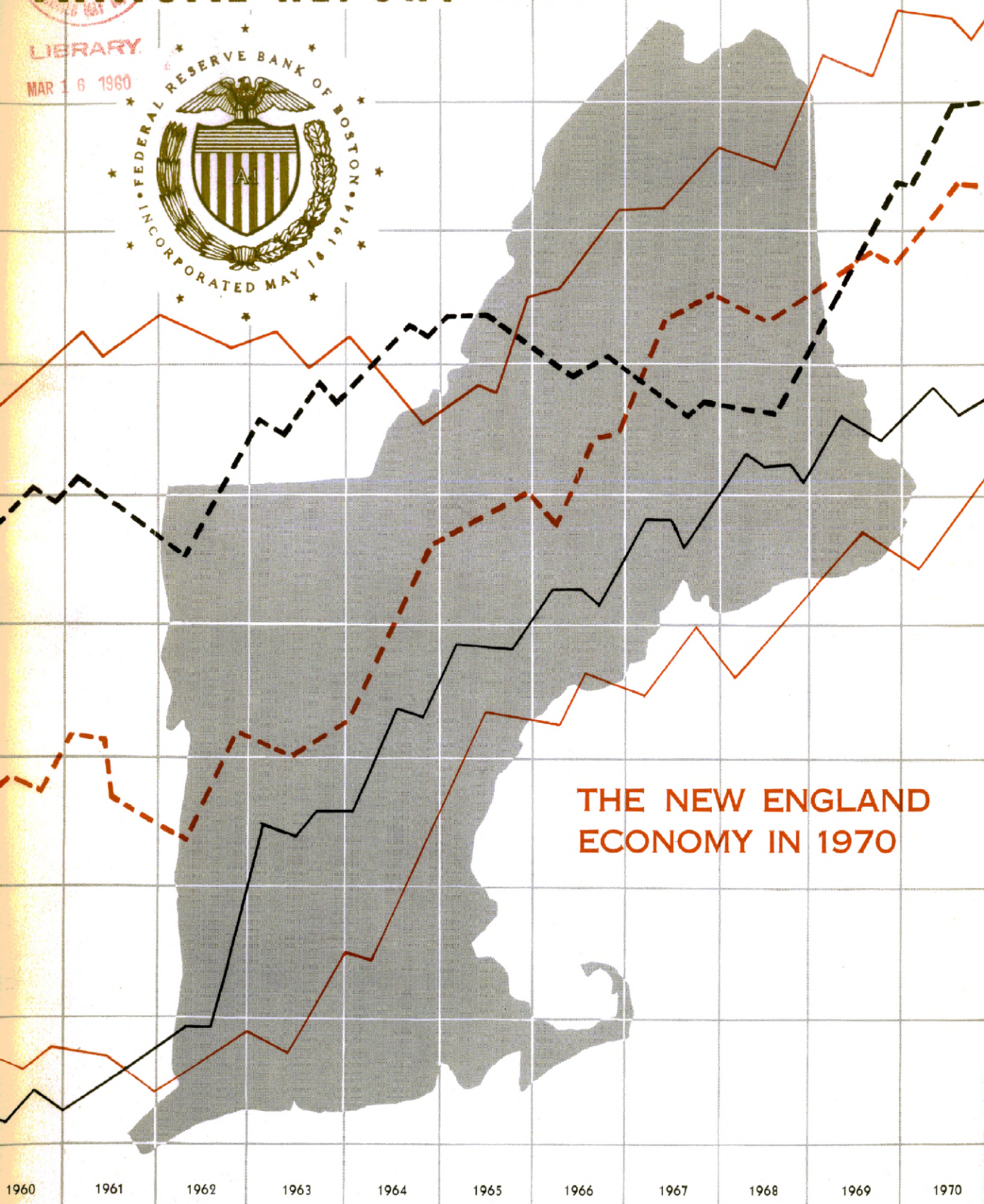


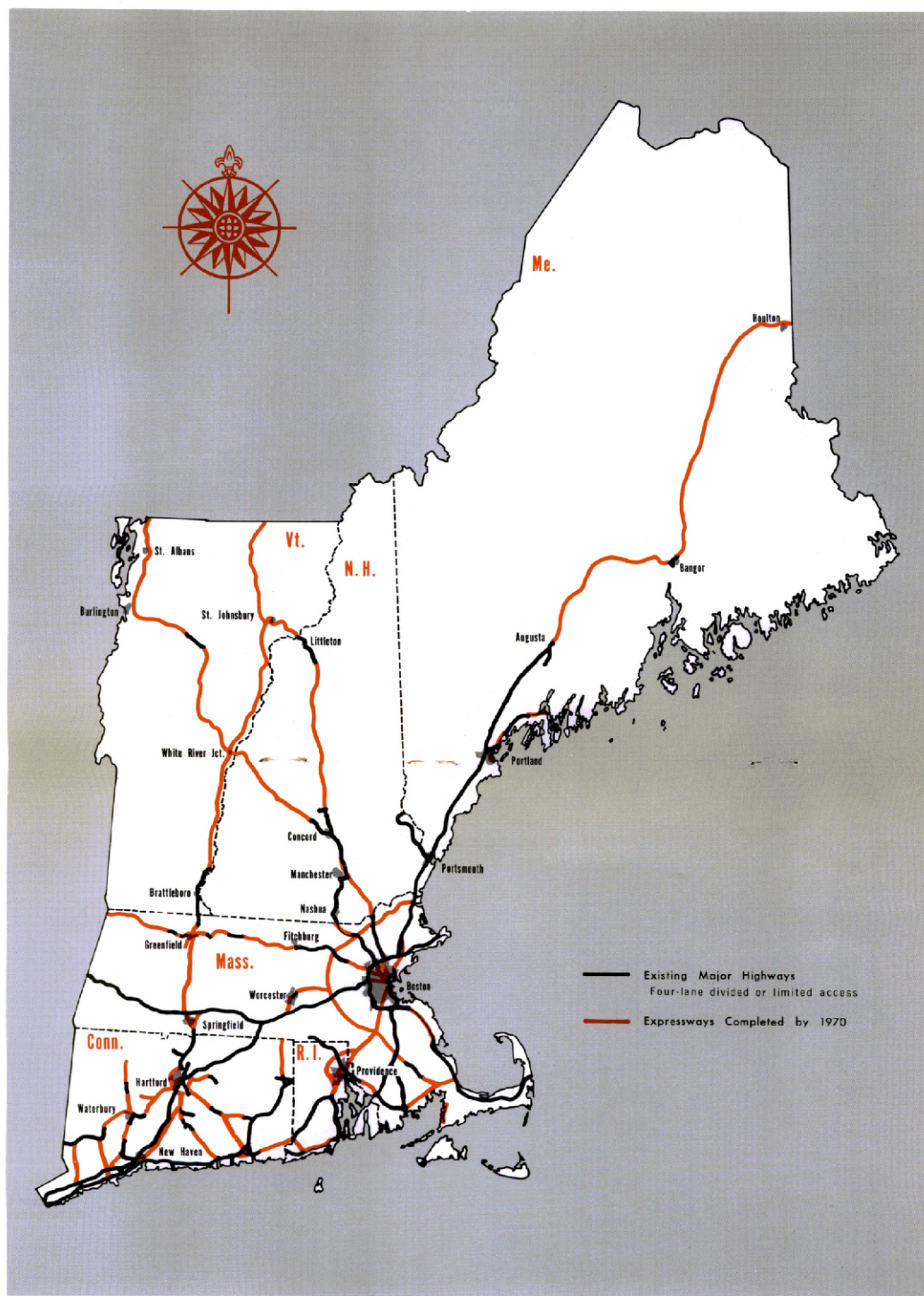
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NEW ENGLAND'S EXPRESSWAY NETWORK

ACTUAL AND PROJECTED

The divided, limited-access highways shown on this map, which does not include all primary roads, are expected to carry about 45 percent of New England's 1970 traffic. They will account for about 25 billion vehicle miles of the regional total of 55 billion estimated for 1970 by the Census Bureau.

