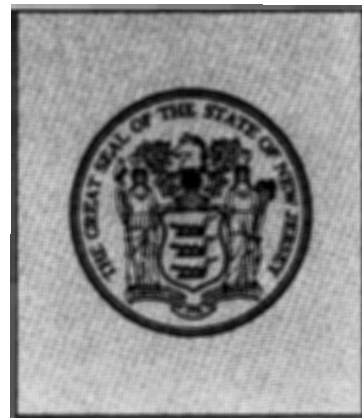
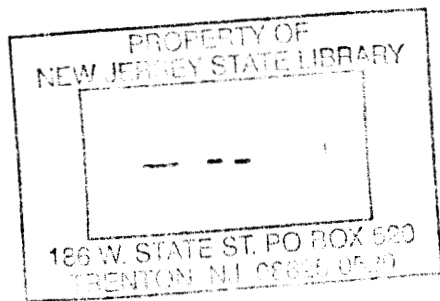


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8th Annual Report

Economic Policy Council
and Office of Economic Policy

Department of the Treasury
State of New Jersey
September, 1975

DEDICATION

During the year, Dr. William J. Baumol, an original member of the Council, retired after eight years of distinguished service. He played a major role in developing the role of the Council, applying to its work the high ability, resourcefulness and dedication that have earned for him a high standing among American economists. His successor is Dr. Joseph J. Seneca, Professor of Economics at Rutgers University. The Council and members of its staff welcome Dr. Seneca and look forward with pleasure to working with him.

8th Annual Report

Economic Policy Council
and Office of Economic Policy

Department of the Treasury
State of New Jersey
September, 1975



STATE OF NEW JERSEY
OFFICE OF THE GOVERNOR
TRENTON

August 8, 1975.

BRENDAN T. BYRNE
GOVERNOR

TO THE LEGISLATURE

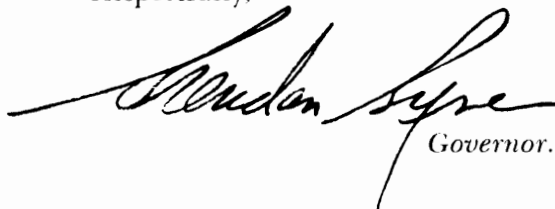
I am pleased to transmit the *Eighth Annual Report* of the Economic Policy Council and the Office of Economic Policy as mandated by Chapter 129, Laws of 1966.

Over the past year I have met with the Council every four to six weeks. These meetings have been very stimulating and useful and have provided a forum in which my Cabinet and I can obtain sound advice on a broad range of economic issues. The Council's *Report* covers some of these issues as well as a great deal of related work performed by their staff during the past year.

This year's *Report* contains several items that will be of interest to members of the Legislature. Problem areas related to the State's economic development occupy several of the chapters. You will find thoughtful analyses of the decline of manufacturing industry, the structure of unemployment and the labor force, and a review of recent legislation relating to economic policy. In addition, there is an economic forecast for fiscal year 1976 and a new method for forecasting corporate income tax revenues, both of which should help the Legislature assess near term prospects for the New Jersey economy and State tax revenues.

As you know, in my Annual Message, I committed my Administration to the design of an overall economic development strategy. The resources to carry out this pledge are now available. I recommend this *Report* to you as a good example of the kind of work that needs to be done if our economic strategy is to be well founded and offer some chance of getting New Jersey back onto a path of sound economic growth and long run development.

Respectfully,


Governor.

ECONOMIC POLICY COUNCIL

DR. LESTER V. CHANDLER, *Chairman*
Professor of Economics, Princeton University

DR. WILLIAM C. FREUND, *Member*
Vice President and Chief Economist, New York Stock Exchange

DR. WILLIAM J. BAUMOL, *Member (to February, 1975)*
Professor of Economics, Princeton University and New York University

DR. JOSEPH J. SENECA, *Member (since June, 1975)*
Associate Professor and Chairman, Department of Economics, Rutgers University

OFFICE OF ECONOMIC POLICY

PETER J. BEARSE, *Director*

ADAM BRONER, Ph.D., *Program Coordinator*

GEORGE R. NAGLE, *Economic Analyst*

SUSAN A. FRANKS, *Secretary*



State of New Jersey
ECONOMIC POLICY COUNCIL
134 WEST STATE STREET
TRENTON, NEW JERSEY 08625

DR. LESTER V. CHANDLER
CHAIRMAN

DR. WILLIAM BAUMOL
DR. WILLIAM C. FREUND
MEMBERS

August 1, 1975.

HONORABLE BRENDAN T. BYRNE
Governor of New Jersey
Trenton, N. J. 08625

DEAR GOVERNOR BYRNE:

The Economic Policy Council has the honor to transmit to you its *Eighth Annual Report* in accordance with Chapter 129, Laws of 1966.

As in the past, we include our outlook for the State's economy. The forecast has been revised and updated since it was issued last December, and in this report, for the first time, we look ahead on a fiscal year basis. We hope that this semi-annual revision, along with an improved method of forecasting the yield of the corporate income tax, will be useful to you and the Legislature in making budgetary or other decisions where fiscal year forecasts are needed.

This year more than ever we have tried to address issues directly related to the economic development problems of the State. Since unemployment and the health of the manufacturing industry in New Jersey are matters of utmost concern, we have commissioned studies of why manufacturing has been in decline (Chapter VI) and why unemployment has been so high (Chapter VII).

Aside from assessing factors behind negative trends, however, we have tried to identify some of New Jersey's "comparative advantages" for economic development and specify what needs to be done to develop an overall strategy to exploit these advantages intelligently.

Finally, we assess some implications of the Mount Laurel decision, review recent legislation relating to economic policy and evaluate our own success (or failure) in providing economic counsel to the Executive branch.

We take this opportunity to acknowledge the assistance we have received from various individuals and agencies in State government. Dr. Arthur O'Neal, Director of Planning and Research for Labor and Industry, has been especially helpful in revising and updating the data series for our Statistical Appendix. The expert and efficient staff of the New Jersey State Library continues to be a great help in locating and supplying all sorts of source material. The kind and knowledgeable assistance of people at the Princeton/Rutgers Census Data Project (Shirley Gilbert and Judith Rowe) has made it possible for us to access many specialized items of Census data.

The Council and its staff hope that over the coming year we can further assist your Administration in designing programs which will spur economic recovery and improve the economic features of legislation.

Sincerely yours,

A handwritten signature in cursive script that reads "Lester V. Chandler".

LESTER V. CHANDLER,
Chairman.

LVC:sf

CONTENTS

	<i>Page</i>
I. The Activities of the Economic Policy Council During the Past Year	1
II. Review of the New Jersey Economy and Forecasts for Fiscal Year 1975-76	3
III. Review of Legislation with Significance for the New Jersey Economy	12
IV. Economic Counseling in State Government	23
V. A Proposal To Develop a Comprehensive Economic Plan for the State of New Jersey	27
VI. New Jersey's Manufacturing Industries: A Long-Run Overview	38
VII. A Closer Look at Unemployment and Job Growth: New Jersey and the Nation Compared	61
VIII. The Quality of the New Jersey Labor Force	95
IX. Exclusionary Zoning in New Jersey: The Mount Laurel Decision	122
X. Tax Revenue Forecasting: Case of the Corporate Income Tax	128
XI. Statistical Appendix	145

Appendix: STATISTICAL TABLES

<i>Table</i>	<i>Page</i>
1. Population and Employment, New Jersey, 1956-1974	145
2. Wage and Salary Workers in Nonagricultural Establishments, Major Industry Divisions, New Jersey, 1947-1974	146
3. Wage and Salary Workers in Manufacturing, Durable Goods, New Jersey, 1947-1974	147
4. Wage and Salary Workers in Manufacturing, Nondurable Goods, New Jersey, 1947-1975	148
5. Employment, Hours, and Earnings of Production Workers on Manufacturing Payrolls, New Jersey, 1947-1974	149
6. Consumer Price Indexes for Urban Wage Earners and Clerical Workers, 1947-1974	150
7. Personal Income, New Jersey and United States, 1948-1974	151
8. Production and Trade, New Jersey, 1948-1974	152
9. Business Activity, New Jersey, 1948-1974	153
10. Finance, New Jersey, 1948-1974	154
11. Agriculture, New Jersey, 1950-1974	155
12. State Tax Revenues, New Jersey Calendar Years 1949-1974 ...	156
13. County Population Estimates	157

I

THE ACTIVITIES OF THE ECONOMIC POLICY COUNCIL DURING THE PAST YEAR*

In economic terms, 1974 was the worst year since World War II for the people of New Jersey and for governmental units at all levels in the State. Unemployment rose well above the national average, and real income and output declined. Sharp price inflation raised the cost of living for New Jersey citizens, including the unemployed and the indigent, increased the costs of providing public services, and brought strong pressures for large increases of public utility rates. Abnormally high interest rates were accompanied by a virtual collapse of residential construction. Government budgetary problems were created not only by the inflation-induced rise of government costs but also by the automatic decline of revenues in response to the decline of employment, real income and other tax bases. The State was confronted with the problem of levying additional taxes to cover such deficits and also to conform to the order of the State Supreme Court to reform the financing of public education. There were also other economic and social problems, such as those of promoting the longer-run development of employment and economic activity in the State, urban rehabilitation, determining the future patterns of rail transportation, protection of the environment, and waste disposal.

In such an environment, the Council and its staff inevitably became involved in a wide range of economic issues. The following are examples of topics dealt with in memoranda, reports, and meetings with legislators, the Governor and members of executive departments:

1. The outlook for economic developments in the national economy and in New Jersey, and the implications of these for public policy (see Chapter II).
2. Analysis of various tax proposals.
3. Effects of reductions of expenditures by State and local governmental units on the levels of employment and unemployment in the State.
4. Methods of forecasting revenues from the corporate income tax (see Chapter XI).
5. Proposals for the formulation and implementation of forward economic planning (see Chapter V).
6. The roles of effluent fees and of various types of solid waste disposal in a program for environmental protection.
7. Appraisal of various proposals to stimulate investment and employment in the State.

* Prepared by Dr. Lester V. Chandler, Chairman, Economic Policy Council.

8. Peak-load pricing and other methods of promoting economy in the production and use of public utility services.
9. Evaluation of proposals for financing generation and transmission facilities in the electric utility industry.
10. Effects of State ceilings on mortgage interest rates or the availability of financing for various classes of residential real estate.
11. Evaluation of selected items of legislation pertaining to the State's economy.
12. Analysis of long run changes in New Jersey's manufacturing sector (see Chapter VI).
13. Debates concerning the organization of an on-going process of economic plan-

ning and policy analysis in the Office of the Governor (see Chapter IV).

Finally, at year's end, we faced the unhappy prospect of Professor William Baumol's departure from the Council. A charter member, he decided that eight years' service was sufficient. This report's dedication to "Will," as he liked to be called by colleagues, reflects the personal, intellectual and professional qualities that we shall very much miss. Of course, it is not for us to evaluate his contributions to State economic policy making. Suffice to say that, for eight years, New Jersey State government had at its disposal an economist of international reputation and of catholic abilities who could readily translate the best of economic thought into practical policy terms. We hope to maintain the standard he has established, the example he has set for the Council, which is still something of an innovation in State government.

II

REVIEW OF THE NEW JERSEY ECONOMY AND FORECASTS FOR FISCAL YEAR 1975-76*

As is our custom, we review and preview the economic situation in New Jersey. Obviously, the state of business in the nation as a whole has a critical impact on conditions in New Jersey, which is why it is imperative to view our State in the context of the nation's total economy.

THE NEW JERSEY ECONOMY IN 1974

Nineteen seventy-four was anything but a banner year for the New Jersey economy. It was a year of spiraling prices, energy shortages, mounting business failures, and sharply higher unemployment. By year's end, with the national economy well into a recession, unemployment in New Jersey was the highest in seventeen years and still heading upward.

A Recession Unfolds

During the early months of 1974 the national and state economies were disrupted by petroleum shortages brought on by the Arab oil embargo, but this merely diverted attention from more fundamental weaknesses that spelled eco-

nomic hard times with or without adequate supplies of fuel. These weaknesses, most notably a sharp drop in housing starts and a pronounced shift toward consumer cautiousness, were evident even before the energy crisis began to dominate the headlines and were the basis for a rather pessimistic prognosis in the Economic Policy Council's forecast of a year ago.

Real purchasing power of New Jersey households declined during 1974, as inflation outstripped wage gains. This reinforced consumers' sales resistance, particularly with regard to new cars, household durables, and other deferrable or nonessential items. As a result, retail sales dropped sharply in real terms. At the same time, construction activity plummeted because of continued scarcity of mortgage money, skyrocketing building costs, and curtailment of expansion plans by utilities, manufacturers, and other increasingly wary investors facing a drop-off of profits and/or experiencing difficulties raising capital. Because of reduced demand for consumer goods and construction materials—and to a lesser extent because of supply problems—industrial production skidded downward, a number of plants closed their doors permanently,

* "The New Jersey Economy in 1974" was prepared by Dr. Arthur J. O'Neal, Director, Division of Planning and Research, Department of Labor and Industry, State of New Jersey.

"The New Jersey Economy in 1975" was prepared by William C. Freund, member of the New Jersey Economic Policy Council; Vice President and Chief Economist of the New York Stock Exchange.

and thousands of workers joined the ranks of the unemployed.

Key Statistics Tell the Story

The gloomy story of 1974 is clearly told by the performance of key New Jersey economic statistics. Though New Jersey's gross state product reached \$56.5 billion for 1974, an increase of about 9% over 1973 in current dollars, the State's output of goods and services will show a drop of about 1.5% in *real* terms after allowing for an inflation rate of 10.4%.* Similarly, personal income will be down by about 2½% in real terms despite a nominal rise of 9% in current dollars to \$46.8 billion. Sales by New Jersey retailers totaled \$18 billion in 1974, substantially unchanged from 1973 despite sharply higher prices. If inflation is taken into account, sales are off by 11%. Hardest hit have been new car sales, which totaled only 325,000 for the year, down 28% from 1973's record volume.

Needless to say, labor market conditions in New Jersey also deteriorated badly in 1974. Employment declined sharply in the private sector and unemployment registered a steep increase, particularly during the second half of the year. Buoyed up by a substantial expansion of public sector jobs, total employment increased 11,000 (or 0.4%) from 1973 to an average of 3.1 million for the full year. This rate of job growth is not nearly enough, however, to keep pace with the State's expanding labor force. As a result, the unemployment rolls climbed by 54,000 to an average of 278,000 for 1974. New Jersey's unemployment rate averaged 8.3% in 1974, compared with 6.8% in 1973.

An alternative method of computation mandated by the U.S. Bureau of Labor Statistics (BLS), and under challenge by the New Jersey Department of Labor and Industry in Federal court, yields an unemployment estimate for 1974

that is about 75,000 lower but which shows roughly the same rising trend from a year earlier. Based on the BLS estimating method, unemployment will average about 203,000 in 1974, or 6.3% of the labor force. This represents an increase of 23,000 or 0.7 percentage points from 1973.**

Annual averages, of course, do not begin to tell the story of labor market trends in 1974. They obscure the fact that conditions were progressively worsening during the year. By the end of the year employment in New Jersey was down 49,000 from the same time a year earlier, despite an increase of 28,000 jobs in Federal, State, and local government. Thus, there had been an erosion of 77,000 private sector jobs over a twelve-month period, with big losses in manufacturing and construction far outweighing unusually small gains in trade, services, and finance.

Similarly, unemployment reached 333,000 or 10.1% by December, seasonally adjusted, far above the annual average and three and one-half percentage points higher than in the spring of 1973. The jobless rate estimated by the BLS method was 7.7% in December, also well above the annual average. This surge in joblessness comes on top of the damage inflicted by the last recession, from which the New Jersey labor market never fully recovered. Over the past five years, unemployment in the State has risen by 200,000 or by five and one-half percentage points. Unemployment has not been this severe since the depths of the 1957-58 recession.

Though the economic slump started in 1974 was a nationwide phenomenon, the impact was particularly severe in New Jersey, as it has been ever since the nation's economic woes began five years ago. On an annual basis, output and personal income declined by about one percentage point more in New Jersey than

* This is not the usual "inflation rate" represented by the Consumer Price Index or "cost of living" index. The latter has gone up 12.1% in New Jersey during 1974. The 10.4% rate is termed the "GNP deflator" which is used to adjust the total output of goods and services for the effects of inflation.

** A full discussion of the methodological controversy between the State and the U.S. Bureau of Labor Statistics, which has significant implications for Federal fund allocations, appeared in the September 4, 1974, issue of *New Jersey Economic Indicators*. Reprints of the article, entitled "New Jersey Unemployment Statistics: A Dispute Over Methodology," are available upon request from the New Jersey Department of Labor and Industry's Division of Planning and Research.

nationally, while unemployment rose more sharply in New Jersey than in the nation generally. Since January the State's jobless rate has risen 0.5 of a percentage point more than the national increase. New Jersey also experienced a greater than average drop in retail sales during 1974 and a disproportionate number of business bankruptcies. One indicator—the net gain in number of business telephones—declined by 36.5%.* Similarly, the number of business failures increased 31%.

Manufacturing Hit Hard

New Jersey's cyclically vulnerable manufacturing sector, still reeling from the apparent permanent losses of the last recession, was hit hard again in 1974. After a very disappointing recovery from the severe recession cutbacks of 1970 and 1971, factory employment in the State peaked in mid-1973 and then headed into a steep decline that accelerated during the second half of 1974. By November, manufacturing employment had dropped by about 58,000 over a sixteen-month period to 787,000, seasonally adjusted.

Manufacturing layoffs during the current contraction have been biggest in apparel, electrical equipment, transportation equipment, fabricated metals, food processing, "miscellaneous manufacturing" (which includes such products as toys and novelty goods), and stone, clay and glass products. Smaller declines were spread over most other industries. There were several notable exceptions, however, where demand apparently has remained strong. Employment has increased or at least held relatively steady in chemicals, petroleum refining, printing, and industrial machinery manufacturing. It is worth noting that most of the industries suffering declines as a result of the recession are also those which have been steadily declining over a much longer period of time. Also, most of those whose employment is holding up are also industries which, in the past, have done well relative to the nation.

