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ABSTRACT

This paper reports a systematic examination of the determinants of deposit-related retail banking fees using a set of survey data that is unusual for its size, specificity, and sampling properties. The analysis focuses explicitly on six different fees associated with checking accounts and automated teller machine (ATM) usage. A preliminary analysis documents that, on average, multimarket banks charge substantially higher fees than do typically smaller, single-market banks. A more detailed econometric analysis yields results consistent with predictions of recent models. In particular, it finds that the greater the presence of multimarket banks in the local market, the higher are the retail deposit fees of single-market banks (except in highly concentrated markets) and the weaker is the positive relationship between those fees and market concentration.

Retail Deposit Fees and Multimarket Banking

1. Introduction

As a source of bank income, fees have become increasingly important in recent years. Increases in retail fees in particular have been the subject of sharp criticism from some quarters, and at least one congressional investigation into the likely causes has been conducted.[1] Despite the space devoted to this subject in the financial and mainstream press, academic studies have tended to focus on the deposit interest rates offered by banking institutions rather than on the deposit-related fees charged by them. A possible reason for this lack of attention is that, compared to the availability of information on deposit rates, systematic data on the retail fees of a large number of financial institutions is hard to come by. Also, as any retail depositor can attest, a bewildering number of different fees exist, and many of them can interact with account characteristics in ways that make it difficult to compare fees systematically across institutions. For example, to compare a monthly account fee across institutions, one must account for different minimum-balance requirements and ancillary services offered the account holder.

This paper employs an extensive set of survey data that is unusual for its size, specificity, and sampling properties to examine the relationship between various deposit-related fees of depository institutions and hypothesized determinants of those fees. The analysis avoids retail fees that are difficult to compare across institutions and the more obscure or less frequently levied retail fees. This leaves as the focus of the study six fairly common fees that can be more easily compared across institutions, including fees

associated with checks drawn on insufficient funds, fees levied to stop payment on a check, and fees incurred when the depositor of one institution uses another institution's automated teller machine (ATM).

Theory and past empirical findings regarding deposit interest rates point to two of the usual suspects--market structure and institution size--as likely determinants of the retail fees that depository institutions charge their customers. The traditional structure-conduct-performance paradigm asserts that more-concentrated market structures make noncompetitive behavior more likely or more pronounced. Numerous studies have found evidence consistent with this prediction regarding deposit interest rates, but no study has reported such a relationship regarding bank fees.

Institution size may serve as a proxy for many factors, including, most obviously, differences in the marginal costs of providing deposit services. Several recent studies have argued (or noted as a possibility) that, beyond some point, larger institutions do not find it in their interest to attract increasingly "marginal" retail depositors. The reason offered is that larger institutions have greater access to wholesale funds that (at least beyond some point) are cheaper than retail funds.[2] Consistent with the implications of such a funding advantage, these studies report evidence that larger banking institutions tend to offer lower deposit interest rates than do smaller institutions.[3] The equivalent implication regarding deposit-related fees is that larger institutions charge higher retail fees than do smaller ones, because they do not find it in their interest to use lower fees to

[1] A 1994 hearing before the House Subcommittee on Consumer Credit and Insurance, chaired by Representative Joseph Kennedy, led off with the testimony of a Girl Scout who, because of retail fees, had lost all her collected cookie money to a bank.
[2] See Hannan and Prager (2004), Kiser (2004), and Park and Pennacchi (2005).

attract less profitable retail customers. This argument may be particularly relevant if the fee in question relates to behavior (such as overdrawing an account) that might indicate a less profitable depositor.

Still another issue raised by the recent literature concerns the presence of large multimarket institutions in geographic areas traditionally treated as local banking markets. Substantial evidence suggests that, at least in the case of deposit interest rates**,** a bank often offers the same rate for a given type of account in all the local areas in which it operates.[4] If local market areas remain relevant for single-market banks and if large multimarket banks tend to offer lower deposit rates in those markets because they have greater access to wholesale funds--as Park and Pennacchi (2005) explicitly model and as Hannan and Prager (2004) speculate--then one may infer that the deposit rates of single-market banks decline as the presence of large multimarket banks in the local market increases. As discussed in more detail below, one may also infer that the role of market structure in affecting the deposit rates of single-market banks diminishes as the presence of multimarket banks increases. Using different data sets, both Hannan and Prager (2004) and Park and Pennacchi (2005) report results that are strongly consistent with these implications. This paper reports tests of the equivalent hypotheses as they apply to retail fees.

The plan of the paper is as follows: Section 2 presents a heuristic description of two spatial models of bank competition that have appeared recently in the literature and that yield predictions regarding the role of multimarket banks and relevant interactions

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[3] A further implication of this "wholesale funding advantage" argument is that larger institution may also charge lower loan rates than do smaller ones—a prediction confirmed most recently in a study by Berger, Rosen, and Udell (2005).

[4] See Radecki (1998) and Heitfield (1999).

with market structure. Section 3 presents the empirical model designed to test the implications of these theories, and section 4 describes the data and measurement of relevant variables. Section 5 presents results, and section 6 provides a summary and conclusions. Many of the predictions of these models are supported by the data for several of the retail fees included in the study, with the interesting exception of one of the ATM fees examined.

2. Models of Retail Deposit Pricing

Two spatial models of retail deposit pricing have appeared in the recent literature, and both may be used to derive predictions of interest in this study**.** A qualification to the use of these models as a guide, however, is the fact that they relate explicitly to deposit interest rates rather than deposit-related fees. It does not automatically follow that institutions that raise deposit rates in response to some source of competitive pressure will invariably reduce deposit-related fees as well. Also, depositors at single-market and multimarket banks may be quite different in terms of their valuations of the tradeoff between deposit rates and deposit fees, and this may result in substantial differences in the importance of the interaction between single-market and multimarket banks as they apply to the two types of prices. It does, however, seem most reasonable that, in response to a change in the competitive environment, any optimal combination of deposit rates and fees would generally entail movement of both types of prices either in the direction that benefits or in the direction that harms the depositor. This would imply opposite predictions regarding the impact of measures of the competitive environment on deposit rates and retail deposit fees. We adopt this presumption in deriving predictions

concerning deposit-related fees and, of course, subject these predictions to testing, as reported below.

