

ECONOMIC COMMENTARY

Deposit Rates and Local Markets

by Paul R. Watro

measure, explained between 27 percent and 42 percent of the variability in deposit rates for MMDAs, SNOWs, and CDs (table 2). Individual variables generally behaved as anticipated.

Deposit composition helped to explain rate differences for all the deposit accounts examined. Institutions holding lower percentages of deposits in demand and NOW accounts paid higher deposit rates. Such institutions presumably had greater demand for MMDAs, SNOWs, and CDs. In addition, institutions operating in faster growing markets paid higher rates on personal MMDAs and SNOWs. Apparently, population growth caused the supply of deposits to increase by less than the demand for deposits.

Deposit rates for personal MMDAs and CDs were lower at institutions with more offices per dollar of deposits in the market. More offices per dollar of deposits reflect greater convenience for depositors.

Institutions extending more loans and generating higher revenues had greater demand for deposits since they could earn more on these funds than other institutions. Loan growth helped to explain higher rates on personal MMDAs, SNOWs, and CDs, and higher average revenues contributed to higher rates on business MMDAs.

Finally, depositors earned higher rates in less concentrated markets. Whether measured by the HHI, or by the four-institution concentration ratio, market structure was important in explaining rate differentials among the institutions for SNOWs and MMDAs.⁹ In fact, market concentration substantially improved the overall ability of the model to explain rate differences for MMDAs and SNOWs. When the HHI was added to the relationship, the explanatory power (adjusted R^2) increased from 0.28 to 0.36 for personal MMDAs, from 0.35 to 0.41 for business MMDAs, and from 0.23 to 0.27 for SNOWs.

9. Results using the four-institution concentration ratio were not reported here because they were generally consistent with the findings using the HHI. Moreover, the rate variance for each type of deposit examined was greater between markets than within markets.

Rates paid on CDs, however, were not statistically associated with local market structure measures.¹⁰ One interpretation of this finding is that the markets for CDs might have been in disequilibrium when the survey was conducted (one month after rate ceilings and minimum balance requirements were removed). Another interpretation is that counties and metropolitan statistical areas are not good for defining consumer CD markets in Ohio.¹¹

Conclusion

Findings suggest that local market concentration affects rates paid on SNOWs and MMDAs. Higher rates were paid by depository institutions operating in more competitive areas as reflected by market structure measures. Although rate deregulation has certainly caused deposit rates to be more sensitive to money market conditions, the local competitive environment remains important.

10. Market structure measures were also tested with rates paid on each type of CD and found statistically insignificant.

11. Deposit surveys have traditionally shown that the area from which banks draw CDs is larger than the area from which they draw transaction and savings deposits. The number of transactions on these accounts is virtually limited to two: purchase and withdrawal.

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Commercial banks and thrift institutions have always competed aggressively for deposits, but in today's market they must increasingly rely on rate competition to attract depositors. They have to do this because recent changes in regulations have transformed the deposit market.

Authorization of money market accounts (MMDAs) and Super-NOW accounts (SNOWs), and the removal of rate ceilings and minimum balance requirements on certificates of deposit (CDs), have changed the ground rules for depository institutions.¹

Rate deregulation, technological improvements in telecommunications, and increased consumer sophistication have reduced the isolation of local markets and increased rate competition. Consumers appear more interest-rate-sensitive and less convenience-conscious in choosing a depository institution. It could be argued that the geographic market for deposits has become nationwide, even though interstate branching is not possible. Many consumers now hold savings in money market mutual funds that cater to a nationwide market. Some large depository institutions advertise deposit rates throughout the United States. In spite of these changes, however, noticeable deposit rate differences still exist among institutions operating in different geographic areas.

This *Economic Commentary* documents rate differences for a sample of Ohio depository institutions located in traditionally different markets. Some of these rate differences can be attributed to variations in non-rate features, and to variations in transaction costs and demand conditions. In addition, however, commercial banks and thrifts located in more competitive (less concentrated) local markets tend to pay higher deposit rates.

Identifying Markets

Depository institutions provide different products to many customers, and the geographic market area can vary from product to product, and from customer to customer.

The market area for large corporate loans and deposits, for instance, is national and often international in scope. Buying and selling large negotiable CDs (over \$100,000) is usually conducted electronically. Location generally does not alter the transaction costs, which usually represent an insignificant portion of the yield. In contrast, purchasers of small CDs and other consumer deposits incur transaction costs such as time and transportation, which are directly related to location and can be significant. Because of these transaction

costs, the alternatives of consumers are generally limited to institutions that operate in an area in which they live, work, or shop. It is generally too time-consuming and expensive for most consumers to consider depository institutions outside of their immediate area.

