

Loan Officer Turnover and Credit Availability for Small Firms

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Abstract

This paper presents empirical evidence on the role loan officers play in facilitating small firm access to commercial bank loans. If loan officers use soft information (e.g., assessments of character, information from customers and suppliers) to make lending decisions that would not otherwise be made on the basis of hard information (e.g., tax returns or financial statements), then frequent turnover in loan officers should be associated with an adverse effect on credit availability. This relationship is confirmed empirically using survey data of U.S. small firms in 1995 and 2001, where loan officer turnover is positively related to the turndown rate on the most recent loan application. Although loan officer turnover could be influenced by the turndown rate (e.g., an owner changes banks and gets a new loan officer as a result of a recent turndown), its negative effect on credit availability persists under several different tests.

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Background

Small firm credit decisions are often made on the basis of hard information that is easily quantifiable such as audited financial statements, credit bureau information, or owner tax returns, and non-financial or soft information, which is more difficult to quantify such as assessments of the owner's character. The loan officer (or relationship manager) plays a key role in producing and interpreting soft information that should provide a more complete profile for credit decisions, especially for banks that rely on a relationship banking strategy (Berger and Udell, 2002). Without the soft information, many small firms could be denied credit because of their limited operating history or incomplete financial statements, especially for proprietorships or family-owned firms. In other words, the numbers or hard information may not tell the entire story. While there is some empirical evidence that non-financial information affects small firm bank credit availability (Cole, et al, 2004), the role of the loan officer in using soft information small firm credit decisions is largely unexplored.

The paper provides the first direct empirical evidence that shows an association between the role of loan officers and credit availability for small firms. Increased loan officer turnover could lead to decreased credit availability for small firms if the value of soft information in the credit decision is dependent upon the loan officer's interpretation. Small firm owners need to understand this relationship, especially in the United States where a consolidating banking industry has resulted in fewer community banks serving small firms, and an increased reliance by larger banks on credit-scoring techniques for small business loans - the antithesis of relationship banking.

Firm level data are used from the 1995 and 2001 Credit, Banks and Small Business surveys of U.S. small businesses that are members of the National Federation of Independent Business ("NFIB") to test what role of loan officers have on small firm credit availability. One of the survey

variables, a report of account manager turnover, is used as a proxy soft information production. Account manager turnover and proxies for hard information (e.g., length of banking relationship), along with control variable for firm risk characteristics (size, years in business) and market structure (merger activity, market size, and deposit concentration), are used to explain the most recent loan application outcome at commercial banks.

Relationship Lending: Theory and Evidence

Relationship lending in the literature generally refers to the process of collecting private, customer-specific information on potential borrowers, and then using it to engage in profitable banking activities (e.g., Boot 2000). Private information can include any information about the borrower not in the public domain and includes both ‘hard’ information (e.g. tax returns, customer lists) and ‘soft’ information (e.g. supplier comments about the borrower). Without the collection of private information, small firm access to credit markets would be limited because of their information opacity. Information opacity refers to the inability of lenders to completely understand the risk characteristics of the enterprise, possibly due to short-operating histories or lack of complete financial information. With this private information, banks will be able to write contracts that improve credit availability and/or terms that would not otherwise take place in its absence (Bhattacharya and Chiesa, 1995), Berlin and Mester, 1992, Rajan and Winton, 1995, and Petersen and Rajan, 1995).

Berger and Udell (2002) have refocused the definition of relationship banking on private information gathered by the lender and how this information is communicated within the organization. They describe relationship banking as a lending technology where the loan officer produces soft information, i.e., generally non-quantifiable information obtained through interactions with the firm, its

owner, suppliers, customers and the community. Soft information can include assessments of the owner's character, assessments of managerial ability, leadership characteristics, or ability to handle business adversity. Soft information has little value without the loan officer's interpretation because of the officer is the only person who can verify it (Stein, 2002). Hard information, however, such as financial statements, tax returns, and observations of banking activity (checking accounts, other financial service usage) can be easily transferred throughout the lending organization and can be analyzed independent of the gatherer, who could be the loan officer. Hard information can also include public information such as years in business or Dun & Bradstreet ratings. Thus, the loan officer adds much less value to hard information than to soft information.

Actual lending decisions by banks can rely on both hard and soft information. A relationship banking technology would rely on both hard and soft information, where the interpretation of the soft information by the loan officer is a critical input to the lending decision. A loan approval process that relies on credit scoring is a technology driven strictly by hard information (private and possibly public information such as the years in business), the antithesis of relationship lending. From the bank perspective, they have a choice of lending technology and must determine the tradeoffs in developing their lending strategy. Ultimately the ease and objectivity of credit-scoring versus more time intensive soft-information production have to be evaluated against the interest rates that can be charged and the bank's competitive position in their local market. From an owner perspective, they must choose the bank with a loan approval technology that maximizes their chance of obtaining a reliable funding source.

The use of soft information may not always be beneficial to small firms. A bank could decide the owner is not very adaptable in the face of a new competitive threat, and, despite

acceptable financial performance, turn down the next loan as a result of this soft information. The bank could decide to exit a particular line of business (e.g., auto leasing), in which case no amount of soft information would alter the lending decision. The bank could become aware of an impending change of control from an intergenerational transfer, a revised assessment of control systems that are inadequate to support growth (that could lead to fraud), or unexpected health problems for an owner that lacks management depth – all factors that might lead to turn down. And finally, some banks could turn down applications based on non-economic factors such as ethnicity or gender. While some empirical work supports the existence of these non-economic factors, more recent evidence suggests that pre-market forces play an important role in statistically observed discrimination (e.g. Cavalluzzo, et al, 2002, Wolken and Robb, 2002). Thus, the importance of soft information to small firms in the credit granting process is ultimately an empirical issue.

