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Abstract

In this study we examine the determinants of the fraction of bank borrowing to total borrowing in 749 4-digit SIC industries between 1982 and 1987. To our surprise, we do not find strong support for the view that banks provide loans to firms where problems of monitoring and verification of project quality between insiders and outsiders are greatest. We find some support for this monitoring view role of banks among larger borrowers with more than $1 million in assets. Consistent with Rajan's (1992) theory that firms with good growth opportunities use bank debt less and instead opt for arms-length debt, we find that larger firms which can most readily access arms-length debt do so when they are in industries which are viewed positively by the stock market. Also consistent with the idea that banks build relationships with firms only when they can be assured that such relationships are largely exclusive, we find that bank borrowing is greatest among firms with relatively little debt in their capital structures.

The Determinants of Corporate Bank Borrowing

While banks have long been a major source of capital for U.S. businesses, the factors which lead businesses to borrow from banks instead of the public bond market, private lenders or trade creditors are poorly understood. This issue is becoming increasingly important as banks lose market share to other providers of capital.[1] Economic theory suggests that banks have a comparative advantage as providers of capital because of their special knowledge of customers and ability to closely monitor users of funds on an ongoing basis [See Fama (1985)]. It may be that banks are losing market share because they have not pursued their comparative advantage in monitoring and building relationships or because these services are not sufficiently valuable in the marketplace.

It is important that we better understand the comparative advantage of banks in the lending arena. In the last several years, key policymakers have advocated making it easier for banks to provide loans under the logic that they form special relationships with businesses. These efforts have been particularly directed at encouraging banks to provide credit to small businesses. President Clinton, for example, has encouraged bank regulators to view non-collateralized, "character" loans in a positive light. But, if banks serve no special role as providers of capital then such efforts might be better directed elsewhere.

The view that banks play a special role in the economy because of their superior information about borrowers has been made in models developed by several authors including Diamond (1984). The argument is that financial intermediaries have a comparative advantage in lending to firms which are difficult for outsiders to evaluate and monitor. Such firms are likely to have unique intangible resources and be relatively small. Alternatively, banks may

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[1]Becketti and Morris (1992) show that bank loans as a fraction of all debt in the economy has been declining in the last decade.

withhold loans to businesses which have intangible resources because moral hazard problems in lending require that assets be collateralizable [Boot, Thakor and Udell (1991)]. This perspective clearly offers different predictions than the unique resources theory.

This study empirically evaluates the relative importance of various theories of the determinants of bank lending behavior. Our empirical analysis is restricted by the paucity of firm-level data on bank borrowing of U.S. firms in electronically readable form. Consequently, we resort to size-stratified, industry-level data provided by Dun and Bradstreet. This dataset aggregates information on the borrowing behavior of more than 1,000,000 businesses each year.

Our main results show that the determinants of bank borrowing depend critically on firm size. Among very small firms with assets of less than $500,000, banks largely provide credit to businesses with collateralizable assets. This does not fit the theory that banks have an advantage in lending to firms with intangible resources which are hard to observe at arms-length. Rather, it appears that banks screen smaller lenders and choose to lend almost exclusively to those with collateralizable assets. However, among larger firms this behavior is reversed. Banks concentrate lending to businesses with the most intangible resources. They lend relatively more to businesses which have unique assets and less tangible assets on their balance sheet. This change in borrower characteristics across firm size suggests that borrowing opportunities differ dramatically as firms grow. One model which predicts a pattern like this one is Diamond (1991). Diamond shows that good borrowers use public credit markets because they have strong reputations; that medium-quality borrowers resort to bank borrowing; while low-quality borrowers are sometimes denied even bank credit. This model can explain our results if size is a reasonable proxy for firm's quality and reputation in the marketplace.

