Do small businesses still prefer community banks?

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Abstract

We formulate and test hypotheses about the role of bank type – small versus large, single-market versus multimarket, and local versus nonlocal banks – in banking relationships. Arguments in the literature suggest that "community banks" – small, single-market, local institutions – are better able to form strong relationships with informationally opaque small businesses, while "megabanks" – large, multimarket, and/or nonlocal institutions – tend to serve more transparent firms because dealing with opaque firms requires the use of soft information and such information is difficult to quantify and transmit through the communication channels and layers of management of large, multimarket, and nonlocal institutions. We address a number of key research and policy issues, including the potential effects of bank consolidation on relationships, given that consolidation tends to result in more relationships with large banks, multimarket banks, and nonlocal banks. Our application matches data from U.S. small businesses and their owners from the 2003 Survey of Small Business Finance (SSBF) to balance sheet and income statement information on banks that provide them with credit and other services, and Summary of Deposits data on the competitive conditions in their local banking market. We conduct two sets of tests. First, we test for the type of bank serving as the "main" relationship bank – defined in several alternative ways – for small businesses with different firm and owner characteristics. Second, we test for the strength of these main relationships by examining the probability of multiple relationships as a function of main bank type and financial fragility, as well as firm and owner characteristics. The results are often not consistent with the predictions of the conventional paradigm. In the first test, we find that opaque small businesses are not more likely to have a community bank as their main bank. In the second test, we find that opaque small businesses do have stronger relationships with their main banks, but that strength does not depend on the type of bank.

1. Introduction

A number of important research and policy issues concern the abilities of different types of banks to maintain strong relationships with small businesses. Banks extract proprietary information from strong relationships and use this information to set future contract terms and make future credit underwriting decisions. The extant research suggests that small businesses benefit from relationships in terms of credit availability, credit terms, and firm performance.

However, strong relationships – particularly when they are exclusive – may also involve costs associated with a "hold up" problem or with the potential for premature withdrawal of services if the bank becomes financially distressed or fails. Exclusive relationships with certain types of banks may also be inherently more fragile if these types of banks are more likely to sever small business relationships or withdraw credit than other banks. Firms often bear the duplicative costs of multiple banking relationships to mitigate these problems.

Arguments in the literature suggest that small banks are better able to form strong relationships with informationally opaque small businesses, while large banks tend to serve more transparent firms because dealing with opaque firms requires the use of soft information and such information is difficult to quantify and transmit through the communication channels and layers of management of large organizations (e.g., Berger and Udell 2002, Stein 2002). Most of the extant empirical literature has provided support for this paradigm (e.g., Haynes, Ou, and Berney 1999, Cole, Goldberg, and White 2004, Scott 2004, Berger, Miller, Petersen, Rajan, and Stein 2005). By extension, the arguments about the difficulties of large banks in dealing with the soft information of opaque small firms may apply to multimarket and nonlocal banks as well. Thus, it is expected under the existing paradigm in the literature that opaque small businesses would be best served by small, single-market, local banks, while large, multimarket, nonlocal institutions would tend to serve more transparent firms.

If this existing paradigm is correct, banking industry consolidation may have significant consequences for the effectiveness of banking relationships with small businesses. Small banks, single-market banks, and local banks may more often function as "community banks" that rely on soft information about the firm, its owner, and local community, while large banks, multimarket banks, nonlocal banks may act more as "mega banks" with weaker community ties that base their relationships primarily on hard information about the firm. Bank consolidation may also affect the competitiveness of local banking markets, which may alter the strength of relationships and the benefits and costs of these relationships to small businesses.

The large banks, multimarket banks, and nonlocal banks created by consolidation may be disadvantaged in relationships based on soft information and may be more likely to severe relationships or withdraw credit than the small, single-market, and local institutions they replace. During the financial crisis of 2007-2009, small businesses saw their bank borrowing contract precipitously. Numerous reports cite small business owners' difficulty in obtaining access to credit over the crisis period, particularly from large banks.[1]

Recently, however, a few articles have challenged the conventional paradigm. Berger and Udell (2006) suggest that large banks may be able to serve opaque firms well using hard-information technologies, such as credit scoring and lending against fixed assets with value that are relatively easy to assess. A number of empirical articles suggest that very large banks are able to increase their lending to opaque small businesses using credit scoring technology (e.g., Frame, Srinivasan, and Woosley 2001, Frame, Padhi, and Woosley 2004, Berger, Frame, and Miller 2005) and one study finds that small business lending is responsible for an increase in lending distance in recent years (DeYoung, Frame, Glennon and Nigro, forthcoming). Empirical results in Berger, Rosen, and Udell (2007) do not suggest a significant net advantage or disadvantage for large banks in small business lending overall, or in lending to informationally opaque small businesses in particular. Rather, the local market share held by large banks, representing the relative convenience of these institutions, appears to be most important in determining lender size. Berger and Black (forthcoming) find that large banks tend to lend to both the smallest and the largest small businesses, with small banks specializing in lending to medium-sized small firms. Berger and Black (forthcoming) and Berger, Cowan, and Frame (forthcoming) find that small banks use hard-information technologies, fixed asset lending and credit scoring, respectively, in addition to relationship lending. Finally, de la Torre, Martinez Peria, and Schmukler (2010) find that both large and small banks cater to small firms.

Despite these important issues and the recent controversy over the conventional paradigm, surprisingly little empirical effort has been devoted to investigating the type of bank that tends to serve as the main relationship bank with opaque small businesses and which types of main banks tend to be associated with stronger relationships with these firms. The primary purpose of this paper is to expand the literature along these lines. We test hypotheses about the role of bank type – small versus large, single-market versus multimarket,

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[1] Testimony of Governor Elizabeth A. Duke before the Committee on Financial Services and Committee on Small Business, U.S. House of Representatives, Washington, D.C., February 26, 2010 (http://www.federalreserve.gov/newsevents/testimony/duke20100226a.htm) and NFIB, Small Credit in a Deep Recession, February 2010.

and local versus nonlocal banks – in banking relationships. Our application matches U.S. small business data from the 2003 Survey of Small Business Finance (SSBF) to the Consolidated Reports of Condition and Income for U.S. Banks (Call Report) on the banks that provide them with credit and other services, and Summary of Deposits data on the competitive conditions in their local banking markets.

We conduct two sets of tests. First, we test for the type of bank serving as the "main" relationship bank for small businesses, that is, the "primary" financial institution identified by the firm. Prior analyses of U.S. data typically do not focus on main banking relationships – they usually examine the relationship for a single loan at a time, and often do not match the loan to the bank type.[2] We include exogenous variables measuring firm characteristics (e.g., firm size and age, ownership type, and industry), principal owner characteristics (e.g., if owner is also manager, has majority share, has had personal financial problems), and local banking market competition (e.g., concentration, market shares of large and multimarket banks, state banking restrictions). We test the hypothesis from the conventional paradigm that relatively opaque firms – measured by firm size, age, owner involvement, and several other characteristics – tend to have their main banking relationship with small, single-market, and local banks. Under the paradigm, these banks are expected to have advantages in soft-information-based relationships relative to large, multimarket, and nonlocal banks, respectively. More transparent small businesses that rely more on hard-information-based relationships are expected to have their main relationships more frequently at large, multimarket, nonlocal banks.

