

The Ties That Bind: Bank Relationships and Small Business Lending

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Abstract

Using hand-collected, proprietary data from the lending portfolio of a mid-sized regional bank in the United States, I empirically identify the channels that strengthen the relationship between a small business and its bank. In contrast to earlier work that focuses on the role of relationships in alleviating information and incentive problems in lending, I find that the source of value in relationship banking is not limited to enhanced monitoring. I introduce two novel channels of relationship strength that embody an entrepreneur's profit appeal for a bank: (1) the depth of *cross-selling* of non-loan products to the entrepreneur, and (2) the breadth of additional bank business referred through the entrepreneur's social and professional *connections*. I show that a borrower's intensive margin of profit (the depth and profitability of cross-selling) and extensive margin of profit (the quantity and profitability of referrals) lower the cost of borrowing and generate access to more credit. These effects are additive. A one-standard deviation increase in both cross-selling and referral profits is associated with a 29 basis point reduction in the cost of borrowing and a 21 percent increase in the amount of credit available to a firm.

1. Introduction

A large theoretical literature argues that bank relationships mitigate information and incentive problems in the supply of credit.¹ These relationships are particularly important for small firms, since their informational opacity can preclude access to public capital markets. Yet the inner workings of small businesses' bank relationships remain obscure. Empirical evidence is sparse in large part because micro data on contracting between private firms and banks is rarely available.

Surveys of small business owners suggest that longer and more concentrated bank relationships ease access to credit and, to some extent, lower interest rates and collateral requirements (Petersen and Rajan (1994), Berger and Udell (1995)). However, the underlying mechanism that drives these benefits is not clear. As Boot (2000) points out in a review of the literature, “existing empirical work is virtually silent on identifying the precise sources of value in relationship banking.”

In this paper, I demonstrate that in order to dissect the foundations of relationship benefits, it is critical to view lending within the larger set of fee-generating services that banks provide. While traditional theories model banks as delegated monitors with the twin roles of credit and liquidity provision (Diamond (1984, 1991), Rajan (1992), Kashyap, Rajan and Stein (2002)), technology and deregulation have significantly expanded banks' production set beyond financial intermediation. Banks offer an array of non-credit financial services and products, including portfolio management, firm cash management, transaction services, pension plans, trust services, and other types of asset management. At banks across the United States, income

¹ See Leland and Pyle (1977), Stiglitz and Weiss (1981), Campbell and Kracaw (1980), Diamond (1984, 1991), Fama (1985), and Haubrich (1989).

from non-credit services has more than doubled in the last 30 years, from 18% of total net operating revenue in 1979 to a share of 41% at the end of 2007 (see Figure 1).

This paradigm shift has changed the composition of bank income sources and placed credit policy in a broader context of profit maximization (Rajan (1996)). Several authors have examined the implications of large banks' provision of non-intermediation services;² however, micro evidence on how non-credit income incentives shape lending relationships at small banks has lagged far behind.

In this paper, I employ a unique empirical strategy that explores small business bank relationships from the perspective of aggregate profitability. I argue that information exchange is only part of the mechanism that creates benefits for firms with strong ties to their bank. Information production is costly and, thus, wasteful if the overall profits from the borrower are not high enough to justify the opportunity cost of monitoring. To assess the determinants of relationship strength, I assemble proprietary data from the commercial lending portfolio of a mid-sized regional bank in the United States. I construct a novel dataset that combines detailed information on every loan, including direct measures of ex ante risk and ex post performance, with thorough observation of the borrower's overall relationship with the bank. The empirical view of the relationship includes the borrower's purchases of non-lending services, as well as the borrower's referrals of additional clients to the bank. By focusing on the complete commercial loan portfolio of an individual bank, I exploit variation in borrower characteristics within the same institution to directly quantify the influence of relationships on the price and availability of credit.

² See, for example, Rajan (1991), John et al (1994), Puri (1996), Boyd et al (1998), Boyd et al (1980), Kwan (1998), De Young and Roland (2001), Stiroh (2004), and Stiroh and Rumble (2006).

To identify the drivers of relationship strength, I examine the features that make a borrower attractive enough as a trading partner to merit more favorable loan terms than a less attractive borrower with a comparable risk profile. I introduce two novel channels of relationship strength that capture an entrepreneur's non-lending profit appeal for a bank: namely, (1) the depth of *cross-selling* to the entrepreneur, and (2) the breadth of additional bank business referred through the entrepreneur's social and professional *connections*. These measures represent a borrower's intensive and extensive margins of profit, respectively: Cross-selling captures the supplemental profit the bank extracts from within an individual borrower, while the revenue stream from referred connections embodies the additional profit acquired from just outside the borrower's limit.