Empirical work related to the importance of banking relationships for small firms uses firm level data in both the United States and Europe, and focuses on the outcome of the most recent loan request and loan terms (rate and incidence of collateral), using length (or duration) of the banking relationship, the scale of the relationship (e.g., the number of lenders), and the scope of the relationship (e.g., the number of products used as the primary quantitative proxies for the strength of the relationship) as proxies for strength of banking relationships. This work has frequently found that both credit availability and loan terms improve as the length of the banking relationship increases (e.g., Berger and Udell, 1995; Degryse and Van Cayseele, 2000; Harhoff and Korting, 1998, Petersen and Rajan, 1994; and Cole, 1998). Increases in the scope of the relationship have been found in some cases to improve credit availability and loan terms, while increases in the scale of the relationship have been found to have an adverse effect (e.g., Cole, 1998, Harhoff and Korting, 1998; Degryse and Van

Cayseele, 2000).

None of the previous work cited specifically examines how soft information affects credit market outcomes for small firms. Harhoff and Korting (1998) find a negative relationship between trust and cost of borrowing and incidence of collateral, but no significant relationship with credit availability (although the variable has the correct sign). They note, however, that the measure of trust and outcomes may not be independent, which complicates the interpretation of their results. In other words, there is no way to determine if the high trust or quality rankings are the result of good credit quality or vice versa. Two recent papers examine the role of soft information in small firm lending decisions by focusing on the role of bank size (Cole et al, 2004 and Berger et al, 2004). Both papers conclude that larger banks are more likely to rely on hard information in lending decisions to small firms, but neither investigates the role of the loan officer in the lending decision.

This paper adds to the literature on relationship banking by providing some initial evidence on the role of the loan officer and soft information production in the credit granting process. The role of the loan officer is especially important in the United States because there are many community banks without the resources to construct sophisticated internal rating systems based on hard information, nor the management depth to transfer problem customers to a workout group under the supervision of another lending officer. If the value of soft information lies with the loan officer and cannot be easily transmitted within the organization (large or small), then an increase in loan officer turnover should have an adverse effect on credit availability, all else equal. The empirical tests will investigate how the outcome of the most recent loan application by independent samples of U.S. small firms in 1995 and 2001 is related to loan officer turnover experience (a proxy for soft information), length of time at the

primary bank (a proxy for hard information), and other control factors for firm risk characteristics and market structure.

Data and Methodology

The data used in this study come from the 1995 and 2001 Credit, Banks and Small Business Survey conducted by the National Federation of Independent Business (NFIB). The purpose of the surveys is to collect information about the credit market experiences of a random sample of the NFIB's 600,000 members. Details about the surveys can be found in (Dunkelberg, 1998 and Scott, Dunkelberg, and Dennis, 2003). In the 1995 survey, eighteen thousand questionnaires were sent in the initial mailing and 3,642 completed questionnaires were available after the second mailing for a response rate of 20 percent. In the 2001 survey, questionnaires were mailed to 12,500 firms and responses were received from 2,223 after two mailings for a response rate of 18 percent.

The Appendix compares the distribution of the 1995 and 2001 NFIB sample to the distribution of the 1993 and 1998 National Survey of Small Business Finance ("NSSBF") conducted by the Board of Governors of the Federal Reserve System. In both surveys the NFIB sample tends to be slightly larger than those in the NSSBF survey in terms of employees, sales, and assets. The 2001 NFIB survey tends to be a somewhat older, less urban sample than the 1995 survey.

The number of questionnaires used in the empirical analysis is restricted to those firms applying for a loan from a commercial bank, which reduced the 1995 survey sample to 2,300 observations and the 2001 survey sample to 1,126 observations. The restriction is made to eliminate potentially unwanted variation attributable to different dynamics in finance company, credit union or personal lending markets. The definition and summary statistics of the key variables used in each survey in this

study are shown in Table 1. Not all of the variables in Table 1 have 2,300 (1995 Survey) or 1,126 (2001 Survey) observations because the ‘no answer’ responses are excluded in the summary statistics.

Model and Variable Definitions

The general reduced form model underlying the empirical tests is:

$$(1) \quad \text{Credit availability} = f\{\text{soft information, hard information, control variables}\}.$$

The proxy for credit availability is the incidence of turndowns from the last loan application, which takes a value of 1 if the firm was turned down on its last loan application, and 0 otherwise. Seventeen (17) percent of the 1995 sample was turned down, as compared to 15.5 percent in the 1995 SSBF data used by Cole (1998), and approximately 12 percent in the 2001 NFIB sample.

The soft information production proxy is loan officer turnover, the number of different loan officers the owner was assigned in the three years prior to the survey at their primary bank. Half of the owners in the 1995 survey saw no change in their loan officer in the past three years, while over 45% had two to three loan officers, 3% dealt with four loan officers, and 1% dealt with five or more. The 2001 distribution was very similar, with 48 percent reporting one loan officer, 48 percent reporting two to three loan officers, three percent reported four loan officers, and one percent reported five or more. If the value of soft information production lies with the loan officer - and the loan officer uses this information to make lending decisions that would not otherwise be made on the basis of hard information - then an increase in loan officer turnover should be positively related to being turned down on the last loan application. The surveys also have two other variables that have been used as banking relationship proxies in previous empirical studies: length of time at the owner’s primary bank and the number of financial institutions used. Almost two-thirds have been with their primary bank for six or more years, but 11% had changed within the past two years in the 1995 survey; about 40 percent

reported never changing, while 10 percent reported changing in the past two years. Using this truncated distribution (i.e., all firms over five years take the same value of 6), the 1995 mean response is 5.1 years and 4.9 years for the 2001 survey. Length of time is negatively correlated with loan officer turnover in 1995 ($r = -.131$) but there is no association in 2001 ($r = .037$). The potential effect of this correlation is examined in one of the sensitivity tests.

