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THE COST OF MEMBERSHIP IN THE FEDERAL RESERVE SYSTEM

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The disadvantages or "costs" associated with membership in the Federal Reserve System, apparently increasing in recent years, have resulted in many existing banks withdrawing from the System and a large majority of organizing banks choosing nonmember status. Between 1960 and 1976, the percentage of banks electing System membership fell from 46 percent to 39 percent while the share of total deposits held in member banks has fallen over the same period from 84 percent to 74 percent. Recently, relatively large banks have joined this exodus from the System. These trends have generated interest in two important issues: (1) the impact declining membership has on the Federal Reserve's control of the nation's money supply, and (2) the opportunity cost of System membership. This study is concerned with the economic motivation for bank withdrawals and, therefore, is limited to an examination of the second of these issues.

Previous research suggests that the primary reason for declining System membership is the differential effective reserve requirements imposed on member and nonmember banks. The Federal Reserve, with high reserve requirements relative to those of most states, forces member banks to hold a larger portion of their assets in nonearning form than most nonmembers. This disadvantage (advantage to nonmembers) becomes increasingly important to bankers as more emphasis is placed on earnings and as interest rates reach higher levels as has been the case in recent years. In addition, the increasing competition between commercial banks and thrift institutions

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has forced bankers into a more careful evaluation of their competitive positions.

It has been argued that nonmember banks can earn higher profits and/or offer more attractive terms to borrowers and depositors than member banks. Thus, the "cost" of membership in the Federal Reserve System is said to be borne primarily by two groups of individuals: (a) bank stockholders who, through membership in the System, forego some additional return on equity obtainable through nonmember status, and/or (b) customers of member banks who pay higher loan rates for a reduced volume of credit, increased service charges on demand deposits, and reduced remuneration for time deposits.

System reserve requirements are said to place member banks at a competitive disadvantage relative to nonmembers. Bankers, believing that bank performance can be improved by changing their membership status, have withdrawn from the System at an increasing rate in recent years. The Federal Reserve's proposal for a uniform set of reserve requirements for all commercial banks, though advanced on the grounds that it would enhance the monetary authorities' control over the nation's money supply, would reduce the costs associated with membership and could be expected to curtail the exodus of banks from the System. In the absence of such legislation, however, alternatives designed to minimize the loss in membership by eliminating its competitive disadvantages are being explored. The reduction of selected reserve requirements and the payment of interest on reserve balances held at the Fed, for example, are being examined in this respect.[1] A

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[1]The Board of Directors of the Federal Reserve Bank of Boston, in a recent report [2], endorsed and recommended to the Board of Governors both proposals as solutions to the membership problem. The present study was originally prepared for use by the Federal Reserve System Committee on Research, Public Information, and Bank Relations in their deliberations on the membership issue. This Committee has made similar recommendations. A final solution to the membership problem, if forthcoming, will most likely require legislative action.

prerequisite to implementation of such proposals, however, is knowledge of the extent to which member banks of different circumstances are penalized. The present study will attempt to measure the cost of membership for banks of different sizes and different locations and identify particular groups of banks whose membership status is most sensitive to cost factors.

Previous Evidence

Recently, a survey of 250 banks selected randomly from all banks withdrawing from the Federal Reserve System between 1965 and 1974 asked respondents to rank several commonly discussed advantages and disadvantages of System membership. The most important advantages of membership cited by withdrawing bankers were access to the Fed's discount window and the free shipment of coin and currency while the overwhelming disadvantage was found to be restrictive reserve requirements.[2] When asked why the banks had chosen to leave the System, almost two-thirds of withdrawing banks indicated reasons involving reserve requirements. A majority of respondents cited an increase in earnings brought about by the ability to invest more cash in earning assets as the prime objective realized through withdrawal. The results were consistent for all sizes of banks and for banks in states with low, medium, and high state reserve requirements.[3] This is not too surprising since withdrawals were heavily concentrated in states with less restrictive

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[2]Over 90 percent of the respondents listed reserve requirements as the most important disadvantage of membership [12, p. 47].

[3]A comparison of statutory reserve requirements between states is difficult considering the diversity of state requirements with respect to types of deposits covered and assets qualifying as reserves. A classification of states according to effective reserve requirements (high, medium, low), based on cluster analysis groupings, is provided in [4]. "Effective" reserve requirements refer to that portion of reserves that are required to be held in the form of nonearning assets.

effective reserve requirements than the Federal Reserve and, although required reserves for nonmembers were considered high in some states, for the most part they remained below System levels even in such cases.

The results of the survey indicate that withdrawing bankers felt strongly that the high levels of System reserve requirements inhibited the performance of their banks. An expected improvement in earnings appears to have been the primary incentive for their withdrawal. This survey supports the results of empirical investigations designed to measure performance differences between member and nonmember banks and gains realized by withdrawing banks.

The "cost of membership" has been associated with the difference in the set of performance characteristics (with emphasis on profits) between the two groups. A study of Illinois banks provides a measure that probably approximates the maximum cost of membership to commercial banks [9]. Nonmember banks in Illinois, facing no state reserve requirements, experienced higher rates of return than member banks during the 1961 to 1963 period. This was a result of nonmembers holding a higher proportion of earning assets, particularly loans, in their portfolios than members. Similar results were found in a study of banks in South Carolina [3], a state with moderate reserve requirements. Evidence predominantly from Ohio [10], however, found no difference between member and nonmember banks in the same size categories. Differences in performance characteristics between banks in individual states, therefore, have paralleled differences between state reserve requirements and Federal Reserve requirements. The impact of System membership on bank performance appears to increase as state reserve requirements decline relative to Fed requirements. As the impact of differential reserve requirements varies across states, the incentives for banks to withdraw

from the System undoubtedly differ among states.

A recent study by Rose [11] provides further evidence that membership has imposed an opportunity cost on member banks. His results suggest that the cost of membership may also vary across deposit size classifications. Comparing rates of return for all member and insured nonmember banks within different deposit size classes, Rose found that member bank earnings were significantly lower for each category up to $100 million in deposits. No statistically significant earnings difference was detected between member and nonmember banks in larger deposit categories.

Brimmer [1] investigated the effect of changes in membership status on bank performance and found that banks leaving the Federal Reserve System decreased their cash to asset ratios and most increased their earnings ratios. Gilbert and Peterson [5] paired withdrawing banks from throughout the nation with comparable member banks and found that banks experienced lower cash holdings, more loans, and significantly higher profits following withdrawal relative to banks remaining in the System. Rose, Fraser, and Shugart [13], using a similar procedure for banks in Texas (where effective reserve requirements are considered high but less restrictive than the Fed's), also found that withdrawing banks held a larger fraction of earning assets than comparable member banks. Nonmembers did not, however, experience greater earnings due, apparently, to member banks charging higher rates on loans and fees on deposit accounts.

