Good Air for the Great Society

Why the Bulge in the Corporate Bond Market?

The Race for Savings

FEDERAL RESERVE BANK OF PHILADELPHIA

BUSINESS REVIEW

DECEMBER 1965

BUSINESS REVIEW is produced in the Department of Research. Evan B. Alderfer was primarily responsible for the article "Good Air for the Great Society," Hugh Chairnoff for "Why the Bulge in the Corporate Bond Market?" Jack C. Rothwell and John F. O'Leary, Jr. for "The Race for Savings." The authors will be glad to receive comments on their articles.

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GOOD AIR FOR THE GREAT SOCIETY

Air is our most indispensable natural resource. Without food, a person can live several weeks; without water, several days; without air, only several minutes. Who would have thought that the air we breathe would become a matter of serious social concern! But it has.

One of the first bills President Johnson signed while convalescing from recent surgery was the Clean Air Act Amendments and Solid Waste Disposal Act. On signing the bill, October 20, 1965, the President said: "We have now reached the point where our factories, our automobiles, our furnaces, and our municipal dumps are spewing 150 million tons of pollutants annually into the air we breathe." Air is no longer the economists' classic example of a *free* good. On the floor of the atmospheric ocean where most of us move and have our being, pollution is so bad in many communities as to jeopardize public health and life itself.

In the closing weeks of October last, people in Los Angeles were coughing and choking in one of the worst smog episodes in that city's experience. But we Easterners need not be smug, for smog killed 17 citizens of Donora, Pennsylvania, in 1948; and about 200 deaths in New York City in 1953 were attributed to a similar cause. Thus far Philadelphia has had no such disaster, but the city has atmospheric pollution aplenty.

Whence all the pollution?

Air, you may remember from a course in chemistry, is a mixture of gases—about 78 per cent nitrogen, 21 per cent oxygen, and minor traces of elements such as argon, helium, and hydrogen. Anything else is an impurity.

Nature herself contributes some impurities such as sulfur dioxide, hydrogen sulfide (rotten-egg odor), and methane, resulting from volcanic eruptions, forest fires, and decay of vegetation. When the Indonesian volcano Krakotoa exploded in 1883, clouds of volcanic dust darkened the skies over a vast area and finer particles were diffused over a large part of the earth.

The biggest polluter, however, is man—modern man, 20th century, sophisticated, technologically wise man. We befoul the air by the burning of fuels to generate electricity, to heat our homes and to propel our automobiles, trains, planes, and missiles; by the processing of raw materials in our factories; by the application

of pesticides and fertilizers to increase crop yields; by the explosion of nuclear weapons; by the clearing of land; by the construction of roads and buildings; and by the burning of leaves, trash, and garbage. Each of these daily activities corrupts the air we breathe and occasionally, depending upon local weather conditions, chokes to death a number of citizens.

Where there's fire . . .

The earth's supply of air is fixed in amount, but it is used in enormous quantities for purposes other than breathing. The burning of a ton of coal consumes about 27,000 pounds of air; a gallon of fuel oil, about 90 pounds; and a pound of natural gas, approximately 18 pounds. The burning of a tankful of gasoline by a motor vehicle requires about a ton of air. Approximately 3,000 cubic miles of air are utilized annually to satisfy the oxygen requirements of the fossil fuels burned in the United States alone. Where there's fire, there's smoke; and where there's smoke there's atmospheric contamination.

Smoke is unburned particles of fuel. In a former generation there was a saying, "Vote Republican and the smokestacks will be smoking." In our time the stacks smoke no matter how you vote. Across the land enormous quantities of fly ash emerge from the stacks of factories and electric utilities, as well as from the millions of chimneys of private dwellings. The soot settling on the exterior of buildings makes dirty-faced architecture; and airborne particles permeating the interior of buildings smudge walls, trim, draperies, and rugs. The annual cost in deterioration of materials, damage to crops and livestock is estimated to run in excess of $11 billion.

Along with the nuisance of dust and grime of particulates are the unhealthful effects of gases accompanying the burning of fossil fuels. Assuming an average sulfur content of 2 per cent, the coal burned each day in the country discharges 48,000 tons of sulfur dioxide, which in terms of volume would pollute the air to a height of 400 feet over an area greater than that of Pennsylvania.

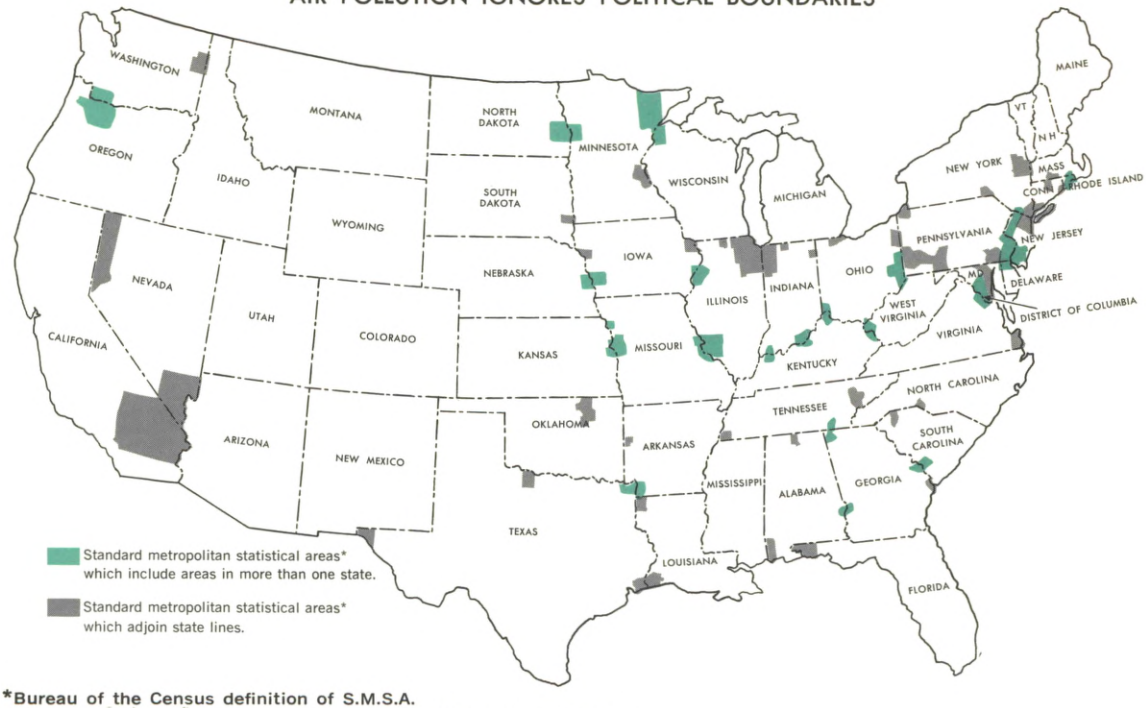
The country's motor vehicles daily pour into the atmosphere 250,000 tons of carbon monoxide, 4,000 to 12,000 tons of nitrogen oxides, and 16,000 to 33,000 tons of hydrocarbons. In addition to the impurities arising from incomplete combustion of fuels, there are also factory wastes from metallurgical, chemical, refining processes, and rubbish incineration. And now to top off the conventional forms of air pollution comes the deadly fallout of nuclear weaponry, the testing of which has thus far been confined largely to the Northern Hemisphere. Unbridled "technological progress" may yet require all of us to wear gas masks.

The worst pollution is in cities

Air pollution has become a menace because most of the people are now huddled in cities and their suburbs, where most of the atmospheric poisons are generated. Two-thirds of the population of the United States live in the 212 standard metropolitan statistical areas, which have a combined area of 310,000 square miles —less than 10 per cent of the country's total area. Not counting the suburbs, over half of the people of the United States live in cities which occupy less than 1 per cent of the nation's land area.

