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# INTEREST RATES, SAVINGS COMPETITION, AND BANK PROFITABILITY

A Paper Presented

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# INTEREST RATES, SAVINGS COMPETITION, AND BANK PROFITABILITY

The intensity of competition for savings and the resulting sharp rise in interest rates last year have been widely commented on. So far, however, there has been little appraisal of the effect of this competition on these financial institutions themselves. In this paper, such an appraisal is being made for commercial banks.

The results, showing changes in the pattern of savings flows and interest rates, are both interesting and significant:

- The greater flexibility of commercial banks in fashioning savings instruments enabled them to withstand the pressure of competition from market securities to a greater extent than most other financial institutions -- particularly savings and loan associations.
- There is a close association between size of bank and the types of savings instruments offered. The biggest money market banks concentrate on attracting funds of corporations and other large depositors. At the opposite extreme, local banks rely primarily on the regular savings of their immediate communities. In between, the behavior of the large-to-medium-sized banks is conditioned essentially by the characteristics of their nearest neighbors in the size spectrum.

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In general, rates paid on time deposits varied directly with size of bank -- the largest banks offering the highest and the smallest banks the lowest rates. However, on the most competitive types of savings instruments, advances during 1966 in rates paid were almost the same at banks regardless of size.

The sharp advance in interest payments had a distinctly adverse impact on operating cost and bank profitability:

- Interest on time deposits, which accounted for most of the rise in banks' expenses last year, now account for almost half of banks' operating cost.
- The extra interest cost paid by banks to attract the additional deposits gained was substantially greater than that incurred by savings and loan associations. The banks' less favorable experience as a group seems to reflect the higher rates offered by the largest banks -- especially on business-type deposits; among other banks, their greater flexibility in designing different types of instruments to reach particular kinds of savers seems to have moderated the advance in the amount of interest payments in relation to the rise in deposits.
- The growth of time deposits clearly enables a bank to enlarge its scale of operation. But the expansion of these deposits also imposes a burden on bank profitability. Although the

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economies of scale associated with large banks offset some of the higher cost, the adverse effects on profits are still evident.

- At least by one test based on 1966 data, it seems that for each 1.00 per cent increase in the cost of time deposits, bank profits decline by 0.33 per cent. This relationship may be different for other years.

The above analysis points up a number of implications for both bank managements and bank supervisory authorities:

- As far as banks are concerned, it should be obvious that the winds of competition for savings are strong enough to reach even the smallest institutions. Thus, increasingly it will be necessary for banks to offer savers rates of return competitive with those obtainable on alternative instruments available on marketable securities.
- On the other hand, banks should be particularly careful in entering the competitive race for savings. For some the adverse impact of higher cost time deposits on profits cannot be readily offset.

Bank supervisory agencies, in the establishment of interest rate ceilings on time deposits, should be particularly careful to tailor their regulations to take account of the diversities in deposit competition

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which have emerged among institutions:

- For example, the distinctive pattern of competition for savings on the part of large money market banks clearly suggests rate ceilings different from those set for smaller institutions.
- Moreover, given the greatly increased sensitivity of depositors to changes in interest rates, I think it would be a mistake for the bank supervisory authorities, in the current environment, to undertake a general roll-back in the maximum rates which banks can pay for time deposits.

Competition for Savings

Last year, in the face of the strong pull of yields obtainable in the securities markets, all the principal types of savings institutions did less well in the mobilization of funds than they did in 1965. For example, last year, the net savings inflow for commercial bank, savings and loan associations and mutual savings banks amounted to $19.6 billion, or only three-fifths the volume recorded in the previous year. However, the short-fall was particularly dramatic for S&L's, who succeeded in attracting barely two-fifths of the net inflows obtained in 1965. Mutual savings banks, with a net increase in deposits equal to 70 per cent of the previous year's gain, performed best of all among the three groups. The increase in commercial banks' time and savings deposits in 1966 was about the three-quarters that registered in the year earlier. However,

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much of the commercial's banks' adverse experience can be traced to the attrition in their CD holdings from August to mid-December as yields on competitive market securities advanced to levels in excess of the maximum rates payable on time deposits as set by the monetary authorities. If bank holdings of negotiable CD's are excluded, their 1966 gain in time and savings deposits was over three-quarters of the net inflow in the preceding year.