Second, we test for the strength of these main relationships by examining the probability of an exclusive relationship versus multiple banking relationships and the length of a relationship as functions of the main bank type and its financial fragility, as well as firm, owner, and market characteristics. Under the conventional paradigm, relatively small, young firms with more "important" principal owners, and otherwise opaque small businesses tend to have stronger, more exclusive relationships to deal with their soft information problems, whereas larger, more mature, firms with less "important" principal owners may more often engage in multiple banking to reduce hold up and financial distress concerns. Larger firms may also more often have multiple banks because a single bank cannot provide all the financial services they need. In addition, under the conventional paradigm, it is expected that – even after conditioning on firm and owner characteristics,

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[2] Studies of German hausbanks are examples in which main banking relationships are examined. Hausbanks are found to provide liquidity insurance to their customers (e.g., Elsas and Krahnen 1998). Hausbanks are also found to have better access to information, more influence on borrower management, and to provide relatively high shares of borrower debt (Elsas 2005).

relationships with small, single-market, and local banks or "community banks" are likely to be stronger and more exclusive than those with large, multimarket, and nonlocal banks or "mega banks" because the former relationships are more likely to be based significantly on soft information. In addition, firms may avoid single relationships with "mega banks" because of the fragility of these relationships. These banks may have weaker ties to the local community and may be more likely to sever small business relationships or withdraw soft-information-based credit than "community banks."

By way of preview, our empirical results are often not consistent with the predictions of the conventional paradigm. In the first test, we find that opaque small businesses are not more likely to have a community bank as their main bank. In the second test, we find mixed evidence on whether opaque small businesses have stronger relationships with their main banks, but the evidence is clearer that strength does not depend on the type of bank.

We conjecture that the conventional paradigm does not hold because of two important changes in the banking industry over time: 1) changes in lending technology, specifically the introduction of credit scoring in small business lending, and 2) changes in bank regulation (such as the Interstate Banking and Branching Efficiency Act of 1994 (IBBEA)) that allows large, multimarket and nonlocal banks to integrate offices across state lines. We expect that prior to these two events, the introduction of small business credit scoring technology and IBBEA, the conventional paradigm likely held and we will test this hypothesis in future drafts of the paper.

The remainder of the paper is organized as follows. Section 2 briefly reviews the relevant literature on banking relationship strength and associated research and policy issues. Section 3 discusses the data set and provides summary statistics. Section 4 presents the empirical methodology. Section 5 presents the empirical results, and Section 6 concludes.

2. Brief review of the relationship strength literature and associated issues

Relationship strength

Relationship strength is generally measured by the length or breadth of the relationship, or whether the bank is the exclusive provider of loans and other services. Strong relationships may often be needed to extract proprietary soft information and lend to small firms without sufficient hard information on which to base credit decisions. Firms of all types may also benefit from strong banking relationships in which the bank is able to

"reuse" hard and soft information garnered over the course of the relationship from loans, deposits, or other services to set future contract terms or make future credit underwriting decisions. As will become clear, the literature suggests that different types of banks – small versus large, single-market versus multimarket, and local versus nonlocal – may have different abilities to maintain strong relationships with small businesses.

Benefits from strong relationships

Most empirical studies find benefits to borrowers from strong relationships. The research often finds that stronger relationships are associated with better credit availability, as measured by a higher loan application acceptance rate, less dependence on expensive trade credit, or more loans without collateral requirements (e.g., Petersen and Rajan 1994, 1995, Berger and Udell 1995, Cole 1998, Elsas and Krahnen 1998, Harhoff and Korting 1998, Machauer and Weber 2000). Studies of U.S. small businesses typically also find lower loan interest rates when relationships are stronger (e.g., Petersen and Rajan 1994, Berger and Udell 1995), although European studies often yield no significant effects of relationship strength on rates (e.g., Elsas and Krahnen 1998, Harhoff and Korting 1998, Machauer and Weber 2000, Degryse and Cayseele 2000). Some recent studies also discover favorable effects of strong relationships on firm performance. Specifically, one study of publicly traded U.S. companies finds that strong relationships increase the likelihood of success of moderately financially distressed firms (Rosenfeld 2007), another study finds that relationships aid in resolution of Chapter 11 bankruptcy proceedings (Dahiya, John, Puri, and Ramirez 2003), and a study of Italian manufacturers yields a positive association between relationship strength and innovation by borrowing firms (Herrera and Minetti 2007).[3]

Costs to strong relationships that may result in multiple banking

Strong relationships – particularly when they are exclusive – may also involve costs. The private information generated by an exclusive banking relationship may give the bank market power over the firm, yielding a "hold up" problem and extraction of rents from the firm (e.g., Sharpe 1990, Rajan 1992). Firms may bear additional costs to engage in multiple relationships to mitigate the rent extraction (e.g., Von Thadden 1992, Boot 2000, Farinha and Santos 2002, Elsas, Heinemann, and Tyrell 2004).[4]

Firms may also bear the duplicative costs of multiple banking instead of a single strong banking

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[3] One recent study also documents some of the benefits to lenders from relationships in terms of increased future profitable lending opportunities (Bharath, Dahiya, Saunders, and Srinivasan 2006).
[4] The extraction of rents may also make it profitable for banks to lend to some additional firms with marginal credit quality, improving the credit availability of these marginal firms (e.g., Petersen and Rajan 1995).

relationship to protect themselves from premature withdrawal of services if their main bank becomes financially distressed or fails. Thus, firms may be more likely to have multiple banking relationships when their main bank is financially fragile and likely to become distressed or fail. The empirical literature on this topic is mixed, with studies in some cases finding positive, negative, and/or no consistent effect of bank fragility on the probability of multiple banking (e.g., Detragiache, Garella, and Guiso 2000, Ongena and Smith 2000, Berger, Klapper, and Udell 2001, Berger, Klapper, Martinez Peria, and Zaidi 2008).[5]

The concept of relationship fragility may also be extended to apply to bank type if some types of banks are more likely to sever relationships or withdraw critical services, independent of the bank's financial condition. One study of Indian banking suggests that foreign banks have weaker ties to the country and may be more likely to severe relationships with local firms than state-owned banks with mandates to serve local firms (Berger, Klapper, Martinez Peria, and Zaidi 2008). In the present context, it may be analogously expected that large, multimarket, and nonlocal banks have weaker ties to the local community and may be more likely to severe small business relationships or cut off soft-information-based credit than small, single-market, and local institutions, respectively.