1959
ANNUAL REPORT

Federal Reserve Bank of Boston

**THE
NEW ENGLAND ECONOMY
IN 1970**



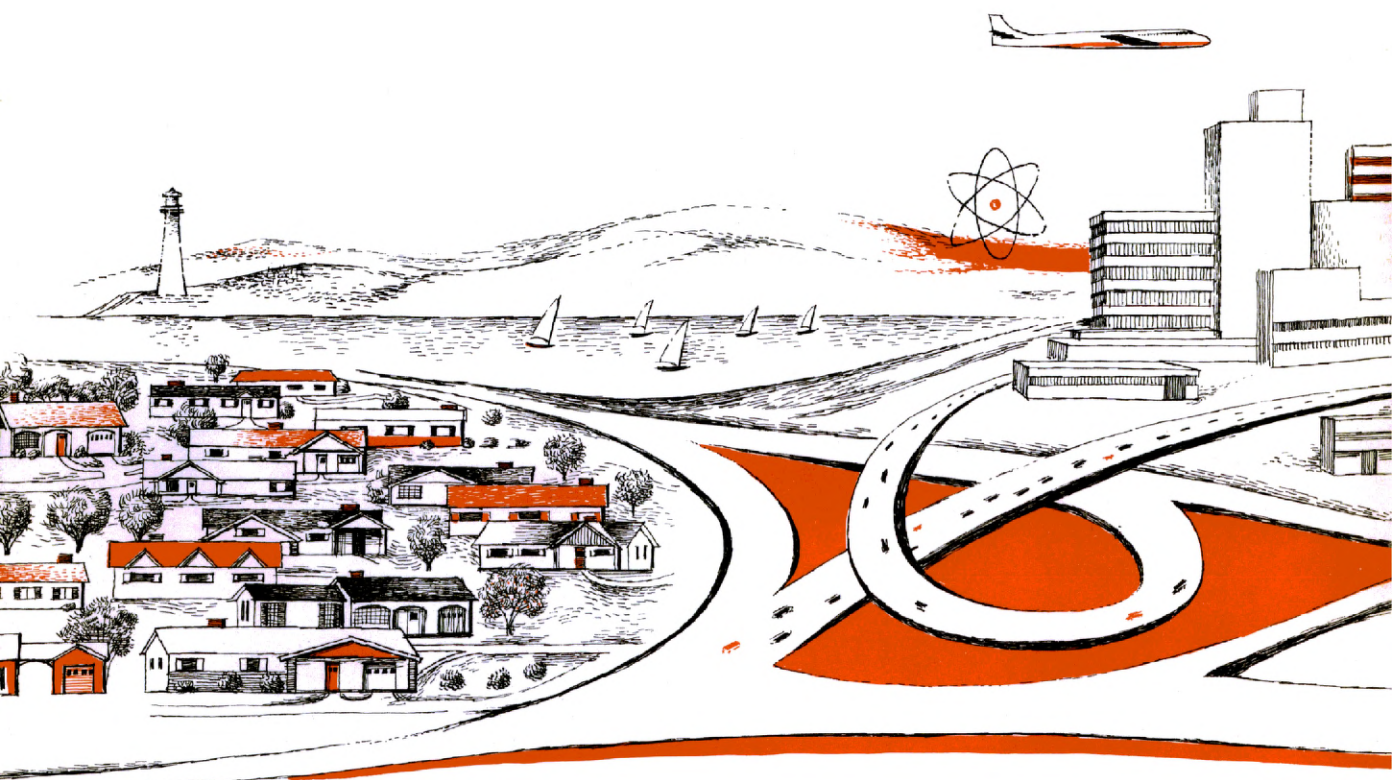
THE NEW ENGLAND ECONOMY IN 1970

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IT is a pleasure to send you the 1959 Annual Report of the Federal Reserve Bank of Boston.

You will observe that as in previous issues much of the report is devoted to a discussion of the New England economy rather than the operations of our Bank.

This year we present the results of an extended study of some of the possibilities and probabilities of the New England economy in 1970. The general areas we have studied are indicated in the table of contents on the opposite page.

Although the need for a look ahead for New England seems hardly to require justification, perhaps the homely words of C. F. Kettering are appropriate here: "We should all be concerned about the future because we shall have to spend the rest of our lives there." Our purpose in this presentation is to help, as best we can, all those in private enterprise and public affairs who will have to make major decisions which are directly related to the broader aspects of New England's economic future.

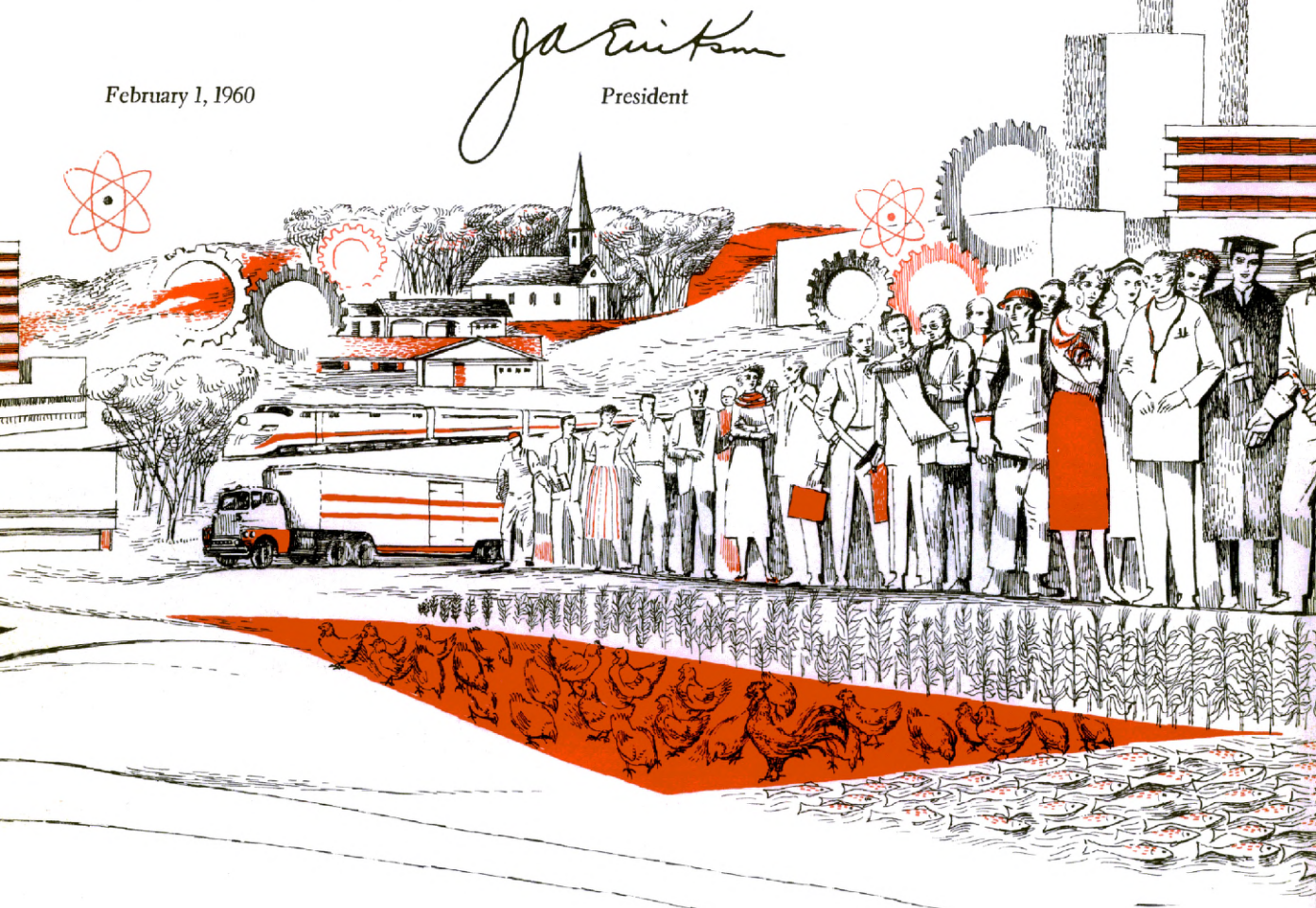
In reading the following pages it is important to remember that economic projections are not predictions: at best they can be merely estimates of what seems likely to occur on the basis of specific carefully chosen assumptions. The wisdom of our assumptions and the degree of skill with which we have built upon them can be proved only by time itself.

Summaries of the Bank's operations conclude the report. For the increasing efficiency of these operations, and for the assistance of our officers and staff in helping still further to expand the Bank's usefulness to New England's people, I extend my own thanks and those of our directors.

Our gratitude goes also to the region's bankers and other business leaders for their continuing generous co-operation.

February 1, 1960

President





THE NEW ENGLAND ECONOMY IN 1970

FOREWORD

In what ways and how fast is our national economy expanding? Is the growth of a kind which is likely to meet the needs of the American people as a whole and is the expansion fast enough? If changes in the direction of growth are needed, how can these best be made within the democratic and private enterprise systems? If expansion needs to be accelerated, what force or forces should be employed, and how?

These are some of the difficult questions which are of increasing concern to the nation. They make for continuing controversy about the comparative strength and growth rates of the free and communist nations and the implications of these respective rates of growth in terms of international relationships. The questions and the debates explicitly recognize the need for defining national goals and devising means of achieving them which will enlist widespread support.

To a lesser degree the nation's political subdivisions — regions, states and municipalities — face much the same problems. What is our economic destination? What roadblocks are we likely to encounter? How shall we get over or around them?

The following pages attempt to answer some of these questions as they apply to New England. The answers are necessarily tentative and at times incomplete. They are based on analyses of the region's recent economic history and on projections of trends in important sectors of New England's economic life as these have been measured, qualified and balanced one against another.

