 4 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.
- 5 Share of total banks within Multi-bank holding companies.
- 6 Share of total banks within a One-bank holding company.
- 7 The data only include loans from banking institutions.
- 8 The data only include loans from institutions other than banks.
- 9 The data include all firms with positive credit/assets < 10.
- 10 The data only include firms with positive net equity.

Table 3B: Credit Limits as a Share of Assets¹
Banks Compared to Non-Bank Financial Institutions
 [Measured from the sum of all sources of credit]

PANEL A: BANKS²

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-4.25 (3.01)	-0.81 (2.45)	-15.98* (-9.05)
Med Banks ⁵	2.19 (4.16)	3.84 (3.37)	-6.12 (12.80)
MBHC ⁶	5.54* (2.69)	2.13 (2.21)	11.71 (7.90)
OBHC ⁷	5.70* (3.23)	0.57 (2.64)	18.77* (9.51)
n	2,118	1,578	538
R ² (Adj)	0.05	0.05	0.05

PANEL B: NON-BANK FINANCIAL INSTITUTIONS³

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	3.52 (2.44)	-0.09 (1.45)	15.56* (7.97)
Med Banks ⁵	-1.01 (3.36)	-0.59 (2.00)	8.86 (11.27)
MBHC ⁶	-3.86 (2.18)	-1.00 (1.31)	-9.63 (6.95)
OBHC ⁷	-3.90 (2.61)	0.63 (1.54)	-14.87* (8.37)
n	2,118	1,578	538
R ² (Adj)	0.12	0.11	0.19

Notes:

- 1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.
- 2 The data only include loans from banking institutions.
- 3 The data only include loans from institutions other than banks.
- 4 Share of deposits held by banks with assets > \$5 billion
- 5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.
- 6 Share of total banks within Multi-bank holding companies.
- 7 Share of total banks within a One-bank holding company.
- 8 The data include all firms with positive credit/assets < 10.
- 9 The data only include firms with positive net equity.

Table 4: Total Credit Balance/Assets: Banking Structure Results¹

[Measured from the sum of all sources of credit]

PANEL A: DICHOTOMOUS DECISION TO ACCEPT DEBT²

<i>Independent Variables</i>	All Firms	Positive Equity ⁸	Negative Equity
Big Banks ⁴	-1.50 (.96)	-1.77* (1.08)	-0.309 (1.98)
Med Banks ⁵	2.07 (1.35)	1.65 (1.51)	3.53 (2.81)
MBHC ⁶	2.73* (0.87)	2.64* (.98)	2.74 (1.76)
OBHC ⁷	2.42* (1.04)	2.70* (1.17)	1.02 (2.08)
n	3561	2730	831
R ² (Adj)	0.34	0.36	0.32

PANEL B: LEVEL OF DEBT (as a share of assets)³

<i>Independent Variables</i>	All Firms	Positive Equity ⁸	Negative Equity
Big Banks ⁴	1.96 (3.21)	0.66 (1.99)	6.19 (9.91)
Med Banks ⁵	4.67 (4.43)	6.10* (2.74)	8.48 (14.02)
MBHC ⁶	-0.68 (2.86)	-0.29 (1.80)	-2.38 (8.65)
OBHC ⁷	-0.11 (3.44)	0.72 (2.15)	-2.53 (10.41)
n	2,118	1,578	538
R ² (Adj)	0.09	0.05	0.13

Notes:

1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.

2 Panel A results are from a linear probability model on all firms in the data, or from all with positive or negative equity (see text).

3 Panel B results are weighted least squares, and include all firms with positive levels of credit/assets < 10.

4 Share of deposits held by banks with assets > \$5 billion

5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.

6 Share of total banks within Multi-bank holding companies.

7 Share of total banks within a One-bank holding company.

8 The data only include firms with positive net equity.

Table 4A: Dichotomous Decision to Accept Credit Balances¹
Banks Compared to Non-Bank Financial Institutions
 [Measured from the sum of all sources of credit]

PANEL A: BANKS²

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-1.37 (0.98)	-1.02 (1.07)	-2.58 (2.31)
Med Banks ⁵	2.01 (1.38)	2.27 (1.50)	0.45 (3.29)
MBHC ⁶	2.91* (0.89)	3.02* (0.97)	2.21 (2.05)
OBHC ⁷	1.99* (1.06)	1.82 (1.17)	2.2 (2.43)
n	3,561	2,730	831
R ² (Adj)	0.24	0.28	0.17