The broad changes in commercial banks' holdings of time and savings deposits during 1966 can be seen in figures for member banks of the Federal Reserve System as reported in special surveys conducted in December,1965, May, 1966, and January, 1967. The principal changes are summarized in Table 1. From these data, it is clear that member banks relied heavily on consumer-type time deposits as a principal source of funds in 1966.

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Table 1 -- Principal Types of Time and Savings Deposits at Federal Reserve Member Banks on December 3, 1965 and January 31, 1967 (in millions of dollars)

| Type of Instrument | Amount Outstanding | | Change | |
|---|---|---|---|---|
| | Dec. 3, 1965 | Jan. 31, 1967 | Amount | Per Cent |
| Business-Type Deposits | | | | |
| Negotiable CD's, $100,000 and over | 13,141 | 13,017 | - 124 | - 0.9 |
| Nonnegotiable CD's, $100,000 and over | ** | 2,813 | n.a. | n.a. |
| Time Deposits- Open Account, $100,000 and over | 1,767** | 1,819 | n.a. | n.a. |
| Consumer-Type Deposits | | | | |
| Time deposits -open account, under $100,000 | ** | 1,853 | n.a. | n.a. |
| Negotiable CD's, under $100,000 | 2,539 | 4,375 | 1,836 | +72.3 |
| Other Nonnegotiable CD's under $100,000 | 3,359** | 9,401 | n.a. | n.a. |
| Savings Certificates | 6,790 | 7,971 | 1,181 | +17.4 |
| Savings Bonds | 402 | 1,314 | 912 | +226.9 |
| Passbook Savings Deposits | 74,089 | 70,698 | -3,391 | -4.6 |
| Total Time and Savings Deposits | 102,087 | 113,261 | 11,174 | +10.9 |

Source: Federal Reserve Bulletin, August 1966, pp. 1115-1126; April, 1967, pp. 525-529.

The December 3, 1965, Federal Reserve Survey did not distinguish between nonnegotiable CD's or time deposits-open account by size of account. However, the January 31, 1967, survey indicated that roughly three-quarters of nonnegotiable CD's were under $100,000, while about half of the time deposits open account was under this figure. For convenience, all non-negotiable CD's in 1965 were listed as "consumer type." From other sources of information, we know that most of the time deposits-open account are held by "business type" groups, so all of these accounts were classified accordingly.

n.a. not applicable.

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During roughly 14 months covered in the Federal Reserve surveys, the latter sources more than accounted for the net increase in the banks' total holdings of savings and time deposits. The expansion of business-type deposits was more than offset by the decline in their passbook savings accounts. In fact, to a considerable extent, the shrinkage in passbook savings can be traced directly to the higher-yielding instruments designed by many banks to attract (or hold) time deposits. In the absence of these innovations, banks undoubtedly would have had an even more adverse experience in the competition for savings.

## Banking Structure and Specialization in Savings

The results from the Federal Reserve surveys also show a close association between size of bank and the types of instruments used to attract funds. In Table 2, member banks in the January, 1967, survey are cross-classified by size of bank and principal forms of time and savings deposit held. For convenient reference, banks are identified as follows:

| Designation | Size Group (Total deposits; millions of dollars) |
|---|---|
| Money market banks | Over $500 |
| Large banks | $100-500 |
| Medium-size banks | $ 50-100 |
| Small banks | $ 10-50 |
| Local banks | Under $10 million |

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Table 2 -- Distribution of Member Bank Time and Savings Deposits, By Size of Bank* and Type of Deposit, January 31, 1967 (in millions of dollars)