A full list of our cities or metropolitan areas with air-pollution problems is too long to enumerate here. Some, like Boston, Baltimore, and Cleveland, have serious sulfur dioxide pollu-

AIR POLLUTION IGNORES POLITICAL BOUNDARIES



*Bureau of the Census definition of S.M.S.A.
Source: Staff Report to Committee on Public Works, U. S. Senate.

tion. Others, like Los Angeles, Salt Lake City, and Washington, have serious automobile-exhaust pollution. Still others, like Charleston, W. Va., Phoenix, Ariz., and Wilmington, Del., have much suspended particulate matter—smoke, dust, and fumes. Most of the large cities, such as New York, Chicago, Detroit, and Philadelphia, have everything.

Critical areas in the Philadelphia Federal Reserve District, in addition to Philadelphia-Camden and Wilmington, include Johnstown, Scranton, Harrisburg, and Reading. Major, though not yet critical, problems also exist in some of the other cities of the district.

Moreover, air pollution is no respecter of political boundaries. In a number of areas, many urbanized localities are located closely enough together so that pollution from one may adversely affect another. Such problems are often of an interstate nature, as shown on the map. Note especially the almost unbroken chain of standard metropolitan statistical areas from Boston to Washington. Depending upon how the wind blows, a lot of people occasionally inhale each other's dirty air. State and local officials, in 1961, reported "major" air-pollution problems in 308 urban places. Regional weather conditions in certain areas occasionally intensify the ill effects of pollution.

How bad weather worsens bad air

Under normal conditions, air becomes cooler at a rate of 5° F., for every thousand feet you rise above the ground. That helps to clean the air of pollutants because warm air currents rise into the cooler upper air, carrying with them the contaminants from below.

Occasionally, however, on windless days a layer of warm air intervenes at an intermediate altitude, thus forming a "lid" over a city. Combustion fallout then strikes a low ceiling and traps the accumulating pollution in the limited air space underneath. Meteorologists call the phenomenon a thermal inversion; that is, air standing on its head.

Such adverse local weather conditions may be intensified by hills, mountains, lakes, and oceans. The Los Angeles Basin, for example, is a bowl bordered on three sides by mountains and on the fourth by the Pacific Ocean. Cool air slides down the mountainsides blocking an inversion across the Basin, like an air-tight cover, confining the region in a blanket of its own thickening and sickening effluents.

Cities are man-made traps for bad air because buildings obstruct the flow of air, creating pollution problems in the maze of city streets forming valleys between architectural canyons. The heat of the sun beating down on the hydrocarbons and nitrogen dioxide given off by multitudes of motor vehicles causes chemical reactions resulting in highly toxic "photochemical smog" that darkens the atmosphere, irritates the eyes, and induces coughing and labored breathing.

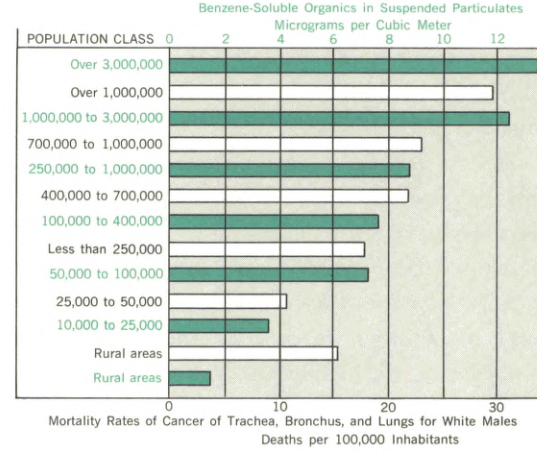
Effects of air pollution

Air pollution is a health hazard to which a growing majority of American citizens are exposed daily. When an airliner crashes and brings sudden death to all aboard, the tragedy makes the headlines in bold-faced type. How much prolonged misery and early deaths are caused by air pollution no one really knows, and such deaths seldom get into the papers because slow suffocation is such an undramatic way to expire. Indeed, it is difficult to prove that anyone's death was caused by air pollution; but the evidences of its harmful effects on health are overwhelming.

The common cold and other upper respiratory tract infections are known to occur more frequently in areas which have high pollution levels. Chronic bronchitis is another disease associated with and aggravated by air pollution, as numerous studies have plainly shown. Pulmonary emphysema (a disease affecting the tiny air sacs of the lungs, resulting in oxygen deprivation) may ultimately have adverse effects on the heart. In recent years, deaths from pulmonary emphysema have risen rapidly, especially among males. Bronchial asthma, another respiratory infirmity, is aggravated by air pollution in many cases. Air pollution is also under strong suspicion as a cause of lung cancer, which is responsible for rising rates of mortality. Evidence of this suspicion is the fact that the lung cancer rate is higher in cities than in rural areas and higher in big cities than in smaller cities.

Air pollution is a definite hazard to land, water, and air transportation because it reduces

LUNG CANCER IS HIGHER IN CITIES



Source: Staff Report to Committee on Public Works, U. S. Senate.

visibility. "Obstruction to vision" by dust, haze, sand, and smoke has been cited as a cause of accidents on our airways, highways, and waterways, with resultant injuries and deaths.

In addition to property losses previously mentioned, air pollution is costly to agriculture. Crops damaged by some forms of air pollutants are corn, peaches, beans, rye, barley, tobacco, and leafy vegetables like spinach, endive, and broccoli. Moreover, cattle foraging on alfalfa and clover tainted with airborne fluorides suffer serious disease.

What's being done about it?

Fortunately, some efforts are being made toward the abatement of air pollution. Unfortunately, air pollution is growing faster than the clean-up campaign, in part because the seriousness of the public menace is underestimated and in part because abatement hits the pocketbook nerves of the polluters—which, incidentally, includes almost everybody.

Industry is estimated to be spending $300 million a year on the installation and operation of special equipment and changes in materials and production processes, as well as research designed to reduce air pollution. Government spending at all levels on enforcement and research is estimated to be $35 million annually —over half of which is federal money.

The Federal Government took active interest in 1955 with a law designed to provide research and technical assistance relating to air-pollution control. The latest law, mentioned at the outset, empowers the Department of Health, Education, and Welfare to establish standards for the control of automobile and diesel truck emissions. According to press reports, such standards when established by HEW are to go into effect in September, 1967. Air monitoring is already taking place at 250 stations throughout the country that provides information on suspended particulate matter in urban and non-urban locations in every state.

