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**Does Distance Matter in Banking?**

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# Does Distance Matter in Banking?

by

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**Abstract:** Deregulation and technological change have reduced the transactions costs that led to the dominance of local financial service suppliers, leading some to question if distance still matters in banking. This debate has been particularly acute in small business banking, where transactions costs are believed to be particularly high. This paper provides a detailed review of the literature on distance in banking markets, highlighting the reasons why geographic proximity is believed to be important and examining the changes that may have affected its importance. Relying on new data from the 2003 Survey of Small Business Finances, we examine how distances between small firms and their financial service suppliers changed over the 1993-2003 decade. Our analysis reveals that distances increased, though the extent varied substantially across financial services and supplier types. Generally, increases were observed in the early half of the decade, while distances declined in the following five years. There was also a trend towards less in person interaction between small firms and their suppliers of financial services. Nevertheless, most relationships remained local, with a median distance of 5 miles in 2003. The results suggest that distance, while perhaps not as tyrannical as in the past, remains an important factor in banking.

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## 1 Introduction

Over the past several decades, substantial changes have occurred in the technologies employed by banks in providing financial services and in the regulatory environment in which banks operate. The technological changes have allowed banks to interact with customers or prospective customers more efficiently (such as automated teller machines (ATMs) and online banking) and to more accurately measure and manage risk (for example, credit scoring and loan securitization). At the same time, banking deregulation removed many of the regulatory barriers that limited the geographic areas in which banks operate. Deregulation resulted in fewer restrictions on branching activity (both intrastate and interstate) and a greater ability for banks in one state to offer financial services in another state free from additional regulatory burden (e.g., preemption).

That these technological and regulatory developments have had an impact on the structure of the banking industry is indisputable. In the United States, these changes fostered a dramatic increase in industry consolidation at the national level that reduced the number of banks and thrifts from 16,392 in June 1989 to 8,848 in June 2006. Nevertheless, the U.S. banking industry continues to have a large number of banks, the majority of which continue to focus on serving their local community and local customers. Consequently, there is significant disagreement about whether regulatory and technological changes have altered the methods of providing banking services sufficiently to break the traditional reliance of households and small businesses on local suppliers.<sup>1</sup> The extent to which this reliance on local suppliers, which some refer to as the “tyranny of distance,” has declined over time has been the subject of a substantial amount of research.

This research, which is summarized below, focuses primarily on whether the distances between bank customers and their banking institutions have increased over time. Generally, these studies report that average distances have increased over the past two decades. However, there also is evidence that these changes may not have affected all banks or customers equally. This leaves open several questions about the role of location in banking. In particular, as banking institutions and their customers have adjusted to deregulation and technological advances, has having a local presence become insignificant for either banks or their customers? Or does distance continue to matter in banking?

In this paper, we examine the role of distance, or more specifically, geographic proximity in U.S. banking markets.<sup>2</sup> We begin by reviewing the different rationales for why proximity might be an

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<sup>1</sup> Several published studies have established the reliance of households and small businesses on local suppliers of financial services. For examples, see Kwast, Starr-McCluer, and Wolken (1997), Amel and Starr-McCluer (2002), and Amel and Brevoort (2005).

<sup>2</sup> We suspect that the same evolutionary process is playing out for similar reasons across the developed world and that consequently our results for U.S. markets will be more broadly applicable. One advantage of using U.S. data is that our analysis can focus specifically on the issue of distance, without worrying about the effect of

important factor in the provision of financial services and evaluate whether these rationales remain relevant in the modern banking marketplace. These rationales for the importance of proximity each relate to some aspect of transactions costs. Many of these transactions costs may have been reduced by recent technological improvements. Nevertheless, the existing evidence on the extent to which technology has reduced these costs is unclear from the extant literature.

Traditionally, small business lending has been cited as the area of banking that has been most affected by the types of transactions costs that are exacerbated by distance. Consequently, the provision of financial services to small businesses has tended to involve local suppliers. The extent to which technological and regulatory changes have altered this tendency has been controversial.

The new data from the 2003 Survey of Small Business Finances (SSBF), supplemented with the data from the two previous SSBFs in 1993 and 1998, allow for an examination of the extent to which geographic distances have changed between 1993 and 2003. The SSBF data provide the most comprehensive view available of financial service usage by a nationally representative sample of small businesses. Our analysis of the data reveals that distances generally increased over the decade, though the extent of the increase varied substantially across the types of financial service being supplied and the types of institution that was supplying them. These increases were generally observed in the early half of the decade, with distances declining somewhat in the following five years. Additionally, there seems to have been a general trend towards less in person interaction between small firms and their suppliers of financial services. Despite these changes, however, the data show that distance, while perhaps not as tyrannical as in the past, remains an important factor in banking.

The remainder of this paper documents our analysis of the role of distance in banking, with particular emphasis on how the importance of proximity evolved over the decade. The next section reviews the current literature on why distance might matter in the delivery of financial services and how recent technological innovations may have altered the value of proximity. Both theoretical and empirical studies are reviewed. The latter portion of the paper provides updated information from the Surveys of Small Business Finance on how the importance of distance and the tendency to conduct business in person have changed over the past decade. Conclusions and suggested areas for future research follow.

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international borders. The distinction between the related concept of distance and borders is made by Degryse and Ongena (2004).

## 2 Why Distance Might Matter

In this section, we begin our analysis of the role of distance in banking by exploring the reasons why one might expect distance, or more specifically geographic proximity, to play an important role in the provision, delivery, and use of banking services. We then discuss technological or regulatory changes that have occurred in U.S. banking markets in recent years that may have diminished the role that geographic proximity plays. Finally, the section concludes by examining the literature on how the relative locations of banks and their customers have changed over time.

### *2.1 Sources of Advantage from Geographic Proximity*

The role of geographic proximity in the provision of financial services is most often attributed to its effect on the transactions costs incurred by banks or their customers. Elliehausen and Wolken (1990) delineate two components of transactions costs that are affected by geographic proximity: transportation and information costs.

Transportation costs include the dollar and time costs incurred by banks or their customers in conducting business in person. For consumers of financial services, transportation costs vary directly with the number of transactions the consumer has with a financial service provider, the distance between the consumer and the institution, and the extent to which the consumer has to conduct transactions with their financial institution in person, rather than by other means (e.g., telephone, mail or online). If these costs are nonnegligible, then they will tend to serve as a source of competitive advantage for nearby banks. For example, Chiappori, Perez-Castrillo and Verdier (1995), Dell'Araccia (2001), Park and Pennacchi (2003), and Villas-Boas and Schmidt-Mohr (1999) each point to the geographic transportation costs incurred by consumers as an important component of bank competition.<sup>3</sup> Additionally, Degryse and Ongena (2005) and Degryse, Laeven, and Ongena (2006) point to both the transportation costs between a borrower and a lender and between the borrower and an alternative lender as factors that affect loan pricing. In each of these papers, the transportation costs incurred by bank customers affect their choice of banking institution.

Financial institutions also may incur transportation costs, primarily in the provision of credit. Evaluating loan applications or monitoring borrowers after a loan is made (particularly business customers) may require multiple site visits by a loan officer. In this case, any travel costs incurred by a lender would make lending to distant borrowers costlier and, to the extent that the banks cannot pass along the higher transportation costs to borrowers through higher interest rates or fees, decrease the willingness of lenders to extend credit to more distant borrowers. Almazan (2002) highlights the role of

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<sup>3</sup> Additionally, both Barros (1999) and Hannan and Prager (2004) employ theoretical models that utilize transportation costs, though the costs in these models are less clearly related to geographic transportation costs.

lender transportation costs in bank competition. The larger the transportation costs incurred by financial institutions, the more likely consumers are to receive services from local providers.

As with transportation costs, information costs may also be incurred by either financial institutions or their customers. For customers, information costs primarily relate to search costs associated with acquiring information about alternative suppliers. These search costs may vary directly with the distance between the customer and financial institutions and the degree of heterogeneity in financial services. Providing information to prospective customers can also impose costs on financial institutions in the form of advertising or the costs associated with maintaining relationships with brokers or other agents that interact with potential customers.

Financial institutions may also face other information costs that vary with distance and that are specifically related to the provision of credit. Unlike deposit markets, which generally do not involve any adverse selection of depositors, the provision of credit involves risk. Therefore the costs of supplying funds will depend upon the credit quality of the borrowers. Particularly when evaluating credit applications from small businesses, lenders may lack the “hard” information provided by audited financial statements or the publicly priced debt or equity available for larger firms. In this case, the lenders will have to rely more heavily on “soft” information collected through previous dealings or through knowledge of the local community and economic conditions. Thus, lenders that are more proximate to prospective borrowers may possess superior information about those borrowers and be able to monitor the loan performance of the borrowers more easily than more distant lenders.<sup>4</sup> These factors may affect the willingness of distant lenders to extend credit.