The results obtained in this paper reinforce and expand the findings of an older literature which examines the stock market reaction to firms' announcements of new and renewed bank

loans. Mikkelson and Partch (1986), James (1987), Lummer and McConnell (1989), Wansley, Elayan and Collins (1991), and Slovin, Johnson and Glascock (1992) show that bank loan announcements can have positive effects on firm value. These studies are consistent with the hypothesis that banks provide special information production services to borrowers. At the same time, these results can be rationalized by other stories about the role that banks play as lenders. For example, the story that banks mainly play a screening role rather than a monitoring role would be consistent with the event study evidence. In addition, while these studies suggest that banks provide special monitoring services to borrowers which causes share prices to rise, they give little information about the types of firms which will benefit the most from bank's services. For example, it is not possible to analyze the effect of decisions not to obtain bank loans (or, alternatively, denial of credit) on firm value. Thus, our analysis of the determinants of bank borrowing behavior adds substantially to this empirical literature on the special role of banks as providers of capital.[2]

This paper is organized as follows. Section I develops the hypotheses to be tested. We contrast the unique resources view of lending to the asset based lending view. In Section II we present the dataset used in the empirical section and offer descriptive statistics about the industries in the sample. Section III presents our main results which show the dependence of bank borrowing on industry characteristics. Section IV concludes the paper and attempts to reconcile the results with previous theory in this area.

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[2]Two previous studies also analyze the determinants of bank borrowing. Hoshi, Kashyap and Scharstein (1993) analyze the determinants of the bank debt/total debt ratio of 112 publicly traded Japanese firms. They find that financial leverage (debt/assets) is positively related to the propensity to use bank debt while liquidity is negatively associated with the likelihood of using bank debt. Easterwood and Kadapakkam (1991) finds that the proportion of non-public long-term debt held by Fortune 500 firms cannot be accounted for by proxies for issue costs, agency costs and the value of liquidity. As we will discuss later, there are not well-established reasons why a very large firm such as those examined by these authors would borrow much from a bank in the first place.

I. The Role of Bank Lending in the Economy

A. Information Asymmetry and Bank Lending

A rich literature describes the comparative advantage of financial intermediaries as providers of capital. Diamond (1984), Ramakrishnan and Thakor (1984), Fama (1985), Boyd and Prescott (1986) and Seward (1990) show that banks can bring welfare improvements in an economy with informational asymmetries between borrowers and lenders that cannot be resolved by third parties. Banks have an informational advantage relative to other providers of capital because they can better observe firms' cash flows and project choices. Thus provision of bank loans certifies firm quality to a market lacking in information. This information asymmetry perspective on the role of banks leads to the first empirical hypothesis tested in this paper, namely that firms with activities which are more difficult to observe will be the most likely users of bank debt. Empirically, we measure observability of activities as *the fraction of fixed assets to total assets*. Firms with more fixed assets will tend to have activities which are more easily observable by outsiders. For example, it would be much easier to check that a firm builds a new factory with a loan than to check that it provides needed training to its workers (purchases an intangible asset) with the same loan.

Another measure of the unobservability of project choice is *firm size*. Firms which are small are typically more difficult for arms-length outsiders to observe because little information is produced about these firms. A bank, however, will typically have access to the management and premises of borrowers, regardless of their size. (See Fama (1985) and Slovin, Johnson and Glascock (1992)).

B.   *Information Asymmetry When Firms Can Build Reputations*

Diamond (1991) has shown that information asymmetry may lead to a more complex equilibrium when firms can build reputations in the credit market. In his model, the form of debt financing depends on information asymmetries between the lender and borrower. Both the degree of monitoring required for the project being funded and the riskiness of the project influence a firm's form of financing. Diamond relates the choice of debt instrument to these two factors in a multi-period model in which a borrower establishes a reputation. A borrower with a high credit rating chooses to borrow directly by issuing publicly-traded bonds or commercial paper because its reputation is well-established in the credit market. A borrower with an intermediate credit rating chooses to borrow from a bank to obtain monitoring services. Finally, a borrower with a low credit rating chooses a bank loan also but will be screened and may be rejected for the loan. If business prospects worsen, a higher-rated borrower will choose a bank loan instead of commercial paper, which could lead to an increase in the ratio of new loans to new commercial paper issues.