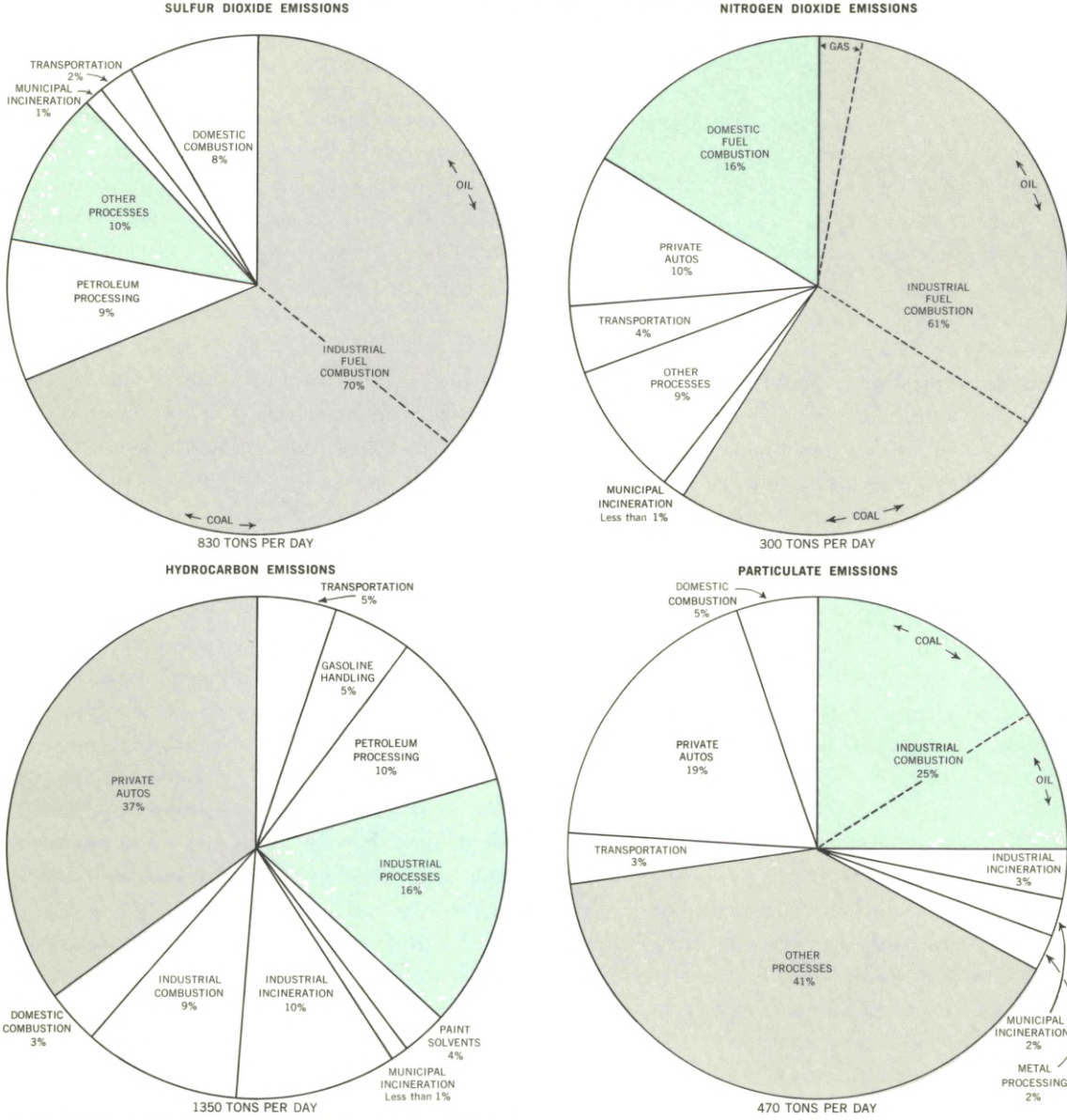
The basic objectives of the federal program are to improve the status of knowledge about the causes and effects of air pollution, to disseminate such knowledge through technical assistance to states, communities, and industries, and to stimulate all levels of government, industry, and the general public toward greater air-pollution control efforts. The Federal Government treads a bit lightly, based on the philosophy that primary responsibility for regulatory control rests with state and local governments.

State and local government control of air pollution is spotty. In 1961, only 17 states were spending as much as $5,000 a year on air-pollution programs, and over half of the total outlays were made by California. Michigan Senator Pat McNamara's 1963 questionnaire addressed to all the state governors revealed that 33 of the states had some type of air-pollution control laws but the others did not. The questionnaire also revealed that only 15 had some control authority. Generally, though with some exceptions, the most progressive states were the ones with the most pollution, and also the heavily populated and most industrialized.

California, where tailpipe pollution is the major problem, has done more to clean her air than any other state. In 1961, California required blow-by devices to be installed on all new cars by 1963 to reduce crankcase emissions. More recently, California law requires new cars to have control devices that reduce exhaust emissions by two-thirds.

Pennsylvania, New Jersey, and Delaware are among states that have taken active measures to control air pollution. In 1958, Pennsylvania

SOURCES OF AIR POLLUTION EMISSIONS IN PHILADELPHIA



Source: Philadelphia Department of Public Health (1958).

initiated a comprehensive state-wide survey of air pollution in the Commonwealth. Results of the survey made by the Pennsylvania Department of Health and the Public Health Service of the U. S. Department of Health, Education, and Welfare were published in a comprehensive 1961 report. A total of 801 communities, including over 80 per cent of the state's popula-

tion, were surveyed. Ninety-one communities—large, medium, and small—were found to have air-pollution problems of major proportions. In the job of cleaning the Commonwealth's atmosphere, considerable progress has already been made by both state and local authorities as well as by numerous industries. Pittsburgh has undergone a remarkable transformation. The widespread shift from coal to gas for home heating and the installation of air-cleaning devices in the Steel City's open-hearth capacity have reduced the dust fall to about half of what it was formerly.

Philadelphia, in contrast to Pittsburgh, has a more diversified industrial structure; the city's major sources of air pollution are sulfur dioxide and nitrogen dioxide emissions of industrial origin and, of course, automotive hydrocarbons and particulates, as shown in the illustration. The city's Air Pollution Control Section has a modest staff of people and a small budget to carry out its major functions of prevention, inspection, and engineering. Prevention means passing on newly installed combustion facilities of new construction. Inspection means going over existing combustion facilities, domestic and industrial, offering suggestions for improved operation. Engineering has to do with technical advice on equipment. The city's Air Pollution Section also has a traveling crew to spot sources of emissions and to investigate complaints.

What more could be done?

Most states and municipalities, however, are regrettably deficient in air-pollution control. Although they have "thou-shalt-not pollute" laws on the books, enforcement is feeble and appropriations are parsimonious. All states and local governments together spend anuually about 8 cents per capita on air-pollution control. Eight cents worth of prevention, however, makes imperceptible dents on the case loads of physicians and morticians.

What state and local governments might well do for their citizens is, first, ascertain the intensity and types of impurities of the air in their respective jurisdictions; second, establish minimum standards of tolerable impurities in their ambient air; third, enact appropriate legislation to enforce compliance with the established standards; and, fourth, appropriate sufficient funds to employ competent medical and engineering talent for administrative purposes. Admittedly, it is easier to prescribe than to carry out; but the fact that effective control exists in some localities is prima facie evidence that it can be done.

Industry is to be complimented for such antipollution measures as have already been taken, like the installation of filters, scrubbers, electrostatic devices, and the construction of tall stacks. But most industries could do a great deal better. Fossil fuel-burning industries are the heavyweight polluters, notably the electric power utilities, the steel and metallurgical industries, and the petroleum refineries. Many of these have done much to reduce the emission of particulates, but huge volumes of noxious gases still pour out. Much of the sulfur dioxide contamination, for example, could be eliminated by shifting to low-sulfur coal without much increase in cost of kilowatts to consumers. One engineering journal, referring to the various stack emissions, points out that "careful fuel selection and attention to fundamental principles of combustion can eliminate some of these entirely and reduce the amount of others such as fly ash."

Multitudes of smokemobiles

The country's 80 million automobiles and trucks that choke urban and suburban streets

and expressways also choke up metropolitan atmospheres with unburned hydrocarbon corruption. The internal combustion engine is an infernal air contaminator.

The trouble with the spark-fired internal combustion engine is that it doesn't combust all the fuel fed to it. Unburned hydrocarbons escape through tailpipes in enormous volume. Moreover, motor companies, in their competitive zeal to build cars that outperform each other, have souped up the motors with herculean horsepower and jackrabbit acceleration, thereby making the modern motor car a superpolluter.

