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# An Analysis of Standardized Versus Relationship Bank Lending to Small Firms[±]

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Using the 1998 Survey of Small Business Finances and banking data to produce a bank-firm match, the author tests for evidence of standardized versus relationship lending methods in both total bank credit as well as credit emanating from the firm's most important source of financial services, its primary bank. The author employs a two step Heckman procedure to test the likelihood a small firm has bank debt, then conditional upon having debt, the level of credit outstanding. By comparing the determinates of bank and firm characteristics of primary bank credit with credit from all bank sources, the author finds relationship lending inherent within the primary bank, whereas competing bank sources employ standardized lending techniques such as credit scoring. Relating to credit availability, however, no clear dominance of one method over the other prevails, though empirical support is evident in primary banks providing more favorable credit conditions for riskier firms.

As banking consolidation and technological innovation continue in the financial services industry, there exists an evident dichotomy in the manner in which commercial banks mitigate the information asymmetry between borrows and lenders in the small business loan market. This dichotomy—the production technique most appropriate for supplying funds to small firms—is primarily a function of the structure of the banking organization. The

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technique dramatically differs in large organizations as compared to their smaller counterpart.[2] It arises, in part, due to the nature of the small firm loan market. Inherent in small business lending is a more pronounced information asymmetry, since small firms are more opaque than relatively transparent large firms. The comparative advantage small banks have enjoyed in small business loans due to this opacity has been eroded by technological advances allowing for more efficient information gathering. Consequently, large organizations have made marked inroads into this loan category. Since most borrowing of small firms are through commercial banks (Bitler, Robb and Wolken, 2001; Ang, 1991), the supplying of loanable funds by essentially two divergent production techniques is important.

On the one hand large banks are primarily making loans to small firms by standardized methods. This transaction-based technique includes financial statement lending, asset-based lending and credit scoring. That is, loans are extended in this market based on a production function determining creditworthiness from "hard" information. This hard information is furnished by the firm in the loan application process, or is obtainable from other sources such as the bank's own credit file of the firm, or from a computerized loan-evaluation system referred to as credit scoring. It is a type of retail banking, analogous to consumer lending, and the process is generally impersonal. Due to economies of scale, the cost to the large bank is relatively low compared to more personal, labor-intensive information gathering.

On the other hand, the small bank typically engages in what has been termed relationship lending. The bank's smaller scale generally prevents standardized lending from being cost effective. Thus, the information asymmetry between borrower and lender is narrowed not solely by hard, quantitative data reflected in the firm's credit score, financial ratios or collateral pledges; but is bridged by "soft" information gathered over more subjective processes during the course of the bank's relationship with the small firm. For example, it is developed through personal interaction with firm owners and bank loan officers; through the firm's use of pre-existing bank products; the firm's reputation in the community; or the bank's knowledge of the local market. The gathering of this soft information underlies the relationship lending technique used by small banking organizations, and makes their production function in the small business loan market strikingly different from large ones.

Before technology advancements in credit scoring spurred standardized lending, small business credit was the province of small banks. Now, as the use credit scoring has become more prevalent, small banks no longer dominate the arena of small firm debt. And with continued consolidation in the financial service industry, the number of small banks is shrinking. Therefore, considering inroads forged by large banks through standardized lending, this portion of the small business loan market may have a different face. Thus with fewer small banks employing relationship lending coupled with small firms being a strong engine of economic growth, the policy question that arises is, "Will the small business loan market be adequately served?".

This question is addressed herein, with pertinent literature noted in section (1.) as well as throughout the paper. Section (2.) contains the data description and competing hypotheses. Section (3) presents the model and empirical methodology used in the analytical framework, followed by the results (4), and finally the conclusion and policy implications (5). Overall the findings show that relationship lending is prevalent in the primary bank, with additional bank

[2] The banking organization refers to the consolidated bank holding company, which may encompass more than one bank, all operating under holding company policy. If no multi-bank holding company exists, the banking organization is essentially the bank itself. Consequently, banking organization and banks are used interchangeably throughout this paper.

sources using standardized methods. Also, primary banks reflect improved credit to firms with low credit ratings and those recently declaring bankruptcy.

## I. Literature Review

Many studies have found that small banks have an advantage in small firm lending (Carter and McNulty 2005; Craig and Hardee, 2001; Peek and Rosengren, 1998). This is especially evident in the area of relationship loans, or loans to firms not producing sufficient hard information for standardized lending practices (Cole, Goldberg and White, 2004; Scott, 2004; Berger and Udell, 2002; Berger, et al, 2002). Consequently, DeYoung, Hunter and Udell (2004) project the future banking industry will be divided between very large banks specializing in the use of hard information to make standardized loans, and small banks specializing in the use of soft information and customer relationships to make non-standardized loans.

Although the above citations support small banks' proclivity in relationship lending, there is disparity in other research results. For instance, Strahan and Weston (1998) find that there is no difference in credit availability to small firms from changes in banking system structure and its underlying loan production processes; while Hancock, Peek and Wilcox (2004) find that as banks consolidate under the fifty largest holding companies, total small business lending is reduced. Others show that reductions in small business lending from consolidation are offset by de novo banks[3] (Goldberg and DeYoung, 1999; Goldberg and White, 1998), and by other types of financial institutions (Berger, Miller, Rajan and Stein, 2002; Berger, Goldberg and White, 2001). Conversely some analysts find that credit to small firms have improved with the advent of credit scoring models offered by large banks, particularly with marginal credits (Berger, Frame and Miller, 2004). Also, with these technological improvements, large banks are finding a niche in making smaller loans amenable to credit scoring (Levonian, 1997; Mester, 1997); while small banks are capturing more of the larger loans to small firms (Ely and Robinson, 2001). Furthermore, Frame, Padhi and Woosley (2004) find that credit scoring by large banks improved credit availability to small firms in low- and moderate- income areas. Finally, other research indicates non-bank financial institutions are making headway in the small business loan market (Cole and Wolken, 1996), and more particularly so with riskier credits (Craig and Hardee, 2007).

## II. Data and Competing Hypotheses

### A. Data

Given the divergence of prior findings, this research reexamines this issue using proprietary data not available to researchers outside the small business section within the Federal Reserve Board of Governors, thus illuminating the evidence in a much more direct fashion. The proprietary data, extracted from the 1998 Survey of Small Business Finances (Survey), allow the authorized researcher to identify at the firm level, the organizational structure of the bank used for financial products and the characteristics of the firm. That is, in this project the individual small firm data from the Survey are combined with banking data from the Federal Deposit Insurance Corporation's (FDIC) Summary of Deposits to get a bank/firm match.[4] Banking data is as of December 31, 1998, the date of the majority of the firms' fiscal year end.

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[3] De novo banks are new entrants into the banking industry.

