CORRESPONDENT SERVICES, FEDERAL RESERVE SERVICES, AND BANK CASH MANAGEMENT POLICY

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An earlier article published in this *Review* [4] discussed the operational and legal factors that determine bank holdings of cash assets. It showed that smaller sized nonmember banks in the Fifth Federal Reserve District have operating cash requirements that exceed by a substantial margin the legal reserve requirements to which they are subject. Conversely, smaller sized member banks are subject to legal reserve requirements that cause them to hold more cash assets than needed purely for operating purposes. Accordingly, legal reserve requirements for nonmember banks, which are established by the various states, are described as nonbinding. On the other hand, reserve requirements for member banks, which are set by the Federal Reserve within limits established by Congress, are described as binding.

The key difference between state and Federal reserve requirements leading to differences in nonmember and member bank cash asset ratios centers around the definition of eligible reserve assets. State requirements allow banks to count several types of cash balances, including balances held with correspondent banks, as eligible reserves. Federal requirements allow vault cash and deposits with the Federal Reserve, but not correspondent balances, as eligible reserve assets. In general, correspondent balances are held by both nonmember and member banks to compensate private correspondent banks for services received. For nonmember banks such balances serve a double purpose since they also count toward satisfying the legal reserve requirement. Many smaller member banks hold compensating balances with correspondent banks in addition to holding reservable assets as specified by Federal legal requirements.

The conclusion that member bank, but not nonmember bank, reserve requirements are binding is an empirical finding based on comparisons of average cash assets for the two groups. Smaller member banks on average hold more cash assets than their nonmember counterparts. But it cannot automatically be concluded from this that individual member banks *must* hold such excess balances. The Federal Reserve System makes available to member banks a number of correspondent type services free of explicit charge. To the extent that member banks substitute Federal Reserve services for those of private correspondent banks they may be able to operate with smaller correspondent balances and hence with lower levels of total cash assets than otherwise. Indeed, it may be possible that, through intensive use of Federal Reserve services, smaller member banks may reduce their total cash requirements to levels comparable with, or even below, those of similarly situated nonmembers.

This article examines how use of Federal Reserve System services affects member bank cash management policy. The first section reviews the types of correspondent services that are important to banks. The second section describes the services made available to member banks by the Federal Reserve and indicates the extent to which those services are utilized by member banks in the Fifth Federal Reserve District. In the third section, cash asset positions of member banks using System services heavily are compared with cash asset positions of other member and nonmember banks of similar size located in the same state. Conclusions are summarized in the fourth section.

Importance of Correspondent Services In mid-1976 the American Bankers Association sponsored a survey to determine the relative importance of different correspondent services to respondent banks [1]. Over 200 correspondent banks participated in the survey. They were asked to evaluate 39 specific services in terms of how important they were to respondent bank customers. The survey participants rated each of the services on a scale of 5 to 1, where a rating of 5 indicates "very important," a rating of 3 "slightly important," and a rating of 1 "not at all important." Table I ranks in descending order of importance the 20 services receiving the highest average scores on the survey.

Table I

CORRESPONDENT SERVICES RANKED IN ORDER OF IMPORTANCE

AMERICAN BANKERS ASSOCIATION SURVEY

Type of Service	Average Score[1]	Percent of Correspondent Banks Offering Service
1. Overline and liquidity loan participation assistance	4.68	97
2. Handling check collection for respondent banks	4.55	100
3. Offer EDP services to respondent banks	4.42	80
4. Regularly sell Federal funds to respondent banks	4.26	90
5. Purchase Federal funds from respondent banks other than for own needs	4.25	94
6. Offer fund transfers	4.24	98
7. Participate in term loans originated by respondent banks	4.03	92
8. Provide security safekeeping services to respondent banks	4.00	93
9. Offer loans to directors and officers of respondent banks, including bank stock loans	3.99	93
10. Offer a systematic portfolio analysis service to respondent banks	3.99	55
11. Actively buy and sell U. S. Govt. and agency securities to respondent banks	3.98	78
12. Offer access to ACH services to respondent banks	3.96	75
13. Assist respondent banks in raising capital or meeting capital adequacy standards	3.95	72
14. Actively buy and sell municipal securities to respondent banks	3.94	72
15. Actively deal in commercial paper, bankers' acceptances, negotiable CD's, RP's, etc., for respondent banks	3.83	77
16. Sell loans or participations in pools of loans to respondent banks for investment purposes	3.82	65
17. Provide currency and coin to respondent banks	3.74	98
18. Offer respondent bank customers point-of-sale transfer services	3.71	19
19. Assist respondent banks by revising or improving their procedures	3.65	83
20. Assist respondent banks in a full range of international banking transactions	3.46	63

[1] Average of 220 correspondent bank responses, each of which ranked the services on a scale of 5 to 1 in descending order of importance to their respondent bank customers.