The first of these studies, by Barros (1999), was employed by Hannan and Prager (2004) to guide empirical estimation of the relationship between bank deposit rates and several explanatory variables, including local market structure, multimarket bank presence, and variables relevant to spatial competition. The second study, by Park and Pennacchi (2005), addresses more explicitly the advantage that greater access to cheaper wholesale funds may provide large multimarket banking institutions. They derive the implications of that advantage for the levels of the retail deposit rates and loan rates of multimarket banks and, through spatial interactions, the levels of retail deposit rates and loan rates chosen by single-market competitors.

Both models start with the illustrative assumption, common in spatial models, of a market characterized by a circle on which firms (bank branches in this case) are located. Depositors, located uniformly along the circle, choose the most attractive bank in terms of net returns on deposits adjusted for the costs of visiting its branches. These models yield transportation costs and distances (and therefore the extent of a bank's branch network) as important determinants of bank choice.

The effect of multimarket banking in these models can be illustrated by presuming that at least one of the branches is owned by a large multimarket bank that, because of a wholesale funding advantage, offers the local depositor lower deposit rates (and perhaps charges higher deposit-related fees).[5] Because of competitive interactions

[5] Park and Pennachi (2005) also presume lower marginal deposit-related costs at large multimarket banks, so this presumption of lower deposit interest rates at multimarket banks follows only if the negative impact on deposit interest rates of a funding advantage is large enough to outweigh the positive effect on deposit rates of lower marginal costs.

with branches owned by neighboring single-market banks, both models predict that neighboring single-market banks will also reduce deposit interest rates (and perhaps increase deposit-related fees). [6]

While there are some differences in underlying assumptions, both models yield the prediction that as the number of branches owned by multimarket banks (with a sufficient funding advantage) increases, single-market banks will lower their deposit interest rates, raise their deposit-related fees, or do both. The reason is that, on average, the single-market bank will be more likely to be a neighbor of a multimarket bank (Barros, 1999) or, on average, be closer to a branch of a multimarket bank (Park and Pennacchi, 2005).

Both models predict that, as concentration increases, deposit interest rates of single-market banks decline, deposit-related fees increase, or both occur. These predictions agree even though the models define concentration differently. Park and Pennacchi define it as simply the number of banks (each having one branch) on a circle of a given circumference. More banks (meaning less concentration) under these circumstances imply smaller distances between them. Assuming Bertrand pricing, this implies, through the spatial interactions among neighboring competitors, higher deposit interest rates, lower deposit-related fees, or both. The Barros model can be shown to incorporate the same "distance" effect of concentration, but it also includes a conduct parameter indicating the extent to which one bank internalizes the profits of competing

[6] This prediction also assumes that local markets are characterized by sufficiently high loan demand, such that single-market banks invest their retail deposits in loans and do not invest appreciably in wholesale money market securities. With insufficient loan demand, an equilibrium is possible such that retail deposit rates are below the wholesale funding rate, and excess deposits are invested in money market securities. Under these circumstances, the funding advantage of large multimarket competitors would make no difference to the pricing decisions of single-market banks.

banks in the market. Hannan and Prager (2004) note that, to the extent that concentration influences the conduct parameter, the traditional prediction of lower deposit interest rates in more concentrated markets results.

Both models predict that, as the presence of multimarket banks in a market increases under these circumstances, the traditionally predicted relationship between local concentration and price attenuates. The primary reason is that, with the prices of multimarket banks unaffected by local market structure (or at least less affected because they reflect a weighted average of the conditions in many markets), any concentration-induced change in the price offered or charged by single-market banks would entail a loss of customers to the branches of multimarket banks. The more branches of multimarket banks in the market, the greater would be the loss in customers to multimarket banks and hence the weaker would be the relationship between concentration and price.

The evidence in support of these predictions as they apply to retail deposit rates is quite strong. Using different data sources, Hannan and Prager (2004) and Park and Pennacchi (2005) report evidence that large multimarket banks offer lower retail deposit rates than do single-market banks operating in the same local markets, a finding consistent with the implications of a funding advantage of multimarket banks (but also consistent with other explanations). Hannan and Prager (2004) report results consistent with the above predictions using deposit interest rates constructed from Reports of Condition and Income for two large cross sections of banks--one for 1996 and the other for 1999. Park and Pennacchi (2005) also report results generally consistent with these predictions. They used survey data, obtained from *Bank Rate Monitor*, on Money Market Deposit Account rates and on various Certificates of Deposit rates for cross sections

ranging from 1998 to 2003 and for pooled samples as well. The primary task in this paper is to determine whether these predictions also apply to individual retail deposit-related fees charged by depository institutions.

3. Test

The strategy employed to test the basic predictions of these theories is to focus on the pricing behavior of banks and thrift institutions that operate in only one local area (referred to as "single-market banks"), taking into account the predicted competitive impact of multimarket banks operating in the same area. To this end, estimations of the following relationship are reported**:**

$$fee_i^{sm} = \beta_0 + \beta_1 hhi + \beta_2 \ln(bkassets_i) + \beta_3 \ln(mktpop) + \beta_4 mmshare_i + \beta_5 mmshare_i X\ hhi + \beta_6 brshare_i \text{ , } \textbf{(1)}$$

where fee_i^{sm} denotes a retail fee charged by single-market bank *i; hhi* denotes the Herfindahl-Hirschman index of concentration, defined as the sum of squared market shares; $bkassets_i$ denotes the total assets of bank *i*; *mktpop* denotes market population; $mmshare_i$ denotes the share of the branches of bank *i*'s competitors that are owned by multimarket banks; and $brshare_i$ denotes the share of branches in the market owned by bank *i*. Note that the variables $bkassets_i$ and *mktpop* are entered in log form because they exhibit extreme skewness, and it is unlikely that their relationships with retail fees are linear across the substantial range of values observed in the data.