[4] Only onsite analysts from the Small Business Section at the Board of Governors are authorized to match the firms in the Survey with data on the bank providers. Accordingly, Traci L. Mach, completed the bank/firm match, provided data for Table I and as well as all of the regression output reflected in Tables II through VI.

The Survey is a nationally representative, weighted sample of small firms operating in the U.S. as of year-end 1998.[5] Of the 3,561 firms included in the Survey, 2,202 carry debt from a financial institution, of which 1695 firms have bank debt. The financial institution debt emanates from depository institutions, mortgage companies, finance and leasing companies, brokerage houses, and insurance companies. It includes various loan products, exclusive of credit cards. Namely these are six different credit instruments: Lines of Credit, Mortgages, Equipment Loans, Motor Vehicle Loans, Capital Leases and Other Loans—loans not of the preceding types (primarily unsecured term loans).

Commercial banks, savings banks and savings & loans constitute suppliers of bank debt and are what is termed "bank(s)" in this paper. Credit unions are excluded as a bank, since they are not FDIC insured, thus are not part of the deposit data, and constitute a minimal of financial institution debt (Bitler, Robb and Wolken, 2001). Out of the 3,561 total firms included in the Survey, 70 did not have a bank-firm match—i.e., either they did not use a bank for financial services or the institution could not be identified. Thus the sample size is 3,491 with 1680 firms reflecting bank debt.

Table I reflects the weighted and un-weighted mean and median firm debt from all financial institutions as well as debt from banks by banking organization (holding company) size. The debt is the aggregate at the firm level of the above six credit instruments. From Table I we see average loan size increases as the assets of the banking organization increase. Although this is a function of regulatory lending limits that generally increase with bank size, it is interesting to note that the median firm debt for the largest organizations—over 10 billion in total assets—is lower than those with assets of only $500 million to $1 billion—a manifestation which may be attributed to credit scoring in the large institutions.

Thus this project contributes to the research community by testing actual bank credit of small firms, analyzing it from the perspective of all sources as well as the firm's primary bank. The latter is determined in the Survey, and represents that bank which the firm considers as its most important source of financial services.

### B. Competing Hypotheses

The competing hypotheses follow the lines that large, more complex bank organizations primarily lend to small firms qualifying under the standardized (credit scoring) criteria whereas small, more simply structured banks lend to firms falling under the umbrella of relationships. These hypotheses have theoretical underpinnings of hierarchical control expostulated by Williamson (1967).

On the one hand, Williamson posited as an organization increases in size, it loses control between successive hierarchies. As mandated policies and procedures are transmitted to successive hierarchal levels, distortions increase. Consequently, a large, complex banking organization needs explicit guidelines of the standardized lending process to avoid deviation from mandates and resultant managerial diseconomies of scale. On the other hand, the smaller organization is less complex, or flat, allowing loan officers far more discretion in the approval process. Thus the organization ferrets out problems of adverse selection and moral hazard based on relationship lending. This research empirically measures the effects of these two lending techniques on credit availability via the model and methodology discussed below.

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[5] The Survey data contain the sample weights that are constructed from the universe of small firms listed in Dun & Bradstreet's (D & B) market Identifier File, a national register of small firms estimated to have about 93% of small businesses in the U.S.(Bitler, Robb & Wolken, 2001). The weights are designed to reflect from the sample the target population of all U.S. small businesses as listed by D & B.

## III. Model and Empirical Methodology

### A. General Model

The model utilizes a two-step Heckman process at the firm level to control for sample selection estimation bias.[6] The first step estimates the probability of a small firm obtaining credit, while the second step estimates normalized levels of credit for those firms having debt. A Heckman analysis is employed because there are reasons to consider that the decision whether to carry debt may have separate components than the decision concerning the level of debt. That is, the incentives to the financial institution provider in supplying credit may not be consistent with the demand preferences for debt by firms. 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 a small community bank organization. Furthermore, viable small firms may be rejected in the standardized loan application process due to non-consideration of soft information. But if approved, the cost savings of larger institutions from economies of scale may be passed on through loan pricing, as found by Berger and Udell (1996). Thus, conditional on surviving the loan approval process, the amount borrowed may actually rise if credit is less expensive. This may affect the level of debt differently from the probability of debt (Craig and Hardee, 2007). Thus the two steps in the loan approval process are modeled separately. The first step models the probability the firm has bank credit using a Probit specification. The general form is as follows:

$$Debt = f(\text{bank market identification variables, firm characteristics}) \quad (1)$$

This first step (equation 1) 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. Here all of the bank-matched firms in the Survey are tested, each weighted to mimic the U.S. small business population. The second step in equation (2) expresses the level of credit conditional on debt.

$$Debt\ levels = f(\text{bank structure variables, firm characteristics}) \quad (2)$$

Thus by explicitly modeling the decision process of how much bank debt the firm assumes as a separate step from the decision to carry this debt, the differences in lending/borrowing behavior at both stages of the funding process are captured.[7]

### B. Dependent Variables

The dependent variables in our model are bank debt as measured by credit limits, inclusive of un-drawn lines of credit, and outstanding bank loan balances (which exclude unused credit). This debt is normalized by the firm's total revenue. The dependent variables are reflected by total bank debt and primary bank debt to isolate the behavior of determinants from bank sources other than the firm's primary bank. Literature supports this methodology in that Thakor (1996) demonstrated the existence of multiple bank sources reduces the value of information acquisition by any one bank. Petersen and Rajan (1994) demonstrated multiple lenders increase price and reduce credit availability to small firms. Cole, Goldberg, and White

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[6] The Heckman process by design is in two steps, and is a specific econometric estimation technique that is suited to this model. By employing it, the results are more reflective of the data.

[7] This would be lost under a Tobit model, which assumes that the decision to carry debt is identical to the decision regarding the debt level.

(2004) find multiple lending sources decrease the likelihood of small firms' loan approvals. Thus the effects of multiple bank sources are reflected in the total bank credit regression.

Further rationale for examining primary bank credit apart from total debt is based on the primary bank being the predominant repository of the firm's private and soft information. Unlike large public-traded firms that have readily available information, a small firm has private information and much of it is soft, based on the character and reputation of the owner. The primary bank is privy to this, consequently should have a comparative advantage in obtaining private information vis-à-vis other banks. Two studies supporting this argument are Scott (2004) and Shin, Fraser, and Kolari (2003). Thus the primary bank will be more inclined to employ relationship lending, whereas secondary sources of credit, short on soft information, may be employing standardized lending.

### C. Independent Variables

The independent variables relate to structure of the bank market for the first step in the model, where the firms having bank debt are identified through a Probit or selection procedure. The individual bank structure is used in the second step of the model, which linearly tests levels of debt conditional upon the firm having a bank loan.[8] The same firm characteristics are used in both steps.