When a thermal inversion clamps a lid over a city its citizens are trapped in an atmosphere of tailpipe vapors, and there is nothing they can do but inhale the poisonous air and endure the smarting of eyes until the arrival of a breeze strong enough to clear the atmosphere. In last year's "Clean Air" hearings in Washington, Maine's Senator Muskie, addressing a representative of the Automobile Manufacturers Association, said: "It strikes me . . . that if you develop for California for its 1967-model cars, a device which will substantially reduce the emissions from the automobile exhaust, that it would be a service to the country to make that available on every new car sold in America." The Senator's statement elicited a reply concerning the need for a tremendous amount of work to be done. Purification of tailpipes would be ever so much better for public health than glorification of tailfins.

What next?

Learned lectures delivered before professional societies frequently end with a plea for further study. Air pollution can also stand more research, but there comes a time when the fruits of research must be translated into action.

It is already well known that air pollution is a national nuisance; that it has adverse effects on public health; that the majority of people are victims of the scourge; that the menace is getting worse instead of better because all the fires of pollution are raging faster than the ardor for abatement. To be sure, there is need for more education, more missionary work, because the severity of atmospheric litter is still not comprehended by many people, including some five- and six-digit executives.

But the major reason for so little action is that abatement costs money. There's the rub. To equip a $200,000 open-hearth steel furnace with an electric precipitator to capture the stack dust costs about $150,000 additional. In some industries the additional cost of installing a control device is proportionately smaller; in others, greater. Substantial reduction of motor-vehicle emission, however, could be achieved without much additional cost, according to one motor company. Modification of the engine is said to cost no more than $14 to $19 per car at the factory.

Leading concerns in major industries have established high standards of production with a minimum of air pollution by non-revenue-producing expenditures of considerable amount for appropriate installations. There are reasonably clean steel mills, petroleum refineries, coal-burning power plants; but the socially conscious corporations are in the minority.

Suppose all fossil fuel-burning installations were cleaned up with the best anti-pollution know-how. Suppose all incinerators, all motor vehicles, all dusty, dirty, fumy, smoky, and smelly installations were taken to the laundry. The consumers of their goods and services would, of course, pay the tab in higher prices for their products; but would the cost be pro-

hibitive? It might run to $3 billion, perhaps $5 billion. Even at twice the latter figure, it would just about offset the estimated annual cost of property damage caused by air pollution. And about 200 million people would be breathing pure air—not so pure as it was when the Mayflower docked, but much, much better than it is now.

Postscript

The carbon dioxide which we exhale is not a pollutant in the ordinary sense, and it constitutes only a tiny fraction of the atmosphere but it plays an important role in the life processes of the world's flora and fauna. Green plants, utilizing the energy of sunlight, manufacture carbohydrates from carbon dioxide and water, and release oxygen. Man and other breathing animals use oxygen and release carbon dioxide; thus plants and animals are mutually interdependent in what scientists call the "carbon cycle."

Carbon dioxide, however, is also produced whenever we burn carbonaceous fuels such as coal, gas, oil, wood, or paper. All this burning since the turn of the century has increased the carbon dioxide in the atmosphere by an estimated 10 per cent, according to one authority—faster than plants and the oceans can absorb it, and may be the cause for the slight warming of the Northern Hemisphere that has taken place since then.

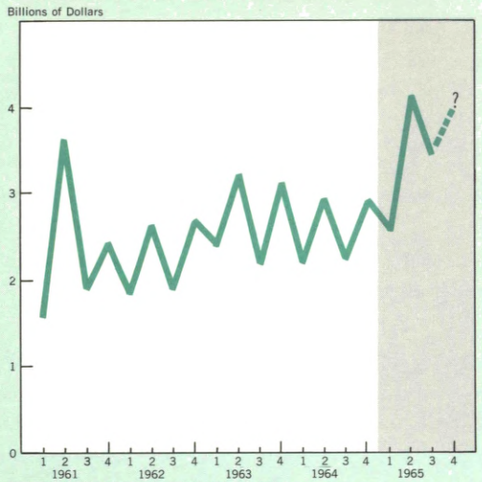
The Conservation Foundation says that the carbon dioxide build-up, while not yet alarming, may eventually cause the polar icecaps to melt, raising the ocean levels and submerging low-lying cities like New York, Philadelphia, and Washington. It is suggested that the reader, if he is still with us, not worry too much about this hazard because it is not imminent and is a matter in need of further research.

WHY THE BULGE IN THE CORPORATE BOND MARKET?

CHART 1.

Corporate bond issues in 1965 should total around $14 billion, a record for any one year and the third consecutive year in which corporate bond issues have exceeded $10 billion. Why this bulge? The following charts throw some light on this question.

Gross Proceeds from Corporate Bond Issues*

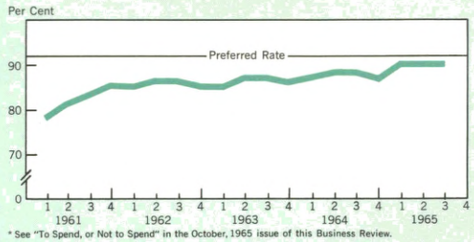


*Includes bonds issued by finance and real estate corporations.
Source: S.E.C. Statistical Bulletin.

CHART 2.

Since 1961, expanding demand for goods and services has reduced substantially the level of **excess capacity** in the economy. As the actual rate of capacity utilization nears the preferred rate, as it has particularly since mid-1964, business has responded by increasing its physical capacity to produce.*

Rate of Capacity Utilization of the Manufacturing Sector

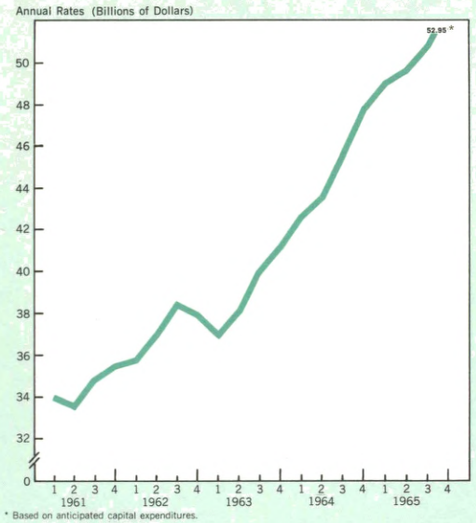


* See "To Spend, or Not to Spend" in the October, 1965 issue of this Business Review.

CHART 3.

Increasing the physical capacity to produce requires **capital expenditures.** Indeed, business outlays for plant and equipment have been one of the strong points of the business expansion which began in 1961. Moreover, the rate of increase in capital expenditures has accelerated since 1964. Estimated expenditures in the fourth quarter of 1965 are 56 percent greater than expenditures in the first quarter of 1961, and 22 percent greater than expenditures in the second quarter of 1964.

Expenditures for Plant and Equipment
(Seasonally Adjusted)

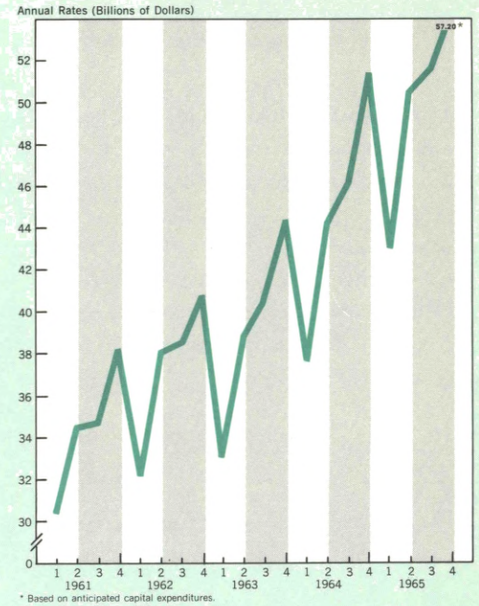


* Based on anticipated capital expenditures.
Source: Survey of Current Business.