Finally, firms may more often bear the duplicative costs of multiple banking when one bank cannot provide all of their financial service needs. This is likely to occur only for the largest of the small businesses studied here, which may be geographically dispersed, requiring services in more markets than are served by the firm's main bank. Multiple banks may similarly be needed if the firm requires international services or specialized investment products not provided by the firm's main bank. Empirical research typically finds that larger firms are associated with multiple banking (e.g., Houston and James 1996, Machauer and Weber 2000, Ongena and Smith 2000, Berger, Klapper, and Udell 2001, Berger, Miller, Petersen, Rajan, and Stein 2005, Berger, Klapper, Martinez Peria, and Zaidi 2008).[6]

These incentives for multiple banking also apply to diversification across relationship types. That is, firms may be more likely to diversify to mitigate a "hold up" problem by a type of bank, to protect against premature withdrawal of services by a type of bank, and/or fulfill different service needs provided by different types of banks. We are aware of only one prior study of bank type diversification, and it does find evidence

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[5] A possible issue with these studies is that they typically do not measure the fragility of the main bank, but rather the fragility of one lending bank or all of the firm's banks. We argue that the fragility of the main bank is the most logical choice, based on the assumption that the main bank is determined first.

[6] Other motives for multiple banking relationships are discussed in Berger, Klapper, Martinez Peria, and Zaidi (2008).

consistent with these incentives (Berger, Klapper, Martinez Peria, and Zaidi 2008).

Strong relationships and bank consolidation issues

Some research and policy issues concern the effects of bank consolidation on relationships. Much of the relationship lending literature focuses on the effects of bank size, hypothesizing that larger banks are disadvantaged in relationships to small firms based on soft information due to difficulties in processing and transmitting soft information through the communication channels of large organizations (e.g., Stein 2002), agency problems within large organizations with more layers of management because the loan officer is the main repository of soft information (e.g., Berger and Udell 2002), and/or organizational diseconomies of dealing with using hard-information-based technologies for some firms along with soft-information-based technologies for other firms (e.g., Williamson 1988). Large banks may have a comparative advantage in relationships with larger firms due to economies of scale in processing and transmitting hard information.

Some empirical research is consistent with these expectations that large banks are less likely than small banks to lend to or have strong relationships with small, young firms with little hard information available and conversely for relationships with large, mature firms with more hard information available (e.g., Haynes, Ou, and Berney 1999, Cole, Goldberg, and White 2004, Scott 2004, Berger, Miller, Petersen, Rajan, and Stein 2005). Thus, bank consolidation may have unfavorable implications for firms relying on relationships that make primary use of soft information and conversely for firms relying on relationships based primarily on hard information.[7]

Presumably, arguments similar to those based on bank size apply to the geography of banks – single-market and local banks are more likely to have a comparative advantage in relationships based on soft information, and multimarket and nonlocal banks are more likely to have the advantage in hard-information-based relationships. Some of the recent industrial organization research on banking focuses on differences in competitive behavior and efficiencies of multimarket versus single-market banks and their effects on small businesses and consumers, but does not examine the role of relationships (e.g., Hannan and Prager 2006, Berger, Dick, Goldberg, and White 2007, Cohen and Mazzeo 2007, Berger and Ostromogolsky 2009). Similarly, there has been research showing that lending distances have increased over time, with more small businesses

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[7] However, some research finds that market reactions may offset some of these consequences. Some studies of bank mergers and acquisitions find that small business lending appears to decline at consolidating institutions, but may be offset by increased lending supplies by other banks in the market or through increased market entry of newly chartered banks (e.g., Berger, Saunders, Scalise, and Udell 1998, Avery and Samolyk 2004, Berger, Bonime, Goldberg, and White 2004).

borrowing from nonlocal lenders (e.g., Petersen and Rajan 2002, Hannan 2003, Brevoort and Hannan 2006). This literature also usually does not focus on relationships, despite the likely role of soft information in local relationships and hard information in nonlocal relationships.[8] Thus, the consolidation of the banking industry may be expected to shift resources from small, single-market, and local banks to large, multimarket, nonlocal institutions, with potentially significant consequences for banking relationships and their benefits to small businesses.

Consolidation may also affect the competitiveness of local banking markets. Mergers and acquisitions (M&As) within markets likely reduces competitiveness and M&As across markets likely increase competitiveness. Relationship strength and its consequences may be greater when banking markets are less competitive, because firms have fewer potential alternatives in the future event that their main bank tightens contract terms dramatically. Empirical studies of the effects of concentration and other restrictions on competitiveness on measures of credit availability, activity, and general economic performance find both favorable effects (e.g., Petersen and Rajan 1995, Cetorelli and Gambera 2001, Bonaccorsi di Patti and Dell'Ariccia 2004, Cetorelli 2004) and unfavorable effects (e.g., Black and Strahan 2002, Berger, Hasan, and Klapper 2004, Karceski, Ongena, and Smith 2005, Cetorelli and Strahan 2006).

3. Data and Summary Statistics

We combine data from the Survey of Small Business Finance (SSBF) with the Call Reports. The SSBF is a survey by the Federal Reserve of the financial condition of firms with fewer than 500 employees. The survey was first conducted in 1987 and repeated in 1993, 1998, and 2003. It contains details on small businesses' income, expenses, assets, liabilities, and characteristics of the firm, firm owners, and the small businesses' financial relationships with financial service suppliers for a broad set of products and services. The sample is randomly drawn but stratified to ensure geographical representation across all regions of the United States. The SSBF also oversamples relatively large firms (conditional on having fewer than 500 workers). Given the above data, we can measure assets, liabilities, profits, firm age, and the length of time firms have established relationships with banks and other lenders. We also know the location of firms, so we can control for

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[8] One study that does distinguish the lending technologies is Frame, Padhi, and Woosley (2004), which explicitly links the increase in distance to lenders using one of the hard lending technologies, small business credit scoring.

local market conditions. The SSBF data also collected information on the financial service suppliers to the surveyed firms, such as loans, deposits, and other financial services used by each firm.

Petersen and Rajan (1994) and Berger and Udell (1995) are among the first to use the data from the 1987 survey. These papers both find that banking relationships expand credit availability for small firms. Other authors also use these data to study whether bank size affects credit allocation decisions (Cole 1998, Jayaratne and Wolken 1999, Cole, Goldberg, and White, 2004, Berger, Miller, Petersen, Rajan, and Stein 2005). Our paper is the first to use these data to test role of bank type – small versus large, single-market versus multimarket, and local versus nonlocal banks – in banking relationships.

The SSBF data contain information on up to 20 financial services firms with which a small business may have a relationship. We match the small businesses' banks with the Call Reports, which contain financial statement and structure data on all U.S. commercial banks.

We exclude a number of firms from the sample. Of the 4240 firms in the SSBF, 3350 of those firms are in urban markets. We initially restrict our study to urban markets, because lending practices vary greatly between urban and rural markets. DeYoung, Nigro, and Spong (2010) find fundamental differences between small rural and urban business borrowers and conclude that divergent lending practices made necessary by these differences may result in a greater number of small rural commercial banks than would be expected. Moreover, because soft information may be more difficult to convey across rural markets to urban markets, rather than within rural or urban markets, small rural borrowers will be less able to borrow from nonlocal lenders.