Dell’Ariccia, Friedman, and Marquez (1999) suggest that the information provided by previous credit relationships may provide such a substantial competitive advantage as to constitute a barrier of entry to new lenders. In this case, prospective borrowers may find that more distant lenders are not willing to supply credit due to fear of a “winner’s curse,” in which the bank winds up only making loans to borrowers who have been rejected by lenders with superior information (Shaffer, 1998).<sup>5</sup>

In the case of consumer lending, soft information is less likely to be an important component of lending for several reasons. One reason is that consumer loans tend to be smaller in size than commercial loans, and therefore the marginal costs incurred in acquiring soft information may not be cost effective.<sup>6</sup>

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<sup>4</sup> A detailed discussion of the importance of soft information in small business lending is provided by Berger and Udell (2002).

<sup>5</sup> Even though local banks may have an advantage in information production, it is possible that distant lenders could be competitive with local lenders if their cost of funds was sufficiently lower than the cost of funds for the local lenders. Such a situation is possible if the nonlocal institution is very large. Del’Ariccia and Marquez (2004) provide such a theoretical model.

<sup>6</sup> The notable exception to this may be residential mortgages, which tend to be larger than other types of consumer loans. In evaluating mortgage applications, lenders often expend effort to document income levels and

A second reason is the existence of credit bureaus that collect and maintain large databases on each individual's past credit experiences. To the extent that information on credit accounts is transmitted to the credit bureaus, the informational advantage possessed by local lenders because of past credit relationships with a prospective borrower is diminished (though for the provision of depository services and other activities not reported to the credit bureaus, the information advantage would be maintained). These credit bureaus have the effect of taking what may previously have been considered soft information possessed by a single lender and "hardening" it in a form that is accessible to all lenders.

While some small business lenders will also utilize information from credit bureau records of the owner of the small business,<sup>7</sup> the data sources on the past credit experiences of small businesses are much less developed.<sup>8</sup> Additionally, consumers may be more able to produce documentation of income levels and other pieces of information that provide additional hard information to the lender, thereby reducing the extent of asymmetric information in consumer loan markets. Consequently, one might expect the reduced potential for information asymmetries in consumer lending markets to make geographic proximity less important in these credit markets than in small business lending markets. Nevertheless, transactions costs incurred by households or consumers in conjunction with preferences to conduct financial business in person may still provide a rationale for the importance of distance for these bank customers.

## 2.2 *Technological Changes and the Importance of Distance.*

The discussion above suggests that the importance of geographic proximity in banking markets can be primarily attributed to the transactions costs incurred in the provision of financial services. Technological changes have occurred in the past few decades that may have reduced, or even eliminated, some transactions costs. If so, then one would expect the role of geographic proximity to have diminished in banking. Two technological changes stand out as potentially having reduced the transactions costs associated with distance between financial service companies and their customers: alternative service delivery mechanisms and automated credit scoring systems.

The first major technological advance has been the development of alternative service delivery mechanisms, such as online banking and automated teller machines (ATMs). These new technologies have the potential to reduce the transportation costs incurred by consumers in interacting with their financial institution. This would have the effect of lowering the transactions costs of distant institutions

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secure other information about the borrower or the property.

<sup>7</sup> Refer to Mester (1997) and Cowan and Cowan (2006).

<sup>8</sup> Kallberg and Udell (2003) discuss the small business credit information collected by Dun & Bradstreet. They find that the information contained in these models provides significant additional predictive power above that provided by the other credit information available to lenders.

dealing with local customers by reducing the frequency with which a customer needs to interact in person with her financial institution.

The existing evidence on the extent to which these new service delivery mechanisms have allowed consumers to reduce their need for in person interaction with their financial services suppliers is mixed. Regarding online banking, Khan (2004) finds that a household's use of online banking services is not affected by the distance to the closest bank branch and suggests that online banking services may be a supplement to, rather than a substitute for, personal interaction with banks. Amel and Brevoort (2005) reach a similar conclusion for small businesses based on an analysis of survey data in which firms that used the Internet for banking reported fewer alternative services available than other small businesses not using the Internet. These studies suggest that while the development of online banking has the potential to reduce the transportation costs incurred by consumers in obtaining financial services, at present it is operating as a service enhancement, rather than a substitute for in person interaction.

Similarly, if the customers of a bank view ATM networks as substitutes for bank branches, then it is possible that banks can compete for customers in areas in which they have few or no branches, provided that their customers can access their services through an ATM. While this is unlikely to play any role in lending,<sup>9</sup> ATMs may provide an alternative to brick-and-mortar branches that can allow banks to expand their geographic reach at much lower cost. Using data on banks in Italy, Hester, Calcagnini, and De Bonis (2001) find that the number of ATMs in a province is positively related to the number of branches a bank has in that province and that the strength of this association is increasing over time. This result appears inconsistent with a trend towards substituting branches for ATMs. In contrast, using U.S. banking data, Hannan and Hanweck (2007) find that the average bank branch size (measured as the number of bank employees per branch) declined during a period when both the number of branches and ATMs have increased, suggesting that perhaps ATMs are serving as substitutes for bank tellers, but not necessarily for bank branches.

The second major technological advance has been the development of automated credit scoring systems. These systems, along with the large storehouses of information upon which they rely, have the potential to reduce the transaction costs incurred in providing credit. This reduction is a result of the use of credit scoring in three distinct ways: prescreening, loan origination, and loan monitoring.

The first use of credit scoring is to "prescreen" potential borrowers to allow solicitations to be focused only on those borrowers who satisfy established credit criteria. By allowing financial institutions to identify and target their advertisements to a smaller subset of borrowers, credit scoring may help

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<sup>9</sup> The services accessible through ATMs are generally related to deposit-account-related activities (e.g., cash withdrawals or deposits) and do not include credit-related activities like loan application processing or underwriting.



reduce the information costs associated with search incurred by both borrowers and lenders.<sup>10</sup>

A second use of credit scoring that may have reduced transactions costs involves loan origination and possibly loan pricing. As discussed earlier, the assembling of data on past credit experience by individuals by credit bureaus has served to provide hard information about the quality of individual applicants. This information can be used in credit scoring models to evaluate an individual's creditworthiness at very low marginal costs. While the information in credit bureaus is primarily related to individual (and not business) credit histories, this information has also proven useful in commercial lending. Cowan and Cowan (2002), for example, report that 80 percent of lenders that use credit scoring in underwriting small business loans rely exclusively on the personal credit score of the owner of the small business. Only 2.6 percent use only a credit score calculated for the business, with the remaining lenders using a combination. These scores and the information upon which they are based may potentially reduce the information costs faced by lenders and, to the extent that they reduce the information asymmetries between distant and local lenders, may reduce the extent of adverse selection and increase the willingness of lenders to actively lend to distant markets.

Finally, the third use of credit scoring that may help reduce transactions costs is loan monitoring. While most of the attention that credit scoring has received in the literature involves the use of credit scoring in underwriting and pricing, credit scoring is also widely used as a means of monitoring existing loans. Indeed, Cowan and Cowan (2006) report that banks are over 50 percent more likely to use credit scoring in small business lending for the monitoring of existing loans than for risk-based pricing. To the extent that credit scoring can substitute for site visits in loan monitoring, this would be expected to reduce the transportation costs incurred by lenders in extending credit to distant suppliers.

To date, there has only been a limited amount of empirical research on the effect of credit scoring on lending activity. In the area of consumer lending, the Board of Governors of the Federal Reserve System (2007) found that the adoption of credit scoring had likely contributed to increased credit availability and affordability, though very little direct empirical evidence was available on this point.<sup>11</sup> In the area of small business lending, two related papers by Frame, Srinivasan and Woosley (2001) and Frame, Padhi, and Woosley (2004) find that the use of credit scoring by large banks is positively correlated with the banks' volume of small business lending. A third study by Berger, Frame, and Miller (forthcoming) finds that banks that use credit scoring have higher ratios of small business loans to assets, higher loan prices, and higher loan risk. However, since large lenders are more likely to acquire credit scoring technologies (Mester 1997) and since the authors of these three studies are unable to separate the

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<sup>10</sup> For a discussion of the use of credit scoring in the solicitation of credit, see Board of Governors of the Federal Reserve System (2006).

<sup>11</sup> Consequently, the Federal Reserve Board's conclusion was based primarily on public comments, as opposed to published empirical studies or original research.

treatment effects of credit scoring adoption from selection effects, it is unclear how much of the higher lending activity can be attributed directly to the use of credit scoring.