Source: Clark [1].

Correspondent banks rate overline credit and liquidity loan participations as the most important service they offer. The importance to banks of a source of liquidity is indicated by more than the number one ranking given overlines and loan participation services, however. Two other services, regular Federal funds sales to respondent banks (number four) and participation in term loans originated by respondent banks (number seven), also receive high scores and are directly related to respondent bank liquidity needs. These results suggest that immediate credit availability to meet both temporary funds deficiencies and longer term loan demands is of foremost importance to respondent banks. Liquidity services are widely available, with at least 90 percent of all correspondent banks participating in the survey offering each of these services.

In addition to liquidity requirements, certain service requirements relating to bank operations also receive high ranking. Check collection is the most important of these operating services, as indicated by its number two ranking and by the fact that 100 percent of correspondent banks offer it. Also highly ranked are data processing services (number three), fund transfers (number six), and security safekeeping services (number eight). Automated clearinghouse services and currency and coin services are of somewhat lesser importance. Correspondent banks also act as agents for their respondents in the purchase and sale of U. S. Government and municipal securities, and money market instruments such as commercial paper, bankers' acceptances, and negotiable CD's.

A third general category of services that seems significant is management advice. Portfolio advice ranks tenth in importance in Table I, although only 55 percent of the correspondent banks offer such advice. More commonly offered is assistance in meeting capital needs (number thirteen) and advice in improving operating procedures (number nineteen).

Respondent banks reimburse their correspondents for the types of services listed in Table I primarily by holding compensating demand deposit balances. Data processing services are an exception to this general rule, however, with fees being more important than compensating balances. Among the banks reporting in the 1976 ABA survey, 63.5 percent derived less than 5 percent of their total correspondent income from fees while 85 percent derived 20 percent or less from fees [1, p. 44]. Correspondent banks expect to receive an increasing proportion of their income in the form of fees in future years.

Indications are, however, that any movement towards substitution of direct charges for compensating balances is quite gradual. It seems clear, therefore, that compensating balances remain the dominant form of reimbursement for correspondent services.

The Federal Reserve System offers services to member banks that can be considered full or at least partial substitutes for five of the twenty services listed in Table I. The discount window is a source of temporary liquidity similar to overline credits offered by correspondent banks. In periods of extreme credit stringency, however, the discount window may be more reliable than credit lines with private correspondent banks. Federal Reserve check clearing, wire transfer, security safekeeping, and currency and coin services are available to meet respondent bank operating requirements. These five services can be directly compared to the private correspondent services ranked, respectively, first, second, sixth, eighth, and seventeenth in importance in Table I. In addition to these five services, the Federal Reserve also administers a standardized cost accounting system, called Functional Cost Analysis, that is available to member banks. This is comparable to a private correspondent budgeting service ranked twenty-seventh in importance on the ABA survey.

Clearly, the range of correspondent type services offered to member banks by the Federal Reserve is not nearly as wide as that offered by private correspondent banks. Nonetheless, System services are among the most important types demanded by respondent banks. Indeed, the Federal Reserve offers four services that rank among the top ten in the ABA survey. Another essential service, provision of currency and coin, probably receives a relatively low ranking from correspondent banks participating in the survey because of its wide availability through Federal Reserve banks. It would appear, therefore, that member banks have the opportunity to substitute use of Federal Reserve System services for some important private correspondent services.

Description of Federal Reserve System Services The availability of correspondent type services from the Federal Reserve System is essentially the same in all Federal Reserve districts. Nevertheless, some regional differences exist as a result of attempts by Reserve banks to tailor their services to the operating patterns of commercial banks in the areas they serve. The descriptions of System services that follow can be taken as broadly representative of such services available on a nationwide basis. Some details, however, may be unique to the operating procedures of the Federal Reserve Bank of Richmond.