Of the 3350 urban firms, 2610 identified a commercial bank as their primary institution. We drop 740 firms from the sample that either did not have a commercial bank as a primary institution or provided an incomplete response to the question, leaving the identity of the primary institution uncertain.

Table 1 reports the summary statistics on the 2003 SSBF matched with the Call Reports. On average, firms in our sample are about 16 years old, and 67 percent are organized as a corporation. The debt to asset ratio of the firm is 33 percent, and nearly half of the firms have a bank loan. Less than one percent of owners in our sample have declared bankruptcy in the past 7 years, while 17 percent of owners have been delinquent 60 or more days on at least one business obligation in the past three years. These firms are largely family owned and operated: 82 percent of firms are family owned and 90 percent of owners are managers of the firm.

Three-quarters of the firms in our sample have a large bank as a primary bank, and roughly 60 percent have a nonlocal bank and/or multimarket bank as their primary bank. The majority of firms (57 percent) in the sample state that they have only one bank. The high proportion of firms that have large, multimarket or nonlocal banks as their main bank suggests, initially, that the conventional paradigm does not hold; small firms in our sample do not necessarily have community banks as their main bank.

4. Empirical Methodology

Determinants of main bank type

Our first model examines the effects of firm, owner, and local market characteristics in determining the firm's main bank type:

Main bank type = f{Firm and owner characteristics, Local market characteristics}   *(1)*

The dependent variables are dummies which equal 1 if the main bank is the given type and 0 otherwise. We distinguish between small and large banks, between single-market and multimarket banks, and between local and nonlocal banks. For these specifications of equation (1), we estimate binomial logit models specifying the probability of the main bank being large, multimarket, or nonlocal, leaving small, single-market, or local as the excluded base case, respectively.[9]

Following prior research on the empirical definition of "community banks," we use a size cutoff of $1 billion in gross total assets (GTA) to distinguish between small and large banks (e.g., DeYoung, Hunter, and Udell 2004). Also following prior research and anti-trust guidelines, we define a single-market bank as one in a single metropolitan market – a Metropolitan Statistical Area (MSA) or New England County Metropolitan Areas (NECMA) – or a single non-MSA, non-NECMA rural county in which the small business is located. All banks with branch offices in two or more markets are defined as multimarket banks. In this draft, we run the model only for firms in metropolitan markets (MSAs or NECMAs). In future drafts, we will run the models separately for rural markets (non-MSA, non-NECMA) for the reasons cited above and because metropolitan markets are much more competitive than rural markets.

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[9] In future drafts of this paper, we will also estimate a multinomial logit specification in which bank size and geography are considered together. We distinguish large, single-market banks; small, multimarket banks; and large, multimarket banks from the base case of small, single-market banks. We do not run a model in which the local and nonlocal main bank types are included with the bank size and single-market versus multimarket banks because many of the cells would be empty or nearly empty. Presumably, almost all of the nonlocal banks are large, multimarket institutions.

The firm characteristics include measures of firm size, age, risk, organizational form, and industry. For firm size, we specify dummies for small, medium, and large firms, with total assets $\leq$ \$100,000, \$100,000 - \$1 million, and over \$1 million, respectively, with small firms excluded as the base case. Note that these are relative sizes within the broader category of small businesses that are in the SSBF, and do not include the largest firms in the nation. Prior research finds significant differences across these three size classes in the comparative advantages of large and small banks in using different lending technologies (Berger and Black forthcoming). For firm age, we simply specify the natural log of age. Age is a measure of opacity and has been found to affect the likelihood of borrowing from large banks in prior research (e.g., Berger, Miller, Petersen, Rajan, and Stein 2005, Berger, Rosen, and Udell 2007). For firm risk, we include leverage and a dummy that equals 1 if the business has been delinquent in the past three years. Organizational form includes dummies for whether the firm is a corporation, partnership, or proprietorship, as these forms offer the firm different protections of assets in the event that they do not repay their bank credit and may also reflect the need for soft information in their banking relationships. We also control for industry type with dummies for construction, retailing, services, and manufacturing.

The owner characteristics are measures of the involvement or "importance" of the principal owner in the life of the firm. We include variables measuring whether the principal owner of the firm is also the manager, whether the share of ownership of the principal owner and family is over 50 percent, and whether there has been a personal bankruptcy by or judgment rendered against the principal owner over the past three years. When the owner is also the manager, has a large stake in the firm, and has personal financial problems, it is more likely that the main relationship with the firm will require significant collection of soft information about the owner. Thus, when the owner is more "important," the firm is more likely to have a main relationship with a small, single-market, or local bank to deal with the soft information.

Local market characteristics include a control for local market competition in the form of the Herfindahl index of local market concentration. We also include variables measuring the shares of local market branches large banks and multimarket banks to proxy for the convenience of large and multimarket banks, respectively. The shares of branches of small or single-market banks are the base case. It is expected that firms are more likely to have their main relationship at a large or multimarket bank if the market presence of the corresponding

bank type is larger, all else equal.[10] We also include an interstate branching index to control for regulatory and competitive conditions (Rice and Strahan 2010).

Our primary tests in equation (1) are based on the discussion above concerning the effects of firm size and age, and the "importance" of principal owner to the firm. We test the hypotheses that "community banks" (small, single-market, and local banks) tend to serve as the main bank for more opaque firms – i.e., smaller, younger firms, with more "important" owners – and "mega banks" (large, multimarket, or nonlocal banks) tend to have their strongest relationship with more transparent firms – i.e., larger, more mature firms, with less "important" owners.

Determinants of relationship strength

Our second model investigates the determinants of relationship strength. We use logit estimations to study the probability that a firm has an exclusive banking relationship using a dummy for the dependent variable. We alternatively estimate an OLS model using robust standard errors to test for the length of the relationship (where length is defined as the log of (1+ length of firm-bank relationship in months). We assume that relationship strength is a function of firm, local market, and main bank characteristics as shown in equation (2):

Relationship Strength = g{Firm and owner characteristics, Local market characteristics,
$$\qquad\qquad\qquad\qquad\qquad\qquad \textit{Main bank fragility and type\}} \qquad\qquad (2)$$

The firm, owner, and local market characteristics in equation (2) are identical to those in equation (1). The main bank characteristics include measures of the financial fragility and type of the main bank. For financial fragility, we include the main bank's equity to gross total assets (GTA) ratio, its total risk-based capital ratio, and its nonperforming loan to GTA ratio. For main bank type, we simply specify dummies for large bank, multimarket bank, and nonlocal bank, excluding dummies for small, single-market, and local banks as the base case.