Diamond's model suggests that the relation between information asymmetry and the concentration of bank borrowing will depend on firm size. At the high end of the market, firms build strong reputations which allow them to tap cheap credit in external credit markets. Thus, they have little bank debt. Likewise, at the low end of the market, many firms are screened out of the capital markets by banks. These firms have little choice but to use self-financing, financing by "angels" or financing from suppliers and thus will have little bank debt. On the other hand, in the middle part of the market, firms which lack sufficient reputation to use the external credit market, but have demonstrably low credit risk for a bank, will use banks as a source of capital. Diamond's model has the empirical implication that the determinants of bank borrowing are size dependent. Specifically, firms which are more difficult to monitor will be more likely to be

denied credit when they are small. However, as they grow sufficiently in size to be able to access external credit markets, they will be more likely to borrow from banks when outsiders can't easily verify their quality. Thus, we hypothesize that firms with high concentrations of intangible assets will have low bank loan intensity when they are small, but high bank loan intensity as they grow in size. And when they become very large and well-known in the external credit market, they will have little bank debt at all.

Hoshi, Kashyap and Scharfstein (1993) present a model which leads to implications very similar to those of Diamond (1991) when managers maximize shareholder value. They predict that firms will use arms-length debt rather than bank debt when they have good investment opportunities because there is no need for bank monitoring to prevent poor project choice. Consistent with this prediction, they find that Japanese firms which use the most arms-length debt have less leverage and greater liquidity. Surprisingly though, they do not find that firms with higher Tobin's q have less bank debt. They show that this is theoretically possible given that manager incentives to invest in good projects vary as q changes. Given that most of the small firms that we analyze in this study have high if not total manager ownership, the relevant case of their model is that where managers choose value-maximizing projects. Their model then leads to the additional empirical implication that firms with low leverage should be the least likely to rely on bank borrowing-at least when arms length debt markets are accessible.

C.   Bank Oversight and Managerial Discretion

In a recent paper, Rajan (1992) has expanded the literature by explaining why some firms would find bank loans disadvantageous despite banks' ability to more closely monitor actions and performance. Banks gain specific information about borrower performance which cannot be transferred. This allows the firm to gain access to loans and gives the bank a measure of

monopoly power over the firm which allows it to gain rents in compensation for its efforts. A firm with projects involving low discretionary investment chooses bank loans because the different incentives from different debt instruments have little impact on project performance. If the level of discretionary investment is high, a firm may instead choose bond financing to avoid the costs arising from bank loans due to the rental rights that the bank gets.

Rajan's (1992) theory leads to some predictions opposite those of the earlier theory that banks provide the most capital in industries where close monitoring is needed because of informational asymmetries. Specifically, managerial discretion is likely to be most important in industries which are intangible resource intensive. Tangible resources require less ongoing management effort than intangible resources. Firms producing ideas (e.g. advertising agencies) or services need careful and continuous management supervision. Empirically then, we hypothesize that firms which are in industries with significant tangible resources will use relatively more bank debt than will firms in industries with significant intangible resources. Because discretionary investment in projects is important in research and development, we also hypothesize that firms with higher R&D expenditures will be less likely to use bank debt.

Finally, firms with good future opportunities are more likely to break away from banks to use external credit markets. This avoids some of the onerous effects of bank monitoring discussed by Rajan (1992). Like Hoshi, Kashyap and Scharfstein (1993), Rajan (1991) predicts that Tobin's q (a measure of future growth opportunities) should be inversely related to the use of bank debt over some region.

