

# September 1967

Philadelphia's Desire to Acquire  
Deposit Variability: A Banker's Headache

# Business Review

Federal Reserve Bank of Philadelphia



An article in the May issue of the Business Review surveyed Philadelphia's status as a center for corporate headquarters. For years the region has ranked high among metropolitan areas as a headquarters complex. The article, however, pointed to a number of signs that the area's headquarters leadership was beginning to wane. Given many possible reasons for a home-office decline, we have taken a closer look at one of the suspected causes.

# PHILADELPHIA'S DESIRE TO ACQUIRE

by Elizabeth P. Deutermann

Headquarters of corporations are an economic asset to a community. Every sign of decline in these nerve centers of corporate control is of great concern to a region's business fraternity. Philadelphia's fraternity is no exception.

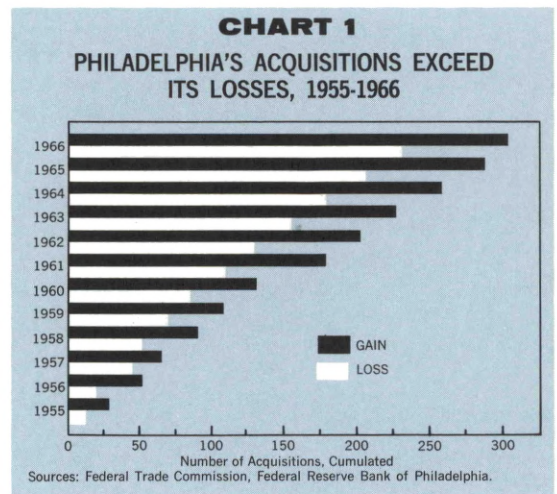
Recently, indications have emerged which show Philadelphia is slipping behind its competitors as a center of corporate headquarters.<sup>1</sup> The obvious question is why. If one were to survey local business leaders, a single factor would carry considerable weight; that is, headquarters are vanishing as corporations sell themselves to companies headquartered outside of the region.<sup>2</sup> And, it is said, the selling exceeds buying by local headquarters of companies outside of the region. The result is a loss of headquarters. In other words, local acquisitions of firms outside the region are not keeping pace with outside acquisitions of firms in the Delaware Valley. So goes local thinking.

## The balance sheet

It may therefore come as somewhat of a surprise

<sup>1</sup>See "Headquarters: Centers of Corporate Control," Business Review, Federal Reserve Bank of Philadelphia, May, 1967.

<sup>2</sup>Philadelphia, throughout this article, refers to the eight-county Philadelphia Standard Metropolitan Area. It includes the counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and the counties of Burlington, Camden, and Gloucester in New Jersey.



to find that Philadelphia is a net gainer in this era of merger fever. During the past 12 years (1955-1966) firms headquartered in Philadelphia acquired *more* corporations from outside of the region than they lost to the rest of the nation.<sup>3</sup> Philadelphia headquarters acquired 306 corporations from cities and towns outside of the Delaware Valley. Over the same time span 233 Philadelphia-based headquarters were acquired by companies outside of the region. In terms of sheer numbers, Philadelphia's desire to acquire resulted in 73 net acquisitions. (See Chart 1).

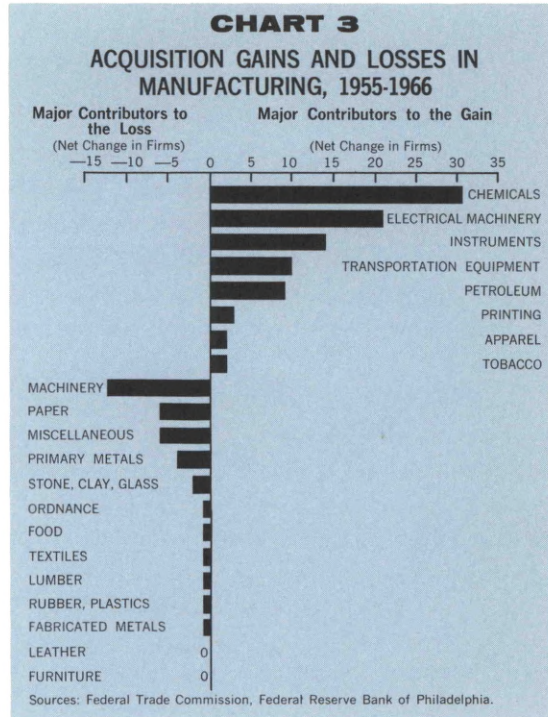
<sup>3</sup>Full acquisitions only, as opposed to partial, are included in these comparisons.

**At the source**

Industries, nationally or locally, are conventionally grouped into the four sectors shown in Chart 2. From the chart we see which sectors were responsible for the net gain in acquisitions, and to what degree. Of these four major sectors, only wholesale and retail trade combined chalked up a net loss. Manufacturing corporations of the region were primarily responsible for the total net gain in acquisitions.

Chart 2 also points to the relative importance of manufacturing in the region's merger activity. Of all local acquisitions over the past 12 years, three-fourths of the acquirers and of the acquirees were manufacturing corporations.

While manufacturing is responsible for this region's net acquisition success, a few important manufacturing industries have provided the real strength. Within the manufacturing sector, over half of the major industries experienced a net loss to the region through the acquisition route. On the other hand, as can be seen in Chart 3, eight other industries more than compensated for

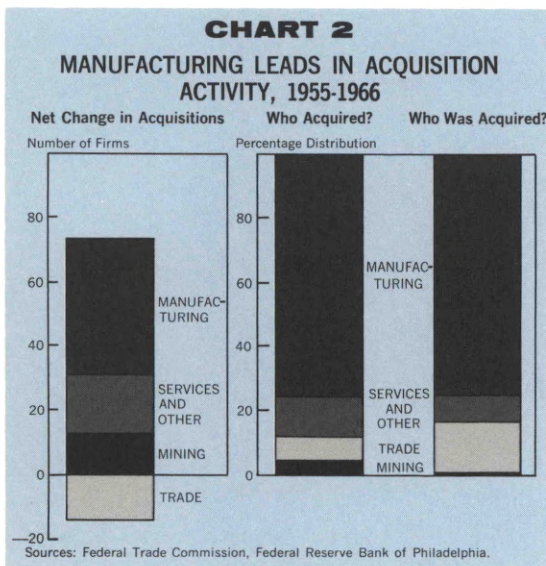


the larger loss group. The net gain in acquisitions by the chemical industry alone almost offset the total impact of the losers. Along with chemicals, the electrical machinery and instrument industries stand out as the area's acquisition activists.