Using equation (2), we first test the effects of firm size, age, and "importance" of the principal owner on main bank relationship strength. Specifically, we test the hypotheses that smaller, younger firms, with more "important" principal owners are more likely to have exclusive relationships and longer relationships to deal with their soft information problems, while relatively large, more mature firms with less "important" principal

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[10] Prior research finds that the local market share of large banks is a powerful predictor of lending bank size (e.g., Berger, Miller, Petersen, Rajan, and Stein 2005, Berger, Rosen, and Udell 2007).

owners may more often engage in multiple banking relationships and shorter relationships.

Second, we test the effects of main bank financial fragility on the probability that the firm has multiple banking relationships or short relationships to protect themselves from premature withdrawal of services if their main bank becomes financially distressed or fails. Thus, conditional on the firm and owner characteristics, we expect that multiple relationships and short relationships are more likely when the main bank has low capital and liquidity ratios and high nonperforming loan ratios.[11]

Third, we test hypotheses regarding the strength of the relationship with the main bank type. Specifically, we test the hypotheses that large, multimarket, and nonlocal banks have weaker ties to the local community, and may be more likely to severe small business relationships or withdraw soft-information-based credit than small, single-market, and local institutions, respectively. Therefore, it is expected that firms that have these bank types are more likely to protect themselves against the fragility of their main banking relationship by engaging in multiple banking or have shorter relationships, implying odds ratios of less than one on the dummies for large, multimarket, and nonlocal main banks.

5. Empirical results

Tables 2 and 3 show our regression results for the determinants of main bank type (Table 2), and relationship strength (Table 3). We present the estimates as odds ratios (except for the relationship strength regressions which are estimated by OLS) which are obtained by exponentiating the original logit coefficients. For example, in the logit regressions in Table 3 with the probability of a large, multimarket, or nonlocal bank as dependent variable, an odds ratio of one on a firm being medium-sized indicates that the probability of the medium firm having a large, multimarket, or nonlocal bank as its main bank is equally likely the probability of a small firm (the excluded base case) having a "mega bank" as its main bank. An odds ratio greater than one on a right-hand side variable indicates that a higher value predicts a greater probability of a main bank being a large,

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[11] Some studies of multiple banking in other nations use two different models of choice to have multiple banks and number of banks, given multiple banking (e.g., Detragiache, Garella, and Guiso 2000, Berger, Klapper, Martinez Peria, and Zaidi 2008). We argue that such an approach is not appropriate for our sample of U.S. small businesses, which rarely have many more than two relationships.

multimarket or nonlocal bank, as appropriate.   We report the z-statistics, in parentheses, under the odds ratios in all tables.

Determinants of main bank type

Table 2 reports the results of our first set of tests; that small, single-market, and local banks tend to serve as the main bank for more opaque firms – i.e., smaller, younger firms, with more "important" owners – and large, multimarket, and nonlocal banks tend to have their strongest relationship with more transparent firms – i.e., larger, more mature firms, with less "important" owners.   Columns 1-3 report these regressions for the primary bank being a large bank, multimarket bank, or nonlocal bank, respectively.   We find that most of the key exogenous variables have odds ratios that are statistically insignificantly different from one; that is we find little evidence that smaller, younger firms, with more important owners have their strongest relationships with small, single-market and local banks.   The one exception is that young firms are just slightly less likely to have large banks as their main bank – the odds ratio of 1.014 suggests that doubling the age increases the probability of a large main bank by about 1.4 percent.   The odds ratio on the large bank share of the market is greater than one and statistically significant in the first regression, suggesting that small businesses' choice of large banks is, in part, motivated by the convenience of having a large share of branches of those types of banks in the area.   In the third regression, column 3, the odds ratio on the total branches in each market per capita, our proxy of local bank or branch office presence, is less than one, suggesting that small businesses' choice of nonlocal banks is driven again partly by the convenience of having a local office in the market.

Determinants of relationship strength

Table 3 reports the results of our second set of regressions, which tests the effects of firm size, age, and "importance" of the principal owner, as well as the main bank type and financial fragility, on the strength of the main relationship. Columns 1 through 3 report the results of equation (2) estimated as a logit model using the exclusive relationship indicator as the endogenous variable, while columns 4 though 6 reports the results of equation (2), estimated as an OLS model with robust standard errors and using the log of one plus the length of the relationship with the primary bank as the endogenous variable.   Each set of regressions uses one of the alternate measures of main bank financial fragility. Columns 1 and 4 report the results of equation (2) using the equity to asset ratio of the primary bank as the financial fragility measure, columns 2 and 5 list the results of

equation (2) using the nonperforming loan ratio of the primary bank and, finally, columns 3 and 6 report the results using the risk-based capital ratio of the primary bank.

We see in the set of logit regressions using the exclusive relationship dummy, that the odds ratios for the medium and large firm indicators are below one and statistically significant, that is, these firms are less likely than small firms to have exclusive relationships with their main banks. This could indicate that small firms have stronger relationships with their main banks, consistent with the predictions of the conventional paradigm, or it could reflect the fact that larger firms demand a larger array of financial services, which may require multiple banks. We turn to the regression results for relationship length below to determine which of these explanations is more likely. The odds ratios on whether the main bank is large, multimarket, or nonlocal are insignificantly different from one – inconsistent with the conventional paradigm, which would predict stronger relationships with "community banks." The odds ratio on the equity to asset ratio of the main bank is significantly less than one, suggesting that riskier banks (with lower equity ratios) are more likely to have exclusive relationships, which runs counter to the prediction that firms choose multiple banks to avoid the risk of a fragile main bank.

The set of OLS regressions using the log of one plus the length of the relationship shows that small firms are no more likely than medium or large firms to have a longer relationship with their banks; again, inconsistent with the predictions of the conventional paradigm. The estimated coefficients on the age and riskiness of the firms indicate that older and safer firms are more likely to have a longer relationship with their banks. The age coefficient may reflect a mechanical association, given that older firms have more years available to have longer relationships, while the risk coefficient may suggest that banks prefer to keep relationships with safer firms. Finally, firms whose primary bank is large or multimarket tend to have longer relationship with their banks, contrary to the predictions of the conventional paradigm, although firms whose primary bank is nonlocal have shorter relationships with their primary banks.

6. Conclusions

Bank researchers have traditionally argued that "community banks" – institutions that are small and operate locally in a single market – tend to have the strongest relationships with the smallest, least informationally transparent small businesses. The argument frequently cited is that community bankers are superior at processing "soft" qualitative information about their customers and local communities that is difficult to quantify and transmit over distances and through the communication channels of other banks. "Mega banks"

– institutions that are large, multimarket, and provide services from outside the local market – in contrast are better at serving larger, more transparent firms using "hard" quantitative information and that may be more easily communicated within these organizations.

There are reasons to believe that this conventional paradigm may have lost hold to some degree over time as technological progress and deregulation has made it easier for mega banks to serve small, opaque firms. For example, the small business credit scoring technology, which enables large institutions to lend to the smallest firms, was not widely used by large banks until the mid-1990s. Moreover, geographical deregulation, which culminated in the enactment of IBBEA in 1994, allows mega banks to operate virtually nationwide.