D. Bank Lending and Collateral

In contrast to the information asymmetry view, the model of Boot, Thakor, and Udell (1991) also shows that banks may not lend to firms with intangible assets. Tangible assets help a firm to

obtain bank loans because they serve as collateral. Collateral limits the moral hazard problem arising in bank lending when borrowers take unobservable actions after a loan is made which are not in the lender's interest. Collateral induces a borrower to choose the first-best action, because the probability of default and loss of the collateral decreases with the first-best action. Riskier borrowers pledge more collateral for their loans than do less risky borrowers because riskier borrowers have a greater incentive to choose a second-best action if they do not have collateral at stake. If private information on a loan's payoff, available to the borrower but not the lender also exists, then the use of collateral increases. The positive relationship between borrower riskiness and the use of collateral will depend on the extent of private information.

The theory of Boot, Thakor, and Udell suggests that the relationship between the concentration of bank debt and tangible assets, or potential collateral will be positive. A firm with collateral is more likely to obtain bank debt because it can pledge the collateral to avoid moral hazard problems with a bank loan. The collateral theory has predictions for this variable that are the opposite of the information asymmetry theory. Empirically, the information asymmetries theory predicts a negative relationship between tangible assets and bank debt, but the collateral theory predicts a positive relationship between tangible assets and bank debt. The collateral theory also suggests that riskier borrowers will be more likely to use collateral than less-risky borrowers. But because the presence of private information may either increase or diminish this relationship, the empirical implications are indistinct. To the extent that the collateral theory predicts a positive relationship between risk and collateral, and risk is negatively correlated with firm size, then empirically we would expect to see smaller borrowers using more collateral and more bank debt than larger borrowers.[3]

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[3]This prediction, too, differs from the information asymmetry theory, which would predict that small firms use little bank debt, while medium-sized firms use more bank debt if they have few collaterizable assets.

E.   Summary of Hypotheses

The above hypotheses offer competing empirical predictions about banks' comparative advantage in providing loans. In each model, the observability of a project is an important determinant of corporate bank borrowing. However, observability, measured by the proportion of fixed assets, is negatively related to bank debt in the information asymmetry theory, but positively related to bank debt in both the collateral theory and the bank oversight theory. Diamond's (1991) reputational-effects model predicts a more complex relationship, in which the empirical relation between observability and bank debt depends on firm size. Small firms which are difficult to monitor (have relatively greater intangible assets) will more likely be denied bank debt, while medium-sized firms will be more likely to obtain bank debt if they are difficult to monitor. Eventually, as a firm becomes large and establishes a reputation, it will rely more on public debt markets and less on bank debt.

Rajan's (1992) bank oversight theory suggests a number of other variables that will influence corporate bank borrowing. Firms with projects requiring a high level of discretionary investment and firms with good future opportunities avoid the costs of monitoring associated with bank loans by going to external debt markets. Empirically, we expect discretionary investment, measured by the ratio of R&D to firm sales, and future growth opportunities, measured by Tobin's q, to be negatively related to the intensity of borrowing from banks. A firm's leverage ratio also will help to determine corporate bank borrowing because a higher ratio likely reflects a higher number of sources of credit for the firm. The oversight theory suggests that banks tend to lend to firms when they can develop monopoly information rights related to that firm, so firms with higher leverage ratios and a greater number of sources of credit would be less likely to hold bank debt. Hoshi, Kashyap and Scharfstein (1993) make a similar prediction using different logic.

II. Empirical Approach

A. Data

We measure bank borrowing behavior and financial characteristics using industry-level summary information from 1982-1987 distributed by Dun and Bradstreet in their *InSight* Database. This data is partially listed in the widely used Dun and Bradstreet *Key Business Ratios* publication. We use 4-digit SIC level medians of balance sheet and income statement items provided by Dun and Bradstreet. These data summarize the financial condition of more than 1,000,000 proprietorships, partnerships and corporations in the United States. this data source is ideal for analyzing the relevance of informational and collateral issues in obtaining capital because the firms included in the Dun and Bradstreet database are typically small and privately held.

