Southern Business Review

Volume 8 | Issue 2 Article 3

September 1982

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William D. Gerdes
North Dakota State University

INTEREST RATE PEAKS AND SMALL BANK ACTIVITY IN THE FEDERAL FUNDS MARKET

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Increases in the level and volatility of interest rates, increased competition for deposit funds, and significant changes in the regulatory environment have encouraged banks to expend additional resources in managing the liquidity position. One of the most significant changes in small bank liquidity management involves the phenomenal growth of their activity in the federal funds market, a market which was previously the domain of money market center banks and security dealers. This study provides a controlled statistical analysis of the operating characteristics of small banks participating in the federal funds market during a period when interest rates peaked. Activities of selling and purchasing banks are studied independently, and the results are assessed from the standpoint of bank customers and stockholders. Implications for monetary authorities are also considered.

Previous studies cited the prospect for improved profit margins as an important motive for small bank entry into the federal funds market (1, 5, 17). Since most small banks sell federal funds, the potential for increasing profits would seem to be greatest when interest rates are at their cyclical peak and yield curves are sloping downward. The sale of additional federal funds during such periods, however, could reduce the ability of these banks to extend credit in local markets. To the extent that the federal funds market serves as a vehicle for redistributing bank reserves (and thus bank credit), small bank activity in the market is also of interest to monetary authorities.[1] If small banks selling federal funds restrict their lending activity, it would suggest that the federal funds market serves as an important link in transmitting the effects of operation market operations which initially impact on New York City money markets.

While the practice of liability management is normally associated with large banks located in money market centers, events of the past decade suggest that small banks, too, are becoming more active in managing liabilities. An increasing number of small banks now purchase federal funds, and these banks may be more willing to extend credit when conditions in financial markets are tight if they feel that reserve shortages can be accommodated by borrowing immediately available funds on an overnight basis.[2] The purchase of federal funds at interest rate peaks is costly. The effect on small bank profitability is of concern, since further deregulation of rates banks may pay for liabilities and heightened competition for funds in the marketplace indicate that the trend toward more active small bank liability management will continue.

Methodology and Data

For purposes of this study, small banks are defined as those with deposits of $100 million or less. The method employed to examine the operating performance of small banks trading funds is to compare the performance of participating and non-participating banks. As previously noted, banks can participate in the federal funds market as sellers or buyers. Since bank operating performance is expected to differ according to whether a bank is selling or buying federal funds, the population of small participating banks is partitioned into two groups; buyers and sellers.[3] A random sample of 180 banks is selected from each group. For each sample bank in a group, a bank with the same control characteristics is randomly selected.[4] In some cases, it is not possible to match a non-participating with a participating bank, and those participating banks are eliminated from the study. This procedure results in two sets of sample banks with associated control groups of the same size: 95 sellers and 56 buyers.

The behavior of banks in each group are studied independently. Random variables under consideration are differences between the operating performance of sample banks and control group banks.[5] For each performance variable, differences in performance are calculated as $\triangle P = Pi - NPi$, where Pi is the performance of the ith participating bank and NPi is the performance of the paired non-participating bank. Given the controls for size and structural characteristics, it would appear that such performance differences reflect portfolio choices and operating procedures which occasioned differences in the federal funds market participation status of small banks.

Performance variables are either: 1) averages of mid-year and year-end balance sheet entries; or, 2) yearly income statement items. They provide information on the bank portfolio behavior, capital structure, and revenues, expenses, and profits. Data employed are for the year 1974, and are obtained from Reports of Condition and Reports of Income and Dividends filed with Federal bank regulatory authorities. Results of t-tests of the hypothesis that, on the average, small banks participating in the federal funds market perform no differently than banks with no federal funds transactions are presented in Figure 1.

Empirical Results

The results indicate that differences in performance are associated with small bank portfolio decisions which give rise to different federal funds market positions. Analysis of differences in operating characteristics for

Figure 1. Mean Differences in Operating Characteristics of Small Bank Participants in the Federal Funds Market Relative to Non-Participating Small Banks, 1974.