CHART 4.

Spending for plant and equipment moves in a regularly recurring **seasonal pattern.** From a low point in the first quarter of the year, expenditures rise sharply in the second quarter, roughly level-off in the third quarter, and rise sharply again in the fourth quarter. While cyclical factors have led to record capital spending this year, seasonal factors have led to bulges in the second and fourth quarters.

Expenditures for Plant and Equipment
(Not Seasonally Adjusted)

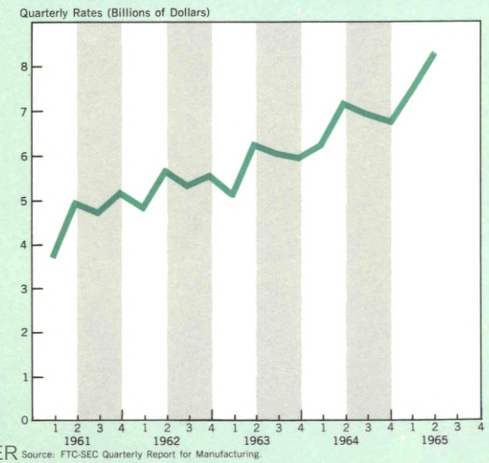


* Based on anticipated capital expenditures.
Source: Survey of Current Business.

CHART 5.

The major source of funds for financing capital expenditures and additions to net working capital is **internally generated funds,** primarily the sum of retained earnings and depreciation allowances. Internally generated funds in the past few years declined in the third and fourth quarters. Thus far in 1965, the rate of internal funds generation has followed this pattern. This means that internal funds have tended to be low when capital spending has been high, as shown by . . .

Internally Generated Funds of Manufacturing Corporations

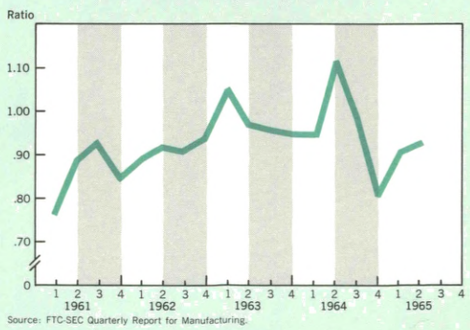


Source: FTC-SEC Quarterly Report for Manufacturing.

CHART 6.

. . . the **ratio of internally generated funds to investment spending.** This has been substantially lower than it was in mid-1964 as capital spending increased at a greater rate than generation of internal funds. What is more, if seasonal factors continue as in the past, the ratio probably declined in the third quarter and will drop further in the fourth quarter of 1965.

Ratio of Internally Generated Funds to Gross Capital Expenditures Plus Additions to Net Working Capital for Manufacturing Corporations



Source: FTC-SEC Quarterly Report for Manufacturing.

Forecasters see capital spending continuing at a rapid rate in 1966. A resurgence in the rate of flow of internally generated funds is not expected. Consequently, the high level of demands for corporate long-term external financing (of which 80 percent has been bond issues during the current expansion) seems likely to continue in 1966. The corporate bond market should have another busy year.

More and more bankers are asking whether rates paid on savings and time deposits should be hiked to provide a competitive edge in the scramble for the savings dollar. Alternatively, they wonder whether less costly ways exist to attract time deposits. Answers to these questions are important in the hotly competitive market for savings and indeed may yet determine who wins . . .

THE RACE FOR SAVINGS

Throughout the 1950's, savings and loan associations were winning the race for savings. In the last few years commercial banks have been turning the tables.

The percentage share of combined time and savings deposits held by commercial banks, savings and loan associations and mutual savings banks in the U.S. over the last decade and a half looks like this:

	1950	1961	1964
Savings and Loan Associations	20	38	38
Commercial Banks	51	41	43
Mutual Savings Banks	29	21	19
	100%	100%	100%

A similar table for the Third Federal Reserve District shows the same pattern of development:

	1950	1961	1964
Savings and Loan Associations	18	34	33
Commercial Banks	61	46	47
Mutual Savings Banks	21	20	20
	100%	100%	100%

During the fifties, bankers in the nation and the Third District saw their share of the savings market plummet as savings and loan associations took the lion's share of the savings dollar. Later, bankers in the District, as in the U.S., reversed the downward trend.[1]

In view of the likelihood that the race for savings will continue at a hectic pace, an analysis of past shifts may tell us much about the outcome of the race in the future. To the economist, this involves such interesting questions as the interest-elasticity of the supply of savings; to the banker, it is a very real problem of dollars-and-cents importance.

FACTORS AFFECTING SHARES

The economist and the banker would agree that it is hard to single out the most important factors at work in determining the volume of savings. There is a whole group of forces at work in the environment: the size and growth of the local population, the size and growth of incomes, the number of saving institutions present in a community, and so on. Our analysis suggests that the volume of savings in an area is influenced significantly by such environmental

[1] Unlike their colleagues nationally, however, mutual savings bankers in the Third District managed to hold their share of the market fairly constant over the period, perhaps reflecting to some extent the relatively high geographical concentration of mutual savings banks in the District compared to most other parts of the country.

considerations over which the individual banker has little or no direct control.

The share of savings that a particular institution may get is influenced by at least two other factors, and these are things over which institutions have more direct control: interest rates paid for savings deposits and number of offices (the convenience factor). To examine the effects these controllable factors have on market shares, let us look first at competition between commercial banks and savings and loan associations. Then we will take a look at competition for savings deposits among commercial banks.

Commercial banks, savings and loans, and interest rates

As shown in the chart on the following page, throughout the 1950's and so far in the 1960's, the average interest rate paid by savings and loan associations has been higher than that paid by commercial banks. As one might expect in such a situation, the S & L's have increased their share of the savings market.

But their gain has not been steady; one can discern a definite stair-step pattern in the chart. These stair-step jumps upward in the S & L's share of deposits have come when the premium paid by savings and loans has suddenly widened (or failed to narrow much)—periods which seemed to be associated in the main with years of business cycle recession and recovery.

One possible reason for this pattern concerns the types of assets in which the two institutions invest their funds. Savings and loans put their money to work primarily in residential mortgages. Mortgages are relatively high-yielding assets (which means that savings and loans historically have been able to pay a higher price for savings). Moreover, the supply of mortgages has been rising steadily since 1950 (which means that savings and loans had a steady outlet for their higher-cost savings funds).

Commercial banks, on the other hand, have a greater need for liquidity. They place a much smaller percentage of their funds into mortgages and other higher-yielding assets (which historically has tended to limit the interest rates banks pay on time and savings deposits). Moreover, the assets in which banks *have* tended to invest more heavily over the years (business loans and investments) not only provide a lower yield on average, but also provide a less stable outlet for funds. Loan demand is subject to wide variation over the business cycle.

These differing characteristics, then, have helped to produce the pattern shown in the chart. As the business cycle turns down, loan demand at commercial banks declines and as a result banks tend to compete less aggressively for time deposits. The gap between the rate of interest paid by savings and loan associations and commercial banks tends to widen, proportionately more savers take their money to the S & L's, and the commercial bank share of the savings market declines.