**What's it worth?**

Merger head-counting has documented a total net gain in acquisitions to the Philadelphia metropolitan area. Similarly, such head-counting has demonstrated a net gain in manufacturing acquisitions. But we beg an important question. What is this regional gain worth in dollars and cents?

For all sectors of the economy, we just don't know. But for the most important one, manufacturing, we do. And unfortunately the numer-



ical gain in manufacturing acquisitions has resulted in a monetary loss. (See Chart 4.)

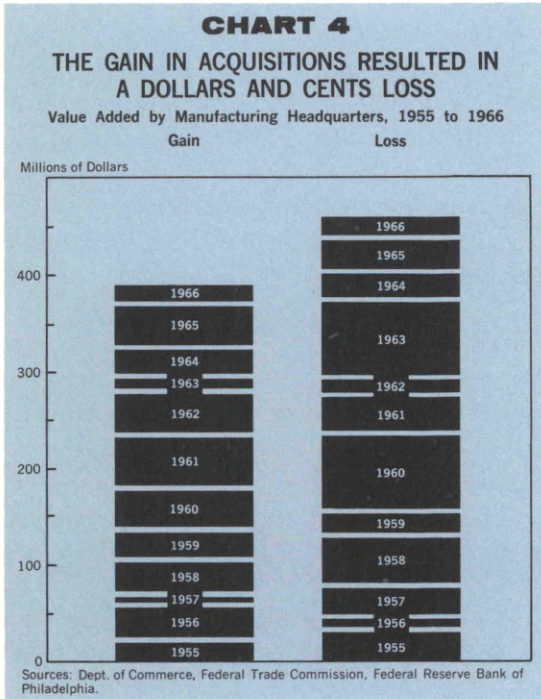
Historically, manufacturing has provided the base for the region's economy. It supports the area's service industries. In Philadelphia it generates more jobs than any other sector. And now we see that it is responsible for over three-fourths of the region's acquisition activity. These factors give added significance to a net acquisition gain in manufacturing which produced a dollars-and-cents loss to the region.

Over the past 12 years, headquarters of manufacturers in Philadelphia acquired companies outside of the region which, through their production, added to the nation's gross national product. This gave Philadelphia headquarters new control over that production—measured as value added. At the same time, a fewer number

of manufacturing companies in this region were being purchased by headquarters outside of the Delaware Valley. But the smaller number of firms this region lost was worth more in terms of production. Net numbers of acquisitions ran counter to their net value.

Through the merger process, Philadelphia-headquartered firms lost 18 per cent more than they gained in control over manufacturing, as measured by value added. This region's headquarters acquired manufacturing headquarters from outside of the area whose firms generated \$392 million worth of new production. But now look at the other side of the ledger, as shown in Chart 4. During the same time period, local manufacturing headquarters which had been responsible for \$461 million worth of new production merged into companies outside of the region.<sup>4</sup>

As a result of the acquisition process, Philadelphia was a net loser of corporate control over productive activity to the tune of \$70 million in value added. This is the value of the 18 per cent net loss experienced by Philadelphia home offices in control over manufacturing activity since 1955.



**Letting in some air**

To this point, we have been considering Philadelphia's acquisition and merger experience in a relative vacuum. Unfortunately, comparable information on other metropolitan areas does not exist. However, using the national experience as a backdrop may shed some light on Philadelphia's acquisitive economy.

For example, of all acquisitions in the United States and in Philadelphia over the past dozen years, the same four sectors of the economy were relatively important. That is, for both the nation

<sup>4</sup>In the vernacular, if a company buys, it "acquires"; if it was bought, it "merged"!

and the region, manufacturing corporations were the leading acquirers. They were followed, in order, by services, trade, and mining.

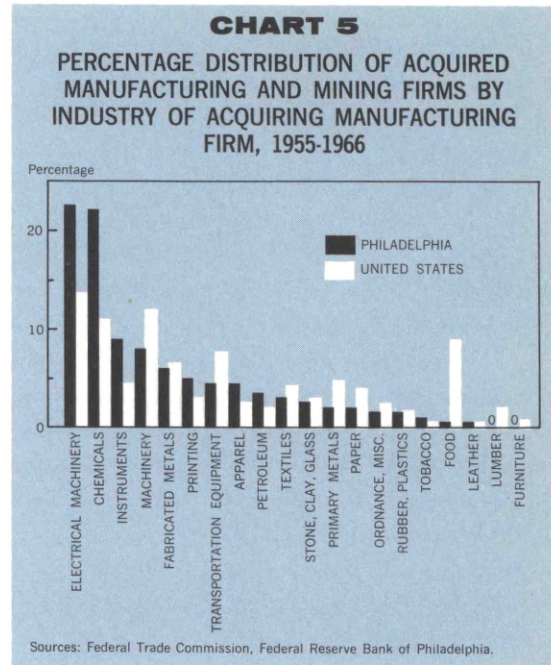
**The United States in microcosm?** Philadelphia has frequently been referred to as a “miniature United States” with respect to its industrial structure—and rightly so. But is this also true in terms of its acquisitive industries?

For the bulk of this region’s manufacturing industries the answer is yes, as can be seen in Chart 5. For most of the 20 major manufacturing industries there is very little difference in the preeminence of Philadelphia acquirers and the nation’s as a whole. There are, however, a few very important exceptions.