The New England economy is an integral part of the national economy. In taking this look at New England in 1970, it has been necessary, therefore, to make certain assumptions regarding the course of the nation over the next decade. For example, a major war or country-wide depression would automatically disrupt conventional economic relationships and overturn customary expectations. This report projects New England economic developments in the absence of such social catastrophes. At the same time, it assumes conditions which will necessitate a continuation of federal expenditures at a level comparable to that of 1959. It also assumes that the nation's economic life is likely to follow prevailing patterns of population growth, technological change and political stability, and that New England's economic life will generally conform to these patterns subject to discernible and measurable regional differences.

This study acknowledges one major goal for the New England economy during the 1960's — jobs for all who wish to work at wages and salaries which compare favorably with those paid elsewhere. If regional birth and death rates continue as expected, New England's population will increase slightly more than one million — the greatest gain in any decade of the region's history. To support such a population rise without substantial net migration, New England will need to provide an additional 421,000 jobs at acceptable income levels.

One difficulty in any attempt to project economic values is that price changes may alter the basic unit of measure in which change is recorded. In this report this fundamental difficulty is by-passed — not resolved — by expressing all estimated values in terms of 1957 dollars unless otherwise noted. The 1957 dollar base was chosen because this was the latest year for which much of the necessary data were available. By using constant dollar values, growth is expressed in real rather than in merely monetary terms. Insofar as inflation has affected the growth of recent decades, projection techniques that rely on recent trends must necessarily assume, for purposes of analysis, that the 1960's will experience the same degree of impact.

The sectors of New England's 1970 economy considered in this report have their own prospects and problems. But common to all of them, and often of primary importance, are certain developments unique to the region. Part I of this report deals with the composite pattern that seems to characterize New England's economic outlook. Such a discussion must, of course, consider the absolute size, the character, and relative growth rate of economic activity in New England, but it must also examine special problems likely to hamper the region's expansion and appraise possible stimulants to growth. Part II consists of a series of New England economic projections in such fields as population, labor force characteristics, income, markets, power and transportation facilities, and local and state government revenues and expenditures. It must be emphasized that projections are not predictions; they are simply estimates of the future based on numerous well-founded assumptions.

The objective of this study is not to provide pinpoint accuracy in statistical detail but to paint a broad picture of economic relationships which may facilitate the decisions which will shape the New England economy in the decade ahead.

The challenges which will confront the New England economy during the next decade call for positive action. The business community must display energetic enterprise; public officials must have the vision to develop constructive programs that will encourage economic growth. The alliance of these two forces, as history has shown, will enable New Englanders to build a still more vigorous and prosperous economy.



CHALLENGES AND OPPORTUNITIES

New England is entering what can be its greatest decade. During the 1960's the region's population is expected to rise by more than a million persons and its real annual income by \$7.1 billion, a 21 percent increase per person over 1957. Such unprecedented growth makes it necessary, as never before, to define and appraise attendant problems and lay out courses of action which will bring about the fullest realization of potential opportunities.

Reporters have all too frequently confused a decline in New England's relative share of the national economy with an absolute decline in regional activity. Since the Northeast — the older, more highly developed section of our country — may continue to expect a slower rate of growth than less highly developed regions, this confusion is likely to persist. New Englanders themselves are not so much concerned about their growth rate as they are about providing well-paying jobs for a constantly growing number of workers. In itself, a rise in population can sometimes create a drain on available resources which is not offset by the contribution of additional manpower.

It is important, therefore, to view New England's prospective growth with this in mind: New England is expected to add 17 persons per square mile during the next 10 years as against only 11 for the nation. By 1970 New England population per square mile is expected to be 180 as against 72 for the country as a whole. While New England cannot anticipate the discovery and exploitation of such vital mineral resources as coal, oil, or iron, so important to the development of some regions, neither does it contain, as others do, vast barren and unproductive areas. The economic value of land varies so much among regions that direct comparison of more detailed economic implications is extremely difficult.

The region's economy does not automatically operate to guarantee the projections made in these pages. For example, a population rise of one million presupposes an expanding supply of jobs at competitive wage levels. Unless suitable jobs are available at such levels, net out-migration is likely to check population growth. Basically, the competence, energy and imagination, and the decisions of millions of persons — producers, consumers, entrepreneurs and workers who are actively involved in the regional

economy — will determine the results. The record supports the excellence of the available talent. Despite the contraction of the textile industry, and in the face of vigorous competition from other regions, economic activity in New England created \$206 billion in real income during the 1950's — an increase of 26 percent over that of the 1940's and almost twice that of the 1930's. But the recipe for the region's growth and the methods of achieving it have changed substantially in recent years and will change still more in the years ahead.

It is not enough to realize the 1970 income and production goals; it is also essential so to improve the economy during the 1960's that the stage is set for a future of even more remarkable growth. We have come to expect, even to require, ever-rising incomes for an increasing population.



Structural Problems of Growth

The structural problems of growth clearly outweigh in difficulty those associated only with its magnitude. Most of the next 10 years' population growth is expected to occur in metropolitan areas, particularly in the suburbs. Some analysts estimate that on a nation-wide basis at least 80 percent of the net growth will occur in metropolitan areas. In New England, almost one-third of the entire population growth will take place in the 137 municipalities of metropolitan Boston which surround the 12 core cities and towns of Boston, Brookline, Watertown, Cambridge, Arlington, Somerville, Medford, Malden, Everett, Chelsea, Revere and Winthrop. Such growth will put a strain on the limited available resources by generating heavy demands for new schools, roads and other transportation facilities, water and sewer systems in cities and towns whose budgets are already hard pressed. The need for construction workers to build these projects will, of course, compete with the region's manufacturing labor needs.

Structural changes within the labor force will probably intensify the problems of factory management. The number of workers in New England is expected to expand by 421,000 during the next decade, with much of this expansion resulting from older women's taking jobs outside the home. In contrast, the proportion of males over 14 years of age in the labor force is expected to decline from its current level of 76 percent to 74 percent even though the number of male workers is expected to increase by 207,000. Employers will have to tailor their job requirements to these expectations.



Manufacturing and New England

Manufacturers must play the central role in the development of New England's economic potential. Employment needs and opportunities in construction, transportation, communication, education, government and other services are the result of over-all economic growth. In highly industrialized New England this over-all growth is supported largely by manufacturing payrolls and profits.

Manufacturing activity will thus be the major determinant in the growth of New England's population, income and output. The income earned by the sale of manufactured products to other areas provides the wherewithal for much of New England's

consumption. The success of the region's manufacturers rests on their ability to compete in national and world markets.

In 1954 New England's value added by manufacturing was approximately \$1.5 billion (16.8 percent) less than it would have been if the region's growth during the preceding seven years had matched that of the nation. The reasons for this disparity lie in the nature of New England's manufactured products and in the techniques of their production.

On both scores, New England has reason to examine its situation carefully. The record shows that in general the New England states have depended heavily on industries that have declined nationally, such as textiles, or on industries with slow rates of growth such as shoe manufacturing. Quite naturally, the manufacturing growth rates of the six states have reflected this concentration even to the extent of obscuring the effects of comparatively strong growth in other industries. When state manufacturing growth rates are adjusted to take into account differences in product concentration, New England's growth rate compares much more favorably with that of the nation.

These findings suggest two approaches by which New England can hope to expand its industrial production:

First, the region should concentrate wherever possible on those product lines which

TABLE 1

THE ECONOMIES OF THE UNITED STATES AND NEW ENGLAND—1960 AND 1970

	UNITED STATES			NEW ENGLAND		
	1960	1970	Percent Increase 1960-1970	1960	1970	Percent Increase 1960-1970
Population	180,100,000	213,800,000	18.7%	10,322,000	11,380,000	10.2%
Civilian Labor Force	73,600,000	83,600,000	13.6	4,175,000	4,614,000	10.5
School Enrollment (Public and Private)	42,000,000	50,200,000	19.5	2,390,000	2,680,000	12.1
Personal Income (Billions of 1957 dollars) ¹	\$385.0	\$612.4	59.1	\$25.0	\$32.0	28.0
State and Local Government Expenditures (Billions of 1957 dollars)	\$ 42.7	\$ 57.5	34.7	\$ 3.5	\$ 4.3	22.8

¹ The U. S. income projections were made on a different basis than the New England projections and are not, therefore, strictly comparable.

rely heavily on skilled labor backed up by special research competence. Some of these, such as electronics, seem likely in the future to achieve the most rapid growth. As in the past decade, New England's best opportunities for growth may be found in research-based products;

Second, the region's manufacturers must employ every feasible means to increase the productivity of the labor force.

About 10 percent of the nation's population is now engaged in manufacturing as against only eight percent in the 1920's. In New England the figure is now 15 percent, about the same as in 1920. The stability of this New England ratio is due partly to the shift of some workers from low to higher productivity industries and partly because of the increased demand for workers in government, trade and other service occupations. Over the past 10 years the value of New England manufactured products has increased at an average annual rate of 3.4 percent, enough to support a continuously rising income level.



