Business Review

Seeding Science-Based Industry

Pressing Against the Ceiling?
or
How High Can the Loan/Deposit Ratio Go?

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Federal Reserve Bank of Philadelphia

Seeding Science-Based Industry

. . . New research-oriented firms are difficult to nurture at best. Often in the past, they have found the environment in the Delaware Valley less than best, but deeds and attitudes are changing in this respect, and the changes are all for the better.

Pressing Against the Ceiling?

. . . Credit demands in our full-employment economy are boosting the ratio of loans to deposits in commercial banks. Trend is likely to continue, but at a slower pace.

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A report on interviews with scientist-businessmen on problems of . . . .

SEEDING SCIENCE-BASED INDUSTRY

by Elizabeth P. Deutermann

The young engineer looked his visitor squarely in the eye. "Yes," he said, "Government contracts were essential when we started the firm. In 1957 almost a hundred per cent of our work was with the Pentagon. Not now, though. Today it's only 42 per cent. Our research and development led to so many commercial applications we hadn't expected." With computer-like speed he ticked off new patents, products, and industrial customers, just as he had answered the previous questions.

"How did I get initial financing? It wasn't easy. It never is for a firm whose stock-in-trade is new technology. But I'll tell you this. Financing a venture like ours is a lot easier here in Boston than in many other places." An hour passed before the engineer was asked if there were any ties between area universities and his company. "Of course if it hadn't been for Graduate School at M.I.T., I wouldn't have come here from Texas in the first place. And that goes for a lot of our staff. We always know we can get good technical people from local schools when we need them."

The scene of this questioning is an electronics plant in suburban Boston. An interview is underway in one of the offices—a handsomely modern one. Behind the teak desk sits the engineer. Facing him is his visitor. To the engineer's left a large window frames an almost rural panorama. To his right is the closed glass door providing a mirror image of the word President.

The president of this company is one of three engineers who started their own business after leaving a larger firm. He was anxious to tell how they did it. For three hours he drew on his personal experience to explain what made it easy or difficult to form his science-based firm.

Why did he bother? Really, for the same reason a golfer talks golf, or a skier, skiing. He was discussing something dear to his heart.

More to the point, why did the interview occur at all? The answer lies in the intense contemporary concern with regional economic growth, and the widespread hope that science-based industry will stimulate it.

Home-grown R & D

From New York City to Sacramento, California, thousands of private citizens and public officials work to increase jobs in their communities. Two questions loom large in their minds. What indus-

tries will be the big employers of tomorrow? How can they get more of those industries in their regions? In response to question one, a number of major cities expect future jobs to be generated by research and development activities. R & D, undoubtedly, is one of the nation's most rapidly growing businesses. And it tends to concentrate in large urban areas. So far, so good.

But having identified an opportunity for growth, the urban developer's prime concern is how his area can capitalize on it. A region can increase its R & D activities in different ways. A popular and well-publicized approach is to look outside the region for help—specifically, to lure a large Government laboratory. A more fundamental approach is to look inward and create the kind of community which stimulates and supports the formation of new science-based firms.

Soil testing

What does it take for a community to be a good place to start a science-based firm? A number of people think they know. But actually very little fact-finding has been done to answer this question. Hence the investigation reported here.

The approach was through case studies of firms in two metropolitan areas: Philadelphia and Boston. Philadelphia is the largest metropolitan area in the Third Federal Reserve District. Boston has an outstanding reputation as a research and development center. It is alleged to be a community where science-based firms find it easy to take roots and grow.

Is it really easier to start a research-oriented business in one community than in another? And if so, why?

Germination and climate

There are three basic requirements for starting a science-based company. First, there must be an engineer or scientist with an idea for a better mousetrap. Second, the man with the idea must want to start his own firm. Third, the community where he is employed must show receptiveness to new ideas by tangible support of fledgling R & D companies.

Take Philadelphia as an illustration. Somewhere in the area an engineer is contemplating his resignation from a large company. He has worked for years in computer research. He has not one, but ten ideas for improving a company product. And he strongly believes their adoption will boost sales tremendously. Since management doesn't agree, he is considering two alternatives. Should he go with another company or *spin-off* and start his own firm? Personally, he is eager to be his own boss. But something holds him back. Long hours of conversation with engineer friends who started their own companies have planted doubts in his mind.

From their experience, he has formed an attitude that Philadelphia is not the best place to start a new science-based firm. Whether this attitude is based on myth or reality, the image itself can be the determining factor in the birth of a new company in the area. And the image apparently does exist.

The attitudes of company founders interviewed in Philadelphia suggest the Delaware Valley is not regarded as an outstandingly good area in which to launch a new R & D-oriented business. Scientist-businessmen frequently cited Boston, with envy, as a case in contrast. Is it possible that if another group had been studied, their feelings would have been different? Probably not; the evidence points to such attitudes being widespread among scientists and engineers.* And the mere fact that they are held is important; in itself, it can inhibit growth.

**This question is discussed in detail on pp. 9-10.*

These are summary evaluations. On what are they based? What do the Boston founders think they have going for them that their Philadelphia counterparts find lacking? The answer is in the financial climate and the university complex.