The six fees studied in the analysis are (1) the stop-payment fee, defined as the fee charged the account holder for stopping payment on a check; (2) the "nsf" fee, defined as the fee charged the account holder for writing a check that is returned for "not sufficient funds"; (3) the overdraft fee, which is a fee charged for writing a check on insufficient

funds, but in this case the check is honored by the account holder's bank; (4) the "deposit items returned" fee, which is a fee typically charged an account holder who deposits (rather than writes) a check that is drawn on insufficient funds; (5) the ATM foreign fee, defined as a fee charged the account holder by the account holder's institution for withdrawing cash at an ATM not owned by the institution; and (6) the ATM surcharge, which is the fee typically charged nondepositors of an institution for use of the institution's ATMs.

The models discussed above suggest that for the typical fee, the predictions for the coefficients in (1) are

$$\beta_1 > 0, \beta_2 > 0, \beta_4 > 0, \beta_5 < 0, and\, \beta_6 > 0 .$$

A positive coefficient of the measure of concentration $(\beta_1 > 0)$ is implied if noncompetitive behavior is more likely or more pronounced in more-concentrated markets. A positive relationship between bank size and retail fees $(\beta_2 > 0)$ is also predicted if larger banks, because of access to cheaper wholesale funds, do not find it in their interest to attract less profitable depositors (thus charging higher fees). This relationship, however, could also reflect other distinctions between larger and smaller institutions, such as differences in efficiency or in the quality and extent of services offered.

More central to the models discussed above is the prediction that retail fees of single-market banks should generally be higher the larger the share of the branches of bank *i*'s competitors that are owned by multimarket banks $(\beta_4 > 0)$.[7] This prediction follows in the case of the typical fee, because, as will be seen, large multimarket banks

[7] This statement abstracts from the interaction term, which we discuss below.

typically charge higher retail fees than do single-market banks. Thus, a larger share of competitors' branches that are owned by multimarket banks means that a branch of a high-fee multimarket bank is more likely to be a neighbor (Barros, 1999) to the single-market bank or on average closer to it (Park and Pennacchi, 2005). Implicit in this prediction is the assumption that the fees of interest are strategic complements, whereby a higher price charged by one firm causes competitors to charge a higher price as well.[8]

The interaction between multimarket presence and concentration is predicted (in the typical case) to have a negative impact on the retail fees of single-market banks $(\beta_5 < 0)$. This prediction implies that, as the presence of multimarket banks increases, the positive relationship between market concentration and the fees of single-market banks attenuates. As noted above, the primary reason is that the fees of multimarket banks do not respond (or respond very little)) to changes in concentration in the market because such fees primarily reflect conditions outside the market. Because depositors have the option to switch accounts from or to the branches of multimarket banks, the positive relationship between the fees of single-market banks and market concentration is weakened as the presence of multimarket banks in the market increases. This prediction in particular is dependent on the proposition that multimarket banks charge the same price everywhere, so their prices are less responsive to changes in the concentration of any one market in which they operate.

Finally, the share of market branches owned by the single-market bank is predicted to be positively related to the bank's retail fees $(\beta_6 > 0)$. This prediction is

[8] As discussed below, this assumption may be violated in the case of the ATM fees examined. It also bears emphasizing that no claim is made here that multimarket banks charge higher fees because they operate in multiple markets. A more likely reason for their higher fees is that they are typically quite large and therefore have access to funding not available to smaller single-market institutions.

implied by Barro's (1999) spatial model, wherein a bank with more branches is likely to have a greater share of customers for whom one of the bank's branches is the next best alternative to another. This allows the bank to exploit this "spatial market power" by charging higher fees.[9] As Barros makes clear, proximity may be expressed in terms of product space as well as geographic space, so the measure may be thought of more generally as capturing firm-specific market power.

The log of market population is also employed as an explanatory variable for the purpose of control. Because of the many unknown differences that may exist between larger and smaller market areas, no prediction is offered regarding the sign of its coefficient.

A potentially important exception to the prediction of a positive impact of $mmshare_i$ on single-market bank fees $(\beta_4 > 0)$ may be the ATM foreign fee. As noted above, this prediction in the typical case assumes that the fees in question are strategic compliments, so that the higher fees charged by multimarket banks induce an increase in the fees charged by competing single-market banks. This is a reasonable presumption in the case of the typical bank fee (the nsf fee, for example), because an increase in such a fee by multimarket banks should cause an increase in demand for the services of competing single-market banks. This prediction is least likely to follow, however, in the case of the ATM foreign fee. A primary reason is that the levying of the ATM surcharge, as is often argued, can actually attract depositors to a bank with many ATMs. The reason is that an account with the bank allows the customer to avoid the surcharge when using the bank's ATMs. Under these circumstances, a reduction in the foreign fee

[9] Since the model by Park and Pennacchi (2005) does not allow more than one branch per bank in a market, it does not address this issue. Hannan and Prager (2004) use a somewhat more complicated expression,

by single-market banks may be an optimal response to the high ATM surcharges levied by multimarket banks offering the convenience of numerous ATM locations. Thus, a greater presence of multimarket banks in an area may reduce--rather than increase--the fees of single-market banks in this case.

An additional, though probably less important, reason for such a relationship results from the fact that a bank's ATM foreign fee and another institution's ATM surcharge are levied on the same transaction when depositors of one bank use another bank's ATMs . So even in the absence of incentives to switch banks, the presence of multimarket banks charging high ATM surcharges would reduce the demand for interbank ATM transactions by the depositors of single-market banks and result in a possible reduction, rather than an increase, in the single-market bank's foreign fee.[10] Indeed McAndrews (2004), using a spatial model of ATM use, derives explicitly this inverse relationship between one bank's surcharge and the optimal foreign fee of rival banks.[11]

4. Data

The data on retail fees are obtained from two annual surveys--one conducted in 1999 and the other in 2001--by Moebs Services of Lake Bluff, Illinois. These data were obtained through telephone interviews of approximately 1,000 U.S. banks and thrift

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suggested by their use of the Barros model, to account for this phenomenon.