Capital Investment

The trend of manufacturing and changes in productivity during the next 10 years will depend more and more on decisions regarding capital investment. Industry by industry, New England manufacturers typically use less capital per worker and have been investing less per worker in capital facilities than their national counterparts. To some extent this reflects differences in resources and industrial structure. With New England lacking in basic mineral resources, heavy capital-intensive industries have not developed in the region. But even in those New England industries which produce the same kinds of goods as are made elsewhere in the nation, there is a slower rate of capital investment. If the labor force is growing more slowly in New England than in the nation, then perhaps a smaller amount of new equipment per worker is needed to increase productivity. But investment needs are greater when growing industries must replace a contracting industry. In general, it must be concluded that New England's 40 percent slower investment rate for the years 1954-56 arose largely from the differences in management decisions about the value of new investment. The relatively lower output per man-hour in New England factories is in part a cause and in part a result of the region's slower investment rate.

A good part of the rise in output produced by increased investment comes not because more capital equipment is at work but because the new equipment is of improved design which encourages, and may even require, adoption of more efficient production techniques. An age of rapid technological change puts a premium on rapid renewal and development of equipment. Even though there may be little possibility for significant progress, New England will lose business if it does not advance productive efficiency enough to hold its present position in product and price competition in national and world markets.

If the region's manufacturers were to expand their rate of investment in plant and equipment by \$36 million (in 1955 dollars) each year, productivity might increase at

about two percent a year. In that case, the value of the region's manufactured products might rise about 34 percent by 1970. Such a rise will indeed be necessary to achieve the higher wage levels that factory and other workers will regard as their share of the growing regional income. If the manufacturing output goal is to be realized, such projected increases in investment and productivity will have to be accompanied by an increase in the number of factory workers, with manufacturing employment rising by about 274,000 from 1957 levels. If manufacturing competes more vigorously in the labor market it can increase its share of New England's total work force from 34 percent in 1960 to 37 percent in 1970. There is precedent for such an increase. During the 1920's, New England manufacturing significantly enlarged its relative share of the regional labor force.



Challenges To Growth

The challenges facing New England manufacturers are not to be dismissed lightly. The region's increasing remoteness from the national market presents an important obstacle to growth. Location at the end of the line means high costs for bringing in raw materials and fuels and for delivering finished goods.

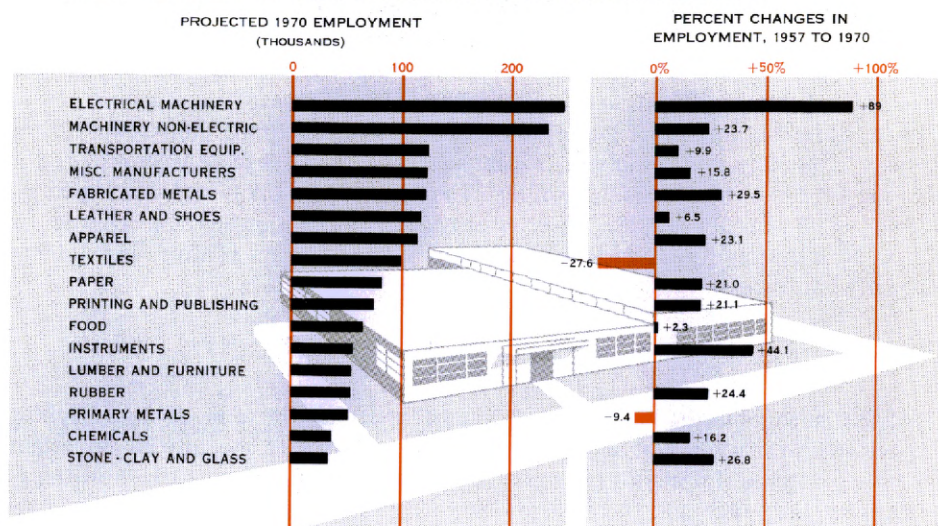
Many communities in New England are concerned about their increasingly heavy dependence on the region's newest and most vigorous industry, electronics, especially since the industry's strength derives in large measure from the nation's defense outlays.

During fiscal 1959 Connecticut received more prime contract defense awards, on a per capita basis, than any other state. Connecticut and Massachusetts together, with non-secret defense contracts totaling \$2 billion, accounted for 10 percent of the national total that year. With the changing structure of procurement, Connecticut received 25 percent fewer contract award dollars in 1959 than in 1956, and Massachusetts, on the other hand, 126 percent more. Obviously, a marked reduction in defense outlays, or a shift in the nature of materiel needed, as from manned aircraft to missiles in recent years, could have a concentrated and perhaps devastating effect on defense industries and communities dependent on them. History has demonstrated the community distress which can arise from excessive dependence on a single industry or firm. The stability gained through industrial diversification should be a major consideration in future community development programs.

There are prospects of new — or at least increasingly serious — problems arising during the 1960's from the region's tendency to concentrate its manufacturing effort on products in which labor costs make up a large portion of total costs. In every major New England industry, with the exception of apparel and electrical machinery-manufacturing, wages account for a larger part of value added by manufacturing than they do in the national average.

Since labor is New England's most substantial "natural asset," it would seem logical to develop still further those industries with a labor-intensive output. Yet this course may expose manufacturers to a combination of pressures that could become

NEW ENGLAND MANUFACTURING EMPLOYMENT



severe during the 1960's. On the one hand there will be increasing competition from foreign manufacturers with similar specializations but lower labor costs, and on the other the likelihood of rising wage scales. Because wage increases will have their greatest impact on employers in labor-intensive industries, New England manufacturers will be particularly concerned.

The increasing competition in domestic markets of foreign manufactured goods with those made in New England has already adversely affected the textile industry. The region's shoe industry is keeping a wary eye on rising import levels and machinery manufacturers have felt the force of the competition in the loss of some domestic as well as some foreign markets. New England producers have a right to expect that the burden of adjustment to federal foreign policies will not be regionally concentrated.

More investment, greater automation, higher productivity — these are the paths to competitive strength for New England's manufacturers. The task is a formidable one. A 1959 survey conducted by the Boston Reserve Bank indicates that perhaps 16 percent of the presently occupied manufacturing space in New England was constructed before 1900, and that more than 50 percent of the equipment being used by 10 of New England's 19 major industries is more than eight years old. To replace outmoded space, to keep pace with current depreciation and to provide for the projected employment growth will require about 247 million square feet of new manufacturing space in the 1960's. This amounts to construction of about 25 million square feet of new manufacturing space annually. The annual rate of new plant construction for the years 1950-57 was only 14 million square feet.

It is possible to meet these challenges, but obviously not without substantially increasing investment in new manufacturing facilities. By 1970 the annual investment must be \$990 million (in 1955 dollars) as compared with the 1955-1958 average level of \$450 million.

Still there are factors in New England's prospect which may gradually relieve some of the pressures of both domestic and foreign competition. One is the current emphasis on lighter-weight products of plastics and aluminum. Technological and stylistic trends which reduce weight help to cut New England's two-way transport costs.

Improvements in communication and transportation also, particularly in air express, are encouraging new systems of inventory and distribution methods which permit national, even world-wide, customer-servicing of high-value products from New England locations.



Both of these developments are pertinent to New England's welfare, since its recent economic history shows a consistent shift to new products and new processes based on research. Studies show that between 1950 and 1955, 85 percent of the total employment gains in expanding New England industries was traceable to six industries which had allocated the largest amounts to research and development. In 1955, about one-third of the region's manufacturing employment was dependent on new products introduced during the preceding 10 years. As research outlays mount, and more firms establish their laboratories in the region, the contributions of research to new employment will gain wider recognition.

**Growth
Through
Research**

Experience itself will also be of value in further expanding manufacturing activity in New England. Just as manufacturers have of necessity developed an ability to adapt both operations and output to changing conditions, so have both public and private groups at local, state, and regional levels attained proficiency in stimulating industrial growth. Operating to help close the gap between current and needed investment outlays in manufacturing is a combination of especially-designed organizations. One type of financing agency, which was originated in New England, is the state-wide development credit corporation that makes risk-type capital loans to assist manufacturing growth. In addition, about 100 New England communities have established varying types of industrial development corporations expressly to provide sites, build plants, and make capital loans to manufacturers. Recently some of these community-development groups have built new plants even before locating a prospective tenant. State-supported industrial building authorities, through which the state guarantees payments on mortgages used to finance the construction of new industrial plants, have been created in Maine and Rhode Island to stimulate new plant construction. Private developers have brightened the industrial outlook by carefully tailoring sites for modern plants in uncongested areas and in some cases providing a complete "package" — design, financing and construction. In combination, these especially directed efforts reinforce the prospects for the region's continuing manufacturing growth.

Metropolitan Growth

The boundaries of mushrooming metropolitan areas are already beginning to overlap. This fact, together with the changing uses for land, has intensified the pressures for redevelopment. In urban areas many buildings must be razed and residential slums cleared for new uses. In suburban sections, as industries seek sites for new plants and developers seek locations for housing projects, towns will stiffen their zoning codes to encourage more rational development.