The paired-bank approach has provided valuable evidence on the effects of withdrawal on bank performance.[4] Rose, Fraser, and Shugart paired a sample of withdrawing member banks in Texas with a control group

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[4]Lawrence [8] used a similar methodology in his study on the effects of bank holding company affiliation.

of nonmembers of similar size and location. By comparing performance data between the two groups over a three-year period prior to withdrawal, the authors hoped to measure any competitive disadvantage that might have been imposed on member banks. Continuing this comparison for three years following withdrawal showed whether withdrawing banks were able to eliminate any disadvantage present. The change in the difference between groups before and after withdrawal measured the gain to be realized from withdrawal. The cost of membership, therefore, is reflected directly in bank performance within a statistical design which measures the impact of alternative regulatory requirements by holding such other factors as bank size and local environment constant. This approach provides a wealth of information on the membership problem in Texas. Analogous information is needed for states of varying reserve stringencies.

Gilbert and Peterson [5] also used a before-after analysis of paired banks in their study by expanding the geographical scope to include banks from throughout the nation that changed their membership status. Though aggregating banks of different size from states with divergent reserve requirements provides an expanded awareness of the membership problem, the analysis fails to identify particular groups of banks whose membership status is most sensitive to cost factors. The present study will examine this aspect of the problem through a similar procedure that segments banks for comparison by stringency of state reserve requirements and by bank size.

The Membership Issue Within a Simple Utility Framework

Comparatively restrictive System reserve requirements and the desire to improve bank profits may have provided considerable impetus to bank withdrawals from the Federal Reserve. The assumption of profit maximization as the sole motivating force in banker's membership decisions

provides a convenient framework within which the competitive disadvantage or cost associated with System membership can be approximated. It may, however, neglect an important benefit not totally reflected in profit levels that may partially offset lower earnings by member banks.

Bankers' perceptions of the magnitudes of the costs and benefits of membership undoubtedly vary both between and within states with reserve requirements that differ from those of the Federal Reserve System. Costs and benefits of membership may differ between states due to differences in state reserve regimes and diverse economic conditions. Even bankers within the same state, however, facing identical circumstances and experiences, may interpret these costs and benefits differently because of different risk-return preferences. Aggressive bankers seeking to maximize profits may accept greater risks and be willing to accept greater variability in their bank's earnings stream from year to year than others to whom stable earnings are more important.

The generally more liquid asset portfolio mix of members relative to comparable nonmembers in many states may work to insulate member banks from wide variations in earnings over periods with diverse credit conditions--at the cost, however, of lower average earnings. Access to the Federal Reserve's discount window may have additional implications for the stability of bank earnings as well as the level of earnings. If temporarily illiquid, banks usually seek to strengthen their cash positions by borrowing through the least expensive method available. During periods of high interest rates, the Fed's discount rate is normally below market interest levels. Borrowing from the Federal Reserve during such periods may cushion the impact on member bank earnings relative to comparable nonmembers forced to borrow from more expensive sources. Discount window administration may, however, impose extra

costs on borrowing banks in such situations. Periods of low or moderate interest rates, however, are usually accompanied by discount rates slightly higher than market levels. The privilege of borrowing from the Fed's discount window is less evident during such periods.

This discussion assumes that member banks are in sufficiently sound financial condition to gain access to credit markets. If this is not the case, access to the discount window is an incalculable benefit that, in an extreme case, may allow the bank to avoid failure. The discount window's role in the prevention of bank failure likely affects an individual banker's conception of risk to a degree beyond that represented by variability in earnings. The latter, however, is measurable and, except for extraordinary circumstances, reflects much of the uncertainty facing bankers. For this reason, earnings variability is used as a revealing, yet imperfect, measure of bank risk.

It is not possible to quantify individual bankers' preference functions in terms of a trade-off between risk and return. Some useful generalizations, however, may be made. Profit maximizing, risk minimizing bankers prefer more earnings to less at given levels of risk. Similarly, less risk is preferred to more at given levels of earnings. These statements form a simplified utility function which relates the utility derived from an earnings stream to the expected level of profits ($\bar{\pi}$) and a measure of risk (R) associated with that earnings stream:

$$U = U(\bar{\pi}, R);\ \partial U/\partial \bar{\pi} > 0,\ \partial U/\partial R < 0 .$$

Bank management, representing the interests of bank owners, are assumed to conduct the operations of the bank in a manner that will maximize the utility of its owners, i.e., attain those combinations of profit and risk preferred by owners. Within this context, alternative bank portfolio

mixes and pricing policies and the decision concerning regulatory status are weighed in an effort to maximize owners' utility.

Within this general utility framework, the motivation for banks to withdraw from the Federal Reserve System is present whenever such action improves bank profits without a related increase in owners' risk or reduces risk without harming profits. A combination of increased profits and reduced risk would clearly favor withdrawal. Positions of larger (smaller) earnings and higher (lower) associated risk are ranked in owners' preference functions according to their individual trade-offs between risk and return--information that is not available. No unambiguous definitive statement concerning incentives for withdrawal is possible with such combinations. They may explain, however, why some banks remain in the System, for example, even though they experience lower profits than they could obtain through withdrawal. If lower earnings for members are accompanied by reduced earnings variability as hypothesized, the more profit-oriented banks may choose nonmember status while the more risk-conscious banks are induced to retain membership in the System.

Methodology

The hypothesis was tested by pairing individual banks that withdrew from Federal Reserve membership between 1965 and 1969 with member banks in the same locality and of equivalent deposit size. Two hundred ninety banks (145 pairs) were selected from eight states in which withdrawals were most heavily concentrated--Illinois, Indiana, Iowa, Michigan, Missouri, Pennsylvania, Texas, and Wisconsin. Earnings performances (mean earnings

and coefficients of variation of earnings)[5] of the paired banks were compared over five-year periods both before and after the withdrawal from the System by one of the banks. Through use of paired t - tests,[6] statistically significant differences were sought (1) within Illinois, Indiana, and Texas banks across banks of all deposit sizes and (2) within all eight states across banks of different deposit sizes. The first test was chosen to examine whether the incentives for withdrawal, if present, vary between states with different state reserve requirements. The three states were chosen since they experienced the greatest number of withdrawals during the period and represent liberal, moderate, and restrictive state reserve regimes, respectively. The second test examined how these incentives differ between banks of different size. The eight states were considered together since the effective reserve requirements in all are less restrictive than the Federal Reserve's. Identical tests were conducted on several key portfolio and price variables in an attempt to measure the impact of differential reserve requirements on the operating policies of banks.

Comparing paired banks over the five-year period prior to withdrawal (while each are members) may identify distinguishing characteristics

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[5]The coefficient of variation, defined as the standard deviation of expected earnings over time divided by its mean, has been used frequently in recent years as a measure of relative risk [6, 7, 14, 15, 16]. Since it is thought to be an appropriate measure of risk due to the variability of cash flows, the coefficient of variation of net income/equity is the measure of risk used in the present study.