Together, these two major technological developments provide reason to believe that the transactions costs that drive the importance of proximity in banking may have been reduced over the years. However, the literature available on the effects of these changes is ambiguous and does not provide a conclusive answer and, consequently, the extent to which these technological and regulatory changes have diminished the importance of distance remains unclear. The next section surveys the evidence that has been provided on these questions by the literature that examines the evolving relationship between distance and banking.

### *2.3 Empirical Evidence on the Importance of Distance*

Several studies have empirically examined how geographic distance is related to banking. Generally, the studies present empirical evidence that is broadly consistent with the hypothesis that in recent years the distance between financial institutions and their customers has been non-decreasing over time. Most of these studies base their conclusions on average distances across firms and institutions.

#### *2.3.1 Consumer/Household Users of Financial Services*

The literature on the evolving role of distance in consumer banking markets is thin. While several studies have examined how distance affects a consumer's choice of depository institution, none that we are aware of has examined the extent to which this relationship is changing over time. Indeed, most of the empirical studies of consumer choice of depository institutions have fundamentally glossed over the issue of distance.<sup>12</sup> The two exceptions to this are Ishii (2007), who estimates a discrete choice model in which the utility of a depositor is a function of the distance to the nearest two bank branches, and Grzelonska (2006), who estimates a model that allows for the possibility that consumers may be in different places during a day and that this may affect how each individual values a branch network. In each of these studies, consumers are more likely to choose nearby banks.

Beyond depository services, the only paper that we are aware of that has examined the changing role of distance in consumer banking is Amel, Kennickell, and Moore (2007). These authors used multiple waves of the Survey of Consumer Finances (SCF) to examine how the distance between individuals and their financial service suppliers changed between 1992 and 2004. This work builds upon

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<sup>12</sup> For example, both Dick (2007) and Adams, Brevoort, and Kiser (2007) estimate discrete choice models of consumer choice of depository institutions where the utility an individual receives from each alternative institution is a function of the branch density of the institution in that market. While higher branch densities should be correlated with distances, these studies ignore the location of individual branches relative to individual depositors.

earlier papers by Kwast, Starr-McCluer, and Wolken (1997) and Amel and Starr-McCluer (2001), both of which examine the distance between individuals and their financial institutions using single cross sections of the SCF.

The data provided by Amel, Kennickell, and Moore (2007) document an increased usage of nonlocal suppliers of financial services by consumers between 1992 and 2004, though this increase was not observed for all services. In particular, for depository services, the median<sup>13</sup> distance between a consumer and its financial service institution remained constant between 1992 and 2004 at 3 miles.<sup>14</sup> In contrast, the median distance for all loans over the same time period increased from 7 to 22 miles.<sup>15</sup>

This increase has been aided by the increased frequency with which consumers receive financial services from nondepository institutions. Over the twelve year period, the share of households using a depository institution remained approximately constant at 99 percent, while the share receiving services from nondepositories nearly doubled from 34.6 percent to 63.0 percent 2004. This increase in usage was observed for both local and nonlocal nondepositories.

Overall, Amel, Kennickell, and Moore (2007) find that the median distances between consumers and their financial service providers remained under four miles between 1992 and 2004. This result largely reflects the continued reliance of consumers on local suppliers for account management services. The distance between consumers and their suppliers of most credit products (with the exception of lines of credit) have increased over time, suggesting that geographic proximity may have been less of an advantage in consumer credit markets over the time period.

### 2.3.2 *Small Business Users of Financial Services*

Unlike the literature on distance in consumer lending, several papers have examined distance in small business banking markets. Generally, these papers have focused on the role of distance in small business lending markets.

The first paper to explicitly examine how distance is changing over time in small business lending was by Petersen and Rajan (2002). Using the 1993 SSBF, the authors construct a synthetic panel based upon the year in which the relationship between the small business and its lender began.<sup>16</sup> The paper

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<sup>13</sup> The distance data reported in the SCF is truncated from above at 50 miles. Consequently, mean distances are not available. The distance referred to is the distance to the office or branch used most frequently. In many instances, this is the office where the loan payment is sent, and not where the firm or consumer applied for the loan.

<sup>14</sup> By product, distances remained the same for checking accounts, savings accounts, money market accounts, and certificates of deposit. Median distances increased, however, for IRA/Keogh, brokerage, and trust accounts.

<sup>15</sup> Similar increases were observed for mortgages, vehicle loans, and “other” loans. The median distances for lines of credit only increased slightly from 3 to 4 miles.

<sup>16</sup> As a robustness check, Petersen and Rajan (2002) also incorporated data from the 1987 SSBF. Rather than examining how distances changed across the two time periods, the authors created a synthetic panel from the

focuses on those relationships that began between 1973 and 1993. Petersen and Rajan (2002) find that the average distance between small firms and their lenders increased by 3.4 percent per year, a trend that they attribute to improvements in bank productivity. Additionally, the authors speculate based upon conversations with industry experts and unspecified “other studies” that the trend has accelerated since 1993.

The changing role of distance in small business lending was also addressed using the 1993 and 1998 SSBF by Wolken and Rohde (2002). Comparing distances across the two survey years, Wolken and Rohde (2002) find that the average distance between a small firm's headquarters and the location of its lending institutions increased from 115 miles in 1993 to 244 miles in 1998. This increase corresponds to an annual growth rate of over 15 percent, which is consistent with speculation of Petersen and Rajan (2002) that the growth in mean distances over time after 1993 was accelerating. However, Wolken and Rohde (2002) also note that while average distances increased dramatically, the median distances only increased from 9 miles in 1993 to 10 miles in 1998. This finding suggests that the productivity improvements (or other causes) that were driving the dramatic increase in mean distances were largely affecting the upper tail of the distance distribution and were affecting only a subset of bank-borrower relationships.

Brevoort and Hannan (2006) examine how changes in the distances between banks and their borrowers were playing out at the lower end of the distance distribution. They used Community Reinvestment Act data<sup>17</sup> from 1997 to 2001 to assess how the geographic pattern of local lending by banks with branches in a sample of nine randomly-selected MSAs was changing over time. Brevoort and Hannan (2006) find that the probability that a bank extends credit to small businesses in a given census tract decreased as the distance to that census tract increased and that this “deterrent effect of distance” was stronger for smaller banks. Furthermore, there was little evidence that this effect decreased over the time period studied. In fact, the authors suggest that the in-market commercial lending they evaluate was taking place at shorter distances in local markets, a finding they argued was consistent with theoretical papers by Dell’Ariccia and Marquez (2004) and Hauswald and Marquez (2006). Both studies predicted that greater competition from distant lenders would cause local banks to concentrate their lending on more proximate borrowers for whom they retained an information advantage. This result also reinforces the notion that the increases in distance between bank lenders and small businesses were primarily occurring at the upper end of the distance distribution.

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1987 observations as well, using those relationships that began between 1973 and 1987.

<sup>17</sup> The Community Reinvestment Act data provide information on the geographic distribution of small commercial loans made by depository institutions in each calendar year. The data supply the number and dollar volume of loans made by each bank in each census tract to which it extended credit. For each bank, the data is aggregated at the census tract level, so no detail is available about the characteristics of the loans or the borrowers. For more detail on the CRA data, see Bostic and Canner (1998).

A related paper by Brevoort (2006) examines lending activity at the upper end of the distance distribution. The paper uses CRA data from 1998 to 2003 to examine how the geographic pattern of commercial loans extended by banks into MSAs in which they had no local branch presence (“out-of-market loans”) changed over the period. The study documents a large increase in the amount of out-of-market commercial lending, whether measured in terms of the number or dollar volume of loans. This finding is consistent with an earlier study by Hannan (2003) that also used CRA data to examine how the share of commercial lending accounted for by local lenders was changing over time. However, after controlling for the size of the bank and of the loan, Brevoort (2006) attributes all of the increase to large banks and small loans. Additionally, the results indicate that the deterrent effect of distance in out-of-market lending activity only declined for those lenders specializing in extremely small loans (an average loan size of \$10,000 or less). For other lenders and loan sizes, distance appeared to have more of a deterrent effect on lending activity over time. These results are consistent with the speculation that the upper tail of the distance distribution is changing over time as well as suggesting that the effects on distance may be limited to only a subset of lenders.

Additional evidence that the evolving relationship between distance and small business lending may not be affecting all lenders equally is provided by Degryse and Ongena (2005). While not focusing on how the relationship between distance and small business lending is changing over time, Degryse and Ongena (2005) report that the distance between the large Belgian bank for which they have data and its borrowers did not increase substantially between 1975 and 1997.