B. Descriptive Statistics

Table 1 shows the number of 4-digit SIC industries in the sample by size grouping and year. Dun and Bradstreet does not summarize data for some size classes when insufficient firms with data are available. Thus, we have more industries stratified at the $100,000 to $1 million level than at the less than $100,000 level. Likewise, the number of industries with firms with assets exceeding $1 million was smaller than the number where assets were between $100,000 and $1 million (586 vs. 883) in 1982. Table 1 shows that the number of industries covered in our sample rose slightly over time--especially in 1985.

Table 2 gives descriptive statistics for the variables used in our regression analyses. There is considerable cross-sectional variation in our measure of leverage (debt/assets) and our measure of bank borrowing intensity (bank debt/total liabilities). The median amount of bank debt relative to all liabilities in our sample was 10.2%. This indicates that the firms included in

the industry-level data generally tend to rely on non-bank sources of capital such as trade credit.

III. Results

We regress the fraction of bank debt to total liabilities on financial characteristics which relate to theories of bank borrowing. Because our data are in panel form for the 1982-87 period we use a fixed effects model with industry and year effects to minimize bias from omitted variables and sectoral changes in borrowing behavior. In addition, because some of the theories tested in this study condition their predictions based on firm size we estimate our regression model by size grouping of firms. Specifically, we present regressions for very small firms with less than $100,000 in assets; small firms with $100,000 to $1,000,000 in assets; and medium-sized firms with $1,000,000 - $5,000,000 in assets. Because Dun and Bradstreet provides very few financial breakdowns for firms with more than $5,000,000 in assets we exclude these larger firms from our analysis.

A.   Results for All Firms

Table 3 shows the results of our regressions. The first column gives the results based on aggregated, industry-level data for all firms in the D&B database, regardless of firm size. The coefficient on the debt/assets ratio is negative and statistically significant at the 1 percent level. This indicates that bank lending is concentrated in firms with less total debt than other firms. This finding is consistent with the prediction of Rajan (1992) that banks tend to lend to firms where they can serve as monopsonistic providers of capital. When a firm borrows relatively heavily, it is less likely that banks will be primary providers of credit. This finding also differs from that of Hoshi, Kashyap and Sharfstein (1991) for Japanese firms. The different institutional circumstances and size of firms in their study and ours may account for the disparity in results.

The coefficient on the fraction of fixed assets is positive and statistically significant (t=2.09). This indicates that bank lending is concentrated in firms with heavy amounts of collateralizable assets. This finding is *not* consistent with the theory that banks primarily lend to firms with intangible, hard-to-observe assets. A pure asymmetric information story of bank lending thus appears difficult to uphold empirically. This conclusion is consistent with results of Berger and Udell (1990) that over two-thirds of all commercial bank loans are backed by collateral.

The coefficients for R&D/sales are not statistically significant. This again suggests that banks do not concentrate their lending among firms with relatively unique, hard-to-monitor and observe assets. The coefficient on Tobin's *q* is statistically but is not economically significant in the first regression equation. This is consistent with Rajan's (1991) prediction that bank debt is costliest for firms with good investment opportunities which require exercise of management discretion. This suggests that firms with good investment opportunities are able to obtain capital elsewhere.

B.   *Size-stratified Results*

The second, third and fourth regression equations give results for subsamples based on firm size. In the second regression equation, we examine the determinants of bank lending intensity to firms which are very small (assets of $100,000 or less). These firms are likely to be run by a single owner-manager and thus have severe informational asymmetry problems.[4] In the third regression we examine the determinants of bank lending among firms with assets in the $100,000 to $1,000,000 range. Such firms are still likely to have a single owner-manager. But they

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[4]The quality of financial statements for these smaller firms may be particularly low. Such small firms also have the greatest risk of going out of business.

are also likely to be more seasoned and have more long-lived relationships with providers of capital. Finally, in the fourth regression equation we analyze bank lending to firms with $1 million to $5 million in assets. While these firms are small by the standard of public equity markets, they are large enough to be able to obtain capital through non-banks such as insurance companies, venture capitalists, etc. The adjusted R^2's for the regressions shown in Table 3 lie between 0.3 and 0.1, indicating that much but not the majority of inter-industry variation in bank loan intensity is explained by the regressors employed and year dummies (not shown).