| Type of deposit | money market banks (over $500) | large banks ($100 - $500) | medium-size banks ($50 - $100) | small banks ($10 - $50) | local banks (under $10) | ALL BANKS |
|---|---|---|---|---|---|---|
| Business-Type Deposits | | | | | | |
| Negotiable CD's $100,000 or more | 10,959 | 1,581 | 239 | 202 | 36 | 13,017 |
| Nonnegotiable CD's $100,000 or more | 1,981 | 439 | 153 | 207 | 34 | 2,817 |
| Time Deposits - Open Account $100,000 or more | 1,640 | 116 | 26 | 32 | 5 | 1,819 |
| Consumer-Type Deposits | | | | | | |
| Time Deposits - Open Account Under $100,000 | 1,312 | 227 | 90 | 151 | 73 | 1,853 |
| Negotiable CD's Under $100,000 | 1,075 | 1,034 | 340 | 1,172 | 754 | 4,375 |
| Other Nonnegotiable CD's Under $100,000 | 2,652 | 1,380 | 953 | 2,931 | 1,485 | 9,401 |
| Savings Certificates | 3,249 | 1,599 | 572 | 1,698 | 853 | 7,971 |
| Savings Bonds | 979 | 137 | 58 | 116 | 24 | 1,314 |
| Passbook Savings Deposits | 31,857 | 15,711 | 5,659 | 12,867 | 4,604 | 70,698 |
| Total Time and Savings Deposits | 55,704 | 22,224 | 8,090 | 19,376 | 7,868 | 113,261 |
| Total Time Deposits | 23,847 | 6,513 | 2,431 | 6,509 | 3,264 | 42,563 |
| Business-Type Time Deposits | 14,580 | 2,136 | 418 | 441 | 75 | 17,649 |
| Consumer-Type Time Deposits | 9,267 | 4,377 | 2,013 | 6,068 | 3,189 | 24,914 |
| Percentages | | | | | | |
| (1) Ratio of Savings Deposits to Total Time and Savings Deposits | 57.2 | 70.7 | 70.0 | 66.4 | 58.5 | 62.4 |
| (2) Ratio of Time Deposits to Total Time and Savings Deposits | 42.8 | 29.3 | 30.0 | 33.6 | 41.5 | 37.6 |
| (3) Ratio of Business-Type Time Deposits to Total Time Deposits | 61.1 | 32.8 | 17.2 | 6.8 | 2.3 | 41.5 |
| (4) Ratio of Consumer-Type Time Deposits to Total Time Deposits | 38.9 | 67.2 | 82.8 | 93.2 | 97.7 | 58.5 |

Source: Federal Reserve Bulletin, April, 1967, pp. 525-529.

* Bank size is measured by total deposits in millions of dollars.

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From Table 2, the heavy reliance of money market banks on large, business-type deposits is unmistakable. As we know, the operations of these banks are national -- and even international -- in scope. Time deposits of $100,000 and over accounted for three-fifths of their total time deposits, compared with only two-fifths for all banks covered in the survey. Moreover, the ratio of business-type to total time deposits, declines dramatically as the size of the banks decreases from one-third for large banks just below the money market group to only 2 per cent for the local banks. The large denomination, negotiable CD's are of particular importance to the money market banks. These institutions had issued about 85 per cent of such CD's, an amount representing nearly half of their total time deposits. In contrast, the money market banks held less than half of the member banks' passbook savings, had issued two-fifths of the time-deposit savings certificates, and roughly one-quarter of the CD's under $100,000.

Among the next group of large banks, whose activities may reach throughout a major region of the country, great stress is placed on consumer-type time deposits as a source of funds. As shown in Table 2, this source represented three-fifths of all their time deposits. On the other hand, passbook savings accounted for two-thirds of their combined savings and time deposits. In fact, among banks in this group, one observes the smallest proportion of time to total time and savings deposits.

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As one moves further down the size scale, the reliance on time deposits becomes stronger, so that local banks obtained essentially the same proportion of their funds through time deposits as did the money market banks. Of course, the means of attracting such deposits differed substantially. Consumer-type savings certificates and non-negotiable CD's accounted for nearly three-fourths of all time deposits held by the local banks at the end of the scale, whereas the money market banks focused primarily on business-type deposits.

These divergencies in approach to competition for funds by institutions occupying different positions in the banking structure should be kept in mind. They have important implications for the behavior of interest rates and the shaping of monetary policy.

Pattern of Interest Rate Response

A rough measure of the scope and magnitude of changes in interest rates paid by member banks on time and savings deposits was provided in the Federal Reserve surveys mentioned above. It will be recalled that the Federal Reserve Board on December 3, 1965, raised from 4½ to 5½ per cent the maximum rates which member banks could pay on time deposits. The ceiling on passbook savings was kept at 4 per cent.

Between December 3, 1965, and May 11, 1966, more than half of the banks offering time deposit instruments (except open accounts) posted higher rates. In fact, about three-quarters of the banks (primarily

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money market institutions) which issued large denomination, negotiable CD's increased offering rates. On the other hand, rate advances on passbook savings were reported by less than one-fifth of the banks. But on the whole, as of May 11, 1966, the vast majority of member banks were still paying a maximum rate of 4½ per cent or less on most forms of time deposits. Thus, six months after the time deposit ceiling was raised, the generally prevailing rate was no higher than that which the banks could have offered on time deposits maturing in 90 days or more. On the other hand, virtually all of the banks with sizable amounts of large denomination, negotiable CD's had posted offering rates above 5 per cent by May 11, and a few banks were also paying more than 5 per cent on one or more types of consumer-oriented time deposits.