A survey of System service use by all commercial banks in the Fifth Federal Reserve District was conducted over the two month period December 1977-January 1978. Survey results on the use of these services by member banks with less than $100 million in deposits are summarized below, with accompanying descriptions of the major services.

Discount Window Borrowings by member banks from the Federal Reserve are governed by Regulation A, "Extensions of Credit by Federal Reserve Banks." While the discounting of eligible paper is a valid method of making funds available to member banks, in actual practice virtually all member banks' borrowings take the form of credit advances secured by the pledging of collateral. Acceptable collateral includes U. S. Government or Federal agency obligations, eligible paper, mortgages on one-to-four family residential property, and municipal securities. Extensions of credit to member banks are of three basic types: (1) short-term adjustment credit; (2) seasonal credit; and (3) emergency credit.

Short-term adjustment loans are made to assist member banks in adjusting their reserve positions to unanticipated deposit withdrawals or unexpected credit demands. Such loans may technically be made for periods of up to 90 days, but normally are made for much shorter periods. Banks that have filed a borrowing resolution and lending agreement with the Federal Reserve bank can execute borrowings quickly and conveniently by telephone. Seasonal credit is available for longer periods of time to assist member banks that experience distinctive seasonal patterns in deposit flows and credit demands that give rise to expected needs for funds. The prevailing discount rate is charged on all short-term adjustment and seasonal loans secured by U. S. Government or Federal agency obligations, eligible paper, or one-to-four family residential mortgages. The rate charged on loans secured by municipal obligations and other types of collateral, e.g., customer paper that does not meet eligibility requirements, must be at least one-half of 1 percent higher than the discount rate.

Emergency credit is available to member banks encountering financial difficulties that may involve an extended need for funds. Emergency loans to member banks may be made at a special rate established by the Reserve banks subject to review and determination by the Board of Governors. Currently, the emergency loan rate is set 1 percentage point above the discount rate. The special emergency rate is not applied in those instances where the emergency arises as a result of some natural disaster.

Use of the discount window by member banks is tied closely to movements in money market rates. For much of 1977 the discount rate was above the Federal funds rate, and this discouraged borrowing. Only 51 of all Fifth District member banks less than $100 million in deposit size borrowed from the Federal Reserve in 1977. By contrast, this number increased to 74 through the first nine months of 1978.

Check Collection Federal Reserve banks accept for collection as cash items from member banks checks drawn on other domestic banks that remit at par. Checks are accepted from nonmembers if these checks are drawn on banks located within the nonmembers' Regional Check Processing Center territory. The Reserve banks also accept as cash items U. S. Government checks, postal money orders, and food stamps. The check clearing operations of Reserve banks are governed by Regulation J, "Collection of Checks and Other Items by Federal Reserve Banks." The Federal Reserve check clearing system is primarily intended to facilitate check collections both regionally and nationally. Commercial banks using this system are encouraged to exchange cash items payable at other local banks on a direct basis.

Credit for checks presented for clearing is made through entries to member bank reserve accounts according to a schedule published in the various Federal Reserve bank operating circulars. Immediate credit is given for all qualified regional items and one-day or two-day deferred credit is given for items payable at banks located in Federal Reserve districts outside the Federal Reserve district where presentment is made. In many cases, delivery of cash letters to Federal Reserve offices can be made using the Federal Reserve Transportation System. All checks presented to Reserve banks for clearing must be Magnetic Ink Character Recognition (MICR) encoded with ABA routing symbols and dollar amounts. Moreover, banks with large check clearing volume must sort checks by location category in order to receive the earliest possible availability of credit. Any bank having a daily average number of collection items not exceeding 5,000 items payable outside the city in which it is located is, however, exempted from this sorting requirement. Such banks may send one unsorted cash letter to the Federal Reserve. However, banks choosing this unsorted option lose one day's availability on immediate credit items.

Approximately one-third of Fifth District member banks less than $100 million in deposit size deposit checks for clearing directly with the Federal Reserve. These banks had a daily average volume of check clearings of regular items, i.e., checks payable through other commercial banks, of 2,220 during the December 1977-January 1978 sample period. Member banks clearing with the Federal Reserve have the option of charging debits and credits arising from check clearings to their own reserve account or to a member correspondent bank's reserve account. Nonmember banks, however, are required to charge their activity to a member correspondent bank's reserve account. A survey of banks in the Eighth Federal Reserve District found that many smaller members clearing checks through the Federal Reserve remit for cash letters using a correspondent bank's reserve account [2]. In the Fifth District, however, this is an uncommon practice. Almost all member banks clearing through the Federal Reserve charge clearing activity to their own reserve accounts.