New Jersey's factory job loss during 1974 was much more severe than that nationally, continuing the deteriorating pattern of preceding years. While New Jersey's share of the nation's manufacturing jobs had been declining for decades, reflecting the gradual dispersion of industrial activity out of traditional manufacturing centers of the Northeast and into less developed southern and western states, the trend has accelerated markedly over the past five years as antiquated high-cost facilities have been abandoned, particularly in urban centers. Since mid-1969, factory jobs have declined by about 114,000 in New Jersey, or by 12.6%. In contrast, the decline nationally was only 3.1% over the same period.

In effort to counteract these adverse trends, a State Economic Development Authority was established during 1974 to provide low interest loans for the construction or expansion of facilities. In addition, a customized training program for industry contemplating relocation to New Jersey has been funded, as well as a general strengthening of the State's economic development programs.

Building Activity Plummets

While the recession's impact on manufacturing has, to date, resulted in the biggest numerical job loss of any sector of the State's economy, the most precipitous decline percentage-wise has been in construction. After rising to a record 126,600 in December 1973, contract construction employment plummeted by nearly 20,000 to 107,200 in December, 1974 (seasonally adjusted). This represents a decline of 17%, and it tells only part of the story since many construction workers still fortunate enough to be employed experienced substantial cutbacks in hours of work.

The construction industry was buffeted from all directions during 1974, but the most serious slump was in residential building. Mainly because of a severe shortage of mortgage money—but also because of inflation of housing prices

* The percent changes are based on data that has not been seasonally adjusted.

and a decline in consumers' real incomes—new housing starts continued a two-year nosedive to their smallest volume in many years. For 1974, the number of dwelling units authorized by building permits totaled 22,600, the lowest number on record, down from 52,000 in 1973 and 65,500 in 1972. The drop from 1972 to 1974 amounts to about 65%. With the trend still downward at year's end, homebuilding prospects for at least the first half of 1975 remain rather bleak.

At the same time as housing starts were plummeting, the flow of new nonresidential building and public works projects slowed because of financing difficulties, deterioration of business expectations, and Federal government budgetary restraint. Materials shortages also contributed to delays on some projects. The dollar volume of contract awards for both nonresidential building and such heavy construction as roads, bridges, and utilities did register increases in 1974, but this was due to inflation of building costs and to the fact that awards for such construction had already dropped sharply in 1973. Compared with 1972, nonresidential awards were down 3% and heavy construction awards were up only 10% in inflated dollars. In both cases this means a very substantial drop in real terms.

The Slump Spreads to Services

Economic difficulties also rippled over into most of the State's service-producing industries during 1974. Employment in private sector service activities was only 8,000 higher than a year earlier. Employment expanded in finance, medical services, education, wholesale trade, and in restaurants and some other segments of retail trade. There were declines or a lack of expansion, however, in other activities normally counted upon as reliable generators of new jobs year in, year out. Suffering from a sharp drop in sales, general merchandise stores, auto dealers, and apparel retailers have cut back their staffs since late 1973. Employment also declined during the year in gasoline service sta-

tions, transportation, and in electrical, gas, and sanitary services. The communications industry failed to expand its payrolls, as it has done consistently for many years, and job growth in most other service activities was negligible.

THE NEW JERSEY ECONOMY IN 1975-76

In its annual forecast last December, the Economic Policy Council noted that "The nation is in the midst of what may turn out to be the deepest and longest recession in the postwar period." There is no longer denying that fact. In order to cast light on the outlook for New Jersey, one must begin with an assessment of the nation's economy.

The National Economic Outlook

Recent economic statistics point to both good and bad news.

First, to the bad news. The recession is a very deep and protracted one, indeed the most serious since the Great Depression. Unemployment is near 9%, and this figure is probably an understatement if we allow for discouraged workers who have stopped looking for work. The gross national product declined at an annual rate of 10.4% during the first quarter of the year, measured in real terms, that is after removing the effects of price inflation. And that decline came on the heels of a 9% per annum drop in the previous quarter. With these sharp declines, there is plenty of slack not only in the supply of labor but in productive capacity as well. The simultaneous curtailment of demand among consumers, homebuyers, and business has not only diminished the flow of personal incomes but corporate profits as well. The latter will decline, on average, about 20% over the fiscal year, with declines continuing over the last half of 1975 and increases becoming apparent in the first half of 1976.

The good news has been rather meager. Some encouraging signs are nonetheless beginning to emerge. Above all, inflationary pressures are

easing. The GNP price index was up "only" 8% per annum during the first quarter, a considerable improvement over the 14.5% rate in the fourth quarter of last year and the 12% rate in the third. Moreover, prospects for further improvement appear good. Wage gains are moderating. Many raw materials and agricultural prices are now heading down. Weather for growing crops has improved considerably, and good harvests should find reflection in the consumer price index later this year.

The fear is sometimes expressed that, once the economy turns around, a new surge of inflation will take place on top of an inflation rate which is unlikely to drop much below 7-8% even during the recession. The reasons economists are hopeful that inflation will not surge again as soon as the economy turns up is that once a mild recovery starts, productivity will improve, which in turn should ease price pressures. As the economy rises after a period of slack, output per man-hour typically improves and for good reason. An increase in output can be achieved without a proportionate increase in the work force or hours worked. By contrast, we will have a couple of rough months ahead as the economy recedes. It is during periods of recession that productivity typically falls, with output declining faster than employment, resulting in increased unit labor costs.

Good prospects now seem at hand for a turn in the direction of GNP—from a decline in real terms to a rise—by the fall of this year. The reasons are:

1. The sharp slash in top-heavy inventories should be finished by mid-summer or fall. By then, supplies of autos and most other goods will be in good balance with sales. An end to the current inventory correction will mean an end to production cut-backs.

Inventories have clearly been among the most destabilizing factors. In the fourth quarter of last year, American business was buying (and producing) \$18 billion to increase inventories. In the first quarter

of this year, business was liquidating inventories (and reducing production) by \$18 billion. That represents a swing of \$36 billion, not a small amount even in our giant economy.

2. Housing activity should begin to turn the corner by summer. Mortgage money has again become plentiful and mortgage rates, which have already declined by a full percentage point, are still dropping. There have, of course, been other factors than the cost and supply of mortgage credit inhibiting housing activity, including high prices and some overbuilding. Nonetheless, a more abundant flow of credit, at lower rates, should encourage some recovery in the housing market.
3. Consumer spending will rise, stimulated by less inflation, easier credit conditions, and by an infusion of purchasing power resulting from the \$25 billion tax cut.
4. Consumer attitudes and expectations are improving. Surveys made by the Michigan Survey Center and the Conference Board clearly indicate improvement. When surveyors recently asked the question: "Will conditions be better six months from now?", the answers were predominantly, "Yes." People are no longer asking, "Will there be another Depression?"

Plant and equipment spending will increase only slightly if at all, in dollar terms, implying there will be a decline of 5-7% in real terms. This will probably constitute an economic drag but not enough to choke off slow but noticeable economic improvement.

All factors considered, it appears that a pickup in economic activity is now in sight. Such a development, though devoutly to be wished, will not, however, prevent some further rise in unemployment, as the labor force for a while continues to grow faster than jobs. Nationally, the rate of unemployment is likely to continue rising until the fourth quarter of 1975, peaking near 10% before it turns down.

We do not expect the recovery to be so rapid as to provoke another round of double-digit inflation. As already noted, some further reduction in inflationary pressures appears likely

We also do not expect that implementation of President Ford's Energy Program will have more than a slight dampening effect on recovery trends. Of course, it will take a few billion dollars out of the economy but the effects will be ameliorated by conservation and shifts in the composition rather than the level of output; e.g., a shift from large cars to small cars.

The improvement in business nationally will, as always, find reflection in the economy of New Jersey.

The New Jersey Outlook

In the past it has often been said that the New Jersey economy is a "mirror" of the U.S. Per-

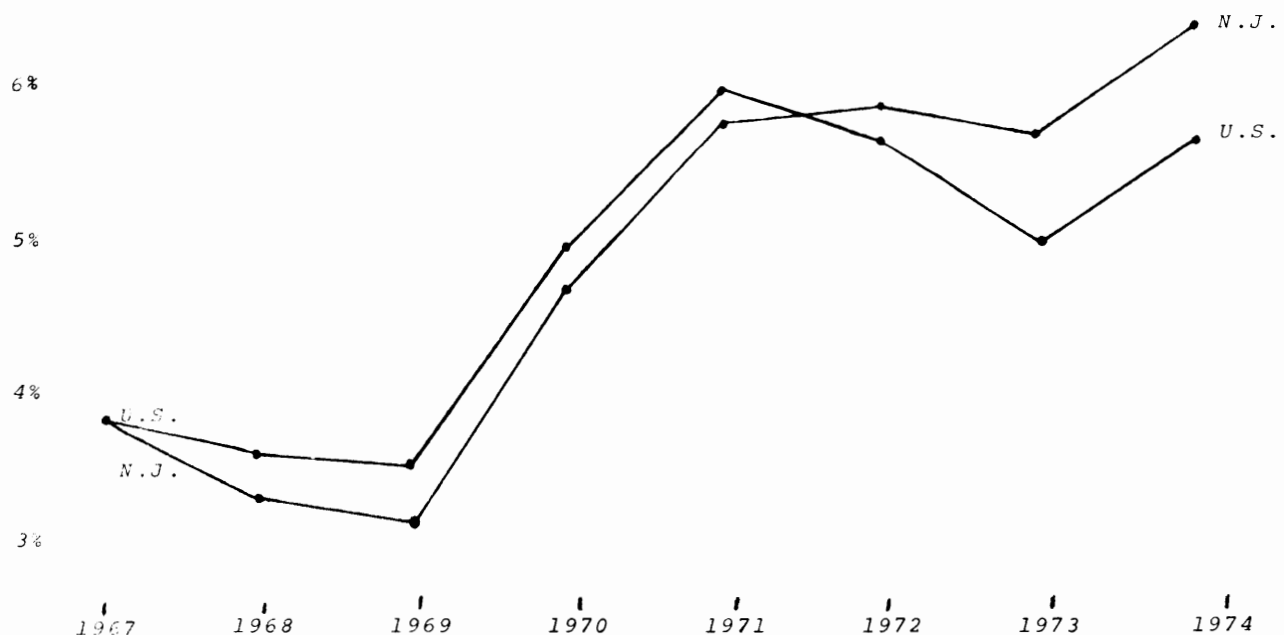
haps, but it seems as if the mirror's focus is distorted. New Jersey is feeling the effects of upswings less, and the effects of downswings more, than the rest of the country.

Where Is the Ceiling on Unemployment?

Over the last recession we noticed that the State's unemployment rate tended to rise more than the national rate. This has happened once again in the recession of 1974-75, as may be seen from the chart below. The State's economy, as measured by unemployment, did not share to any significant extent in the economic recovery of 1972-74. Instead, unemployment proved unusually sticky, and rose again once the national business picture turned down.

The jobless rate has risen over five percentage points over the last two years. The overall rise has been accompanied by especially large increases in the rates for young members of the

FIGURE 2.1
UNEMPLOYMENT RATES IN THE UNITED STATES AND
NEW JERSEY 1967-1974



labor force and in the proportion of those who are "long term" unemployed, as shown below.

Unemployment apparently peaked at 13% in May,* but the rate will decline very slowly over the coming year. Unemployment should remain above 12% through most of the winter and drop to 11% by the end of the fiscal year.**

It seems clear that the State is suffering from some basic structural problems that cause the growth in the labor force to outrun the growth in jobs. This longer-run problem is of the utmost importance. It deserves careful analysis and the single-minded attention of all State policymakers.

As the Department of Labor and Industry's recent reporting indicates, the declines in employment and increases in unemployment have been pervasive. Many jobs other than those in manufacturing or construction are being affected, including those in utilities, finance and some portions of trade and services. In recent years, increases in government jobs, mainly at the State and local level, have tended to partially offset the widespread job losses in the private sector. Over the coming year this offset will be somewhat less because of stringency in public sector budgets. Hence total employment in New Jersey will actually decline in calendar year 1975, compared to an average annual growth rate of about 2.5% within the last decade.

FIGURE 2.2
CHARACTERISTICS OF THE NEW JERSEY INSURED UNEMPLOYED†
(Regular State UI Program Only)
(Thousands)

	April 1975	March 1975	April 1974	Net Change From month ago	Net Change From year ago
By Age of Claimant					
Under 25	49.5	52.4	28.7	-2.9	+20.8
25 through 34	54.0	56.2	33.2	-2.2	+20.8
35 through 44	35.5	38.5	23.8	-3.0	+11.7
45 through 54	38.6	39.2	24.0	-0.6	+14.6
55 through 64	28.4	29.2	18.9	-0.8	+ 9.5
65 & Over	9.8	10.0	8.5	-0.2	+ 1.3
By Duration of Unemployment					
1 to 2 weeks	19.8	25.9	23.0	-6.1	- 3.2
3 to 4 weeks	17.7	23.7	14.9	-6.0	+ 2.8
5 through 14 weeks	117.7	124.9	68.1	-7.2	+49.6
15 weeks & Over	60.5	51.0	31.2	+9.5	+29.3

† Data are for claimants in the week including the 19th of the month and are not seasonally adjusted. The data on characteristics of the insured unemployed under the Regular State UI Program are based on a sample of all insured unemployed. Industry data are for selected categories and do not add to totals.

SOURCE: New Jersey Economic Indicators, May 30, 1975, Department of Labor and Industry.

* This is the rate computed according to the "modified traditional" estimating procedure used by the New Jersey Department of Labor and Industry. The State's rate as computed by the Federal Bureau of Labor Statistics is 10.8% for May (seasonally adjusted). Chapter VII indicates that the latter estimate is more appropriate for State/national comparisons. The State of New Jersey is contesting the Federal estimating procedure in Federal court. Both methods, however, indicate a similar substantial increase in State unemployment during the current recession.

** The corresponding forecast under the Federal reporting system would be: Unemployment should remain above 10% through most of the winter and drop to 9% by the end of the fiscal year (June, 1976).

Despite the full year decline in jobs, we expect the direction and tone of business activity in New Jersey to start improving in the last quarter of 1975 and to show pervasive signs of pickup during the first half of 1976. The improving national economic situation will result in a recall of workers by auto assembly plants and a host of manufacturing and service industries, particularly those catering to the consumer sector. Unfortunately, improvements in labor market indicators will lag considerably behind improvements in other demand related indicators.

How Soon Will Construction Recover?

The depression in construction will continue for several more months. The lowering of interest rates and other factors mentioned in the national outlook will eventually spur a renewal of housing construction in New Jersey as well. There is a lag of several months, however, between the appearance of favorable economic indicators and the onset of increased construction activity. Thrift institutions have been using recent deposit inflows to rebuild their liquidity and repay debt to the Federal Home Loan Bank. With liquidity improved, mortgage loans are becoming available to home buyers on better terms—that is, at lower interest rates and smaller down payments.

Last year, the reduction in residential construction activity was partially offset by continued strength in nonresidential construction activity. Two factors make this an unlikely prospect for 1975: (1) the expected weakness of investment in new plant by business; and (2) an almost empty pipeline of public projects to take up the slack. In view of the latter, Governor Byrne appointed a special commission to identify the needs for public facilities in New Jersey. The Commission recommended that several billion dollars in capital projects be undertaken over the next several years. The first stage of the new capital program will be brought before the voters in the November referendum. None of this, however, will suffice to deal with the

present depression in New Jersey's construction sector. Part of any capital program should be designated to serve as a contracyclical tool—to be released quickly when the State's economy turns down. Unfortunately, the Commission did not address this issue.

Private investment for new industrial plant in New Jersey will be even weaker than forecast for the nation. This means that the level of private investment for new plant and equipment in New Jersey is likely to decline *both* in dollar terms and real terms during 1975 and perhaps to pick up in dollar terms but still not in real terms during the first part of 1976.

Rising Business Failures

A recession as intense as the one we are now experiencing not only depresses economy-wide averages; it affects some parts of the economy more than others. Those less well-endowed generally suffer more than those better endowed. This is true of businesses as well as families. Many new, small and medium sized firms go under. Many new businesses that might have been started are stillborn. The latter may never even show up in the statistics. Business failures are likely to continue to rise until signs of economic recovery appear. The shakeout of newer and smaller firms will have a dampening effect on New Jersey's recovery potential in the next and subsequent year.

New Jersey Exports May Rise

Though the overall U.S. foreign trade balance (exports minus imports) turned from surplus to deficit during 1974, the surplus for all items except oil has increased. U.S. exports increased more than 20% in real terms in 1974 and are likely to increase again in 1975. This should benefit New Jersey industry, though not sufficiently to offset negative employment trends. As of 1971, the State's share of U.S. exports was about 3.8%. Until then, it had been declining rather consistently. The Department of Labor and Industry has begun an export pro-

motion program which, hopefully, can help to increase the State's participation in export trade.

Gross State Product and Personal Income— Inflated Dollars

Economists forecasting Gross National Product (GNP) generally project real growth and then add in a factor for inflation. We use a similar approach to forecast Gross State Product (GSP). We anticipate that there will be an increase in New Jersey's real output of goods and services of about 4.5% over the fiscal year. With inflation averaging about 6-7% this implies that the dollar value of New Jersey GSP should rise in the neighborhood of 10-11%. Thus, by the end of fiscal year 1976 total GSP should reach at least \$63 billion compared to roughly \$57 billion at present. By far the largest portion of GSP is received by State residents in the form of personal incomes. We expect that the total dollar value of personal income in New Jersey will rise 9-10%—from about \$49 billion to about \$51 billion. On a per capita basis personal income should reach close to \$7,200. This means that purchasing power for New Jersey families and individuals will barely keep pace with the rate of inflation.

Tight Public Budgets

The worst of the State's fiscal problems may be behind us. Recent declines in retail sales, corporate profits, auto purchases and other por-

tions of the tax base will begin to pick up. As a result, State tax revenues, while still tight, will see some modest improvement. This does not mean, however, that the State's fiscal crisis will automatically disappear. Some inflation in the costs of goods and services purchased by government will continue. The demands for many types of public services will rise due to social costs of rising unemployment. Even with improvement on the revenue side of the ledger, continued budget gaps are likely in the absence of tax reform. The fiscal crisis will not vanish but it will grow slightly less acute over the next fiscal year.

Better News a Year From Now?