[6]The appropriate "t" statistic is defined as

$$t = \frac{\bar{X}_W - \bar{X}_M}{\sigma_D},$$

where $\bar{X}_W$ is the mean of the variable for the withdrawing banks, $\bar{X}_M$ is the mean for the member banks, and σ_D is the estimated standard error of the difference between the two sample means.

of banks that eventually withdraw from the System. Comparisons over the five years following withdrawal identify performance differences between member and nonmember banks operating under identical circumstances with the exception of different reserve requirements. The change in the difference between paired banks from the period preceding withdrawal to the period following such action should suggest the incentives present for withdrawal and perhaps identify the costs associated with maintaining membership. The costs to member banks, therefore, are sought through an approach that tests whether or not members are forced to operate at a competitive disadvantage. If members do experience lower earnings than comparable nonmembers in some situations, the explicit consideration of a measure of risk examines whether or not this cost of membership is offset to some degree in owners' preference functions.

Empirical Results From Comparisons By State

Tables 1, 2, and 3 present the results of the statistical tests performed on paired banks in Illinois, Indiana, and Texas, respectively.

Prior to Withdrawal. Withdrawing banks in Indiana and Texas did not have different earnings experiences from other member banks prior to withdrawal. Those in Illinois, however, had very poor profit experiences relative to the members they were paired with. In addition to lower rates of return, withdrawing banks in Illinois also experienced earnings with a higher degree of variability during the earlier period.

Withdrawing banks in Indiana and Texas tended to take a somewhat aggressive posture with regard to portfolio mix and/or pricing of bank services. They held less cash balances and reserves with the Federal Reserve than their comparable member banks prior to withdrawal. The Texas banks

TABLE 1
DIFFERENCES BETWEEN PAIRED BANKS IN ILLINOIS
(38 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.1373	.1437	.0064 (0.822)	.1208	.0867	-.0342 (-3.913) ****	-.0406 (-5.065) ****
V_2 Demand Balances With Banks in U.S./Total Deposits	.0646	.0728	.0082 (1.038)	.0590	.0803	.0213 (2.377) ***	.0130 (1.325) *
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0774	.0753	-.0022 (-0.978)	.0634	.0122	-.0512 (-19.509) ****	-.0490 (-15.380) ****
V_4 Time & Savings Deposits/ Total Deposits	.4532	.4766	.0234 (1.261)	.5634	.5691	.0057 (0.436)	-.0177 (-1.339) *
V_5 U.S. Gov't. Securities/ Total Assets	.3185	.3174	-.0011 (-0.053)	.2141	.2121	-.0020 (-0.098)	-.0009 (-0.054)
V_6 Total Loans/ Total Assets	.4139	.4017	-.0121 (-0.696)	.4370	.4627	.0256 (1.505) *	.0377 (2.067) ***
V_7 Total Capital/ Total Assets	.0807	.0828	.0021 (0.544)	.0758	.0739	-.0019 (-0.633)	-.0040 (-1.588) *
V_8 Total Capital/ Risk Assets	.1658	.1679	.0021 (0.173)	.1281	.1110	-.0171 (-1.393) *	-.0192 (-2.203) ***
V_9 Commercial & Industrial Loans/Total Assets	.0614	.0590	-.0024 (-0.288)	.0662	.0881	.0219 (2.514) ***	.0243 (3.027) ****
V_{10} Consumer Loans/ Total Loans	.1110	.1019	-.0091 (-0.780)	.1188	.1206	.0018 (0.157)	.0109 (1.141)
V_{11} Farm Loans/ Total Assets	.1021	.1135	.0114 (0.675)	.0972	.1053	.0080 (0.523)	-.0033 (-0.421)
V_{12} Real Estate Loans/ Total Assets	.1278	.1075	-.0203 (-1.762) **	.1423	.1287	-.0137 (-1.167)	.0067 (0.726)

TABLE 1 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0600	.0593	-.0007 (-0.566)	.0701	.0696	-.0005 (-0.0360)	.0002 (0.155)
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0053	.0038	-.0015 (-2.382) ***	.0054	.0037	-.0018 (-2.665) ***	-.0003 (-1.099)
V_{15} Interest on Deposits/ Time & Savings Deposits	.0318	.0323	.0005 (0.674)	.0416	.0434	.0018 (2.583) ***	.0014 (1.686) *
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0438	.0428	-.0010 (-1.010)	.0550	.0576	0026 (2.848) ****	.0036 (4.659) ****
V_{17} Operating Expenses/ Total Assets	.0334	.0341	.0007 (0.542)	.0437	.0468	.0031 (2.269) ***	.0024 (2.816) ****
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1346	.1074	-.0272 (-3.538) ****	.1554	.1528	-.0026 (-0.232)	.0246 (2.101) ***
V_{19} Net Operating Earnings/ Total Capital	.1346	.1072	-.0274 (-3.563) ****	.1545	.1511	-.0034 (-0.296)	.0240 (2.037) ***
V_{20} Net Operating Earnings/ Total Assets	.0104	.0087	-.0016 (-2.428) ***	.0113	.0108	-.0005 (-0.653)	.0011 (1.636) *
V_{21} Net Income/ Equity	.0865	.0704	-.0161 (-2.149) ***	.1134	.1186	.0052 (0.630)	.0213 (2.334) ***
V_{22} Net Income/ Total Capital	.0865	.0702	-.0163 (-2.176) ***	.1126	.1172	.0046 (0.553)	.0209 (2.318) ***
V_{23} Net Income/ Total Assets	.0069	.0058	-.0011 (-1.612) *	.0083	.0084	.0001 (0.169)	.0012 (1.953) **

TABLE 1 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	-.0228	-.4611	-.4383 (-0.974)	.0386	.1958	.1572 (1.098)	.5955 (1.271)
V_{25} Growth Rate of Deposits	.0870	.0892	.0023 (0.182)	.1099	.1179	.0080 (0.876)	.0057 (0.380)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.4507	1.3584	.9077 (1.754) **	.3560	.3550	-.0010 (-0.010)	-.9087 (-1.729) **
V_{27} Coefficient of Variation of Growth Rates of Net Income/Equity	1.2466	1.3704	.1238 (2.398) ***	1.4402	1.3717	-.0685 (-1.229)	-.1922 (-3.118) ****

* Significant at the .80 confidence level.
** Significant at the .90 confidence level.
*** Significant at the .95 confidence level.
**** Significant at the .99 confidence level.