As the competition for savings became more intensive, rate increases also became more widespread. Between May 11, 1966, and January 31 this year, over half the banks with consumer-type time deposits (which means virtually all member banks) posted higher rates on at least one form of instrument. Most of these banks set rates at the 5 per cent ceiling which was established last September. Moreover, it seems that at least 3 per cent of the banks had to scale down their rates to 5 per cent after the new ceiling was set.

Reflecting these changes, by the end of last January, there had developed a considerable concentration of rates on consumer-type time at the 5 per cent ceiling. The number of member banks paying 5 per cent

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on at least one type instrument rose from 17 per cent in May to 52 per cent in January, and the proportion of total consumer-type time deposits in these institutions climbed from less than half to about four-fifths. Again, these proportions varied directly with size of bank -- from nearly all money market banks to roughly half for local banks. On the whole, by late January the 5 per cent rate applied to about three-fourths of all consumer-type time deposits.

There was little upward rate adjustment on passbook savings after mid-1966, because most banks were already offering the 4 per cent ceiling. Yet, just under 10 per cent of the banks (virtually all of which were small or local institutions) did increase their rates -- for the most part up to the ceiling. Thus, by the end of January, almost two-thirds of all member banks (with 90 per cent of all savings deposits) were offering 4 per cent on such deposits.

Among banks issuing business-type time deposits, about 70 per cent raised their maximum rates between May and January. Most of the increases lifted the rate to 5 per cent or above. As a result, around one-third of the banks (with about half of all business-type deposits) were paying the ceiling rate of 5½ per cent on some form of business-oriented instrument. But reflecting the fact that some of these banks offered lower rates on certain types of instruments, the maximum rate actually applied to about two-fifths of the business-type deposits.

It might also be interesting to note that already by late January,

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a number of money market banks (perhaps around 5 per cent) had reduced the maximum rates offered on business-type time deposits -- especially on large-denomination negotiable CD's. The reductions were essentially in line with the declines which had occurred in Treasury bill and other money market rates. On the other hand, few reductions had occurred on consumer-type time deposits which could be traced to easier money market conditions. Subsequently, however, reductions in the latter rates were made by a number of member banks.

A more comprehensive picture of the course of interest rate changes during 1966 can be seen in Table 3. This table shows the weighted average of interest rates paid by member banks on major types of time deposits and passbook savings in December, 1966, and January 1967. Here again it is clear that the rates paid varied directly with the size of bank. Moreover, the largest rate increases were also made by the largest money market banks on business-oriented time deposits, where rates moved up by 75 to 80 basis points. At the opposite end of the size spectrum, local banks made rate increases (essentially on consumer-type time deposits) in the range of 50-60 basis points. However, where they, too, held business-type deposits, the increase was also roughly 75 basis points. There were also sizable changes in effective rates paid on passbook savings by small and local banks. As mentioned above, the pressure of competition for savings pulled many of these institutions far more directly into the market place for savings than they had ever been.

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Table 3 -- Weighted Averages of Interest Rates Paid by Member Banks on Selected Types of Time and Savings Deposits, By Size of Bank*, December 3, 1965 and January 31, 1967.
(in percentages)