Overall, the year 1975 will be one of the most dismal years in recent memory for the New Jersey economy and the prosperity of the State's citizens. We expect that signs of a New Jersey upturn will lag behind national signs by a few months. If our hopes and expectations regarding the national economy are realized, however, this means that we should begin to see improvements in employment, output and incomes in the State's economy before the end of 1975 and continuing well into 1976.

Economic recovery will be a slow and painful process. The anticipated recovery will not be sufficient to offset the effects of the prior recession, but along with the nation the State will begin to climb out of its economic cellar.

III

REVIEW OF LEGISLATION WITH SIGNIFICANCE FOR THE NEW JERSEY ECONOMY*

The problems buffeting the New Jersey economy in 1974 have been well documented. The economic statistics show the State's economy tumbling into a somewhat deeper recession than the national economy. Depressed economic conditions have continued into 1975, with forecasts for a slow and difficult recovery for our State. There are many causes for today's problems, but a considerable degree of responsibility for economic recovery lies with elected public officials. The following review summarizes recent legislation which may directly or indirectly influence the State's economy. In only a few cases have we been able to suggest ways in which a given legislative item might affect the State's economy. Evaluation of legislative proposals involves data gathering, the selection of appropriate techniques and a good deal of applied economic analysis.** Evaluation of some bills would take a separate chapter in each case. Over the next fiscal year we hope to do evaluations of those items whose potential economic significance is greatest.

Taxation

The fiscal pressures imposed upon State and local governments result largely from the in-

ability of revenue structures to keep pace with the increasing real and monetary demands placed upon government. The history of tax legislation reveals a patchwork approach to fiscal problems. The 1974 Legislature, faced not only with resolving the school finance problem and funding a deficit budget, has been confronted with increasing pressure to justify the grounds by which the overall burden of taxation is distributed among income groups, local jurisdictions, and the business sector relative to families and individuals.

Division over the desirability of a State income tax has resulted in few new tax laws. These laws plus other significant tax proposals can be broken down into two categories; those designed to raise additional funds and those to redistribute the tax burden.

Each new fiscal crisis fosters a host of recommendations to increase the Corporation Business Tax; this past year was no exception. In addition to the business tax due for the current year, a prepayment of tax for the following year, for which a credit is allowed, must be paid. Public Law 1975, Chapter 21 increases the share of tax prepayment from 50% to 60%, resulting in a one-time increase in tax revenues.

* Prepared by George R. Nagle of the Office of Economic Policy.

** Assembly bill A-1000, "The Economic Impact Disclosure Act" sets forth specifically the kinds of considerations that enter into economic impact analysis. This bill is presently awaiting the Governor's veto or signature.

Over the long run, however, the legislation will tend to exaggerate the cyclical nature of business tax revenues.

Other proposals would increase the rates of the Corporation Business Tax and repeal regressive taxes such as the Unincorporated Business Tax and the Retail Gross Receipts Tax which were levied as temporary measures to provide for replacement of the local Business Personal Property Tax.

Related business tax proposals would increase the insurance premiums tax and subject banking corporations to the Corporation Business Tax while exempting them from the Bank Stock Tax. This raises the problem of measuring the income of a financial institution, which for Federal tax purposes is substantially lower in relation to economic income than that of other, non-financial, businesses. Financial institutions would experience a decline in net tax liability.

Introduced and referred to committee in 1974 was a measure imposing a 3% state tax on the fair market value of refined petroleum products.

A major revenue raising measure was introduced in 1974 as the "State Business Stabilization Tax Act." In brief, the tax imposes a property tax surcharge on the owners of business property. The tax base is determined by deducting from the assessed value of the business property 95% of the amount of the general property tax upon that property plus a lump sum of \$200, designed to exclude "small businesses" from additional taxation. Local governments would retain 20% of the proceeds for residential property tax relief.

This tax apparently has three purposes: (1) to capture "windfalls" to business resulting from reductions in local property taxes; (2) to move towards equalization of effective property tax rates on business real property in the various municipalities; and (3) to yield \$200 million in additional revenues to the State. A few likely results of adopting such a tax are the following:

1. New Jersey business as a whole would receive no property tax relief at all. Its

relief from local property taxes would be completely offset by the state tax on business property.

2. The State would start down the road towards classified property taxes on real estate, with the probability of lower rates on owner-occupied houses than on apartments and other "business" properties.
3. The State would implicitly endorse the popular but completely erroneous notion that some abstract entity called "business" can bear taxes. Obviously, neither abstract entities nor "things" can bear taxes; only human beings can—owners, employees, customers, suppliers and so on.

Though the logical basis for taxes on business real property is weak, political conditions virtually assure that such taxes will persist and that every municipality will insist on retaining the revenues from business real property within its boundaries. If the tax is retained, property tax rates on "business" should be equalized among municipalities. This can be accomplished in the following way: (1) make this a State tax, and levy each year a tax rate equal to the weighted average of real property taxes across the State; and (2) allocate to each municipality an amount of revenue equal to the equalized value of business real estate located within its boundaries multiplied by the tax rate it levies on other real property.

In an attempt to help local governments meet short term financial obligations, the Legislature approved P. L. 1975, Chapter 20, which authorizes certain urban municipalities to impose a 2% employer payroll tax.

The property tax has produced sharply increasing yields both from increases in the local rate and from growth in the tax base. A lesser known fact is that the property tax in New Jersey is rising faster than the State's Personal Income, resulting in increased financial burdens for property owners. In 1954 the property tax totaled 4.2% of personal income; in 1974 it reached 6% of personal income, despite the

equalizing effects of General Revenue Sharing. The following proposals seek to relieve or distribute in some way the burden of property taxation.

Many states grant property tax homestead exemptions, which in one form or another relieve the low income or elderly from excessive taxation. A similar proposal by the New Jersey Legislature would exempt a share of the assessed value of property owned by those retired, disabled, or widowed. The bill does not, however, guarantee relief from rising property tax rates. A different version of a homestead statute limits property tax liability to a specified percentage of the property owners' income. This guarantees that no homeowner or renter will pay an excessive share of income in property taxes, regardless of the local tax rate.

A bill designed to provide state aid to municipalities experiencing a declining property base was introduced early in 1974. The measure simply prolongs the problems and offers no incentive to reform local revenue practices.

The Legislature has also considered bills designed to levy a tax on the capital gain accrued from the transfer of real property. The intent of the bill is to limit the incentive for speculative holding of open space property for development. Before enactment, however, serious consideration must be given to the effect a capital gains tax would have on land development and improvement. An improvement will be made only if it can produce rents that cover a return on capital, operating costs, and the property tax. But even a moderate tax on capital value (or an increase in capital value) implies a much larger tax rate on the gross income derived from the investment. Thus, there is a possibility that a capital value tax would displace investment to some extent.

Economic Development/Local Aid

Prompted by a dismal year for the economy the Economic Development Authority (P. L. 1974, Chapter 80) was established to spur the

State's economy by subsidizing the financing of industrial facilities. The legislation grants to the newly created Economic Development Council the authority to obtain mortgages, issue revenue bonds, and lease or sell property to maintain or create employment opportunities. Using the financial tools provided by the legislation, the Authority will obtain loans from private lending sources and make these loan proceeds available to eligible firms.

There is no constraint on the share of total cost that may be financed by the Authority. The Authority may provide a loan for up to 100% of the cost (which may include machinery and equipment, but excludes raw materials, intermediate products, and inventories) in cases where the credit of the firm is adequate.

The legislation grants the Authority power to acquire and develop real property either by sale, purchase or by eminent domain, the latter requiring the approval of the concerned political subdivision. The authority may then construct a facility on behalf of an applicant or permit the firm to construct facilities using funds borrowed from the Authority.

Although the Economic Development Authority is a governmental agency it may not obligate the credit of the State. The Economic Development Authority will not be liable to pay taxes, (excepting real estate transfer, estate and inheritance taxes) and interest on private loans to the Authority will be exempt from Federal corporate income taxes. There is a \$5 million ceiling on Authority loans for projects up to \$5 million, but the level of funding support falls to a maximum of \$1 million for projects exceeding \$5 million in scale. The \$5 million ceiling also qualifies the bond buyer for Federal tax exemptions on interest income. Since interest income is tax free, interest rates on loans to the Authority (and thus, to applicant firms) will be below commercial rates.

If private lenders are unwilling to underwrite the full amount needed for a project, the Authority can guarantee the extra amount needed.

The loan guarantee provision is designed to spur investment in depressed areas of the State. It is questionable, however, whether loans or loan guarantees can adequately serve this purpose. Debt capital establishes a lien on a business's cash flow and constrains it from using profits for reinvestment. There is a need for a public equity capital vehicle rather than further proliferation of loan and loan guarantee methods of financing.

P. L. 1975, Chapter 34 appropriates \$10 million from the Unemployment Compensation Auxiliary Fund to the Economic Development Authority. The appropriation will provide additional collateral for loan guarantees. The law stipulates that at least 50% of the loans generated by this appropriation must be earmarked for projects located in "urban aid" municipalities.

Recognizing that the short run benefits of a recently organized industrial financing agency would be limited in scope, further legislation was introduced that would provide for a business investment tax credit. The proposals intend to induce new investment and employment in New Jersey industry by providing a tax credit for businesses which invest in new capital construction. In one version, this credit would be up to 10% of the "actual costs of capital construction undertaken" during a firm's tax year, not to exceed 10% of the franchise tax owed for that year. Another version would provide a 2% credit similar to that allowed by the State of New York. However, available studies on the effects of tax incentives on industry investment or location indicate that their effects are negligible. Businessmen are influenced by many other prior, more important factors in making such decisions and are only influenced secondarily, if at all, by the existence of tax incentives.

Any tax incentive scheme must be weighed against powerful trends in the private economy. In New Jersey, one such trend is a rate of capital expenditures in manufacturing which is significantly lower than nationwide. Although

more study is needed to understand the reasons why New Jersey has such a low rate of reinvestment in manufacturing, it is clear that a complex set of measures must be undertaken to reverse this unfavorable trend.

A sensible tax incentive scheme would not provide assistance for just *any* investment but for investment above a certain threshold. Although such an incentive would apply to new firms as well as old, its primary purpose would be to encourage reinvestment by New Jersey industry. The applicable threshold is just one important question to be confronted in the design of an appropriate tax incentive scheme. Other questions concern the nature of complementary programs. It is questionable whether, by itself, any tax incentive scheme can induce significant amounts of new investment. Other programs, such as technical assistance, import substitution, venture capital provision, and above all, business tax reform, are required.

Aid to local government was enhanced by continuing the "Safe and Clean Neighborhood Act" (P. L. 1974, Chapter 100). The legislation appropriates up to \$1 million in matching funds to a municipality to upgrade and augment municipal services and programs relating to "safe and clean" neighborhoods.

Population growth has fostered increased demand on local governments for expanded services and facilities. This relates not only to customary services but also to water and sewer services, public parking facilities, and recreational facilities. Many such services are of the type which permit the collection of a service or user charge; but under present laws, municipalities cannot finance revenue producing facilities by issuance of bonds payable solely from the income from such facilities (except for specially created public authorities). In many cases, the municipality is unable, by reason of debt limitation or demands for non-revenue producing services, to finance expanded facilities. Legislation pre-filed in the 1974 session would provide a revenue bond law to permit counties and municipalities to construct or ac-

quire revenue producing public facilities with revenue bonds payable solely through user charges. This distinguishes revenue bonds from general obligation bonds payable from ad valorem taxes. The proposal would also allow the elected governing body to maintain control of the facility.

Labor

The effect of New Jersey's economic slump is clearly reflected in recent employment data. Total employment has declined for ten consecutive months resulting in over 13% of the labor force being unemployed. How have New Jersey lawmakers responded?

For those still holding a full-time job, P. L. 1974, Chapter 63, amends the New Jersey State Wage and Hour Law by raising the State minimum wage to \$2.20 per hour as of January 1, 1975 to coincide with the mandated increase in the Federal minimum wage.

The current recession is over one year old, with prospects for recovery still some months in the future. Unlike previous downturns unemployment is forecast to remain at high levels for at least a year beyond the trough of this recession. In response to lagging employment indicators the State's Legislature has, on several occasions, extended temporary jobless benefits for an additional 13 weeks (P. L. 1974, Chapters 4, 21, 76, 94).

Faced with an Unemployment Insurance Fund that has already been depleted and refinanced with Federal loans the lawmakers have approved P. L. 1974, Chapter 86 which increases employer contributions to the Unemployment Insurance Fund. Increased unemployment insurance taxes, however, may contribute to an "adverse business climate" in New Jersey. The New Jersey Manufacturers Association has concluded that tax burdens on business in New Jersey are high relative to surrounding states.* Examination of their figures indicates that unemployment insurance taxes are the primary

cause of these differentials. The method of financing the unemployment insurance fund should be reexamined lest New Jersey find itself in a vicious circle: high unemployment → higher unemployment insurance taxes → higher business tax burden → out-migration of firms → higher unemployment.

Other legislation of possible benefit to labor includes proposals to study and investigate both public and private pension plans operating within the State. Pension plans are virtually unregulated at the State level and there have been establishments in New Jersey with non-contributory pension plans going out of business and leaving tenured employees without pension coverage. The study commission, if approved, would recommend regulatory measures and draft standards of conduct for pension systems.

The unemployment problem was directly confronted by legislative action which resulted in the "Emergency Employment Development Act of 1974," P. L. 1974, Chapters 194, 195. Recognizing that there is a need to encourage existing businesses to expand and to attract new businesses to the State, the Act mandates the use of public moneys from the Unemployment Compensation Auxiliary Fund to develop and expand job opportunities through the State's expanded Economic Development Program by providing funds to train workers and to design programs to stimulate employment in New Jersey.

Food stamps are another form of assistance to the State's unemployed. In order to provide dispersed locations for their distribution, pre-filed legislation would encourage the State's banking institutions to participate in the sale and distribution of food stamps.

Recession and inflation have increased the cost of administering welfare and relief programs in the State, counties, and municipalities to the point where the resources of these units are no longer sufficient to adequately finance these programs. In a proposed resolution, the U.S. Con-

* See: *The Burden on Manufacturing of State and Local Taxes and Governmentally Imposed Costs: A Comparison of New Jersey and Eight Other States*. Prepared for New Jersey Manufacturers Association, June, 1974, pp. 24-27.

gress is requested to assume the entire cost of administering welfare and relief programs.

Finance/Banking

School districts and county and local governments are restricted by statute to paying no more than 6% interest to borrow funds. With the prime lending rate breaking the 10% barrier during the past year local governments have found it exceedingly difficult to secure funds. P. L. 1974, Chapter 31 temporarily suspends the statutory ceiling and allows government agencies to secure obligations without limit as to the rate of interest.

Usury is defined as an excessive rate of interest. During the Middle Ages, all interest was called usury, and all usury was deemed a crime. In New Jersey, the Commissioner of Banking is authorized to fix the usury ceiling anywhere between 6% and 9.5% per annum. Legislation was introduced that would reduce the maximum interest rate to 8%. This would lower the effective interest rates on loans, but would also reduce the supply of funds when market interest rates exceed the usury ceiling. The position of the Economic Policy Council is that all usury ceilings should be abolished. When a usury ceiling is approached or exceeded by market interest rates, the ceiling does not serve to protect consumers; it leads lenders to adopt various non-price rules of thumb for rationing available funds. This type of rationing is often inequitable.

Proposals were introduced that would raise from 1.5% to 5% the tax on net worth and capital stock of financial institutions.

P. L. 1974, Chapter 137, provides an alternative method whereby savings and loan associations can raise capital through the issuance of capital stock.

Insurance

P. L. 1974, Chapter 17 establishes a New Jersey Property-Liability Insurance Guaranty Association. All direct insurers (except life,

accident, health, workmen's compensation, title insurance, and security bonds) will become members of the private non-profit unincorporated association. Among other things, the association shall be obligated to pay the claims of an insolvent insurer and avoid excessive delay in payment to avoid financial loss to claimants or policyholders. The association will allocate the cost of claims against an insolvent insurer proportionally among member insurers based on the net value of written premiums. Other objectives of the association include assisting in the detection and prevention of insured insolvencies, and providing an organization to assess the cost of such protection among insurers.

A proposal was introduced to limit the authority of the Commissioner of Insurance to approve insurance rates. The intent of the bill, removing all restrictions on insurance rates and rate-making, is to permit a system of "open rating" which should increase the availability of insurance in high risk areas. It is questionable if premiums to the consumer would decline as the result of increased competition.

Trade and Competition

In 1933 the State's Legislature passed an emergency measure to regulate milk prices. With milk prices falling, farmers supported the measure as a necessary part of an overall program to prevent a possible curtailment of milk to New Jersey residents by providing a reasonable return to the milk producer. Today the farmer is well protected by the Federal milk support price.

The term "support price" refers to the Federal support price, as administered by the USDA. Under the Federal Support Price Program, the government (Commodity Credit Corporation) agrees to purchase manufactured milk products in the open market at the support price, thereby guaranteeing a price to dairy farmers.

Legislation has been introduced and referred to committee that would eliminate minimum retail milk prices. Proponents of the measure

feel consumers are hurt because the price floor inhibits competition. The presence of an open market would stimulate efficient production and cut prices. Opponents of the bill claim an open market will foster a price war that will force processors out of business. After market adjustment, the remaining processors would establish a long run price well above the old market supported price.

Many observers feel that wholesale price supports are irrelevant because Federal rules guarantee what price the farmer will receive. But Federal statutes do not guarantee the viability of the milk processors, nor do they guarantee the producer a market for his milk, nor a stable and orderly distribution system to protect his existing market. In a similar manner the laws of New Jersey do not guarantee a market to milk producers nor do they establish a subsidy price in the sense that public funds are being used to subsidize producers.

The Fair Trade Act was also enacted during the Depression. Recently repealed (P. L. 1975, Chapter 107), the mandate allowed manufacturers to establish minimum retail prices for their wares. The retailer was obligated by law not to sell the goods for less than the "fair traded" price.

The repeal of fair trade pricing should lower some retail prices, but small retailers are justifiably concerned because a larger discounter can now put a formerly fair traded item on sale in hopes of attracting customers. Fair trade pricing was most evident in appliances and clothing.