Some of the recent literature has challenged the conventional paradigm, finding that large banks do lend to small, opaque firms using hard-information technologies such as small business credit scoring and fixed-asset technologies. However, the literature has not to date spent much effort testing other predictions of the conventional paradigm regarding which type of bank serves as a small business' "main" relationship bank and the strength of the main bank relationship.

In this paper, we test some of these predictions using data from the 2003 Survey of Small Business Finance (SSBF). Specifically, we conduct two sets of tests. First, we test for the type of bank serving as the "main" relationship bank. We find that opaque small businesses are not more likely to have a community bank as their main bank. Second, we test for the strength of these main relationships by examining the probability of multiple relationships and other measures of relationship strength as a function of main bank type and financial fragility, as well as firm and owner characteristics. We find mixed evidence on whether opaque small businesses have stronger relationships with their main banks, but the evidence is clearer that strength does not depend on the type of bank. Finally, we hypothesize that the conventional paradigm is more likely to hold in older data. Specifically, we expect more conformance with the predictions of the paradigm using the 1993 SSBF, which largely predates the use of small business credit scoring and interstate bank branching. In future drafts of this paper, we will test this hypothesis using the 1993 SSBF data.

References

Avery, R.B., and K.A. Samolyk, 2004. Bank consolidation and the provision of banking services: Small commercial loans, Journal of Financial Services Research 25: 291-325.

Berger, A.N., Black, L.K. forthcoming. Bank Size, Lending Technologies, and Small Business Finance. Journal of Banking and Finance.

Berger, A.N., S.D. Bonime, L.G. Goldberg, and L.J. White, 2004, The dynamics of market entry: The effects of mergers and acquisitions on entry in the banking industry, Journal of Business 77: 797-834.

Berger, A.N., Cowan, A.M., Frame, W.S. forthcoming. The Surprising Use of Credit Scoring in Small Business Lending by Community Banks and the Attendant Effects on Credit Availability, Risk, and Profitability. Journal of Financial Services Research .

Berger, A.N., Frame, W.S., Miller, N. 2005. Credit Scoring and the Availability, Price, and Risk of Small Business Credit. Journal of Money, Credit, and Banking, 37, 191-222.

Berger, A.N., Hasan, I., Klapper, L.F., 2004. Further evidence on the link between finance and growth: An international analysis of community banking and economic performance. Journal of Financial Services Research 25, 169-202.

Berger, A.N., Klapper L.F., Udell, G.F., 2001. The ability of banks to lend to informationally opaque small businesses. Journal of Banking and Finance 25, 2127-2167.

Berger, A.N., Klapper L.F., Martinez Peria, M.S., Zaidi, R. 2008. Bank Ownership Type and Banking Relationships. Journal of Financial Intermediation 17, 37-62.

Berger, A.N., Miller, N.H., Petersen, M.A., Rajan, R.G., Stein, J.C., 2005. Does function follow organizational form? Evidence from the lending practices of large and small banks, Journal of Financial Economics 76, 237-269.

Berger, A.N., Ostromogolsky, P. 2009. The Effects of Banks on 'Debt-Sensitive' Small Businesses. Journal of Financial Economic Policy 1, 44-79.

Berger, A.N., Rosen, R.J., Udell, G.F., 2007. Does market size structure affect competition? The case of small business lending. Journal of Banking and Finance 31: 11-33.

Berger, A.N., A. Saunders, J.M. Scalise, and G.F. Udell, 1998, The effects of bank mergers and acquisitions on small business lending, Journal of Financial Economics 50, 187-229.

Berger, A.N., Udell, G.F., 1995, Relationship lending and lines of credit in small firm finance, Journal of Business 68, 351-381.

Berger, A.N., Udell, G.F., 2002. Small business credit availability and relationship lending: The importance of bank organizational structure, Economic Journal 112, 32-53.

Berger, A.N., Udell, G.F., 2006. A More Complete Conceptual Framework for SME Finance. Journal of Banking and Finance 30, 2945-2966.

Bharath, S., Dahiya, S., Saunders,.A., Srinivasan, A., 2010. So What Do I Get? The Bank's View of Lending. Journal of Financial Economics.

Black S.E., Strahan, P.E., 2002. Entrepreneurship and bank credit availability. Journal of Finance, 57, 2807-2833.

Bonaccorsi di Patti, E., Dell'Ariccia, G., 2004. Bank competition and firm creation. Journal of Money, Credit, and Banking 36: 225-251.

Boot, A.W.A., 2000. Relationship banking: What do we know? Journal of Financial Intermediation 9, 7-25.

Brevoort, K. P. and Hannan, T.H.,2006. "Commercial Lending and Distance: Evidence from Community Reinvestment Act Data," *Journal of Money, Credit, and Banking* 38, 1991-2012.

Cetorelli, N., 2004. Bank concentration and competition in Europe. Journal of Money, Credit, and Banking 36: 543-558.

Cetorelli, N., Gambera, M., 2001. Banking market structure, financial dependence and growth: International evidence from industry data. Journal of Finance 56, 617-648.

Cetorelli, N., Strahan, P.E., 2006. Finance as a barrier to entry: Bank competition and industry structure in local U.S. markets. Journal of Finance 61.

Cohen, Andrew, and Michael J. Mazzeo. 2007. "Market Structure and Competition among Retail Depository Institutions." *Review of Economics and Statistics* 89.

Cole, R., 1998. The importance of relationships to the availability of credit. Journal of Banking and Finance 22, 959-977.

Cole, R. A., Goldberg, L.G., White, L.J., 2004. Cookie-cutter versus character: The micro structure of small business lending by large and small banks. Journal of Financial and Quantitative Analysis 39, 227-251.

Dahiya, Sandeep, Kose John, Manju Puri, and Gabriel Ramirez, 2003, Debtor-in-possession financing and bankruptcy resolution: Empirical evidence, Journal of Financial Economics 69, 259-280.

de la Torre, A., Martinez Peria, M.S., Schmukler, S.L. 2010. Bank involvement with SMEs: Beyond relationship lending. Journal of Banking and Finance, forthcoming.

Degryse, H., Van Cayseele, P., 2000. Relationship lending within a bank-based system: Evidence from European small business data. Journal of Financial Intermediation 9, 90-109.

Detragiache, E., Garella, P., Guiso, L., 2000. Multiple versus single banking relationships: Theory and evidence. Journal of Finance 55, 1133-1161.

DeYoung, R., Frame, W.S., Glennon, D., Nigro, P., forthcoming. The information revolution and small business lending. Journal of Financial Services Research

DeYoung, R., Hunter, W.C., Udell, G.F., 2004. "The Past, Present, and Probable Future for Community Banks." Journal of Financial Services Research 25: 85-133.

DeYoung, R., Nigro, P, and Spong, K., 2010, Ruralness and small business credit access, mimeo.

Elsas, Ralf. 2005. Empirical determinants of relationship lending. Journal of Financial Intermediation14, 32–57.