In spite of the similarities in the industrial make-up of the region and the nation, the food, nonelectrical machinery, and transportation equipment industries are much more merger-minded nationally than locally. But on the other hand, chemical, electrical machinery, and instrument corporations in Philadelphia have been more aggressive acquirers than their national counterparts.

The fact that Philadelphia corporations have had the highest acquisition rates in the three industries noted above should lend considerable strength to the economy. This can be seen by again comparing the nation’s experience with the region’s. The manufacturing firms acquired by local headquarters over the past 12 years are in industries which are expected to be rapid-growth industries in the future. On the average, United States corporations are buying up companies in industries with slower growth expectations. The logical conclusion is that our past acquisition activity (1955-1966) has been heading in the right direction—heading for growth.

**Value revisited.** Both in terms of numbers of net acquisitions and the industrial composition of what was acquired, the region should come off



“smelling like a rose.” Yet, recalling the net value lost, the rose looks a bit wilted.

Part of the answer to this paradox may be found in the size of regional firms which have been most merger-minded. Size, in general, is a very important factor in who acquires whom. The larger corporation seeking growth through acquisitions usually buys out a smaller firm. Of course there are occasions in which an ant swallows an anteater. But the incidence is rare.

Chart 6 graphically depicts this size bias of acquiring firms. During the past 12 years, both nationally and regionally, the great majority of manufacturing firms acquired were bought by companies with assets of \$10 million or more. But as the chart shows, a higher proportion of manufacturing firms in the nation were acquired by corporations with assets of \$100 million or more than was the case in Philadelphia. This fact gains added significance in light of Philadelphia’s high concentration of corporations of

this size relative to the nation as a whole. The data suggest that the region's corporations in the top bracket are not quite so actively acquisitive as their counterparts elsewhere.

Firms acquired by Philadelphia corporations with assets in the \$10 million to \$50 million range were also less heavily concentrated than was the case nationally. However, local corporations between these two top groups exhibited a greater acquisition tendency than did their national counterparts. (See Chart 6). In summary, it is at the top of the scale—from \$10 million in assets upward—where the big firms are more actively acquiring the smaller ones. And it is here that the nation's acquisition rate exceeds that of the Philadelphia region.

Since the general tendency is for the larger firm to acquire the smaller, the lower half of Chart 6 suggests one possible reason for the region's gain in numbers and loss in value. Small corporations in this region are the most acquisitive relative to the national trend. Our bet is that

the firms they acquired from outside of the region were smaller than their Philadelphia buyers.

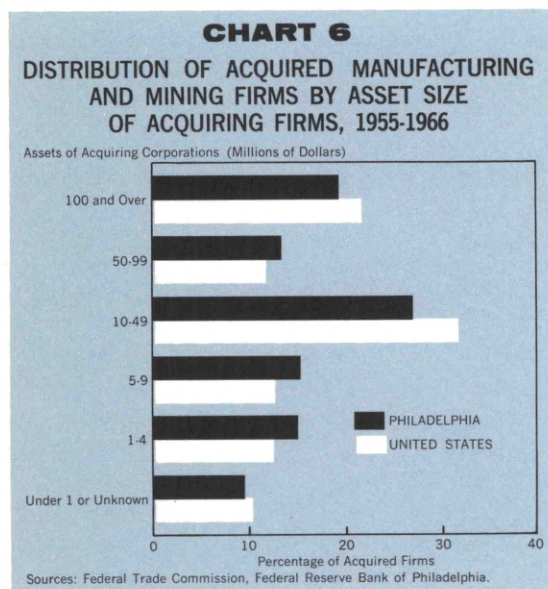
### Merger myopia

Why has the Philadelphia business community, along with similar groups in other major metropolitan areas, been so quick to blame the loss of headquarters on acquisitions? More specifically, why has it assumed that a gain in net acquisitions would improve the region's headquarters' position?

Probably because of some confusion about the relationship between acquisitions and headquarters. Suppose we see a bold newspaper headline noting that a Dallas-headquartered firm has acquired a large Philadelphia-headquartered firm. From past experience we may generalize about the expected damage to the local economy—in the loss of local decision-making, services purchased, plant and equipment put in place, and employment.<sup>4</sup> Therefore fear of a net loss in acquisitions generates fear of a net loss in headquarters. Shouldn't the same process work in reverse?

Unfortunately for Philadelphia it does not. The net gain in acquisitions experienced here over the past 12 years does not imply a net gain in headquarters. For example, if this region's headquarters made 30 acquisitions and in the same year only one corporation in the region was purchased by a company headquartered in, say, New York, the area would have a net acquisition figure of 29. Nevertheless, it would have lost a headquarters. The 29 acquisitions would have enlarged this area's existing home-based corporations, but the acquisitions would not have added any new headquarters to Philadelphia's economy.

Relating headquarters to acquisitions can lead



<sup>4</sup> See footnote 1.

to other points of confusion if we are not cautious. For instance, a net loss through acquisitions could be indicative of a prospering economy. Firms seeking acquisitions usually are not looking for “dogs.” In general, they want to buy companies with good products, customers, growth potential, and talented management—or whatever may be needed to aid their present corporate structures to become more profitable.

To take another important example, the loss of corporate headquarters may be confused with the health of the regional economy in general. There is no proof that a company acquired in a region will make any less contribution to the local economy after the merger than before it.

### Corrective lenses

Nevertheless, business and civic leaders in Philadelphia, and other major metropolitan areas, know headquarters are a special kind of asset to their communities. In the Philadelphia area, one goal of such leaders is to increase the region's stature as a corporate headquarters center. This means adding new headquarters to the economy and holding on to those the area already has.

To accomplish this, community encouragement of the generation of new firms in the region is essential. Each new company born in the area is automatically a headquarters. If the community lends support to the company's initial internal growth, the firm may well find its next step to speed growth is through acquisitions. Nevertheless, as the “urge to merge” moves yearly to new peaks, some headquarters inevitably will be lost. But to minimize this loss, each new company should consider including in its management tool kit the skills of acquiring, as a hedge against being acquired.