Wire Transfer Member banks have access to the Federal Reserve System communications network for the electronic transfer of funds between reserve accounts. Transfers in any amount over $1,000 are made free of charge, while a service charge of $1.50 is levied on transfers in amounts less than $1,000. Transfer requests can be made by telephone and advice of the transactions is made on the member bank's daily summary reserve statement. Member banks receive detailed statements each morning for the preceding days reserve account activity. Transfers of funds are consummated on the business day requested when such requests are received before 3:00 p.m. local time. Member banks with large electronic funds transfer requirements can arrange to access the Federal Reserve communications network directly with on-line computer equipment.

About 72 percent of Fifth District member banks less than $100 million in deposit size originated wire transfers totaling three or more per month during the survey period. These banks initiated an average of eighteen transfers per month.

Security Safekeeping Federal Reserve banks will hold for safekeeping both U. S. Government and eligible Government agency securities in book-entry form and other securities in paper form, called definitive securities, that are solely owned by member banks. In addition, Reserve banks will hold book-entry securities for customers of member banks, where the member banks act as agents for their customers.

Interest payable on book-entry securities or the proceeds of maturing book-entry securities is credited to the reserve account of the bank for which the securities are held. For definitive securities, the safekeeping service includes cutting and collecting coupons, receiving securities for deposit to safekeeping accounts, withdrawing and delivering securities held in safekeeping accounts, and collecting maturing securities.

The security safekeeping service is widely used by Fifth District member banks. During the survey period over 80 percent of smaller Fifth District member banks held either book-entry, or definitive, or both types of securities in safekeeping with the Federal Reserve Bank of Richmond and its branches.

Transportation of Currency and Coin The Federal Reserve banks have been responsible for meeting the currency and coin requirements of all commercial banks, member and nonmember alike, since the 1920's. Member banks have the choice of privately contracting for transportation of cash or of using transportation services arranged and paid for by the Reserve bank supplying their needs. Nonmember banks must pay for their own transportation requirements. Moreover, nonmembers must pay a fee to the Federal Reserve for preparation of currency and coin shipments.[1]

Member banks in the Fifth District can receive free currency and coin transportation to their main office and to one-third of their branch offices in each town where branches are located. Armored carrier is the usual method used for transporting currency and coin, although mail delivery is also used to a much lesser degree. Transportation service is provided once each week, although in areas where there is unusual cash movement more frequent service is provided.

Over 80 percent of smaller Fifth District member banks utilize this service, and all but a few have their own reserve accounts charged for cash transactions.

System Service Use and Bank Cash Asset Positions What effect does utilization of Federal Reserve System services have on bank cash asset positions? The benefits of these services to commercial banks can best be measured by examining differences between cash asset ratios of banks using the services and similar banks not using the services. In fact, smaller banks vary greatly in the intensity with which they use System services [2, 3]. If banks using System services are shown to have significantly lower cash asset ratios than banks not using the services, then there would appear to be a beneficial effect. This effect can be approximated by the potential earning power of the differential. This potential can be calculated roughly by multiplying the corresponding dollar amount of the reduction in the ratio of cash assets to total deposits by the average earnings rate on funds invested.

An analysis of this type has implications for the question of the cost or burden of Federal Reserve System membership. Commercial banks generally bear an opportunity cost by virtue of being Federal Reserve System members that is equal to the income foregone on cash balances required under Regulation D that are in excess of operating needs. Yet member banks have direct access to System services at zero variable cost, potentially allowing them to substitute free services for those obtained from private correspondents and paid for with compensating balances. It is likely, however, that some trade-off exists for member banks between receiving services from the Federal Reserve or from correspondent banks. This trade-off arises in cases where System services are not available in the quantity and/or quality demanded by member banks but are available from private correspondents. It is also possible that some member banks view System services as being inaccessible, due to, for example, geographic distance from a Reserve bank.