TABLE 2
DIFFERENCES BETWEEN PAIRED BANKS IN INDIANA
(21 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.1455	.1285	-.0169 (-2.130) ***	.1194	.0722	-.0472 (-6.916) ****	-.0303 (-3.170) ****
V_2 Demand Balances With Banks in U.S./Total Deposits	.0709	.0644	-.0065 (-0.834)	.0520	.0589	.0068 (1.198)	.0133 (1.750) **
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0842	.0667	-.0176 (-3.551) ****	.0750	.0145	-.0605 (-9.177) ****	-.0429 (-7.291) ****
V_4 Time & Savings Deposits/ Total Deposits	.4311	.4444	.0132 (0.419)	.5507	.5699	.0192 (0.652)	.0059 (0.419)
V_5 U.S. Gov't. Securities/ Total Assets	.3457	.3330	-.0128 (-0.497)	.2492	.1826	-.0666 (-2.501) ***	-.0538 (-2.398) ***
V_6 Total Loans/ Total Assets	.3900	.3969	.0069 (0.312)	.4097	.4740	.0643 (2.457) ***	.0574 (2.925) ****
V_7 Total Capital/ Total Assets	.0819	.0795	-.0024 (-0.634)	.0778	.0740	-.0039 (-0.983)	-.0014 (-0.672)
V_8 Total Capital/ Risk Assets	.1803	.1595	-.0208 (-1.117)	.1348	.1014	-.0333 (-2.155) ***	-.0126 (-1.364) *
V_9 Commercial & Industrial Loans/Total Assets	.0420	.0480	.0060 (1.115)	.0453	.0683	.0230 (2.535) ***	.0170 (2.631) ***
V_{10} Consumer Loans/ Total Loans	.1089	.0911	-.0178 (-1.356) *	.1196	.1119	-.0077 (-0.441)	.0101 (1.128)
V_{11} Farm Loans/ Total Assets	.0745	.0779	.0034 (0.220)	.0733	.0807	.0074 (0.424)	.0040 (0.596)
V_{12} Real Estate Loans/ Total Assets	.1574	.1719	.0145 (0.766)	.1617	.2011	.0394 (2.127) ***	.0249 (1.898) **

TABLE 2 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0631	.0622	-.0009 (-0.613)	.0699	.0701	.0002 (0.197)	.0011 (0.902)
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0024	.0025	.0001 (0.070)	.0030	.0024	-.0006 (-1.161)	-.0006 (-2.693) ***
V_{15} Interest on Deposits/ Time & Savings Deposits	.0282	.0299	.0016 (1.500) *	.0411	.0425	.0014 (1.895) **	-.0003 (-0.309)
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0423	.0429	.0006 (0.842)	.0532	.0562	.0029 (2.908) ****	.0023 (3.722) ****
V_{17} Operating Expenses/ Total Assets	.0316	.0319	.0003 (0.289)	.0411	.0436	.0025 (2.167) ***	.0022 (2.638) ***
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1366	.1402	.0035 (0.316)	.1572	.1714	.0142 (1.594) *	.0107 (1.017)
V_{19} Net Operating Earnings/ Total Capital	.1366	.1402	.0035 (0.316)	.1572	.1709	.0137 (1.552) *	.0102 (0.983)
V_{20} Net Operating Earnings/ Total Assets	.0107	.0110	.0004 (0.395)	.0121	.0125	.0004 (0.433)	.0001 (0.090)
V_{21} Net Income/ Equity	.0881	.0914	.0032 (0.456)	.1114	.1311	.0198 (3.463) ****	.0166 (2.148) ***
V_{22} Net Income/ Total Capital	.0881	.0914	.0032 (0.456)	.1114	.1309	.0195 (3.424) ****	.0163 (2.128) ***
V_{23} Net Income/ Total Assets	.0071	.0072	.0002 (0.295)	.0086	.0097	.0011 (1.727) **	.0009 (1.656) *

TABLE 2 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	.1589	.3457	.1868 (0.278)	.6348	.1429	-.4920 (-0.990)	-.6787 (-0.843)
V_{25} Growth Rate of Deposits	.0948	.1135	.0187 (1.502) *	.1102	.1125	.0023 (0.344)	-.0164 (-1.107)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.2468	.3084	.0616 (1.106)	.2599	.2232	-.0366 (-1.051)	-.0982 (-2.095) ***
V_{27} Coefficient of Variation of Growth Rates of Net Income/ Equity	1.2919	1.3816	.0897 (1.309)	1.3637	1.2795	-.0842 (-1.370) *	-.1739 (-2.100) ***

* Significant at the .80 confidence level.
** Significant at the .90 confidence level.
*** Significant at the .95 confidence level.
**** Significant at the .99 confidence level.

TABLE 3
DIFFERENCES BETWEEN PAIRED BANKS IN TEXAS
(35 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.2068	.2047	-.0022 (-0.199)	.1740	.1584	-.0156 (-1.415) *	-.0135 (-1.231)
V_2 Demand Balances With Banks in U.S./Total Deposits	.1319	.1433	.0114 (1.111)	.1065	.1461	.0397 (3.877) ****	.0282 (2.349) ***
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0896	.0759	-.0138 (-2.929) ****	.0759	.0181	-.0579 (-10.553) ****	-.0441 (-16.102) ****
V_4 Time & Savings Deposits/ Total Deposits	.3063	.3384	.0321 (1.660) *	.4109	.4668	.0559 (2.404) ***	.0238 (1.476) *
V_5 U.S. Gov't. Securities/ Total Assets	.2138	.1824	-.0313 (-1.526) *	.1325	.0975	-.0350 (-1.987) **	-.0037 (-0.280)
V_6 Total Loans/ Total Assets	.4054	.4511	.0456 (1.858) **	.4240	.5062	.0822 (4.894) ****	.0366 (2.018) **
V_7 Total Capital/ Total Assets	.0886	.0911	.0024 (0.605)	.0834	.0823	-.0010 (-0.289)	-.0035 (-0.861)
V_8 Total Capital/ Risk Assets	.1679	.1596	-.0083 (-0.818)	.1291	.1154	-.0136 (-1.956) **	-.0053 (-0.700)
V_9 Commercial & Industrial Loans/Total Assets	.1178	.1246	.0068 (0.355)	.1203	.1477	.0274 (1.845) **	.0206 (1.547) *
V_{10} Consumer Loans/ Total Loans	.1339	.1639	.0300 (1.609) *	.1386	.1679	.0292 (1.860) **	-.0008 (-0.066)
V_{11} Farm Loans/ Total Assets	.0814	.0789	-.0024 (-0.182)	.0774	.0727	-.0047 (-0.359)	-.0022 (-0.215)
V_{12} Real Estate Loans/ Total Assets	.0484	.0599	.0114 (1.656) *	.0624	.0936	.0313 (2.671) ***	.0198 (2.188) ***