Market and bank structure variables have been used to identify relationship lending or standardized lending in several studies, such as those cited previously regarding organizational size. Organizational complexity studies by Keeton (1995, 1996) find that banks with a high degree of branching and multi-bank holding companies (MBHC) hinder small business lending, a phenomenon Nakamura (1994) attributes to informational diseconomies of scale. Goldberg and DeYoung (1999) hypothesize multi-bank holding company structure is particularly inimical to small business lending because it adds extra layers of bureaucracy. However, Stein (2002) argues decentralized hierarchy ease informational flow providing incentives for more efficient capital allocation. By deduction, MBHCs would more readily gather soft information thereby fostering small business lending.

Relating to bank markets Peterson and Rajan (1994) find that banks in more competitive markets make fewer loans to un-established small firms due to informational deficiencies. Also in another paper Peterson and Rajan (1995) suggest small banks in more concentrated markets[9] invest in loan relationships due to higher assurance the borrower will switch to a competitor. In contrast, Jarayante and Wolken (1999) find small firms in areas with only a few small banks did not suffer lack of credit in the long run, though did experience short run disruptions. This paper builds on these concepts by utilizing market and bank structure measures in the model.

Consequently, the *identification variables* employed in the first step (equation 1) focus on the bank market. These variables are based on the assumptions about firms' borrowing decisions. That is, firms would decide whether or not to borrow based on average characteristics of the local market of potential lenders, but once they had made the decision to borrow, the level would be determined by the characteristics of the actual financial institution the firm chose. Accordingly, the identification variables are the average banking characteristics

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[8] A Probit or selection procedure in the first step of the Heckman process determines the probability if a firm has bank debt, by assigning a value of one to firms with this debt and zero otherwise. Thus only firms carrying bank debt (selected firms) are considered in the second step. This two-step estimation is the essence of the Heckman process.

[9] Concentrated markets are those with few, if any, competing banks.

of the local market—i.e., the MSA for urban firms and the county for rural firms, a definition commonly accepted in the literature (Amel and Brevoort, 2004). The identification variables used are **average banking organizations assets, percent of banks in multi-bank holding companies (MBHC), percent of unit (no-branch) banks**[10] and **bank market concentration**, as measured by a Herfindahl index of bank deposits within the local market.

The *bank structure variables* used in the second step (for levels of credit conditional on having debt) capture the structure of multiple bank sources in the total bank credit regression. A separate regression does the same for the firm's primary bank. The source bank structure variables are continuous except where noted by a flag, in which case they are dichotomous; for more than one bank source, an average is used. They are the following:

**Miles to bank**: Peterson and Rajan (2000) find small firms are borrowing at greater distances due not only to bank consolidations but also because of an increase in bank productivity. Thus this variable tests for standardized lending via credit scored, on-line borrowing.

**Years with bank**: Soft information gathered in relationship lending may increase over time, although Cole (1998) found the benefits of relationships to accrue within one year. Earlier papers using data from previous Surveys[11] show the longer the relationship, the greater the credit availability to small firms (Berger and Udell, 1995; Petersen and Rajan, 1994). However, Cole, Goldberg and White (2004) using the 1993 Survey find no evidence of duration of the relationship improving the probability of a small firm's loan approval by a bank. Given the mixed evidence, this variable at a minimum acts as a control and may indicate telling evidence of relationship lending improving credit availability.

**Log of banking organization assets**: The natural log of the assets of the bank holding company or single bank (when no holding company structure exists) is used to distinguish the impact on firm credit between large organizations using standardized methods and small ones using relationships. Because of the wide range in asset size, the natural log is used to minimize problems of heteroscadasticity. The size of the organization rather than the size of the bank is employed to incorporate the effects of lending policy set at the holding company level.

**Unit bank flag**: This is a test for complexity of branch banks using standardized lending.[12] That is, soft information may be more easily processed in a unit bank with its stand-alone location than through the various locations of branch banks. Thus when other than the primary bank furnish credit, standardized lending techniques may be employed, since that type of lending would be more amenable to branch rather that unit banks.

**MBHC flag**: This also is a test for organizational complexity, although the literature previously cited has shown mixed findings.

The *firm characteristics* include variables that allow for distinction between relationship and standardized bank lending. These include **size** (by number of workers); **age of firm**; **minority ownership**; and **type of industry**. Also used are financial variables of **profit**

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[10] Unit banks are stand-alone facilities having no branches—i.e., all the bank operations are "housed" in one location. They can be members of a multi-bank or one-bank holding company or just exist without a holding company structure. The distinguishing feature of a unit bank is than it has no branches.

[11] Surveys of small business finance conducted by Federal Reserve Board of Governors cover data relating first to 1987, followed by 1993, then 1998 (the Survey used in this paper), and finally the most recent, 2003.

[12] The degree of branching is actually a better test of branching organizational complexity, since many small, simply structured banks have branches. However, due to multi-collinearity with size, and size being the preferred variable, we apply this cruder test. Again, a unit bank is one with no branch facilities. Multi-collinearity of variables implies the variables have such similar effects, that they dampen their individual influence.

(normalized by firm assets) and **sales growth** of the firm[13], credit history variables such as the firm and principal owner's **bankruptcies**, the firm's **Dunn & Bradstreet credit score**. These variables encompass hard information used in standardized lending, in contrast to the collection of soft information collected over time through the firm/lender relationship—proprietary knowledge not easily transmitted to or verified by other lenders.

If the hypotheses hold, evidence of relationship lending will be predominant in small, more simply structured banking organizations and the standardized (credit scoring) methods in large ones. Accordingly, firm characteristics will delineate lending methods through marginal or riskier firms with more soft information assumed by relationship lending and sounder firms with presumably hard, quantifiable information assumed by its counterpart. The distinction will be further clarified by comparing the results of multiple bank sources with that of the primary bank. Table II contains a complete list of all the variables, independent and dependent, including brief descriptions and means.

## IV. Results

Statistically significant signs on the banking variables, market and firm specific, along with firm characteristics reveal if relationship or standardized lending prevails. Implicit in the model is the assumption that firms drawing on lines of credit are more cash constrained than firms carrying un-drawn lines of credit. If true, then the results on credit limits highlight firms that have more cash flow than the results on credit balances. Accordingly, one sees more differences in the outcome between primary and total bank credit in the balance results than the limit results, particularly with the firm characteristics. Furthermore, the efficacy of the Heckman procedure is confirmed by the signs switching on some significant variables, thus reflecting different behavior in debt probability versus debt levels.

A detailed discussion of the results is presented below under the two competing hypotheses. Unless otherwise noted, the statistical significance on the coefficients is the same in the marginal results. Since the interest is in the qualitative rather than quantitative outcome, the focus is on the coefficients as reflected in Tables III A and III B, rather than the marginal effects.[14]

Basically one finds much more statistical significance in the likelihood of having credit than in the levels of credit. Evidence of standardized lending prevails when competing banks are involved in the provision of credit and relationship lending when only primary bank credit is considered. Although the evidence is inconclusive in determining if one method over the other improves credit availability, primary banks improve credit to firms with low credit ratings or recent bankruptcy.