[10] More precisely, the elasticity of transaction demand with respect to the foreign fee might increase with higher surcharges levied by competing multimarket banks, resulting in lower optimal foreign fees charged by single-market banks. This effect, unlike the first, is symmetric, implying that a higher foreign fee charged by multimarket banks could also result in a lower surcharge levied by single-market bank competitors.

institutions in the 1999 survey and approximately 600 such institutions in the 2001 survey. Financial institutions were chosen for interview according to a stratified random sample, with region of the country and institution size categories serving as the strata. This data source is particularly desirable for the purposes of this study because the sample design produces a large number of observations of smaller, single-market banks. For reasons of comparability across institutions, as well as general prominence of the fee, the six retail deposit-related fees, described above, chosen for study are the stop payment fee, the nsf fee, the overdraft fee, the fee for "deposit items returned," the ATM foreign fee, and the ATM surcharge.[12]

Data for the remaining variables in the analysis are obtained from several sources, including the quarterly Reports of Condition and Income filed by each depository institution, the Federal Deposit Insurance Corporation's Summary of Deposits, the Office of Thrift Supervision's Branch Office Survey, and the Department of Commerce's Regional Accounts Data.

As in previous literature, local banking markets are defined as either metropolitan statistical areas (MSAs) or non-MSA counties. For purposes of this analysis, a single-market bank is one that derives at least 90 percent of its deposit from the observed market, and a multimarket bank is one that derives less than 30 percent of its deposits from that market. These definitions are chosen because of the expectation that a bank deriving at least 90 percent of its deposits from a single market will set retail fees based

[11] Massoud and Bernhardt (2002) and Massoud, Saunders, and Scholnick (2003) present interesting models of the role and determinants of ATM surcharges and, in the latter work, empirical tests of implications. Neither study, however, addresses the role of ATM foreign fees.

[12] Other fees available from the survey--such as the fee charged for the return of cancelled checks and the fee charged for use of ATMs owned by the depositor's own institution--are not included because banks rarely impose them.

primarily on conditions prevailing in that particular market, whereas a bank deriving less than 30 percent of its deposits from a particular market may set its fees based largely on conditions prevailing in other markets that it serves. Most banks that are classified as multimarket banks in our sample derive far less than 30 percent of their deposits from any single market in which they are considered to be multimarket institutions. Perhaps for this reason, the results reported are quite robust regarding alternative choices of the threshold used to define a multimarket bank.

The samples include observations of both commercial banks and thrift institutions, which will frequently be referred to generically as "banks."[13] The number of branches and the dollar value of deposits held by each depository institution in each local market were obtained from the FDIC's Summary of Deposits. This information was in turn used to calculate relevant concentration measures and each institution's branch share and to classify banks as single-market or multimarket. The variable, $mmshare_i$, is calculated as the share of branches of all banks and thrifts, other than the branches of bank *i*, that are owned collectively by multimarket institutions in the observed market.

The measurement of concentration is problematic because, as argued, the pricing of multimarket banks is not responsive to the conditions in any given market in which they operate. If only competitive interactions among single-market banks account for noncompetitive pricing on the part of single-market banks, then the measure of concentration should be restricted to those banks whose prices are influenced by local market conditions. Because, in the extreme case, the fees of multimarket banks are not influenced by conditions in the observed market, this suggests that the market shares of

[13] All relevant market variables, such as measures of concentration and market shares, also include thrift institutions on an equal weighting as banks.

multimarket banks be left out of the measure of concentration. The thresholds of 90 percent of deposits in the market used to define a single-market bank and a maximum of 30 percent used to define a multimarket bank are chosen as fairly extreme values, to ensure that the banks that meet these standards are indeed single-market and multimarket banks, respectively. This classification leaves a middle range of banks that can be defined as neither, and excluding all of them from a relevant concentration measure is not appropriate. As a compromise, the paper reports results obtained with a concentration measure defined for all institutions in the market that have at least 50 percent of their deposits in the market. The use of other plausible thresholds yields equivalent results.[14]

The top half to table 1 presents, for each annual sample, the number of surveyed institutions that meet the definition of "single-market" institution, the number of local markets for which observations of single-market institutions are obtained, the percent of such institutions that are thrift institutions, and the proportion of such institutions located in MSAs. As indicated, the 1999 survey contains substantially more observations of single-market institutions operating in many more local markets. The 1999 sample contains 526 single-market institutions operating in about 300 different local markets, whereas the 2001 sample contains 330 observations of such institutions operating in 175

[14] Use of the traditional concentration measure, which accounts for all banks with a presence in the market, yields statistically significant coefficients with the hypothesized signs in a number of cases. However, results are generally "weaker" than those obtained using measures of concentration that seek to exclude multimarket banks. This is consistent with the notion that multimarket banks, because they charge the same prices everywhere, are unlikely to exhibit pricing behavior that varies with the concentration of an individual market in which they are observed.

As noted by an anonymous referee, a negative coefficient of the interaction term could result if the measure of concentration that best explains single-market bank fees is in fact the traditional measure and if the traditional measure and $mmshare_i$ are negatively correlated (reflecting lower concentration with multimarket banks added to the market). In this case, higher values of $mmshare_i$ in the interaction term may pick up the fee-depressing effect of lower (unmeasured) traditional concentration. However, since $mmshare_i$ and concentration, as traditionally measured, are not negatively correlated in either of the cross sections used in the analysis, this does not appear to be an explanation for the results reported below.

local markets. These differences reflect a substantial reduction in the number of institutions surveyed in the years after 1999. As indicated in table 1, thrift institutions made up about 34 percent of the sample in 1999 but only 13 percent in the 2001 sample. This difference also reflects a change in the sample design between the two years. In both samples, however, somewhat more than 60 percent of surveyed single-market institutions were located in MSAs.

While observations of multimarket banks are, by design, not used in estimations of (1) reported below, the Moebs surveys also include information on a substantially smaller number of multimarket institutions, as defined above. For the purpose of comparison, the same statistics for these institutions are reported in the bottom half of table 1. Comparisons between the fees of single-market and multimarket institutions and the reasons for the differing number of multimarket institutions surveyed in 1999 and 2001 are discussed below.