TABLE 3 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0725	.0689	-.0036 (-1.663) *	.0804	.0799	-.0004 (-0.252)	.0032 (1.627) *
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0051	.0066	.0016 (1.681) *	.0060	.0075	.0015 (1.570) *	-.0001 (-0.117)
V_{15} Interest on Deposits/ Time & Savings Deposits	.0356	.0326	-.0030 (-1.733) **	.0439	.0433	-.0005 (-0.571)	.0025 (1.571) *
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0464	.0480	.0016 (1.028)	.0574	.0609	.0036 (2.940) ****	.0019 (1.744) **
V_{17} Operating Expenses/ Total Assets	.0351	.0374	.0023 (1.226)	.0448	.0488	.0041 (2.152) ***	.0017 (1.059)
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1375	.1323	-.0052 (-0.478)	.1582	.1525	-.0057 (-0.297)	-.0005 (-0.022)
V_{19} Net Operating Earnings/ Total Capital	.1353	.1323	-.0030 (-0.278)	.1567	.1518	-.0050 (-0.262)	-.0020 (-0.098)
V_{20} Net Operating Earnings/ Total Assets	.0113	.0106	-.0007 (-0.804)	.0126	.0121	-.0005 (-0.316)	.0002 (0.128)
V_{21} Net Income/ Equity	.0777	.0844	.0067 (0.589)	.1159	.1188	.0029 (0.173)	-.0038 (-0.215)
V_{22} Net Income/ Total Capital	.0764	.0844	.0080 (0.703)	.1145	.1181	.0036 (0.214)	-.0044 (-0.259)
V_{23} Net Income/ Total Assets	.0064	.0067	.0003 (0.265)	.0092	.0095	.0004 (0.263)	.0001 (0.068)

TABLE 3 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	.2025	.0406	-.1619 (-0.711)	1.1970	-.0592	-1.2561 (-1.106)	-1.0942 (-1.006)
V_{25} Growth Rate of Deposits	.0937	.1223	.0286 (2.218) ***	.1167	.1415	.0248 (1.973) **	-.0038 (-0.220)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.5215	.8071	.2856 (0.896)	.5661	.5581	-.0079 (-0.039)	-.2935 (-0.865)
V_{27} Coefficient of Variation of Growth Rates of Net Income/ Equity	1.3332	1.3310	-.0022 (-0.038)	1.3796	1.4120	.0324 (0.599)	.0346 (0.494)

* Significant at the .80 confidence level.
** Significant at the .90 confidence level.
*** Significant at the .95 confidence level.
**** Significant at the .99 confidence level.

held a larger total loan portfolio and charged slightly lower loan rates than the control banks, though they had higher service charges on deposits and paid less interest on time and savings deposits. Banks that left the System in Indiana, on the other hand, paid slightly higher rates on time and savings deposits. Withdrawing banks in Illinois also exhibited some reliance on reduction in prices on bank services (lower service charges on deposit accounts).

Perceived operational advantages of withdrawing from the Federal Reserve System would likely appear attractive to the management and stockholders of institutions who have exhibited a tendency to maintain a minimum level of cash balances, as in Indiana and Texas. The shift in regulatory status would allow them to pursue this policy further--possibly with substantial benefits. The relatively poor performance of some Illinois member banks, presumably, would also make that group especially receptive to changes in operation that could improve bank performance.

Following Withdrawal: The Change in Performance Differences Over Periods. The incentives for banks to withdraw from the Federal Reserve System cannot be identified by examining differences between withdrawing and member banks following withdrawal--for such a framework ignores differences between banks prior to withdrawal. Incentives for withdrawal rest in the improvement in performance banks anticipate following withdrawal. This improvement relative to member banks is embodied in the change in the difference between banks over the two five-year periods.

Changes in rates of return over the two periods indicate that withdrawing banks did, in fact, improve earnings relative to members in Illinois and Indiana. In addition, the Illinois banks experienced a slight increase in income growth rates compared to members and eliminated the

earnings disadvantage present prior to withdrawal. The prime reason for the relative improvement in earnings performance was the withdrawing banks' ability to increase the percentage of earning assets in their portfolios. Facing lower effective state reserve requirements, they greatly reduced their cash balances relative to member banks in each state. Commercial and industrial loans, consumer loans, and real estate loans were the prime beneficiaries of the released funds.

In contrast with the hypothesis that member banks have more stable earnings than nonmembers, withdrawing banks experienced a reduction in the variability of earnings relative to members following withdrawal from the Federal Reserve System. Changes in measures of risk associated with earnings favored withdrawing banks in all three states and were statistically significant in Illinois and Indiana.

Withdrawing Illinois banks, following their change in membership status, were able to eliminate the lower earnings and higher variability in rates of return that existed prior to withdrawal. The reduction in the coefficient of variation of net income to equity was so large, in relation to the experience for member banks, that the difference in the values for this variable between paired banks reversed itself and favored the withdrawing banks over the second five-year period. The experience in Indiana was similar. Withdrawing banks in that state, with earnings no different from members prior to withdrawal, experienced a highly significant improvement in net income measures relative to members. In addition, these banks also experienced substantial reductions in measures of risk associated with these higher earnings when compared to banks that maintained membership in the System. Within the simple risk-return framework, there is

little doubt that stockholder utility improved for Illinois and Indiana withdrawing banks relative to those banks choosing to retain their Federal Reserve membership. Changes in earnings and income variability between paired banks in Texas were not statistically significant--therefore the impact on owner utility in that state is not clear.

Just as the improvement in earnings and reduction in risk serve as incentives for banks to withdraw, they represent an opportunity cost to those banks remaining in the System. Member banks in Illinois and Indiana, on average, could have improved the level of their earnings and reduced its variability from year to year by leaving the System. This is a definite cost to the stockholders of these banks that must be absorbed and/or passed on to customers. The increases in mean values in annual net income to equity of 2.13 and 1.66 percent for Illinois and Indiana withdrawing banks relative to members approximates the membership cost to bank stockholders in terms of nominal return. If these figures could be adjusted for relative changes in risk measures, they would be larger. These figures do not, however, indicate the magnitude of the burden of membership to customers of member banks in these states.

Customers of member banks in the three states were granted 3.77 percent, 5.74 percent, and 3.66 percent fewer loans, respectively, than would be possible if their bank had withdrawn from the System. Illinois customers received .14 percent less on time and savings deposits. Indiana's member bank customers paid .06 percent more service charges on deposits. Their counterparts in Texas received .25 percent less interest on savings deposits than they would have, on average, had their banks withdrawn. Costs to Texas customers, however, were at least partially offset by reduced interest charges on loans by member banks.

Comparing overall results for the three states supports the hypothesis that the "costs of membership" vary directly with the variation between state imposed and Federal Reserve System reserve requirements. The distribution of these costs between member bank stockholders and customers differs among states. Illinois member bank stockholders apparently experienced more variability in a lower level of earnings than would have been possible through withdrawal. In addition, a portion of the cost of membership in Illinois was passed on to customers. Bank stockholders in Indiana bore a significant burden of membership through reduced nominal earnings. A reduction in earnings variability of withdrawing banks relative to members was also present. Customers of Indiana banks also shared the cost of membership. Finally, the cost of membership to bank owners in Texas was much less than in the other states. These banks did not increase rates of return or reduce the variability in earnings relative to member banks through withdrawal from the Federal Reserve System. Though the reduced volume of loans granted by members is a cost borne by their customers, it is not clear whether or not the divergence in pricing practices in Texas represents a net cost to member bank customers.