| Type of Deposit | money market banks (over $500) | | large banks ($100-$500) | | medium-size banks ($50-$100) | | small banks ($10-$50) | | local banks (under $10) | | ALL BANKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1965 | 1967 | 1965 | 1967 | 1965 | 1967 | 1965 | 1967 | 1965 | 1967 | 1965 | 1967 |
| Business-Type Deposits | | | | | | | | | | | | |
| Negotiable CD's $100,000 or more | 4.50 | 5.25 | 4.44 | 5.38 | 4.37 | 5.36 | 4.28 | 5.11 | 4.19 | 4.94 | 4.49 | 5.26 |
| Nonnegotiable CD's $100,000 or more | ** | 5.31 | ** | 5.21 | ** | 5.09 | ** | 4.99 | * | 4.80 | ** | 5.25 |
| Time Deposits - Open Account $100,000 or more | 4.48 | 5.20 | 4.34 | 5.24 | 4.06 | 4.93 | 4.00 | 4.86 | 3.89 | 4.42 | 4.41 | 5.19 |
| Consumer-Type Deposits | | | | | | | | | | | | |
| Time Deposits - Open Account Under $100,000 | ** | 4.98 | ** | 4.85 | ** | 4.68 | ** | 4.62 | ** | 4.56 | ** | 4.91 |
| Negotiable CD's Under $100,000 | 4.49 | 5.00 | 4.33 | 4.95 | 4.23 | 4.91 | 4.17 | 4.83 | 4.12 | 4.72 | 4.29 | 4.88 |
| Other Nonnegotiable CD's Under $100,000 | 4.48 | 4.97 | 4.32 | 4.90 | 4.24 | 4.82 | 4.15 | 4.76 | 4.07 | 4.70 | 4.30 | 4.83 |
| Savings Certificates | 4.35 | 4.97 | 4.21 | 4.94 | 4.21 | 4.84 | 4.09 | 4.77 | 4.06 | 4.65 | 4.16 | 4.88 |
| Savings Bonds | 4.50 | 4.98 | 4.14 | 4.86 | 4.50 | 4.84 | 4.21 | 4.79 | 4.38 | 4.79 | 4.46 | 4.94 |
| Passbook Savings Deposits | 3.96 | 3.99 | 3.88 | 3.95 | 3.75 | 3.89 | 3.65 | 3.80 | 3.56 | 3.73 | 3.85 | 3.92 |

Source: Federal Reserve Bulletin, August 1966, pp. 1115-1126; April, 1967, pp. 525-529

* Bank size is measured by total deposits in millions of dollars.

** The December 3, 1965 Federal Reserve Survey did not distinguish between nonnegotiable CD's or time deposits-open account by size of account. However, the January 31, 1967 survey indicated that roughly three-quarters of nonnegotiable CD's were under $100,000, while about half of the time deposits-open account was under this figure. For convenience, all nonnegotiable CD's in 1965 were listed as "consumer type." From other sources of information, we know that most of the time deposits-open account are held by "business type" groups, so all of these accounts were classified accordingly.

Note: Weighted average interest rates were computed using as weights the amount of deposits of each type on which banks offered maximum interest rates ranging from 3.00 to 5.50 per cent.

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This result was a climb of 15 to 20 basis points in the effective rates paid on passbook accounts.

Interest Payments and Bank Operating Expenses

The rise in interest rates analyzed above (as one would expect) produced sharp increases in member bank operating costs in 1966. Last year, total operating expenses of these institutions rose by $1,735 million. The single most important factor behind this rise (again as one would expect) was an advance of $999 million in the amount of interest paid on time deposits, accounting for almost three-fifths of the net increase in operating cost. Thus, last year saw another increment in the steady climb in the ratio of interest on time deposits to member banks' total operating expenses, a climb that has lifted the proportion from 25 per cent in 1960 to 44 per cent in 1966. Compared with total operating revenue, such interest payments also inched up further in 1966 -- to 29.6 per cent from 27.9 per cent in the previous year. Again the divergent experience of banks of different size is also clear: among money market banks, interest payments on time deposits in 1966 represented 47 per cent of operating expenses; the ratio declined to 42 per cent for small banks and to only 28 per cent for local institutions.

An even better way to weigh the changing impact of interest payments on time deposits is to compare such costs to the volume of deposits outstanding. In 1966, this ratio was 3.70 per cent for all member banks -- against 3.47 per cent in the previous year. Here also the ratio varied

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directly with the size of the bank -- from roughly 3.5 per cent for banks in the smallest category to about 4.5 per cent for those in the largest group.

While these average rates are informative, it is even more instructive to focus on the additional interest cost the banks incurred relative to the additional time deposits gained. These added interest costs went not only to attract new deposits but also to maintain balances already at the banks. Such an analysis is summarized in Table 4, showing the ratio of changes in interest payments to changes in time deposits in 1965 and 1966. Several features stand out in the table: first, for all member banks, the additional cost of attracting time deposits -- which also meant paying more on deposits already in existence -- was about 10 per cent in 1966; or approximately double that recorded in 1965. Secondly, among money market banks, the extra cost ratio jumped to almost 16 per cent last year -- over three times what it was in 1965 when it was essentially the same as that for all banks combined. Thus, once more we see the dramatic effect of the enormous effort put forth by the biggest banks to attract and maintain funds. While other member banks also experienced year-to-year increases in the additional cost of time deposits, the increments were much more modest -- centering between 6 and 7 per cent.