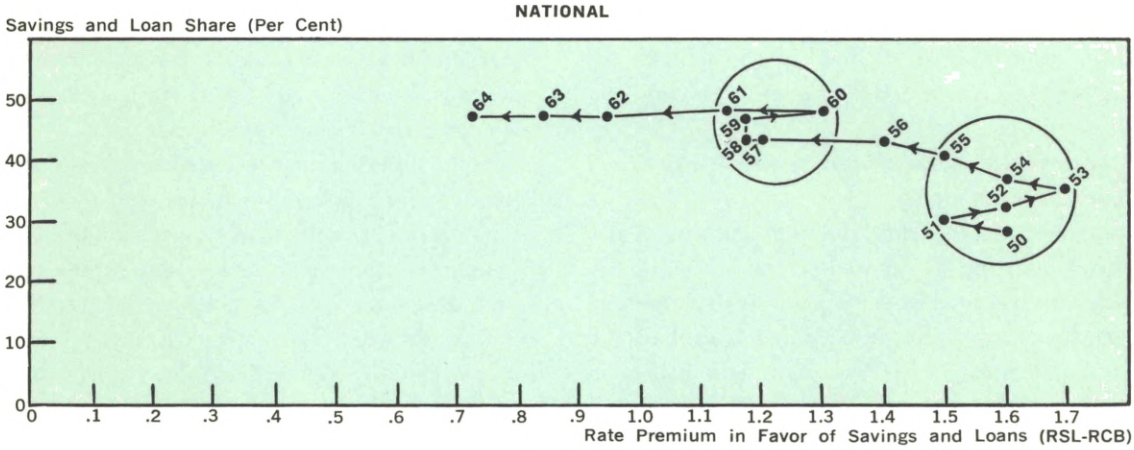
As business conditions pick up, banks need loanable funds more; they compete more aggressively for savings and the interest-rate gap narrows. But with the keen competition that exists, it is difficult for banks to regain their relative share of the savings market. Once people have shifted savings accounts, a big difference in interest rates may be required to get them to move back again, or to attract new deposits.

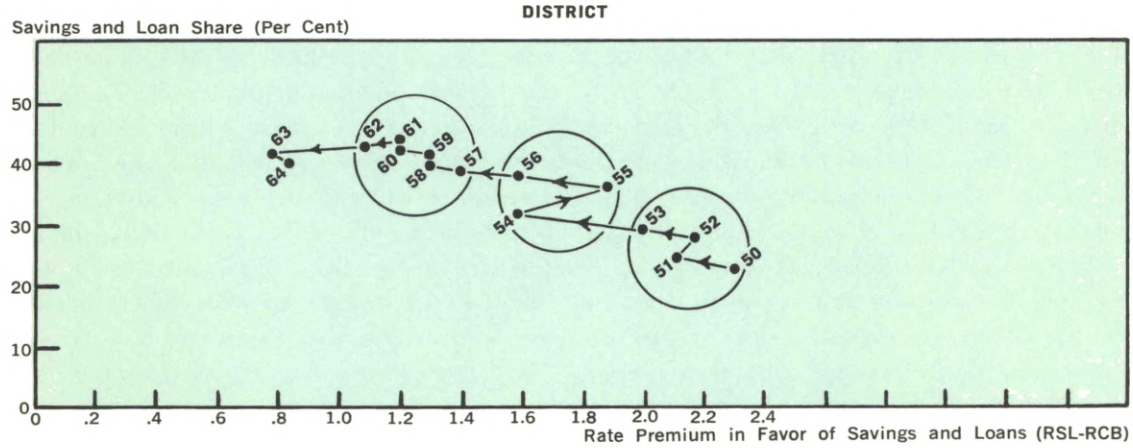
As the chart also shows, however, the pattern since 1961 has been different. During this long period of sustained economic growth, the S & L's share of time deposits started to trend downward in the District and the nation.

At least two factors have enabled banks to

These charts show the relationship between interest rates paid by commercial banks and savings and loan associations (horizontal scale) and the share of the combined savings market held by the two institutions (vertical scale). The line moving from right to left indicates that the differential in interest rates paid by S & L's over rates paid by commercial banks has declined over the period 1950–1964. One can discern a definite stair-step pattern—the S & L's share seems to take quantum leaps. These stair-step jumps upward in the S & L's share of deposits come when the premium paid by savings and loans suddenly widens (or fails to narrow much); periods which seem to be associated in the main with years of business cycle recession and recovery.

RELATIONSHIP BETWEEN SAVINGS AND LOAN SHARE OF THE SAVINGS MARKET AND RATE DIFFERENTIALS
(*1950–1964*)





compete more effectively for time deposits in recent years. For one thing, the period since 1961 has been characterized by a strong demand for bank loans while residential construction and the demand for mortgages has not been so vigorous. Secondly, commercial banks, continuing a trend that began earlier, have been putting more of their funds into mortgages and

higher-yielding consumer loans. Thus banks have had the incentive to compete more vigorously for time deposits and this—coupled with rising ceilings on rates permitted by supervisory authorities—has helped reduce the interest rate differential between banks and S & L's and halt the erosion of commercial banks' share of the savings market.

The District vs. the Nation

The rate premium in favor of savings and loan associations historically has been higher in the District than in the nation. In the last decade and a half rate differences in the District, on average, have ranged from .8 to 2.4 percentage points in favor of S & L's; in the nation the premium has been between .7 and 1.7 percentage points in favor of savings and loan associations. Yet, even though the rate differential puts District commercial banks at a greater *disadvantage* relative to their national counterparts each year, still the commercial bank share of combined S & L-commercial bank savings has been *higher* in the District (and the commercial bank share of the market has not declined at a noticeably more marked pace). One thing that may help to explain this seeming paradox between the local and national situations is a second factor over which the individual banker has some control—the number of offices. Convenient access is even more important to many people than interest rates in determining where to put their savings.

Commercial banks, savings and loans, and offices

The accompanying table indicates that the number of commercial banking offices expanded at a much faster rate than savings and loan offices in the Third District—2.8 per cent versus .4 per cent, respectively. On the national scene, however, savings and loans and commercial banks added offices at the same rate—2.4 per cent. Thus District bankers may have reduced the impact of the rate gap by getting relatively closer to savers.

CHANGE IN NUMBER OF OFFICES
AVERAGE ANNUAL RATE
1950–1964

	District	Nation
Commercial Banks	+2.8%	+2.4%
Savings and Loan Associations	+ .4%	+2.4%

The interest rate—office trade-off

Should a bank or savings and loan rely on interest-rate differentials or convenience (number of offices) to attract savings deposits? The answer—it depends. Our data suggest the answer lies somewhere in between those two extremes and depends on the market environment.

The following table summarizes four different types of market situations depending on interest-rate differentials and number of offices.[2] Along the top of the table is the amount by which the rate paid by savings and loans exceeds the rate paid by commercial banks. Down the side is the ratio of commercial bank offices to savings and loan offices. And in each box in the table is the savings and loan share of the savings market.

[2] Values for this table were derived from data for commercial banks and savings and loan associations in 60 Third District counties for 1963. The office ratio for a county was designated by inspection as high if the number of commercial bank offices per savings and loan office was greater than 4. Interest rate premiums were considered high if the difference between the rate paid by savings and loan associations and the rate paid by commercial banks was equal to or greater than .5 percentage points. The savings and loan share of the combined savings market held by S & L's and commercial banks was computed for each county. Then, each county was placed into one of four groups on the basis of rate differential and office ratio. The four groups were: both rate differential and office ratio high; both rate differential and office ratio low; rate differential high, office ratio low; and rate differential low, office ratio high. Once the four groupings were obtained, the average rate differential, office ratio and market share for each group of counties was computed. Those values appear in the table above. Several different class intervals for classification purposes produce essentially similar results.

		Rate Premium in Favor of Savings and Loan Associations (percentage points)	
		.30	.90
Number of Commercial Bank Offices per Savings and Loan Association Office	8 to 1	5%	7%
	2 to 1	32%	36%

The different types of market situations are:

1. Rate premiums *slightly* in favor of savings and loans (.30) and the number of offices *strongly* in favor of commercial banks (8 to 1)—S & L's get only 5 per cent of the market, the worst showing.