PANEL B: NON-BANK FINANCIAL INSTITUTIONS³

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-0.57 (0.84)	-1.73* (0.92)	3.52* (1.90)
Med Banks ⁵	-0.33 (1.18)	-1.46 (1.30)	4.14* (2.71)
MBHC ⁶	0.49 (0.76)	0.94 (0.84)	-0.83 (1.69)
OBHC ⁷	0.56 (0.90)	1.31 (1.01)	-1.60 (2.00)
n	3,561	2,730	831
R ² (Adj)	0.39	0.37	0.42

Notes:

- 1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.
- 2 The data only include loans from banking institutions.
- 3 The data only include loans from institutions other than banks.
- 4 Share of deposits held by banks with assets > \$5 billion
- 5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.
- 6 Share of total banks within Multi-bank holding companies.
- 7 Share of total banks within a One-bank holding company.
- 8 The data include all firms with positive credit/assets < 10.
- 9 The data only include firms with positive net equity.

Table 4B: Credit Balances as a Share of Assets¹
Banks Compared to Non-Bank Financial Institutions
 [Measured from the sum of all sources of credit]

PANEL A: BANKS²

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	-0.93 (2.32)	2.13 (1.61)	-10.57 (7.46)
Med Banks ⁵	5.02 (3.21)	6.87* (2.22)	-3.26 (10.55)
MBHC ⁶	2.62 (2.07)	-0.18 (1.45)	7.30 (6.51)
OBHC ⁷	3.17 (2.49)	-0.96 (1.71)	12.5 (7.83)
n	2118	1,579	539
R ² (Adj)	0.05	0.06	0.07

PANEL B: NON-BANK FINANCIAL INSTITUTIONS³

<i>Independent Variables</i>	All Firms ⁸	Positive Equity ⁹	Negative Equity
Big Banks ⁴	2.89 (2.37)	-1.47 (1.30)	16.76* (7.90)
Med Banks ⁵	-0.35 (3.27)	-0.78 (1.79)	11.74 (11.17)
MBHC ⁶	-3.3 (2.12)	-0.12 (1.18)	-9.68 (6.89)
OBHC ⁷	-3.28 (2.54)	1.68 (1.41)	-15.02* (8.29)
n	2,118	1,578	538
R ² (Adj)	0.11	0.10	0.18

Notes:

- 1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.
- 2 The data only include loans from banking institutions.
- 3 The data only include loans from institutions other than banks.
- 4 Share of deposits held by banks with assets > \$5 billion
- 5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.
- 6 Share of total banks within Multi-bank holding companies.
- 7 Share of total banks within a One-bank holding company.
- 8 The data include all firms with positive credit balances/assets < 10.
- 9 The data only include firms with positive net equity.

TABLE 5: LINES OF CREDIT- CREDIT LIMITS¹**PANEL A: DICHOTOMOUS DECISION TO ACCEPT CREDIT²**

<i>Independent Variables</i>	All Institutions All Firms	Banks ⁸ All Firms	Non-Banks ⁹ All Firms
Big Banks ⁴	-2.52* (0.96)	-2.43* (0.93)	0.31 (0.43)
Med Banks ⁵	-0.38 (1.35)	1.15 (1.30)	-1.73* (0.60)
MBHC ⁶	3.84* (0.87)	4.22* (0.84)	0.16 (0.38)
OBHC ⁷	3.09* (1.04)	3.20* (1.00)	0.11 (0.46)
n	3,561	3,561	3,561
R ² (Adj)	0.18	0.19	0.10

PANEL B: LINES OF CREDIT LIMIT OVER ASSETS³

<i>Independent Variables</i>	All Institutions All Firms	Banks ⁸ All Firms	Non-Banks ⁹ All Firms
Big Banks ⁴	-3.79* (2.30)	-4.34* (2.16)	0.69 (0.69)
Med Banks ⁵	2.43 (3.17)	2.26 (2.98)	0.36 (.95)
MBHC ⁶	3.83* (2.05)	4.13* (1.93)	-0.28 (0.62)
OBHC ⁷	3.85 (2.46)	4.22* (2.32)	-0.47 (0.74)
n	2,118	2,118	2,118
R ² (Adj)	0.11	0.12	0.22

Notes:

1 ' * ' indicates statistical significance of 10%. Parenthesis reflect the standard error of the estimated coefficient.

2 Panel A results are from a linear probability model on all firms in the data (see text).

3 Panel B results are weighted least squares, and include all firms with positive levels of credit/assets < 10.

4 Share of deposits held by banks with assets > \$5 billion

5 Share of deposits held by banks with assets > \$1 billion, and < \$5 billion.

6 Share of total banks within Multi-bank holding companies.

7 Share of total banks within a One-bank holding company.

8 The data only include credit from banking institutions.

9 The data only include credit from institutions other than banks.