Energy/Public Utilities

The curtailment of petroleum supplies during the early months of 1974 strained the finances of both the suppliers and users of energy. The State's Legislature responded with several bills to aid one group or the other with financial assistance. Although none of the following bills were signed into law, most are still being debated and are active in legislative committees, their future perhaps contingent on the establishment of a national energy policy.

An incentive for consumers to conserve energy was to be provided by sales tax exemptions proposed for all materials designed to reduce energy consumption; i.e., insulating materials, storm doors, etc.

The Utilities' reacted to soaring oil prices by petitioning the Public Utility Commission for increases in utility rates. Legislation filed on behalf of consumer advocates countered by recommending the redistribution of the financial burden onto large energy users. One bill would require electric utilities to adopt a graduated rate structure providing for higher unit costs for the purchase of greater quantities of electricity. Proponents of the measure felt this would provide for an equitable allocation of cost and would help to reduce wasteful consumption of energy resources. A similar measure would allow for setting lower rates where such lower rates are related to lower costs of service.

Expansion of output has been one of the most difficult problems besetting the electric utilities. Another approach to increasing capacity without construction outlays or environmental damage involves a basic modification in utilities' pricing structure. Peak load pricing, as directed by a recent legislative proposal, would establish a differential in rates between periods of high and low usage. During periods when the demand for electricity is low and capacity underutilized, electricity would be sold at rates significantly lower than those in peak periods. This is a means to attract demand away from the time periods when high volume is straining capacity toward those times when there is capacity to spare.

If the price differential between peak and off-peak periods is substantial, reduced daytime and summer demand will free the utility to increase its overall sales volume. In this way it can sell more without a substantial increase in outlays for new generating capacity.

Residents living on fixed incomes have been particularly burdened by soaring utility rates. Legislative bills have been introduced that would provide relief to the disabled and senior

citizens at the expense of the State. Recommendations include preferentially reduced rates and the issue of welfare "energy stamps" to certain subscribers.

The electric companies, beset by inflation, rising oil prices, record high interest rates, and investor resistance, have found it increasingly difficult to secure adequate funds to maintain a capital construction program. Since an abundant energy supply is vital to the State's commerce and industry, the Legislature took steps to propose a Commission with authority to underwrite the construction of energy facilities by issuing tax free bonds. The various recommendations would delegate various degrees of authority to protect the public in the development and implementation of energy demand, supply, and pricing practices, at minimum expense to our environmental resources.

Housing

The New Jersey Mortgage Finance Agency was created in 1970 to expand the supply of funds available for new residential mortgages and to remedy the shortage of adequate housing in the State. The agency seeks to achieve these objectives by making loans on a timely basis to mortgage lenders for residential mortgages. The law requires the agency to receive a pledge of and lien upon collateral security in such amount to assure payment of the loan and interest. Originally, collateral security was limited to U.S. or State obligations and bonds or notes issued by selected Federal agencies. P. L. 1974, Chapter 61 modifies the collateral provision to include conventional mortgages secured by real estate on which there is located a one to four family dwelling. The mortgage must be insured by a mortgage guaranty insurance company licensed to do business in New Jersey. When there are inadequate funds in regular banking channels the new provision will expand the capacity of the Mortgage Finance Agency to supply funds for residential mortgages.

During periods of economic stagnation, high interest rates in other sectors of the economy

siphon funds away from lending institutions, limiting the amount of funds available for residential mortgage lending. A bill has been introduced that would expand the scope of the Mortgage Finance Agency to include the establishment of a secondary mortgage market. The agency will sell tax exempt bonds and use the proceeds to purchase residential mortgages held by the State's lending institutions upon the condition that the lending institutions use the proceeds to reinvest in new residential loans.

Despite numerous Federal programs designed to provide housing for senior citizens and families of low and moderate income the construction and rehabilitation of appropriate housing in New Jersey has not kept pace with demand. P. L. 1974, Chapter 117 offers, subject to public referendum, a \$90 million bond issue for low income housing. The State, through investment of \$90 million, can stimulate the construction of low income housing and, in conjunction with other Federal, State and local programs, encourage the increased investment of private funds in housing. If approved, the bond issue will also spur resumption of activity in the housing and construction industry.

A recently introduced bill would authorize the Commissioner of Banking to declare a moratorium on the payment of mortgage principal for unemployed persons. The proposal, if enacted, would allow unemployed persons to defer up to one year the payment of principal. It is questionable if this measure would provide any degree of relief. If a mortgage is in its early years of inception, the principal is a very small share of the total payment offering little relief to any unemployed homeowner. In its latter years mortgage principal becomes a relatively larger share of the monthly payment. Deferring payment will saddle the homeowner with proportionately higher monthly payments after he is reemployed.

Since 1967 the management objective of the Housing Finance Agency has been to facilitate the construction and rehabilitation of housing for moderate income groups. Subsequent legis-

lation introduced in early 1975 would expand the role of the Housing Finance Agency to finance the construction of community facilities, industrial and commercial establishments, and the redevelopment of certain urban areas. The proposal would also expand the public sector's involvement in the housing market by allowing the agency to construct housing directly, not only through non-profit or limited dividend sponsors.

Transit

The impounding of Federal funds from the Highway Trust Fund in 1974 prompted the State to submit to the people at a general election a \$200 million bond issue for the purpose of improving State highways and road safety, with provisions for acquiring right-of-way for future transportation projects. The "New Jersey Highway Safety and Improvement Bond Act of 1974" (P. L. 1974, Chapter 112) would not only have helped to remedy transportation hazards, but also to pump money into the State's sagging economy and to provide a short run stimulus to the construction industry. Unfortunately, the bond issue was overwhelmingly rejected by the voters in November 1974.

The cause of mass transit was spurred by the repeal of a covenant prohibiting the Path Authority of New York and New Jersey from using debt to finance the PATH extension from Newark to Plainfield (P. L. 1974, Chapter 25). Although this project is controversial and any benefits to be derived from it are years away, it does represent a reversal of the trend in railroad abandonment and provides a benchmark for resurrecting commuter transportation service in and through one of the hardest hit areas of the State's economy.

New Jersey's dedication to mass transit was reflected in a host of bills designed to salvage, refinance, operate and/or subsidize the State's ailing transit industry. Although Federal reorganization of the Northeast railroads (Conrail) alleviated the immediate threat of rail abandon-

ment, the State's Legislature still found it necessary to appropriate an additional \$26 million to subsidize bus and rail carriers (P. L. 1975, Chapter 22). The legislation also mandates strict accounting of disbursed funds with recommendations from the Department of Transportation on improving the subsidized carriers' operation, including performance incentives and revised fare structures.

Subsequent legislation, P. L. 1974, Chapter 60, and P. L. 1974, Chapter 174, created commissions to study the feasibility of operating a mass transit system within the right-of-way of the Garden State Parkway and the New Jersey Turnpike.

In an effort to decentralize the supply of public transportation, P. L. 1974, Chapter 73, authorizes counties and municipalities to enter into agreement and to provide funds to maintain or increase public transportation within their respective locales.

Education

In 1973 the New Jersey Supreme Court declared that the State's system of financing primary and secondary education is unconstitutional. The decision implied that equality of education among pupils cannot be achieved by a system of taxation which depends on the local tax base. In effect, the Court delegated the responsibility of defining a "thorough and efficient" education and the design of a revised school finance system to the State's Legislature.

The Legislature responded with a rash of bills. Some tried to resolve the basic issues raised by the Court while others sought to circumvent the problem by slightly altering past patterns of nonequalizing State aid. The proposals ranged from an amendment to delete the words "thorough and efficient" from the State's Constitution to a plan for full State funding of primary and secondary education. Another proposition would guarantee State aid per pupil for the present year at a level no less than the previous year's State aid per pupil. The spiral-

ing costs to the State for this program are obvious. A maze of State aid distribution formulas were suggested, each attempting to equalize school expenditures up to a prescribed level, such as the statewide median cost per pupil. Recommendations to fund the anticipated increase in State aid included various statewide property tax plans, increases in existing taxes on business, and a host of personal income tax proposals.

Unable to arrive at a consensus, the Legislature was temporarily preempted by the Supreme Court which, for the 1975-76 school year, ordered the redistribution of \$300 million in State school aid from wealthier school districts to poorer school districts.

Proposed, but not yet approved, is the "Public School Education Act of 1975." The bill recognizes the changing concept of a 'thorough and efficient' system of education and proposes a funding structure that considers, in part, the economic, historical, and social environment in which education is delivered. In addition to proposing a funding structure the bill creates a goal oriented education system with stringent measures for comprehensive education and enforcement.

The equalization aid formula centers on a guaranteed equalized value per pupil which is defined as 130% of the statewide average property value per pupil. This establishes a flexible standard for the calculation of state aid which over the long run will tend to reduce the disparity in local school property tax rates.

The amount of equalization aid is limited to funding a school district up to the 65th percentile of expenditure per pupil. A school district will receive more aid to the extent that (1) it has property values per pupil below the guarantee, and (2) its current expense budget falls below the 65th percentile level of expenditure per pupil (statewide).

Equalization aid will be supplemented with so-called categorical aid which is determined by applying specific cost factors to the number of

pupils with various types of learning impairments, deficiencies, or language differences.

Unlike the Supreme Court's order the principal distinction of this plan is its need for large additional sums of money, the source of which is yet undecided.

Environment/Open Space

The Legislature has acted in response to continuous threats to the quality of the State's environment by granting persons the right to bring court action against others who violate laws designed to protect the environment. By recognizing the fact that maintaining environment quality is in the public interest, the Environmental Rights Act (P. L. 1974, Chapter 169) distributes some authority to the residents of the State to help ensure that regulatory laws are enforced.

The future location of development in New Jersey is the concern of the "Major Development Review Act" which is still being debated in a legislative committee. The proposition requires an environmental impact statement from developers which includes an inventory of existing environmental conditions, an assessment of the probable impact of the project on the environment, and steps taken to minimize adverse environmental impacts.

New Jersey ranks first in population density, a fact reflected in increasing demands upon a limited supply of land and water resources. Although the responsibility for land-use planning and management is somewhat fragmented, the New Jersey Legislature approved several bills designed to maintain and conserve open space.

The "New Jersey Green Acres and Recreation Opportunities Bond Act of 1974" (P. L. 1974, Chapter 102) called for public referendum on a \$200 million bond issue to finance the acquisition and development of lands for recreation and conservation. To ensure an equitable distribution of benefits, 25% of the fund is granted to local governments for acquisition of open space. In order to alleviate the fiscal hardship

of losing ratables, the State is directed to reimburse to each municipality in which property is acquired a share of the property tax which would otherwise be levied upon that land over a period of 13 years. The State's share of the local property tax declines from 100% in the first year to 4% in the thirteenth and final year.

In a similar vein, a recent mandate (P. L. 1974, Chapter 107) exempts from property taxation (upon application) land and improvements operated for the public's benefit, but owned by certain non-profit organizations. The intent of this law is to temporarily supplement public acquisition of open space by encouraging the dedication of privately owned lands to public use. A minor tax penalty is imposed for restricting or changing the use of this land in an amount equal to the taxes which would have been payable for the previous two years had the land not been exempt from taxation. In other words, a roll-back tax is imposed.

Among legislation considered but not approved were amendments to the Farmland Assessment Act which provided for reduced tax assessments on land actively devoted to agriculture. Such amendments included restricting preferential assessment to land whose owner earned a minimum of 40% of his gross income from the farm operation, thus excluding land speculators and large absentee corporations from benefiting from this Act. Increases in the revenue contingency requirement for land over five acres in size from \$5.00 per acre to \$10.00

per acre were proposed. Other bills, apparently confusing the original intent of the Farmland Assessment Act, would have qualified non-productive woodland and wetlands for reduced property tax assessment.

A clearly rational approach to land-use policy was introduced, but not yet enacted, by way of a constitutional amendment which would provide for public acquisition of development rights to agricultural land and other open space.

Our right to clean air was bolstered by proposals to encourage the installation of up-to-date air pollution abatement equipment by industry and to create county-wide air pollution agencies with a wide range of authority to enforce clean air standards. Also included were measures to aid industry by allowing for the issue of tax free bonds or tax exemptions to partly finance the cost of pollution abatement.

Although the quality of our water resources has been bolstered by the construction of regional sewage treatment plants and other State and Federal programs, the objectives of water quality improvement can be extended by the imposition of economic incentives in the form of effluent charges. The pertinent legislation (A-722) would assess a fee against the discharger of sewage or industrial waste based on the quality and quantity of effluent he generates. The schedule of effluent charges would serve as an incentive for dischargers to reduce effluents and to perform a higher quality of treatment of industrial discharges.

IV

ECONOMIC COUNSELING IN STATE GOVERNMENT*

After some eight years as a member of New Jersey's Economic Policy Council, I have been asked for my final farewell appearance to offer some comments on the workability of a continuing exchange between professional economists and the government of a state in light of my experiences in New Jersey.

The answer must necessarily vary with the nature of the role the economist is asked to play, the formality of the organization in which he is asked to participate, and the nature of the state's administrative structure.

The Operations of New Jersey's Council

In the State of New Jersey the Economic Policy Council has only recently had associated with it a staff of (two) professional economists who work full-time for the Office of Economic Policy. The three economists who constitute the Council itself, however, serve just as part-time consultants, spending time on behalf of the State only as it is requested and as they can find it to spare.

Usually the Council meets with the Governor and members of his Cabinet every four to six weeks. At these meetings the bulk of the discussion has usually been devoted to the state of the economy, the prospects for employment,

prices, and some particularly critical economic activities such as housing. Besides this, various policy issues such as the encouragement of industrial growth, taxation, educational financing and transportation policies are discussed at these meetings. Members of the Council also meet from time to time with individual Cabinet members at the request of the latter to discuss problems that are currently before them.

On its own initiative, the Economic Policy Council has from time to time prepared memoranda discussing a variety of policy problems which they considered important and on which it had proposals to offer. These have dealt with issues as diverse as bond financing, rent controls, peak-load pricing for public utilities and measures to deal with various problems of state economic development.

Since the Office of Economic Policy as well as the Council are located in the Department of the Treasury in terms of organizational structure, we have usually had fairly close relations with the Treasurer, although there have been noteworthy exceptions. It was often through him that we learned what issues were of most pressing concern to the Administration, and what sorts of advice were most likely to prove useful.

* Prepared by Dr. William J. Baumol, Professor of Economics, Princeton and New York Universities.

The act that created the Economic Policy Council directed it to provide information and advice both to the Legislature and to the Administration. However, until recently there has been no systematic communication between the Council and any legislative group. Several attempts to organize such exchanges were undertaken but very little came of them. More recent expressions of interest by Legislative leaders offer some hope that things will change on this score.

The Council has sought to avoid any political entanglements and has, I believe, never served as a partisan political instrument. We have, of course, tried not to embarrass any Administration by making public any disagreements we may have had with particular policies. However, in our public pronouncements we have been equally careful never to advocate any course of action that suited the purposes of the Administration in power but in which we did not fully believe. We did on several occasions take strong public positions on several controversial matters but in each case we did so out of strong conviction about the justice and importance of the cause.

Contributions to Broad Policy Orientation

Perhaps the most substantial contribution of the Council over the years has been somewhat intangible and amorphous in character, yielded by its participation in the discussion process out of which policy measures were ultimately to emerge. It is not difficult to recall occasions on which we seem to have influenced the broad direction of an Administration's policy, and where the Administration itself readily acknowledged our role. Several times we were called in on some economic matter when there was division of opinion within the Cabinet or where there was some lack of resolution on the issues. In several such cases where the economic principles seemed clear to us, we made a strong case for our position and there seems little doubt that our stand influenced the outcome.

In other cases a discussion of the pertinent principles influenced the direction of thinking by the Administration at a very early stage in the process of policy formation and the final product of that process reflected our ideas.

Unfortunately, of course, economists are far from having categorical solutions to all policy problems, as has become more painfully clear in recent months. We, too, were often forced to admit that we had no reasonable proposals in some particular area, or that the proposals we had formulated were largely untried and the effects of their adoption were far from certain. For example, the programs we suggested to deal with the economic problems of the cities which, I believe, encompassed a number of novel and valuable ideas, were certainly not without their uncertainties, both economic and political. Inflation and recession were matters on which we could be of only modest assistance, at least partly because these issues obviously must be dealt with at the national level.

Yet these were, of course, the issues on which our advice was sought most urgently and it was rather frustrating to us not to be able to offer more on these subjects than we did.

On Day-to-Day Consultation

In the nature of governmental operations, there constantly arise occasions requiring economic information or judgments which must be provided with little delay. A sudden change in interest rates affecting a bond issue, an urgently needed change in the ceiling on mortgage interest or a new proposal in the Legislature all call for information in short order.

Over the years the Economic Policy Council has been consulted on such matters from time to time. Usually, individual members of the Council have responded immediately or, in a memorandum produced in a matter of hours or, occasionally, in a meeting that was arranged hastily. Several times the advice that was offered in this manner resulted in tangible modifications

in the course of action that had been contemplated. For example, the magnitudes of revisions in the "usury ceiling" were more than once influenced by the Council.

Yet it must be admitted that this portion of the activity of the Council has not always been effective and satisfactory. No regular line of communication between the Administration and the Council has ever been established. In the absence of such a "hot line," consultation has been sporadic and haphazard. There is no easy way for the Governor to summon such advice and in the absence of an institutionalized contact arrangement the availability of the Council is frequently overlooked even when the views of a professional economist are badly needed. For while there are few economists in the State government outside the Office of Economic Policy, their immediate advice is solicited no more regularly than that of the members of the Council. As a result, decisions on economic matters are often arrived at without any benefit of professional judgment, and the economists associated with the State government read about them in the paper on the following day.

In deploring this situation I am clearly not arguing that any members of the Administration or the Legislature should give up some of their responsibilities to the economists or shift to them any portion of the final policy decisions. Yet I think it is demonstrable that on a number of occasions there were errors of a sort that are to be expected of laymen acting in isolation. I believe also that consultation with economists could, on various occasions, have revealed the range of available options to be broader than was, in fact, realized, or would have indicated some subtle consequences of actions that were, in fact, taken which might have led to some modification in decisions had they been called to the decision makers' attention in time.