2. Rate premiums *highly* in favor of savings and loans (.90) and the number of offices *highly* in favor of commercial banks (8 to 1)—where the spread in interest rates is wider, the S & L share is 7 per cent of savings.

3. Rate premium *slightly* in favor of savings and loans (.30) and the number of offices *only somewhat* in favor of commercial banks (2 to 1)—the S & L share is 32 per cent of the market even though the rate differential is only slightly in their favor.

4. Rate premium *highly* in favor of savings and loans (.90) and the number of offices *only somewhat* in favor of commercial banks (2 to 1)—in markets where S & L's compete strongly on both terms, interest rates and convenience, they get the largest share—36 per cent—of any other combination of factors.

The best strategy for competition seems to be to use both weapons—interest rates and number of offices, but the strongest attraction for time deposits appears to be offices—the convenience factor. Bankers have always stressed convenience—one-stop banking—and our findings seem to bear out their experience.

Competition between commercial banks

The banker has to worry not only about the savings and loan around the corner but also about the commercial bank across the street, Again, he must decide how much to compete on the basis of interest rate and how much on the basis of convenience.

The following table summarizes four other market situations depending on interest rate differentials and number of offices.[3] Along the top of the table is the average amount by which the rate paid by "high-paying" banks exceeds the rate paid by "low-paying" banks. Down the side is the ratio of offices of "high-paying" banks to offices of "low-paying" banks. And in each box in the table is the share of savings held by the "high-paying" banks.

		Rate Premium in Favor of "High-Paying" Banks (percentage points)	
		.20	.72
Number of Commercial Bank Offices of "High-Paying" Banks per Office of "Low-Paying" Banks	1 to 1	48%	52%
	3 to 1	71%	71%

These situations lead to the same general conclusions as the earlier comparison of commercial banks and savings and loan associations:

1. Rate premiums *slightly* in favor of high-paying banks (.20) and the number of offices *roughly* even (1 to 1)—the high-paying banks get 48 per cent of the market, the worst showing.

[3] Values for this table were derived from data for commercial banks in 60 Third District counties for 1963. In each county, commercial banks were ranked according to rates of interest paid on time and savings deposits, then divided into two groups at the median interest rate paid. Rate differentials were obtained by taking the difference between the average rate paid by banks above the median rate in that county and the average rate for banks below the median. The office ratio for each county was derived by dividing the total number of offices of banks above the median interest rate by the total number of offices of banks below the median rate. Thus, observations consisted of 60 rate differentials and office ratios. Each county was classified into one of four groups: (1) rate differential high (greater than .4)—office ratio high (greater than 1.5); (2) rate differential low (less than .4)—office ratio low (less than 1.5); (3) rate differential high—office ratio low; and (4) rate differential low—office ratio high. Market shares are for those banks above the median interest rate as a per cent of total time and savings deposits held by commercial banks. After classification, the average rate differential, office ratio and market share for each group was computed. Those values appear in the above table. Different class intervals produced similar results.

THE PHILADELPHIA STORY

Philadelphia banks are reaching out for money to lend. To get savings funds, commercial banks now are paying 4 per cent on regular savings—and 4½ per cent on savings bonds (certificates of deposit). The high rate makes the banks more competitive with other institutions in the Philadelphia area. Philadelphia now is, also, more competitive with other major cities in the nation, especially New York.

Increases in rates paid by Philadelphia banks apparently were not motivated by inability to compete with other financial institutions in the area or with banks in other market centers. On the contrary, even before the recent rate hike, the banks had been able to increase their share of total savings in Philadelphia and had been holding their own in comparison with reserve city banks throughout the nation.

Chart A shows shares of combined time and savings deposits held by commercial banks (reserve city banks), mutual savings banks and savings and loan associations in Philadelphia. Despite the fact that reserve city banks paid lower rates—they paid ½ per cent less than mutual savings banks or savings and loan associations—their share of the combined savings held by the three institutions increased from 16 per cent in the last quarter of 1961 to 17% in the second quarter of 1965.

Philadelphia banks have maintained their share of total time and savings deposits held by all reserve city banks in the United States, even though interest rates paid were somewhat lower. Philadelphia reserve city banks' share of total savings deposits of all reserve city member banks was approximately 2 per cent during the period 1961–64; their share of other time deposits ranged narrowly around 3.5 per cent. Time deposit money moving in and out of New York City reserve city banks apparently involved other reserve city banks than those in Philadelphia.

CHART A

AMONG INSTITUTIONS IN PHILADELPHIA

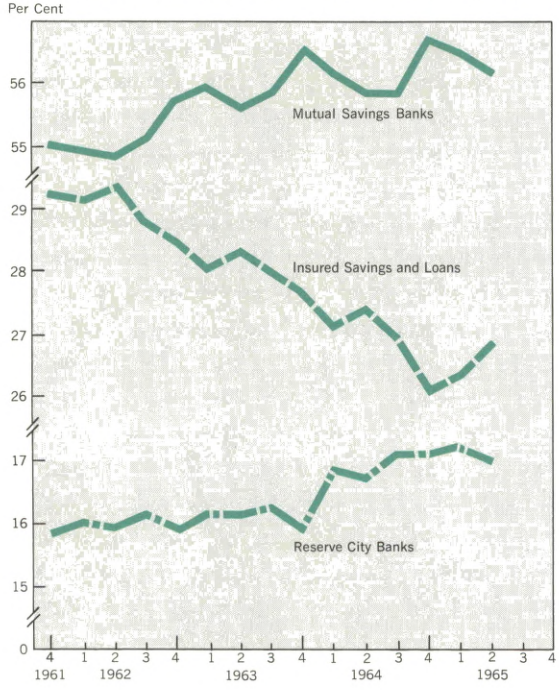
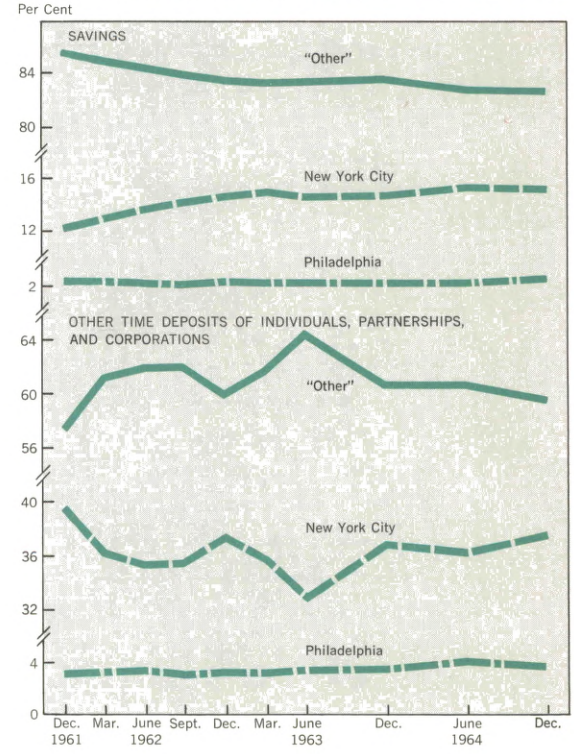


CHART B

AMONG RESERVE CITY BANKS IN THE U. S.



2. Rate premiums *highly* in favor of high-paying banks (.72) and the number of offices *roughly* even (1 to 1)—where the spread in interest rates is wider, the high-paying banks' share is 52 per cent of savings.

3. Rate premiums *slightly* in favor of high-paying banks (.20) and the number of offices *highly* in favor of high-paying banks (3 to 1)—the high-paying banks get 71 per cent of the market.