### A. Comparison of effects of total bank credit to primary bank credit

Under the competing hypotheses, initially the bank variables' impact on the likelihood of a firm having bank credit is discussed, since this represents the selection aspect of our model. Next the impact of source bank structure on credit levels conditional on a firm having bank debt is analyzed. The focus is initially on the banking structure, since the impact of bank consolidation on small firm finance is the main area of concern among policymakers. The

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[13] The Survey data only reflect current and prior year sales. Consequently this is a dummy variable (flag) equaling one if the current year's sales are greater than prior year, and zero otherwise. For firm's not having or reporting prior year's sales we use a zero. Other variables in the firm characteristics represented by a discrete zero-one dummy variable (flag) are: minority ownership, type of industry and bankruptcy.

[14] Marginal results are furnished upon request.

impact of firm characteristics on likelihood and levels of credit are covered together, since these variables are the same in both regressions.

**A. 1. Banking variables' impact on likelihood of credit:**

Except for the Herfindahl index, the outcome of these variables is the same for both primary and total bank credit. Bank market characteristics are initially analyzed, then source bank characteristics.

***Bank Market Characteristics:***

In the likelihood regression bank size matters, and illuminates the competing hypotheses. That is as the **average bank organization size** in the market increases, firms are less likely to have credit limits. This lends support to relationship lending in that the size of the bank organization may dampen the likelihood of small firms having credit due to informational diseconomies of scale.

As the percentage of **unit banks** increase in the bank market, the likelihood of a firm having credit is negative and significant. Since conceptually it is easier to process soft information in a unit bank where all operations are under one roof, this negative result is support for standardized lending. That method would be easier to administer in a branch bank, with offices conceivably located across different markets. This outcome coupled with the result of unit banks decreasing the levels of credit limits with total bank credit (as further discussed in the levels section) is evidence for competing branch banks employing standardized lending.

Additionally, standardized lending is supported in the likelihood regression by the result on **MBHCs**. Firms in bank markets with higher percentages of MBHCs show a greater probability of having credit. Analogous to branch banks, banking organizations with multiple banks in the holding company structure, presumably would find standardized lending more efficient. However, as pointed out in the section below, when the bank is the primary bank, membership in a MBHC produces lower levels of credit, supporting relationship lending.

The outcome on the **Herfindahl** index is negative and significant in primary bank credit limits, indicating that these markets with increased competition are likely to have higher probabilities of having debt. (The lower the index, the more competitive the market.) This supports the principle that competition improves product availability, particularly with primary credit. The lack of significance of this variable with total bank credit may indicate an Internet supply of funds from sources via standardized methods outside the banking market. That is, banks supplying funds on-line are not in the Herfindahl index unless they have a brick and mortar office in the local market. Or it just may indicate that the multiple bank sources apart from the primary bank are those that have a more concentrated share of market deposits, thereby abrogating the negative significance.

**A.2. Banking variables' impact on levels of credit:**

***Source Bank Characteristics:***

**Years the firm has been with the bank** is negative and significant in the primary bank regressions (limits and balances) but not with the average years in total banks. This indicates that with the primary lender, shorter durations improve credit relationships, and indirectly confirms the findings of Cole (1998). This is supportive of relationship lending in that the primary bank can take the risk of increasing loan levels to firms more rapidly, given that it has more private information on the firm as its primary institution. And the significance is even greater in the primary balance regressions, which presumably highlight relatively cash constrained firms. But as evidenced in the total bank regressions, when competing bank organizations provide additional funds, the relationship is clouded, thus the number of years the

firm has been with the competing sources does not impact the loan levels. This result supports the effect of relationships in the primary bank to more readily supply funds.

**Unit banks** is negative and significant in the total banks credit limits (not balances), but not in the primary banks regressions. In some respects, this lends support to relationship lending, in that the level of primary credit is not as affected by branch versus unit bank structure as that with competing bank providers. However, when other banks are involved, unit banks provide lower debt levels relative to branch banks. Therefore, the evidence points to branch banks, when providing additional sources of credit, have higher debt levels. By inference, these banks likely use standardized lending. (This is further supported by the outcome of the percentage of unit banks in the market, discussed in the likelihood section above.) Furthermore, the variable for unit banks interacted with organizational size in the total bank credit limits is positive and significant, providing evidence of credit scoring in unit banks associated with large bank holding companies.

A primary bank in a **MBHC** is negative and significant in the balance regression. The use of additional layers of bureaucracy may make the primary institution more complex, thus lowering the loan balance. This is supportive of relationship lending in accordance with Williamson's organizational hierarchy (1967) and Goldberg and DeYoung (1999). As other bank sources provide credit, this organizational form does not matter, giving evidence of standardized lending used with the competing sources.

### B. Firm characteristics likelihood and levels of Bank credit:

***Firm Characteristics:***

As with the banking variables, overall we find evidence of relationship lending in the primary bank credit and standardized practices in the other bank sources. This is more pronounced in the balance regressions, which again may reflect more cash constrained firms.

For **firm age**, the youngest third of firms (from **zero to seven years**) have less likelihood of obtaining credit for both total and primary banks limits but only for total bank balances. The lack of statistical significance in the primary balances is weak support for the primary bank's ability to process soft information that reduces the risk associated with new firms.[15] That is, younger firms may be considered riskier, since they are less established. The middle third, (**firm age 8 – 16 years**), have a higher probability of obtaining credit relative to the oldest firms with total banks, but not in the primary bank regressions. In summary, the primary bank does not make the distinctions with firm age to the extent of the other sources. This may be attributed to the power of relationship lending overcoming the risks of less established entities.

Although **firm size** shows that the largest has more likelihood of obtaining credit from both primary and competing sources, there is different behavior in the levels. Namely, the smallest third of firms as measured by **total employees (zero - three)** is positive and significant for the total banks in both the limits and balance regressions.[16] (It is negative and significant in the likelihood regressions, thus reinforcing the Heckman methodology capturing this different behavior.) Although these smallest and perhaps riskier firms have lower probabilities of obtaining credit, once credit is approved, the levels extended by the other source banks are greater. This outcome supports the literature that credit scoring is making inroads into the market for business loans less than $100,000 (Mester, 1997; Ely and Robinson,

[15] The marginal effects indicate this variable is significant at the 10% level, thus weakens the outcome of the coefficient.

[16] The significance goes away in the marginal effects for levels of credit balances from all banks.

2001). That is, it is reasonable to surmise these smallest of firms have smaller loans, a conclusion that implies firm size gives evidence of credit scoring.