It seems to me, therefore, that the welfare of the State calls urgently for the creation of some formalized procedure through which economic consultation would become automatic and would be solicited on all economic policy issues

as they arise. Whether or not the Economic Policy Council is the prime instrument for such consultation is not the issue. Rather, the point is that a State which is richly endowed with economic expertise, and in which most professional economists stand ready to volunteer their services, at least within reasonable limits, it hardly seems appropriate to make important economic decisions on what can only be described as an amateur basis.

Preparation of Legislation

While the role of the Economic Policy Council in day-to-day consultation seems far from ideal, the part that it has played in preparation of legislative proposals has been even more unsatisfactory. On a number of occasions the Council has been asked to comment on a completed legislative proposal and has influenced the decision of the Administration on its sponsorship. In one or two occasions such discussions may also have led to a few modifications in particular provisions of the bills. On other occasions, the Council participated in broad discussions of the pertinent principles before the process of drafting of a piece of legislation began. How much the outcome was affected in this process is difficult to judge.

However, only on one occasion was the Council involved in the details of drafting a piece of legislation from the first discussion of the idea to the transmission of the final product to the Legislature. The unhappy fate of that effort is somewhat instructive. The proposed Act was a bill to establish a system of effluent charges to be levied upon polluters of waterways. The proposal was advocated strongly by the members of the Council, and the notion received the strong support of the Governor and several members of the Cabinet. However, the Commissioner of Environmental Protection, at that time, was hostile to the approach, and made no secret of his preference for a system of direct controls. He cooperated in the drafting process, taking part in all the discussions, though in these meetings he made sure that the structure of the charges was such as to interfere as little as possi-

ble with the instruments of direct control. The result, of course, was a set of compromises that were not fully satisfactory to anyone. Nevertheless, the final product of this process was a reasonably good bill which was, after some considerable delay, submitted to the Legislature. The Governor reiterated his support but, without any effective assistance from the Department of Environmental Protection and the predictable opposition of the affected industries, the bill atrophied in the Legislative Committee to which it was referred.

The difficulties here had several causes—the fact that the only real source of continued support for this bill was the Council, the divided views of the Administration on the subject and the absence of any machinery which the Governor could set into motion to push the bill effectively. The only legitimate grounds for complaint by the members of the Council is that they could never get any clear-cut statement about the amount of support the Administration was prepared to devote to the effort, and so members of the Council devoted to the drafting of the bill far more time and effort than seems, in retrospect, to have been justified.

Concluding Comment

The work of the Council has been helpful in a variety of ways that have not been indicated so far. A few examples will suggest their nature:

- a. **The Establishment of the Economic Development Authority to Help Finance Industrial Expansion**—Along with the Department of Labor and Industry the Council pushed hard for this agency and contributed to the background work leading to the pertinent legislation.
- b. **The Commission on Financing Higher Education**—The Council's work on the financing of higher education provided part of the impetus leading to the establishment of the Commission, and the work of the Council may also have some influence on the line of investigation being pursued by the Commission's staff.

- c. **Economic Forecasting**—The Council's forecasts, supplemented by some of our staff work, has influenced the expectations of budgetary officials and others concerning the course of the State and national economy.
- d. **Evaluation of Legislation**—I believe that our evaluation of certain bills has offered good examples of legislative analysis and has also helped dampen enthusiasm for some bills which were poorly designed.
- e. **Policy Analysis and the Diffusion of Economic Intelligence**—This is the most subtle form of the Council's influence, but it is one of the most important components of its work.

More generally, the Economic Policy Council represents an extraordinary opportunity for the State of New Jersey. Its work has already served as a model for several other states; its annual reports have surely achieved a level of quality unparalleled for such an organization, and its staff and the persons available for membership on the Council are of extremely high caliber. Thus, the State has at its disposal persons with impeccable credentials at extremely low cost to itself.

The Council can have no complaint about the reception it has received from the highest officials of the State. Each one of the three Governors under whom we have served have unstintingly given us both time and attention. Yet, by not creating an effective communication mechanism, the value of the contribution of the Council has been far less than what it potentially can be. The moral seems to be clear. Much of New Jersey's example in this area is beyond reproach, and other states would do well to follow its lead. The missing ingredients, which any state will need if it is to make effective use of its economic counsellors, is a channel through which the State will quickly and dependably make its problems known to its advisors and make effective use of the response it receives from them.

V

A PROPOSAL

TO DEVELOP A COMPREHENSIVE ECONOMIC PLAN FOR THE STATE OF NEW JERSEY*

Introduction

Now is a particularly opportune moment to establish an aggressive, imaginative and comprehensive economic development program for the State of New Jersey. People directly concerned with economic development issues have been aware of the State's economic problems for some time, but now, as a result of the current recession, they have become a matter of widespread public attention and debate. There is a growing recognition that New Jersey's economic problems may be longer run rather than merely recessionary. The Governor's Capital Needs Commission has also helped to draw public attention to the need for planning. Simultaneously, proposals to institutionalize economic planning at the Federal level are receiving widespread attention. Senators Hubert Humphrey and Jacob Javits have introduced legislation to provide for the development of a "Balanced Economic Growth Plan" at the national level. (See the NEW YORK TIMES, February 28, 1975.) Thus, the public climate is such that, for the first time, New Jersey may be able to establish an economic planning process which has credibility, visibility and public support.

The Nature of Economic Planning

A State Plan for Economic Development should be an instrument for designing and coordinating economic policies. The plan should analyze various aspects of economic development, identify the weaknesses hampering desired economic and social progress, seek out available options of economic policy, formulate the most worthy goals, and devise appropriate means to attain them. Adequate economic planning requires a systemic approach to the solution of economic problems besetting the State. This implies an objective overall view of the often-conflicting aims of various segments of the economy. It requires proper consideration of intrinsic interrelationships among economic variables.

Economic planning is the process of delineating the crucial economic problems which must be addressed by the State Government, the available policy options, their advantages and disadvantages, and the selection of the best feasible courses of action. If it is to be of any value for policy making, economic planning must be a continuing process, not a one-shot

* This chapter was prepared by Peter Bearse, Director and Adam Broner, Program Coordinator, Office of Economic Policy.

effort. We use the terms "plan" and "planning" interchangeably to denote a set of diagnoses and prescriptions which are continually revised to reflect not only current problems but changing objectives, future expectations and a better understanding of the past.

The Need for Economic Planning in New Jersey

There is a growing awareness that State Government policies and actions have an important impact on the entire economy. There are many specific issues confronting the Executive and Legislative branches of State Government where the information and systematic analysis provided by a plan would be useful. (These are detailed in the sections to follow.) An equally important reason for planning is to guide and assist decisions made by the private sector. Businessmen have learned to forecast market behavior and to deal with many uncertainties created by the market mechanism. With increasing government involvement in economic life, the business community needs information about future government policies. The State Government must be prepared to furnish the elements necessary so that both the public and private sectors can make responsible long-run decisions.

Economic planning is also needed to help move State policy-making away from its chronic "crisis management" orientation. One of the characteristic symptoms of failure in government is its tendency not to consider a problem adequately until it has assumed crisis proportions, then respond to the crisis on an *ad hoc* basis. Separate crises are dealt with individually and responses are developed as independent, additive actions. Large economic systems, however, are too interdependent to be dealt with under such a philosophy. In fact, such a philosophy at the government level is no more healthy than so-called "stimulus-response" patterns of behavior by individuals. Psychologists view the latter as severely neurotic. Why should similar behavior on the part of governmental institutions be considered any different?

Certainly, more and more aspects of our economic and social system interact sufficiently to require joint, preplanned and purposeful action by public institutions.

An economic plan can help transform "crisis management" at least partly into "crisis avoidance." At a minimum, a planning effort will serve this purpose by organizing relevant information for policy analysis. Thus, even when an unanticipated problem arises, people will be better able to marshal needed information quickly, analyze options and provide needed perspective. One of the most important results of a planning effort should be to provide a sophisticated information system which will help policy makers monitor the health of the State's economy and the quality of life for its citizens.

Finally, New Jersey needs a State economic plan in order to broaden the base of understanding which is brought to bear in widespread debates over economic policy alternatives, both among State Government Agencies and the public at large. People involved in these debates often do not talk the same language. Often the issues are obscured by basic misconceptions of how the economy works, what policy alternatives are reasonable, and what the impact of a given alternative is likely to be. Thus, a very basic role of economic planning at any level is to work out policy alternatives sufficiently ahead of time and communicate their implications to the public at large so that, ultimately, a political consensus can crystalize around viable alternatives.

The Main Objectives and Choices to be Weighed Within a Planning Process

There have been a number of attempts to formulate goals and objectives for the future development of New Jersey. The most recent example was Governor Cahill's Council on the Future. Often these goals are juxtaposed as opposites—economic development vs. the environment, growth vs. distribution, quality vs. quantity, manufacturing vs. services, and auto-

mobiles vs. mass transportation. The use of “vs.” in this listing is not meant to imply that every issue poses an irreconcilable either/or conflict. In each case, however, the State does face difficult choices.

Economic planning can contribute substantially to the clarification of the State goals and objectives. A thorough sorting-out is needed. To what extent are various objectives compatible or incompatible? Over what time-frame? If relationships among objectives are clarified, we can proceed to identify costs and benefits or other consequences (the “trade-offs”) associated with major policy choices.

There is no presumption that economic objectives are the overriding ones in every case. One of the key problems of economic planning is to see how “purely” economic and non-economic objectives relate to one another. For instance, what means for achieving environmental control are compatible with those for achieving economic development? Debates on major policy issues seem to revolve about a general question—how can we improve the quality of life of New Jersey residents? Strictly economic goals—improve job opportunities, increase per capita income, enhance technical progress—are means as well as ends. An economic plan can help clarify this means/ends relationship.

In this regard, an economic plan should be viewed, not as an exercise in prediction, but as an attempt by public authorities to achieve more influence and control over the State’s future. Given a set of goals, the plan must ask: which strategies will help us achieve certain outcomes, and which will not? This instrumental, goal-oriented approach is very different from the usual forecasting and model-building approaches.

Above all, the ability to compile a meaningful economic development strategy is contingent on asking the right questions and gathering appropriate information. Among the key questions to be addressed in the New Jersey Economic Plan are the following:

1. *To What Extent Are New Jersey’s Economic Problems Long-run or Structural in Nature Rather Than Short-Term or Cyclical?* This is in no way an “academic” question. Manufacturing industry data appear to suggest that problems in that sector may be long-run or structural in nature, not merely the result of recessionary forces. If so, then what are appropriate remedies? Are the programs emphasized thus far—industrial inducements, low interest loans, manpower training, etc.—adequate to deal with problems of declining manufacturing industry in an “old industrial state”? The right prescription hinges on good diagnosis and we need to know to what extent the State’s economic maladies are chronic rather than transitory. The long-run perspective is important not only with regard to industrial structure and performance but also to population (migration trends, etc.), land-use, and central city problems.
2. *The Nature and Causes of New Jersey’s Chronically High Rate of Unemployment*—For all the headlines and expressions of concern, there is little understanding to serve as a foundation for appropriate policies. Reliable data on the composition and duration of unemployment has not been carefully analyzed with a view to possible policy implications. Even at the highest levels of decision making, people have become accustomed to thinking of unemployment in terms of absolute numbers or crude averages. Yet these averages veil substantial variation in unemployment—along geographic, occupational, periodic and other pertinent dimensions. There are also labor market problems not measured by unemployment statistics—people forced to work part-time because they cannot find a full-time job, “discouraged” workers who have dropped out of the labor force, workers caught in jobs

that pay wages insufficient to support a family, and new entrants and returnees to the labor force.

3. *The Relationship Between New Jersey's Economy and the Regional, National and International Economies*—There are many facets to this relationship, but so far it has been examined carefully for only one economic indicator—manufacturing employment. Even in this case we understand little about underlying causes for the observed pattern. Usually the regional factor is ignored, perhaps because of an assumption that the behavior of the New Jersey economy “mirrors” that of the nation. Partly as a result, the Middle Atlantic states, though they share a host of common problems, have no vehicle for dealing with them. As for the State/national relationship, this is far more complex than any “mirror” analogy can reflect. There is little understanding of the appropriate level at which policies should be pursued. State actions are often constrained by national policies. More importantly, the State is not always compensated (by revenue sharing or other grants) in proportion to the losses inflicted on its economy by Federal policies. (Recently, Senator Muskie has introduced the “Intergovernmental Counter-cyclical Assistance Act” which would automatically provide federal disbursements to State and local governments seriously affected by a recession.) The State has not always formulated demands which would equalize its opportunities. Neighboring states, instead of cooperating on regional matters, are competing for the location of business without due attention to their common interests.
4. *The Structure of the State's Economy*—This is another area where lack of understanding is a severe handicap to the design of appropriate economic develop-

ment policies. We need to know the points or channels in the economic system where State policies can have maximum impact. Different policies should be recommended in areas where the State has a comparative advantage or disadvantage. For instance, which types of industries should we try to encourage or develop?

We need to also look carefully at industrial structure in terms of business organization. The behavior of firms in the private sector is strongly contingent on their size, legal form of organization, diversification and market linkages. Some firms are local; others are regional, national, or multinational. The differences among them are often more than matters of degree. Public policy needs to be grounded on an understanding of how different types of private firms will respond to various types of policies and where public policy can have its greatest impact. For instance, should we orient policies to larger and older firms or to those smaller and newer?

The input-output network is another important aspect of economic structure. It is a laborious and expensive undertaking to construct an input-output table for a state. We do not recommend that it be done at this time. It is necessary, however, to obtain a somewhat better understanding of this structure than now exists. This can be done to some extent using calculations from secondary sources. The effort can help answer some important questions. For example, are there input-output “gaps” that New Jersey can exploit? To what extent are New Jersey firms purchasing intermediate goods and services from out-of-state that could just as well be produced by firms in-state? What types of products does New Jersey export? Can its export mix be improved?

The demographic structure of the State needs to be described in detail and some forecasts developed regarding population growth, migration and labor force growth. These data are obviously fundamental in developing manpower, education and construction programs. They are also essential to any assessment of the future needs and demands for public services of all types. How fast is the State's population aging? To what extent will out-migration occur in response to the decline in job growth? These are only a few questions that can be addressed.

Finally, we should evaluate some prevalent notions about the New Jersey economy. These notions may reflect "reality" or "myth." If myths prevail, it will be more difficult for an economic plan to gain credibility with the public at large. For instance, at one time or other, we have all seen statements of the following nature: "New Jersey is anti-business"; "It is a high cost of business State"; "State government is dominated by a concern for the environment, not for economic growth." We should be able to say to what extent these sorts of statements are true, false, or misleading. The Economic Recovery Commission, recently appointed by Governor Byrne, will probably deal with some of these issues.

Specific Policy Issues Where the Perspective of an Economic Plan is Needed

A strategy of economic development will have to face a variety of specific issues. Some of them are short term problems confronting the State at this particularly difficult period. Others are of a more long term nature. We can illustrate these with a shopping list of pertinent questions which have arisen at various meetings with the Governor.

1. What programs can be developed by the State to increase job opportunities and reduce unemployment? To what extent can public employment contribute to economic development?
2. Should environmental regulations be relaxed during this period of high unemployment?
3. Should the State establish a program of tax incentives for investment and job creation? What should such a program consist of?
4. What additional vehicles, financial and otherwise (besides the Economic Development Authority), does the State need to ensure economic development?
5. Is New Jersey's economic potential inhibited by its system of business taxation?
6. Should the State subsidize the private sector to provide incentives for economic development or should it try to play a more direct role; e.g., by underwriting municipal or state enterprises, worker-managed firms, etc.?
7. How can economic analysis and planning become an integral part of the decision making process of State government?
8. What are the appropriate relationships between State, regional and local authorities in the development and implementation of economic plans?
9. What kind of program is needed to promote the rehabilitation and economic development of the State's central cities?
10. Where should the State place most emphasis in its housing program—on new construction or rehabilitation?
11. Should it be State policy to encourage more dense clusters of development?
12. How should the State redesign its capital program in order to promote economic development?

13. What can be done to maintain the economic viability of New Jersey agriculture?
14. What are some of the economic determinants of changing land-use patterns and how can the State bring to bear some influence on them?
15. How will off-shore developments affect the State's economy and its environment?
16. Is the State's transportation system adequate from the standpoint of economic development goals?
17. How can New Jersey improve its system of higher education, including vocational schools? What can the State do to reduce skill shortages and improve the match between jobs and skills?

No attempt has been made to rank these issues according to importance. Some of these have been examined individually. None, however, has been examined within the context of an overall strategy for the development of New Jersey's economy.

Policy Alternatives—Values and Tools

Policy alternatives have a life of their own, even apart from the policy problems they are meant to solve. Also, the kit-bag of policy instruments at the State level is limited, both in terms of underlying philosophy and specific tools. Thus an economic planning process must, in many cases, evaluate the available alternatives directly, not merely in the context of a given economic problem.

It is unfortunate that any mention of the qualitative dimensions of policy choices, namely, underlying values or philosophies of government are often made to seem academic or beside the point. Some attention to these matters is unavoidable. In this time of economic crisis, there is a broadening debate over the degree and type of intervention which government should try to exert on the workings of the economic system in order to promote economic stabilization and de-

velopment. This type of debate is very apparent at the State level. For instance, in New Jersey State Government there are currently active debates concerning the nature of State intervention in the areas of utility financing, offshore development, land-use and milk pricing. These debates break down into a discrete set of alternatives:

- a. Should the State try to play a direct role in certain economic areas; for example, by taking an equity position in public utilities or establishing a State economic development bank?
- b. Should the State rely more on financial or non-financial instruments? Examples of the former are subsidy programs; of the latter, technical assistance.
- c. To what extent should the State use financial incentives rather than regulations or controls?
- d. To what extent should programs be centralized? Decentralized?
- e. To what extent should State policy try to be redistributive among communities, income groups or other classes of people?
- f. To what extent should State government promote a policy of economic growth, in contrast to policies of conservation?
- g. In the case of public services—to what extent should State government undertake to provide these directly; to what extent depend upon private vendors?

An economic planning effort which manages to avoid confronting at least a few of these questions might be considered somewhat frivolous in the sense that it has little chance to make a significant impact on the course of the State's economy.