Length of time at the primary bank can also capture the loan officer's success in collecting soft information over time and should vary inversely with the turndown rate on the most recent loan application. But length of time could also reflect the accumulation of hard information over time (e.g., audited financial statements) so that the variable by itself does not provide an unambiguous proxy for the value of soft information production. However, the effect of loan officer turnover may diminish with length of time as soft information becomes relatively less important as hard information accumulates. This migration of soft to hard information is examined in an alternate specification of the model.

The number of FIs (banks and non-banks) used to obtain financial services, is the other proxy for the strength of banking relationships. Forty six percent of the respondents use just one financial institution while 15 percent use four or more, with a mean of 2.6. The 2001 survey saw a reduction in the number of banks used, possibly because of the continuing consolidation of the banking system. Fifty-nine percent reported using just one bank and only three percent using four or more, with a mean value of 1.6.

The number of FIs used captures the incentives that a loan officer has to invest in the production of soft information. The use of more banks by a small firm increases the chance that any one bank investing in the production of soft information will not be able to realize an adequate rate

of return on their investment if the firm plays one bank off against another, similar to the free-rider problem identified by Cole (1998). Alternatively, owners could be using more than one bank if they do not want to concentrate all their borrowing with a large bank to avoid the hold-up problem or because a single bank does not have enough capital to meet their total borrowing needs. There is no a priori reason to believe that this effect has a time dimension. However, the relationship of loan officer turnover to the turndown rate may be complicated by multiple bank relationships. For example, if an owner is initially turned down and seeks a loan at another bank in their network of relationships, the effect of loan officer turnover at their primary bank on credit availability will be attenuated. This issue is also addressed as part of an alternate model specification in the sensitivity tests shown below.

Two categories of control variables are shown in Table 1: bank/market characteristics and firm characteristics. Bank/market characteristics include a Herfindahl index of deposit concentration computed by Metropolitan Statistical Area (MSA), rural location, which takes a value of 1 if the firm is located in a rural area (non-MSA) and 0 if in an MSA, and a 1/0 variable for whether the owner's primary bank merged within the past three years. Deposit concentration and market size are frequently used in the relationship empirical literature (e.g. Petersen and Rajan, 1995). These variables also control for important market structure influences that otherwise might be spuriously picked up by the relationship proxies. For example, if an increase in loan officer turnover is associated with a higher turndown rate, it could be attributed to credit administration or organizational complexity problems associated with the merger and not due to the change in loan officers. Although the survey includes information on bank size, it is the size of the current bank of

the respondent and not the bank that might have turned the firm down in its last attempt.

Consequently, bank size is not included as a control variable.

Four firm characteristics are included in the model: size, years in business, sales growth, industry, and organizational form. Firm size and years in business serve in dual roles. The first role is to serve as a rough credit risk proxy, where larger, older firms presumably are less risky and obtain better outcomes. They also serve as measures of information opacity, where smaller, younger firms are assumed to have more information problems and therefore benefit more from stronger banking relationships. The effect of years in business and FTE employees as sources of public information on credit market outcomes is expected to decline over time as little new information is added after the firm becomes a viable entity, and thus the log of each variable is used (e.g., see Berger and Udell, 1995, Cole, 1998). Other control variables include sales growth is the owner's report of annual average growth over the past three years, one-digit SIC codes and form of business are included as categorical variables with non-corporate businesses (partnerships and proprietorships) and retail firms the omitted categories.

Hypotheses and Research Design

Logistic regression is used to estimate the following reduced form specification of the general model in equation (1):

$$(2) \quad \text{Turndown}_i = \alpha_0 + \alpha_1 \text{Loan officer turnover} + \alpha_2 \text{Length of time at primary bank} + \alpha_3 \text{No. of FIs used} + \\ \alpha_4 \text{Primary bank recently merged} + \alpha_5 \text{Rural location} + \alpha_6 \text{Herfindahl} + \alpha_7 \text{Years in business} + \alpha_8 \text{FTE} \\ \text{employment} + \alpha_9 \text{Sales Growth} + \alpha_{10} \text{Form of business} + \alpha_{11} \text{Industry} + \varepsilon_i$$

The primary null hypothesis is $\alpha_1 = 0$. If the null hypothesis is rejected and $\alpha_1 > 0$, then the positive effects of soft information production by loan officers dominate the experience of small firms in

these surveys. However, if the null hypothesis is rejected and $\alpha_1 < 0$, then the negative effects of soft information production dominate the experience of small firms in these surveys.

The other specification of the model tests for the time dimension of the loan officer's investment in soft information:

$$(3) \text{ Turndown}_i = \alpha_0 + \alpha_1 \text{Loan officer turnover} \times \text{long time at primary bank} + \alpha_2 \text{Loan officer turnover} \times \text{short time at primary bank} + \alpha_3 \text{No. of FIs used} + \alpha_4 \text{Primary bank recently merged} + \alpha_5 \text{Rural location} + \alpha_6 \text{Herfindahl} + \alpha_7 \text{Years in business} + \alpha_8 \text{FTE employment} + \alpha_9 \text{Sales growth} + \alpha_{10} \text{Form of business} + \alpha_{11} \text{Industry} + \varepsilon_i$$

The interaction terms are defined as follows: long time at primary bank takes a value of 1 if length of time at primary bank is 5 or more years; and short time at primary bank takes a value of 1 if length of time at primary bank is less than 5 years. The expectation is that α_1 and $\alpha_2 > 0$ and $\alpha_1 < \alpha_2$, i.e., longer time with the primary bank should result in a weaker soft information effect, reflecting the migration of soft to hard information. A Wald linear restriction test is used to test the null hypothesis that $\alpha_1 = \alpha_2$.