5. Results

Table 2 lists the definitions of all the variables used in the analysis, along with their mean (or median) values, calculated for each of the two samples. Note that the mean values of the fee (expressed in U.S. dollars) increased between 1999 and 2001 in most cases. Also of interest is the increase in the mean value of $mmshare_i$ between 1999 and 2001--from 0.415 to 0.461. Although the institutions and markets are not necessarily the same in the two samples, this registered increase may well reflect a trend toward a greater presence of multimarket banks over time. Also note that while some very large

banks meet the definition for inclusion as a single-market bank (discussed in more detail below), the median size of such banks is only slightly more than $100 million in assets. This compares with a median size of about $6 billion in assets for surveyed multimarket banks, so the difference in institution size between the two groups is quite large indeed.

For each of the samples, table 3 compares the fees charged by multimarket and single-market banks, as defined above. These data indicate strongly that multimarket banks charge, on average, higher retail fees than do single-market banks. For stop-payment orders in 1999, for example, the data presented in the column under "stoppay" show that multimarket banks charged on average $19.48, whereas single-market banks charged, on average, $15.11, a statistically significant difference of $4.37. This difference increased to $7.09 in 2001. Similar statistically significant differences are shown for most other fees as well. Only the fee for "deposit items returned" was greater at single-market banks than at multimarket banks (in both years), but these difference are not statistically significant.

It is possible that these observed differences in average fees result because of differences in the locations in which multimarket and single-market banks in the sample are observed. One way to control for locational differences is to calculate the average difference in fees for each of the markets in which the fees of both multimarket and single-market banks are observed and then to calculate the mean of those differences. As indicated in the fourth row of table 3, this exercise yields differences between multimarket and single-market banks (multimarket bank fee minus single-market bank fee) that are positive in all six cases and statistically significant in three cases.

As indicated in the bottom half of table 3, the 2001 survey provides only seven observations of banks that fit the definition of a multimarket bank in the markets in which they are observed.[15] To control for market location in explaining differences in the fees of multimarket and single-market banks, one must observe fees of both single-market and multimarket banks in a market. There are 28 such markets in the 1999; only two are in the 2001 sample. Thus, no results that control for market location can be presented for the 2001 cross section. Statistical control for the state, rather than the market, in which each bank operates is possible. Results for both 1999 and 2001 indicate that for most fees, the fees of multimarket banks are, on average, significantly higher than those of single-market banks operating in the same state (not reported).[16]

Another issue--important to the interpretation of regression results to be reported below and in fact central to the theories of Barros (1999) and Park and Pennacchi (2005)--is the question of whether multimarket banks charge the same retail fee in the different markets in which they operate. As noted above, substantial evidence indicates that they offer the same deposit rates in different areas. Because the survey employed in this study draws its sample through random selection, it is not designed to obtain many cases of multiple observations of the same bank in different areas.[17] Thus, the notion that

[15] The reason for this difference appears to be that the 2001 survey design placed more emphasis on interviewing banks at their headquarters, and relatively few banks fit the requirement of having less than 30 percent of their deposits in the market in which they are headquartered.

[16] This finding of higher retail deposit fees charged by multimarket banks than by single market banks is similar in nature to the findings reported annually to Congress in the Federal Reserve's *Annual Report to Congress on Retail Fees and Services of Depository Institutions*. From 1997 through 2003, these reports have compared the fees of banking organizations that operate in one state with those that operate in more than one state. In each and every year, multistate banks (or banks in holding companies with operations in more than one state) are reported to charge higher fees than banking organizations whose operations are restricted to one state.

[17] Also, since the survey interviewer may end up talking to the same service department to obtain the fees charged in different areas, the answers obtained may not be independent.

multimarket banks charge the same fees in the different areas in which they operate cannot be tested directly and is instead treated as a maintained assumption for the purpose of the tests reported below.

Tables 4 and 5 report estimations of equation (1) for each of six different common retail fees included in the survey, for the years 1999 and 2001, respectively. As noted above, the 1999 sample is superior to the 2001 sample because the former includes many more banks and local markets. The availability of the 2001 sample, however, does provide the opportunity to determine whether results are robust with respect to time.

Because virtually all banks charge a fee for bounced checks (nsf fee), overdrafts, and stop-payment orders, the use in regression analyses of these fees entails no problems associated with censored dependent variables. An OLS (ordinary least squares) estimation procedure that employs robust standard errors and allows for correlation of errors across banks in the same market is used in these cases. This procedure results in larger standard errors than those obtained by using standard OLS. Because a substantial number of institutions do not charge for deposit items returned, ATM foreign fees, and ATM surcharges, Tobit estimation is employed to account for the fact that the dependent variables in these estimations receive the value of zero for a substantial number of observations.

Regression Results, 1999 Sample. Consider first the estimations reported in columns (1) through (3) in table 4. These regressions employ as dependent variable the three common fees (nsf fees, overdraft fees, and charges for stop payment orders) that virtually every bank charges. In estimations that seek to explain the level of these fees, all coefficients exhibit the predicted signs, and most are statistically significant. The

coefficients of *hhi* are positive significant in all three cases, a finding consistent with the prediction that banks in more-concentrated markets are more likely to exercise, or to exercise a greater level of, market power than banks in less concentrated markets.

The coefficients of *ln(bkassests)* are positive and significant in these regressions (and indeed in all regressions but one). This implies that, even among these single-market banks, larger banks tend to charge higher fees, all else equal. Apparently, for banks in general, institution size is an important correlate of the level of retail fees.

The coefficients of *ln(mktpop)* are positive and significant for all fees except those associated with ATMs. The positive coefficients may reflect the greater costs incurred to provide the services of checking accounts in larger, more densely populated urban areas, but they may also pick up other unmeasurable differences that distinguish larger markets from smaller markets.