Second, the community can work to attract relocating corporate headquarters. Endeavors of

the Old Philadelphia Development Corporation, for example, to create a prestige headquarters center around Independence Mall is a move in the right direction. In addition, personal contacts can be one of the most valuable means of attraction not now fully utilized. Presidents and board members of Philadelphia corporations are often the first to know, through their private pipelines, when a headquarters is seeking a new site. The sales talents of these men can be put to good use in selling the region as the right one for headquarters' relocation.

And finally there is a basic job to be done in educating existing Philadelphia-headquartered firms on the acquisition process. Of course, whether the acquisition route is the best one for expansion is a decision each corporation has to make in light of its own situation. However, a growth company with an active acquisition policy and program will probably grow still faster than one relying on internal growth alone. Consummated acquisitions will not create a new headquarters in the region but they may well stem out-migration of headquarters. If local headquarters are acquisition-minded and see tangible results in growing control over corporate wealth, they are less apt to be merger-minded. They will be seeking sellers, not buyers.

A locally headquartered company which is not in such a mood might mull over Chart 5. Is its own industry a vigorously acquiring one nationally? If so, how does its corporate acquisition program compare? Or does it even have such a program? Does it need one at its particular stage of development? Only the individual company can answer. But it is folly to avoid the questions.

In stemming the tide of headquarters out-migration by way of acquisitions, two groups of Philadelphia home offices, in particular, might

assess their acquisitive attitudes relative to their growth requirements. They are corporations which have assets either between \$10 million and \$50 million or over \$100 million. (See Chart 6.) They are companies which can best afford to be in the acquisition game. Because of size they can bring greater control over corporate wealth into the region. And they are the most important groups of local headquarters, in

terms of financial strength, which are not pulling their weight as acquirers.

Acquisitions do not bring corporate headquarters to a region. But they do add to local control over corporate decision-making and national wealth. In contrast, acquisitions by "outsiders" reduce the number of home offices in a region. One prerequisite in preventing the loss of corporate headquarters from Philadelphia is a powerful desire to acquire.

## APPENDIX

We are indebted to the Bureau of Economics of the Federal Trade Commission (FTC) for providing the basic data for this article. The Commission maintains records on acquisitions which it obtains primarily from *Moody's Industrials* (semi-weekly), *Standard Corporation Records* (daily), the *Wall Street Journal*, the *Journal of Commerce*, the *New York Times*, and Dun and Bradstreet. Corporations recorded in the FTC merger file include all manufacturing and mining industries, wholesale and retail trade, and contract construction but only selected services, transportation, and financial, real-estate and insurance companies.

Detailed data on acquisitions by acquiring and acquired companies are unpublished. They were made available to us by the Commission, with the stipulation that there would be no corporation disclosure.

The information was first recorded by us on a company basis from the Commission's I.B.M. cards. Data not available on the cards were obtained from numerous industry sources, including FTC files, by the staff of the Federal Reserve Bank of Philadelphia.

Although the home state of the corporation

was recorded by the FTC, one of the most difficult tasks was determining the headquarters location by metropolitan area. Another problem involved measuring the value of acquisitions. While asset data were virtually complete for acquiring firms, both asset and sales data from the FTC were sketchy for corporations acquired. Therefore, in order to estimate value added for each corporation (as opposed to establishment) in the manufacturing file, the average value added by United States corporations in each four-digit industry was computed, as classified by the *Standard Industrial Classification Manual* for the years 1958 and 1963 (the most recent Census years). Data for 1958 were used for acquisitions during the period 1955 to 1959, and data for 1963 for the years 1960 to 1966. The basic information may be obtained from the U. S. Department of Commerce, Bureau of the Census, *Census of Manufactures, 1963, Vol. III.*

The FTC merger data include both consummated and pending or proposed acquisitions. The Bank staff chose only verified consummated acquisitions for analysis. The staff also used only "full" as opposed to "partial" acquisitions in preparing data for this article. Full acquisitions



include those for which more than 50 per cent of the assets or stock of a company was acquired.

References in the article to projected growth rates of industries are based on studies of the National Planning Association. (See *Revised*

*Statistics of Output, Employment, and Productivity: U. S. Economy and Selected Industries, 1947-1985*, National Economic Projection Series, Report No. 65-1, N.P.A., Washington, D. C., 1965.)

# DEPOSIT VARIABILITY: A BANKER'S HEADACHE

by Hugh Chairnoff

Deposit management is a complicated affair. Bankers know there is nothing in the world to assure them that deposit inflows will match deposit outflows. The more frequent or the larger the fluctuations of deposits around their average level, the higher the variability of deposits and the bigger the headache for bankers.

If bankers know the nature and extent of deposit variability, they can gauge the time for lending and investing, the period for which funds can be committed, and the limitations variability place on their choices among different types of assets. Consequently, bankers will be better able to resolve the ever-present conflict between profitability and safety. Thus, the more bankers know about their deposit variability, the better they are able to serve their communities, their depositors, and their stockholders.

We found that deposits do not fluctuate to the same extent for all banks. In this article we examine some of the factors that cause some banks to experience less deposit variability than others.<sup>1</sup>

<sup>1</sup>This article is based on an analysis of bi-weekly deposit data of a sample of 122 member banks in the Third Federal Reserve District for 1965.

## THE VARIABILITY INDEX

Bankers measure variability in terms of dollars and cents. However, in order to show that some bankers face more of a variability problem than other banks, we need to abstract from dollars and cents. In this way, the factors determining variability can be examined.

The variability index compares the average fluctuation of deposits to the average level of deposits during a given period of time. Because of some mathematical quirks, computation of the variability index is somewhat complicated.

If we were to average only the actual fluctuations of deposits (both positive and negative), the result would be zero—falsely implying no variability. Therefore, we must square each of the fluctuations from the average. The sum of the squared fluctuations divided by the number of fluctuations during the period is the average squared fluctuation. This number has little meaning for us because variability then would be measured in terms of squared dollars. So, we take the square root of the average squared fluctuation—the average fluctuation.