The primary estimation challenge is the potential lack of independence (or endogeneity) between loan officer turnover and the turndown rate, which complicates the interpretation of α_1 in equation (2). This lack of independence may arise from several sources. First, owners may successfully lobby a loan officer to approve their loan request, when all other information would suggest a rejection of their loan request, possibly because the loan officer benefits from making the loan while the lending institution would not (e.g., loan officer bonuses based on loan volume without having an adequate stake in the ownership of the bank). Another example of endogeneity would be if risky firms that had their most recent loan request rejected were moved to another loan officer with less experience or to a loan workout area under the supervision of a different loan

officer. This outcome may be more likely at larger banks with the capacity to support loan workout groups, but less likely at community banks where there may be only one lending officer. A final example is where a firm rejected in their most recent request moves to another bank, again leading to a situation where denial leads to higher loan officer turnover and the destruction of soft information.

Three approaches are used to mitigate the bias from estimating a reduced form model shown in equation (2). The first approach is to use a sub-sample of firms that do not change banks to control for the situation where poor credit availability leads to higher turnover when a firm leaves to search for a new bank. The second is to find a set of instruments for loan officer turnover that is strongly correlated with the soft information proxies but not correlated with the error terms in equation (2). If the structural model is not identified, then it is well known that the estimation of the reduced form model in (2) gives inconsistent estimates of α_j because loan officer turnover is correlated with the error term (see Greene, 2002). The last approach is to test whether the coefficient on loan officer turnover is a function of owner risk (size or years in business). The problem addressed here is whether younger, smaller firms are more likely to experience higher turnover because they are shifted to workout groups within the banking organization. If so, the coefficient on turnover would be higher for these younger firms than for older firms.

Analysis of Results

Reduced Form Estimates

The reduced form estimate of equation (2) is presented in Table 2A, column (1) for 1995 and Table 2B, column (1) for 2001. The coefficient on loan officer turnover is significant and positively

related to the turndown rate as expected in each survey. Thus, the net effect of loan officer turnover, the proxy for soft information acquisition, is positive, with firms experiencing lower turnover having a lower change of a turndown after controlling for firm risk and market structure. In addition, the significance of the turnover effect is independent of the length of time at the current bank, which has a negative and significant association with the turndown rate. The other relationship strength variable, number of financial institutions used, is not significantly associated with the turndown rate in either survey.

Changes in loan officer turnover appear to have a meaningful economic effect as well, but care must be taken in quantifying this effect, especially if the coefficient on turnover is biased because turnover is not independent of credit availability. An increase in loan officer turnover from one (no change) to five or more (a four category change) increases the (log) odds of turndown by 0.21 and 0.13 in 1995 and 2001, respectively. These marginal changes are approximations estimated by multiplying the change in the independent variable \times coefficient \times $p(1 - p)$ where p is the mean of the dependent variable reported in Table 1.

The estimate of equation (3), shown in column (2) in Tables 2A for 1995 and 2B for 2001, reject the null hypothesis that the loan officer turnover effect on the turndown rate is independent of the length of time at the bank. The longer the relationship at the owner's primary bank, the less the effect loan officer turnover has on credit availability. The differences in these coefficients are statistically significant for both survey years. This outcome is consistent with the migration of soft information to hard information over time, reflecting a growing importance of hard information relative to soft information in credit granting decisions.

The primary firm risk factors, years in business and size also vary as expected. The chance of a turndown decreases with increases in firm age and full-time equivalent employment – an outcome also found by Cole (1998) and others. However, the negative association with years in business is not significant in 2001. Firms in rural locations are less likely to experience a turndown, but those in more concentrated deposit markets are more likely, although the latter effect is only significant in 2001.

What do these results mean for a small firm owner? Not surprisingly, older, larger firms are less likely to be turned down in their most recent loan request, as are those firms located in non-metropolitan areas. So how do younger firms offset this inherent disadvantage due to their information opacity or location – assuming that they cannot change these factors? First, a longer time at their primary bank allows the accumulation of hard information that decreases the chance of a being turned down. And second, owners at banks with low account manager turnover are less likely to be turned down on their most recent loan request, although the magnitude of this benefit decreases with the length of time the owner has spent with their current bank.

Sensitivity Tests of Baseline Results

The first test is shown in column (3) in Table 2A and 2B using the sample that is limited to those firms that did not change banks. This restriction limits the loan officer turnover to those cases where the last loan attempt was made at the current principal financial institution. With this restriction, instances where the owner changes banks and gets a new loan officer are eliminated thus providing a purer measure of turnover. This test reduces the sample size to 1,425 in the 1995 Survey and 849 in the 2001 Survey. The coefficient on loan officer turnover remains positive, significant, and of approximately the same magnitude compared to the baseline coefficient in both surveys. If turnover

was largely driven by owners switching banks who were turned down, the coefficient on the turnover variable should be insignificant or at least have a lower magnitude.

For the second test, a set of instruments is used to create predicted values for loan officer turnover. These instruments include the occurrence of a merger, region, market size, MSA employment, and deposit concentration. The instrumental variable (“IV”) estimates are presented in column (4) of Tables 2A and 2B. The coefficient on loan officer turnover is positive for both surveys, but it is only significant in 1995 survey. The mixed IV results may be partially attributable to the low variability of loan officer turnover instruments. For example, the standard deviation of loan officer turnover in the 1995 survey is .38, but the standard deviation of the IV predicted loan officer turnover is .08. A similar pattern is observed for the 2001 survey. Still, both sensitivity tests strongly suggest that endogeneity, if present, has a minor effect on the basic conclusion of the analysis – credit availability increases with less loan officer turnover.