4. Rate premiums *highly* in favor of high-paying banks (.72) and number of offices *highly* in favor of high-paying banks (3 to 1)—high-paying banks still get 71 per cent of the market.

Thus, it would seem the same general pattern of market shares occurs when one compares different market situations among commercial banks or when one compares savings and loan associations versus banks. Banks that pay higher rate premiums and have number of offices strongly in their favor get larger shares of the savings market (though offices seem to exert the stronger pull).

Rates vs. offices—some general considerations

There are, of course, a legion of factors and problems to consider in deciding whether to compete by way of rates or offices or both. If a banker chooses to compete on the basis of rates, he must consider the effects a change in rates may have on his bank. An increase in rates may bring more time and savings dollars into the bank, but interest paid for time and savings deposits is also an expense item in a bank's profit-and-loss statement. When the rate on time deposits rises, that rate applies not only to new deposits but to the time funds already deposited in the bank. Thus, the banker must judge whether or not a rate hike will bring in enough new funds to be loaned out at high enough yields to cover the additional costs on deposits already held. In other words, a banker may find that total interest expenses rise faster than the income that comes from new funds brought in by the rate change.

It may be less expensive for the banker to consider the alternative of establishing or acquiring branches. Whether this is a better alternative depends, among other things, on a comparison between the total cost of additional offices versus the total cost of raising interest rates in relation to funds likely to be gained. If, when costs are compared (and other benefits of new offices are determined), the same amount of new savings deposits can be generated more cheaply by increasing the number of offices, that may be the economic thing to do. Another consideration, however, is that acquiring offices is a decision that usually involves capital expenditures that are committed for relatively long periods of time. Competing on the basis of offices may not have the same degree of flexibility as does rate competition.

Another approach to rate competition (as Philadelphia banks are demonstrating) is the "segmentation" of markets. New instruments, or forms of saving, may permit banks to offer higher rates at the margin without involving all the savings and time deposits on their books. A new instrument, say a savings bond, permits the bank to compete for funds at the time it needs money badly on the basis of interest rates. By offering the new higher rate only on that instrument, the bank may be able to attract funds without having the higher rate apply to deposits it has already. There will be leakage, of course, from people switching from one type deposit to the new type. But the net rise in total interest expense is likely to be less than

if there were an across-the-board rise in interest rates.

These are but a few factors bankers will consider in deciding upon an optimum strategy to compete for savings. They are important ones, however, and how they are combined will significantly influence the outcome in the years ahead of the race for savings.

business review

FEDERAL RESERVE BANK OF PHILADELPHIA

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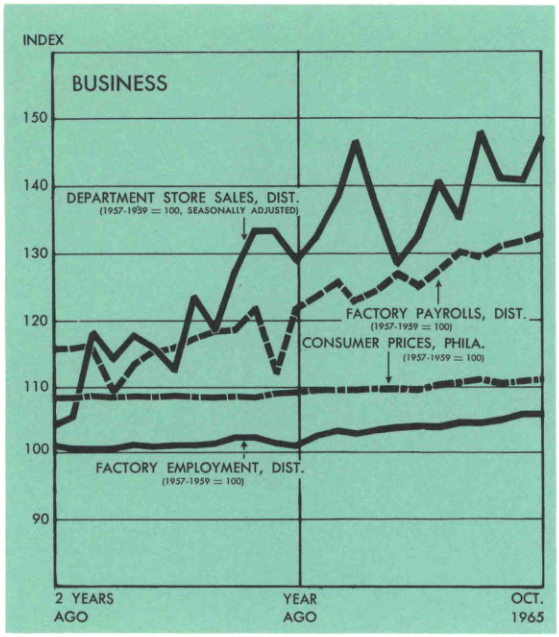
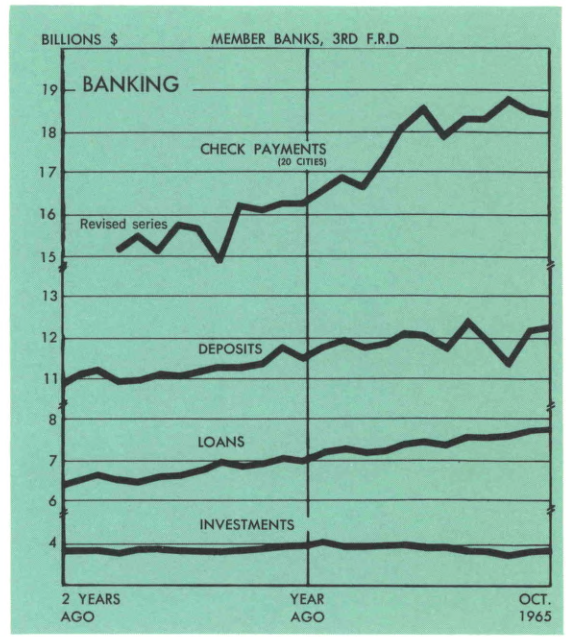
FOR THE RECORD...





SUMMARY

	Third Federal Reserve District			United States		
	Per cent change			Per cent change		
	Oct. 1965 from		10 mos. 1965 from year ago	Oct. 1965 from		10 mos. 1965 from year ago
	mo. ago	year ago		mo. ago	year ago	
MANUFACTURING						
Production	....	....	....	+ 2	+10	+ 9
Electric power consumed	− 2	+ 6	+ 9	....	....	....
Man-hours, total*	0	+ 7	+ 7	....	....	....
Employment, total	0	+ 4	+ 4	....	....	....
Wage income*	+ 1	+10	+ 9	....	....	....
CONSTRUCTION**	− 1	+13	+15	+ 5	+ 8	+ 5
COAL PRODUCTION	+17	+ 2	+ 3	+12	+ 7	+ 7
TRADE***						
Department store sales	+ 5	+11	+ 5	....	....	....
BANKING						
(All member banks)						
Deposits	+ 1	+ 6	+ 7	+ 1	+ 9	+ 9
Loans	+ 1	+11	+11	+ 1	+15	+14
Investments	0	− 2	+ 1	+ 3	+ 2	+ 2
U.S. Govt. securities	0	−10	− 6	+ 5	− 6	− 6
Other	+ 1	+10	+13	0	+16	+15
Check payments***	− 1†	+12†	+12†	0	+ 9	+10
PRICES						
Wholesale	....	....	....	0	+ 2	+ 2
Consumer	0‡	+ 2‡	+ 2‡	0	+ 2	+ 2

*Production workers only
**Value of contracts
***Adjusted for seasonal variation
†15 Cities
‡Philadelphia

LOCAL CHANGES

	Factory*							
	Employment		Payrolls		Department Store Sales†		Check Payments†	
	Per cent change Oct. 1965 from							
	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago
Lehigh Valley	− 1	+ 3	− 1	+ 5	....	....	+ 4	+19
Harrisburg	− 1	+ 2	− 2	+ 6	....	....	+ 5	+23
Lancaster	− 1	+ 7	0	+13	+10	+ 6	+ 3	+12
Philadelphia	0	+ 3	0	+ 8	+12	+ 4	− 5	+ 9
Reading	+ 1	+ 5	+ 3	+10	+ 4	+ 4	+ 9	+26
Scranton	0	+ 4	+ 1	+12	+ 8	+ 4	0	+ 6
Trenton	+ 3	+12	+ 7	+22	+12	+ 5	− 1	+ 4
Wilkes-Barre	− 1	+ 3	0	+ 7	+ 7	+ 5	+ 8	+15
Wilmington	− 1	+ 8	+ 7	+19	+10	+ 8	+15	+31
York	+ 1	+ 5	+ 4	+13	+ 9	+ 9	0	+ 9

*Not restricted to corporate limits of cities but covers areas of one or more counties.
†Adjusted for seasonal variation.