Elsas, Ralf, Heinemann, Frank and Tyrell, Marcel, "Multiple but Asymmetric Bank Financing: The Case of

Relationship Lending" (September 2004). CESifo Working Paper Series No. 1251: http://ssrn.com/abstract=559104.

Elsas, R., Krahnen, J.P., 1998. Is relationship lending special? Evidence from credit-file data in Germany. Journal of Banking and Finance 22, 1283-1316.

Farinha, L.A., and Santos, J.A.C., 2002. Switching from single to multiple bank lending relationships: Determinants and implications. Journal of Financial Intermediation 11, 124-151.

Frame, W.S., Padhi, M., Woolsey L. 2004. The Effect of Credit Scoring on Small Business Lending in Low- and Moderate Income Areas. Financial Review 39, 35-54.

Frame, W.S., Srinivasan, A., Woosley, L. 2001. The Effect of Credit Scoring on Small Business Lending. Journal of Money, Credit, and Banking 33, 813-825.

Hannan, Timothy H. (2003). "Changes in Non-Local Lending to Small Business," Journal of Financial Services Research, 24, 31-46.

Hannan, Timothy H., Prager, R.A. 2006. "The profitability of small, single-market banks in an era of multimarket banking. Finance and Economics Discussion Series (FEDS) 2006-41, Federal Reserve Board.

Harhoff, D., Korting, T., 1998, Lending relationships in Germany – Empirical evidence from survey data, *Journal of Banking and Finance* 22, 1317-1353.

Haynes, G.W., Ou, C., Berney, R., 1999. Small business borrowing from large and small banks. In: Blanton, J.L., Williams, A., Rhine, S.L.W. (Eds.), Business Access to Capital and Credit. Federal Reserve System Research Conference, pp. 287-327.

Herrera, A.M., and Minetti, R., 2007. Informed finance and technological change: Evidence from credit relationships, *Journal of Financial Economics* 83, 223-269.

Houston, J.F., James, C.M., 1996. Bank information monopolies and the mix of private and public debt choices. Journal of Finance 51, 1863-1889.

Jayaratne, J., and JohnWolken, 1999, How important are small banks to small business lending? New evidence from a survey of small firms, *Journal of Banking and Finance* 23, 427–458.

Karceski, J., Ongena, S., Smith, D., 2005. The impact of bank consolidation on commercial borrower welfare, Journal of Finance 60.

Machauer, A., Weber, M., 2000. Number of bank relationships: an indicator of competition, borrower quality or just size? Johan Wolfgang Goethe-Universitat Center for Financial Studies Working Paper No. 2000/06.

Ongena, S., Smith, D., 2000. What determines the number of bank relationships? Cross-country evidence. Journal of Financial Intermediation, 9, 26-56.

Petersen, M., Rajan, R., 1994. The benefits of lending relationships: Evidence from small business data, Journal of Finance 49, 3-37.

Petersen, M., Rajan, R., 1995. The effect of credit market competition on lending relationships. Quarterly Journal of Economics 110, 407-443.

Petersen, M.A., and R.G. Rajan 2002. "The Information Revolution and Small Business Lending: Does Distance Still Matter?" *Journal of Finance*, 57, 2533-2570.

Rajan, R., 1992. Insiders and outsiders: The choice between informed and arms length debt. Journal of Finance, 47, 1367-1400.

Rice, T. and Strahan, P.E., 2010. Does credit competition affect small-firm finance? Journal of Finance 65, 861-889.

Rosenfeld, Claire M. 2005. The Effect of Banking Relationships on the Future of Financially Distressed Firms, University of Minnesota working paper.

Scott, J.A., 2004. Small business and value of community financial institutions. Journal of Financial Services Research 25: 207-230.

Sharpe, S.A., 1990. Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. Journal of Finance 45, 1069-87.

Stein, J.C., 2002. Information production and capital allocation: Decentralized vs. hierarchical firms. Journal of Finance 57, 1891-1921.

Von Thadden, E., 1992. The commitment of finance, duplicated monitoring, and the investment horizon. Working Paper CEPR No. 27.

Williamson, O., 1988. Corporate finance and corporate governance. Journal of Finance 43, 567-91.

Table 1

Summary statistics

This table reports summary statistics from the 2003 Survey of Small Business Finance combined with the Q42003 Bank Call Reports. Market concentration equals the sum of squared share of deposits held by all banks in the borrowers' local market, where market is defined at the Metropolitan Statistical Area (MSA) or county. The branching restriction index is a measure of credit competition from Rice and Strahan (2010). Not all firms have bank relationships, therefore the number of observations of bank characteristics will be less than the number of firms in the sample. MRL equals most recently approved loan. N = 2610.

Variable	Mean	Standard Deviation
Bank characteristics		
Equity to asset ratio of primary bank	0.09	0.03
Indicator if primary bank is large	0.75	0.43
Indicator if primary bank is nonlocal	0.59	0.49
Indicator if primary bank is multimarket	0.63	0.48
NPL ratio of primary bank	0.01	0.01
Liquid asset ratio of primary bank	0.26	0.11
Risk-based capital ratio of primary bank	0.13	0.06
Relationship variables		
Indicator if firm has only one bank	0.57	0.49
Relationship length (years)	11.07	10.55
Firm characteristics		
Indicator if firm has declared bankruptcy	0.01	0.09
Indicator if firm is delinquent on payments	0.17	0.37
Indicator if collateral on MRL	0.23	0.42
Firm risk rating (6 is safest; 1 is riskiest)	3.87	1.45
Leverage ratio of firm	0.33	0.39
Distance between primary bank and firm (miles)	16.36	114.49
Length of relationship with primary bank	10.91	10.05
Indicator if family owned	0.82	0.38
Indicator if firm has a bank loan	0.49	0.50
Firm age (years)	16.36	12.19
Indicator if large firm	0.28	0.45
Indicator if medium firm	0.31	0.46
Indicator if small firm	0.41	0.49
Percent minority owned	0.14	0.34
Indicator if owner is manager	0.89	0.31
Indicator if proprietorship	0.28	0.45
Indicator if partnership	0.05	0.22
Indicator if corporation	0.67	0.47
Market controls		
Large bank share of market	79.30	14.77
Branches per capita	0.10	0.18
Branching restriction index	2.10	1.29
Market concentration	0.14	0.06

Table 2
Determinants of main bank type

Regressions are weighted by survey weights to account for disproportionate sampling and nonresponse, and include a set of two-digit SIC indicator variables to control for industry effects. Market concentration equals the sum of squared share of deposits held by all banks in the borrowers' local market, where market is defined at the Metropolitan Statistical Area (MSA) or county. The branching restriction index is a measure of credit competition from Rice and Strahan (2010). Odds ratios, rather than the coefficient estimates, are reported. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively. MRL equals most recently approved loan.