The average fluctuation is not a completely fair measure of variability. Larger banks will have a higher average fluctuation simply because they are larger banks. A \$1 million fluctuation to a \$1 billion bank is likely to be less worrisome than a \$750,000 fluctuation to a \$500 million bank. Yet, the average fluctuation will be higher at the larger bank—indicating relatively more variability

at the larger bank.

Thus, we must take one more step to arrive at the index of variability. It is to compare the average fluctuation to average deposits. The ratio of the average fluctuation to average deposits during a given period of time is our index of variability.\*

\* For the mathematically inclined, the following notations may be helpful:

$\bar{X}$	Average deposits for the period
$X_i$	Actual deposits, $i = 1, \dots, n$
$n$	Number of observations in the period
$x_i$	Fluctuation of actual from average deposits ( $X_i - \bar{X}$ )
$\sum x_i$	Sum of the individual fluctuations from average deposits—equal to zero
$\frac{\sum (x_i)^2}{n}$	Average squared fluctuation
$\sqrt{\frac{\sum (x_i)^2}{n}}$	The average fluctuation
$\frac{\sqrt{\sum (x_i)^2 / n}}{\bar{X}}$	The index of variability

### DEPOSIT VARIABILITY: A CROSS-SECTIONAL VIEW

For all 122 banks in the study, the average bi-weekly fluctuation of deposits amounted to 2.2 per cent of the average level of deposits.<sup>2</sup> But as Chart 1 shows, larger banks generally experienced less deposit variability than smaller banks. For example, banks with deposits of less than \$5 million had an average deposit fluctuation of 2.4 per cent; banks with deposits of \$20 million or more had an average fluctuation of only 1.9 per cent of the average level of deposits.

Deposit variability does not change much when the average level of total deposits changes. Thus, if the ratio of time deposits to total deposits does not change, a 1 per cent increase in average deposits would reduce deposit variability by less than 1 per cent.<sup>3</sup> The impact, however,

<sup>2</sup> These data have been adjusted for trend.

<sup>3</sup> The sensitivity of the index of total deposit variability was estimated at the mean values of the independent variables of the following linear regression:

$$\text{Std. Dev.} - \text{Total Deposits} = \$804.97 + \$13.34 (\text{Avg. Total Deposits}) - \$11.95 (\text{Time Deposit Proportion}).$$

(\$522.46)
(\$47.11)
(\$0.55)
(\$3.46)

Adjusted  $R^2 = 0.85$ . The regression is significant at the 1% level. The figures in parentheses are the standard errors.

### Variability is not turnover

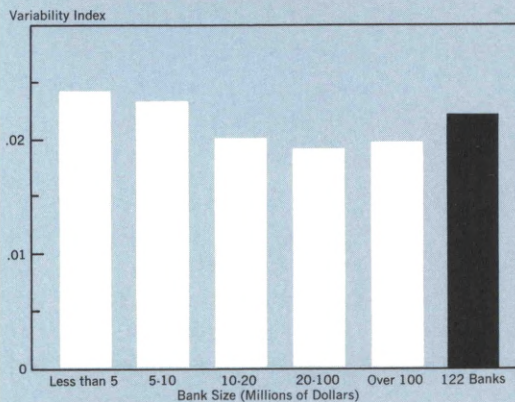
The more familiar concept of deposit turnover should not be confused with deposit variability. There are no inherent reasons for the two concepts to be related. Demand deposit turnover measures deposit activity and sometimes it is used as a proxy for economic activity. Turnover expresses the relationship between total debits and average deposits for a given time period. Deposit variability, on the other hand, measures the extent of fluctuations of deposits from their average during a given period of time.

Fragmentary evidence in the Third Federal Reserve District suggests the lack of any relationship between deposit turnover and variability. The evidence indicates that high or low deposit turnover can be associated with the same degree of deposit variability.

does tend to be greater for smaller banks than for larger banks. A 1 per cent increase in average

*In 1965, larger banks generally experienced less deposit variability than smaller banks . . .*

**CHART 1**  
INDEX OF TOTAL DEPOSIT VARIABILITY RELATED TO BANK SIZE



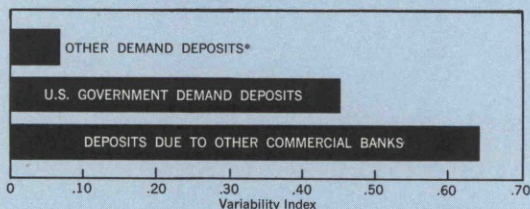
deposits at a \$1 million bank seems to have a greater impact on deposit variability than the same percentage increase at a \$10 million or \$20 million bank, though the impact still is relatively small. For banks with about \$80 million in deposits or more, increases in the average deposit level virtually have no impact on deposit variability.

All this suggests that deposit variability can be reduced, though not much, simply by increasing the level of deposits. But there is another major consideration. Some types of deposits are much less stable than others. For example, Chart 2 compares the variability indexes of

*Increasing the deposit level may not reduce variability because some types of deposits are more unstable than others...*

**CHART 2**

**VARIABILITY OF DEMAND DEPOSITS BY TYPE**



\*Includes deposits of individuals, businesses, state and local governments, and nonbank financial institutions.

three broad categories of demand deposits. Deposits due to domestic commercial banks—interbank demand deposits—are a very unstable source of demand deposits (the average fluctuation of these deposits was 64 per cent of the average level of interbank deposits). Deposits of the United States Government are considerably more stable than interbank deposits (the average fluctuation was about 45 per cent of the average level of these deposits), but they are considerably less stable than the total of all other types of demand deposits, a catch-all category that includes individuals, businesses, state

and local governments, and nonbank financial institutions (with an average fluctuation of about 6 per cent of the average level of this type of deposit). Accounts of different types of individuals, businesses, state and local governments, and nonbank financial institutions also are not equally variable. How stable a banker's deposit structure will be very much depends on the character of the accounts in this category as well. Thus, variability cannot be reduced merely by increasing deposits indiscriminately.