FINANCING

To begin operating, the science-based firm naturally needs seed money. The founder first looks around the home territory where he lives and has worked. How expeditiously he obtains funds varies with his financial sophistication. Those less knowledgeable eventually discover that personal

resources or wealthy friends, rather than financial institutions, most frequently give the breath of life to the infant industry. Risk capital for a venture based on new technology—say, solid state physics—is not readily available any place in the country.

Nevertheless, such risk capital does appear less difficult to obtain if financiers are scientifically sophisticated. The scientist-businessmen we talked with find this sophistication in the Boston financial community. Financiers, they say, believe that a high proportion of new jobs in the next ten years will be in industries growing out of current research and development. A high proportion of future profits for lenders will have the same root. Because Boston bankers believe this, one company president noted, the financially ignorant scientist-entrepreneur can readily learn of sources of venture capital. The financial community is able and willing to help him. A strong communication network in financing circles leads the money-seeking scientist to a local source of capital.

Interviewees point to commercial banks in Boston as an important link in this network. If banks cannot supply the seed money, they know who can. They know because they've made science-based industry a specialty. As a result, the engineer-turned-entrepreneur who seeks financing can sit down to discuss his needs with an engineer-turned-banker. The latter, a vice-president at one bank, is dramatically advertised in local news media as the man who "finances the frontiers of science."

Promotion is one thing. Delivery is what counts. From the interviewees' viewpoint, Boston banks deliver. This holds both for initial financing and for sustaining financing over the difficult first five years—at which time the company is considered to have come of age and finds financing less of a headache. The responses strongly suggest that this rapport with the scientific community and financial support of banks is a great asset to the growth of new R & D industry.

Entrepreneurs interviewed in the Delaware Valley do not find their banking community quite so understanding. They think local banks could be of much greater assistance—indirectly, if not directly—in getting a fledgling off the ground. This attitude, whether justified or not, can inhibit growth not only in R & D but also in local banking itself. If the scientist seeking funds initially assumes local banks can't or won't help him, he won't knock on their doors. The banker, in turn, may assume this indicates a lack of demand for R & D financing. The scientist-executives interviewed felt that when banks cannot directly finance a risky business, they can function as important intermediaries. They can bring eager risk-takers and scientists together.

HIGHER EDUCATION

Founders of science-based firms strongly believe local universities are vital to company formations—and to their futures. The Boston corporate heads think their area's graduate schools play a fundamental role in the growth of the region's R & D companies. The Philadelphia executives interviewed do not believe local universities provide as much stimulation to growth of their industries. This is the second major way in which Boston and Philadelphia scientists view their communities differently as seed-beds for R & D firms.

How can universities stimulate the growth of science-based industry? A direct way is by spinning-off companies. For example, a professor may be a frustrated businessman at heart. If he also is bursting with ideas for marketable new products, he may form his own firm. More likely, however, the university's role in initiating corporations takes a less direct route.

One path is through high-quality graduate training in engineering and physical sciences. Universities which offer outstanding opportunities for study and research act as magnets to attract the nation's most talented students to a region. Let's assume one of these men takes a job with a local company when his graduate study is completed. Time passes before he is ready to start his own firm—if that is his goal. Rarely does the scientist jump straight from the laboratory to executive row. First he must acquire some knowledge of final products and markets—knowledge which he doesn't gain in the laboratory. He gets this education in a position above the starting one. Having acquired it, he departs and forms his own local company. The community has a new economic asset—a job producer, a tax source, a corporate headquarters. It must give some of the credit to the top-notch graduate school which first attracted the company founder to the region.

In this sequence of events, an obvious question arises. What holds the future entrepreneur to an area between graduation and groundbreaking? The same answer applies both to Philadelphia and Boston. In every case in our study, a primary reason for locating new companies in their respective areas was that it was home for one or more of the founders. It was not necessarily the home of birth. In many instances it had become home during the long time spent in graduate school or working in the region.

Lengthy residence in an area gives a new entrepreneur a necessary knowledge of territory. He feels more confident in taking a chance on a company of his own on home ground. Experience has given him contact with local competitors. He can put his finger on local sources of supplies and business services peculiar to his specialized needs. So the thought of starting a company any place other than home is rarely considered. This is quite unlike the large corporation which hires

a consulting firm to search the country for an ideal branch location. Only on one occasion did we encounter a spin-off that did a location survey beyond home base. Even in this exception, the site chosen was influenced by the desire of one founder to go back home.

Many science-based firms in the Delaware Valley and in Boston were started by professors

and by their graduate students. Whether one area produces more firms than the other by these means, no one really knows. However, it may be significant that university offshoots were much easier to track down in Boston than in Philadelphia. In addition. the founders contacted in both regions think Boston has the lead. For Boston, this is another stimulant for a scientist to start a company. Seeing one's colleagues succeed as company founders encourages one to try it himself.

Apparently the big era for attracting the future corporate head to Philadelphia via the graduate school was in the 'forties. One reason, undoubtedly, was the outstanding reputation of the Moore School of Engineering in computer research. The Philadelphia scientist-executives interviewed believe this type of graduate school pull has greatly diminished in the last twenty years. Indicative of Boston's greater attraction today is that it produces nine doctorates in engineering and physics to every one coming out of universities in the Philadelphia area.