The 1960's will undoubtedly be characterized by massive rebuilding of New England urban areas; the need is both great and acknowledged and the techniques of redevelopment are being refined to meet individual situations.

The need for extensive industrial and residential renewal in New England is evident to even the casual observer. Much of New England's manufacturing is housed in factories constructed to meet the needs of an earlier era. This housing reveals, moreover, that the structural alterations made to adjust to technological changes and shifts in manufacturing activities have frequently been of a "make-do" nature. For example, it is estimated that 50 percent of the shoe and leather industry's present manufacturing floor space was built before 1919.

Age is not necessarily an indication of structural or functional obsolescence. Many old residences which have been kept in repair and modernized provide attractive and adequate housing. But a high proportion of old buildings is a danger signal. The latest housing census, made in 1950, revealed that 62 percent of the region's housing was built before 1919 as compared with the nation-wide ratio of 45 percent. Only 11.8 percent of the New England population lived in houses built since 1939, as compared with 20 percent for the nation. A high level of construction activity since that time has perhaps changed these ratios, but the need for new building still remains acute.

A comprehensive urban renewal and housing program aimed at eliminating substandard housing units, allowing families to "undouble," replacing houses as they become obsolete, and providing for the new families expected by 1970, would call for the construction of at least 75,000 new housing units annually, whereas we have been building at the rate of only about 50,000 units annually.

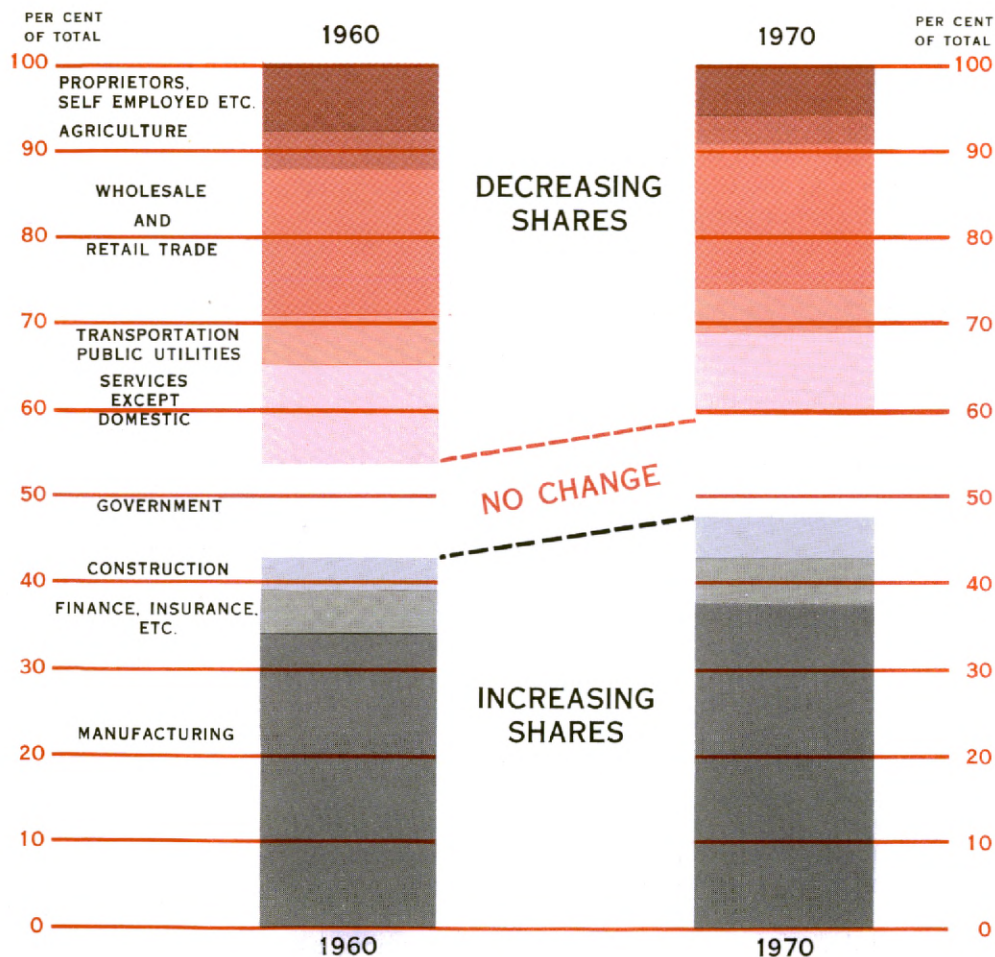
Intensification of renewal needs has brought new solutions to some of the problems. The practice of community planning and zoning, almost unknown 30 years ago, is now general, and cities and towns are constantly seeking to make the most effective use of building codes. Renewal activity not only involves the condemnation of buildings and the acquisition of land for clearance and preparation for re-use, but, just as essentially, demands an over-all metropolitan area financial and directional approach to the entire problem.

The Housing Acts of 1949 and 1954, in recognition and support of renewal programs, provided for federal absorption of two-thirds of the unrecovered costs of such activities, and are particularly relevant to the urgent building problems of such long-urbanized areas as New England.

Urban renewal activity in New England has accelerated as a result of this legislation. By the middle of 1959, 48 municipalities had about \$300 million committed in 84

projects in various stages of development. As expected, the three southern New England states have utilized the urban renewal provision more extensively than have the northern states. Connecticut, with 23 percent of the region's population, has launched programs accounting for 51 percent of renewal authorizations in New England; Massachusetts, with 50 percent of the population, has accounted for only 33 percent. As of March 1959, New England as a whole had received 9.27 percent of all United States urban renewal authorizations.

NEW ENGLAND'S CHANGING EMPLOYMENT PATTERNS



The advantages of this program can and should extend far beyond the refurbishing of residential, commercial and industrial housing. Its successful operation should strengthen the entire economic base which supports municipal and state governmental services, especially in the region's economic focal point, metropolitan Boston.



Boston — The Hub

The main challenges of economic growth will be faced in the Boston metropolitan area, which will be required to house about a third of the region's new inhabitants. By 1970 more than 3,738,000 persons will be living in the 149 towns and cities of the greater Boston area. The communities surrounding the 12 central municipalities of greater Boston will require housing for more than 300,000 additional residents — about as many persons as now live in Vermont.

The functional evolution of downtown Boston, the economic nerve center of New England, will continue despite a decline in its relative importance as suburban areas expand. With the recognition of these changes and of the fundamental interdependence of the communities, must come more effective organization for solving metropolitan area problems.

Downtown Boston's role in the economic life of the metropolitan area is changing: from 1947 to 1957 its employment in manufacturing and distribution contracted by 20 percent, whereas employment in finance, the service industries, and communication and other utilities expanded by 11 percent, with a net loss of 14,000 jobs, or seven percent. In the metropolitan area surrounding the city of Boston, employment expanded by 25 percent, with the gain distributed among all industrial and service categories.

Population and employment changes underscore Boston's problems and opportunities for the coming decade. As the city's economic functions change, many buildings of all types will have to be razed and replaced. Yet mounting public expenditures and a declining taxable base have already pushed property taxes to levels that have greatly impeded new construction. In recognition of this problem and by means of special tax arrangements, extensive redevelopment is already under way or in immediate prospect in a number of areas in the city.

In Back Bay, some 31 acres will be occupied by the new \$100 million Prudential Center; a 48-acre slum adjoining the Charles River in the West End has been cleared for a \$55 million modern-design residential district; in the Beacon Hill-Scollay Square-Adams Square area will be a huge new government center — federal, state and city; another slum of 15 acres has been cleared away near South Station and is zoned for light manufacturing and commercial uses; work has already begun on a second vehicular tunnel under Boston's inner harbor; and the final section of the Central Artery connecting expressways running north and south from the city has been completed. As this report is written, plans for a 14-acre \$15 million industrial research center adjacent to the campus of Massachusetts Institute of Technology in Cambridge have been announced as a result of a unique collaboration among city authorities, M.I.T. and

an internationally-known Boston-headquartered developer of industrial parks.

In rapidly growing suburban communities property tax bills have also mounted because of the costs of expanding school and highway systems and water, sewer, police, and fire departments. Because of increases in local government costs, communities are seeking increases in taxable properties and the kind and value of new construction is becoming of great importance.

A major transportation problem hangs critically over both the metropolitan area and its outlying districts. The location and construction of highways and transit facilities have long been recognized as a vital factor in an area's economic destiny, yet Boston is the only one of the nation's largest metropolitan areas without an adequate organization for over-all planning and implementation of a rational transportation system. The attainment of New England's 1970 economic potential depends in large measure on the early development and activation of area plans so essential to the growth of its central metropolis.