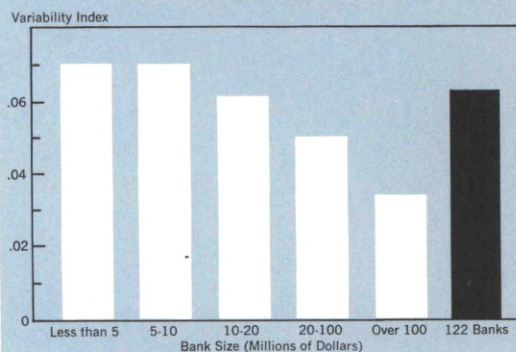
**The anatomy of lower variability—the case of demand deposits**

As Chart 3 shows, larger banks generally experience less demand deposit variability than do smaller banks. Lower variability is achieved despite the fact that larger banks generally have a larger proportion of more unstable types of demand deposits such as interbank and U.S. Government deposits. One reason is that variability of the important catch-all category of demand deposits also is lower at larger banks.

*Larger banks generally experienced less demand deposit variability than smaller banks...*

**CHART 3**

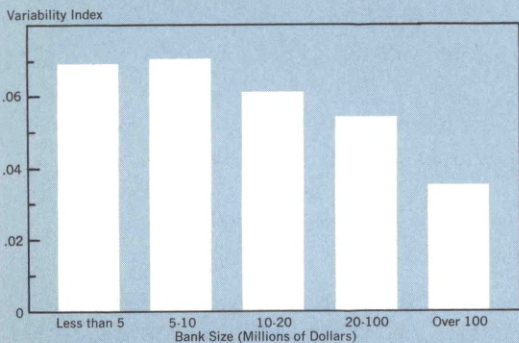
**DEMAND DEPOSIT VARIABILITY RELATED TO BANK SIZE**



One reason for lower variability at larger banks was that deposits of all types of customers except other commercial banks and the U.S. Government tended to be more stable at larger banks . . .

**CHART 4**

**VARIABILITY OF OTHER DEMAND DEPOSITS RELATED TO DEPOSIT SIZE\***



\*Includes all demand deposits except U.S. Government and interbank deposits.

Chart 4 bears this out.<sup>4</sup> Another reason seems to be that there are more chances for deposit flows to offset one another at a larger bank than at a smaller bank.

*Offsetting deposit flows—I.* During a given period, a bank will experience inflows that offset, at least to some extent, outflows. Though deposit accounts, individually and in small groups, may function independently of one another, in the aggregate they are likely to be somewhat interlocking. Thus, while a bank may be experiencing deposit outflows from one or more segments of its accounts, it may be likely to experience deposit inflows from one or more other segments. As a consequence, demand deposit variability actually will be less than the average variability of each of the components.

To test for this type of offsetting deposit flow,

<sup>4</sup>Larger banks ordinarily offer a wider variety of services than smaller banks. Because of this, it may be that greater stability of private demand deposits at larger banks partly results from larger idle balances maintained by depositors as compensation for services received.

we computed the weighted average index of deposit variability over the three broad categories of demand deposits—interbank, U.S. Government and all other—from the sample of 122 member banks. We then computed the ratio of the weighted average index to the actual index for total demand deposits. Because of the likelihood that deposit flows may offset one another to some extent, this ratio will be equal to or greater than unity. Thus, the higher this ratio, the greater is the extent of offsetting flows among deposit accounts. As shown in Chart 5, the bigger the bank, the greater the extent of offsetting deposit flows.<sup>5</sup>

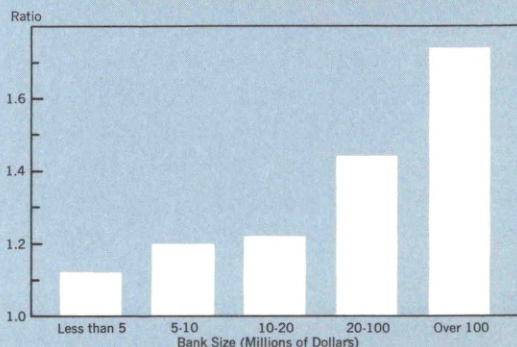
*Offsetting deposit flows—II.* In addition to the likelihood that deposit flows from different parts of the accounts will be offsetting, transactions among depositors of the same bank may tend to be greater at larger banks than at smaller

<sup>5</sup>These results are somewhat biased because the proportion of interbank and U.S. Government deposits tends to be significant mainly at larger banks. However, it would seem that similar results would have been obtained if it were possible to segregate other types of demand deposits.

Another reason was that chances for deposit flows to offset one another seem to be greater at larger banks . . .

**CHART 5**

**RATIO OF WEIGHTED AVERAGE DEMAND DEPOSIT VARIABILITY TO ACTUAL DEMAND DEPOSIT VARIABILITY**



banks. There are a number of reasons why this may occur. For example, larger banks tend to have a much larger number of accounts. Also, they tend to cover a broader geographical area than smaller banks. As a result, transactions among depositors of larger banks may tend to occur more frequently than at smaller banks. So, if Depositor A writes a check to Depositor B, and Depositor B has his account at the same bank credited for the full amount, this transaction has no effect on variability of deposits, since the combined balance of Depositors A and B has not changed. If one can imagine a world in which there was only one bank, it would be a world almost without deposit variability because all transactions (except for those involving currency) would be among depositors of the same bank.

In summary, some banks experience less variability than other banks because they have processes working for them that tend to reduce the frequency and magnitude of deposit fluctuations.

#### IMPACT OF TIME DEPOSITS ON VARIABILITY<sup>6</sup>

Time deposits are less variable than demand deposits. Variability of time deposits for the sample of Third District banks averaged 1.5 per cent of the average level of time deposits (after adjustment for trend). In contrast, variability of demand deposits averaged 6.3 per cent of the average level of demand deposits. Thus, the presence of time deposits has a salutary effect on total deposit variability (also adjusted for time trend). Lower variability of time deposits is especially important to many smaller banks since much of their growth over the last decade has resulted from time deposits.

<sup>6</sup>Throughout this article, time deposits include all interest-bearing deposits from regular passbook accounts to large-denomination certificates of deposit.