I postulate that, for a given level of borrower credit quality, the strength of a bank relationship is increasing in the borrower's overall profitability to the bank. To the extent that banks use price as an instrument to reward their most valued customers, the risk-adjusted discount should be greater for borrowers who yield higher overall profits to the bank, either through the cross-purchase of non-loan products or through the referral of additional clients. Moreover, if banks adjust benefits on the quantity margin, the risk- and demand-adjusted amount of capital committed to a firm should be larger for borrowers who generate more profits through higher cross-selling intensity and referral breadth. I call the interplay between non-credit income incentives and the terms of credit the "profit channel" of relationship benefits. The profit channel weighs the borrower's value as a non-credit customer, and adds another dimension of relationship strength to the "information channel" that dominates within the credit domain.³

³ Institutional details give credence to the aggregate profitability framework for relationship strength. In practice, the unit of classification the Bank uses to denominate each customer is the profit tier corresponding to the customer's total credit and non-credit income. These tier demarcations are linear in dollar profits, and proceed down the hierarchy from "*Crystal*" clients to "*Gold*", "*Silver*", "*Bronze*", and "*Key*" customers.

Identifying the profit channel of relationship benefits hinges on separating a borrower's non-lending profit appeal from his credit quality. Profit channel benefits are price discounts and/or quantity increases *in excess* of the benefits for lower credit risk and reduced monitoring cost that derive from the information channel of the relationship. The key to distinguishing the profit effect is to account accurately for the bank's expectation of credit quality and monitoring cost at the time it sets the terms of the loan. I use the internal risk rating that the bank assigns to the borrower as a measure of the borrower's risk at loan origination. The ability to control directly for the firm's risk level ameliorates any potential concern that measures of relationship strength are contaminated with credit quality.⁴ In addition, to account for possible differences in intra-rating quality, I strengthen the risk control with two measures of ex post loan performance that are costly for a bank, and whose probability should be priced into the initial interest rate.

I directly evaluate the borrower's non-lending profit appeal to the bank in the following ways: I measure the intensity of cross-selling by computing the number of non-credit products the borrower purchases from the bank, both in aggregate terms and differentiated across deposit/savings accounts, cash management services, and other financial services. In addition to the raw number of products, I calculate the actual dollar profits the bank earns on each borrower from these non-credit services. I capture the supplementary profit opportunities the bank secures from the borrower's connections by constructing variables that measure the number of bank clients the borrower refers, as well as the total dollar profits the borrower's referrals yield the bank.

⁴ Earlier papers that use self-reported survey data measure risk indirectly with traditional proxies such as firm size and leverage. A notable exception is Agarwal and Hauswold (2007) who incorporate the internal bank risk rating in their study of a firm's decision to seek a relationship-based loan in-person or a transaction-based loan via the same bank's e-loan option.

I use these measures to quantify the impact of non-lending income incentives on the price and availability of credit for small businesses. I find evidence for the profit channel of relationship strength in the form of risk-adjusted price discounts and quantity rewards for borrowers who have strong non-credit profit appeal. Conditional on risk profile, a one-standard deviation increase in both cross-selling and referral profits is associated with a 29 basis point reduction in the loan interest rate and a 21 percent increase in the amount of credit available to a firm. In dollar magnitude, the risk-adjusted price discount corresponds to an average annual rebate of 14 cents in reduced interest payments for every one dollar of non-credit profit a borrower yields the bank.

2. Empirical Strategy

The identification strategy in this paper relies on separating the influence of non-credit profit incentives from the effect of having better and cheaper information about a borrower. To make this distinction, it is essential to measure both the bank's perception of the borrower's overall non-credit profit appeal and its assessment of credit risk and monitoring cost at the time it sets loan price and quantity. In this section, I describe the key relationship variables and risk controls I employ to distinguish profit channel rewards from those that flow through the information channel of the relationship.