In passing, it is interesting to compare the average and additional costs of time account funds for member banks with those for savings

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Table 4--Time Deposits and Interest Payments by Member Banks, By Size of Bank,* 1964 - 1966 (in millions of dollars)

| Size of Bank | Time Deposits | | | Interest Payments | | | Change in Time Deposits | | Change in Interest Payments | | Ratio of Change in Interest Payments to Change in Time Deposits (Per cent) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1964 | 1965 | 1966 | 1964 | 1965 | 1966 | 1964-65 | 1965-66 | 1964-65 | 1965-66 | 1964-65 | 1965 |
| All Banks | 103,455 | 120,844 | 130,486 | 3,355 | 4,210 | 5,211 | 17,389 | 9,642 | 855 | 1,001 | 4.9 | 10.4 |
| Under $2 | 259 | 222 | 200 | 7 | 6 | 6 | 37 | -22 | -1 | + | -2.7 | - |
| $2 - 5 | 2,465 | 2,514 | 2,398 | 72 | 76 | 78 | 49 | -116 | 4 | 2 | 8.2 | - |
| $5 - 10 | 4,839 | 5,158 | 5,722 | 143 | 160 | 190 | 319 | 564 | 17 | 30 | 5.3 | 5.3 |
| $10 - 25 | 9,488 | 10,616 | 11,729 | 285 | 335 | 400 | 1,128 | 1,113 | 50 | 65 | 4.3 | 5.8 |
| $25 - 50 | 6,867 | 7,979 | 8,892 | 211 | 255 | 312 | 1,112 | 913 | 44 | 57 | 4.0 | 6.2 |
| $50 - 100 | 7,539 | 8,267 | 9,062 | 235 | 271 | 327 | 728 | 795 | 36 | 55 | 5.0 | 6.9 |
| $100 - 500 | 20,205 | 22,514 | 24,828 | 638 | 758 | 915 | 2,309 | 2,314 | 120 | 157 | 5.2 | 6.8 |
| $500 and over | 51,792 | 63,574 | 67,655 | 1,764 | 2,347 | 2,983 | 11,782 | 4,081 | 583 | 636 | 4.9 | 15.5 |

Source: Federal Reserve Bulletin, May, 1965, p. 758; June, 1966, p. 896, and May, 1967, p. 866.

* Size of bank is measured by total deposits in millions of dollars.
\+ Less than $500 thousand.

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and loan associations. The figures are (Per cent):

| | 1965 | | 1966 | |
|---|---|---|---|---|
| | Average Cost | Additional Cost | Average Cost | Additional Cost |
| Member banks | 3.5 | 4.9 | 3.7 | 10.4 |
| S&L's | 4.3 | 4.6 | 4.5 | 6.2 |

Thus, member banks' average cost in both years was below that incurred by S&L's, and in 1965 there was little difference in the costs of the extra funds obtained by both groups of institutions. However, for banks in 1966 such costs rose much more sharply than they did for S&L's. In one sense, this result may appear surprising. The greater flexibility banks possess in tailoring their instruments to meet the desires of different types of depositors should enable them to economize on interest costs by paying lower rates to less sensitive customers. Yet, the above figures suggest the contrary. Actually, however, if one puts aside the money market banks, the additional cost of time deposits for the rest of the banks is seen to be much closer to that for S&L's. This latter comparison seems more in order, since the average size S&L's is much closer to the average size of member banks once the money market institutions have been excluded.

## Interest Costs and Bank Profits: Operating Ratios

The foregoing analysis has already forecast the effects on bank profits of differences in the degree of reliance on time deposits as a source of funds: in general, the greater this reliance, the lower the rate of profit. Several types of evidence helps to document this conclusion.

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The first is summarized in Table 5, showing the variation in bank profits in relation to the proportion of member bank's total deposits held in time accounts. For this purpose, profits are defined as net current earnings before income taxes (which abstracts from the effects of trading in securities, loan losses and recoveries, and similar adjustments). In the first calculation, profits are expressed as a percentage of total assets. For all member banks, this profit ratio was 1.19 per cent in 1965 and 1.26 per cent in 1966. Also in the table, banks are cross-classified by size and the ratio of time to total deposits.