The university graduate school is not only a source of tomorrow's corporate heads, but of men who will work for young research firms today. Interestingly, not one Philadelphia executive suggested that a good reason for being in the area was the availability of technical talent. Only one failed to stress this in Boston. There, new science-based firms depend more heavily on local graduate schools for employees than is the case in the Delaware Valley. The demand is not just for engineers and scientists. It particularly includes graduates of the Harvard Business School.

The Business School graduates have shown considerable interest in new R & D ventures in the Boston area. For many young firms, a very fruitful merger of business and scientific training has resulted. In addition, Boston executives frequently mentioned a number of local venture capital corporations formed by well-heeled Business School graduates who court the "innovation" market. They actively seek out scientists with new ideas to back financially.

Men who have organized science-based firms point to other ways the university community aids their growth. Consulting is one of them. The small, new company depends on university personnel to solve technical problems. Having such consultants readily available is an asset to the firm.

Professors of engineering and science also act as consultants to Boston banks investing in new R & D ventures. For example, the future profitability of an innovation in chemical process control may be hard for a banker to evaluate. Therefore, he turns to a consulting professor he knows who specializes in the same research field as the bank's client. This practice tends to ease financing for new firms with growth potential in technical areas.

Furthermore, many Boston professors actively serve on boards of directors of both science-based firms and area banks. This has generated greater rapport among financiers, universities, and the R & D industry. The founder of the Boston science-based firm feels he profits from the resulting increase in mutual understanding and cooperation.

This type of understanding is felt to be seriously lacking in Philadelphia. It grows in Boston from the many ties described which exist between the university complex and scientists in business. Such ivy-industry ties are considered to be weak in the Delaware Valley.

The other side of the fence

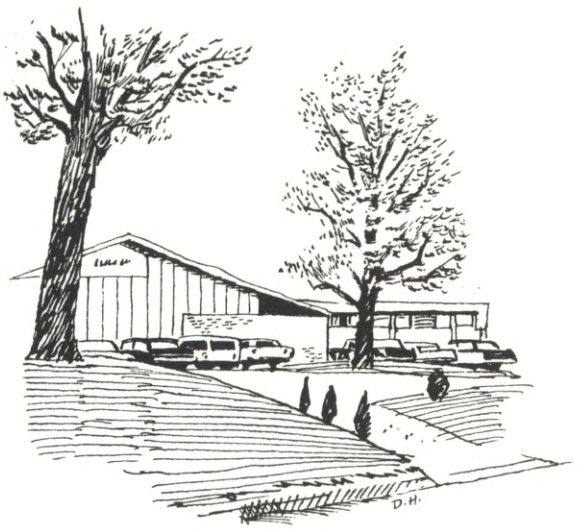
These attitudes of would-be entrepreneurs toward availability of financing and the role of universities are the factors most frequently cited as inhibiting growth of new science-based firms in the Delaware Valley. In other important respects,

entrepreneurs view spin-off influences as equally favorable in both regions.

For example, one requirement is that sufficient low-cost space be available for incubation. In both regions such space is available where the technology-based firm wants it—in the suburban ring surrounding the old core city. Founders of new firms in Philadelphia and Boston agree that low-cost space is no problem—"except in the city." Costs are lower in the suburbs. But this is not the foremost reason why they distinctly prefer a suburban location. Aesthetic appeal and numerous conveniences weigh much more heavily. Hence, abandoned textile plants, for instance, in the older sections of the two cities don't attract incubating R & D firms. City slums, traffic congestion, distance from home to work, and inadequate parking space repel new companies. In both core cities where redevelopment efforts are geared to attract R & D firms, overcoming suburban preferences and finding means to reduce space costs present a real challenge.

If science-based firms are to attract and hold technical personnel in a region, it must rate high as a desirable place to live. Both Philadelphia and Boston rate high. The scientist or engineer prefers to live in a major metropolitan area. He wants as many advantages of the country as possible, without losing those which only the big city provides. Some companies interviewed considered, as they grew, establishing branches in rural areas to lower costs. They didn't do it. Strong staff resistance to isolation from the urban scene killed expansion into rural areas.

Another aid to successful spin-offs is often a Government contract to support R & D until the firm's reputation is established. In the majority of the case studies, Federal customers were essential at the start of the company. But company founders did not feel that contract awards were influenced by their addresses. That is, just being



in Philadelphia or Boston did not give the company any particular advantage in receiving needed Government support.

Shade and sunlight

The preceding discussion suggests that new science-based firms are easier to start in Boston than in Philadelphia. Therefore, one would expect to find more new R & D companies blossoming in the former region. Experience does seem to indicate that R & D spin-offs are easier to locate in Boston than in Philadelphia.

Other evidence indicates that special characteristics of the Boston scientific community make it a more probable spin-off producer than the Delaware Valley. Compared to the Philadelphia area, Boston employs more scientists. A higher proportion of them are working in research and development. By contrast, scientists in the Philadelphia area are more production-oriented. In addition, those in the Boston area have a higher degree of educational attainment than scientists working in Philadelphia.

The story is similar for engineers. Engineers in Philadelphia are engaged more heavily in

production, sales, and marketing than in Boston, where they are employed to a greater extent directly in research and its management. This concentration of high-quality brainpower, oriented toward research and development, is the basic source of new ideas which lead to new companies.