The coefficients of $mmshare_i$ are positive for all three of these common fees and statistically significant in the case of nsf and overdraft fees. This finding (together with that associated with the interaction term as reported below) provides support for the hypothesis that multimarket banks influence, through competitive interactions, the pricing of single-market banks, as outlined above.

Furthermore, if market concentration performs the role assigned to it by the traditional structure-conduct-performance paradigm, then a negative coefficient of the interaction of $mmshare_i$ and *hhi* is predicted, as discussed above. The coefficients of this interaction are negative and significant in all three of these regressions. These results are consistent with the prediction that, as the share of competitors' branches that are owned by multimarket banks increases, the positive relationship between the fees of single-

market banks and market concentration attenuates. As noted above, this finding is consistent with the existence of spatial interactions with multimarket banks, whose fees are little affected by local market structure.

Because of the presence of this interaction term, the total effects of *hhi* and $mmshare_i$ on fees will depend on each other's value.[18] Coefficient magnitudes imply that the total impact of *hhi* on the fee is positive for values of $mmshare_i$ that are less than 0.85 in the case of the nsf and overdraft fees and 0.72 in the case of the stop-payment fees. Nearly all observed values of $mmshare_i$ in the data set are in fact less than these values. Coefficient magnitudes also imply that the total effect of $mmshare_i$ on the fee is positive for values of *hhi* less than 0.44 in the case of the nsf fee, 0.49 in the case of the overdraft fee, and 0.30 in the case of the stop-payment fee (where *hhi* is measured on a scale from 0 to 1) and negative for values of *hhi* above these levels. Values of *hhi* above these threshold levels indicate highly concentrated markets. This prediction of a negative (procompetitive) effect of multimarket banks in such markets reflects the fact that the fees of single-market banks in highly concentrated markets would, in the absence of multimarket institutions, be so high that competition from multimarket institutions actually exerts a negative, rather than positive, influence on them.

Little support is found for the exercise of firm-specific market power, as measured by branch share. The coefficients of branch share, $brshare_i$, are positive, as predicted if the variable proxies firm-specific market power. In only one case, however, is the coefficient of this variable statistically significant.

[18] For example, the results presented in table 4 for nsf fees imply that a change in *hhi* of 0.1 (where *hhi* ranges from 0 to 1) would cause the nsf fee to increase by $1.11, calculated as $11.13 x 0.1, if no multimarket banks operate in the market and by $.45, calculated as [11.13 - 0.5(13.20)] x 0.1, if multimarket banks account for 50 percent of the market.

The nature of the remaining three fees used as dependent variables requires more discussion. The fee for a deposit item returned (*depreturn*) is a charge levied on a depositor who deposits (rather than writes) a check that is returned by the paying bank (because of insufficient funds, for example). The levying of this fee has caused controversy because some have argued that the depositor is not at fault when a deposited check is found to be drawn on insufficient funds and that charging the depositor in such cases is therefore unreasonable. Others argue that such fees may provide a useful incentive for depositors not to accept checks thought likely to be returned and that depository institutions have a right to recover their cost in ways available to them.[19]

Perhaps because of the controversial nature of this fee or because of pressure from merchants (who are at continual risk of depositing customer checks drawn on insufficient funds), many institutions do not charge the fee. Of the 469 observations of single-market commercial banks and thrift institutions employed in the estimation reported in column (4), 135 reported that they do not charge this fee. The coefficients obtained with this fee as a dependent variable and reported in column (4) are generally not statistically significant.

The estimations reported in columns (5) and (6) of table 4 relate to the two ATM charges: the foreign fee and the surcharge. The results indicate no statistically significant relationship between market concentration and either the foreign fee or the surcharge. Like most other retail fees examined, however, both fees are positively and significantly related to the size of the bank. Unlike the other fees included in the study, market size exhibits a negative relationship with these fees.

[19] Check kiting is also an issue in regard to this fee because it involves the depositing of checks drawn on insufficient funds.

Most interestingly, the coefficient of $mmshare_i$ is actually negative and statistically significant in the "foreign fee" regression. As noted above, the most likely reason for this negative coefficient is that the high surcharges (documented above) and large ATM networks of multimarket banks provide an incentive for depositors of single-market banks to switch to them, thereby inducing single-market banks to lower their foreign fees as a competitive response. The coefficients of the remaining variables are not significant in these regressions.

Regression Results, 2001 Sample. Table 5 presents results obtained by using the same specifications and estimation procedures but applied to the smaller 2001 sample. As indicated, coefficient signs are the same as those reported for the larger 1999 sample in virtually every case, but the levels of statistical significance are lower. The coefficients of terms containing the concentration measure, *hhi*, in particular lose statistical significance. An exception is the regression for the deposit-items-returned fee (*depreturn*), for which these coefficients attain statistical significance not observed in the equivalent 1999 regression. Compared with the 1999 results, the coefficients of the log of bank assets, *ln(bktatasst),* are positive and significant in three cases instead of five, and the coefficients of the log of market population, *ln(mktpop),* are positive and significant in the same four regressions in which they are positive and significant for the 1999 sample.

Most importantly, the coefficients of $mmshare_i$ are positive and statistically significant in three cases, as in the 1999 regressions. The coefficient of this variable is also negative in the regression for ATM foreign fees, as in the equivalent 1999 regression, but it is not statistically significant in the 2001 regression.

It is to be expected that levels of statistical significance decline when employing a sample with substantially fewer observations. Coefficient magnitudes, however, do tend to be smaller in the 2001 regressions in the case of a number of variables that are central to the hypotheses tested, suggesting that underlying relations may be weakening over time. On the whole, however, the results obtained for the 2001 sample roughly confirm the results obtained using the larger 1999 sample.

Robustness of Results. Reported results are robust with respect to a number of changes. First, the variables $mmshare_i$ and $brshare_i$ are measured in terms of branches rather than deposits because this approach seems more in keeping with the spatial models of Barros (1999) and Park and Pennacchi (2005). Measurement of these variables in terms of deposit shares, rather than branch shares, yields results that do not differ qualitatively from those reported above.