2.1. Measuring Relationship Strength: Cross-Selling

The first dimension of relationship strength I measure embodies the depth of cross-selling of non-loan products. Consistent with industry norms, the bank markets a wide-ranging menu of banking services that are distinct from the credit domain. These non-credit products are

naturally partitioned into (1) traditional deposit and savings accounts, (2) cash management products, and (3) financial service products, each described in more detail below:

Deposit and savings accounts include both commercial and personal demand deposit accounts, money market and interest checking accounts, as well as certificates of deposits and other savings accounts. These accounts represent a cheap source of funds for the bank to loan out. They also allow the bank to observe a firm's cash flow and, potentially, the owner's personal liquidity.

Cash management products are banking services designed to help businesses better manage their cash flow by increasing control and efficient use of incoming and outgoing funds. These products expedite deposits, manage payments and payroll, consolidate and move funds to maximize interest-earning capacity, and protect against fraud. Some examples include sweep accounts, electronic deposits, and check processing. Bank clients purchase each service for an additional fee. While cash management products generate significant non-credit fee income for banks, they also theoretically make it easier for a bank to monitor a firm's short-term cash flow. In practice, this function is by and large not exploited. Anecdotal evidence suggests that loan officers do not typically rely on the information embedded in a firm's use of cash management services. Instead, the primary channel to keep a pulse on a firm's financial health is the regular reporting of financial statements, as mandated by the loan contract. However, as a conservative assumption, I assume that the bank actively learns from the information set generated from a borrower's consumption of cash management services.

Financial service products encompass various types of asset management services for both businesses and individuals. They include IRA and employer-sponsored retirement plans, investments managed through the bank's proprietary family of mutual funds, client-directed

investments, brokerage, trust and custodial services. In contrast to cash management services, these financial services do not reveal information about firm cash flow. Over long horizons, these products have the potential to be partially informative about a firm's assets or its owner's net worth. However, detailed information on both firm assets and the owner's personal net worth is required of all borrowers as part of the risk rating process at loan initiation, regardless of whether or not the borrower entrusts the bank with the management of these assets. Furthermore, loan covenants are often tied to the value of these assets, which means that their value is routinely reassessed throughout the maturity of the loan. Even though the net worth of a firm and its owner are critical determinants of a firm's risk rating, *delegating* the management of these assets to the bank does not give the bank incremental information in excess of what is already required as part of the loan underwriting and monitoring process.

I measure the intensity of cross-selling per borrower in two complementary ways. First, I use the raw number of non-credit products a borrower purchases from the bank, both in aggregate terms and differentiated across deposit/savings accounts, cash management services and financial services. In addition, I measure the actual dollar profits the bank earns on each borrower from these non-credit products. The ability to directly measure each borrower's annual profitability to the bank is a unique feature of this dataset. The dollar profits per borrower are computed by the bank, and are used internally for such purposes as profitability analysis and loan officer compensation contracts. Using the bank's own accounting metric to measure borrower profitability ensures both consistency across borrowers and practical relevance to the decision-maker. The dollar profits per borrower correspond to the cumulative amount of profit accrued throughout the sample period. As such, this measure represents both the realized profits the bank

has netted just prior to granting each loan, as well as a proxy for the near future profits the bank expects to earn from its cross-selling effort.

2.2. Measuring Relationship Strength: Connections

The second dimension of relationship strength captures the additional profit opportunities the bank secures through the borrower's connections. Connections are ties between clients, usually through referrals, where the bank perceives its relationship with a client as being correlated with its relationship with the client's ties. These connections are traced through a parent-child hierarchy. The levels of seniority are based on who the bank perceives to be the pivotal party in that particular group of connected clients. Figure 2 illustrates a few examples of possible ways in which clients are connected to each other within the bank. In the first example, Client *A* is a stand-alone client who is not connected to any other bank customer. The size of his connection group is, thus, one. In the second example, Client *B* is the head of a group of size four, in which he is responsible for referring Clients *x*, *y* and *z* to the bank. *B* is regarded as "senior" to his three "children" *x*, *y* and *z*, while they are each considered his "junior". In the third example, Client *C* is the "ultimate head" of a group of size six, where he is "senior" to his five children *x*, *y*, *z*, *w*, and *D*. However, *D* also gets credit for referring *z* and *w*, who are therefore regarded as *D*'s children as well. Another way to understand this type of group is to think of *C* as the ultimate head with children *x*, *y* and *D* and grandchildren *z* and *w* courtesy of his child *D*. In this case, *D* is both junior to one client (*C*) and senior to two others (*z* and *w*). In practice, these groups commonly represent ties between firms, suppliers, customers and a firm owner's personal relationships.