Nevertheless, the Philadelphia region does have a strong resource of technical manpower for seeding new science-based industry. Among the nation's major metropolitan areas, Philadelphia ranks seventh as an employer of scientists. There are 29,000 engineers and physicists living in the Philadelphia region compared to 21,000 in Boston. In addition, the number of engineers in both areas grew at about the same speed between 1950 and 1960. This manpower pool is potentially a valuable source of scientific entrepreneurs and of new R & D firms in the Delaware Valley.

In the past few years the Philadelphia community has become increasingly aware of the importance to its economy of home-grown science-based companies. The area's banks are demonstrating greater interest in supporting new R & D enterprises. Bankers' initiative helped lead to the formation of the Southeastern Pennsylvania Development Fund to fill a financing gap for neophyte firms. A formal program is underway to educate local bankers in new technologies which promise industrial growth in the region.

Recently, a number of universities in the area have stepped up their drive for better graduate programs in science and engineering. One example is the program of the new Laboratory for Research on the Structure of Matter at the University of Pennsylvania. This will attract graduate students to the area for research into the science of materials. The Drexel Institute of Technology is in the process of greatly strengthening its graduate program—having received permission last year to grant doctoral degrees. The Institute also is moving actively and successfully to attract outstanding professors of engineering and science to the faculty.

In addition, universities of the region are working in concert to develop the University City Science Center. One specific goal of the Science Center Corporation is to assist the incubation of science-based firms. This is also the objective of the Regional Development Laboratory—a brainchild of the West Philadelphia Corporation and the Southeastern Pennsylvania Economic Development Corporation.

These community efforts are aimed at the most fruitful way of improving the region's environment for formation of new firms. They are beginnings in the opening of new channels of communication among the scientific, university and financial communities of the area. A better understanding and appreciation of the symbiotic relationship of these three groups can provide the stimulating and supportive environment Philadelphia needs to become a more fertile seed-bed of science-based industry.

THE METHODOLOGY OF THIS INVESTIGATION AND THE MEANING OF THE FINDINGS

The Delaware Valley firms whose founders were interviewed in this investigation were selected by carefully reviewing all available sources of information on research-oriented companies. The firms themselves then were contacted, to identify those formed during the postwar years by persons from local universities or companies. When such a firm was identified, arrangements were made to interview one of its founders. No firm refused an interview.

The Boston firms were selected similarly, but those actually interviewed were chosen so as to approximate the Delaware Valley firms in age, size, industry and origin of founder—whether from a university or a research-oriented industry. One firm contacted refused an interview without prior high-level contacts being established. The required entree then was obtained prior to further requests for interviews, and there were no more refusals. In one case, the founder had left to form another new firm, but granted an interview nevertheless.

To insure comparability, each person interviewed was asked the same questions. However,

interviews were open-ended; they averaged three hours in length. Questions asked were based on a thorough review of suggested hypotheses as to why new science-based firms are established. The questionnaire served to test the hypotheses themselves and to determine where responses differed between Boston and Philadelphia.

Answers to the majority of the questions did not differ very much between the two areas. But with respect to two questions, responses differed strikingly. The two questions concerned the importance of local universities in the formation of new science-based firms, and the attitude of local banks to the financing of the small science-based firm.

On the first issue, the interviews in every case took off from the question, "Do local universities play any role in stimulating new science-based firms?" All 13 company founders responded, as follows:

	Philadelphia	Boston
Universities play an important role	0	6
Universities play small role	7	0

It is possible, of course, to pick from two areas, where opinion really does not differ on a subject, 13 people (7 from Area 1; 6 from Area 2) whose opinions differ in such a way that all those from Area 1 react negatively and all those from Area 2 react positively. The probability of this occurring accidentally (that is, solely as a chance event) is .00058. In other words, in 13 cases, chance alone would produce so violent a difference, when in reality opinions in each area were split the same way, only once in 1716 tries (58 times in 100,000 tries).

The financing issue was opened with the question, "What is the attitude of local banks to financing for the small, science-based firm?" One company founder in Boston disclaimed current knowledge on the subject; accordingly, there were 12 responses, as follows:

	Philadelphia	Boston
Attitude "good" or "excellent"	0	5
Attitude "unreceptive," "poor" or "bad."	7	0

The probability of accidentally picking 12 people from two areas where opinion really does not differ on a subject (7 from Area 1; 5 from Area 2) and finding that all those from Area 1 react negatively and all those from Area 2 react positively, is .00126. That is, chance alone would produce so violent a difference in 12 cases, when in reality opinions in each area were split the same way, only once in 792 tries (126 times in 100,000 tries).

The probability that these findings are accidental manifestly is extremely small; they are one-in-a-thousand cases. Therefore, in all probability they reflect either real differences of opinion on these points in the two areas, or else they reflect bias either in the selection of firms or in the way the interviews were conducted.

The method of selecting firms has been outlined; lists were assembled, firms were contacted, and when one met the criterion of being a spin-off from a Delaware Valley university or industry its founder was interviewed. Boston firms were selected by trying to match characteristics of the local firms that had been interviewed. These selection procedures were imposed by the difficulty of enumerating the total population of spin-off firms in each area. This selection method does not satisfy all the conditions of a random procedure, so it is possible that it favored "negatives" in Philadelphia and "positives" in Boston. There is nothing in the way firms were selected to support such a contention, however. Arguing against it is the fact that on all issues except universities and financing, the responses from the same persons failed to show statistically significant differences; that is, such differences as did materialize between the two areas were well within the range expected on the basis of chance alone.