Regulatory agencies such as the Federal Reserve System are required to prevent bank mergers and acquisitions that would have substantially adverse effects on banking competition. After specifying the product market, regulators must delineate the relevant geographic banking market. This area should include all institutions whose price and output decisions react to the same set of supply and demand factors. The Federal Reserve System defines a geographic banking market as an area in which buyers and sellers of banking services can interact without significant transaction costs.² Such an area generally contains one community that is the center of economic activity and surrounding communities that are economically integrated with the hub city to a large degree.

This determination is made through the analysis of many factors, including the absolute and relative size of the communities, population density, transportation networks, commuting patterns for employment and shop-

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The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

1. MMDAs were introduced in December 1982; SNOWs were authorized in January 1983, and rate ceilings and minimum-balance requirements were removed from 32-day to 2½-year CDs in October 1983. Rate and balance restrictions for longer-term CDs were lifted in earlier years.

2. The Federal Reserve's approach differs from the approaches used by the Justice Department and other federal regulators. See John D. Wolken, *Geographic Market Delineation: A Review of The Literature*, Staff Studies 140, Washington, DC: Board of Governors of the Federal Reserve System, October 1984.

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ping, overlap of media coverage, natural and political boundaries, and economic growth. In addition, the pricing behavior and marketing efforts of banks are considered, along with the areas in which they operate and from which they draw their business.

Institutions operating in the same banking markets will tend to pay the same deposit rates. However, rate differences do not necessarily imply that institutions operate in separate markets. The concept of a market assumes a homogeneous product, but competing institutions can use specialization and product differentiation to attract and retain customers.

Because deposit rate competition traditionally has been limited by regulation, product differentiation has become quite important for depository institutions. Such nonrate factors as office location, banking hours, quality, and complementary services may give one institution an advantage over others in attracting and keeping customers.

For example, a SNOW may appear to be a standard product among depository institutions, but the availability of direct payroll deposit and automatic teller machines and the time it takes to cash a check, or to make a deposit, may indeed alter consumer perception of the cost or value of holding a deposit. Such nonrate differences, including differences in balance requirements, and in service charges, may explain variations in consumer deposit rates among depository institutions in the same market area.

Pricing Factors

The interest rate that an institution is willing to pay for deposits depends on a variety of factors:

- Higher minimum balance requirements and monthly maintenance and per item fees for deposit accounts tend to reduce the supply of deposits, thus requiring higher rates to attract customers.

- Depositors also incur implicit costs of opening and maintaining accounts that are difficult to measure. A rough measure of inconvenience and transportation costs is the number of offices that an institution operates in the market relative to its market deposits. More offices per dollar of deposits should reflect more convenience and lower transaction costs for depositors. Assuming a tradeoff between deposit rates and convenience, depositors would supply an equal amount of funds at different rates, provided the lower rate were offset by more convenience or lower transaction costs.

- Institutions operating in faster growing markets might pay lower rates because they enjoy a growing pool of potential new customers.³

Institutions with greater demand for deposits may pay higher rates. Demand for deposits is derived from the demand for the institution's loans, which determine the value of the deposit input to the organization. To maximize profit, an institution should acquire deposits (and other liabilities) until the additional cost per dollar is equal to the additional revenue gained from its use. To capture demand for deposits, several factors were considered:

- The institution's return on average assets and loan growth in 1983 are used to estimate its investment and loan opportunities. Higher revenues and faster loan growth would enhance the institution's demand for deposits.

- The administrative and operating costs of acquiring funds and making loans and investments should affect the value of deposits. More efficient

investors and lenders have an incentive to pay higher rates to attract more deposits. Asset size is employed in the analysis to capture any rate differences due to operating efficiencies.

- Deposit demand may vary by type of account. A "preference" or "niche" for certain deposits would motivate an institution to pay a higher rate. For example, institutions holding a smaller percentage of demand and NOW deposits would have stronger demand for other types of deposits.

In addition to the preceding factors, prices should be influenced by market structure—by the number and relative size of competitors in the market. If traditional local market definitions are still relevant after deposit rate deregulation, it should be possible to detect deposit rate differences between more and less concentrated market areas. Theory implies that institutions would have to pay higher deposit rates in more competitive markets. There is no unambiguous measure for market structure, but researchers typically employ either a three- or a four-firm concentration ratio, or the Hirschman-Herfindahl Index (HHI).

A concentration ratio describes the portion of the market held by the largest institutions. Such a ratio is simple to calculate, and has been accepted by the courts as a measure of competition. The HHI, which takes into account both the number and the size distribution of all competitors in the market, is a more comprehensive measure of market structure.⁴ It is computed by adding the squared market shares of competing institutions. The HHI attains its maximum value of 10,000 when a market has only 1 institution. The value of HHI drops with increases in the number of competitors and with size equality among market participants.