Second, estimations conducted using MSA markets only and rural markets only do not yield results that appear markedly different from those reported above for the full sample, except that levels of statistical significance are lower as a result of the smaller number of observations.[20] Inclusion of a binary variable indicating operation in an urban market in estimations that employ the full sample does not alter qualitatively the results of primary interest in the study. The inclusion of this variable does, however, substantially alter the coefficient of *ln(mktpop)* in some regressions because these variables are highly correlated.

[20] Coefficient magnitudes suggest that the variables containing *hh*i play a greater role in rural markets than in urban ones and that the variable $mmshare_i$ plays a greater role in urban markets than in rural ones. However, tests for differences in these coefficients fail to reject the hypothesis that they are the same. The division of the samples according to whether the market is above or below the median size, rather than according to the whether the market is an MSA, yields many more markets and observations in the "small

Next, because thrift institutions as well as commercial banks are included as observations, it is natural to consider whether significant differences exist in the pricing of the two types of institution. Tests for intercept differences are statistically significant, with differing signs, in a few cases. Tests for coefficient differences between the two types of institution, however, invariably fail to reject the hypothesis that coefficients are the same. Exclusion of thrift institutions from the sample yields results that are the same qualitatively as those reported above.

Although the median size of the single-market banks in the two annual samples is barely over $100 million in assets (table 2), several large banks are included in the samples because they meet the criterion by having more than 90 percent of their deposits in a huge market, such as New York and Chicago. Elimination of the larger institutions from the sample results in coefficients that have higher *t*-statistics than those reported in tables 4 and 5. For the 2001 sample, elimination of the largest 25 percent of the sample (or banks having more than $250 million in assets) results in coefficients with levels of statistical significance that are as high as those reported for the 1999 sample. In general, this finding suggests the possibility that the hypotheses examined are more relevant to smaller than larger banking institutions.

Restricting the sample to those institutions that have at least 90 percent of their deposits in one market excludes a substantial number of institutions that might be included under a less demanding definition.[21] A relaxation of the definition of single-market bank to 75 percent, for example, would add an additional fifty institutions to the

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market" category. Consequently, most of the statistically significant results are observed for this category (not reported).

[21] This choice reflects the precedent set by Hannan and Prager (2004), whose interest rate study had available to it virtually the entire population of banks in the United States.

data set and add to the number of statistically significant coefficients in some cases, particularly in the case of the 2001 sample.[22]

6. Conclusion

This paper reports a systematic examination of the determinants of retail banking fees using an extensive set of survey data that is unusual for its size, specificity, and sampling properties. Data on six different fees and for two different years--1999 and 2001--are employed. The paper reports a number of findings regarding the differences in the level of these fees across banks and areas. In a preliminary examination, multimarket banks (where markets are defined as MSAs or non-MSA counties) are found to charge, on average, substantially higher fees than do single-market banks.

With the sample restricted to the large number of surveyed banks that operate predominantly in one market, regression results reported using the larger 1999 sample of depository institutions produce the following findings: For the most common retail fees that every bank charges, banks in more concentrated markets tend to charge higher fees, all else equal, a finding consistent with the predictions of the structure-conduct-performance paradigm. Consistent with predictions, this relationship is found to become weaker, the greater the presence of typically large, multimarket banks in the market. Even for this sample of single-market banks, larger institutions are found to charge higher fees than do smaller ones, all else equal. Furthermore, except for the ATM charges, fees are found to be higher in larger markets, all else equal.

[22] For example, the number of observations in the 2001 overdraft regression increases from 299 to 345 with this change and results in a coefficient of *hh*i that is positive and significant at the 10 percent level and a coefficient of $mmshare_i \times hhi$ that is negative and significant at the 5 percent level. Detailed results are available from the author upon request.

For the more commonly charged fees, single-market banks are found to charge higher fees in markets where multimarket banks have a greater presence (and where markets are not highly concentrated), a finding consistent with the predictions of recent theories of behavior of single-market banks that are confronted with competition from multimarket banks. An interesting exception occurs in the case of the ATM "foreign fee," wherein single-market banks are found to charge lower foreign fees when faced with a greater presence of multimarket banks. The incentive for depositors to switch their accounts to large multimarkets banks that impose high surcharges for use of their machines by nondepositors is offered as the most likely reason for this competitive response on the part of single-market banks.

Estimations for the smaller 2001 sample of depository institutions yield coefficients that have the same signs as those reported for the 1999 sample, but cases of statistical significance are fewer. This is particularly true in the case of terms containing the concentration measure. As in the case of the 1999 regressions, coefficients of a term measuring the extent of multimarket bank presence are found to be positive and statistically significant for three fees charged by single-market banks.

On the whole, these findings are similar in nature to those reported in recent studies of deposit interest rates. Like those findings, they are relevant to the conduct of antitrust analyses in banking. The positive and statistically significant coefficients obtained for measures of concentration, defined on the basis of local markets, suggests that local markets, as of the time of these surveys (particularly the 1999 survey) were still relevant in explaining bank pricing, at least for single-market banks in markets with little multimarket bank presence. The registered effect of mulitmarket bank presence, in both

1999 and 2001, also provides support for the relevance of local markets. One would presumably observe no relationship between the extent of multimarket bank presence in local markets and the fees of single-market banks in those areas if local competition were not relevant to bank pricing. However, the evidence that the relationship between fees and local market concentration attenuates as multimarket banks become more important in the market suggests that if the trend toward multimarket banking continues, the rationale for the use of local markets in antitrust analyses of the banking industry will become weaker.

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Table 1

Characteristics of Surveyed Single-market Institutions

Year	No. of single-market institutions	No. of local markets	Percent thrifts	Percent in MSAs
1999	526	299	34	62
2001	330	175	13	64

Characteristics of Surveyed Multimarket Institutions

Year	No. of multimarket institutions	No. of local markets	Percent Thrifts	Percent in MSAs
1999	98	88	10	61
2001	7	7	14	71

Table 2

Variable Definitions and Means (or Medians) for the 1999 and 2001 Samples of Single-Market Institutions Employed in the Analysis.