One slight advantage member banks may enjoy in some states is a higher deposit growth rate. Evidence in Indiana and Texas suggest that withdrawing banks experienced a slight reduction in growth in deposits relative to members following withdrawal, while those in Illinois experienced a relative increase. None of the above changes was statistically significant, however. Even if membership does provide a net benefit to deposit growth in some localities, empirical results seem to indicate that any impact on bank rates of return attributable to this factor is dwarfed by the impact of differential reserve requirements.

Results From Comparisons By Bank Size

Tables 4, 5, and 6 present the results of the tests performed on the total sample of paired banks classified by deposit class; those with less than $10 million in total deposits (class 1), those with $10 to $25 million in deposits (class 2), and those with more than $25 million in deposits[7] (class 3).

Withdrawing banks in deposit class 1 experienced higher operating expenses and, consequently, lower net operating earnings than member banks prior to withdrawal. In addition, earnings variability measures were significantly higher for these small banks relative to those retaining membership during the early period. In deposit class 2, banks that later withdrew from the System had lower operating revenue due, in part, to lower loan rates and service charges on deposit accounts relative to members prior to withdrawal. Surprisingly, though, these banks experienced slightly higher income during the earlier period. No significant difference in earnings was detected for class 3 banks but withdrawing banks had a larger coefficient of variation of net income to equity than did members within this category prior to withdrawal.

During this period, withdrawing banks in all three deposit groups held substantially less currency, coin, and reserves with the Federal Reserve than did banks that remained in the System. A change in regulatory status, presumably, would permit these banks to further reduce their non-earning cash assets.

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[7]Only one pair of banks in this category had total deposits exceeding $100 million at the time of withdrawal. Deposits for these two banks were approximately $150 million.

TABLE 4
DIFFERENCES BETWEEN PAIRED BANKS IN DEPOSIT CLASS 1
Less Than $10 Million Deposits
(100 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.1669	.1671	.0002 (0.036)	.1401	.1040	-.0361 (-6.623) ****	-.0363 (-6.468) ****
V_2 Demand Balances With Banks in U.S./Total Deposits	.0943	.1053	.0110 (1.742) **	.0773	.0953	.0179 (3.566) ****	.0069 (1.150)
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0846	.0753	-.0093 (-4.168) ****	.0704	.0152	-.0553 (-20.932) ****	-.0459 (-22.110) ****
V_4 Time & Savings Deposits/ Total Deposits	.3998	.4197	.0198 (1.481) *	.5067	.5380	.0313 (2.362) ***	.0115 (1.314) *
V_5 U.S. Gov't. Securities/ Total Assets	.2965	.2777	-.0188 (-1.449) *	.2015	.1780	-.0235 (-1.920) **	-.0047 (-0.465)
V_6 Total Loans/ Total Assets	.4059	.4218	.0159 (1.170)	.4360	.4837	.0476 (3.940) ****	.0317 (2.952) ****
V_7 Total Capital/ Total Assets	.0917	.0926	.0009 (0.327)	.0818	.0814	-.0004 (-0.176)	-.0013 (-0.611)
V_8 Total Capital/ Risk Assets	.1893	.1800	-.0093 (-1.011)	.1396	.1179	-.0217 (2.392) ***	-.0124 (-1.851) **
V_9 Commercial & Industrial Loans/Total Assets	.0648	.0699	.0051 (0.798)	.0682	.0894	.0212 (3.419) ****	.0161 (2.824) ****
V_{10} Consumer Loans/ Total Loans	.0963	.1024	.0061 (0.784)	.1098	.1175	.0077 (1.010)	.0016 (0.307)
V_{11} Farm Loans/ Total Assets	.1047	.1123	.0076 (0.899)	.1026	.1097	.0071 (0.801)	-.0005 (-0.104)
V_{12} Real Estate Loans/ Total Assets	.1265	.1235	-.0031 (-0.411)	.1417	.1517	.0101 (1.284)	.0131 (2.275) ***

TABLE 4 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0645	.0635	-.0011 (-1.070)	.0719	.0715	-.0004 (-0.435)	.0007 (0.723)
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0039	.0042	.0003 (0.822)	.0044	.0046	.0003 (0.600)	-.0001 (-0.276)
V_{15} Interest on Deposits/ Time & Savings Deposits	.0309	.0308	-.0001 (-0.176)	.0415	.0420	.0005 (0.927)	.0006 (0.943)
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0433	.0440	.0007 (0.907)	.0542	.0572	.0030 (4.477) ****	.0023 (4.517) ****
V_{17} Operating Expenses/ Total Assets	.0322	.0337	.0015 (1.720) **	.0421	.0455	.0034 (3.663) ****	.0019 (2.805) ****
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1264	.1176	-.0087 (-1.661) **	.1516	.1468	-.0048 (-0.636)	.0039 (0.479)
V_{19} Net Operating Earnings/ Total Capital	.1263	.1176	-.0087 (-1.652) *	.1510	.1463	-.0047 (-0.624)	.0040 (0.500)
V_{20} Net Operating Earnings/ Total Assets	.0111	.0103	-.0008 (-1.619) *	.0121	.0117	-.0004 (-0.675)	.0004 (0.607)
V_{21} Net Income/ Equity	.0800	.0749	-.0051 (-0.988)	.1108	.1128	.0020 (0.313)	.0071 (0.995)
V_{22} Net Income/ Total Capital	.0800	.0749	-.0051 (-0.982)	.1102	.1124	.0021 (0.339)	.0072 (1.024)
V_{23} Net Income/ Total Assets	.0071	.0066	-.0005 (-1.024)	.0088	.0090	.0002 (0.332)	.0007 (1.248)

TABLE 4 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	.1032	-.0237	-.1270 (-0.695)	.5617	.1508	-.4109 (-0.989)	-.2840 (-0.660)
V_{25} Growth Rate of Deposits	.1019	.1053	.0034 (0.350)	.1157	.1282	.0124 (2.217) ***	.0091 (0.904)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.4258	.9985	.5727 (2.227) ***	.3989	.3601	-.0387 (-0.569)	-.6614 (-2.321) ***
V_{27} Coefficient of Variation of Growth Rates of Net Income/Equity	1.3072	1.3490	.0418 (1.364) *	1.3710	1.3217	-.0493 (-1.571) *	-.0911 (2.283) ***

* Significant at .80 confidence level.
** Significant at .90 confidence level.
*** Significant at .95 confidence level.
**** Significant at .99 confidence level.