A series of papers have used data collected from the U.S. Small Business Administration’s (SBA’s) 7(a) Loan Program. This loan program is targeted to small businesses that have been unable to obtain financing from conventional sources and provides a government guarantee of loans made under this program, for generally between 50 and 85 percent of the outstanding loan balance.<sup>18</sup> As a fraction of the total small business lending market, the 7(a) program is quite small, accounting for an estimated 1.3 percent of small business loans and 4.1 percent of outstanding small business loan dollars for loans under \$1 million in 2005 (US GAO, 2007).

These SBA data formed the basis of the work by DeYoung, Glennon, and Nigro (2006), DeYoung, et al. (2007b), and DeYoung, et al (2007a). In the first two of these papers, the SBA data were supplemented with survey data on the use of credit scoring by large banks conducted by the Federal Reserve Bank of Atlanta in 1998.<sup>19</sup> Both papers reach essentially the same conclusion in regard to changes in distance. They find that average distances between small business borrowers and their lenders

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<sup>18</sup> For a description of the SBA’s 7(a) Loan Program, see United States Government Accountability Office (2007).

<sup>19</sup> This credit scoring survey also served as the basis for the papers by Frame, Srinivasan, and Woosley (2001), Frame, Padhi, and Woosley (2004), and Berger, Frame, and Miller (forthcoming).

grew between 1984 and 2001 and that these observed increases were larger at banks that had adopted credit scoring by the time of the 1998 survey. While it is not possible to identify a credit scoring treatment effect, the results are consistent both with the earlier observed increases in mean distances and with the notion that the increases have not affected all lenders equally. Additionally, DeYoung, et al. (2007a) find that small business borrowers in low-to-moderate income tracts had slightly lower mean distances during the 1980s and mid-1990s, but higher mean distances after 1998.

### *2.3.3 Summary of Empirical Literature*

Taken together, the evidence supplied by these papers suggests that the technological and regulatory changes that have been playing out in the banking marketplace have reduced the importance of proximity in banking. Generally, the empirical evidence indicates that distances between financial service suppliers and small businesses have increased in recent years. These studies also suggest that neither all borrowers nor all lenders have been equally affected. The importance of distance may have declined only for some borrowers or some lenders. While averages may have increased, such changes may have not occurred uniformly across the distribution of distances and may only have occurred at the upper or lower end of the distribution.<sup>20</sup> Moreover, these studies generally do not study how and whether the distance changes observed in the past few years differ by bank customer, financial service supplier, or product used.

Hence, the remainder of this paper focuses on the small business lending marketplace using newly-available data that provide the best and most up-to-date examination of how the relationship between distance and small business banking relationships have evolved over the past decade. An important contribution of this work is disaggregating the data to permit an examination of changes that account for differences in product and institution characteristics. In the empirical section below, we offer some evidence that suggests that distance remains important for a large subset of bank customers and financial service suppliers.

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<sup>20</sup>The importance of distance and its effect on policy (e.g. market definition of banking services) may be different if the incidence of distance changes is concentrated in certain portions of the distribution or among certain groups of customers, products, or institutions,

### 3 Data and Univariate Analysis

Since its inception, the Survey of Small Business Finances (SSBF) has provided the most comprehensive picture of the financial dealings of small businesses. The latest wave of this survey, the 2003 SSBF, together with the 1993 and 1998 SSBFs, makes it possible to examine how the distance between small businesses and their suppliers of financial services have changed over the decade 1993 – 2003.

The SSBF offers, arguably, the best data set available for examining how distances between the locations of small businesses and their providers of financial services are changing over time. Unlike other studies in this area that use regulatory data or data from a single bank and its customers, the SSBF surveys small businesses directly and obtains a nationally representative dataset of small businesses' financial relationships and services used by each business. Because the data are obtained from the firm, it is possible to obtain an inventory of financial services and suppliers used by the firm. Hence, suppliers other than banks can be examined. Further, while studies utilizing individual bank or CRA data typically have little information available on the firm, the SSBF contains a broad set of firm and owner characteristics. Finally, the SSBF asks firms to identify their financial service suppliers and from this information the data can be matched to banking data to obtain characteristics of the bank or other financial supplier as well as the market or geographic area in which the firm is headquartered.

More specifically, in the SSBF, firms provide information about the institutions from which they received financial services, including the institution's type and geographic location. The firm is asked to report both the location of the office or branch of the financial institution used most frequently and the distance between the firm's headquarters and this office. When the firm does not know the distance, the location of the financial service provider is used to calculate the distance between the firm's main office and each of its suppliers. Firms also provide information on whether the most frequent method of conducting business with the branch or office was in person.<sup>21</sup> These data permit an examination of how the geographic relationship between a small business and its financial service suppliers varies by institution and product type and how these geographic relationships have changed over the 1993-2003 decade.<sup>22</sup>

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<sup>21</sup> During the 1993, 1998, and 2003 surveys, respondents were asked the following: "Think of the office or branch of (NAME) that the firm used most frequently. (i) Approximately how many miles from the main office of the firm is this office or branch of (NAME)? (ii) What was the most frequent method of conducting business with this office or branch?" For additional details, see the questionnaire or codebook for the surveys at <http://www.federalreserve.gov/pubs/oss/oss3/nssbftoc.htm>.

<sup>22</sup> All data presented are weighted to provide estimates of population parameters. The samples drawn in each of the three survey years are stratified (by size, region and urban/rural status) nonproportional random samples. The weights adjust for unequal selection probabilities and response rates..

### 3.1 Location of Financial Service Suppliers by Type of Supplier

Suppliers of financial services to small businesses are divided into two broad categories or “institution types:” *depository* and *nondepository* institutions. Depositories include commercial banks, thrifts (savings banks and savings and loans), and credit unions. Nondepository institutions include finance and factoring companies, brokerage and pension firms, leasing companies, and insurance and mortgage firms.<sup>23</sup> Mean and median distances between each small business and its suppliers of financial services are provided in Table 1.<sup>24</sup> In addition, this table provides the proportion of the institutions that are “local,” defined as those institutions located within 30 miles of the firm's main office.<sup>25</sup> These data suggest that the distribution of distances is highly skewed. In 2003, the mean distance among all firm-institution pairs was 134 miles while the median distance was 5 miles. This is a pattern that repeats itself across all institution types. Depository institutions were located an average of 55 miles from the firm, while the median distance was only 3 miles. Among depositories, credit unions had the lowest mean distance, but the largest median, while commercial banks and thrifts had slightly higher means and a lower median. The mean distance between the firm and its nondepository sources was 317.7 miles and the median was 40 miles. Among nondepositories, the mean and median distances were lowest for brokerage and pension firms and highest for finance and factoring firms.

Between 1993 and 2003, there was moderate growth in the distance between firms and their providers of financial services. Average distances increased significantly for most types of suppliers. On a per annum basis, average distances increased 5.3 percent per year; depository distances grew at 5.9 percent per annum, whereas nondepository distances grew at 3.8 percent per annum. The median distance between the firm and its institutions increased from 4 miles to 5 miles. The median distance from depository institutions has remained largely unchanged, increasing slightly from 2 miles to 3 miles. This stability primarily reflects the pattern observed for commercial banks, which account for 84 percent of all depository institutions used in 2003, although the patterns for thrifts and credit unions were also largely stable over the decade.

Among nondepository institutions, the median distance increased from 30 to 40 miles and average distances increased significantly from 218.6 to 317.7 miles. Increases were observed in three of the four subtypes, with the only exception being leasing companies, where median distance declined from 57

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<sup>23</sup> Other nondepository sources, including credit card and check processors, governments, individuals, and otherwise unclassified sources are not included in the tables. Information about the location and method of conducting business with these types of suppliers was not collected in the 1993 survey. These sources account for about 10 percent of all sources used in each of the survey years.

<sup>24</sup> Estimates of the statistical significance of differences of means and proportions between 1993 and 2003, and between 1998 and 2003 are reported in the 1993 and 1998 columns respectively. These calculations are adjusted for sampling weights and sampling strata using survey statistical techniques available in STATA.

<sup>25</sup> While the use of 30 miles to denote local suppliers is somewhat arbitrary, using alternative definitions (e.g., 15, 20, 25, or 35 miles) would not change the qualitative results.



miles to 45 miles. Between 1993 and 1998, there were substantial increases in median and average distances to finance and factoring institutions, leasing companies, and insurance and mortgage companies, but most of these increases had reversed by 2003. Between 1998 and 2003, the average distance for both depository and nondepository institutions fell significantly, but not so much as to eliminate the increases in average and median distance that occurred during the first half of the decade.

The relative stability in median distances is reflected in the percentage of financial service providers that are located within 30 miles of the firm. In 1993, slightly more than four-fifths of providers were local. By 2003, the percentage had only fallen to 74.7 percent. There are, however, substantial differences in levels and direction of changes across the various types of financial service providers. Among depositories, between 1993 and 2003 the percentage located within 30 miles of the firm fell only four percentage points -- from 91.9 percent in 1993 to 87.9 percent in 2003.