Several conclusions are inescapable: for any given size group of banks, the higher the ratio of time to total deposits, the smaller is the rate of profit (not necessarily absolute profits). Secondly, for a given proportion of time deposits, the profit rate tends to rise steadily as the size of bank increases. Thus, the economics of scale associated with larger institutions seem to compensate for some of the adverse effects of higher time deposit costs on bank profits. Nevertheless, the offset is by no means complete.

In another sense, however, some bank managements may feel that -- despite the adverse effect of time deposit growth on profits in relation to assets -- it is still worthwhile to expand such deposits. This may be so because a larger scale of operations may lift profits in relation to bank capital. However, as can be seen in the second calculation in

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Table 5 -- Relation of Time Deposits to Bank Profitability, Member Banks, By Size of Bank* and Ratio of Time to Total Deposits, 1966

| Size Group | Net Current Earnings Before Taxes As a Percentage of: Total Assets | Total Capital Accounts |
|---|---|---|
| Banks with ratios of time to total deposits of under 25% | | |
| 2 and under | 1.45 | 11.6 |
| 2 - 5 | 1.60 | 14.5 |
| 5 - 25 | 1.68 | 17.8 |
| over 25 | 1.72 | 19.8 |
| Banks with ratios of time to total deposits of 25 - 50% | | |
| 2 and under | 1.22 | 11.1 |
| 2 - 5 | 1.29 | 13.5 |
| 5 - 25 | 1.35 | 16.6 |
| over 25 | 1.35 | 17.6 |
| Banks with ratios of time to total deposits of 50% and over | | |
| 2 and over | .84 | 8.4 |
| 2 - 5 | 1.11 | 12.3 |
| 5 - 25 | 1.15 | 15.0 |
| over 25 | 1.12 | 16.0 |
| All Banks | 1.26 | 15.0 |

Source: Federal Reserve Bulletin, April, 1967, p. 661.

*Bank size is measured by total deposits in millions of dollars.

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Table 5, bank profits tend to decline in relation to capital as the proportion of time to total deposits increases for a given size of bank. Thus, if the above motivation underlies much of the effort to attract time deposits, the hopes of some banks may be disappointed.

Time Deposit Cost and Net Operating Profit: A Statistical Analysis (*)

Still another attempt was made to weigh the relationship of interest cost on time deposits with net operating income. After eliminating banks involved in mergers or which showed exceptionally large year-to-year changes, the experiences of 5,735 member banks in 1966 remained for analysis. In this study, the task was to unravel the effects of several factors working jointly to influence bank profits. For this purpose, bank profits were again defined as:

> The ratio of net current earnings before taxes as a percentage of total assets.

The factors associated with time deposits and assumed to have a major bearing on the rate of profit were:

> The ratio of interest payments on time deposits to the amount of time deposits held.
>
> The rate of growth of time deposits in 1966.
>
> The proportion of total deposits held as time accounts.

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(*) I am indebted to Mr. Thomas D. Thomson of the Federal Reserve Board's staff for undertaking the computer work required to obtain the results on which this part of the discussion is based.

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- The size of bank.

- The State in which the bank is located.

In carrying out the study, the banks were divided into six size groups based on total deposits (millions of dollars): 2-5M; 5-10M; 10-25M; 25-50M; 50-100M; and over 100M. Forty States with a significant number of banks were also identified.

The analytical method employed made it possible to separate the effect of time deposit cost on profits from the effects of the other factors listed above.* The results of this analysis suggest that in 1966 bank profits / varied inversely with the cost of time deposits. For the nearly 6,000 banks included in the study, a 1.00 per cent rise in the interest ratio is associated with a 0.33 per cent fall in the income ratio. The rate of growth of time deposits has a small negative influence on the profit rate, and the proportion of time to total deposits has a large negative influence. In this analysis also bank size has a positive influence on the rate of profit. Here again the effects of economics of scale are observable -- the larger the bank, the more other factors /the adverse influence of interest cost on bank profits. offset The State of domicile also seems to make a significant difference in bank profits. The States were identified separately in order to isolate the effect of State banking legislation and State differences in banking customers and

*In technical terms, the analysis used was a multiple regression equation based on cross section data for 5,735 member banks. A statistically significant negative relationship was found between the ratio of interest cost on time deposits to total time deposits and the ratio of net operating income to total assets.