The Sample and Rates

This study used pricing information on MMDAs, SNOWs, and on small CDs for a sample of depository institutions in Ohio. Commercial banks

Table 1 Deposit Rates and Balance Requirements
As of November 1983

	MMDA			
	Personal	Business	Super-NOW	Average CD
Interest rate paid (%)				
Average	8.36	8.25	7.23	9.52
Maximum	9.25	9.25	8.80	10.17
Minimum	7.10	6.80	6.00	8.67
Minimum balance requirement (\$)				
Average	2,571	3,007	2,537	1,257
Maximum	5,000	10,000	5,000	6,167
Minimum	2,500	2,500	2,500	1

and thrift institutions offer these accounts to a common group of customers. The geographic areas where they generally market these accounts, and where consumers and small firms can conveniently find alternative depositories, are assumed to be represented by metropolitan statistical areas and counties outside of urban areas. These areas provide the traditional definitions of local markets employed in banking structure research.

The sample of depository institutions referred to in this *Economic Commentary* includes 37 commercial banks and 34 thrift institutions.⁵ These institutions had deposits ranging from \$4.3 billion to \$16.6 million and are headquartered in 28 local market areas. Deposit concentration for banks and thrifts as measured by the HHI, varied from 425 to 3,469 in these markets.

Deposit rates and minimum balance requirements varied by type of account and among institutions (table 1). Rates showed more variability than minimum balance requirements, particularly for MMDAs and

SNOWs, which have regulatory minimums. CDs were less liquid than MMDAs and SNOWs and paid the highest average rate.⁶ Among the individual CDs examined, longer-term funds earned higher returns.

Higher paying MMDAs still differ from SNOWs in several ways. MMDAs have a broader customer base, limited transaction privileges, and either no or lower reserve requirements. In contrast, SNOWs have higher reserve requirements, unlimited check-

Table 2 Regression Results for Deposit Rates
As of November 1983

	MMDA			
	Personal	Business	Super-NOW	Average CD
Minimum balance requirement	Positive	Positive	Negative	Negative
Service charge dummy	Not included	Not included	Positive	Not included
Offices per deposits	Negative ^b	Negative	Negative	Negative ^c
Population growth	Positive ^a	Positive	Positive ^b	Negative
Average revenue	Positive	Positive ^b	Negative	Negative
Loan growth	Positive ^b	Positive	Positive ^a	Positive ^c
Deposit composition	Negative ^c	Negative ^c	Negative ^c	Negative ^c
Asset size	Negative	Negative	Negative	Negative
Hirschman-Herfindahl index	Negative ^c	Negative ^c	Negative ^b	Positive
Adjusted R ²	0.36	0.41	0.27	0.42

a. Statistically significant at 10 percent level.
b. Statistically significant at 5 percent level.
c. Statistically significant at 1 percent level.

writing capacity, and are available only to individuals and to nonprofit organizations. The slightly lower MMDA rate for businesses may be

attributed to the fact that institutions have to hold required reserves only on business MMDA balances.

Institutions in the sample also imposed lower balance requirements on CDs, particularly for longer-term funds. Balance requirements for MMDAs and SNOWs were typically at the regulatory minimum levels of \$2,500 at the time of the survey.⁷ Service charges were not levied on CDs and were uncommon for MMDAs. About one in every five institutions, however, charged either a monthly or a per transaction fee for SNOWs; several institutions had both.⁸

Results

Local market structure still influences deposit rates. Even taking into account minimum balance requirements, service fees, convenience, market growth, average revenues, loan growth, institution size, and deposit composition, market structure has a significant impact on deposit rates.

The effect of all the specified variables including a market structure

3. Market growth is measured by the percentage of change in population from 1976 to 1982.

4. For antitrust purposes, the Justice Department uses the HHI to classify markets into 3 groups: highly concentrated (HHI over 1,800), moderately concentrated (HHI between 1,000 and 1,800), and unconcentrated (HHI below 1,000). According to its guidelines, the Justice Department is unlikely to challenge any merger in unconcentrated markets, but might attempt to block a merger in moderately and highly concentrated

markets, if the transaction would cause the HHI to increase by more than 100 points and 50 points, respectively.

5. The survey was conducted in November 1983 and included a sample of 112 depository institutions in the Fourth Federal Reserve District. However, this study was limited to those institutions in which data were readily available.

6. Pricing information was collected on 91-day, 6-month, 1-year, 2½-year, and 4-year CDs. However, this study uses an average CD rate and average CD minimum balance for each institution, since many of the sampled institutions did not specifically offer all types.

7. The statutory minimum balance requirements on MMDAs and SNOWs were reduced to \$1,000 in January 1985 and will be lifted completely in January 1986.

8. A dummy variable is used to control for the influence that service charges (fixed or variable) might have on SNOW rates.