As their mean and median distances indicate, nondepositories were much less likely to be local than depositories. Between 1993 and 2003, the percent of institutions located within 30 miles of the firm declined significantly for nondepositories overall and for finance and brokerage institutions. However, between 1998 and 2003, the percentage of nondepositories that were local actually increased significantly from 36.7 percent in 1998 to 43.8 by 2003.

### *3.2 Location of Financial Service Suppliers by Type of Service*

Table 2 provides mean and median distances between small businesses and their financial service providers, as well as the percentage of these providers that are local, by type of service for 1993, 1998, and 2003. Services are grouped into three categories: asset services, which include checking and savings accounts; loan services, which include lines of credit, capital leases, mortgages, equipment loans, motor vehicle loans, and other loans; and financial management services, which include cash management, credit-related, pension, brokerage, transactions, and credit and debit card processing services.<sup>26</sup>

As with the breakdown by institution type, the distance distributions across product types are highly skewed. Focusing on 2003, distances are lowest for asset services (median of 3 miles and mean of 28.9 miles), with somewhat shorter distances for checking than savings accounts. Financial management services also tended to be provided by nearby suppliers, with a median distance of 5 miles and a mean of 106.8. Across the financial management services subtypes, each had a median distance of 15 miles or less. Institutions providing loans were located somewhat farther from the firm than institutions providing

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<sup>26</sup>In 1993 and 1998, firms were asked about credit card processing as part of the question on transactions services. In 2003, the question on credit card processing was split from the question on transactions services and the new question on credit card processing was expanded to include pin- and signature-based debit card processing. The question changes may lead to more institutions being identified in 2003. However, we expect that institutions that provide credit card processing also provide debit card processing, which should mitigate any overstatement. For additional information, see Mach and Wolken (2006).

other services, but were still located relatively close to the firm. The median loan provider was located 11 miles from the firm and the average loan provider was located 180.6 miles from the firm. Across the loan subtypes, the only product type that had a median distance of over 25 miles was capital leases, which had a median distance of 53 miles.

The change in distance over the decade by product type, illustrated in Table 2, shows a consistent pattern across products – median and average distances generally increased, and the average changes were significant for all but mortgages, cash and credit services. The increase in median distance to suppliers providing asset services was minimal, increasing from 2 miles to 3 miles. The median distance for loan providers increased from 8 to 11 miles, with all of the increase occurring between 1998 and 2003. For lines of credit providers, the median distance fell from 4 miles in 1993 to 3 miles in 2003. The median distances for motor vehicle loans and other loans more than doubled between 1993 and 2003. For leases, the median distance also increased over this period, with a substantial jump in 1998 that appears to have mostly reversed by 2003. The median distance for financial management services almost doubled between 1993 and 2003 from 3 to 5 miles, with the largest percentage increase observed for credit related services. Smaller percentage increases were observed for pension, and brokerage services.<sup>27</sup> There was no change in median distances to providers of cash management services.

Broken down by type of service, there was somewhat less variation in the use of local suppliers across types of service than was observed in the breakdown by institution type. Although the percent of suppliers located within 30 miles generally declined over the 1993-2003 period, a very large percentage of small businesses' financial suppliers are located within 30 miles of the firm. Over 90 percent of institutions providing asset services were located within 30 miles, a share that has only declined slightly -- but significantly -- over the decade (from 95.6 percent in 1993 to 93.9 percent in 2003). More than four-fifths of financial management sources were located within 30 miles of the firm. Loans were less likely to be obtained from local suppliers than asset services, but even for loans, nearly two-thirds of lending institutions are located within 30 miles of the firm, although the percentage of loans obtained locally declined significantly from 72.1 percent in 1993 to 65.4 percent in 2003.

### *3.3 Location of Financial Service Suppliers by Supplier Type and Product Type*

Since there is a correlation between the types of financial service providers and the products they supply, it is useful to examine how distance varies by product category across institution types. Table 3 provides the median distance to financial service providers by institution type and major product category

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<sup>27</sup>The inclusion of credit card processing as a separate service in the 2003 survey, which has a relatively high median distance of 17 miles, may have been responsible for some of the observed increase in median distance among financial management services between 1998 and 2003.

for 1993, 1998, and 2003. Table 4 presents average distances and tests for significant differences between 2003 and 1998, and between 2003 and 1993. The results show depository institutions tend to be located closer than other institution types for each of the products being provided. In 2003, the median distance to depository institutions was less than five miles for each of the major product types. The median distance to nondepositories was considerably higher than to depositories, ranging from a median of 18 miles for checking and savings accounts to 26 miles for financial management services and 52 miles for loans.<sup>28</sup>

The median distance across product and institution types has increased moderately over the decade. The median distance to services provided by depository institutions has remained largely unchanged, with no changes for asset services and loans and only a 1 mile increase (from 2 to 3 miles) in financial management services. The increase in median distance between credit unions and the firms they serve has been considerable in loans and financial management services and comparatively minor in asset services, although all median distances are less than or equal to 10 miles. For nondepository institutions, there has been an overall increase in the median distance from 30 to 40 miles, with the majority of this increase likely attributable to financial management services.

In sum, between 1993 and 2003, the average and median distances between financial service suppliers and their customers increased generally for most types of suppliers and most types of financial products. The largest increases occurred among nondepository sources and among loan and financial management services. However, between 1998 and 2003, for many products and suppliers, average distances actually declined significantly for loans from nondepositories, and for financial management services from depositories. Hence while distances increased over the decade, there is some evidence that the increases may have attenuated or reversed for some institutions and some products between 1998 and 2003.

Finally, for a very large proportion of banking customers, proximity to financial institutions remains important. This is particularly true of commercial banking institutions, which continue to dominate as suppliers of most financial services to small businesses (Mach and Wolken, 2006). In 2003, the median distance between a firm and its financial service supplier was 5 miles, and 82.2 percent of all financial institutions used by small businesses were located within thirty miles of the firms' headquarter offices.

### *3.4 Conducting Business In Person*

As discussed in an earlier section, the reasons to suspect that geographic proximity might be

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<sup>28</sup>The distance measures for nondepository institutions that provide asset services may be noisy due to the fact that relatively few firms obtain checking and savings accounts from these institutions.

playing a reduced role in banking relate primarily to technological changes that have reduced the need for in person interactions between banks and their customers. The SSBF asks each firm to list the most frequent method of conducting business with each of their financial institutions. The range of possible answers has changed somewhat over the three surveys, making a direct comparison of each possible response across the three waves difficult. However, in each survey year, one of the possible responses was “in person.” These data can help to indicate whether the observed changes in mean and median distances actually reflect a reduced tendency to conduct interactions with financial institutions in person.

### *3.4.1 Conducting Business In Person by Type of Supplier*

The share of firm-institution relationships that were conducted most frequently in person is reported for each of the three samples by institution type in Table 5. Overall, in 2003 firms were slightly more likely than not (54 percent) to conduct business with their financial service suppliers in person. The tendency towards in person interactions was noticeably higher for depository institutions, where 71 percent of relationships were primarily in person. This incidence primarily reflects the impact of commercial banks, which account for most of the relationships with depository institutions in the data.

Relationships with nondepository institutions are much less likely to be conducted in person than relationships with depositories. Among nondepositories in 2003, 15 percent of relationships were conducted primarily in person. Each type of nondepository institution exhibits this tendency towards less in person interaction, with brokerage or pension institutions having the highest incidence of in person interaction at 20 percent. In contrast, only 7 percent of relationships with leasing companies were conducted in person in 2003.

Over the course of the decade, the tendency to conduct business in person declined by 8 percentage points from 1993 to 2003, with most of the decrease occurring since 1998. A large portion of this decrease can be attributed to the changes in incidence at depository institutions, which over the decade declined 6 percentage points. Like the overall change in the incidence of in person interaction, the decline at depository institutions reflected a decrease that occurred after 1998. The decline over the decade was observed for each type of depository institution, though the declines were not statistically significant for thrifts or credit unions.

The tendency of relationships with nondepository institutions to be conducted primarily in person was identical in the 2003 and 1993 surveys at 15 percent. While these incidences did decline in 1998 (to 12 percent), this trend appears to have been reversed by 2003. Among the different types of nondepository institutions, the largest change was observed for brokerage and pension institutions, where the share of relationships that were conducted in person declined from 24 percent in 1993 to 20 percent in 2003. The changes were even smaller at insurance and mortgage companies (3 points), finance

companies (1 point), and leasing companies (1 point). Not only were the observed changes in the incidence of in person interaction at each type of nondepository small, they were also insignificant. Nevertheless, relationships with nondepository institutions contributed to the overall decline in in person interaction over the decade, as there was an increase in the share of relationships involving nondepository institutions and the levels of in person interaction at these institution is so much lower than at depositories.