	(1)	(2)	(3)
	Primary bank is large bank	Primary bank is multimarket bank	Primary bank is nonlocal bank
Indicator if medium firm	1.203	1.048	1.142
	(1.281)	(0.371)	(1.097)
Indicator if large firm	1.156	0.898	1.155
	(0.675)	(-0.564)	(0.790)
Firm age (years)	1.014**	1.001	1.003
	(2.347)	(0.261)	(0.607)
Firm risk rating (6 is safest; 1 is riskiest)	1.019	1.052	1.037
	(0.435)	(1.254)	(0.942)
Indicator if collateral on MRL	0.733	0.912	0.630***
	(-1.601)	(-0.540)	(-3.016)
Indicator if delinquent	0.906	1.004	1.146
	(-0.603)	(0.027)	(0.931)
Indicator if owner declared bankruptcy	0.662	0.676	0.386*
	(-0.840)	(-0.741)	(-1.718)
Leverage ratio of firm	0.833	0.880	1.225
	(-1.124)	(-0.900)	(1.523)
Indicator if owner is manager	1.057	1.338	0.731
	(0.218)	(1.244)	(-1.386)
Indicator if family owned	0.920	1.002	1.057
	(-0.411)	(0.010)	(0.346)
Percent minority owned	1.841***	1.593***	1.273*
	(3.189)	(2.823)	(1.660)
Market concentration	4.438	0.818	0.061***
	(1.329)	(-0.216)	(-3.025)
Large bank share of market	1.060***		
	(12.633)		
Mulitmarket share of market		1.000**	
		(-2.209)	
Total branches per capita			0.280**
			(-2.339)
Indicator if corporation	1.174	1.080	0.798*
	(1.103)	(0.593)	(-1.846)
Indicator if partnership	1.176	2.011**	0.898
	(0.542)	(2.522)	(-0.433)
Branching restriction index	0.991	0.986	1.029
	(-0.198)	(-0.311)	(0.706)
Constant	0.020***	1.245	3.022***
	(-7.041)	(0.570)	(3.045)
R-squared	12.98	1.78	2.82
N	2846	2610	2846

Table 3
Determinants of relationship strength

Regressions are weighted by survey weights to account for disproportionate sampling and nonresponse, and include a set of two-digit SIC indicator variables to control for industry effects. Market concentration equals the sum of squared share of deposits held by all banks in the borrowers' local market, where market is defined at the Metropolitan Statistical Area (MSA) or county. The branching restriction index is a measure of credit competition from Rice and Strahan (2010). Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively. MRL equals most recently approved loan.

	(1)	(2)	(3)	(4)	(5)	(6)
		Firm has	Firm has			
	Firm has exclusive	exclusive	exclusive	Length of	Length of	Length of
	relationship	relationship	relationship	relationship	relationship	relationship
Indicator if medium firm	0.497***	0.496***	0.497***	0.042	0.042	0.042
	(-5.437)	(-5.466)	(-5.438)	(0.986)	(0.985)	(0.988)
Indicator if large firm	0.381***	0.380***	0.379***	0.075	0.075	0.075
	(-5.164)	(-5.148)	(-5.170)	(1.170)	(1.160)	(1.166)
Firm age (years)	0.998	0.999	0.999	0.033***	0.033***	0.033***
	(-0.375)	(-0.213)	(-0.274)	(13.872)	(14.711)	(13.877)
Firm risk rating (6 is safest; 1 is riskiest)	0.974	0.972	0.973	0.048***	0.049***	0.048***
	(-0.628)	(-0.683)	(-0.668)	(3.312)	(3.337)	(3.307)
Indicator if collateral on MRL	0.751*	0.746*	0.748*	-0.135**	-0.139**	-0.135**
	(-1.737)	(-1.766)	(-1.755)	(-2.387)	(-2.447)	(-2.391)
Indicator if delinquent	0.822	0.837	0.831	0.035	0.037	0.035
	(-1.224)	(-1.112)	(-1.160)	(0.643)	(0.679)	(0.644)
Indicator if owner declared bankruptcy	1.279	1.319	1.310	0.234	0.243	0.235
	(0.457)	(0.512)	(0.497)	(1.280)	(1.321)	(1.284)
Leverage ratio of firm	0.364***	0.368***	0.364***	-0.045	-0.042	-0.045
	(-6.963)	(-6.881)	(-6.941)	(-0.926)	(-0.874)	(-0.931)
Indicator if owner is manager	0.859	0.858	0.866	0.108	0.106	0.108
	(-0.711)	(-0.711)	(-0.671)	(1.575)	(1.550)	(1.582)
Indicator if family owned	0.758	0.774	0.760	0.087*	0.090*	0.087*
	(-1.596)	(-1.499)	(-1.592)	(1.678)	(1.704)	(1.678)
Percent minority owned	0.776	0.774	0.773	-0.027	-0.026	-0.027
	(-1.610)	(-1.622)	(-1.632)	(-0.611)	(-0.591)	(-0.615)
Market concentration	1.042	1.152	1.107	0.177	0.207	0.178
	(0.039)	(0.135)	(0.097)	(0.577)	(0.672)	(0.583)
Large bank share of market	1.004	1.003	1.004	-0.004***	-0.004***	-0.004***
	(0.979)	(0.688)	(0.854)	(-2.663)	(-2.763)	(-2.647)
Indicator if corporation	1.259*	1.251*	1.254*	-0.064	-0.066	-0.064
	(1.774)	(1.725)	(1.745)	(-1.516)	(-1.553)	(-1.516)
Indicator if partnership	1.608	1.618	1.612	-0.085	-0.083	-0.085
	(1.543)	(1.549)	(1.538)	(-0.879)	(-0.849)	(-0.877)
Equity to asset ratio of primary bank	0.007**			-0.151		
	(-2.230)			(-0.279)		
Nonperforming loan ratio of primary bank		0.029			-3.185	
		(-0.663)			(-1.065)	
Risk-based capital ratio of the primary bank			0.411			-0.062
			(-0.864)			(-0.183)
Indicator if primary bank is large	1.112	1.227	1.186	0.159***	0.159***	0.160***
	(0.625)	(1.215)	(0.995)	(2.911)	(2.984)	(2.913)
Indicator if primary bank is multimarket	1.108	1.100	1.083	0.122***	0.128***	0.121***
	(0.788)	(0.735)	(0.615)	(2.817)	(2.941)	(2.794)
Indicator if primary bank is nonlocal	0.982	0.975	0.974	-0.078*	-0.075*	-0.078*
	(-0.129)	(-0.180)	(-0.193)	(-1.816)	(-1.736)	(-1.826)
Branching restriction index	1.160***	1.158***	1.158***	0.005	0.005	0.005
	(3.365)	(3.315)	(3.307)	(0.369)	(0.370)	(0.366)
Constant	4.116***	2.716**	2.911**	1.428***	1.454***	1.422***
	(2.679)	(2.048)	(2.124)	(8.304)	(8.685)	(8.437)
R-squared	7.41	7.02	7.08	25.70	25.84	25.70
N	2614	2614	2614	2614	2614	2614