TABLE 5
DIFFERENCES BETWEEN PAIRED BANKS IN DEPOSIT CLASS 2
$10–$25 Million Deposits
(30 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.1370	.1366	-.0003 (-0.062)	.1190	.0943	-.0247 (-2.965) ****	-.0243 (-4.391) ****
V_2 Demand Balances With Banks in U.S./Total Deposits	.0676	.0679	.0003 (0.030)	.0519	.0793	.0273 (3.117) ****	.0269 (3.455) ****
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0746	.0663	-.0083 (-2.659) ***	.0673	.0159	-.0513 (-14.723) ****	-.0429 (-16.346) ****
V_4 Time & Savings Deposits/ Total Deposits	.5123	.5069	-.0053 (-0.277)	.6009	.5863	-.0146 (-0.910)	-.0093 (-0.891)
V_5 U.S. Gov't. Securities/ Total Assets	.2369	.2566	.0196 (1.037)	.1553	.1609	.0056 (0.322)	-.0139 (-1.091)
V_6 Total Loans/ Total Assets	.4626	.4449	-.0176 (-0.948)	.4906	.4993	.0086 (0.476)	.0263 (1.574) *
V_7 Total Capital/ Total Assets	.0763	.0733	-.0029 (-0.788)	.0726	.0719	-.0006 (-0.165)	.0023 (0.812)
V_8 Total Capital/ Risk Assets	.1236	.1249	.0013 (0.124)	.1016	.0986	-.0029 (-0.516)	-.0043 (-0.608)
V_9 Commercial & Industrial Loans/Total Assets	.0919	.0763	-.0156 (-1.273)	.1049	.1029	-.0019 (-0.171)	.0136 (1.830) **
V_{10} Consumer Loans/ Total Loans	.1339	.1269	-.0069 (-0.400)	.1406	.1369	-.0036 (-0.243)	.0033 (0.295)
V_{11} Farm Loans/ Total Assets	.0629	.0636	.0006 (0.048)	.0516	.0609	.0093 (0.790)	.0086 (1.274)
V_{12} Real Estate Loans/ Total Assets	.1579	.1596	.0016 (0.141)	.1796	.1799	.0003 (0.019)	-.0013 (-0.153)

TABLE 5 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0633	.0609	-.0023 (-2.216) ***	.0713	.0710	-.0003 (-0.514)	.0020 (1.464) *
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0066	.0056	-.0009 (-2.052) ***	.0063	.0053	-.0010 (-1.720) **	-.0001 (0.050)
V_{15} Interest on Deposits/ Time & Savings Deposits	.0319	.0316	-.0003 (-0.605)	.0427	.0430	.0003 (0.199)	.0006 (0.610)
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0473	.0460	-.0013 (-1.794) **	.0573	.0583	.0010 (0.906)	.0023 (3.693) ****
V_{17} Operating Expenses/ Total Assets	.0367	.0360	-.0007 (-0.571)	.0467	.0463	-.0004 (-0.085)	.0003 (0.531)
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1507	.1377	-.0130 (-1.172)	.1570	.1697	.0127 (0.926)	.0257 (2.110) ***
V_{19} Net Operating Earnings/ Total Capital	.1480	.1373	-.0107 (-0.984)	.1547	.1834	.0287 (0.921)	.0394 (2.030) **
V_{20} Net Operating Earnings/ Total Assets	.0107	.0100	-.0007 (-1.185)	.0110	.0117	.0007 (0.953)	.0014 (2.552) ***
V_{21} Net Income/ Equity	.0827	.0910	.0083 (1.266)	.1107	.1313	.0206 (2.289) ***	.0123 (1.460) *
V_{22} Net Income/ Total Capital	.0813	.0910	.0097 (1.485) *	.1090	.1297	.0207 (2.251) ***	.0110 (1.393) *
V_{23} Net Income/ Total Assets	.0060	.0067	.0007 (0.966)	.0077	.0090	.0013 (2.625) ***	.0006 (1.736) **

TABLE 5 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	.0033	-.3647	-.3680 (-0.652)	.0670	-.0520	-.1190 (-0.868)	.2490 (0.423)
V_{25} Growth Rate of Deposits	.0997	.1007	.0010 (0.079)	.1030	.1167	.0140 (1.533) *	.0130 (0.845)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.5627	.4037	-.1587 (-0.694)	.3310	.2636	-.0674 (-0.601)	.0913 (0.711)
V_{27} Coefficient of Variation of Growth Rates of Net Income/Equity	1.3280	1.3717	.0437 (0.635)	1.4470	1.3513	-.0957 (-1.939) **	-.1394 (-1.975) **

* Significant at the .80 confidence level.
** Significant at the .90 confidence level.
*** Significant at the .95 confidence level.
**** Significant at the .99 confidence level.

TABLE 6
DIFFERENCES BETWEEN PAIRED BANKS IN DEPOSIT CLASS 3
More Than $25 Million Deposits
(15 Pairs)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PORTFOLIO COMPOSITION:							
V_1 Cash & Due/ Total Assets	.1253	.1340	.0087 (0.990)	.1140	.0987	-.0153 (-1.265)	-.0240 (-2.100) **
V_2 Demand Balances With Banks in U.S./Total Deposits	.0500	.0627	.0127 (1.320)	.0507	.0880	.0373 (2.819) ***	.0247 (1.809) **
V_3 Currency, Coin, & Reserve with Fed/Total Deposits	.0727	.0660	-.0067 (-1.676) *	.0600	.0140	-.0460 (-16.211) ****	-.0393 (-7.352) ****
V_4 Time & Savings Deposits/ Total Deposits	.5193	.4800	-.0393 (-1.295)	.5867	.5487	-.0380 (-1.101)	.0013 (0.049)
V_5 U.S. Gov't. Securities/ Total Assets	.2240	.2300	.0067 (0.463)	.1220	.1107	-.0113 (-0.780)	-.0180 (-1.025)
V_6 Total Loans/ Total Assets	.4773	.4913	.0140 (0.596)	.5087	.5406	.0320 (1.141)	.0173 (0.722)
V_7 Total Capital/ Total Assets	.0700	.0720	.0020 (0.407)	.0700	.0733	.0033 (0.584)	.0013 (0.245)
V_8 Total Capital/ Risk Assets	.1093	.1160	.0067 (0.723)	.0927	.0947	.0020 (0.305)	-.0047 (-0.684)
V_9 Commercial & Industrial Loans/Total Assets	.1107	.1393	.0287 (1.143)	.1293	.1633	.0340 (1.733) *	.0053 (0.275)
V_{10} Consumer Loans/ Total Loans	.1633	.1533	-.0100 (-0.653)	.1640	.1520	-.0120 (-0.633)	-.0020 (-0.088)
V_{11} Farm Loans/ Total Assets	.0060	.0153	.0093 (1.180)	.0073	.0173	.0100 (1.404) *	.0007 (0.166)
V_{12} Real Estate Loans/ Total Assets	.1600	.1300	-.0300 (-2.809) ***	.1727	.1733	.0007 (0.016)	.0307 (1.358) *