Among very small firms (those with less than $100,000 in assets), we find a large negative coefficient on the debt/assets ratio (-0.38). This indicates that for every ten percent increase in the average firm's debt/asset ratio, there will be roughly a four percent reduction in the amount of bank debt relative to liabilities. Banks appear to be quite reluctant to lend to very small firms with access to other sources of capital. These very small firms are likely to be in the early stages of establishing a relationship with a bank that will hesitate to make the required informational investments in a borrower over which it does not have monopsony power as a supplier of capital. Firms with $100,000 to $1 million in assets and those with $1 million to $5 million in assets differ in that the trade-off in accessing bank capital with a high debt/assets ratio is lower. The coefficients on the debt/assets ratio in the third and fourth regression equations are -.12 and .03, respectively. The positive, although statistically insignificant, coefficient on the debt/assets ratio in the largest size subgroup supports the idea mentioned above that the difference in the results obtained in this study and Hoshi, Kashyap and Scharfstein (1993) may be due to the difference in size of firms examined. Specifically, their study and ours find the same positive sign on financial leverage among larger firms which can access public debt markets.

The importance of collateralizable assets in obtaining bank loans falls as firms become larger. The coefficient on the fraction of fixed assets for firms with less than $100,000 in assets

is economically and statistically significant (coefficient = 0.23, t-statistic = 5.61). This coefficient declines with size and actually becomes negative for firms with more than $1 million in assets. This suggests that the smallest firms in the economy tend to be screened out of the credit market altogether unless they can get a collateralized loan. Once businesses are large enough to access other sources of capital, bank lending tends to become concentrated among firms lacking collaterizable assets. These relatively large businesses are likely to have sufficiently long financial histories to justify a non-collateralized bank loan. At the same time, larger businesses with collateralizable assets may be able to get arms-length loans from finance companies or private placements.

We do not find that the ratio of R&D/sales is related to the concentration of bank loans. On the other hand, industry growth potential, measured by Tobin's q (the imputed market value of assets over the book value of assets), is positively related to the concentration of bank lending among very small firms and negatively related to the proportion of bank lending among larger firms with more than $1 million in assets. This indicates that smaller firms in industries with good future prospects are more likely to get a bank loan. On the other hand, larger firms with good future prospects appear more likely to resort to other sources of capital when they have good prospects. This is consistent with Rajan's (1992) prediction that bank loans are onerous for firms with good prospects that require managerial discretion. The dependence of the q effect on size again is likely to reflect the effect of screening among small firms. Very small firms appear to have little alternative but to take a bank loan when they have good future prospects. In contrast, larger firms have access to other sources of capital which they appear to use in order to avoid the disincentive effects of bank loans on managerial discretion.

IV. Conclusion

In this study we have examined the determinants of firm's use of bank debt to fund their operations. While the existing event study literature suggests that banks play a unique role as providers of capital, little is known about the types of firms which use bank debt the most. To our surprise, we do not find strong support for the predominant view that banks provide loans to firms where problems of monitoring and verification of project quality between insiders and outsiders are greatest. Proxies for the need for bank monitoring (levels of intangible assets and research & development spending/sales) are not consistently related to bank debt concentration as suggested by the theory. We find the strongest support for the special monitoring role of banks among larger firms with more than $1 million in assets. Bank debt as a percentage of all liabilities is somewhat greater for these larger firms with with a high proportion on non-collateralizable intangible assets.

Our results suggest that a more developed view of the costs and benefits of bank financing is needed. One such view, offered by Rajan (1992), argues that banks can overcome informational problems by building relationships with firms, but that these same relationships may become onerous and prevent managers from pursuing growth opportunities. Consistent with the idea that firms with strong growth opportunities use bank debt less and opt for arms-length debt, we find that larger firms which can most readily access arms-length debt do so when they are in industries which are viewed positively by the stock market (where Tobin's q is high). Also consistent with the idea that banks build relationships with firms only when they can be assured that such relationships are largely exclusive, we find that bank borrowing is greatest among firms with relatively little debt in their capital structures. Banks lend far less to firms which are heavily indebted, especially when they are small. This finding buttresses similar empirical conclusions about the importance of exclusivity in lending relationships for the

relaxation of credit constraints obtained by Berger and Udell (1993) and Petersen and Rajan (1993).