	$\overline{\triangle P}$	
Performance Measure (P)	Selling Banks	Purchasing Banks
Cash and due/total assets	−0.0166*	−0.0273*
U.S. Treasury securities/total assets	−0.0311	−0.0547*
U.S. Agency securities/total assets	0.0009	−0.0074
State and local obligations/total assets	0.0058	0.0208
Gross loans/total assets	−0.0490*	0.0602*
Total operating expense/total assets	0.0011	0.0067*
Current operating income/total assets	−0.0007	−0.0051*
Current operating income/equity capital	0.0014	−0.0608*
Net income/total assets	−0.0005	−0.0024*
Net income/equity capital	0.0028	−0.0263
Income from loans/loans	0.0011	0.0018
Service charges/demand deposits	−0.0009	0.0022*
Interest/time deposits	0.0012	0.0038*
Equity capital/total assets	−0.0021	−0.0031
Sample Size =	95	56

*Significant at the .05 level.

selling banks and non-participants reveals that only two of fourteen performance ratios are significant. They are the loan/asset and cash/asset ratios.

Lending activity (relative to assets) for small banks selling federal funds was nearly five percentage points lower than for non-participants. This, of course, could be due to lower loan demand in markets served by selling banks. Two factors, however, raise doubts about such an interpretation. First, selling banks were paired with banks of similar size, regulatory status, and location. Hence, credit market conditions facing both sellers and non-participants should be similar. Second, if non-participating banks were experiencing greater loan demand, one would expect these pressures to be reflected in their holdings of other liquid assets. This was not the case. Both the cash/asset and Treasury security/asset ratios were lower for selling banks, although only the former was significant at any reasonable level of significance. Thus, it would appear that individuals and businesses in markets served by small selling banks may have experienced more difficulty in obtaining bank credit. This differs from findings of earlier studies which indicated that, during the period of rapid small bank entry into the market, these banks increased positions in federal funds sold primarily by reducing holdings of cash and U.S. Treasury securities (4, 5, 17).

Portfolio decisions undertaken by small banks selling federal funds were not associated with any statistically discernable effects on bank profitability. Neither the return on assets (net income/total assets) nor the return on equity (net income/equity capital) for sellers of federal funds were

significantly different from returns recorded by banks with no federal funds transactions. This was somewhat surprising, since the average small sample bank had federal funds sold equal to 8.9 percent of bank assets in 1974, a year when federal funds traded in excess of 16 percent near mid-year and were relatively high throughout the year. Clearly the substitution of federal funds sold for cash would contribute to bank profitability. Loans, on the other hand, are traditionally a relatively high earning asset for commercial banks. Reduced income and fees from loans apparently largely offset the income from federal funds sold. The absence of statistically significant differences between selling banks and non-participants in other areas of bank operations such as average return on loans, interest paid on time deposits, the level of service charges, and financial leverage suggest that this was the case.

The average sample bank which bought federal funds had purchases equal to 4.2 percent of bank assets. The evidence suggests that managers of these banks were considerably more aggressive (than those of non-participating banks) in terms of lending policies, willingness to compete for funds in the marketplace, and the pricing of bank services. Loan volume for purchasing banks was approximately six percentage points higher than for banks in the control group, and liquidity holdings were significantly lower. Purchasing banks also tended to pay higher rates on time deposits and to charge more for serving transactions accounts.

While such policies resulted in more liberal credit extension and higher rates for depositors, the consequences were less favorable for stockholders. Purchasing banks typically generated more income, but also experienced significantly higher costs. The return on assets for these banks was nearly one-quarter of one percent lower than for non-participating banks. Return on equity for purchasing banks was also much lower, although the latter variable was not significant at the .05 level. These findings suggest that aggressive purchasing of federal funds and a higher loan volume may not be worthwhile for small banks during periods of tight credit. They are also consistent with the results of bank profitability studies which cite the ability to limit the growth of bank costs as a critical factor in bank profitability (2, 7, 12).