The third test addresses the issue of whether turnover is a function of firm risk. This phenomenon would occur if higher risk firms are transferred to a loan workout group as the result of an internal rating change. Although the survey does not include any data on bank internal ratings, a set of interactive variables with loan officer turnover is created based on years in business and size of the firm. These interactive variables are: loan officer turnover x young firms, loan officer turnover x mid-age firms, and loan officer turnover x old firms for years in business and loan officer turnover x small firms, loan officer turnover x mid-size firms, and loan officer turnover x large firms based on full-time equivalent employment. The years in business and size categories are defined in Table 3A for 1995 and 3B for 2001 and each takes a value of 1 if the firm falls within the range and 0 otherwise. Younger, smaller firms are more likely to encounter financial distress and thus be more likely candidates to be

shifted to workout groups. The expectation is that the coefficients on the interactive terms for younger, smaller firms will be positive, while the coefficients on the interactive term for older, larger firms will be zero or, if positive, less than the coefficient for the younger firms. The estimates of the interactive terms with years in business are shown in column (1) of Tables 3A and 3B, while the estimates of the interactive terms with employment are shown in column (2). A Wald linear restriction test is used to test the null hypothesis that all of the interactive coefficients are equal and is presented at the bottom of the tables.

In 1995, younger, smaller firms have a significantly higher chance of reporting increased turnover compared to old firms. However, older, larger firms still have a significantly worse experience accessing credit if loan officer turnover is high in 1995. The fact that old and large firms still have a significant loan officer turnover coefficient is consistent with the strength of soft information production on credit availability – the effect is just less than it is on smaller, younger firms. In 2001, no significant difference in turnover is found by years in business or firm size. Taken together, this alternative specification does not provide clear evidence that loan officer turnover results from the shifting of risky small firms to loan workout groups under the supervision of a different loan officer.

The fourth and final test examines whether multiple banking relationships may complicate the interpretation of loan officer turnover on the turndown rate as noted above. To address this issue, another set of interactive variables are created for loan officer turnover, loan officer turnover x uses 1 FI (financial institution) and loan officer turnover x uses more than 1 FI, where uses 1 FI takes a value of 1 if the owner uses only one financial institution and 0 otherwise and uses more than one FI takes a value of 1 if the owner uses more than one financial institution. These estimates, presented in column (3) of

Tables 3A and 3B, show no significantly different effect on loan officer turnover by the number of financial institutions used.

Summary and Conclusions

This paper investigates how credit availability is affected by loan officer turnover, a proxy for the production of soft information by loan officers. Soft information refers to non-quantitative information such as assessments of the owner's character, reputation, or management ability that can be used as input to the credit approval process. In contrast, many credit decisions rely on hard information such as tax return data or other financial ratios that are amenable to statistically-driven loan approval processes such as credit scoring. Loan officers add value to soft information because it cannot easily be transmitted within a banking organization. With hard information, loan officer adds less value because the interpretation can be made independent of the person who may gathers it.

Soft information can be a critical input to the credit decision for many small, information opaque firms, especially those without a sufficiently long operating history or those with substantial intangible assets. For these firms, loan approvals based only on hard information could limit their ability to obtain credit. Soft information obtained by the loan officer is likely to increase credit availability, but there are instances where it may not (e.g., the officer learns about internal control problems at the firm) and result in decreased credit availability. Thus, the benefit of soft information to small firms is an empirical issue.

A survey variable is used from a sample of United States small businesses in 1995 and 2001 that addresses the loan officer's role in producing soft information. This proxy, the number of loan officers the small firm had in the past three years, is related to the outcome of the most recent loan application. Reduced loan officer turnover is associated with lower turndown rates and has a time

dimension, with the effect of higher loan officer turnover weakening, the longer the owner remains at their primary bank. This weakening turnover effect could reflect the migration of soft information to hard information in the lending decisions. Although the results may be biased because loan officer turnover is not completely independent of the credit decision, estimates from a sub-sample of firms that have not changed their bank, instrumental variable estimates of loan officer turnover, and interactive coefficients that test for differential turnover effects by years in business and size of the firm all continue to document a persistent loan officer turnover effect.

Overall, the results are consistent with the idea that the value of relationship banking resides as much with the loan officer's production of soft information as the bank's accumulation of hard information. What do these results mean for owners of small firms? First, they should develop an understanding of the costs and benefits of relationship banking. Credit-scoring technologies may give quick answers to loan requests at a new bank, but the outcome could change in a future application if key financial ratios changes. Second, soft information matters for small firms, especially those with a short operating history or with few tangible assets, whereas older, larger firms may benefit more from a credit-scoring technology based on traditional financial ratios. Third, not all banks will choose to be relationship lenders. Owners of small, information opaque businesses should seek banks where there is a history of stability in loan officers and local decision-making. For many firms, this recommendation may mean choosing a locally owned, community bank that focuses on relationship lending. And finally, if the characteristics of the business are such that soft information is important, the earlier the choice of a relationship bank is made the better, because the length of time at a bank is also related to credit decisions.

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Appendix

Selected Demographic Characteristics of National Federation of Independent Business (NFIB) Credit Banks and Small Business Survey versus National Survey of Small Business Finance (NSSBF) Respondents^a

Form of Business	NFIB^b		NSSBF^c		Years in Business	NFIB		NSSBF	
	1995	2001	1993	1998		1995	2001	1993	1998
Proprietorship	31	26	44	43	0-4	15	11	15	15
Partnership	6	8	8	8	5-9	21	14	27	28
Corporation	42	40	28	20	10-14	19	16	19	19
S-Corporation	21	24	20	28	15-19	14	14	14	14
No answer	1	3			20-24	11	13	9	9
					25 or more	19	28	15	15
					No answer	1	5		
Full Time Equivalent Employees									
One	7	7	39	18	Industry				
2-4	30	29	29	39	Construction/mining	13	15	14	14
5-9	27	25	15	23	Manufacturing	12	11	8	8
10-19	17	17	8	11	Transportation	3	4	3	3
20-49	11	12	5	6	Wholesale	6	10	8	8
50-99	3	4	1	2	Retail	21	20	22	22
100-499	2	2	1	1	FIRE	7	6	7	7
500 or more	*	*			Business services	17	17	22	21
No answer	3	5			Professional services	8	8	16	17
					Agriculture	8	5		
					No answer	4	4		
Gross sales (\$000)									
Under 25	2	3	13	11	Region				
25-49	2	1	8	9	Northeast	15	15	23	22
50-99	6	4	12	13	Midwest	34	39	24	24
100-249	18	12	24	25	South	27	24	29	29
250-499	18	14	15	16	West	26	22	24	24
500-999	16	15	11	12	No answer	0	*		
1,000-2,499	15	14	9	8	Urban Location				
2,500-4,999	7	7	4	4	Yes	65	60	79	79
5,000-9,999	5	4	2	2	No	35	40	21	21
10,000 or more	4	6	2	2	No answer	*	*		
No answer	8	21							

^a The NFIB data are unweighted, while the NSSBF data are weighted to reflect the population proportions.