One might wonder why these connections are important enough for the bank to invest in their documentation. In practice, connected clients tend to have correlated longevity with the

bank. If a pivotal member of the group leaves the bank, others might follow, possibly with some lag. In other words, just as the cross-selling measures capture both realized and expected profits, these networks of referrals capture both the potential for new sources of profit and, importantly, the loss of existing sources of profit.

2.3. Measuring Risk: Ex Ante Credit Quality

Earlier papers that use self-reported survey data measure risk indirectly with traditional proxies such as firm size, leverage and profitability. Measuring small firms' risk with hard information alone neglects the distinguishing attribute that compels these inherently obscure firms to seek credit from smaller regional banks instead of large banks. In addition to gleaning information from firms' financial statements, small banks evaluate intangible risk factors such as the borrower's character, the quality of management, geographic risk, industry risk, extraordinary risks, and competitive position. Thus, an accurate measure of credit risk must embed both the quantifiable information about the firm and the soft, private information the bank has accumulated through costly monitoring.

In accordance with the United States Office of the Comptroller of the Currency (OCC) recommendation, the bank assesses two risk ratings for each loan: (1) the *Borrower Rating*, which measures the borrower's fundamental creditworthiness on the basis of historical, present and prospective financial and non-financial characteristics, and (2) the *Facility Rating*, which adjusts the *Borrower Rating* based on an analysis of positive and negative factors that can affect the potential for recovery in the event of default. To determine the *Borrower Rating*, the bank evaluates the borrower's character, the quality of management, the firm's leverage, capitalization, liquidity, profit margins, earnings, adequacy of financial records, alternative funding sources, geographic risk, industry risk, cash flow adequacy, accounting practices, asset

protection, payment performance, extraordinary risks, and competitive position. To assess the intangible components of risk, in particular the borrower's character, loan officers make phone calls to the borrower's suppliers and customers, as well as to fellow lenders in the area. According to the bank, financial communities in regional lending markets are small and "reputation follows a borrower". Special attention is paid to how the borrower has dealt with financial commitments in the past, especially during previous business cycles or other periods of distress.

The *Facility Rating* modifies the *Borrower Rating* on the basis of collateral, guarantees or third party undertakings, ownership, loan structure, terms, and policy exceptions. Put differently, the *Borrower Rating* reflects the probability of default while the *Facility Rating* reflects the probability that the bank will incur a loss in the event of default. Each borrower has only one *Borrower Rating*, but can have multiple *Facility Ratings*. For each loan, the *Facility Rating* encapsulates what is known in the industry as the "5 C's of Credit": the borrower's character (repayment integrity), capacity (cash flow), capital (net worth), collateral to secure the loan, and the conditions of the overall economy.

Both scores are rated on an integer scale between 1 and 10 that is decreasing in credit quality: a 1-rated facility represents the highest quality class of loan, while a rating of 10 signifies loss to the bank. In all of the regressions in the paper, I control for the level of the risk rating non-parametrically with dummy variables that span the *Facility Rating's* integer scale. This approach imposes the least a priori structure on how the risk rating maps to the cost and availability of capital.

3. Conclusion

This paper examines firm-bank relationships by investigating credit provision as part of a broader set of fee-generating services that banks offer. The results offer new insights on the channels that lead to repeated interaction between a small firm and a bank. In contrast to earlier work that focuses on the role of relationships in alleviating information and incentive problems in lending, I find that the source of value in relationship banking is not limited to enhanced monitoring. Relationships enable banks to sell borrowers a variety of other profitable financial services, as well as gain access to additional borrowers to whom they can sell these services. This paper shows that non-lending income incentives interact with the terms of credit to create a profit channel of relationship strength that gives weight to the borrower's aggregate profitability as a non-credit customer. Conditional on risk profile, borrowers who buy more financial services and who refer more clients to a bank get access to more credit at a lower price.

These findings shed a new light on the sources of bargaining power between a firm and a bank. In models of banks as pure financial intermediaries, the relative bargaining position of each party is determined in the credit domain alone. The results in this paper suggest that the component of relationship capital that derives from the borrower's cross-selling profitability is transferrable, since it is not locked up in private information about the borrower's credit quality.