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practices. While the results of including the States are not clear-cut, it seems obvious that State differences do have a bearing on bank profitability.

Thus, in general, the results of the analytical examination sketched above seem to reinforce the conclusions reached earlier: higher rates on time deposits tend to have an adverse impact on bank profits -- an impact that is moderated by the economies associated with large-scale banking operations.

## Implications for Bank Management and Public Policy

As mentioned at the outset, the analysis presented in this paper poses several questions which are worthy of consideration by both bank management and bank supervisory agencies. With respect to banks, the results suggest that they should take a good hard look at the real contribution which a vigorous time deposit program actually makes to the profitability of their institutions. I am personally convinced that virtually all bankers already do this, so this observation may seem gratuitous. Nevertheless, the weight of the evidence assembled here -- as a minimum -- should encourage an alert bank management to review its own operation.

At the same time, I also want to stress that nothing I have said here should lead you to conclude that attracting time deposits is unprofitable for a bank in any absolute sense. In the first place, important factors (such as loan and investment policies) not studied

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specifically obviously have a bearing on bank profits. Moreover, it must be remembered that member banks came into 1966 with an asset portfolio that was built up during periods of lower interest rates. While the pressure of competition tends to produce rather rapid adjustments in the cost of funds, the income received loans adjusts with a considerable time lag. Although a sizable proportion of the banks" assets turns over each year, this is probably still not large enough to enable all of them to employ their new resources in ways to compensate quickly and completely for the higher cost of funds during a period of rising interest rates. On the other hand, they may well catch up in later years when the cost of money stabilizes or turns down.

The results of this examination also demonstrate that no banker -- no matter how small and isolated an operation he may think he conducts -- can truly shield himself from the winds of competition originating in the Nation's central money markets. Even small savers have exhibited a considerable degree of sensitivity to interest rate differentials, and they can be expected to respond increasingly to even slight changes in investment opportunities. This means that all bankers will have to operate in a more intensively competitive -- but also a more efficient -- market place for savings.

For all the increased depositor sensitivity that small banks face, however, the analysis has pointed up a sharp and significant distinction between the largest banks, located in central money markets but whose operations are even international in scope,and those institutions serving primarily their own regions and local communities. Because of the heavy

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reliance of the money market banks on large and typically hypersensitive business-type time deposits as a source of funds, I think personally that we should give serious thought to the possibility of treating them separately for the purpose of regulating maximum interest rates payable on time deposits. It will be recalled that when the Federal Reserve Board set a 5 per cent ceiling on comsumer-type deposits last September, it continued to permit member banks to pay up to 5½ per cent on large-denomination time deposits. At the time, this distinction was considered temporary, designed primarily to avoid substantial run off of such deposits while attempting to moderate the generally excessive competition for savings which was then prevailing. In the long-run, however, this particular form of focusing on money market banks may not be the proper one. Nevertheless, I think some means of regulating these institutions should be found which would permit them to pay rates on those types of time deposits on which they depend so heavily that are most competitive with yields on money market instruments. Such rate ceilings on the largest time deposits may well have to remain higher than those payable on the consumer-type deposits.

On the other hand, the lending behavior which these money market banks may adopt (perhaps reflecting their relatively enhanced ability to compete for time deposits) may on occasion post a problem for the conduct of general monetary policy. In fact, this was essentially the situation which emerged last year and which led to the establishment of higher

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reserve requirements for banks with time deposits in excess of $5 million. In the long-run, to insure the effectiveness of monetary management, it may be necessary to maintain this or some other variety of differential restraint on these institutions. While the analysis presented in this paper does not focus directly on the latter issues, it is clear that such questions would have to be resolved before any particular course of action is adopted.

In the meantime, however, the results of the present examination do support the need for regulatory machinery which would allow for separate treatment of those institutions engaged in the mobilization of large, hyper-rate, sensitive time deposits. For this reason, among others, I am personally in favor of an extension of the one-year authority which Congress last September gave to the Federal bank supervisory authorities to set maximum rates on a number of bases -- so long as they are reasonable. In the meantime, I am pleased that -- at least to date -- those agencies which supervise commercial banks have not used the existing legislation to undertake a roll-back in the maximum rates which banks can pay for time deposits. Certainly in the present environment -- and in the face of far greater sen sensitivity of depositors to rate differentials -- I think personally that such a course of action would be unwise.

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