^b Percent of total responses reported

^c No answer responses for empirically estimated in the NSSBF data but not for the NFIB data.

* Less than .5%

Table 1

Variable Definition and Summary Statistics of NFIB Survey Samples

Variable	Definition	1995 Survey			2001 Survey		
		Applied for Loan ^a			Applied for Loan ^a		
		Mean	Std. Dev.	No. of Obs.	Mean	Std. Dev.	No. of Obs.
Soft information production proxy							
Loan officer turnover	"Within the last 3 years, how many different account managers have you dealt with at your primary financial institution?" '1' = one; '2' = two '3' = three; '4' = four, '5' = five or more	1.73	0.89	2,268	1.74	0.92	1,088
Other relationship proxies							
Length of time at bank	"When was the last time you changed principal financial institutions?" '1' = within the last year; '2' = 1-2 years ago; '3' = 2-3 years ago; '4' = 3-4 years ago; '5' = 4-5 years ago; and '6' = more than 5 years ago	4.97	1.60	2,279	4.90	1.33	1,078
No. of FIs used	Total financial institutions used to obtain financial services	1.88	1.17	2,285	1.58	0.86	1,106
Credit availability proxies							
Turndown	1 if the respondent reported that they did not get a loan the last time that they tried at a commercial bank	0.17	0.38	2,330	0.12	0.32	1,126
Bank/market characteristics							
Herfindahl index ^b	Herfindahl-Hirshman index of deposit concentration computed by county	2,202	1,126	2,328	2,374	1,403	1,121
Rural location	1 if the firm is located in a MSA area (0 = non-MSA area)	0.63	0.48	2,330	0.59	0.49	1,126
Bank recently merged	"During the last 3 years, was your principal financial institution bought out or absorbed by another?" '1' = Yes	0.27	0.44	2,287	0.35	0.48	1,126
Firm characteristics							
Years in business	Years in business	15.3	12.7	2,314	18.6	13.6	1,096
FTE employees	Full-time equivalent employees	17.2	45.3	2,330	19.8	58.1	1,088
Sales growth	"Which category best describes your average annual change in your gross sales over the past 3 years?" '1' = Declined more than 5%; '2' = No change (-5% to +5%); '3' = Grew 6% - 10%; '4' = Grew 11% to 20%; '5' = Grew 20% or more	2.80	1.23	2,210	2.72	1.17	1,075
Non-corporate business	1 if organized as a proprietorship or partnership	0.34	0.47	2,298	0.30	0.23	1,118
S-corporation	1 if organized as a S-corporation	0.22	0.41	2,298	0.27	0.45	1,118
Corporation	1 if organized as a corporation	0.45	0.50	2,298	0.42	0.49	1,118
Agriculture	1 if a firm's primary activity is agriculture	0.10	0.30	2,229	0.08	0.27	1,118
Construction	1 if a firm's primary activity is construction	0.14	0.35	2,229	0.15	0.35	1,118
Finance	1 if a firm's primary activity is financial services	0.06	0.24	2,229	0.06	0.24	1,118
Manufacturer	1 if a firm's primary activity is manufacturing	0.14	0.35	2,229	0.13	0.34	1,118
Professional services	1 if a firm's primary activity is professional services	0.05	0.22	2,229	0.06	0.25	1,118
Retail	1 if a firm's primary activity is retail	0.21	0.41	2,229	0.20	0.40	1,118
Non-professional services	1 if a firm's primary activity is non-professional services	0.19	0.40	2,229	0.16	0.36	1,118
Transportation	1 if a firm's primary activity is transportation	0.04	0.18	2,229	0.04	0.19	1,118
Wholesale	1 if a firm's primary activity is wholesale	0.07	0.26	2,229	0.12	0.33	1,118

^a The sample is limited to those firms that applied for a loan at a commercial bank

^b The Herfindahl Index for the 1995 survey is computed using the Federal Deposit Insurance Corporation's June 1994 Summary of Deposits Report; the 2001 survey uses the June 2001 report.

Table 2A
Logistic Regression Results for Loan Application Turndown Rate as the Dependent Variable