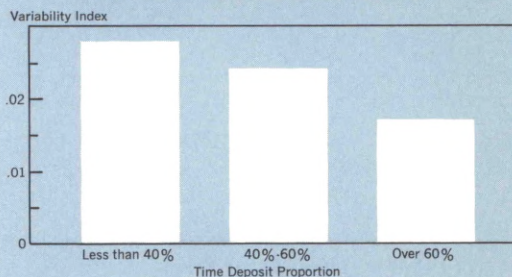
Deposit variability is sensitive to changes in the proportion of time deposits in the deposit structure. In fact, deposit variability is more sensitive to changes in the time deposit proportion than it is to changes in the average level of deposits. A 1 per cent increase in the time deposit proportion is accompanied, on average, by a 1.28 per cent decrease in deposit variability. The same percentage increase in the average level of total deposits would bring a less than 1 per cent reduction in the index of deposit variability.

Actually, sensitivity of deposit variability to changes in the time deposit proportion depends on the *level* of the time deposit proportion. For example, for banks whose time deposits are less than 50 per cent of total deposits, a 1 per cent increase in the time deposit proportion is accompanied by a less than 1 per cent reduction in variability. But for banks with time deposits in excess of 50 per cent of total deposits, the percentage drop in variability will be greater than the percentage change in the time deposit proportion. Thus, the higher the time deposit proportion, the lower the variability of total deposits as shown in Chart 6.

*Variability of time deposits tends to be lower at banks with a higher proportion of time deposits in the deposit structure . . .*

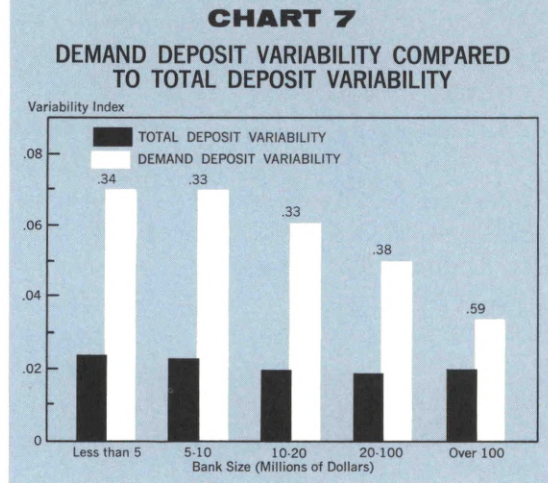
**CHART 6**

#### TOTAL DEPOSIT VARIABILITY RELATED TO THE TIME DEPOSIT PROPORTION



The impact of time deposits on total deposit variability manifests itself in another way. Time deposit variability tends to decline as the time deposit proportion rises. Because smaller banks tend to have a higher time deposit proportion, they tend to benefit more from the presence of time deposits. Table 1 shows that the percentage of banks with a time deposit proportion of 60 per cent or more is higher for smaller banks than it is for larger banks. As a result, the impact of time deposits on total deposit variability tends to be greater for smaller banks. On Chart 7, the number at the top of each pair of bars is the ratio of the index of total deposit variability to the index of demand deposit variability. The lower this ratio the greater the impact of time deposits on total variability. For banks with deposits of \$20 million or less, total deposit variability is less than 35 per cent of demand deposit variability. On the other hand, total deposit variability is a higher proportion of demand deposit variability for banks with deposits of \$20 million or more. Thus, the presence of time deposits had a greater impact on total variability at smaller banks than at larger banks. If it were not for different proportions of time

*Time deposits had more of an impact on total deposit variability of smaller banks . . .*



deposits, smaller banks and larger banks would have had even greater differences in deposit variability.<sup>7</sup>

**DIVERSITY AND DEPOSIT VARIABILITY**

Differences in variability between banks seem to result mainly from differences in deposit structure. Banks with more broadly based deposit structures seem to experience less deposit variability.

Diversity of deposits is a nice thing, if you can get it. That is why bankers suffer headaches from managing deposits. Diversity has so many manifestations that deposit management is com-

**TABLE 1**  
**PERCENTAGE OF BANKS WITH A TIME DEPOSIT PROPORTION OF 60 PER CENT OR MORE BY SIZE GROUP\***

Size Group (in Millions)	Percentage of Total in Group	Total Banks in Group
Less than \$5	78%	35
\$5- \$10	72	32
\$10- \$20	77	29
\$20-\$100	52	20
\$100 or more	33	6

\* From sample of 122 banks in the Third Federal Reserve District.

<sup>7</sup> *The benefits of time deposits can be illusory. For example, bidding for time deposits may induce customers holding idle demand deposits to switch. Such a process will have no impact on variability but it will increase the cost of the deposit structure.*

*It also is important to recognize that the decision to increase the time deposit proportion should not be based solely on its impact on variability. These are interest-bearing deposits. Bankers must be able to employ these funds profitably with due consideration for risk. The benefits arising from reduced variability, though positive, may not be sufficient to reward bankers for acquiring interest-bearing deposits.*

plicated. Moreover, not all types of diversity may produce the results desired. For example, a bank in an area dominated by a single industry or firm may find it difficult to achieve diversity. The behavior of a few accounts will likely dominate the entire deposit structure. Sometimes bankers have sought to acquire a large number of relatively small accounts without sufficient knowledge to compare the high costs of acquiring and handling such accounts with the potential benefits including possible loan business. For some banks, diversity is an oft-dreamed of, though impractical goal.