Limited land resources not only restrict residential and industrial building activity but also increase the problems of providing new highways and parking facilities. Insistence on the automobile as the general means of personal transportation creates the demand for highway and parking facilities. In one community after another, such facilities have proved inadequate to meet rush-hour requirements shortly after completion. The problem is compounded by the lack of attractive and convenient rapid public transportation to suburbs. Completely satisfactory solutions to these problems have not been found for any major city in the United States, and even the procedures already devised need more effective implementation. Here, too, a unified approach to all aspects of the transportation problem is of prime importance, particularly the integration of highway planning with mass transit facilities in the light of prospective travel patterns.

**Economic
Growth
and the
Use of Land**

Completion of the \$2 billion interstate highway system in New England during the 1960's will open up new recreational and residential areas and stimulate industrial and commercial development, particularly at interchanges outside large metropolitan areas. Economic activity along Boston's circumferential highway Route 128 is an indication of what may be anticipated in degree along other new highways — in the few years that Route 128 has been open, 227 companies have invested \$137 million in new industrial and commercial buildings.

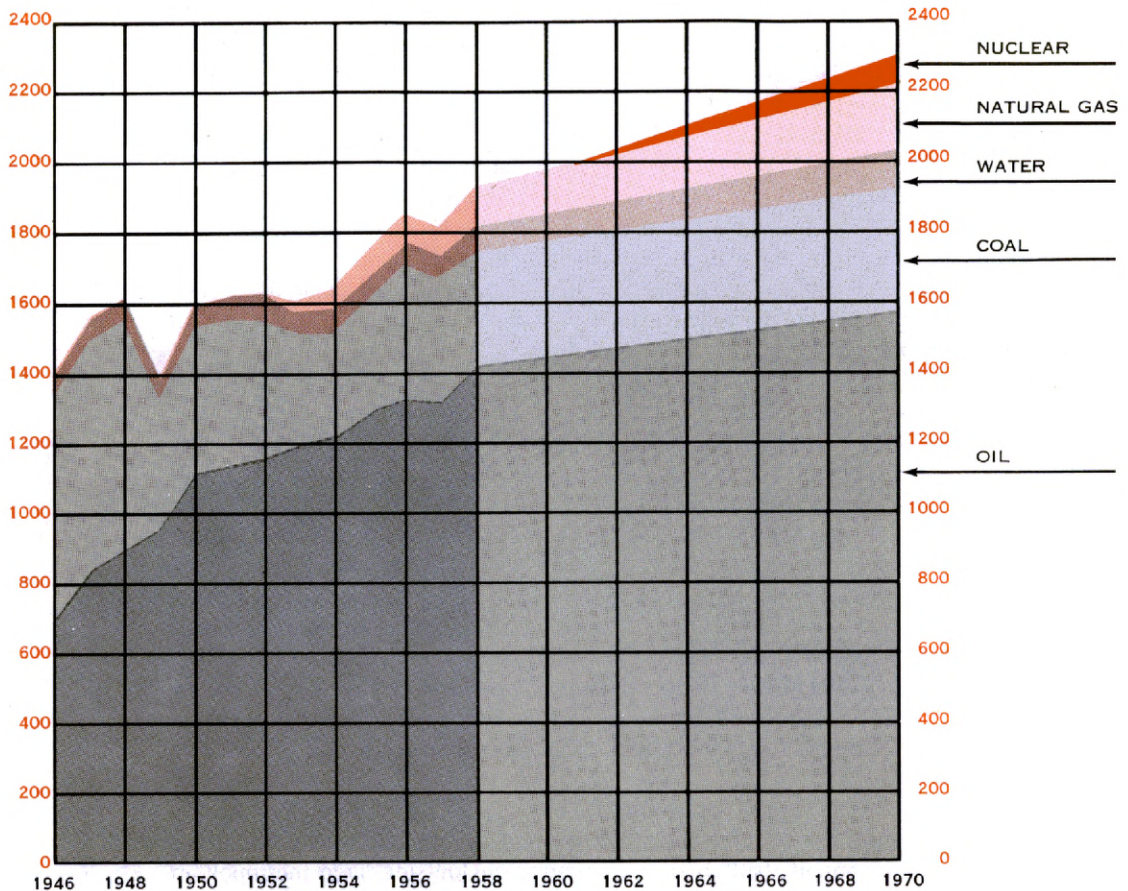


Obviously land and labor are essential to the achievement of New England's goals for 1970, but they are insufficient in themselves: they must be supported by adequate capital and by resources drawn from other regions — foodstuffs, fuels, minerals, chemicals, fibers — the entire range of materiel that backstops an industrial economy. The ready availability of such resources cannot be casually assumed.

**Resources to
Support Growth**

NEW ENGLAND ENERGY CONSUMPTION

(Thousands of Trillions of B.T.U.'s)



Fuel is a case in point. New England is devoid of coal or oil resources and its hydro-electric power sites are already largely developed. Unless existing barriers to oil imports are removed, or some new and comparatively inexpensive power becomes available, perhaps from nuclear sources, the region will be forced, between now and 1970, to spend an increasing percentage of its income on fuel and energy.

New England runs on oil: in 1958 approximately 74 percent of its energy consumption derived from oil, a marked rise from the 1946 figure of 50 percent. The use of coal has fallen sharply. The popularity of the automobile, the convenience of oil furnaces and stoves, and the dieselization of the railroads all point to a regional annual petroleum consumption increase of about two percent.

Although New England's seaboard location strengthens the feasibility of its using foreign oil, such imports do not move in freely to meet regional needs. The Presidential proclamation of March 10, 1959 restricted imports of crude and residual oils. Crude oil imports are limited to about 12 percent of domestic crude oil production. As a result of this restriction, the price of crude oil along the eastern seaboard is about 50 cents per barrel above the world price, adding at least \$118 million to New England's annual fuel costs.

New England has a deep continuing concern, therefore, in the development of alternative energy sources. There is a reasonable possibility that nuclear fuels will become as economical as conventional fuels for generating electric power. Already the region's first nuclear power plant is nearing completion and the utility industry is considering the construction of at least one more such plant by the middle 1960's. Costs at neither installation, however, are expected to be significantly below those of plants using conventional fuels. Even assuming an early technological breakthrough, the nuclear-generated power which might be available by 1970 would not exceed one million KW of capacity. This amount could supply only five percent of the energy consumed in 1958. Obviously New England's interest in fuel, as in such industrial raw materials as steel and aluminum, will be best served by active competition in price and quality between foreign and domestic producers.



Most New England cities and towns will face a major capital outlay program for such new facilities as schools, streets, water systems, and playgrounds during the 1960's. State governments also face huge outlays for highways, bridges, hospitals, dormitories and classrooms. At the same time business must raise funds for new factories, machinery, power plants, office buildings, hotels, stores and shopping centers. How are these public and private needs to be financed?

Financing Economic Growth

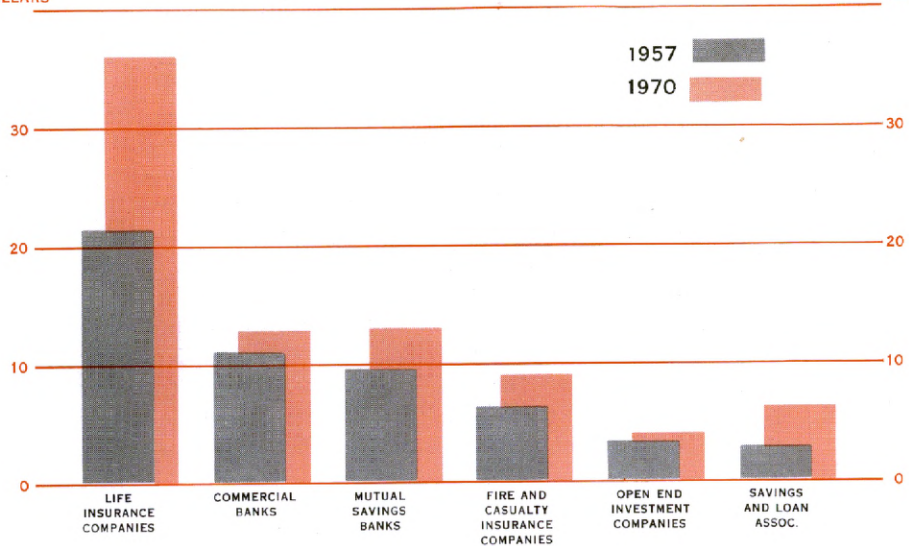
Both the strength of New England's financial institutions and the volume of the region's liquid savings are reassuring. New England is a capital-rich area, and long experience in financial management brightens the prospect for adequate financing of the investment needs of business in the 1960's. In 1957, for example, the accumulated volume of liquid savings reached \$21 billion, or about \$2,000 per person. Continued savings will bring liquid savings in New England to about \$28 billion by 1970, or from 30 to 40 percent higher per person than the national average.