Given the large number of small banks in this country, management decisions relating to their use of the federal funds market have important consequences beyond their impact on bank customers and stockholders. This is particularly true during periods of tight credit when money market center banks are confronted with rising loan demand and an increased cost of funds, and Federal Reserve actions are monitored closely. Tighter credit conditions in money market centers result in tighter credit conditions throughout the country if small banks reduce credit extension in local markets in order to sell additional federal funds. Given the large number of small banks selling funds in 1974, observed portfolio substitutions by these banks provide support for those who maintain that the federal funds

market serves as an important medium for transmitting the initial effects of Federal Reserve action throughout the economy.

Whether small banks continue to supply a substantial volume of funds to the market when credit conditions are tight depends, in part, upon their willingness to use the market as a source of funds. If the trend toward greater small bank purchases persists, these banks may become a less reliable source of funds for liability management banks in money market centers. This may account, in part, for the observed tendency among liability management banks to rely more heavily on repurchase agreements with nonbanks.

Summary

This study examined the operating characteristics of small bank participants in the federal funds market during a period when interest rates peaked. The evidence indicates that the volume of credit extended in local markets is related to small bank portfolio decisions which give rise to different federal funds positions. Banks selling funds extended significantly less credit than did banks with no federal funds transactions. This contrasts with earlier findings that small banks selling federal funds did so primarily by reducing holdings of other liquid instruments, e.g., cash and U.S. Treasury securities. Banks purchasing federal funds, as expected, used funds acquired in the market to support aggressive lending policies. They also tended to pay higher rates on deposits and to charge more for servicing transactions accounts.

Small bank participation in the federal funds market was not associated with higher bank profits and, in some cases, it may have increased pressures on margins. Profits for small selling banks were not significantly different from those recorded by non-participants. This was counter-intuitive since federal funds provided liberal returns in 1974, and the lure of greater profits was frequently cited as a motive for increased small bank activity in the market. Both the return on assets and the return on equity were lower for purchasing banks, although only the former was statistically significant. For small banks contemplating more active management of liabilities, the message is somewhat ominous. Doing so, at least during periods of tight credit, may have unsalutary consequences of bank profits.

Small banks selling federal funds in 1974 provided a substantial volume of funds to the market. The lower volume of lending activity by these banks provides support for the hypothesis that the federal funds market serves as an important medium for transmitting the initial effects of Federal Reserve action throughout the economy. While their number remains small relative to the number of selling banks, more small banks are entering the market on the demand side. If that trend persists, traditional trading patterns will be altered, and money market center banks and security dealers will experience increased competition for funds during periods of tight credit.

Footnotes

[1]The relationship between activity in the federal funds market and the effectiveness of monetary policy is a matter of continuing concern. In the years following the Treasury-Federal Reserve accord, Smith (16), and Minsky (14) expressed reservations about the ability of the Federal Reserve to successfully employ monetary restraint due to the growth of "money-like" assets. Studies of a more recent vintage suggest that structural changes in the market may be having a pronounced effect on the demand for money. Difficulty in forecasting those changes, it is argued, has created problems for those managing the nation's money supply. See Garcia and Pak (9), Goldfield (11), and Lombra and Kauffman (13).

[2]For a recent study of factors influencing small bank purchases, see Gambs and Kimball (8).

[3]Buyers are banks with federal funds purchases and no sales; sellers, federal funds sales but no purchases. A growing number of small banks engage in two-way trading. A sampling of these banks indicated that they were mainly net sellers of federal funds. Furthermore, the operating characteristics of small two-way traders resembled those of sellers. Given their relatively small number, they were excluded from the population of small banks.

[4]To control for other factors, participating banks are paired with non-participating banks with the same regulatory status and similar size and location. Banks located in a SMSA are paired with banks in the same state and SMSA. Those located outside an SMSA are paired with rural banks in the same state and Federal Reserve District.

[5]Paired samples are not independent samples. In order to test hypotheses concerning differences between an experimental group and a control group, Freund (6) suggests treating differences in paired observations as a random variable. That procedure, which was employed in this study, is frequently used in analyses of bank performance. See, for example, Gilbert and Peterson (10) and Smith (15).

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William D. Gerdes is an Associate Professor in the Department of Business Administration and Economics, North Dakota State University.