For **minority**-owned firms one finds in all regressions that there is less likelihood these firms will carry bank credit, but sees evidence of relationship lending in the levels. Specifically, the level of balances is relatively higher at the primary bank. Here one may surmise that the relationship aspect allows for higher balances with this group of borrowers.

A strong indicator of relationship lending in the primary bank is the results on the **D & B credit score** as well as **bankruptcy**. In the balance regression, the likelihood of a lower rated firm obtaining credit is higher. That is, the higher the score, the better the credit. Thus in the primary relation, lower ranked riskier firms have more of a chance obtaining a loan, but not when competing banks provide credit. These banks are likely to produce a low credit score on their own system, thus reject these presumably cash constrained firms in their standardized lending. In the **bankruptcy** variable one sees a similar outcome. No distinction is made between firms or their owners declaring bankruptcy by the primary bank, whereas when competing banks are considered, these firms are less likely to have a loan balance. (In terms of credit limits, which include un-drawn lines of credit, bankruptcy decreases the chance of a firm obtaining credit at the primary and competing banks.) Taken together the credit rating and bankruptcy results reflect more favorable credit conditions granted by the primary bank to riskier firms; and by deduction, these banks would likely be using relationship lending.

Basic principles of finance are evidenced in the results for **profit** as well as **sales growth,** but do not shed light on the competing hypotheses. Here we find, as expected, more profitable firms and those with one-year sales growth are more likely to obtain credit, particularly in the limits. However, in the primary balances profit does not matter in the loan level, but is negatively significant in total banks balances. One may interpret this as less profitable firms are extended higher balances in the standardized lending scheme. Growing sales have lower balances in the primary banks in these possibly cash constrained firms, while the more cash flush firms of credit limits show lower levels in the total banks.

Although within the industry types, there is different behavior between the primary and total bank regressions no conclusive interpretations are made under the competing hypotheses. However, it is interesting to observe that firms involved in the **real estate or transportation industry** have a higher likelihood of being selected for credit when competing banks were involved, but not with primary banks. This may be indicative of firms in the then growing real estate industry—a desirable market at the time of the data—obtaining additional credit from other bank sources.

## V. Conclusion and Policy Implications

This research employs the fruitful data of the Survey of Small Business Finances coupled with proprietary data identifying the firm's financial source to ferret out standardized versus relationship lending in bank credit. Overall, one finds strong evidence that relationship lending is inherent in primary banks and standardized lending in other bank providers. Although no conclusive evidence exists indicating that one lending technique is dominant in improving credit availability, primary banks do seem more favorably inclined toward lower rated credits.

In terms of the competing hypotheses, this research provides substantive evidence of the impact of two diverse lending techniques. That one method is not apparently better in overall credit availability has significant policy implications. It is possible that the changes in the banking industry and the resulting changes in small business finance are efficient in this market. That is, credit may be adequate due to the primary banks' niche in relationship lending, as large more complex banking organizations supplement supply via standardized

methods. Furthermore, these large bank suppliers may be the primary bank, and augment standardized techniques with the benefits of proprietary relationship information. Thus, opaque but viable small firms may face sufficient credit availability in an environment of improved lending technologies and changing financial intermediary structure. Hence, the market, if allowed to function freely, efficiently allocates adequate financing to small firms regardless of the supplier's lending methodology.

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## Table I A
## Firms' Outstanding Balances By Size Of Banking Organization

| *Firm Debt by Bank Organ. Size:* | Un-weighted Firm Debt | | Weighted Firm Debt | |
|---|---|---|---|---|
| Variable | Mean | Median | Mean | Median |
| **Firms' Credit balances with all Financial Institutions** | 845,884 | 69,150 | 229,537 | 35,000 |
| **Firms' CREDIT balances with all banking organizations** | 762,416 | 85,000 | 226,741 | 37,000 |
| CREDIT BALANCE—Unclassified[1] | 627,906 | 39,350 | 149,015 | 20,000 |
| **Asset Size of Banking Organization** | | | | |
| Under 25 Million | 82,574 | 21,000 | 45,926 | 8,232 |
| 25 to 50 Million | 196,148 | 60,000 | 148,878 | 60,000 |
| 50 to 100 Million | 169,371 | 43,865 | 71,341 | 24,500 |
| 100 to 300 Million | 238,419 | 81,500 | 126,182 | 48,000 |
| 300 to 500 Million | 308,404 | 74,226 | 164,455 | 35,000 |
| 500 Million to 1Billion | 259,224 | 62,447 | 147,409 | 45,000 |
| *Firm Debt to Bank Org. with Assets 1 Billion or less* | *255,125* | *65,491* | *136,714* | *44,950* |
| Bank Assets 1B to 3B | 496,418 | 91,000 | 234,597 | 50,000 |
| Bank Assets 3B to 10B | 502,066 | 77,335 | 215,434 | 30,000 |
| Bank Assets Over 10B | 937,963 | 61,789 | 247,382 | 28,985 |
| *Firm Debt to Bank Org. with Assets Greater than 1 Billion* | *873,955* | *76,831* | *251,792* | *31,600* |
| **Firms' CREDIT BALANCES with all primary institutions** | 790,246 | 83,670 | 234,618 | 33,028 |
| **Firms' CREDIT BALANCES with all primary banking organizations** | 808,183 | 90,784 | 236,227 | 38,000 |
| CREDIT BALANCE--PRIMARY BANK, Unclassified[1] | 1,007,779 | 108,469 | 217,764 | 32,080 |
| **Primary Bank Organ. Asset Size** | | | | |
| Under 25 Million | 68,563 | 27,500 | 54,774 | 31,000 |
| 25 to 50 Million | 209,371 | 107,076 | 200,225 | 127,000 |
| 50 to 100 Million | 208,572 | 60,239 | 74,037 | 20,000 |
| 100 to 300 Million | 276,208 | 98,500 | 145,241 | 55,000 |
| 300 to 500 Million | 415,304 | 98,000 | 223,878 | 48,000 |
| 500 Million to 1Billion | 327,125 | 60,423 | 149,902 | 38,000 |
| *Firm Debt to Primary Bank Organization Assets 1 Billion or less* | *292,510* | *94,556* | *149,492* | *48,000* |
| Primary Bank Assets 1 to 3 Billion | 551,154 | 111,500 | 242,423 | 61,972 |
| Primary Bank Assets 3 to 10 Billion | 570,316 | 90,500 | 228,668 | 33,560 |
| Primary Bank Assets Over 10 Billion | 1,154,196 | 88,000 | 297,090 | 30,000 |
| *Firm Debt to Primary Bank Organization Assets Greater than 1 Billion* | *1,003,925* | *90,000* | *281,344* | *32,000* |

[1] Unclassified implies that the size of the banking organization could not be determined, since it was unidentified in the bank-firm match.