The interviews were kept comparable by employing the same questionnaire and interviewer in each. Company founders expressed themselves freely and at length. It is possible that they were led to express opinions contrary to or more highly colored than their real ones—negatively colored on the one hand and positively on the other. The investigation was so designed as to guard against this happening, however.

The findings, therefore, probably did not arise by accident or from controlled selection or controlled responses, though this is not certain. If none of these factors determined the results, then they reflect real differences between the areas on the two questions.

PRESSING AGAINST THE CEILING? OR HOW HIGH CAN THE LOAN/DEPOSIT RATIO GO?

by David P. Eastburn

As credit demands press harder and harder on supplies, a recurring question in board rooms and executive dining rooms of commercial banks is "how high can the loan/deposit ratio go?" Bankers look at a ratio of 62 per cent for all commercial banks and ratios of 70 per cent and above for many individual banks and conclude that the ceiling can't be very far away.*

Older bankers with long memories, of course, may recall even higher ratios back in the 1920's. As chart 1 shows, the ratio for all commercial banks was just under 80 per cent early in the twenties, and at the end of the decade was still as high as 70 per cent. But memories tend to be short, and as top positions of more and more banks are taken by younger men whose experience is limited to post-Depression years, the present ratio is, to all intents and purposes, a new peak. The broad rise from 17 per cent in 1944 to 62 per cent today seemingly just can't continue at the rate it has been going.

What has moved the ratio in the past?

The future of the loan/deposit ratio will depend on the same basic forces that have shaped its past. As chart 1 also shows, putting the question in terms of loans as a percentage of total loans and investments gives the same general picture as loans as a percentage of total deposits. This is a much more fruitful way of looking at the question because the most important factor determining

Some calculate the ratio by deducting uncollected items from deposits and expressing loans as a percentage of "adjusted" deposits. This produces a ratio for all commercial banks of 67 per cent.

CHART 1

The **LOAN/DEPOSIT RATIO** has experienced two broad swings in the past 45 years—declining from 1920 to 1944, and then rising since World War II. The ratio of loans to loans and investments has moved generally the same way.

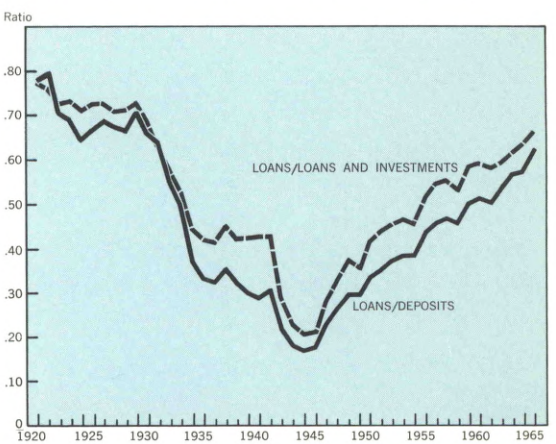
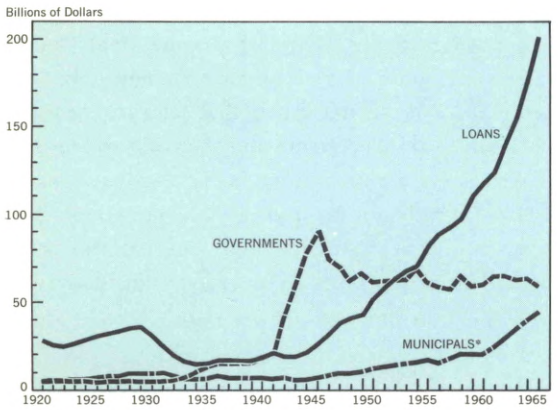


CHART 2

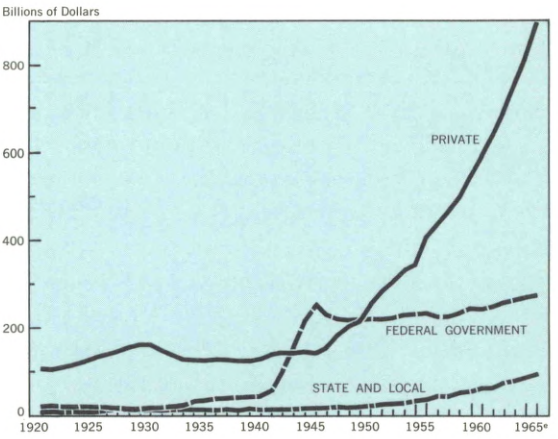
Changes in **EARNING ASSETS HELD BY COMMERCIAL BANKS** help to explain ups and downs in the loan/deposit ratio. The rise in the ratio in recent years results from the increase in loans relative to Governments and municipals held by banks.



*"Other securities."