#### *3.4.2 Conducting Business In Person by Type of Service*

The incidence of relationships involving primarily in person interaction can also be broken down by the type of financial service being provided (Table 6). In 2003, asset services continued to be dominated by relationships involving in person interaction with 78 percent of such relationships being conducted primarily in person. This tendency towards in person interaction was observed for both checking and savings accounts. Relationships involving the provision of loans were conducted in person in 44 percent of the cases. There was substantial heterogeneity across loan types. For three of the loan types, in person interactions occur more than half of the time: lines of credit (66 percent), mortgages (60 percent) and other loans (56 percent). In contrast, relationships involving the provision of the other three loan types -- motor vehicle loans, equipment loans, and capital leases -- were all more likely to not involve in person interaction, with incidences of 32, 40, and 8 percent respectively.

Among relationships involving financial management services, business was conducted in person in 57 percent of the cases. As with loans, there was significant heterogeneity across these services, with the incidence of in person interaction ranging from a high of 75 percent for transactions services to as little as 22 percent for brokerage firms.

Looked at over the course of the decade, overall, the incidence of in person interaction fell significantly between 1993 and 2003. Declines were recorded for all product categories, most of which were significantly different from zero. While remaining predominantly in person in 2003, the percentage of in person interactions for asset services declined by 5 percentage points over the decade, with all of the observed decrease being reported between 1998 and 2003. This pattern is observed for relationships involving both checking and savings accounts. In each of these cases, the decline from 1998 to 2003 was statistically significant at the 5 percent level, though the observed decline in incidences over the entire 10 year period was not significant for relationships involving savings services.

Relationships involving loans also were less likely to be conducted primarily in person in 2003 than they were in 1993. As with asset services, most of the overall change occurred between the 1998 and

2003 SSBFs, when the incidence of in person interactions for loans fell from 48 to 44 percent.<sup>29</sup> With the exception of other loans, where the incidence declined 15 points between 1993 and 2003, from 71 percent to 56 percent, the largest decreases in the incidence of in person interactions were observed for those relationships that were the least likely to involve in person interaction in 1993. In 1993, the loan types that were least likely to involve in person interaction were motor vehicle loans (41 percent), equipment loans (53 percent), and leases (15 percent). For relationships involving motor vehicle loans or capital leases, the incidences of in person interaction declined by 9 and 7 points, respectively, all of which occurred after 1998. Equipment loans exhibited a more gradual change over the decade, declining from 53 percent in 1993 to 46 percent in 1998 and to 40 percent in 2003. This decline of 13 percentage points over the decade was the largest decline observed. In contrast, lines of credit and mortgages, both of which (along with other loans) were among the three products most likely to involve in person interaction in 1993, showed noticeably smaller declines. Lines of credit declined 5 percentage points, largely since 1998, and mortgage relationships declined by 3 percentage points. Over the decade, relationships involving each of the individual loan types, with the exception of mortgages, declined by a statistically significant amount with all of the difference appearing after 1998.<sup>30</sup>

Finally, the relationships involving financial management services also experienced a decline in their propensity to involve primarily in person interaction. Like the other product categories, the decline over the decade (from 61 percent to 57 percent) was attributable to changes in the incidences between 1998 and 2003. Over this time, in person incidences decreased significantly for only two types of financial management services. The first was the incidence for relationships involving credit related services, which declined from 64 percent in 1993 to 49 percent in 2003 with most of the observed decline coming after 1998.<sup>31</sup> The second was the incidence for relationships involving pension services, which declined by 10 percentage points. Pension service relationships were the only type of relationship for which the decline in the incidence of in person interaction over the decade was both statistically significant and had occurred primarily between 1993 and 1998. The changes in incidences observed over the decade for relationships involving the other three types of financial management services were each insignificant at the 10 percent level.

### *3.4.3 Conducting Business In Person by Financial Supplier Type and Service Type*

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<sup>29</sup> The change in the incidence of in person interaction for relationships involving loans between 1993 and 1998 was not significant at the 10 percent level.

<sup>30</sup> For each of the six loan types, none of the changes in incidence between 1993 and 1998 was statistically significant at the 5 percent level. Only equipment loans had a statistically significant change over this five year period at the 10 percent level (data not shown in tables).

<sup>31</sup> The change between 1993 and 1998 from 64 to 61 percent was not statistically significant at the 10 percent level.

A breakdown of the incidence of in person relationships by service category across institution types is presented in Table 7. The table provides an institution type breakdown of the incidence of in person relationships for each of the major service types: checking or savings accounts, loans and lines of credit, and financial management services.

As shown in Table 7, the overall tendency of relationships involving the provision of asset services to be conducted in person is only observed for depository institutions. In 2003, 81 percent of asset service relationships involving depository institutions were conducted in person. Similarly, asset service relationships involving each type of depository institution were also predominantly conducted in person. In contrast, asset service relationships with nondepository institutions were substantially less likely to involve in person interaction than those involving depositories (22 percent versus 81 percent). Over the course of the decade, the propensity for in person interaction in asset service relationships declined for both depository and nondepository institutions, though the decrease was somewhat faster for the nondepositories. In both cases, the observed decline over the decade was dominated by changes occurring after 1998. However, only the observed decrease for depository institutions was significant at the 5 percent level.

Similar differences were observed across institution types for relationships involving loans. Loan relationships with depository institutions in 2003 were conducted primarily in person 62 percent of the time, compared with only 14 percent of the time for nondepository institutions. Unlike asset services, the direction of the changes over the decade for these two institution types differed. Incidences of in person interaction at depository institutions declined by 6 percentage points between 1993 and 2003 while at nondepositories they increased by 4 percentage points. In both cases, the observed changes transpired after 1998 and were significant at the 5 percent level.

Finally, for relationships involving the provision of financial management services, similar differences were observed across depository and nondepository institutions. While financial management relationships involving depositories were largely conducted in person (73 percent in 2003), the observed incidences for nondepositories were substantially lower (18 percent). The trends over the decade were similar to those involving asset services, in that there was a statistically significant decline for financial management relationships involving depository institutions (from 76 to 73 percent) that occurred primarily in the latter half of the decade and in that the change for nondepositories (from 22 to 18 percent) was not statistically significant.

#### **4 Summary and Discussion**

The data provided in the previous section provided a detailed look at the relationship between the locations of a firm and its financial service suppliers and how those relationships changed over the decade

1993 to 2003. The results of the analysis conducted in this study suggest several things about the role of geographic proximity in the provision of financial services to small businesses.

The first is that distance continues to matter in banking. While distances vary substantially across financial service products, as of 2003, most financial services provided to small businesses were provided by local institutions. In addition, half of all such services were provided by financial institutions located within 5 miles of the firm's headquarters and the primary method of conducting business with financial institutions remained in person. The close proximity of firms and their financial service suppliers, as well as the frequent use of in person interaction, suggest that the importance of geographic proximity remains.

The second conclusion from this analysis is that the importance of geographic proximity appears to vary substantially across the types of institution providing financial services and according to the financial service being provided. Even when controlling for the type of service, distances between small firms and their nondepository institution providers are substantially greater than those between small firms and the depository institutions from which they receive services. At the same time, the incidence with which relationships are conducted in person is substantially lower for nondepository institutions than depositories. Similarly, even when controlling for institution type, there are consistent differences in distances across product types, with asset services being provided locally more often than loans or financial management services. While explaining the reasons behind these differences is beyond the scope of this paper, clear differences do exist. This suggests that the importance of geographic proximity varies across institution and product types.

The third conclusion to be drawn from this analysis is that the geographic relationships between small firms and their lenders are changing over time. Over the course of the decade examined here, both mean and median distances for most institution types and services provided increased. Additionally, there seems to be a general trend towards less in person interaction between small firms and their suppliers of financial services. However, just as the differences in distances and the tendency towards in person interaction differed across institution types and services being provided, the extent to which distances changed over the decade varied substantially. Any technological changes that may have contributed to these higher distances and diminished use of in person interaction seem to have affected different institutions and products to varying degrees.

Another finding is that while distances generally increased between small businesses and their financial service providers, the changes across the decade were not always monotonic. In particular, for some loans and financial management services, and for some nondepository sources, distances actually declined between 1998 and 2003. These findings are in contrast to the speculation of Petersen and Rajan (2002) that the growth in mean distances over time after 1993 was accelerating. What is responsible for these attenuations or reversals and whether the trends will continue requires additional research.