## Table I B
## Firms' Outstanding Credit Limits By Size Of Banking Organization

| *Firm Debt by Bank Organ. Size:* | Un-weighted Firm Debt | | Weighted Firm Debt | |
|---|---|---|---|---|
| Variable | Mean | Median | Mean | Median |
| **Firms' Credit limits with all Financial Institutions** | 1,167,270 | 98,139 | 322,244 | 48,718 |
| **Firms' CREDIT LIMITS with all banking organizations** | 1,089,430 | 103,535 | 329,696 | 50,000 |
| CREDIT LIMIT—Unclassified[1] | 891,756 | 50,000 | 287,338 | 30,000 |
| **Asset Size of Banking Organization** | | | | |
| Under 25 Million | 81,210 | 25,000 | 53,326 | 15,000 |
| 25 to 50 Million | 214,701 | 76,259 | 163,240 | 72,518 |
| 50 to 100 Million | 203,197 | 45,000 | 98,583 | 25,000 |
| 100 to 300 Million | 286,278 | 98,000 | 143,831 | 50,000 |
| 300 to 500 Million | 368,899 | 85,500 | 180,580 | 25,000 |
| 500 Million to 1Billion | 357,568 | 105,000 | 181,310 | 65,000 |
| *Total of Firm Debt to Bank Org. with Assets 1 Billion or less* | *314,520* | *96,500* | *159,241* | *50,000* |
| Bank Assets 1B to 3B | 615,193 | 111,000 | 267,924 | 50,000 |
| Bank Assets 3B to 10B | 680,384 | 100,000 | 322,391 | 50,000 |
| Bank Assets Over 10B | 1,375,941 | 91,000 | 367,542 | 46,000 |
| *Total of Firm Debt to Bank Org. with Assets Greater than 1 Billion* | *1,266,132* | *100,000* | *364,587* | *50,000* |
| **Firms' CREDIT LIMITS with all primary institutions** | 1,110,574 | 100,000 | 333,079 | 50,000 |
| **Firms' CREDIT LIMITS with all primary banking organizations** | 1,138,353 | 109,215 | 342,637 | 50,000 |
| CREDIT LIMIT--PRIMARY BANK, Unclassified[1] | 1,370,395 | 144,000 | 438,005 | 50,000 |
| **Primary Bank Organ. Asset Size** | | | | |
| Under 25 Million | 67,709 | 25,000 | 60,261 | 31,000 |
| 25 to 50 Million | 232,874 | 117,038 | 212,186 | 127,000 |
| 50 to 100 Million | 237,346 | 60,000 | 97,477 | 25,000 |
| 100 to 300 Million | 333,583 | 107,953 | 162,797 | 63,000 |
| 300 to 500 Million | 488,717 | 121,500 | 240,843 | 48,000 |
| 500 Million to 1Billion | 431,765 | 107,347 | 186,453 | 64,000 |
| *Firm Debt to Primary Bank Organization Assets 1 Billion or less* | *352,918* | *100,000* | *169,998* | *53,460* |
| Primary Bank Assets 1 to 3 Billion | 721,756 | 129,000 | 295,728 | 50,000 |
| Primary Bank Assets 3 to 10 Billion | 755,760 | 140,000 | 356,174 | 60,000 |
| Primary Bank Assets Over 10 Billion | 1,668,878 | 106,765 | 435,149 | 50,000 |
| *Firm Debt to Primary Bank Organization Assets Greater than 1 Billion* | *1,439,246* | *114,034* | *407,797* | *50,000* |

[1] Unclassified implies that the size of the banking organization could not be determined, since it was unidentified in the bank-firm match.

## Table II
## Variable Descriptions and Means

| *VARIABLE* Dependent Variables | Description | N | Mean | Std. |
|---|---|---|---|---|
| ***Likelihood of Credit*** | | | | |
| *Credit Balances* | | | | |
| *Total banks* | A dichotomous variable equaling one if the firm has an outstanding bank loan balance with any bank (1462 firms), zero otherwise | 3491 | .3491 | .0095 |
| *Primary banks* | A dichotomous variable equaling one if the firm has an outstanding loan balance with the firm's primary bank (1163 firms), zero otherwise | 3491 | .3173 | .0092 |
| Credit Limits | | | | |
| *Total banks* | A dichotomous variable equaling one if the firm has a credit limit with any bank (1695 firms), zero otherwise. This differs from bank balances in that it includes un-drawn lines of credit | 3491 | .4278 | .0098 |
| *Primary banks* | A dichotomous variable equaling one if the firm has a credit limit with with the firm's primary bank (1402 firms), zero otherwise. It includes un-drawn lines of credit. | 3491 | .3273 | .0093 |
| ***Levels of Credit*** | | | | |
| *Balance to Revenue* | | | | |
| *Total banks* | Outstanding balance on all the firm's bank loans (mortgages, motor vehicles, equipment, lines of credit, other) at all source banks divided by total revenue of the firm | 1448 | .4768 | .0599 |
| *Primary banks* | Same as above except credit is only from the firm's primary bank--i.e., the bank the firm considers to be its most important provider of financial services | 1330 | .4566 | .0560 |
| Limits to Revenue | | | | |
| *Total banks* | Total credit limit on all the firm's bank loans including un-drawn lines of credit (mortgages, motor vehicles, equipment, lines of credit, other) at all source banks divided by total revenue of the firm | 1680 | .5289 | .0608 |
| *Primary banks* | Same as above except credit is only from the firm's primary bank—i.e., the bank the firm considers to be its most important provider of financial services | 1389 | .4319 | .0550 |