CHART 3

Changes in earning assets of banks are strongly influenced by changes in **NET PRIVATE AND PUBLIC DEBT OUTSTANDING.** As private debt has expanded in recent years relative to Federal and state and local government debt, much of this private debt has found its way into bank portfolios in the form of loans.



e—estimated.

the loan/deposit ratio is the *kinds* of assets bankers decide to put their funds into. As chart 2 shows, bankers ever since World War II have chosen to acquire loans rather than Federal Government securities. This accounts for the broad rise in the loan/deposit ratio during that period. The broad decline through the 1930's and World War II was caused by the opposite movement—acquisition of Government securities at a rate greater than loans. Bank holdings of municipal securities were a relatively neutral factor during most of the earlier period, but after World War II began to become more important and in the last five years have really spurted.*

Individual bankers consider many things in deciding the kinds of assets to acquire, and in this, of course, lies much of the art and skill of commercial banking. But in a broad sense, their decisions are made for them by events over which they have little or no control. Among these are wars and the general state of the economy.

These affect the banker's decisions by influencing the kinds of instruments *available* for him to acquire. Trends in major types of debt outstanding in the economy, presented in chart 3, show a striking similarity to trends in bank assets in chart 2. During the Depression and World War II, Federal Government debt increased more rapidly than private and state and local government debt. As bankers took large amounts of Federal Government securities into their portfolios, this kind of instrument became a much larger proportion of total earning assets.

In the postwar period, on the other hand, bankers have responded to, and indeed contributed to, the tremendous surge of the private economy. Their acquisitions of loans have been

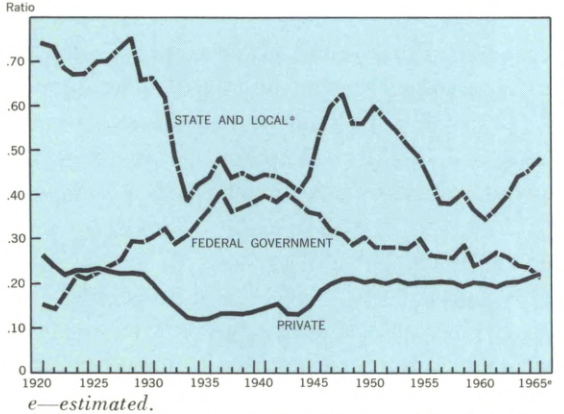
*Throughout this article, data on municipal securities actually are "other" (i.e., other than Federal Government) securities held by banks. Municipals constitute the great bulk of "other securities."

part of the process which has generated such a rapid increase in private debt. In contrast, growth of Federal debt has been relatively limited and helps to explain the decline in bank holdings of Government securities. The expansion in state and local government debt has offered more opportunities for banks to acquire this type of instrument.

In broad terms, then, the types of assets which bankers decide to *hold* have been influenced strongly by the types of debt instruments *available*. When Federal Government debt has risen more rapidly than state and local and private debt, banks have acquired *Government securities* relative to other assets. When, as in the postwar period, private debt has risen more rapidly than Government debt, banks have increased the importance of *loans* relative to investments. This fact, probably more than anything else, explains the behavior of both the ratio of loans to loans and investments and the ratio of loans to deposits.

CHART 4

The **COMMERCIAL BANK SHARE OF OUTSTANDING DEBT** also helps to explain behavior of the loan/deposit ratio. In the past few years, banks have acquired a larger share of outstanding private debt, thus pushing up the loan/deposit ratio even faster than would have resulted from shifting debt patterns alone.



e—estimated.

**Ratio of "other securities" to state and local government debt.*

The picture is much more complicated than this, of course, but here let's consider only one refinement. This has to do with the *share* of outstanding debt which commercial banks, *vis-á-vis* other investors, acquire. Chart 4 shows commercial banks' share of outstanding debt since 1920. It indicates that banks in recent years have acquired a rising share of private debt, but a declining share of Federal Government debt. Another way of putting this is that the ratio of loans to loans and investments and the ratio of loans to deposits have grown even faster than one would expect simply on grounds of the growth in outstanding debt; bankers have hurried the trend along in recent years by acquiring an increasing share of outstanding private debt.

Outlook for 1970

This review of forces at work in the past brings us back to the question posed at the outset: how much higher can the loan/deposit ratio go? Without making any predictions, it is possible to figure how high it *might* go by, say, 1970, assuming certain conditions. These conditions involve: (1) trends in the various kinds of debt outstanding; (2) commercial banks' share of that debt. Some of the many possible assumptions that could be made are shown in the table on the next page.

In the first column, we assume simply that trends continue as they have been going in recent years. Private debt would keep rising very rapidly and commercial banks would continue to get a rising share of it. State and local government debt also would rise rapidly, and the commercial bank share would expand at the exceptionally fast rate of recent years. While Federal Government debt also would rise, commercial banks would reduce their share, as they have been doing for some time.