Inasmuch as the question of the burden of Federal Reserve membership is purely one of relative costs, it is important to consider to what extent, if any, nonmember banks have access to System services. If System services allow member banks to economize on correspondent balances, the same would hold for nonmembers to the extent that they are granted access to these services. In fact, the Federal Reserve, as part of its continuing effort to improve the nation's payments mechanism, has adopted a policy that extends limited payments services to nonmember banks: nonmembers are granted Regional Check Processing Center (RCPC) area clearing privileges on the same terms as are member banks, except that they must settle through a member correspondent's reserve account. Basically, each Fifth District state is an RCPC area, an arrangement that gives nonmembers clearing privileges for most items drawn on banks in their state.[2] For small banks generally, intra-RCPC clearings probably dominate their total clearings.

[1] This fee paid by nonmember banks to the Federal Reserve is a cost that does not appear in compensating balances. The compensating balances of nonmembers receiving cash service directly from the Federal Reserve, therefore, somewhat understate their total payments for services received.

[2] There is one exception to this rule. The Baltimore RCPC includes not only Maryland and the District of Columbia, but also seven northeastern West Virginia and four northern Virginia counties.

Therefore, nonmember bank access to RCPC's is a potentially important factor in offsetting the relative advantage to member banks of using Federal Reserve clearing services.

Method of Analysis Information on the use of five Federal Reserve services over the two month period December 1977-January 1978 has been collected for all Fifth District member and nonmember banks operating on June 30, 1977. Adjustment for mergers and conversions out of the Federal Reserve System leaves 681 banks with total deposits less than $100 million. Four possible combinations of membership and System service utilization are defined using this survey information:

1. member fully using Fed services (MU);
2. member not fully using Fed services (MN);
3. nonmember using RCPC services (NU); and
4. nonmember not using RCPC services (NN).

Member users are defined as those member banks that clear checks in volume through the Federal Reserve and that use two additional services from the group including money transfer, security safekeeping, and wire transfer. Member nonusers include all other member banks. Nonmember users are nonmember banks depositing directly with the Federal Reserve for RCPC area clearing. Nonmember nonusers are all other nonmember banks. The number of banks falling into the MU, MN, NU, and NN categories are 107, 227, 56, and 291, respectively.

Mean values of adjusted cash assets to total deposits are computed for the banks in each of these four categories by state and within each of three deposit size groups. The size groupings are: $0-25 million; $25-50 million; and $50-100 million. Larger banks are not considered in the analysis inasmuch as there is a tendency for correspondent banking activity to increase with size.[3] Differences in mean cash asset ratios are examined for three comparison groups: (1) member users versus member nonusers (MU — MN); (2) member users versus nonmember nonusers (MU — NN); and (3) member users versus nonmember users (MU — NU).[4] Analysis of these differences will help determine whether use of System services is significant in allowing member banks to economize on cash balances, and whether use of System services allows member banks to offset the opportunity costs of membership. Readers who are not interested in the detailed results can skip to the concluding section of the article for a summary.

Empirical analyses conducted by state and within size groups test the hypothesis that there is no statistically significant difference between sample means. If the difference between sample means is statistically significant, the hypothesis is rejected. It can then be concluded that the membership-service use combinations being compared have differing influences on bank cash asset positions. Two different adjusted cash asset to total deposit ratios are evaluated. Differences in means and t-statistics[5] for ratios having demand balances due from U. S. banks, currency and coin, and deposits with the Federal Reserve in the numerator are listed in Table II. This measure, however, tends to overstate the cash asset ratios of banks clearing through private correspondents relative to banks clearing through Reserve banks to the extent that private correspondents grant immediate book credit for cash items presented for collection. These items represent uncollected funds carried on respondents' books as correspondent balances. Such an overstatement would bias downward the differences between the user and nonuser ratios.

A reliable measure of the proportion of collected to total correspondent balances for Fifth District banks is not available. Nonetheless, the possible downward bias of the differences shown in Table II can be corrected by adding cash items in process of collection to the calculations. Differences in means and t-statistics for ratios having the same numerator as those in Table II, except for the addition of cash items in process of collection (CIPC), are listed in Table III. Table III is intended to adjust for possible overstatement in the correspondent balances of banks that clear checks through correspondent banks. This adjustment is not perfect since, for member and nonmember bank users of Federal Reserve clearing services, it includes CIPC resulting from correspondent clearing activity [4]. To the extent that smaller banks using System check clearing services act as correspondent clearing banks, the ratios including CIPC bias upward the differences between the user and nonuser banks. Therefore, careful joint inter-

[3] Large banks acting as correspondents are likely to maintain cash balances for different reasons than do smaller, noncorrespondent banks. This could lead to variability between banks alike in all respects except degree of correspondent activity and thus invalidate comparisons aimed at finding the influence of System service use on cash positions.