## Table II
## Variable Descriptions and Means (continued)

| *VARIABLE* Independent Variables | Description | N[1] | Mean[1] | Std.[1] |
|---|---|---|---|---|
| ***Firm Characteristics*** | | | | |
| Firm age 0 - 7 years | A dummy (0,1) variable for the youngest third of firms. The omitted variable is firms established for more than 16 years | 1448<br>3491 | .3076<br>.3701 | .0156<br>.0097 |
| Firm age 8 - 16 years | A dummy (0,1) variable for the middle third of firms. The omitted variable is firms established for more than 16 years | 1448<br>3491 | .3726<br>.3362 | .0164<br>.0095 |
| 1 - 3 employees | Measures firm size with a dummy (0,1) variable for the smallest third of firms in terms of number of workers, inclusive of sole proprietor. The omitted variable is firms larger than 10 employees | 1448<br>3491 | .3349<br>.5137 | .0163<br>.0099 |
| 4 – 10 employees | Measures firm size with a dummy (0,1) variable for the middle third of firms. The omitted variable is firms larger than 10 employees | 1448<br>3491 | .4076<br>.3304 | .0165<br>.0096 |
| minority owned | A dummy variable if the primary owner—i.e., having the largest percent, is an ethnic minority. | 1448<br>3491 | .0698<br>.0947 | .0055<br>.0030 |
| D&B Credit Score | A continuous variable from zero to 100, with 100 representing the strongest credit rating determined by Dunn & Bradstreet. | 1448<br>3491 | 51.68<br>51.05 | .9716<br>.5553 |
| bankruptcy in past 7 years | A dummy variable if the primary owner or the firm declared bankruptcy within the last seven years. | 1448<br>3491 | .0158<br>.0244 | .0045<br>.0030 |
| Profit per asset | The profit of the firm normalized by the firm's assets. | 1448<br>3491 | .0003<br>.0046 | .0002<br>.0036 |
| 1998 sales>1997 sales | A dummy variable of 1 if the firm's current year's sales are greater than prior year. | 1448<br>3491 | .6577<br>.6080 | .0159<br>.0098 |
| | **Standard Industrial Codes (SIC) as determined by the Census Bureau** | | | |
| Construction | A dummy variable for the firm industry, Omitted variable is services | 1448<br>3491 | .1527<br>.1186 | .0129<br>.0068 |
| Manufacturing | A dummy variable for the firm industry, Omitted variable is Services | 1448<br>3491 | .0949<br>.0846 | .0093<br>.0055 |
| Trade | A dummy variable for the firm industry, wholesale or retail trade; the omitted variable is services | 1448<br>3491 | .2841<br>.2649 | .0152<br>.0089 |
| Real Estate & Transportation | A dummy variable for the firm industry, Omitted variable is Services | 1448<br>3491 | .1070<br>.1012 | .0106<br>.0061 |

[1] Due to different number of observations for each dependent variable for conditional levels of debt, there are four subsets of means for the independent variables associated with each regression--total bank balances, primary bank balances, total bank limits, primary bank limits. Only total bank balances are reflected, since they are very similar to the remaining three. Full subsets will be furnished at the request of the author. The mean for the sample size N=3491 represents the mean for the variables in the selection (probit) regression.

## Table II
## Variable Descriptions and Means (continued)

| *VARIABLE* Independent Variables | Description | N[2] | Mean[2] | Std.[2] |
|---|---|---|---|---|
| ***Source bank Variables*** | For multiple banks this represents an average | | | |
| Years with bank[1] | The number of years the firm has had at least one financial service provided by the bank | 1448 | 8.926 | .2828 |
| miles to nearest bank used[1] | The number of miles from the firm's headquarters to the nearest and most frequently used bank office (branch). | 1448 | 8.236 | 3.272 |
| Log of Total Org Assets[1] | The natural log of the assets of the banking organization--the consolidated holding company. | 1448 | 15.454 | .1670 |
| at least one unit bank used[1] | A dummy variable if at least one of the bank credit providers is a unit bank | 1448 | .0672 | .0085 |
| at least one mbhc used[1] | A dummy variable if at least one of the bank credit providers is a member of a multi-bank holding company | 1448 | .7144 | .0156 |
| BHC assets * unit bank | The unit bank dummy variable interacted with the total assets of the bank holding company. This is to capture behavioral differences between unit banks that are members of small versus large bank organizations. | 1448 | .9556 | .1206 |
| ***Bank Market Variables*** | | | | |
| Herfindahl index-1998 100% bank | An index based on local market deposits of all banking offices located in the county for a rural area and MSA for an urban area. It is computed by summing the square of each bank's market share. The variable is continuous with a high number implying the market is concentrated--i.e., containing very few banks. | 3491 | .2090 | .0022 |
| Log of Avg Org Asset in MSA/county | This is the natural log of the average assets of all the banking organizations in the local market. | 3491 | 15.706 | .02909 |
| % mult bhc in msa/county | This is a percentage of multi-bank holding companies within the local bank market. | 3491 | .3483 | .0032 |
| % unit-banks in msa/county | This is a percentage of unit banks (single-office or no-branch banks) within the local bank market. | 3491 | .1444 | .0025 |

[1] For multiple banks this is an average of all banks, otherwise it is the primary bank

[2] Due to different number of observations for each dependent variable for conditional levels of debt, there are four subsets of means for the independent variables associated with each regression--total bank balances, primary bank balances, total bank limits, primary bank limits. Only total bank balances are reflected, since they are very similar to the remaining three. Full subsets will be furnished at the request of the author. The mean for the sample size N=3491 represents the mean for the variables in the selection (probit) regression.

## Table III A
## Total Banks and Primary Banks Regressions—Balances

| *VARIABLE DESCRIPTION* | Balance to Revenue LEVELS **Total Banks** | Balance to Revenue SELECT **Total Banks** | **Primary** Balance to Revenue LEVELS **Primary Banks** | **Primary** Balance to Revenue SELECT **Primary Banks** |
|---|---|---|---|---|
| **Firm Characteristics** | | | | |
| Firm age 0 - 7 years | 0.383 | -0.129 | 0.292 | -0.095 |
| | (0.157)** | (0.058)** | (0.140)** | (0.059) |
| Firm age 8 - 16 years | 0.024 | 0.091 | 0.027 | 0.083 |
| | (0.109) | (0.054)* | (0.119) | (0.056) |
| 1 - 3 employees | 0.302 | -0.888 | 0.126 | -0.791 |
| | (0.153)** | (0.049)*** | (0.170) | (0.051)*** |
| 4 - 10 employees | 0.041 | -0.338 | -0.064 | -0.337 |
| | (0.147) | (0.047)*** | (0.172) | (0.050)*** |
| minority owned | 0.577 | -0.201 | 0.785 | -0.160 |
| | (0.414) | (0.064)*** | (0.472)* | (0.065)** |
| D&B Credit Score | -0.002 | -0.001 | 0.000 | -0.002 |
| | (0.002) | (0.001) | (0.002) | (0.001)** |
| Bankruptcy in past 7 years | 0.052 | -0.323 | 0.033 | -0.060 |
| | (0.309) | (0.175)* | (0.220) | (0.153) |
| Profit per asset | -6.107 | -3.628 | -3.686 | -3.916 |
| | (3.436)* | (2.845) | (2.714) | (3.904) |
| 1998 sales>1997 sales | -0.176 | 0.183 | -0.252 | 0.100 |
| | (0.138) | (0.045)*** | (0.139)* | (0.046)** |
| Construction | -0.470 | 0.324 | -0.414 | 0.288 |
| | (0.147)*** | (0.070)*** | (0.136)*** | (0.073)*** |
| Manufacturing | -0.435 | 0.082 | -0.320 | 0.158 |
| | (0.159)*** | (0.076) | (0.156)** | (0.076)** |
| Trade | -0.373 | 0.101 | -0.191 | 0.091 |
| | (0.177)** | (0.054)* | (0.163) | (0.055)* |
| Real Estate & Transportation | -0.043 | 0.169 | 0.141 | 0.091 |
| | (0.200) | (0.076)** | (0.201) | (0.079) |
| **Source Bank Characteristics** | | | | |
| Years with bank[1] | 0.001 | | -0.010 | |
| | (0.004) | | (0.005)** | |
| miles to nearest bank used[1] | -0.000 | | -0.000 | |
| | (0.000) | | (0.000) | |
| Log of Total Org Assets[1] | 0.016 | | -0.001 | |
| | (0.017) | | (0.011) | |
| at least one unit bank used[1] | -0.511 | | -0.117 | |
| | (0.333) | | (0.633) | |
| at least one mbhc used[1] | -0.270 | | -0.318 | |
| | (0.251) | | (0.193)* | |
| Unit bank * BHC assets[1] | -0.020 | | -0.011 | |
| | (0.022) | | (0.056) | |

significant at 10%; ** significant at 5%; *** significant at 1%; standard errors in parentheses