Variable Name:	Variable Definition:	Mean (1999)	Mean (2001)
stoppay	Fee charged the account holder for stopping payment on a check	$15.11	$16.50
nsf	Fee charged the account holder for writing a check that is returned for insufficient funds	$18.11	$19.35
overdraft	Fee charged the account holder for writing a check on insufficient funds, but in this case the check is honored by the account holder's bank	$18.00	$18.96
depreturn	Fee charged for a "deposit item returned," typically charged an account holder for depositing a check of another bank that is returned for insufficient funds	$4.69	$4.95
foreign	Fee charged the account holder for withdrawing cash at an ATM not owned by the account holder's bank	$ .83	$ .80
surcharge	Fee charged (usually nondepositors) for use of an institution's ATM	$ .96	$1.10
hhi	The Herfindahl-Hirschman index of concentration, defined as the sum of squared market shares	.2341	.1980
$bktotasst_i$	Total assets of bank i ($ in millions)	105.6 (median)	108.7 (median)
mktpop	Total population of the market (in thousands)	384 (median)	570 (median)
$mmshare_i$	For institution i, the share of all branches in the market (other than those owned by institution i) owned by institutions designated as "multimarket"	.415	.461
$brshare_i$	Institution i's share of branches in the market	.085	.070

Table 3

Comparison of Fees Charged by Single-Market and Mulitmarket Banks
(means and difference in dollars)

	stoppay	nsf	overdraft	depreturn	foreign	surcharge
Year: 1999						
Multimarket banks	19.48	22.05	21.94	4.42	.95	1.21
(No. of observation)	(98)	(98)	(97)	(98)	(97)	(93)
Single-market banks	15.11	18.11	18.00	4.69	.83	.96
(No. of observations)	(491)	(489)	(429)	(489)	(399)	(379)
Difference (multimarket – single-market)	4.37**	3.94**	3.94**	-.27	.12**	.25**
Average of within-market differences	6.01**	3.92**	3.64**	1.28	.15	.21
Year: 2001						
Multimarket banks	23.59	25.21	25.21	3.29	1.18	1.43
(No. of observations)	(7)	(7)	(7)	(7)	(7)	(7)
Single-market banks	16.50	19.36	18.96	4.29	.80	1.09
(No. of observations)	(324)	(324)	(299)	(321)	(289)	(275)
			:			
Fee difference (multimarket – single-market)	7.09**	5.85**	6.25**	-1.00	.38+	.34**
Average of within-market differences	…	…	…	….	…	…

Note: The symbols + and ** denote significance at the 10 percent and 1 percent levels, respectively.

Table 4

The Relationship between Retail Deposit Fees and their Determinants, 1999

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables	nsf	overdraft	stoppay	depreturn	foreign	surcharge
Intercept	-3.80	-8.57	-6.11	-4.26	-.53	-.10
	(-1.75)	(-4.00)	(-2.53)	(-1.26)	(-1.12)	(-.23)
hhi	11.13**	10.70*	8.71*	5.61	.45	-.82
	(2.79)	(2.60)	(2.00)	(1.05)	(.65)	(-1.40)
ln(bktotassst)	1.22**	1.65**	1.30**	-.084	.16**	.11**
	(6.40)	(9.38)	(6.22)	(-.29)	(3.82)	(3.01)
ln(mktpop)	.70**	.60*	.61*	1.21**	-.070+	-.077*
	(2.70)	(2.62)	(2.24)	(4.48)	(-1.90)	(-2.29)
$mmshare_i$	5.87**	6.12**	3.44	2.10	-.57*	.50*
	(2.94)	(3.06)	(1.52)	(1.12)	(-2.29)	(2.23)
$mmshare_i$ x hhi	-13.20**	-12.52**	-11.51*	-2.85	-.11	.59
	(-3.40)	(-2.92)	(-2.51)	(-.48)	(-.15)	(.92)
$brshare_i$	4.05	3.86	7.60*	-4.34	-.30	.10
	(1.21)	(1.02)	(1.99)	(-.83)	(-.45)	(.17)
Estimation procedure	OLS	OL S	OLS	Tobit	Tobit	Tobit
R^2	.19	.23	.17	…	…	…
N	469	410	471	469	379	362

Note: *t*-statistics are presented in parentheses. The symbols +, *, and ** denote significance at the 10, 5, and 1 percent levels, respectively.

Table 5

The Relationship between Retail Deposit Fees and their Determinants, 2001

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables	nsf	overdraft	stoppay	depreturn	foreign	surcharge
Intercept	-1.35	-3.38	.023	-20.31	-.30	.53
	(-.34)	(-.74)	(.01)	(-3.57)	(-.46)	(1.19)
hhi	4.24	6.81	3.24	14.27+	.32	-.283
	(1.00)	(1.39)	(.59)	(1.72)	(.37)	(-.47)
ln(bktotassst)	1.11**	1.20**	.71	.55	.087	.066+
	(2.89)	(2.68)	(1.61)	(1.12)	(1.59)	(1.78)
ln(mktpop)	.86*	.95**	1.12**	2.04**	-.0014	-.036
	(2.47)	(3.19)	(3.16)	(5.29)	(-.03)	(-1.21)
$mmshare_i$	4.18+	3.62+	2.30	5.90*	-.044	.12
	(1.89)	(1.86)	(.88)	(2.40)	(-.16)	(.64)
$mmshare_i$ x hhi	-4.98	-6.46	-4.86	-14.06+	-.44	.50
	(-.98)	(-1.26)	(-.93)	(-1.69)	(-.49)	(.80)
$brshare_i$	6.17	6.07	6.63	9.88	-.19	.065
	(1.37)	(1.39)	(1.08)	(1.31)	(.22)	(.11)
Estimation procedure	OLS	OL S	OLS	Tobit	Tobit	Tobit
R^2	.21	.19	.18	…	…	…
N	324	299	324	321	267	256

Note: *t*-statistics are presented in parentheses. The symbols +, *, and ** denote significance at the 10, 5, and 1 percent levels, respectively.