[4] More detailed comparisons are available in [3].

[5] The statistic $t = (D - \Delta_H)/S_D$, where D is the difference between the two sample means; Δ_H is the hypothetical difference between sample means, or zero; and S_D is the estimated standard error of the difference between the two means.

pretation of the results from Tables II and III is necessary to gain insight into the differences between cash asset ratios of user and nonuser banks.

Empirical Results The results shown in Table II support the idea that use of System services by member banks less than $50 million in deposit size leads to economies in cash balances. In all eight of the comparisons with member nonusers, the member user category has a lower mean cash asset ratio. The differences are statistically significant at the .20 level or above in four of the cases. In each of the three cases tested for the $50-100 million deposit size classification, however, the member users have higher cash asset ratios than the member nonusers.

Comparison of the MU — MN and MU — NN differences provides insight into the effects of System service use on the costs of membership. For example, Table II shows that Maryland member users in the $0-25 million deposit size group have a cash asset to total deposit ratio .95 percentage points less than that of the member nonusers. The member user ratio is also 1.58 percentage points greater than that for the nonmember nonusers. These results suggest that member users have higher opportunity costs than nonmember nonusers, but that this cost, expressed in terms of cash asset to total deposit ratios, is .95 percentage points lower than that experienced by the member nonuser group. The lower opportunity cost in dollar terms for member users compared to member nonusers can be approximated using the method described earlier. Assume a member user bank in Maryland has $25 million in deposits. If this bank maintains an average cash asset to total deposit ratio that is .95 percentage points lower than that of a similar bank not using System services, then the MU has available for investment $237,500 more than the comparison MN bank ($25 million × .0095). This amount invested at 5.27 percent interest (the average 3-month Treasury bill rate for 1977) yields additional before tax revenue of $12,500.

Applying this type of analysis to the $0-25 million size groups in other states shows for users of System services an elimination of the burden in two states (South Carolina and Virginia), reduction of the burden in one state (West Virginia), and enhancement of an already advantageous position in another state (North Carolina) when comparison is made with nonmember nonusers of the RCPC area clearing service.

Comparison with nonmember users, however, gives a somewhat different picture. In four states (Maryland, South Carolina, Virginia, and West Virginia) there is some indication of a moderation in the relative gains made by member users, as shown by the greater differences in the MU — NU compared to the MU — NN category. This suggests that nonmember users of the RCPC service in these states are able to achieve cash economies.

For member banks in the $25-50 million deposit classification, there is a reduction of the membership burden for users of System services in two states (Virginia and West Virginia) when comparison is made with nonmember nonusers. This result is also suggested in Maryland, although less strongly. The small number of member banks in the $25-50 million group prevents as complete an analysis for North Carolina and South Carolina. Table II shows, however, that the member user ratio is higher than the nonmember nonuser ratio in North Carolina and lower in South Carolina. Comparing the MU — NN and MU — NU differences suggests that nonmember users have higher ratios than nonmember nonusers in three states (Maryland, North Carolina, and Virginia). In South Carolina, however, the nonmember nonusers have a higher ratio than the nonmember users. While the evidence suggests that South Carolina member users experience no burden compared to nonmember nonusers, the relative burden is substantial and significant when the comparison is made with nonmember users of the RCPC area clearing service.

This evidence, which is based on comparisons of mean cash asset ratios that exclude CIPC, is not completely consistent with evidence in Table III based on cash asset ratios that include CIPC. In the eight cases tested in Table III for banks less than $50 million in deposit size, the member user group mean cash asset ratio is less than the member nonuser group mean in only five instances. Of these five negative differences, only one is statistically significant.