As a result of having such a large volume of funds available for investment, New England's borrowing rates average lower than the nation's; both business loan and home mortgage loan rates are generally the lowest in the country. Furthermore, since the region's borrowers do not absorb all the available funds, despite the low rate, the surplus is invested elsewhere. But the availability of funds resolves only part of the problem of growth; the balance depends on the willingness and the ability of New England businessmen to use the funds wisely and energetically in expanding existing

ASSETS OF NEW ENGLAND FINANCIAL INSTITUTIONS

BILLIONS
OF 1957
DOLLARS

BILLIONS
OF 1957
DOLLARS



firms and in creating new ones. New England is well served by a complex of financial institutions able to finance even the most optimistic of projected economic goals. The uncertain elements are the managerial strength and vision of the prospective borrowers.

Financing the expansion of public facilities is certain to put severe strains on local and state governments during the 1960's. Conservative estimates indicate that capital outlays for education and highways alone will total \$5.6 billion during the period between 1958 and 1970.

By 1970 there will be approximately 290,000 more children entitled to a public education in New England. Many of these will be enrolled in the region's private schools, but the bulk will register at public schools — pushing enrollment figures upward by about 222,000. Providing for their needs, replacing presently inadequate buildings and improving the quality of education will heavily burden many communities. It seems likely that education may have to find new sources of financial support.

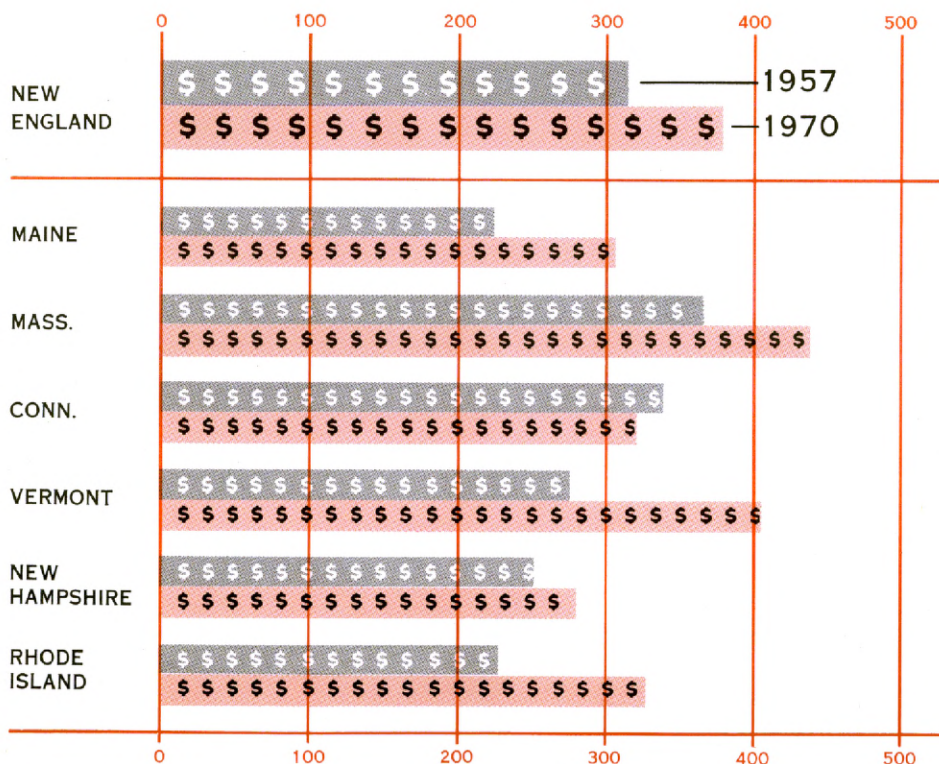
In recent years, local government capital outlays for highways have exceeded the capital investment in schools. If past trends hold, the towns and cities of New England will have to invest about \$1.5 billion in highways during the period between 1958 and 1970. Together with projected capital outlays of \$940 million for schools, the local government capital investment programs indicate a marked increase in town and city debt. Depending on the methods chosen to finance the capital facilities, local government debt may rise from \$2 billion in 1958 to \$3 billion in 1970.

At the state level, the problems of financing economic growth are equally pressing. In each of the six states the techniques for meeting the anticipated demands for higher education have yet to be established. The number of 18 to 21 year olds in New England will rise by approximately 45 percent between 1960 and 1970. Even if the proportion of those seeking a higher education were to remain stationary, demand would greatly exceed any presently contemplated expansion of capacity by the region's colleges and universities.

If state governments attempt the construction of conventional educational facilities at the rate of projected need, they face capital outlays approximating \$400 million in the 1958-1970 period. Such outlays are feasible enough, but other capital investment needs similarly demand attention and response. Highways alone, without material expansion of present plans, could absorb \$2.7 billion of state funds during 1958-1970.

STATE AND LOCAL GOVERNMENT SPENDING


1957 DOLLARS PER CAPITA



Providing public facilities to support New England's economic growth is only one of the essential functions to be performed by state and local governments during the next 10 years. It is equally important for these governments to provide political climates and tax policies which will enable business, particularly manufacturing, to meet the increasingly keen competition of other areas.



New England's 1970 economy, as detailed in the following pages, will not and can not just happen — it must be created through the joint efforts of all the members of the regional community. New England manufacturers will be the architects and prime movers of this project. At the same time, government will play a more important role than hitherto. Through metropolitan and regional planning, government can insure economic growth which best utilizes land resources. Through its public works, educational and other capital facilities programs, government can support the productive efforts of its economic enterprises. And through sound taxing and spending policies government can stimulate rather than stifle economic initiative and development.



ESTIMATES AND EVALUATIONS

The projections in the following pages are based on the assumption that New England's population will increase by slightly more than one million between 1960 and 1970. This expected increase, which would be the largest ever recorded for the region in a single decade, is in turn based on projections of New England birth and death rate trends and on estimates of population movements between the region and the rest of the country. The anticipated rise in New England's population recognizes the freedom of the American citizen to move wherever he chooses in search of a better job or of better living conditions. The accuracy of this estimated gain in population will be determined largely by the decisions of individual New Englanders as to whether they will remain within or leave the region. In general they are likely to remain if the region steadily expands its work opportunities at wages and salaries which compare favorably with those elsewhere. The number of new jobs which must be provided to support a New England population increase of over one million by 1970 is estimated to be 421,000. Projections for major forms of regional economic activity indicate that such an expansion of jobs is realistic. On this basis it is possible to calculate in rough magnitudes many interrelated aspects of New England production, consumption, governmental activities and needs, and uses of human and natural resources. These pages, then, depict an internally consistent pattern of probable developments over the next decade.

Most New Englanders will seek to live in Massachusetts, Rhode Island and Connecticut, and particularly in their metropolitan areas; in fact, over three-quarters of the population growth will occur in these southern states, as shown on Table 2. As a group, Maine, New Hampshire and Vermont are projected to grow by eight percent compared with the 11 percent growth of their three southern neighbors. Southern New England will continue to draw workers and their families from the northern states, with the pull of job opportunities primarily setting the pace of the differing state growth rates.



Effective use of the labor supply in shaping New England's economic future provides both its chief opportunity and major challenge. Here, past trends reveal some of the changes which will influence forthcoming developments.

For instance, although there are now more men in the labor force than ever before, more and more women are also working. In 1960, about 76 percent of men over 14

**Labor Force
Projections**

years of age are working or seeking work. The comparable figure for women is only 35 percent. Since 1950, however, the percentage of male workers has declined, primarily because of earlier retirement and longer schooling, whereas the percentage of female workers has measurably increased. In fact, more than half of the net growth in the labor force during the 1950's was accounted for by women: thus it is evident that the projected growth in both labor force and employment will not materialize unless many of the new jobs can be filled by women.

As indicated above, the challenge of growth will be to provide jobs for all those seeking work in New England, with a goal of 421,000 additional jobs by 1970. More particularly, the goal is 207,000 additional jobs for men and 214,000 that can be held by women, with the latter thus accounting for 51 percent of the labor force growth. This job goal assumes that in the aggregate the region will continue to have about 54 percent of its population 14 years and older gainfully occupied. Within this over-all figure, however, are offsetting trends. For example, more and more middle-aged women will be accepting jobs, offsetting the tendency for young people to study longer and old people to retire earlier. As another example, only 51 percent of Vermonters over 14 will be working or seeking gainful employment, while 57 percent of the same age group will be so engaged in urbanized Connecticut.

These patterns are significant because income, consumption and saving flow from employment. It is important, therefore, for New England to employ its labor force with the greatest possible efficiency.

TABLE 2

POPULATION, HOUSEHOLDS, AND LABOR FORCE
(THOUSANDS)

	Population		Households		Labor Force	
	1960	1970	1960	1970	1960	1970
New England	10,322	11,380	2,745	3,055	4,175	4,614
Maine	953	1,018	256	279	364	387
New Hampshire	592	655	165	184	236	261
Vermont	376	404	100	109	133	141
Massachusetts	5,147	5,595	1,344	1,472	2,076	2,261
Rhode Island	871	943	235	254	360	396
Connecticut	2,383	2,766	645	757	1,006	1,168

Details may not add to totals because of rounding.