Any banker who expects things to keep going as they have been, in other words, can get an

	Assumed trend to 1970	
Outstanding debt—		
Private	Continues trend of recent years	Increases ¾ as fast as in recent years
Federal Government	"	Increases as fast as in recent years
State & local government	"	Increases as fast as in recent years
Commercial bank share of—		
Private debt	"	Increases ¾ as fast as in recent years
Federal Government debt	"	Declines ¾ as fast as in recent years
State & local gov't debt	"	Increases ¾ as fast as in recent years
Ratio of loans/loans & investments	72%	70%
Ratio of loans/deposits*	66%	64%

* Estimated from relationship to ratio of loans/loans & investments in recent years.

idea of the loan/deposit ratio in 1970 by looking at the bottom of the first column. This shows a ratio of about 66 per cent. This, of course, is higher than the ratio today. But it is not as high as one would expect simply by projecting the trend of the loan/deposit ratio in recent years. The reason, primarily, is the very rapid growth of municipals in bank portfolios. If this were to continue for the next several years, municipals would become an increasingly important part of bank earning assets and tend to hold down the rise in the loan/deposit ratio.*

The second column is intended for those bankers who may not be content to assume simply a continuation of recent trends. In this column, we assume that private debt will not rise as rapidly as it has been, nor will commercial banks increase their share of it as rapidly. On the other hand, Federal Government debt is assumed to keep growing at the recent rate and commercial banks do not reduce their share of it quite so rapidly. State and local government debt would also continue to rise as fast as it has been, but commercial banks would not increase their share of it quite so rapidly. Given these assumptions, the loan/deposit ratio would come out to about 64 per cent.

Bankers who foresee other possibilities will get other loan/deposit ratios. More extreme assumptions would tend to produce more extreme results. But the odds are against either extreme —either a very high, or very low ratio—as we look ahead. A very high ratio would suggest boom conditions in the private economy until 1970, with commercial banks extending their competitive position; at the same time, municipals and Governments held by banks would have to increase much more slowly or decline relative to loans. While these conditions are possible, they don't appear to be the most likely.

It seems still clearer that a *decline* in the ratio of any size is quite remote. As chart 1 shows, the ratio has not dropped consistently and substantially since the 1930's and World War II. The only developments which could bring about such a drop would seem to be an international crisis or a depression. Either of these would require a major step-up in Federal Government spending which would produce a large flow of Government securities into commercial banks.

The greater likelihood is that the loan/deposit ratio will rise higher by 1970 than it is now, but not as fast as it has in recent years.

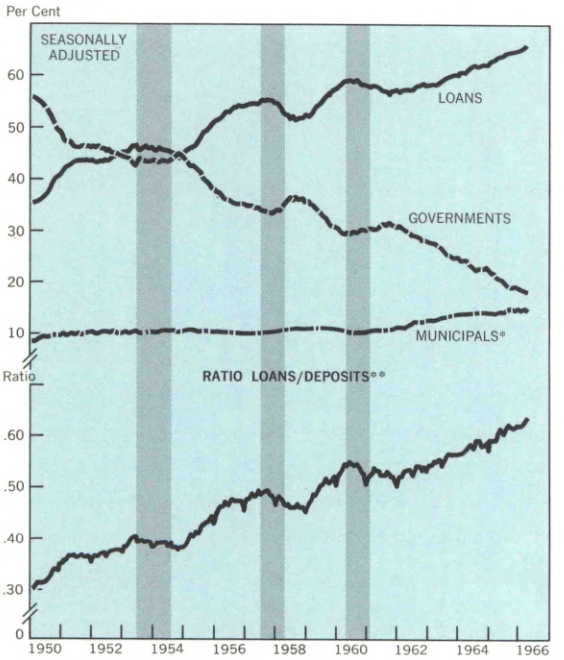
In the shorter-run

Of course, 1970 is still some time away. In shorter periods the loan/deposit ratio responds, more than anything else, to fluctuations of the business cycle. As chart 5 shows, the ratio rises during economic expansions and declines during

**Municipals would rise from 14.7 to 18.0 per cent of total earning assets. The importance of assumptions about the behavior of municipals is illustrated by the fact that if all trends are assumed to continue as in recent years* except *that commercial banks' share of municipals is assumed to level off at the present percentage, then the loan/deposit ratio would rise to 68.5 per cent.*

CHART 5

SHIFTS IN LOANS AND INVESTMENTS over business cycles explain short-run changes in the loan/deposit ratio. Banks move into Governments when loan demand falls off in recessions (shaded portions) and out of Governments when loans pick up again.



*"*Other securities.*"
***Unadjusted.*
Shaded areas represent periods of recession.

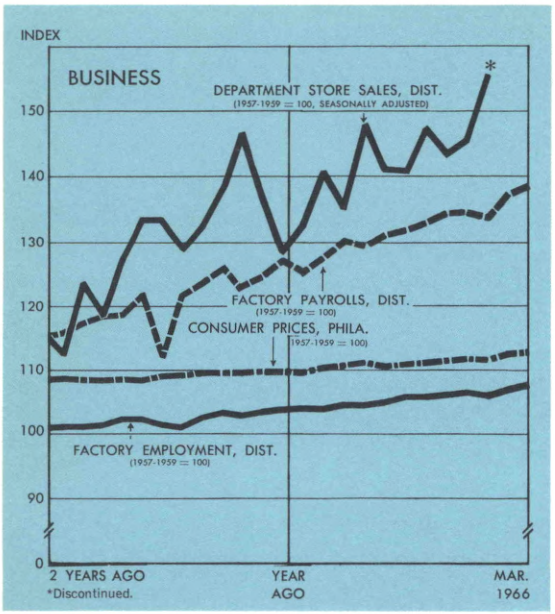
recessions (shaded portions). The reason, of course, is that loan demand is strong when business is good. At the same time, supplies of funds get tight and, in order to meet needs of their customers, banks sell Government securities. Their holdings of municipals have tended to grow more steadily, picking up in recent years as banks have sought higher-yielding investments.