While this study sheds light on some existing theories of bank borrowing, the findings and our interpretations are subject to several important caveats. First, the proxies used for information asymmetry and asset collateralizability are crude and incomplete. We are also unable to directly observe some critical factors in borrowing from a bank such as the nature of firm's alternative sources of capital and the length of their relationships with banks. In addition, we do not know how many banks a firm borrows from. Some of these factors are more clearly explored in Petersen and Rajan (1992). Second, our empirical model does not fully operationalize concepts in the theoretical literature such as the idea of a firm's credit rating and past reputation as a borrower. Third, our analysis is carried out using industry-level rather than firm-level data. This inevitably causes loss of information which might better help us account for the cross-sectional variation in bank borrowing. We hope that some of these shortcomings can be addressed in future research in this area.

TABLE 1
Numer of Industries in the Sample by Year and Size Grouping.

Year	Assets < $5 million	Assets < $100,000	Assets > $100,000 & < $1 million	Assets > $1 million & < $5 million
1982	749	427	883	586
1983	750	424	883	596
1984	756	431	889	606
1985	760	397	915	639
1986	761	396	918	645
1987	760	395	916	642

TABLE 2
Descriptive Statistics for Main Variables Analyzed in Regressions. The sample consists of 749 4-digit SIC industries. Reported values are based on industry medians reported by Dun & Bradstreet without firm size stratification.

Variable	25th percentile	Median	75th percentile
Bank loans/liabilities	5.1%	10.2%	18.2%
Debt/total assets	20.6%	26.9%	35.2%
Fixed assets/total assets	23.5%	29.5%	35.7%
Tobin's q	0.78	0.91	1.11
R&D spending/sales	< 0.1%	0.3%	1.5%
Sales	$504,481	$1,000,000	$1,953,049

TABLE 3
Panel Regressions with Industry and Year Effects Predicting the Fraction of Bank Debt to Total Liabilities Among Size Groupings of Firms With Less Than $5,000,000 in Assets in the 1982-87 Period.

The table reports estimates of a fixed effects model with industry and year dummies. The unit of analysis is the median of a firm characteristic at the 4-digit SIC level computed by Dun and Bradstreet. The fraction of fixed assets is computed as plant, property and equipment divided by total assets. The debt/assets ratio is computed as total liabilities minus net worth divided by total assets. The R&D/sales ratio is the mean R&D/sales ratio for publicly held firms in the COMPUSTAT tape. The Tobin's q ratio is the median ratio of the market value of common equity plus the book value of debt divided by total assets of firms in the same industry on the COMPUSTAT tape. T-statistics are shown in parentheses. * means the coefficient is significantly different from zero at the 5% level or better.

	Assets < $5 million	Assets < $100,000	Assets > $100,000 & < $1 million	Assets > $1 million & < $5 million
Intercept	-.027 (-5.29)*	-.049 (-3.56)*	-.076 (-13.9)*	.087 (11.5)*
Debt/assets	-.067 (-6.85)*	-.379 (-10.7)*	-.123 (-9.79)*	-.030 (-2.54)*
Fraction of fixed assets	.035 (2.09)*	.232 (5.61)*	.197 (10.2)*	-.279 (-10.9)*
R&D/sales	.0048 (0.22)	-.011 (-0.21)	.020 (0.89)	-.037 (-1.18)
Tobin's q	-.0062 (-1.96)*	.019 (2.02)*	.0025 (0.66)	-.018 (-3.66)*
Adjusted R^2	0.23	0.26	0.17	0.15
Total observations	4535	2469	5404	3488

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