Apart from the upsets arising from World War II, three trends have dominated New England's employment changes for more than 40 years. A continuing increase in agricultural productivity has permitted a steady reduction in farm employment. Growing complexity of economic organization, rising income and changing patterns of social and individual behavior and demands have stimulated growth in nonmanufacturing jobs. Finally, the region has struggled to re-employ manufacturing workers released by the contraction of the textile industry, once the region's largest. Each of these three trends will continue to operate in the 1960's.

New England's Employment Prospects

TABLE 3
NEW ENGLAND EMPLOYMENT 1950, 1960, AND 1970
(THOUSANDS)

	1950		1960		1970		Percent Change	
	Actual	Percent of Labor Force	Estimated	Percent of Labor Force	Projected	Percent of Labor Force	1950 — 1960	1960 — 1970
Population	9,336	10,322	11,380	+ 10.6%	+ 10.2%
Total Labor Force	3,963	100.0%	4,175	100.0%	4,614	100.0%	+ 5.3	+ 10.5
Unemployment	146	3.7	167	4.0	185	4.0	+ 14.4	+ 10.8
Total Employment ¹	3,817	96.3	4,008	96.0	4,429	96.0	+ 5.0	+ 10.5
Total Agricultural	219	5.5	165	3.9	120	2.6	— 24.7	— 27.3
Total Nonagricultural	3,299	83.2	3,561	85.3	4,047	87.7	+ 7.1	+ 13.6
Total Manufacturing	1,441	36.4	1,407	33.7	1,706	37.0	— 2.4	+ 21.2
Total Nonmanufacturing	1,858	46.9	2,154	51.6	2,341	50.7	+ 15.9	+ 8.7
Government	377	9.5	456	10.9	505	10.9	+ 21.0	+ 10.7
Finance, Insurance, Real Estate	139	3.5	179	4.3	219	4.7	+ 28.8	+ 22.3
Wholesale and Retail Trade	639	16.1	703	16.8	726	15.7	+ 10.0	+ 3.2
Services	347	8.8	438	10.5	471	10.3	+ 26.2	+ 7.5
Contract Construction	144	3.6	168	4.0	207	4.5	+ 16.7	+ 23.2
Public Utilities	212	5.3	210	5.0	213	4.6	— 1.0	+ 1.4

¹ Total employment reported in Census data is greater than the sum of agricultural and nonagricultural employment shown here because nonagricultural employment is based upon Bureau of Labor Statistics data which do not include proprietors, self-employed persons, domestic servants and unpaid family workers.

The agricultural sector of New England's economy will probably release 45,000 workers in the decade ahead, a smaller number than was released during the past 10 years. (Table 3.) This is a continuation of a long-term trend, both regional and national, that is likely to persist as long as improved techniques, well within the range of present technology, are employed to increase farm productivity.

Nonmanufacturing employment expanded considerably during the 1950's. In fact, its growth exceeded the net growth in labor force. This was due in part to the lag in manufacturing but mainly to sharp expansion of demand for workers in the nonmanufacturing categories shown in Table 3.

In the coming decade, the need for doctors, teachers, lawyers, pilots, truck drivers, office and other service workers will expand as the population expands. On the other hand, automation and other technological advances in communication, finance, construction and some other fields should make it possible to expand output with more slowly growing work forces. These individual projections add up to a nine-percent growth in nonmanufacturing employment by 1970, somewhat below the 16-percent growth of the past 10 years. The employment requirements in the manufacturing sector may also tend to limit growth in nonmanufacturing employment.



The Outlook for Manufacturing

New England's manufacturing prospect must be viewed in terms of the output which can be achieved by the resourceful employment of men and money. The goal of greater productivity can best be achieved by capital investment which will speed availability of more and better plants and machines.

For the past 10 years, as in the preceding 30, regional manufacturing employment trends have been blurred by the continued contraction of textile activities. During the 1950's, as textile manufacturers released about 150,000 employees, other industries were helped in meeting their needs for 110,000 additional workers. Although further reduction in textiles is anticipated, this source alone obviously cannot supply the additional workers who will be needed by other industries by 1970.

A region devoid of rich natural resources and dependent on manufacturing to pay for its foodstuffs cannot expect indefinitely to reduce the share of its labor force devoted to manufacturing. In order to maintain its position, it must invest in new facilities and develop new products at a rate which will match the progress of competing manufacturers in other regions. Although New England achievements are impressive, the record indicates that manufacturers are not investing rapidly enough to support rising income levels through greater productivity.

The data available on investment and productivity often seem to obscure as much as to illuminate the picture. It may still be useful, nevertheless, to consider a pattern of investment and productivity increases that could provide gains in manufactured output consistent with other facets of the projected 1970 economy of New England. Such a pattern is presented in Table 4.

The major values of the manufacturing projections presented in Table 4 arise from

TABLE 4
NEW ENGLAND MANUFACTURING PROJECTION¹

Industry	EMPLOYMENT			VALUE OF PRODUCTION ²			Projected Average Annual Gain in Output Per Manhour (percent)	Projected Average Annual Increase in Value of Invested Capital (millions of 1955 \$)
	1957	1970	Percent Change	1957 (in millions of 1950 \$)	1970	Percent Change		
Manufacturing Total	1,431,680	1,705,559	+ 19.1	\$9,198.3	\$12,429.6	+ 35.1%	2.1%	\$591.4
Durable Goods Total	707,983	927,400	+ 31.0	4,205.4	6,476.9	+ 54.0	2.1	371.1
Machinery	189,267	234,200	+ 23.7	1,160.9	1,710.7	+ 47.4	2.2	147.1
Electrical Machinery	130,807	247,400	+ 89.1	709.0	1,637.5	+131.0	2.7	77.2
Transportation Equip.	113,423	124,600	+ 9.9	662.5	917.4	+ 38.5	1.7	31.3
Fabricated Metals	94,800	122,800	+ 29.5	618.0	910.7	+ 47.4	2.3	43.8
Primary Metals	57,388	52,000	- 9.4	223.9	179.8	- 19.7	.3	13.1
Lumber and Furniture	57,063	56,800	— ³	336.1	303.1	- 9.8	1.3	15.7
Instruments	39,760	57,300	+ 44.1	278.8	506.4	+ 81.6	2.6	23.3
Stone, Clay and Glass	25,475	32,300	+ 26.8	216.2	311.3	+ 44.0	2.2	19.6
Nondurable Goods Total	723,697	778,159	+ 7.5	4,992.9	5,952.6	+ 19.2	2.1	220.4
Textiles	138,176	100,000	- 27.6	1,302.2	886.5	- 31.9	.9	46.5
Leather and Shoes	110,823	118,000	+ 6.5	629.6	897.0	+ 42.5	1.3	17.3
Miscellaneous Mfg.	107,320	124,300	+ 15.8	572.1	623.1	+ 8.9	1.3	26.9
Apparel	93,863	115,500	+ 23.1	432.3	618.7	+ 43.1	1.6	7.7
Paper	69,207	83,731	+ 21.0	558.7	841.1	+ 50.6	2.6	41.0
Food ⁴	64,400 ⁵	65,900	+ 2.3	404.0	392.1	- 2.9	.5	15.0
Printing	62,254	75,400	+ 21.1	394.3	580.4	+ 47.2	2.2	23.6
Rubber	44,853	55,800	+ 24.4	307.7	453.8	+ 47.5	2.5	19.6
Chemicals	30,804	35,800	+ 16.2	392.0	659.9	+ 68.3	2.6	22.8
Petroleum and Coal	1,997	3,728	+ 86.7	n.a. ⁶	n.a. ⁶	n.a. ⁶	n.a. ⁶	n.a. ⁶

¹ To comprehend this table it is essential to appreciate the unique method used in its construction and the critical interdependence of its parts. As a starting point, 1970 employment (Column 2) was initially estimated from national projections by the U. S. Bureau of Labor Statistics and then refined by regional studies. The related 1970 estimates all resulted from a special analysis of the structure of New England manufacturing. The need for expansion was determined by the employment projection, and the need for replacement was calculated from the present age distribution of machinery, equipment and plants as shown in Table 5. This revealed opportunities for the innovation and diffusion of better technologies. Their probable impacts on labor and capital productivities were analyzed from a large body of plant data for 1950 and 1955. The relationships suggested by the analysis were the basis for the simultaneous estimation of book values of capital investment, value added by manufacturing and output per man-hour of production worker labor consistent with the projected 1970 employment level and also consistent with the special technological characteristics of the New England manufacturing industries.

Readers are especially cautioned against comparing the Column 7 productivity gain estimates (which apply only to value added) with those commonly available for the United States (which frequently apply to all output). It should also be noted that the investment data (Column 8) refer to book value of capital assets in 1955 dollars and may not be directly compared with gross investment data published elsewhere by this bank.

² These data are value added by manufacture and are not identical with Census estimates by industry for two reasons: First, they are based on a sample different in size and composition. Second, they are trend values expressed in 1950 dollars.

³ Less than 0.05 percent change.

⁴ Does not include dairy industry.

⁵ 1954 figure.

⁶ Not available.