For member user banks $0-25 million in deposit size, the results in Table III support those in Table II suggesting a reduction of the membership burden in Maryland and West Virginia and elimination of the burden in South Carolina. In North Carolina and Virginia, Table III shows larger mean cash asset ratios for the member users than for the member nonusers. This is due to the large CIPC ratios maintained by these member user groups. The small North Carolina member user banks have a ratio of CIPC to total deposits of .0413 compared to .0104 for the member nonuser banks. The small Virginia member user banks have a ratio of CIPC to total deposits of .0320 compared to .0078 for the member nonuser banks. If these high ratios result from a high dollar volume of clearing activity, then these banks should not be considered disadvantaged compared to the nonusers.

The results from comparison of $25-50 million deposit member user and nonuser mean cash asset ratios that include CIPC are about the same as the results based on ratios that exclude CIPC. An exception, however, is Virginia: no reduction in the membership burden is apparent when CIPC is included in the analysis of $25-50 million deposit size banks.

The evidence from Tables II and III is consistent for banks above $50 million in deposit size: member users of System services maintain higher cash asset ratios than do member nonusers. When CIPC is included, however, the member user ratios are even higher. This combined evidence from Tables II and III suggests that member user banks above $50 million in deposit size are acting as correspondents.

This analysis offers some support for the idea that member banks less than $50 million in deposit size are able to economize in their cash balances by using System services. It is reasonable to expect, therefore, that these banks generate more revenue than similar banks not using System services. In order to test this proposition, the tax equivalent gross return on loans and investments as a percent of total assets

Table II

DIFFERENCES BETWEEN MEAN VALUES OF CASH ASSET TO TOTAL DEPOSIT RATIOS

(Excluding CIPC)[1]

THREE MEMBERSHIP-SERVICE USE COMBINATIONS BY STATE AND SIZE GROUP

FIFTH DISTRICT STATES

CALCULATED FROM JUNE 30, 1977 CALL REPORT

Deposit Size (millions of dollars)	Maryland	North Carolina	South Carolina	Virginia	West Virginia
			Member User minus Member Nonuser		
0-25	−0.0095 (−0.4879)	−0.0127 (−1.0039)	−0.0388 (−2.0936)**	−0.0178 (−2.4043)***	−0.0090 (−0.9242)
25-50	−0.0195 (−1.4445)*	2	2	−0.0106 (−1.3834)*	−0.0161 (−1.2416)
50-100	0.0185 (1.2026)	2	2	0.0166 (1.4321)*	0.0031 (0.2485)
			Member User minus Nonmember Nonuser		
0-25	0.0158 (0.8567)	−0.0144 (−1.2342)	−0.0125 (−0.7912)	−0.0125 (−1.3220)*	0.0066 (0.6244)
25-50	−0.0002 (−0.0132)	0.0070 (0.4142)	−0.0111 (−0.6433)	0.0091 (0.9759)	0.0124 (1.4747)*
50-100	0.0186 (0.9308)	2	2	2	2
			Member User minus Nonmember User		
0-25	0.0222 (0.7248)	−0.0150 (−0.8693)	−0.0117 (−0.7821)	0.0090 (0.4385)	0.0095 (0.5740)
25-50	−0.0498 (−4.3899)****	−0.0029 (−0.2196)	0.0381 (2.6987)***	−0.0078 (−0.3958)	2
50-100	0.0228 (1.0516)	2	2	−0.0311 (−1.0802)	0.0431 (3.2370)****

[1] Numerators of ratios exclude CIPC. t-statistics are in parentheses.

[2] Number of observations in at least one group less than two.

* significant at the .20 level

** significant at the .10 level

*** significant at the .05 level

**** significant at the .01 level

is computed for the groups of member banks examined above.[6] The calculations are based on operating income data from the December 1977 Report of Income and total asset data from the June 1977 Report of Condition.

The average tax equivalent gross return on assets of member user banks less than $25 million in deposit size in the five states is 7.76 percent versus 7.70 percent for member nonuser banks.[7] This implies that a member user bank $25 million in asset size has $15,000 more in tax equivalent revenue than a similar nonuser bank ($25 million × .0006). The average tax equivalent gross return on assets of member user banks $25-50 million in deposit size in the five states is 8.09 percent, versus 7.89 percent for member nonuser banks.[8] Again, this implies that a member user

[6] The tax equivalent return is used in order to adjust for possible differences in bank investments in tax free municipal securities. In computing the adjustment, interest income from municipal securities is multiplied by factors ranging from 1 (for banks with zero before tax income) to 1.9231 (for banks with before tax income of greater than $400,000).