We need to assess each of the tools that the State can use to implement an economic plan and ask how each can be used to maximum advantage. The most important are the following:

- (1) The use of the State's purchasing power;
- (2) Financial incentives such as low-interest loans and tax incentives;
- (3) Regulation and licensing powers;
- (4) Budgetary allocations and fiscal planning;
- (5) Bonding power and the capital program, including the timing and location of capital facilities' construction;
- (6) Intergovernmental powers and relations;
- (7) The organization of State government;
- (8) The allocation of revenue sharing funds;
- (9) Changes in the tax system and the selective use of taxing power;
- (10) Information programs;
- (11) Public employment;
- (12) Planning and research;
- (13) Educational policy; and last but not least—
- (14) Political leadership under a Constitution which provides for a strong Executive branch in State government.

Before we look for new tools, we need to recognize that *existing* tools have not been used coherently and aggressively to promote economic development.

Intra-state Development: The Economic Problems of Cities and Regions

The sad litany of economic and social problems besetting New Jersey's central cities is too frequent and long to repeat here; likewise for the long list of failures in attempts to solve these problems. Central city economic development is a complex and chronic problem area; therefore, it will pay to approach the topic carefully and eschew the usual sweeping agenda. Given the limited resources available to the State, a program that tries to do everything at once will be effective at nothing. The treatment of central city development within a State economic development plan must give priority to one or two strategic problem areas in which the great-

est payoffs can be expected. State government cannot redevelop New Jersey's central cities; its role is more modest but no less significant. Actions taken at the State level can either *constrain* cities' abilities to solve their own problems or it can permit cities to assemble resources to solve them. Thus the thrust of this section of the planning effort should be an evaluation of existing laws and programs that affect the ability of communities to initiate and carry out programs to deal with their economic problems. The second important task is to identify cities and neighborhoods where limited State resources should be focused. In the case of housing rehabilitation, this has already been done. The Department of Community Affairs has designated "neighborhood preservation areas." Assembly Bill No. 3395 would expand and formalize this program.

A third task will be to design a prototype urban development program which can be pursued in a few cities on an experimental basis. The latter should be a program which experiments with new ideas, new modes of state-local government and inter-departmental cooperation in order to achieve a coordinated, comprehensive attack on central city problems.

The problems which are of central importance are (a) inadequate incomes and employment opportunities and (b) the flight of middle classes and economic activities which erodes the urban tax base and contributes directly to urban decay. While this is admittedly a traditional diagnosis, it need not lead to those traditional prescriptions which have failed. In fact, there is a basic choice to be made between the conventional policy emphasis—trying to attract new people and industry—and its alternative—trying to preserve, upgrade and expand what is already in place. Studies suggest that there is more to be gained by emphasizing the latter, but the concrete programmatic implications are unclear and will have to be carefully considered.

As for the regional aspect, there is need to do three things:

1. Examine whether New Jersey can be divided into meaningful sub-regions for either planning or implementation purposes;
2. Evaluate the utility of the sub-state Economic Development District Program and other sub-regional administrative programs as vehicles for assisting economic development in New Jersey;
3. Clearly identify those problem areas where a regional or interstate approach is needed and identify workable regional strategies.

The Main Chapters of a Plan Document

We think the plan should start with a thorough examination of the State's economic development in the postwar period and the problems or opportunities of the present situation. While such a study can be organized by sectors—agriculture, manufacturing, etc., the aim should be to reveal the strengths, weaknesses and interrelations of their development. In other words, we should not be primarily interested in compiling a lot of statistical information but rather in organizing this information in such a manner as to expose the bottlenecks which impede further development and to suggest opportunities for future growth. Instead of taking stock of everything possible we should concentrate on problems, deficiencies and aberrations from "normal" development.

In order to carry the analysis one step further we will need to take stock of the main resources for development: natural resources, infra-structure, human resources and capital.

Projections of future growth should be based on general U.S. projections for manufacturing industries, the State's comparative advantages or disadvantages revealed in the preliminary studies and the expansion of the local market and export opportunities. The projections should be viewed as learning devices which permit distinctions between the influence of national, regional, and intra-state factors.

Projections for New Jersey should cover the period 1976-1980 and distinguish among advantageous, promising and less promising industries. All sectors of employment should be included. The plan should spell out clearly the policy implications of these projections. In particular, the policy instruments available at the State level should be identified and associated with the main objectives of the State Plan. The policy implications should include suggestions for new legislation or repeal of existing laws if they are impeding desired development. One of the results of this work should be a proposal for a Statewide Statistical Service capable of providing sufficient and timely information on actual conditions and monitoring deviations from desired development. Finally, the plan should draw conclusions with regard to broader regional problems which need to be solved by joint actions among neighboring states (for example, problems in the areas of transportation, water and energy supply).

The overall plan will contain the following chapters:

I. Problems and Opportunities Revealed by Analyses of the Past Development of the New Jersey Economy

- A. Agriculture
- B. Manufacturing
- C. Construction
- D. Transportation
- E. Services

II. Resources for Development

- A. Raw materials available in New Jersey (surface, water, subsoil and ocean resources)
- B. Infrastructure—rail and road transportation, local mass transportation, housing, energy
- C. Human Resources—population growth including projections of migration, vocational training and higher education, stock of skilled labor, research capacity

- D. Capital stock, investment patterns, capacity utilization, and bottlenecks hindering development

III. Directions of Development Based on “Status Quo” Trend — Projections of Growth Through 1980 (Output, Employment, Investments)

- A. The Advantageous Industries
- B. The Promising Industries
- C. The Less Promising Industries
- D. Resource Requirements for Development—material, financial, and human

IV. Policy Implications

- A. An inventory of available policy instruments on the State and local level
- B. Identification of policy options according to their primary focus
 - 1. General growth policies
 - 2. Taxation policies
 - 3. Energy policy
 - 4. Transportation policy
 - 5. Environmental policy
 - 6. Housing and land-use policies
 - 7. External focus—attracting industry population, capital, etc.
 - 8. Internal focus—supporting and creating local enterprise
- C. Identification and classification of development goals according to their time horizon—short run, medium term, or long run. The consistency of various goals.
- D. The applicability of policy instruments at various phases of the business cycle
- E. Suggestions for new legislation or repeal of existing laws bearing on economic development

V. Intra-state Locational Problems

- A. Central Cities—A State program for assisting urban economic development
- B. Concentration vs. dispersal of development—An evaluation of long-run costs vs. benefits

- C. Rural areas—The problem of preserving agriculture in New Jersey

- D. The location of industry—existing determinants and ways for the State to influence location patterns

- E. The quality of the urban environment—Its influence on the State’s economic development

- F. Economic geography—The significance of New Jersey being in the economic “shadow” of the New York and Philadelphia metropolitan areas

VI. Regional Problems Requiring Joint Actions in Neighboring States

- A. Transportation
- B. Water Resources
- C. Energy Supply
- D. Environmental Problems
- E. Economic Incentives for Industrial Development

VII. A State Statistical Service Capable of Comprehensive and Timely Monitoring of the State’s Economic Development

The Planning Process

We propose to organize work on the New Jersey Comprehensive Economic Plan in three stages:

1. Preliminary sketches and studies. Presentation for initial panel discussions.
2. Developing the preliminary work into full projects. Coordination for internal consistency. Presentation for final panel discussions.
3. Synthesis and summary reports. Interface and integration with related planning efforts (health, education, taxation, institutions). Of course, to avoid duplication of effort, some efforts at “interface and integration” should be made at a very early stage.
4. Presentation to the Governor and Legislature.

The preliminary stage, which should last approximately six months, should be devoted to studies of past development (roughly Chapters I and II) and to the first sketches of the problems (listed under Chapters III-VII). In order to reflect in the plan the views and needs of the State's localities, county and city governments should be asked to either submit their views on crucial issues or at least to participate in the preliminary and final panel discussions of work prepared by various authors. Also, to the extent possible, State workers involved in the planning effort should visit community agencies and directly solicit their views. Similarly, the views of all interested State Departments will be solicited. In most cases, qualified personnel within the Departments will be invited to develop the relevant sections of the economic plan. Independent outside authors will either work simultaneously on these problems or be invited to prepare a thorough criticism of the Department's projections, and vice versa. We also foresee the participation of business associations, labor unions, and nonprofit research institutions in the preparation and discussions of the relevant sections of the plan.

In the process of economic planning the viewpoints of all groups concerned with economic problems should be admitted and carefully evaluated. Spatial considerations and the needs of various communities should be an intrinsic part of statewide economic planning. Representatives of business, local communities and other interest groups should be given the opportunity to critically evaluate economic goals and projections. Such expert criticism will protect government officials against gross errors.

The same approach will be taken in the second stage of the planning process. The latter will take about nine months, during which preliminary studies and projections should be expanded into draft reports. In particular, a great deal of attention should be devoted to harmonizing divergent objectives, reconciling conflicting policy recommendations and problems of implementing the plan at the State and local levels.

Locational and interregional problems should be clearly delineated and discussed.

In the third stage the projections and recommendations of all sections of the plan will be summarized and presented in a final report to the Governor. Overall, the planning effort should take about two years.

The Benefits, Results, and Output from Economic Planning

No attempt is made to ascertain the expected financial benefits from comprehensive economic planning in New Jersey. However, it is our conviction that the costs of such planning are low relative to the expected economic and social effects. We estimate the formulation of the plan as described herein will cost approximately \$500,000. The potential benefits are manifold and include the following:

1. Clarification of government policies will improve the general business climate and thus facilitate expansion and new plant location in the State.
2. Private investment decisions based on the information contained in the economic plan will be able to avoid serious misjudgment, therefore reducing possible losses and business failures.
3. Economic planning will improve the process of selecting the most worthy objectives and the best policy options in many areas of State and local government. It will also lead to better coordination of activities in pursuit of a set of coherent goals. The result will be better and more efficient government. Improved efficiency in conducting public affairs will have a positive impact on citizens' attitudes toward participation in public life.
4. The result of economic planning should be a better understanding of the State's comparative advantages for future development. Broader exploitation of those advantages will contribute directly to the economic health of New Jersey.

5. One of the most important results of a State Economic Plan should be a set of countercyclical economic instruments applicable at the State level. Most important among these will be the strategic planning and implementation of the State's capital program.
6. Harmonization of economic goals and policies for all the segments of the State economy will have positive implications for the functioning of the entire system. Clarification of the State's land-use, urban development and housing programs, improvements in the transportation system and environmental conditions and several other results of a concerted development plan will have a positive impact on both economic conditions and the quality of life in New Jersey. The welfare of the State's residents will gradually gain from this effort.
7. Identification of future employment opportunities and manpower requirements, if coordinated with training programs in vocational schools and higher education, will create a better chance for matching jobs and skills. This will help labor markets work more equitably and efficiently.
8. Changes in the tax system following a review of the existing arrangements should improve the business climate and the economic incentives for development.
9. A data system will result from the entire planning effort. This will allow State and local authorities to fully monitor the State's economic development and to recommend necessary corrective measures in a timely fashion whenever aberrations from desired development occur.

VI

NEW JERSEY'S MANUFACTURING INDUSTRIES: A LONG-RUN OVERVIEW*

Introduction

Even before the recent recession there was growing concern about the performance of New Jersey's manufacturing industries. Several symptoms of weakening industrial growth have emerged in recent years. The upturn after the 1970-71 recession was not as strong in New Jersey as in the rest of the nation. On top of this, the current and much more severe recession has aggravated long-term problems and appears to have caused extreme hardships for parts of the State economy. Several newspaper reviews have painted gloomy pictures of the State's economy under dramatic headlines like: "Jersey's Sick Economy." Unfortunately, these reviews made no clear distinction between short-term recession symptoms and the basic strengths or weaknesses of New Jersey's economy under the circumstances in which it operates. The dark colors used to describe the State's economy have brought a reaction from State officials defending the soundness of New Jersey's economy.**

Since short-term and long-run symptoms have been obscured, the diagnosis of economic illness may also have been misread. Many theories are

floating around which pretend to describe adequately the causes of New Jersey's manufacturing industries' less than satisfactory performance. Environmental protection and an "anti-business" climate are alleged to be primary causes of the decline of the State's manufacturing sector and consistently high unemployment. The administration's concern with economic development issues and its actions to attract business to New Jersey clearly contradict the view of an anti-business bias. Similarly, vigorous actions by the Department of Environmental Protection to assure the maximum use of available Federal funds for building sewage treatment facilities, the green acres program, and approaches to solving the solid waste disposal problem are only a few examples of how a sound environmental policy may enhance economic activities directly and simultaneously contribute to the expansion of opportunities for further economic growth. Needless to say, a highly industrialized and densely populated state like New Jersey needs stricter, enforceable and reasonable environmental standards. These standards have in some cases been relaxed in order to alleviate possible hardships in some areas.† Most importantly, we do not find any

* Prepared by Adam Broner, Ph.D., Program Coordinator, Office of Economic Policy.

** See Commissioner Joseph Hoffman's Letter to the Editor, New York Times, Saturday, April 20, 1975.

† The main example is the contemplated relaxation of requirements affecting the glass industry in South Jersey.

association between industries' production of polluting effluents and their relative decline of employment in New Jersey.*

Hard facts and solid research are needed to define precisely what the problems of New Jersey's manufacturing industries are, what the real contributing factors are, and on this basis, what the policy recommendations should be. It will be helpful if thorough studies by State agencies and research centers are undertaken which will lead to a better understanding of the past performance and future potential of the State's manufacturing industries. With this in mind, the Economic Policy Council directed its staff to undertake a study of long-run trends in New Jersey manufacturing industries with due attention to regional and national comparisons. The present report is but a first step in fulfillment of this commitment. Although we see the need to fill many gaps in this study and to expand it in various directions, we offer our initial report now in the hope that it will contribute to a broadened understanding and discussion of the State's economic development.

The Historical Perspective

Throughout this study we will often compare the performance of New Jersey's industries with

those in neighboring states (the Middle Atlantic Region) and in the nation. These are obvious points of reference. We do not expect developments in New Jersey to exactly follow events in other states, although they cannot be completely isolated either. Similarly, recent developments within the State may depart from long-run, secular trends. But they may also be a continuation of patterns rooted far back in history. This distinction is extremely important. Economic diagnosis and policy recommendations might diametrically differ if, for example, recent developments are found to be caused by dynamic forces which were instrumental in the past or if they reflect a genuine departure from the past. Even in the latter case there is much to be learned from the past in formulating remedies for the future.

We invite the reader to take an excursion into the beginning of the Twentieth Century and to examine two indicators of manufacturing growth—output measured by value-added in manufacturing** and employment. The data presented in Figure 6.1 cover the period 1899-1972 and distinguish several subperiods. They also compare growth in New Jersey with growth in other states of the region and the nation.

FIGURE 6.1
GROWTH MEASURES FOR MANUFACTURING IN THE MIDDLE ATLANTIC STATES
AND THE U.S. FROM 1899 TO 1972 (IN PERCENTAGES)

States	1899-1947		1925-1955		1947-1972		1967-1972	
	Value Added (1)	No. of Employees (2)	Value Added (3)	No. of Employees (4)	Value Added (5)	No. of Employees (6)	Value Added (7)	No. of Employees (8)
U.S.	+1,490	+192	+328	+74	+374	+32	+35	—02
Middle Atlantic States	+1,110	+136	+232	+50	+240	0	+23	—09
New York State	+1,050	+130	+206	+56	+218	—05	+22	—12
Pennsylvania	+ 940	+124	+236	+37	+239	—02	+22	—08
New Jersey	+1,870	+230	+298	+61	+291	+14	+28	—04

SOURCES: Columns (1) - (4): *The Economy of New Jersey*, a report prepared for the Department of Conservation and Economic Development of the State of New Jersey under the direction of Salomon J. Flink, Rutgers University Press, 1958, pp. 195-196.

Columns (5) - (8): *U.S. Census of Manufactures*, 1947-1972.

* A negative correlation has been found between the ranking of New Jersey industries according to their degree of pollution (particulates, sulfur dioxide, organics and biochemical oxygen demand of discharged water) and the relative decline of their employment.

** Value-added by manufacturing is derived by subtracting the total cost of materials from the value of shipments and other receipts and adjusting the resulting amount by the net change in finished products and work-in-progress inventories between the beginning and end of the year.

Throughout the entire Twentieth Century the Middle Atlantic region's manufacturing sector was growing at a considerably slower rate than in the U.S. It is known that a similar tendency prevailed in other Northeastern states. Thus, the beneficiaries of manufacturing growth were the Southern and Western regions. The share of these states in the nation's manufacturing output and employment was increasing while that of the Eastern states was declining. New Jersey, however, was an exception. Despite the State's high level of industrialization, its participation in the nation's (and region's) manufacturing output and employment continued to increase up to the 1930's. From the 1930's New Jersey joined the other Middle Atlantic states in a pattern of manufacturing growth at a slower pace than the nation as a whole.

The pertinent question to be asked is—what is the likelihood of a continuation of this downhill trend? If it reflects only a process of other regions catching up in industrial development, then assuming no serious shifts in population occur, the differential growth of manufacturing will eventually return to a pattern of relative equality. However, if the past process was also aggravated by inaction or misplaced policies on the part of the Eastern states, as a result of which they lost some of the attributes favoring the location of industries in their areas, their relative decline may continue. Moreover, if not sufficiently counteracted, the relative decline may turn into an absolute decline of manufacturing output and employment.

We are not ready yet to answer these questions precisely. A significant element in forming one's view on these matters is whether there is evidence of an absolute decline in the State's manufacturing output and employment. If the answer is affirmative then perhaps a case can be made that the State's own actions (or lack thereof) are contributing to its economic decay.

Examination of manufacturing growth in New Jersey leads to the conclusion that up to 1969 manufacturing output continued to grow

except in years of general recession. Some doubt arises for the years following 1969. These were years of two recessions and high inflation, which obscure the real growth of output. We can partly remedy this by calculating manufacturing output in constant prices, using the U.S. industrial wholesale price index. By applying this method we found that New Jersey's manufacturing output increased by 2.6% during the years 1969-1972. During 1969-70 output in constant prices declined by -2.6% and during 1970-71 by -3.2%. On the national level the 1969-70 change was -5.0% in constant prices but 1970-71 showed a small gain (+1.4%). The 1971-72 recovery brought New Jersey's output a nearly +10.0% increase, while for the U.S. the gain was +8.4%. Thus, New Jersey lost further ground in comparison with the nation but showed a small absolute increase in output from 1969 to 1972. At the end of 1973 a new downturn in the U.S. economy began and we are still experiencing it today. Therefore, one cannot make any conclusions about the absolute decline in manufacturing output for the last two years. It seems warranted, however, to say that without a strong recovery from the current recession, New Jersey might enter a period of absolute decline of manufacturing output.