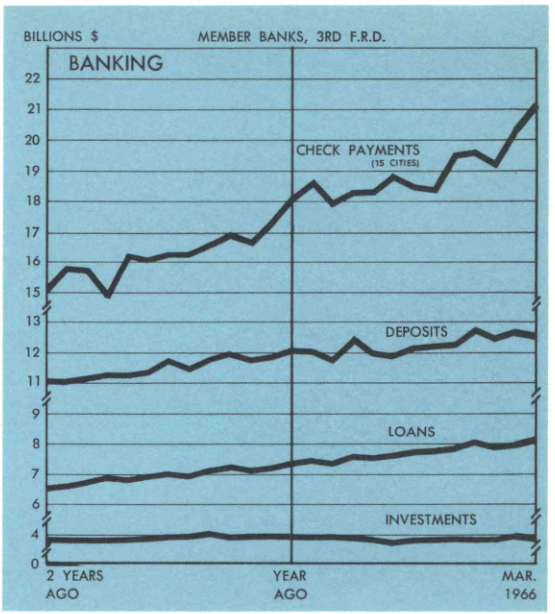
What this look at cycles indicates is that on top of the longer upward drift of the loan/deposit ratio are superimposed particularly rapid spurts during periods of strong credit demand, such as the present. It is during these periods that concern about the ratio mounts. Bankers see their holdings of more risky and less liquid assets rising and their holdings of less risky and more liquid assets declining. As they look ahead to still further demands on their resources, they examine their risk and liquidity positions more and more closely and tend to become more selective in meeting further demands.

Bankers may not find much comfort, therefore, in the longer-run projections presented above. Nor are they urged to. Sometime in the future they may look back on today's ratio and regard it as fairly comfortable. Bankers have changed their views about customary levels of the ratio in the past and may well change them again in years to come.

But right now, and looking to the immediate future, they feel squeezed by the rising ratio. To the extent this feeling induces them to look twice at demands for credit, it serves a useful purpose of relieving pressures in our current full-employment economy.

FOR THE RECORD . . .





SUMMARY

	Third Federal Reserve District			United States		
	Per cent change			Per cent change		
	Mar. 1966 from		3 mos. 1966 from year ago	Mar. 1966 from		3 mos. 1966 from year ago
	mo. ago	year ago		mo. ago	year ago	
MANUFACTURING						
Production	.....	.....	.....	+ 2	+ 9	+ 9
Electric power consumed	+10	+ 8	+ 9	.....	.....	.....
Man-hours, total*	+ 1	+ 5	+ 6	.....	.....	.....
Employment, total	+ 1	+ 4	+ 4	.....	.....	.....
Wage income*	+ 1	+ 9	+10	.....	.....	.....
CONSTRUCTION**	+46	−23	− 9	+45	+12	+11
COAL PRODUCTION	− 2	+ 3	+ 2	+ 5	+14	+10
BANKING						
(All member banks)						
Deposits	− 1	+ 4	+ 6	0	+ 6	+ 8
Loans	+ 2	+10	+10	+ 2	+14	+14
Investments	− 2	− 1	− 1	− 2	0	+ 1
U.S. Govt. securities	− 4	−10	− 8	− 4	− 9	− 7
Other	+ 1	+12	+11	0	+11	+12
Check payments***	+ 4†	+17†	+16†	+ 4	+16	+15
PRICES						
Wholesale	.....	.....	.....	0	+ 4	+ 4
Consumer	0‡	+ 3‡	+ 2‡	0	+ 3	+ 2

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

†15 SMSA's
‡Philadelphia

LOCAL CHANGES

Standard Metropolitan Statistical Areas*	Manufacturing				Banking			
	Employment		Payrolls		Check Payments**		Total Deposits***	
	Per cent change March 1966 from							
	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago
Wilmington	0	+ 2	0	+ 4	− 1	+16	+ 4	−16
Atlantic City	.....	.....	.....	.....	+ 1	+18	− 1	+ 8
Trenton	0	− 1	+ 1	+ 3	−14	− 3	+ 8	+24
Altoona	+ 1	+10	+ 3	+11	− 2	+13	+ 1	+ 7
Harrisburg	+ 1	+ 3	+ 2	+ 9	+ 4	+15	+ 1	−31
Johnstown	+ 1	+ 1	+ 4	+ 2	+ 4	+ 9	− 1	+ 2
Lancaster	+ 1	+ 7	+ 2	+14	+ 9	+17	+ 1	+10
Lehigh Valley	+ 1	+ 1	+ 4	+ 4	+ 3	+20	− 1	+ 5
Philadelphia	0	+ 4	+ 1	+10	+ 7	+19	− 2	+ 6
Reading	0	+ 4	+ 1	+ 9	− 6	+12	0	+ 6
Scranton	0	+ 5	+ 3	+12	− 2	+15	− 1	+10
Wilkes-Barre	+ 2	+ 4	+ 2	+10	− 2	+14	+ 1	+ 9
York	0	+ 5	+ 1	+13	− 1	+ 8	0	+ 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.