[7] The t-value for a test of significance for the difference in mean returns is 0.5334, which is not statistically significant.

[8] The t-value for a test of significance for the difference in mean returns is 1.7932, which is statistically significant at the .10 level.

Table III

DIFFERENCES BETWEEN MEAN VALUES OF CASH ASSET TO TOTAL DEPOSIT RATIOS (Including CIPC)[1]

THREE MEMBERSHIP-SERVICE USE COMBINATIONS BY STATE AND SIZE GROUP

FIFTH DISTRICT STATES

CALCULATED FROM JUNE 30, 1977 CALL REPORT

Deposit Size (millions of dollars)	Maryland	North Carolina	South Carolina	Virginia	West Virginia
			Member User minus Member Nonuser		
0-25	−0.0122 (−0.5949)	0.0181 (0.8793)	−0.0301 (−1.6515)*	0.0065 (0.9426)	−0.0031 (−0.3232)
25-50	−0.0097 (−0.6863)	2	2	0.0002 (0.0187)	−0.0174 (−1.1363)
50-100	0.0199 (1.6166)*	2	2	0.0306 (3.5698)****	0.0108 (0.8676)
			Member User minus Nonmember Nonuser		
0-25	0.0146 (0.8015)	0.0257 (1.8736)**	−0.0061 (−0.3850)	0.0163 (1.6456)*	0.0113 (1.0252)
25-50	0.0005 (0.0292)	0.0033 (0.2167)	−0.0013 (−0.0741)	0.0254 (2.5875)***	0.0140 (1.6749)*
50-100	0.0282 (1.6037)*	2	2	2	2
			Member User minus Nonmember User		
0-25	0.0004 (0.0270)	0.0188 (0.9555)	−0.0055 (−0.3858)	0.0303 (0.9531)	0.0149 (0.9952)
25-50	−0.0402 (−3.0725)***	−0.0028 (−0.2470)	0.0432 (2.9287)***	0.0107 (0.5062)	2
50-100	0.0153 (0.8916)	2	2	−0.0124 (−0.4958)	0.0459 (3.5699)****

[1] Numerators of ratios include CIPC. *t*-statistics are in parentheses.

[2] Number of observations in at least one group less than two.

* significant at the .20 level

** significant at the .10 level

*** significant at the .05 level

**** significant at the .01 level

bank $50 million in asset size has $100,000 more in tax equivalent revenue than a similar nonuser bank ($50 million × .0020).

Conclusions Private correspondent banks supply a large variety of services to other banks. The most important such services satisfy commercial bank liquidity requirements, both temporary (overline services) and longer term (loan participation services). Services relating to bank operations, however, are also very important.

The Federal Reserve System offers member banks several services at zero variable cost that appear to be close substitutes for private correspondent bank services. In fact, four Federal Reserve services are among the ten most important types of correspondent services listed in a recent nationwide survey of correspondent banks. These include the availability of temporary credit through the discount window, check collection, wire transfer of funds, and safekeeping of securities. There is reason to believe, therefore, that member banks heavily using System services might be able to economize on compensating balances held with private correspondent banks. If so, then members heavily using System services might be able to reduce the opportunity costs associated with membership in the Federal Reserve.

Analysis of Fifth District bank cash asset ratios indicates that member bank users of Federal Reserve System services less than $50 million in deposit size generally maintain lower cash asset ratios than do member nonusers. Moreover, these member bank users also earn a higher tax equivalent gross return on assets than nonusers. The higher return is especially strong for member user banks in the $25-50 million deposit size range, implying $100,000 more in annual tax equivalent revenue for a $50 million member user than a nonuser bank.

The analysis also suggests that use of System services can lead to a reduction or elimination of the membership burden when comparison is made to nonmember nonusers of the RCPC area clearing service. There is some indication, however, that the relative gains made by member users are moderated when comparison is made to nonmember users of the RCPC area clearing service. Also, available evidence suggests that among member banks greater than $50 million in deposit size, users of System services maintain higher cash asset ratios than do nonusers.

The empirical results presented in this article thus support the conclusion that use of Federal Reserve System services can help reduce the opportunity costs of membership for some small commercial banks. All member banks pay for these services by virtue of holding required reserves, although relatively few fully use System services. Among the smaller member banks in the Fifth Federal Reserve District, it is primarily the nonusers of System services that suffer burdens of membership.

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