However, such findings do suggest that some factors other than distance-minimizing technological changes may be attenuating the tendency towards increased distance and less in person business.

## 5 Suggested Areas for Additional Research

While there seems sufficient evidence in the data to suggest that geographic proximity remains important in the provision of banking services, several other questions remain unanswered. In this section we draw upon the existing literature and the analysis provided here to suggest additional areas where further study is needed.

The most central unanswered question in the literature is, why does distance matter in banking? As discussed in the literature review, there are several theoretical reasons to believe that distance should matter in banking, each of which relates to some aspect of transactions costs. Nevertheless, there has been very little empirical work that has attempted to determine the role of these transactions costs in order to ascertain why distances between financial institutions and their customers (particularly small businesses) remain predominantly local. In the current study, we have shown that financial services provided to small businesses tend to be provided by local suppliers, but we are unable in this analysis to determine the relative contributions of different types of transactions costs in leading to this outcome.

Related to the question of why geographic proximity matters in the provision of financial services is, how is the importance of geographic proximity changing? While this study has documented that distances have changed over the 1993 to 2003 period in small business lending, the extent of the changes differs substantially across product types and the types of financial institutions that provide them. Nevertheless, most studies on how distances have changed in small business lending have focused exclusively on the question of *whether* distances are changing overall and therefore have not examined how the changes in distance over time have played out across product and institution types and have not attempted to ascertain how these changes may be affected by the characteristics of the borrowers themselves. A careful analysis of the evolving role of distance that allows for such heterogeneity across firms, institutions, and products is needed.

Without such an analysis, it is difficult, if not impossible, to determine what is driving the changes in distance observed in this and other papers, or to speculate about the potential for these changes to continue. While some studies have attempted to test the extent to which small business credit scoring has contributed to greater distances between small businesses and their lenders, these studies have been unable to isolate the treatment effect of credit scoring. Consequently, it is not possible to draw inferences about the likely effects of a continued expansion of credit scoring.

Additionally, there has been no research, of which we are aware, on the role that demand-side factors may play in the importance of geographic proximity. While technological change may increase

the willingness of suppliers of financial services to offer services at a distance, if customers still have a preference for local suppliers and face-to-face contact then the extent to which the technological changes will impact average distances will be muted. An analysis that can disentangle the demand and supply factors that promote the local provision of financial services would improve our understanding of how these markets are currently functioning and of whether geographic proximity will likely continue to matter in banking.

Finally, one factor that has not received much attention is how distance is or should be defined. In each of the theoretical papers that examine the role of proximity in banking, the concept of “distance” is clear and distinct. Banks are located in one point in space (be it geographic, product, or information space) and each customer at another. The size of the transactions costs or the extent of the information asymmetries can then be expressed as a function of the distance between these two points. In empirical studies that focus on the importance of distance in geographic space, however, this simple concept of distance may be less relevant when either the bank or its customers have multiple geographic locations.

Particularly in the provision of credit, when a bank has multiple offices the concept of distance becomes muddled and it is not necessarily clear how best to calculate it. The bank’s offices may play different roles in providing services to borrowers, with one branch serving as the point of contact where the customer applied for a loan, another housing the decision makers who approve or deny the application, and other offices processing payments, providing customer service, or housing loan monitoring operations.<sup>32</sup> An argument can be made that the distance between the customer and each of these different locations plays a role. Similarly, for banking customers with multiple locations (e.g., businesses with multiple offices or consumers who work and live in different areas), it is not necessarily clear which location is the most important factor in determining from where it obtains its financial services. Each location may play a role and the importance of each location may differ depending upon the financial service being obtained.

While the most appropriate definition of distance might be multi-dimensional, most of the extant research on the role of distance in banking, including this study, has focused on a single, scalar measure of distance.<sup>33</sup> To a large extent, this reflects the fact that the studies used data sources that contained only

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<sup>32</sup> Some evidence that such differences may be important is available from the SSBF. In the 2003 survey, firms that applied for loans within the last three years were asked to report on how they applied and whether they at some point had to go in person to obtain the loan. Roughly 78 percent of loan applicants went in person at some point in the application process. In contrast, as documented in this paper, on average in 2003, 44 percent of firms with lending relationships conducted business in person. Likewise, the average and median distances for loan applications were 77 and 5 miles, respectively. For outstanding loans, the average and median distances were 181 and 11 miles. We speculate that the difference is in part because once the loan is approved, many businesses need only make loan payments and the loan payment office may differ from the loan application office.

<sup>33</sup> There are two notable exceptions to this. The first is the work of Alessandrini, Presbitero, and Zazzaro

a single measure of distance. Nevertheless, as technological and regulatory changes may not have affected the role of each type of distance equally, the choice of distance measure used may affect the conclusions reached.

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(2007), who distinguish between two different types of distance: operative distance, which is the physical distance between the bank and its customers, and functional distance, which is the distance between the bank's decision-making center and the local community of the borrower. This latter type of distance is not limited to measures of geographic distance, but may include economic or cultural differences. The second exception is a related work by Alessandrini, Presbitero, and Zazzaro (2007) who find that both of these measures of distance are important predictors of several different measures of credit rationing to small businesses.

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Table 1: Distance between firm's headquarters and financial source by type of financial source and year<sup>1</sup>

Type of Financial Service Supplier	Mean distance			Median distance			Percent within 30 miles			Memo: Incidence <sup>2</sup>
	2003	1998 <sup>3</sup>	1993 <sup>3</sup>	2003	1998 <sup>3</sup>	1993 <sup>3</sup>	2003	1998 <sup>3</sup>	1993 <sup>3</sup>	2003
Any source	134.0	166.6**	74.7**	5	4	4	74.7	76.8**	82.2**	96.4
Depository institutions	55.0	67.1*	30.9**	3	2	2	87.9	90.2**	91.9**	96.0
Commercial banks	52.7	68.0**	30.8**	3	2	2	88.5	90.1**	92.0**	86.6
Thrifts	81.6	76.9	31.9**	3	3	3	85.4	90.3*	92.4**	13.7
Credit Unions	40.6	34.5	33.1	7	4	5	84.0	92.0**	89.2	8.1
Nondepository institutions	317.7	465.4**	218.6**	40	123	30	43.8	36.7**	50.2**	40.4
Finance and Factoring	365.9	458.9**	208.8**	50	213	39	37.4	29.7**	43.2**	25.2
Brokerage and Pension	226.2	277.5	169.2*	20	15	12	59.9	61.7	69.8**	14.9
Leasing	284.2	751.3**	292.7	45	465	57	37.1	16.0**	40.1	4.5
Insurance and Mortgage	350.8	497.7**	198.5**	51	139	38	38.1	35.5	48.4	5.4

<sup>1</sup>Includes all firm-institution pairs where the firm has at least one financial service (checking account, savings account, line of credit, mortgage, motor vehicle loan, equipment loan, capital lease, other loan, transactions services, credit card processing services, trust services, brokerage services, cash management services, or credit related service) and the financial service supplier is a depository institution or a nondepository financial institution, including finance and factoring firms, brokerage, pension, leasing, insurance or mortgage companies.

<sup>2</sup>Indicates the percentage of firms that used that type of institution in 2003.

<sup>3</sup>\* indicates significantly differently from 2003 value at 10 percent level of significance; \*\* indicates significantly different from 2003 value at 5 percent level of significance.

Table 2: Distance between firm's headquarters and financial source by selected product and year