A similar gradation of growth can be observed for manufacturing employment. Due to productivity growth, employment may start to decline relatively or absolutely much earlier than output. From this point of view no alteration in our reasoning for the first two phases of growth is needed. We observe, however, an absolute decline in manufacturing employment in the State of New York and Pennsylvania in 1972, a peak year in comparison to 1947. New Jersey, although it went through various fluctuations in employment during the 1947-1972 period, ended up with a 14% growth in 1972 compared to 1947. Within the 1967-1972 period, New Jersey's manufacturing employment reached a peak in 1969, declined during 1970-1971 and gained somewhat in 1972 but did not reach the 1969 level of employment.

But so did manufacturing employment in the nation. This reflects not only cyclical behavior but to some extent also the continuing shift from manufacturing to service employment in the national economy. Hence, we cannot, on the basis of this indicator, state unequivocally that New Jersey entered a phase of absolute decline of manufacturing employment and output. The performance of New Jersey's manufacturing industries was definitely better than in the other Middle Atlantic states over each of the periods defined in Fig. 6.1. Combined with the absence of clear evidence of an absolute decline of manufacturing, one doubts whether the difficulties in the State economy observed in the last few years can be ascribed chiefly to failure on the part of State policies.

This brief historical background implies that during the entire Twentieth Century New Jersey's manufacturing sector was in a much more favorable position than other Middle Atlantic and East Coast states. Despite this, it is hard to believe that New Jersey can avoid altogether the general plight of the entire Northeastern Industrial Belt. It is possible that New Jersey is at a stage such that the past favorable trends cannot be continued.

The policy implications of this analysis are that there is no sense in trying to retain, attract, or assist industries where the State does not

have comparative advantages with respect to other regions. However, it is absolutely necessary to develop policies which will help prevent a further widening of the gap in rates of manufacturing growth and remove the danger of absolute decay of the manufacturing industry in New Jersey. These will have to be selective policies, some elements of which will be analyzed in subsequent sections. Before doing this we have to better understand the various factors influencing development of the State's manufacturing sector.

Factors Affecting New Jersey's Manufacturing Growth

The distinct features of New Jersey's changing position in the nation and Middle Atlantic Region can be highlighted by analyzing its share in population, manufacturing output and employment. The pertinent calculations are displayed in Figure 6.2. The State's share in manufacturing output and employment has been declining relative to the nation but this decline has been less than that for other Middle Atlantic states. The question we now ask is how can this be explained? Is it the State's economic policy that led to this result or are some other objective factors responsible for this relatively favorable outcome?

FIGURE 6.2
SHARE OF MIDDLE ATLANTIC STATES IN U.S. POPULATION,
MANUFACTURING OUTPUT AND EMPLOYMENT, 1947-1972

States	Percentage Share in U.S.						Index of Change 1972/1947			Share of Output Over Share of Population	
	Population 1947	Population 1972	Output 1947	Output 1972	Employment 1947	Employment 1972	Popu- lation	Output	Employ- ment	1947	1972
New York and											
Pennsylvania	17.21	14.54	22.33	15.39	22.50	16.44	0.8449	0.6892	0.7307	1.30	1.06
New Jersey	3.23	3.53	5.61	4.63	5.16	4.45	1.0929	0.8254	0.8624	1.74	1.31
Other States	79.56	81.93	72.06	79.98	72.34	79.11	1.0298	1.1099	1.0936	0.91	0.98

SOURCES: *Census of Manufactures, 1947 and 1972*
Statistical Abstract of the United States, 1947 and 1972

Many studies indicate that the location of a number of industries, which mainly serve the local market, follow geographical shifts in population and income.* Assuming changes in population roughly approximate shifts in income we can use available information about population movement to infer how this might have influenced growth of New Jersey's manufacturing. Figure 6.3 provides information on shifts of population shares for the Middle Atlantic states during the Twentieth Century.

New Jersey's pattern of population growth is quite unique. It exhibits a steady increase of its share in total U.S. population throughout the century, with only a slight dent shown in 1940. The rest of the nation and the other two Middle Atlantic states followed divergent patterns starting from 1930. The share of the population of New York and Pennsylvania declined considerably while all other states together increased. Middle Atlantic states, except New Jersey, followed the same pattern as most New England and East-North-Central states while New Jersey resembled more the Southern-Western pattern.

We can now try to make sense of all this information. Two processes are taking place simultaneously. One is the accelerated growth of manufacturing industries in the South and the West which causes the share of earlier in-

dustrialized states of the Northeast (including New Jersey) to decline. However, New Jersey's increasing share of population should serve to counteract this tendency somewhat. The first tendency is the more powerful, so, on balance, we observe a declining share for New Jersey's manufacturing sector. This decline, however, has been slower than in the other Middle Atlantic states because New Jersey gained part of the population which out-migrated from neighboring states. The difference in the changes in population shares between New Jersey and New York State and Pennsylvania is approximately 25 points (1.09-0.84). Similarly, the difference in manufacturing output or employment is over 13 points (0.86-0.73). These differentials in favor of New Jersey conform well with the suggestions in the literature that approximately half of manufacturing industries are located close to their local markets.

Information provided in Figure 6.2 allows us to make some additional observations. In the last two columns we have calculated an indicator which shows the relative degree of industrialization. These indices take into account shifts in population.** It is remarkable that New Jersey retained in 1972 a large margin above the rest of the country (1.31 compared to 0.98), despite the fact that the difference between the other Middle Atlantic states and the rest of the country has almost vanished (1.06 compared to

FIGURE 6.3
SHARE OF MIDDLE ATLANTIC STATES IN TOTAL
U.S. POPULATION, 1900-1970 (PERCENTAGES)

State	1900	1920	1930	1940	1950	1960	1970
New York and Pennsylvania	17.86	18.02	18.12	17.69	16.73	15.67	14.78
New Jersey	2.48	2.98	3.20	3.15	3.20	3.38	3.53
Total Middle Atlantic Region	20.34	21.00	21.32	20.84	19.93	19.05	18.31

SOURCE: *Manpower Report of the President*, 1975

* There may be considerable lags in locational responses to such shifts, however, and the nature of these lags are not well understood.

** These indices are frequently referred to as "location quotients". A location quotient provides an index of comparison between two percentage distributions for a particular characteristic (C); i.e.,

$$L.Q. = \frac{\text{Percent (C) in N.J.}}{\text{Percent (C) in the U.S.}}$$

A L.Q. greater than 1.00 indicates a relative N.J. advantage over the U.S. for characteristic (C).

0.98). We may say that in comparing the Middle Atlantic Region to the rest of the nation, the process of equalization of industrial development is almost complete. During this period of equalization the other two Middle Atlantic states have lost much of their initial advantage. New Jersey, however, has managed to retain a difference of over 30 points. Some important conclusions follow: First, there is a much better chance now that the rate of manufacturing growth (relative to population) in the future will not differ as much between New Jersey and the rest of the U.S. Second, New Jersey still maintains a considerable comparative advantage in manufacturing. Third, if the rate of growth of population in New Jersey were to exceed the national rate, one could expect the share of the State's manufacturing sector in total U.S. manufacturing to stabilize after a few years. This would mean a reversal of the hitherto falling share. The decline in share may continue, however, if there is a decline in the rate of population in-migration. The latter has been the main factor behind New Jersey's high rate of population growth during the post-war period.*

This study does not examine the factors which have caused New Jersey to have substantial in-migration while other East Coast states experience out-migration. We should, however, com-

ment on the repercussions of migration trends on the labor market situation in New Jersey. A plausible hypothesis might be that the State's higher rates of unemployment are partly due to higher rates of in-migration to New Jersey. The only assumption needed for this hypothesis is that in-migration precedes the creation of new jobs. Such an assumption seems plausible. Migration decisions are made on the basis of, at best, imperfect information regarding job opportunities and the least skilled migrants may migrate because of "push" factors at their point of origin rather than "pull" factors at alternative destinations. At any given time there is some disparity between people seeking employment and availability of jobs. This disparity appears in addition to the "normal" rate of frictional or cyclical unemployment. It is possible that not only is the State attractive for newcomers but for the same reasons the unemployed delay decisions to leave the State when they cannot find a suitable job over a prolonged period of time. Hence, both ends of the migratory process tend to create a surplus labor force. The slower rate of growth of the manufacturing sector in New Jersey in comparison to South-Western states aggravates this structural imbalance. This line of reasoning may help explain why, for some period of time, the overall rate of unemployment in New Jersey has been higher than in the U.S. and many other states (see Figure 6.4).

FIGURE 6.4
PERCENTAGE OF UNEMPLOYED LABOR FORCE
IN NEW JERSEY AND OTHER STATES

State	1970	1971	1972	1973	1974
United States	4.9	5.9	5.6	4.9	5.6
New York	4.5	6.6	6.7	5.4	6.3
Pennsylvania	4.5	5.4	5.4	4.8	5.7
New Jersey	4.6	5.7	5.8	5.6	6.9

SOURCE: *Manpower Report of the President*, 1975

* The latest data on net migration from the U.S. *Current Population Survey* indicates that the rate of in-migration for New Jersey has fallen over the period 1970-73, compared to the high rates of the post-war period.

Further Characteristics of the Manufacturing Sector

We have mentioned earlier that New Jersey retains a comfortable margin of industrial development relative to most other states of the union. This margin reflects considerable comparative advantages the State has in comparison to others. We have selected several further indicators which might shed some light on areas where the State has a comparative advantage or shows signs of lagging behind other regions. These indicators include labor productivity,

labor cost and capital formation. The latter indicator allows a more complex analysis of capital-output and capital-labor ratios. These data have heretofore *not been available* for New Jersey.

Labor productivity is definitely one of New Jersey's positive attributes. For almost the entire period covering the years 1947 to 1972, the average level of labor productivity in New Jersey's manufacturing sector was higher than in the U.S. (the only exception was 1964). An even larger advantage is apparent in comparison

FIGURE 6.5
RELATIVE INDICATORS OF LABOR PRODUCTIVITY,
LABOR COST AND CAPITAL EXPENDITURES, 1947-1972

Labor Productivity			Labor Cost*		Capital Expenditures**	
New Jersey compared with:						
Middle Atlantic			Middle Atlantic		Middle Atlantic	
Year	States	U.S.	States	U.S.	States	U.S.
1947	1.08	1.09	0.97	0.99	1.13	0.90
1949	1.11	1.10	0.94	0.94	NA	NA
1950	1.12	1.09	0.94	0.98	NA	NA
1951	1.07	1.05	1.00	1.01	1.05	0.90
1952	1.09	1.07	0.97	1.00	0.87	0.74
1953	1.07	1.06	0.96	0.98	1.01	0.78
1954	1.08	1.08	0.97	0.98	1.11	0.85
1955	1.12	1.04	0.94	1.02	1.11	0.88
1956	1.12	1.07	0.93	0.98	1.14	0.83
1957	1.11	1.06	0.93	0.98	1.15	0.83
1958	1.10	1.07	0.95	0.98	1.05	0.90
1959	1.12	1.02	0.93	1.04	1.10	0.96
1960	1.13	1.04	0.92	1.02	1.05	0.90
1961	1.15	1.06	0.91	1.01	1.08	0.91
1962	1.16	1.06	0.90	1.00	1.14	0.96
1963	1.12	1.01	0.92	1.06	1.10	0.89
1964	1.10	0.99	0.93	1.08	1.02	0.77
1965	1.11	1.01	0.93	1.06	1.00	0.75
1966	1.10	1.01	0.94	1.06	1.04	0.79
1967	1.10	1.02	0.93	1.05	0.98	0.79
1968	1.11	1.01	0.91	1.02	0.93	0.78
1969	1.09	1.02	0.94	1.05	1.04	0.89
1970	1.10	1.02	0.94	1.06	1.03	0.85
1971	1.09	1.00	0.96	1.10	0.97	0.83
1972	1.08	1.04	0.95	1.01	1.03	0.88

* Labor Cost is calculated as a ratio of total payroll to total value-added by manufacturing.

** Capital Expenditures are calculated as a ratio of total capital expenditures to total value-added by manufacturing.

SOURCES: Census of Manufactures and Annual Survey of Manufactures

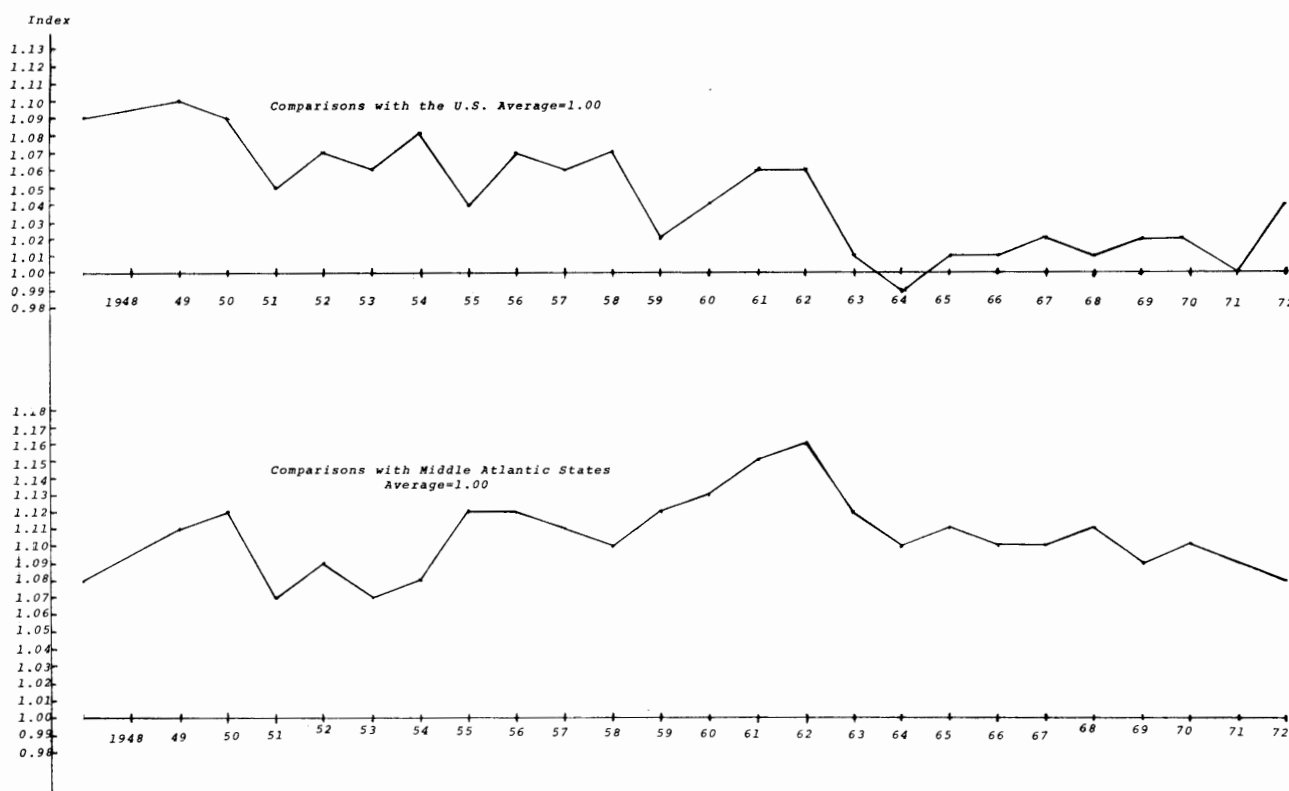
with the Middle Atlantic Region. These differences, however, might stem from a substantially different composition of industry, whereby the industries which have higher ratios are more than proportionately represented in New Jersey. If this is the case then labor productivity levels in particular industries might not be higher despite the overall higher level. We checked this possibility and found that New Jersey has a genuine advantage in a number of industries. But New Jersey's advantage over other states in terms of labor productivity has diminished in the 1960's. This is visibly apparent in Figure 6.6.

Mainly as a result of higher productivity, labor cost per unit of output was lower in New Jersey than in the other Middle Atlantic states throughout the 1947-72 period. In comparison with the U.S. unit labor cost was only slightly lower up to 1958 and became higher thereafter. The previous remark about the State's diminish-

ing advantage in labor productivity suggests that higher unit labor costs have been caused by relatively lower productivity rather than a relatively high rate of increase in wage rates. But we did not examine wage rates in New Jersey industry and this would be an important extension of our analysis.

One area where the State is clearly lagging behind the rest of the nation is in the rate of capital formation in manufacturing. During the 1947-1972 period, out of each dollar of value-added by U.S. manufacturing, on the average \$.07 was reinvested in the manufacturing sector. The range of variation over the years was between 5.39 cents and 8.40 cents for each dollar of value-added. In New Jersey less than six cents on the average were reinvested in the State's manufacturing industries. During the entire 1947-1972 period the reinvestment ratio in New Jersey never surpassed the national

FIGURE 6.6
LABOR PRODUCTIVITY IN THE MANUFACTURING SECTOR
(1948-1972)



level. In the years 1958-1962 the reinvestment ratio was over 90% of the national level only because the latter was also very low. During the years 1964-1968 New Jersey's reinvestment ratio was less than 80% of the national level despite the fact that these were years of rising levels of manufacturing activity in both the State and the nation. A crude estimate indicates that if manufacturing investment in New Jersey had occurred at the national rate, \$2.6 billion more would have been invested during the 1947-1972 period.

How can this consistently different pattern of investment behavior be explained? Does New Jersey have a peculiar composition of industries, each requiring, on the average, less capital investment to produce a unit of output? Or is it that New Jersey applies technologies in each industry which require less capital investment per unit of output? This is a proposition which can be true in exceptional cases of some industries but is hardly possible as a general rule. Is New Jersey adopting less capital intensive innovations? Unfortunately, we do not have the information to answer this question in even a limited way. One source of information which can shed some light on this question is the number of patents awarded to New Jersey residents.* But the number of patents awarded to New Jerseyans does not necessarily imply that they were actually applied in New Jersey's industries. Besides, there is no way of knowing whether the patents represent capital saving inventions. Technical progress quite often leads to higher capital requirements per unit of output.