Explanatory Variables	1995 Survey							
	Baseline Results		Loan officer turnover coefficient varies with time at bank		Sample limited to those that did not change banks		Instrumental Variables for Loan officer turnover	
	(1)		(2)		(3)		(4)	
	Coeff.	Std Err	Coeff.	Std Err	Coeff.	Std Err	Coeff.	Std Err
Loan officer turnover ^b	0.382	0.035 ***			0.408	0.089 ***	2.176	0.704 ***
Turnover x Long time at bank ^c			0.320	0.068 ***				
Turnover x Short time at bank			0.454	0.070 ***				
Time at bank ^b	-0.123	0.063 ***					-0.144	0.035 ***
No. of FIs used ^b	0.059	0.060	0.072	0.060	0.070	0.091	0.061	0.059
Bank recently merged	0.067	0.134	0.098	0.134	0.015	0.198	-0.484	0.249 *
Herfindahl index	0.172	0.658	0.170	0.656	0.514	0.846	0.722	0.664
Rural location	-0.702	0.157 ***	-0.706	0.157 ***	-0.770	0.217 ***	-0.644	0.159 ***
Years in business ^b	-0.596	0.089 ***	-0.607	0.089 ***	-0.604	0.122 ***	-0.551	0.088 ***
FTE employees ^b	-0.185	0.070 ***	-0.184	0.070 ***	-0.192	0.099 *	-0.182	0.070 ***
Sales growth	-0.249	0.052 ***	-0.247	0.052 ***	-0.316	0.077 ***	-0.233	0.051 ***
Corporation	-0.148	0.128	-0.151	0.127	0.019	0.175	-0.135	0.127
Agriculture	-0.337	0.264	-0.339	0.263	-0.246	0.381	-0.301	0.262
Construction	0.050	0.215	0.033	0.214	-0.107	0.307	0.021	0.213
Finance	-0.096	0.288	-0.128	0.287	-0.240	0.432	-0.119	0.284
Manufacturing	0.015	0.221	0.020	0.220	0.284	0.297	-0.039	0.219
Professional services	-0.063	0.291	-0.087	0.291	0.228	0.402	-0.066	0.290
Non-professional services	0.513	0.178 ***	0.497	0.177 ***	0.566	0.245 **	0.482	0.177 ***
Transportation	0.572	0.331 *	0.521	0.330	0.846	0.420 **	0.429	0.329
Wholesale	0.009	0.281	-0.005	0.280	0.167	0.372	-0.070	0.279
Number of observations	2330		2330		1,425		2,330	
-2 Log likelihood	1889.5		1908.0		1037.9		1922.8	
Pseudo-rsquared	0.096		0.089		0.082		0.083	

^a No answer categories for the independent variables were included in the estimation but are not reported. The significance levels at the 1%, 5%, and 10% levels are denoted by ***, **, and *.

^b Years in business and FTE employees are entered in log form.

^c The chi-square statistic for the null hypothesis of equal coefficients for the 1995 survey is 4.98 with p=.03.

Table 2B
Logistic Regression Results for Loan Application Turndown Rate as the Dependent Variable

Explanatory Variables	2001 Survey							
	Baseline Results		Loan officer turnover coefficient varies with time at bank		Sample limited to those that did not change banks		Instrumental Variables for Loan officer turnover	
	(1)		(2)		(3)		(4)	
	Coeff.	Std Err	Coeff.	Std Err	Coeff.	Std Err	Coeff.	Std Err
Loan officer turnover ^b	0.317	0.110 ***			0.339	0.125 ***	1.723	1.195
Turnover x Long time at bank ^c			0.621	0.342 *				
Turnover x Short time at bank			1.248	0.375 ***				
Time at bank ^b	-0.215	0.064 ***					-0.207	0.065 ***
No. of FIs used ^b	-0.083	0.129	-0.0693	0.12771	-0.067	0.161	-0.060	0.128
Bank recently merged	-0.029	0.208	0.005	0.206	-0.126	0.263	-0.314	0.353
Herfindahl index	1.483	0.669 **	1.455	0.666 **	1.303	0.868	1.713	0.673 **
Rural location	-0.529	0.228 **	-0.553	0.227 **	-1.024	0.302 ***	0.501	0.241 **
Years in business ^b	-0.301	0.209	-0.301	0.210	-0.539	0.234 **	-0.367	0.211 *
FTE employees ^b	-0.296	0.105 ***	-0.312	0.106 ***	-0.349	0.130 ***	-0.353	0.107 ***
Sales growth	-0.007	0.078	0.005	0.077	-0.080	0.099	-0.020	0.078
Corporation	-0.131	0.211	-0.109	0.210	-0.114	0.257	-0.048	0.212
Agriculture	-0.910	0.481 *	-0.911	0.479 *	-0.945	0.550 *	-0.875	0.480 *
Construction	-0.204	0.312	-0.237	0.311	-0.708	0.436	-0.273	0.316
Finance	-1.150	0.563 **	-1.132	0.559 *	-0.800	0.594	-1.170	0.561 **
Manufacturing	-0.055	0.324	-0.069	0.322	0.063	0.380	-0.049	0.325
Professional services	-0.283	0.437	-0.286	0.433	-0.054	0.485	-0.351	0.437
Non-professional services	-0.460	0.306	-0.466	0.304	-0.577	0.391	-0.515	0.311 *
Transportation	0.232	0.499	0.179	0.495	0.159	0.602	0.168	0.499
Wholesale	-1.325	0.472 ***	-1.350	0.473 ***	-1.053	0.531 **	-1.401	0.473 ***
Number of observations	1126		1126		849		1,126	
-2 Log likelihood	744.6		749.8		508.4		734.7	
Pseudo-rsquared	0.066		0.062		0.065		0.066	

^a No answer categories for the independent variables were included in the estimation but are not reported. The significance levels at the 1%, 5%, and 10% levels are denoted by ***, **, and *.

^b Years in business and FTE employees are entered in log form.

^c The chi-square statistic for the null hypothesis of equal coefficients for the 2001 survey is 8.39 with p=.00.

Table 3A

Logistic Regression for Loan Application Turndown Rate: Sensitivity of Loan Officer Turnover to Years in Business, FTE Employment and Number of FIs Used^a