Type of Service Used	Mean distance			Median distance			Percent within 30 miles			Memo: Incidence <sup>1</sup>
	2003	1998 <sup>2</sup>	1993 <sup>2</sup>	2003	1998	1993	2003	1998 <sup>2</sup>	1993 <sup>2</sup>	2003
Any service	134.0	166.6**	74.9**	5	4	4	74.7	76.8**	82.2**	96.4
Asset services	28.4	25.9	18.3**	3	2	2	93.9	95.7**	95.6**	95.0
Checking	21.3	16.8	13.8**	2	2	2	95.3	96.6**	96.4**	94.7
Savings	49.2	52.1	30.3**	3	2	2	89.6	92.7**	93.5**	22.1
Loans	180.6	242.9**	110.6**	11	8	8	65.4	66.0	72.1**	57.0
Line of credit	77.1	109.4**	48.4**	3	3	4	87.3	85.8	88.1	33.9
Mortgage	82.8	156.4**	70.2	7	4	4	76.8	82.3*	84.0**	12.4
Motor vehicle loan	198.9	206.9	65.4**	24	15	9	54.7	61.6**	73.1**	25.2
Equipment loan	254.5	281.3	144.0**	19	11	10	59.0	60.6	68.0**	9.0
Leases	438.0	563.2**	298.0**	54	230	48	33.2	30.4	40.6**	7.7
Other loan	161.6	79.0**	62.4**	10	3	3	68.0 <sup>3</sup>	87.2** <sup>3</sup>	84.1**	4.8
Financial management services	106.8	137.9**	75.3**	5	3	3	80.2	80.2	84.7**	58.8
Cash management	61.8	40.6	41.9	3	3	2	89.8	92.6	91.1	6.6
Credit related	122.7	123.4	81.0	7	6	3	79.6	75.2	81.4	4.8
Pension	183.4	280.6**	104.8**	15	15	9	64.4	59.3	75.1**	16.2
Brokerage	212.7	129.2*	117.4**	15	15	10	65.4	71.5	77.3**	5.5
Transaction (inc. cc proc.)	. <sup>3</sup>	96.7	49.0	. <sup>3</sup>	2	2	. <sup>3</sup>	87.5	91.2	. <sup>3</sup>
Transaction (exc. cc proc.)	34.7	. <sup>3</sup>	. <sup>3</sup>	3	. <sup>3</sup>	. <sup>3</sup>	92.1	. <sup>3</sup>	. <sup>3</sup>	38.7
Credit card processing	140.1	. <sup>3</sup>	. <sup>3</sup>	5	. <sup>3</sup>	. <sup>3</sup>	89.8	. <sup>3</sup>	. <sup>3</sup>	23.8

<sup>1</sup> Indicates the percentage of firms that used the service in 2003.

<sup>2</sup> \* indicates significantly differently from 2003 value at 10 percent level of significance;

\*\* indicates significantly different from 2003 value at 5 percent level of significance.

<sup>3</sup> The questions on transactions services were changed between the 1998 and 2003 surveys. In 1993 and 1998, transactions services included obtaining paper money or coins, credit card receipt processing, night deposits, and wire transfers. In the 2003 survey, transactions services did not include credit card processing, which was asked about with PIN-based and signature-based debit card processing.



Table 3: Median Distance to Financial Services Provider by Institution Type and Major Product Category

Type of Service Used	Any service			Checking or Savings			Loans or Lines of Credit			Financial Management Services		
	2003	1998	1993	2003	1998	1993	2003	1998	1993	2003	1998	1993
Any source	5	4	4	3	2	2	11	8	8	5	3	3
Depositories	3	2	2	2	2	2	4	3	4	3	2	2
Commercial banks	3	2	2	2	2	2	4	3	3	3	2	2
Thrifts	3	3	3	2	2	2	5	4	5	4	2	2
Credit unions	7	4	5	5	4	4	10	5	5	6	3	3
Nondepositories <sup>1</sup>	40	123	30	18	10	12	52	252	47	26	25	14

<sup>1</sup> Includes finance and factoring, brokerage and pension, leasing, and insurance and mortgage companies.

Table 4: Mean Distance to Financial Services Provider by Institution Type and Major Product Category

Type of Service Used	Any service			Checking or Savings			Loans or Lines of Credit			Financial Management Services		
	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>
Any source	134.0	166.6**	74.9**	28.4	25.9	18.3**	180.6	242.9**	110.6**	106.8	137.9**	75.3**
Depositories	55.0	67.1*	30.9**	17.6	17.5	12.1**	74.6	84.5	42.3**	47.1	78.3**	46.3
Commercial banks	52.7	68.0**	30.8**	14.4	17.9	11.7	75.4	83.9	40.6**	43.4	78.1**	48.2
Thrifts	81.6	76.9	31.9**	42.4	11.6**	15.4*	80.3	105.7	57.5	93.9	122.0	22.3**
Credit unions	40.6	34.5	33.1	23.2	17.9	13.0	55.6	67.3	49.4	21.2	14.8	35.4
Nondepositories <sup>2</sup>	317.7	465.4**	218.6**	274.8	289.1	176.5	357.4	552.7**	249.8**	264.4	312.8	152.9**

<sup>1</sup>\* indicates significantly differently from 2003 value at 10 percent level of significance;

\*\* indicates significantly different from 2003 value at 5 percent level of significance.

<sup>2</sup> Includes finance and factoring, brokerage and pension, leasing, and insurance and mortgage companies.

Table 5: Proportion of firms that conducted business in person by type of financial source and year

Type of Financial Service Supplier	Proportion Conducting Business in Person			Memo: Incidence <sup>1</sup>
	2003	1998 <sup>2</sup>	1993 <sup>2</sup>	2003
Any source	0.54	0.61**	0.62**	96.4
Depository institutions	0.71	0.77**	0.77**	95.9
Commercial banks	0.71	0.77**	0.77**	86.5
Thrifts	0.73	0.76	0.78	13.7
Credit Unions	0.62	0.70	0.64	8.1
Nondepository institutions	0.15	0.12**	0.15	54.7
Finance and Factoring	0.14	0.12	0.13	25.2
Brokerage and Pension	0.20	0.19	0.24	14.9
Leasing	0.07	0.05	0.08	4.5
Insurance and Mortgage	0.16	0.11	0.13	5.4

<sup>1</sup> Indicates the percentage of firms that used that type of institution in 2003.

<sup>2</sup>\* indicates significantly differently from 2003 value at 10 percent level of significance;

\*\* indicates significantly different from 2003 value at 5 percent level of significance.

Table 6: Proportion of firms that conducted business in person by selected product and year

Type of Service Used	Proportion Conducting Business in Person			Memo: Incidence <sup>1</sup>
	2003	1998 <sup>2</sup>	1993 <sup>2</sup>	2003
Any service	0.54	0.61**	0.62**	96.4
Asset services	0.78	0.84**	0.83**	95.0
Checking	0.80	0.85**	0.85**	94.6
Savings	0.71	0.76**	0.74	22.1
Loans	0.44	0.48**	0.49**	60.4
Line of credit	0.66	0.70**	0.71**	34.3
Mortgage	0.61	0.61	0.64	13.3
Motor vehicle loan	0.32	0.42**	0.41**	25.5
Equipment loan	0.40	0.46	0.53**	10.3
Lease	0.08	0.15**	0.15**	8.7
Other loan	0.56	0.68**	0.71**	10.1
Financial management services	0.57	0.62**	0.61**	64.8
Cash management	0.66	0.69	0.68	6.7
Credit related	0.49	0.61*	0.64**	5.0
Pension	0.30	0.25*	0.40**	17.2
Brokerage	0.22	0.23	0.24	5.6
Transaction (inc. cc proc.)	. <sup>3</sup>	0.75	0.76	. <sup>3</sup>
Transaction (exc. cc proc.)	0.75	. <sup>3</sup>	. <sup>3</sup>	38.9
Credit card processing	0.57	. <sup>3</sup>	. <sup>3</sup>	37.2

<sup>1</sup> Indicates the percentage of firms that used that type of institution in 2003.

<sup>2</sup> \* indicates significantly differently from 2003 value at 10 percent level of significance;

\*\* indicates significantly different from 2003 value at 5 percent level of significance.

<sup>3</sup> The questions on transactions services were changed between the 1998 and 2003 surveys. In 1993 and 1998, transactions services included obtaining paper money or coins, credit card receipt processing, night deposits, and wire transfers. In the 2003 survey, transactions services did not include credit card processing, which was asked about with PIN-based and signature-based debit card processing.

Table 7: Proportion of Firms Conducting Business in Person, by Institution Type and Major Product Category

Type of Service Used	Any service			Checking or Savings			Loans or Lines of Credit			Financial Management Services		
	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>	2003	1998 <sup>1</sup>	1993 <sup>1</sup>
Any source	0.54	0.61**	0.62**	0.78	0.84**	0.83**	0.44	0.48**	0.49**	0.57	0.62**	0.61**
Depositories	0.71	0.77**	0.77**	0.81	0.86**	0.85**	0.62	0.69**	0.68**	0.73	0.77**	0.76**
Commercial banks	0.71	0.77**	0.77**	0.81	0.86**	0.85**	0.63	0.70**	0.69**	0.73	0.77**	0.76**
Thrifts	0.73	0.76	0.78	0.85	0.87	0.88	0.62	0.63	0.60	0.72	0.77	0.82*
Credit unions	0.62	0.70	0.64	0.71	0.79	0.81	0.52	0.55	0.56	0.68	0.77	0.63
Nondepositories <sup>2</sup>	0.15	0.12**	0.15	0.22	0.28	0.30	0.14	0.09**	0.10**	0.18	0.16	0.22

<sup>1</sup>\* indicates significantly differently from 2003 value at 10 percent level of significance;

\*\* indicates significantly different from 2003 value at 5 percent level of significance.

<sup>2</sup> Includes finance and factoring, brokerage and pension, leasing, and insurance and mortgage companies.