[1] For multiple banks this is an average of all banks, otherwise it is the primary bank

## Table III A
## Total Banks and Primary Banks Regressions--Balances (Continued)

| *VARIABLE DESCRIPTION* | Balance to Revenue SELECT **Total** Banks | | **Primary** Balance to Revenue SELECT **Primary** Banks | |
|---|---|---|---|---|
| ***BANK MARKET CHARACTERISTICS*** | | | | |
| herfindahl index-1998 100% bank | -0.062 | | -0.249 | |
| | (0.195) | | (0.209) | |
| Log of Avg Org Asset in MSA/county | -0.081 | | -0.070 | |
| | (0.018)*** | | (0.018)*** | |
| % mult bhc in msa/county | 0.530 | | 0.571 | |
| | (0.144)*** | | (0.144)*** | |
| % unit-banks in msa/county | -0.565 | | -0.673 | |
| | (0.204)*** | | (0.216)*** | |
| Constant | 0.657 | 1.202 | 0.932 | 1.039 |
| | (0.252)*** | (0.311)*** | (0.355)*** | (0.318)*** |
| Observations | 3491 | 3491 | 3491 | 3491 |
| Standard errors in parentheses | | | | |

* significant at 10%; ** significant at 5%; *** significant at 1%

## Table III B
## Total Banks and Primary Banks Regressions—Limits

| *VARIABLE DESCRIPTION* | Limit to Revenue | Limit to Revenue | **Primary** Limit to Revenue | **Primary** Limit to Revenue |
|---|---|---|---|---|
| | LEVELS | SELECT | LEVELS | SELECT |
| **Firm Characteristics** | **Total** | **Total** | **Primary** | **Primary** |
| | Banks | Banks | Banks | Banks |
| Firm age 0 - 7 years | 0.367 | -0.173 | 0.294 | -0.222 |
| | (0.140)*** | (0.055)*** | (0.131)** | (0.059)*** |
| Firm age 8 - 16 years | 0.107 | 0.109 | -0.015 | 0.089 |
| | (0.124) | (0.051)** | (0.110) | (0.055) |
| 1 - 3 employees | 0.350 | -1.035 | 0.139 | -1.011 |
| | (0.155)** | (0.045)*** | (0.164) | (0.051)*** |
| 4 - 10 employees | 0.022 | -0.433 | -0.073 | -0.462 |
| | (0.140) | (0.043)*** | (0.172) | (0.048)*** |
| minority owned | 0.456 | -0.205 | 0.623 | -0.196 |
| | (0.359) | (0.059)*** | (0.436) | (0.066)*** |
| D&B Credit Score | -0.002 | 0.001 | -0.000 | 0.001 |
| | (0.002) | (0.001) | (0.002) | (0.001) |
| bankruptcy in past 7 years | 0.007 | -0.457 | 0.012 | -0.520 |
| | (0.309) | (0.178)** | (0.204) | (0.200)*** |
| Profit per asset | -0.130 | 0.399 | -0.126 | 0.475 |
| | (0.031)*** | (0.139)*** | (0.030)*** | (0.132)*** |
| 1998 sales>1997 sales | -0.268 | 0.204 | -0.236 | 0.142 |
| | (0.152)* | (0.043)*** | (0.144) | (0.046)*** |
| Construction | -0.488 | 0.379 | -0.329 | 0.365 |
| | (0.147)*** | (0.065)*** | (0.146)** | (0.071)*** |
| Manufacturing | -0.447 | 0.053 | -0.255 | 0.136 |
| | (0.162)*** | (0.073) | (0.167) | (0.078)* |
| Trade | -0.419 | 0.133 | -0.150 | 0.168 |
| | (0.176)** | (0.052)** | (0.158) | (0.056)*** |
| Real Estate & Transportation | -0.069 | 0.230 | 0.140 | 0.108 |
| | (0.194) | (0.071)*** | (0.193) | (0.079) |
| **Source Bank Characteristics** | | | | |
| Years with bank[1] | 0.005 | | -0.008 | |
| | (0.004) | | (0.004)* | |
| miles to nearest bank used[1] | -0.000 | | -0.000 | |
| | (0.000) | | (0.000) | |
| Log of Total Org Assets[1] | 0.011 | | 0.006 | |
| | (0.014) | | (0.016) | |
| At least one unit bank used[1] | -0.713 | | -0.190 | |
| | (0.288)** | | (0.591) | |
| At least one mbhc used[1] | -0.198 | | -0.379 | |
| | (0.211) | | (0.236) | |
| Unit bank * BHC assets[1] | 0.036 | | -0.006 | |
| | (0.019)* | | (0.053) | |

significant at 10%; ** significant at 5%; *** significant at 1%; standard errors in parentheses

[1] For multiple banks this is an average of all banks, otherwise it is the primary bank

## Table III B
## Total Banks and Primary Banks Regressions--Limits (Continued)

| *VARIABLE DESCRIPTION* | | Limits to Revenue SELECT **Total** Banks | | **Primary** Limits to Revenue SELECT **Primary** Banks |
|---|---|---|---|---|
| *BANK MARKET CHARACTERISTICS* | | | | |
| Herfindahl index-1998 100% bank | | -0.239 | | -0.407 |
| | | (0.184) | | (0.203)** |
| Log of Avg Org Asset in MSA/county | | -0.077 | | -0.073 |
| | | (0.017)*** | | (0.018)*** |
| % mult bhc in msa/county | | 0.494 | | 0.470 |
| | | (0.139)*** | | (0.147)*** |
| % unit-banks in msa/county | | -0.615 | | -0.586 |
| | | (0.193)*** | | (0.214)*** |
| Constant | 0.751 | 1.337 | 0.879 | 1.161 |
| | (0.253)*** | (0.294)*** | (0.414)** | (0.315)*** |
| Observations | 3491 | 3491 | 3491 | 3491 |
| Standard errors in parentheses | | | | |

* significant at 10%; ** significant at 5%; *** significant at 1%

[1] For multiple banks this is an average of all banks, otherwise it is the primary bank