A potential implication of the profit channel in bank relationships is stronger protection in credit negotiations for borrowers who generate non-lending profits than for comparably risky borrowers who only buy loans. For example, in credit markets with limited competition, empirical evidence suggests that firms that concentrate their bank debt are susceptible to exploitation in the supply of credit. Banks that have acquired a monopoly on the firm's private information can use the threat of hold-up to extract rents from the firm in the form of higher

interest rates (Petersen and Rajan (1995)). In this case, the borrower's stock of non-lending relationship capital from cross-selling profitability could be a useful source of bargaining power to mitigate this risk. On the other hand, relationship capital from non-credit channels also exacerbates concerns about allocative efficiency and the soft-budget constraint problem in the provision of credit. Firms in economic distress could potentially use their non-lending bargaining power to extract more credit to forestall default in a way that would not be possible on the basis of their credit quality alone.

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Figure 1

Non-Interest Income Growth in U.S. Commercial Banks

The graph plots non-interest income as a share of net operating revenue, in aggregate dollars, across all Federal Deposit Insurance Company-insured commercial banks in the United States. Source: FDIC Historical Statistics on Banking.

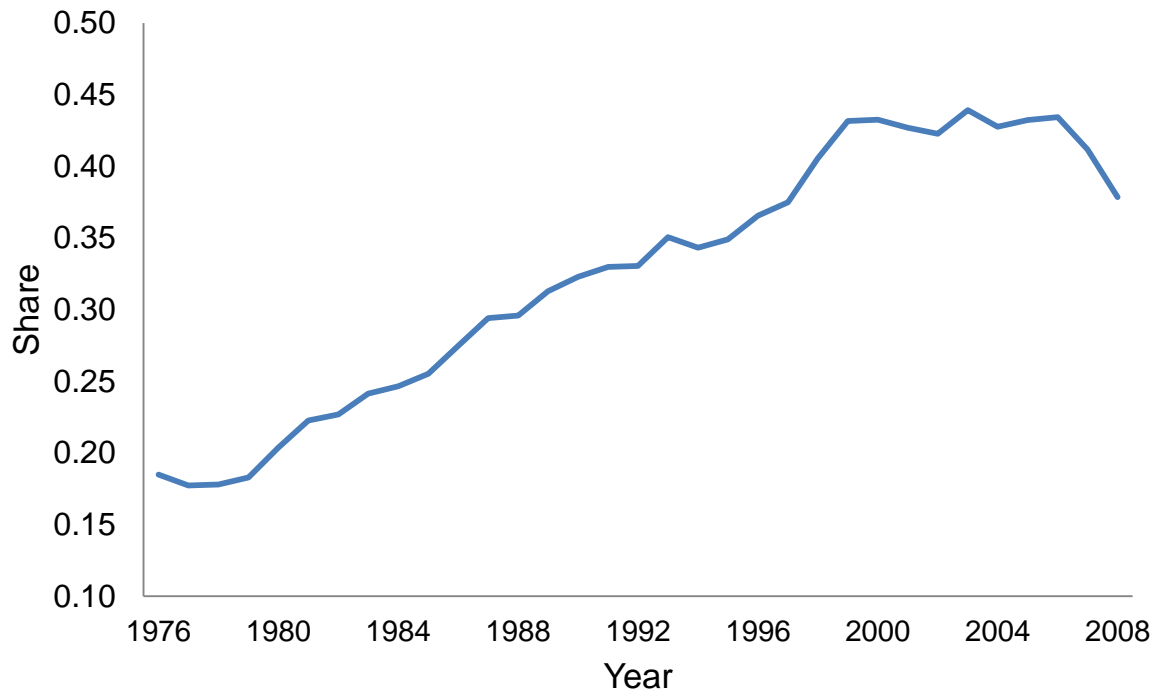


Figure 2
Connection Hierarchy Examples

The figure illustrates examples of connection networks among bank clients. In the first example, Client A is a stand-alone client who is not connected to any other bank customer. The size of his connection group is one. In the second example, Client B is the head of a group of size four, in which he is responsible for referring Clients x, y and z to the bank. B is regarded as “senior” to his three “children” x, y and z, while they are each considered his “junior”. In the third example, Client C is the “ultimate head” of a group of size six, where he is “senior” to his five children x, y, z, w, and D. However, D also gets credit for referring z and w, who are therefore regarded as D’s children as well. Another way to understand this type of group is to think of C as the ultimate head with children x, y and D and grandchildren z and w courtesy of his child D. In this case, D is both junior to one client (C) and senior to two others (z and w). In practice, these groups commonly represent ties between firms, suppliers, customers and a firm owner’s personal relationships.