TABLE 6 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
PRICES:							
V_{13} Interest & Fees on Loans/Total Loans	.0593	.0567	-.0027 (-1.325) *	.0713	.0713	.0000 (0.275)	.0027 (1.436) *
V_{14} Service Charges on Deposit Accounts/Total Demand Deposits	.0067	.0060	-.0007 (-0.563)	.0067	.0053	-.0014 (-0.937)	-.0007 (-0.486)
V_{15} Interest on Deposits/ Time & Savings Deposits	.0320	.0313	-.0007 (-0.268)	.0413	.0433	.0020 (1.184)	.0027 (1.671) *
EFFICIENCY:							
V_{16} Operating Revenue/ Total Assets	.0460	.0440	-.0020 (-1.441) *	.0573	.0587 .	.0014 (1.178)	.0034 (2.394) ***
V_{17} Operating Expenses/ Total Assets	.0367	.0347	-.0020 (-1.545)	.0467	.0473	.0006 (0.116)	.0026 (1.186)
PROFITABILITY:							
V_{18} Net Operating Earnings/ Equity	.1420	.1367	-.0052 (-0.281)	.1580	.1527	-.0053 (-0.199)	-.0001 (-0.012)
V_{19} Net Operating Earnings/ Total Capital	.1413	.1354	-.0060 (-0.333)	.1547	.1520	-.0027 (-0.091)	.0033 (0.165)
V_{20} Net Operating Earnings/ Total Assets	.0093	.0093	.0000 (0.033)	.0107	.0013	.0006 (0.503)	.0006 (0.650)
V_{21} Net Income/ Equity	.0853	.0840	-.0013 (-0.101)	.1127	.1067	-.0060 (-0.253)	-.0047 (-0.226)
V_{22} Net Income/ Total Capital	.0853	.0833	-.0020 (-0.144)	.1100	.1073	-.0027 (-0.115)	-.0007 (-0.0040)
V_{23} Net Income/ Total Assets	.0060	.0060	.0000 (-0.139)	.0073	.0080	.0007 (0.507)	.0007 (0.688)

TABLE 6 (CONTINUED)

Variable	Mean Before Withdrawal: Member Banks	Mean Before Withdrawal: Withdrawing Banks	Mean Before Withdrawal: Difference	Mean After Withdrawal: Member Banks	Mean After Withdrawal: Withdrawing Banks	Mean After Withdrawal: Difference	Mean Change in Difference (After-Before)
GROWTH:							
V_{24} Growth Rate of Net Income/Equity	.1353	.2360	.1007 (0.474)	.1840	.0220	-.1620 (-0.639)	-.2627 (0.724)
V_{25} Growth Rate of Deposits	.1080	.1393	.0313 (0.764)	.0991	.1053	.0061 (0.254)	-.0252 (-0.690)
VARIABILITY:							
V_{26} Coefficient of Variation of Net Income/Equity	.3220	.5707	.2487 (1.574) *	.2927	1.0240	.7313 (1.481) *	.4826 (1.053)
V_{27} Coefficient of Variation of Growth Rates of Net Income/Equity	1.3193	1.2933	-.0260 (-0.315)	1.3820	1.3973	.0153 (0.181)	.0413 (0.427)

* Significant at the .80 confidence level.
** Significant at the .90 confidence level.
*** Significant at the .95 confidence level.
**** Significant at the .99 confidence level.

Following withdrawal, most banks leaving the System apparently improved their earnings performances relative to members. Improvement was most noticeable for those banks within the two smaller deposit classes. Net income measures increased relatively for withdrawing banks within deposit class 2 and variability in earnings declined relatively for class 1 banks. No statistically significant alteration in withdrawing banks' earnings performance relative to members was detected within the largest banks.[8]

Banks leaving the System dramatically reduced their cash balances and increased balances held with commercial banks relative to members. They increased outstanding loans when compared with those maintaining membership. Withdrawing banks in the three categories granted, on average, 3.17 percent, 2.63 percent, and 1.73 percent more loans, respectively, than would have been expected had they remained in the System. Banks in classes 2 and 3 increased interest charged on loans slightly, while class 3 banks also increased interest paid on deposits in comparison to members.

The cost of membership, therefore, appears heaviest for member bank stockholders and customers within the smaller deposit classifications. The incentives for withdrawal seem strongest for these banks.

Summary

Statistical results support the conclusion that many member banks operate at a competitive disadvantage to similarly situated nonmembers. In

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[8]Conclusions based on the small sample of paired banks within this last deposit category are tentative and inconclusive. The small number of large banks leaving the System between 1965 and 1969, however, suggests that the costs of membership were not thought excessive by these banks. Recent experience suggests that large banks are becoming increasingly sensitive to membership costs.

two of the three states studied separately and within two of the three deposit size classifications, the "cost of membership" has significantly affected two groups of individuals--member bank stockholders and customers.

In Illinois and Indiana, rates of return were lower for banks that maintained Federal Reserve membership than they would have been had the banks withdrawn from the System. A sample taken from eight states reveals banks with $10-$25 million in deposits had similar results. In addition, withdrawing banks in Illinois and Indiana experienced reduced variability in earnings relative to comparable members over the periods included in the study, as did banks in the larger sample with less than $10 million deposits. This combination has provided a strong incentive for banks to relinquish membership in recent years. In Texas and for banks with more than $25 million in deposits, however, no membership cost in the form of reduced earnings or increased variability in earnings was detected.

Empirical evidence also indicates that, to varying degrees, member bank stockholders have shared the costs of membership with their customers in the form of a reduced volume of loans, higher service charges on deposit accounts, higher rates on loans, and/or reduced interest paid on savings deposits. Such membership costs were imposed on member bank customers in Illinois, Indiana, and Texas as well as for banks with less than $25 million in deposits. No clear costs to customers associated with membership were found for larger banks.

The cost of Federal Reserve membership, therefore, varies across states with different reserve requirements and for different size categories. Accordingly, accurately measuring the cost of membership for banks should be approached on a state by state basis.

The results of the present study should not be applied to other states without regard to the peculiar regulatory and competitive environment of each state. The cost of membership measures used in this study reflect an average yearly cost over the period 1965 through 1974 and, therefore, may not completely represent costs associated with Federal Reserve membership at the present time.

The membership problem has intensified in recent years due to an increased opportunity cost of idle reserve balances (higher interest rates) and to an expansion of competition between commercial banks and depository thrift institutions [17]. The Federal Reserve System has long been aware of disadvantages imposed on member banks through its reserve requirements and, in the past, supported a legislative remedy of uniform reserve requirements for all commercial banks. In the absence of such legislation, the System is giving serious consideration to alternative proposals to reduce the cost of membership. Whether this is best accomplished through a reduction in System reserve requirements, paying interest on reserve balances held with the Fed, or by some combination of proposals is currently under review.

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