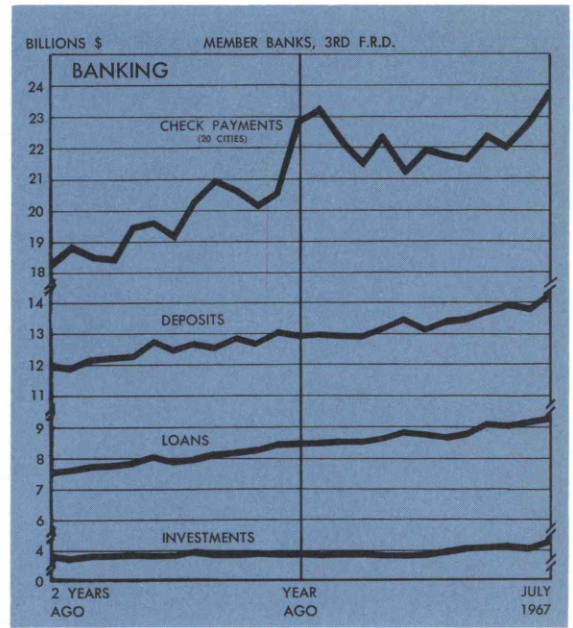
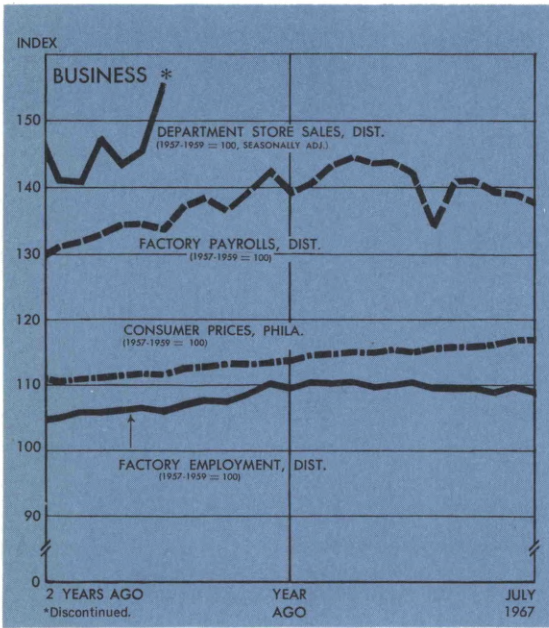
Without knowledge of the nature of variability of different types of deposits and different depositors, planning by bankers always will be a more precarious task than it needs to be. Though the banker is devoting increased attention to his deposit structure, more knowledge would prove equally useful since so many of his problems emanate from the nature of his deposits. A greater understanding of deposit behavior, including the factors that contribute to lower deposit variability, can contribute to better planning and, hence, to more efficient bank operation.

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### **THIRD DISTRICT MEMBER BANKERS**

If you would like to know how the variability of your deposit structure compares to the average for banks of similar size in the Third District, please write to the author on your bank's letterhead. We regret that this analysis can be made available only to Third District member banks.

# FOR THE RECORD . . .



SUMMARY	Third Federal Reserve District			United States		
	Per cent change			Per cent change		
	July 1967 from		7 mos. 1967 from year ago	July 1967 from		7 mos. 1967 from year ago
	mo. ago	year ago		mo. ago	year ago	
<b>MANUFACTURING</b>						
Production .....				- 7	- 2	+ 1
Electric power consumed .....	- 2	+ 1	+ 2	.....	.....	.....
Man-hours, total* .....	- 1	- 5	- 3	.....	.....	.....
Employment, total .....	- 1	0	+ 1	.....	.....	.....
Wage income* .....	- 1	- 1	+ 1	.....	.....	.....
CONSTRUCTION** .....	-29	- 8	+ 5	-10	+ 2	- 4
COAL PRODUCTION .....	-18	- 5	- 1	-14	+ 8	+ 7
<b>BANKING</b>						
(All member banks)						
Deposits .....	+ 3	+10	+ 7	+ 2	+ 9	+ 6
Loans .....	+ 2	+ 9	+ 9	0	+ 6	+ 6
Investments .....	+ 4	+ 9	+ 4	+ 4	+13	+ 8
U.S. Govt. securities ....	+ 6	+ 3	- 4	+ 6	+10	+ 2
Other .....	+ 2	+17	+14	+ 1	+16	+14
Check payments*** .....	+ 5†	+ 7†	+ 7†	+ 1	+14	+12
<b>PRICES</b>						
Wholesale .....				0	0	0
Consumer .....	0‡	+ 3‡	+ 3‡	0	+ 3	+ 3

\*Production workers only  
 \*\*Value of contracts  
 \*\*\*Adjusted for seasonal variation

†15 SMSA's  
 ‡Philadelphia

LOCAL CHANGES	Manufacturing				Banking			
	Employment		Payrolls		Check Payments**		Total Deposits***	
	Per cent change July 1967 from		Per cent change July 1967 from		Per cent change July 1967 from		Per cent change July 1967 from	
	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago
Standard Metropolitan Statistical Areas*	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago
Wilmington .....	- 4	0	- 3	+ 1	+25	-14	0	+ 8
Atlantic City .....	.....	.....	.....	.....	- 1	+ 1	+ 4	+ 4
Trenton .....	- 1	- 3	0	- 5	+11	+58	+ 5	+18
Altoona .....	0	- 1	0	- 1	+ 3	+10	0	+ 5
Harrisburg .....	0	0	+ 2	+ 5	- 9	+11	0	+10
Johnstown .....	- 1	- 5	- 3	- 9	+ 2	+ 2	+ 2	+ 6
Lancaster .....	+ 8	0	+10	+ 2	- 5	- 4	+ 1	+ 6
Lehigh Valley .....	- 1	- 2	+ 2	0	+ 2	+ 7	+ 2	+ 7
Philadelphia .....	- 1	- 1	- 1	- 1	+ 1	+11	+ 3	+12
Reading .....	- 1	- 2	0	+ 4	- 9	+ 6	+ 1	+11
Scranton .....	- 1	+ 2	+ 2	+12	+13	+25	+ 4	+10
Wilkes-Barre .....	- 3	- 4	- 2	+ 2	+ 3	+ 7	+ 2	+10
York .....	- 1	- 1	- 1	+ 5	+ 3	+ 1	+ 1	+ 4

\*Not restricted to corporate limits of cities but covers areas of one or more counties.  
 \*\*All commercial banks. Adjusted for seasonal variation.  
 \*\*\*Member banks only. Last Wednesday of the month.