	1995 Survey					
	Years in Business Test		FTE Employment Test		No. of Banks Used Test	
	(1)	(2)	(3)	(1)	(2)	(3)
<u>Independent variables</u>	<u>Coeff.</u>	<u>Std Err</u>	<u>Coeff.</u>	<u>Std Err</u>	<u>Coeff.</u>	<u>Std Err</u>
Loan officer turnover x Young firm (<5 years) ^b	0.667	0.083 ***				
Loan officer turnover x Mid-age (5-15 years) firm	0.347	0.080 ***				
Loan officer turnover x Old (>15 years) firm	0.241	0.069 ***				
Loan officer turnover x Small (<3 FTE) firm ^c			0.507	0.079 ***		
Loan officer turnover x Mid-size (3-6 FTE) firm			0.369	0.071 ***		
Loan officer turnover x Large (>6 FTE) firm			0.306	0.076 ***		
Loan officer turnover x Use 1 FI ^d					0.321	0.076 ***
Loan officer turnover x Use more than 1 FI					0.362	0.066 ***
Time at bank ^b	-0.130	0.035 ***	-0.122	0.035 ***	-0.127	0.035 ***
No. of FIs used ^b	0.053	0.060	0.055	0.060		
Bank recently merged	0.056	0.134	0.080	0.134	0.081	0.134
Herfindahl index	0.217	0.654	0.169	0.660	0.144	0.656
Rural location	-0.731	0.157 ***	-0.700	0.157 ***	-0.699	0.157 ***
Years in business ^b			-0.607	0.089 ***	-0.590	0.089 ***
FTE employees ^b	-0.221	0.070 ***			-0.179	0.070 ***
Sales growth	-0.230	0.052 ***	-0.252	0.051 ***	-0.247	0.051 ***
Corporation	-0.166	0.128	-0.165	0.127	-0.139	0.127
Agriculture	-0.408	0.263	-0.344	0.265	-0.331	0.264
Construction	0.019	0.214	0.036	0.215	0.055	0.214
Finance	-0.097	0.287	-0.084	0.289	-0.088	0.287
Manufacturing	-0.015	0.221	-0.016	0.220	0.010	0.220
Professional services	-0.038	0.293	-0.045	0.292	-0.058	0.291
Non-professional services	0.529	0.178 ***	0.522	0.178 ***	0.509	0.177 ***
Transportation	0.546	0.328 *	0.580	0.329 *	0.568	0.330 *
Wholesale	-0.038	0.279	-0.002	0.280	-0.002	0.280
Number of observations	2,330		2,330		2,330	
-2 Log likelihood	1907.8		1895.2		1903.0	
Pseudo-rsquared	0.089		0.094		0.091	
Linear restriction test for equality of loan officer turnover interactive coefficients ^e	38.30	(0.00)	7.05	(0.03)	0.40	(0.53)

^a No answer categories for the independent variables were included in the estimation but are not reported. The significance levels at the 1%, 5%, and 10% levels are denoted by ***, **, and *.

^b Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (young, mid-age or old) or 0 otherwise

^c Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (small, medium or large) or 0 otherwise

^d Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (use 1 bank or use more than 1 bank) or 0 otherwise

^e The chi-square statistic for the null hypothesis of equal coefficients is presented first, followed by the significance level in parentheses.

Table 3B

Logistic Regression for Loan Application Turndown Rate: Sensitivity of Loan Officer Turnover to Years in Business, FTE Employment and Number of FIs Used^a

	2001 Survey					
	Years in Business Test		FTE Employment Test		No. of Banks Used Test	
	(1)	(2)	(3)	(1)	(2)	(3)
<u>Independent variables</u>	<u>Coeff.</u>	<u>Std Err</u>	<u>Coeff.</u>	<u>Std Err</u>	<u>Coeff.</u>	<u>Std Err</u>
Loan officer turnover x Young firm (<5 years) ^b	0.588	0.173 ***				
Loan officer turnover x Mid-age (5-15 years) firm	0.265	0.128 *				
Loan officer turnover x Old (>15 years) firm	0.216	0.133				
Loan officer turnover x Small (<3 FTE) firm ^c			0.425	0.149 ***		
Loan officer turnover x Mid-size (3-6 FTE) firm			0.219	0.129 *		
Loan officer turnover x Large (>6 FTE) firm			0.162	0.117		
Loan officer turnover x Use 1 FI ^d					0.325	0.118 ***
Loan officer turnover x Use more than 1 FI					0.312	0.121 **
Time at bank ^b	-0.207	0.065 ***	-0.215	0.064 ***	-0.213	0.065 ***
No. of FIs used ^b	-0.081	0.131	-0.108	0.126		
Bank recently merged	0.037	0.207	0.009	0.206	-0.0349	0.20799
Herfindahl index	1.448	0.678 **	1.389	0.665 **	1.458	0.668 **
Rural location	0.534	0.229 **	0.449	0.226 **	0.525	0.228 **
Years in business ^b			-0.469	0.205 **	-0.297	0.210
FTE employees ^b	-0.360	0.108 ***			-0.302	0.105 ***
Sales growth	-0.019	0.078	-0.005	0.078	-0.010	0.078
Corporation	-0.089	0.211	-0.155	0.210	-0.133	0.211
Agriculture	-0.794	0.476	-0.816	0.476	-0.920	0.480 *
Construction	-0.173	0.313	-0.222	0.311	-0.208	0.312
Finance	-1.120	0.562 **	-1.060	0.561 *	-1.179	0.562 **
Manufacturing	0.012	0.325	-0.183	0.323	-0.046	0.324
Professional services	-0.215	0.438	-0.258	0.434	-0.298	0.437
Non-professional services	-0.454	0.309	-0.378	0.303	-0.466	0.305
Transportation	0.258	0.500	0.165	0.497	0.214	0.499
Wholesale	-1.263	0.470 ***	-1.354	0.468 ***	-1.346	0.473 ***
Number of observations	1,126		1,126		1,126	
-2 Log likelihood	744.0		745.6		745.0	
Pseudo-rsquared	0.067		0.065		0.066	
Linear restriction test for equality of loan officer turnover interactive coefficients ^e	1.95	(0.38)	3.06	(0.22)	0.02	(0.89)

^a No answer categories for the independent variables were included in the estimation but are not reported. The significance levels at the 1%, 5%, and 10% levels are denoted by ***, **, and *.

^b Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (young, mid-age or old) or 0 otherwise

^b Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (small, medium or large) or 0 otherwise

^b Each interactive variable is constructed by multiplying the value of loan officer turnover by a 1 if the years in business falls in that range (use 1 bank or use more than 1 bank) or 0 otherwise

^e The chi-square statistic for the null hypothesis of equal coefficients is presented first, followed by the significance level in parentheses.