Hence there must be some other plausible explanation. We suggest the following hypothesis: we have already noticed a long-run tendency for New Jersey's manufacturing output to decline relative to the U.S.; therefore, it is reasonable to expect a similar tendency on the part of capital expenditures. If both these magnitudes (output and capital expenditures) change at the same time and at the same rate we should not observe any difference in the New

Jersey and U.S. ratio of capital expenditures to value-added.** However, the nature of things is such that investments precede output; sometimes by several years. Therefore a continuing decline in investment shares leads to a continuing decline in output shares, and because the former precedes the latter, one should observe a lower ratio of investments to output at any point in time. The following hypothetical example will clarify this point. Assume that in order to maintain a steady annual output of one million dollars it is necessary to invest one hundred thousand dollars each year. The investment-output ratio is thus 0.10 i.e., ten cents per dollar. Now assume that for some reason output planned three years hence is only one-half million dollars. Less investment funds will be committed each year. Now, though the capacity to produce one million dollars of output still exists, the investment ratio will start to decline immediately. If such a process continues for a long period of time, we observe a lower reinvestment ratio every year. This is precisely what we observe in the State of New Jersey. This does not explain why decisions are made which lead to the State's reduced share in national (or international) markets. We have tried earlier to associate this with the tendency for industrial markets and industrial development to spread more evenly throughout the country. But this must still be translated into concrete factors of comparative advantage. Otherwise, the market mechanism would not accomplish such location shifts.

Our immediate concern, which is preliminary to any further analysis, is to establish a data base which will allow us to test some of our hypotheses. This cannot be done without data on capital stock by industry. Moreover, estimates of capital stock must take into account the real (not accounting) process of depreciation.

The assessment of actual depreciation is extremely hazardous. Most annual gross investment replaces worn out units of plant or equipment. Even small errors in estimates of actual

* Patent information is discussed in a separate chapter of this report. See Chapter VIII.

** As long as the capital-output ratios were equal at some point.

depreciation will have serious repercussions for magnitudes of net investment. Comparisons of gross investments with total or incremental output would not be satisfactory either.

In a shrinking economy gross investment may not even be sufficient to reproduce the part of the capital stock which is physically (or economically) withdrawn from operation. In the meantime output may continue to grow because of improved utilization of remaining capacities. We can easily envisage contrary situations whereby even an increase in net investment may not result in an increase in output because of a lower rate of capacity utilization. Furthermore, it is questionable whether investments of a recent year should be compared with output of the same year, bearing in mind a considerable lag between investment expenditures and actual output. The usual remedy proposed for such cases is to allow for the time lag; that is, to compare previous investments with this year's output. But the time lags involved are not well known and any arbitrary assumptions as to the magnitude of the lags would not allow us to test our earlier hypothesis concerning a lower capital-output ratio in New Jersey.

Total capital stock and total output are less sensitive to errors in estimating depreciation or changes in capacity utilization.* Partly for these reasons and also because total capital estimates have utility for other applications, we decided to attempt an estimate of the capital stock in New Jersey manufacturing industries. In order to assure appropriate comparisons with identical indicators on the national level we had to estimate capital stock for U.S. manufacturing industries as well. The reader should be warned that these estimates and the indicators derived from them contain some unspecified margin of error. Nevertheless, this is the first time that such estimates have been derived for New Jersey.

* Less sensitive, that is, than *changes* in capital stock or output.

** The procedure and estimates obtained will be published in a separate working paper.

† Jack Faucett Associates, Inc. (1973). DEVELOPMENT OF CAPITAL STOCK SERIES BY INDUSTRY SECTOR, Executive Office of the President, Office of Emergency Preparedness, March, TR-81.

The procedure for estimating capital stock is quite elaborate. Only a very brief description can (or should) be given here.** In order to arrive at an estimate of the capital stock in manufacturing industries in the State and the U.S., we revaluated book value of capital stock into 1963 or 1972 replacement prices. The book value of capital stock encompasses all fixed depreciable assets on the books of manufacturing establishments at the end of the year and represents the actual cost of the assets at the time they were acquired, including such costs as transportation and installation. Replacement prices mean that these assets are evaluated at the cost of acquiring them anew at a particular year. Neither the book value nor the replacement value take into account the physical state of the assets; i.e., the degree of their capability to produce. However, actual retirement of assets is taken into account. For the State of New Jersey data on book value of fixed assets are available for 1957 (incomplete) and for 1962-1964. No information is available for 1972. The U.S. data cover the same years and also 1971. We have estimated the 1972 capital stock using 1964 data on book value of fixed assets and capital expenditures data from 1965 to 1972. Appropriate allowances for actual retirements during this period were made on the basis of retirement rates for total U.S. manufacturing industries. These were subsequently adjusted to allow for possibly different retirement rates in the case of New Jersey, where on the average the age of capital is presumably older. Finally, book values were converted into replacement values by applying appropriate conversion indices which can be deduced from a study by Faucett for the U.S. Government.† We use 1963 replacement prices in comparisons involving 1963 capital-output ratios and 1972 replacement prices for 1972 capital-output ratios. Figure 6.7 presents the results of these estimations. As we expected, the capital-output ratios for total manufacturing

are in fact lower in New Jersey both in 1963 and in 1972. Thus, our hypothesis seems to be true. However, we do not find capital-output ratios for New Jersey to be lower in all industries. So we should make sure that the overall result for manufacturing is not simply due to differences in industry composition. We can test this easily by calculating a standardized overall capital-output ratio; that is, the ratio New Jersey would have if it had an industry composition identical to that of the U.S.

The results are shown in the last two rows of Figure 6.7. They clearly indicate no serious impact on the overall capital-output ratio due to the difference in industry compositions between New Jersey and the U.S. We should, however, emphasize that such differences could become apparent with a more detailed industry classification. Possibly, such disaggregation might explain some of the extremely large N.J.-U.S. differentials in capital-output ratios at the two digit classification level. Having already de-

FIGURE 6.7
CAPITAL-OUTPUT RATIOS IN U.S. AND NEW JERSEY
MANUFACTURING INDUSTRIES, 1963 AND 1972

Industry	Capital-Output Ratios in 1963 Prices		Capital-Output Ratios in 1972 Prices		Index 1972/1963	
	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.
Food and Kindred Products...	0.898	0.852	1.215	1.054	1.353	1.237
Textile Mill Products	1.129	0.824	1.317	0.971	1.167	1.178
Apparel and Other						
Textile Products	0.259	0.335	0.335	0.367	1.293	1.096
Lumber and Wood Products ..	1.107	0.532	0.976	0.474	0.881	0.891
Furniture and Fixtures	0.506	0.578	0.555	0.489	1.097	0.846
Paper and Allied Products ...	1.809	1.300	2.285	1.778	1.263	1.368
Printing and Publishing	0.632	0.642	0.732	0.709	1.158	1.104
Chemicals and Allied Products	1.316	1.063	1.580	1.290	1.201	1.214
Petroleum and Coal Products .	3.436	3.657	4.619	4.529	1.344	1.238
Rubber and Miscellaneous						
Plastic Products	0.955	1.046	0.822	1.174	0.861	1.122
Leather and Leather Products	0.322	0.292	0.500	0.394	1.553	1.349
Stone, Clay, and Glass						
Products	1.460	1.207	1.770	1.341	1.212	1.111
Primary Metal Industries	2.015	1.567	2.898	2.024	1.438	1.292
Fabricated Metal Products ...	0.788	0.750	0.765	0.946	0.971	1.261
Machinery, except Electrical ..	0.766	0.752	0.777	0.876	1.014	1.164
Electric and Electronic						
Equipment	0.550	0.562	0.677	0.874	1.231	1.555
Transportation Equipment ..	0.635	0.534	0.803	0.636	1.265	1.191
Instruments and Related						
Products	0.576	0.748	0.491	0.673	0.852	0.900
Miscellaneous Manufacturing						
Industries	0.495	0.630	0.582	0.707	1.176	1.122
Total (nonstandardized)	0.997	0.907	1.172	1.104	1.176	1.217
Total (standardized)	0.997	0.883	1.172	1.082	1.176	1.225

SOURCE: Office of Economic Policy

veloped our analytical tools, it is possible to expand our future research in this direction. Given the wide margin between the U.S. and New Jersey ratios, more detailed estimates will not reverse the conclusion we have reached; however, it has rather limited implications. For we have proven a rather technical point—that in a situation where the State's manufacturing sector share is shrinking, we have to expect lower capital-output ratios. This explains why for each dollar of value-added New Jersey reinvests in manufacturing less than in the U.S. But this does not explain *why* the State's share of manufacturing activity is declining.

The upshot of our argument is that the relatively lower rate of reinvestment in New Jersey's manufacturing sector is not mainly of our own making. The observed decline can be explained by the general process by which industrial development is being "equalized" across the U.S. Hypotheses regarding an "anti-business climate" or environmental restrictions are much less convincing.* For as we have seen, the lower reinvestment ratio in New Jersey is not a recent phenomenon, it is consistent with the State's declining share of manufacturing and both have been going on for several decades.

Our estimates of capital stock will be useful for other tasks, among them those which will be necessitated by the Governor's commitment to formulate a comprehensive State Economic Plan.** It will be possible, for example, to evaluate the capital requirements for any specific level and mix of manufacturing employment, and then translate capital needs into magnitudes of output (or vice versa). In such projections not only are levels important but

also their change over time. New Jersey's initially lower capital-output ratios increased significantly during the last decade. A similar tendency prevailed in the U.S. so that the relative differentials remained essentially the same. Moreover, capital-output ratios increased in an overwhelming number of industries both in New Jersey and on the national level. With few exceptions, industries which exhibit an increase or decline in the capital-output ratio in New Jersey changed in the same direction in the U.S. This implies that, barring compositional changes on a more detailed level of industry classification, technical progress during the last decade was capital intensive. In other words, technical innovation required more capital investment per unit of output. This is even more true with regard to incremental capital-output ratios, for increasing average ratios imply ever-growing marginal ratios.† Parenthetically, this confirms the suggestion made earlier that it is inconceivable that technical progress in New Jersey was less capital intensive than in other states.

Technical progress which takes the form of increased capital-labor ratios can be partly induced by growing labor costs which lead to a search for ways to reduce costs by substituting capital for labor. We have calculated capital-labor ratios for New Jersey and the U.S. manufacturing industries in 1963 and 1972. In order to assure comparability for both these years, we have expressed capital in terms of 1972 replacement prices. By comparing changes of capital-labor ratios in the U.S. and in New Jersey, we might specifically test the hypothesis that New Jersey ratios were growing faster because of increased labor costs during the 1960's. The capital-labor ratios are shown in Figure 6.8.

* We have already shown that there is no indication that industries which pollute more (and presumably are more subject to environmental regulations) have also declined more in New Jersey. This matter is discussed by Chapter VII in relation to unemployment. As for "business climate" it is apparent that loud complaints about an "anti-business attitude" crop up periodically in every highly industrialized state. There is no evidence that this is a factor conditioning the differences in economic performance among, say, the states of the Northeast. To the contrary, a recent study commissioned by the New York State Legislature concluded that "business climate, though it was considered bad in New York State by many of the officials interviewed, was minor among the causes for migration" (of firms). (INDUSTRY IN NEW YORK: A TIME OF TRANSITION, The 1970 Report of the Select Committee on the Economy, Assemblyman John W. Beckman, Chairman, New York State legislative document No. 12 (1974).

** See Governor Brendan T. Byrne's FIRST ANNUAL MESSAGE TO THE LEGISLATURE. Our proposal for developing a comprehensive economic plan for New Jersey is given in Chapter V.

† That is, recent additions to capital stock made in order to generate additional output are more capital intensive than past additions to capital stock made to generate past additions in output.

FIGURE 6.8
CAPITAL-LABOR RATIOS IN THE U.S. AND
NEW JERSEY MANUFACTURING INDUSTRIES, 1963-1972†

Industry	1963 Capital-Labor Ratio		1972 Capital-Labor Ratio		Index 1972/1963	
	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.
Food and Kindred Products . . .	16,002	19,338	27,522	29,781	1.720	1.540
Textile Mill Products	10,733	10,065	16,042	14,364	1.495	1.427
Apparel and Other Textile Products	2,135	2,817	3,264	3,761	1.529	1.335
Lumber and Wood Products . . .	10,596	5,440	14,464	6,316	1.365	1.161
Furniture and Fixtures	5,524	6,943	7,344	7,333	1.330	1.056
Paper and Allied Products . . .	30,501	20,646	46,670	29,813	1.530	1.444
Printing and Publishing	9,725	9,687	14,047	12,756	1.444	1.317
Chemicals and Allied Products	42,084	35,469	61,554	50,543	1.463	1.425
Petroleum and Coal Products .	111,464	129,794	193,172	190,543	1.733	1.468
Rubber and Miscellaneous Plastic Products	14,354	14,234	16,026	19,588	1.117	1.376
Leather and Leather Products	2,740	2,680	5,356	4,696	1.955	1.752
Stone, Clay, and Glass Products	24,026	18,356	36,107	25,355	1.503	1.381
Primary Metal Industries	36,604	23,922	59,010	37,706	1.612	1.576
Fabricated Metal Products . . .	11,506	12,013	13,904	18,030	1.208	1.501
Machinery, except Electrical . .	12,189	12,348	16,009	17,971	1.313	1.455
Electric and Electronic Equipment	8,298	7,775	12,433	14,286	1.498	1.837
Transportation Equipment . . .	12,111	11,250	18,749	22,517	1.548	2.002
Instruments and Related Products	10,095	13,028	11,588	15,079	1.148	1.157
Miscellaneous Manufacturing Industries	6,051	6,982	8,783	10,878	1.452	1.558
Total (non-standardized)	15,448	15,565	22,978	23,672	1.487	1.521
Total (standardized by 1972 U.S. weights)	15,448	14,033	22,978	21,213	1.487	1.512

† Capital estimated at 1972 replacement prices, dollars per employee.

SOURCE: Office of Economic Policy

As can be seen, there is no evidence that capital-labor ratios in New Jersey manufacturing industries have grown faster than in the U.S. Quite the opposite; in most industries the New Jersey ratios grew at a lower rate. There are, however, several important exceptions, mainly in the metalworking and engineering industries (SIC #34, 35, 36, and 37). It is not clear whether these exceptions are caused by gross errors in estimating depreciation or whether the ratios actually indicate a faster substitution of capital

for labor. Extension of our analysis to include wage rates would be helpful in explaining these differentials.

A final comment relates to the absolute level of capital per employee in the State's manufacturing sector. When this is calculated as a standardized average by adjusting the industry composition in New Jersey for N.J.-U.S. differences, the average magnitudes are 8-9 percentage points lower in New Jersey.* This is the same

* The standardized figures are computed using 1972 weights.

as the differential in the capital-output ratios. Thus, allowing for the lag between investment and output, which is equally applicable to the relationship between investment and employment, we can say that on the average the amount of capital per employee in New Jersey does not deviate from the national level.

The Foreign Trade Sector

New Jersey's geographical location, its access to the large Atlantic ports, long industrial tradition and leadership in technical progress have gained the State a more than proportionate participation in foreign trade. This was apparent in 1960, but the State's position has deteriorated

A partial explanation of this unfavorable phenomenon can be found in the larger decline of shares for those industries which are relatively more export oriented; for example, industries producing machinery and equipment. More importantly, statistics for most two digit industries show a lower export ratio in New Jersey than in the U.S. with the exception of chemicals and primary metals. This can be seen in Figure 6.10. Among eleven industries for which data are available, in nine the share of total shipments directed to foreign markets was lower in New Jersey than nationwide. This includes all so-called technology-intensive industries (SIC #35, 36, 37, and 38),

FIGURE 6.9
VALUE OF ESTIMATED EXPORT SHIPMENTS BY
MANUFACTURING ESTABLISHMENTS 1960-1972

State	Value of Exports (\$ Million)					Percent of U.S. Exports				
	1960	1963	1966	1969	1972	1960	1963	1966	1969	1972
United States	14,546	16,473	21,299	29,210	36,608	100.0	100.0	100.0	100.0	100.0
New York	1,211	1,423	1,838	2,296	2,864	8.3	8.6	8.5	7.9	7.8
Pennsylvania	1,083	1,224	1,542	1,902	2,346	7.4	7.4	7.2	6.5	6.4
New Jersey	783	842	980	1,114	1,368	5.4	5.1	4.6	3.8	3.7

NOTE: These statistics are based on special surveys for larger firms and estimates for the remaining establishments not surveyed.

SOURCE: SURVEY OF THE ORIGIN OF EXPORTS OF MANUFACTURING ESTABLISHMENTS IN 1972, U.S. Department of Commerce, November 1974.

rapidly ever since. Evidence on this is provided in Figure 6.9.

In 1960 the State's share in total U.S. exports was 5.40%, while its share in the nation's output, based on value-added, was only 5.24%. However, during the 1960's the State lost its favorable position. By 1972 the difference in these two indicators was considerably less favorable to New Jersey. The State's share in the nation's output fell to 4.63% and its share in exports declined much faster to a mere 3.70%. This is a surprising result. Even in comparison to the other two Middle Atlantic states, New Jersey has done worse.

except chemicals. Lower export participation ratios could arise if a relatively greater production of intermediate products (parts, engines, accessories, etc.) are shipped to firms in other states for assembly into final products for export. The exports would then be attributed to out-of-state establishments even though New Jersey produced key components. We have no way of examining this possibility. We need to find out why such dramatic changes took place in the 1960's. Whatever the causes, the data clearly indicate there is a need for the State to more aggressively promote foreign trade and help New Jersey firms enter export markets.

FIGURE 6.10
RELATIVE EXPORT RATIOS IN THE U.S. AND NEW JERSEY MANUFACTURING
SECTOR BY INDUSTRY, 1972

	Exports		Total Shipments (\$ Million)		Exports Over Total Shipments	
	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.
Total	36,608	1,368	752,829	32,248	4.86	4.24
Food and Kindred Products	3,046	88	114,322	3,895	2.66	2.26
Paper and Allied Products	988	20	28,167	1,155	3.52	1.73
Chemicals and Allied Products	3,757	439	57,062	6,544	6.58	6.71
Rubber and Miscellaneous						
Plastic Products	519	19	21,269	1,121	2.44	1.69
Stone, Clay, and Glass Products	409	20	21,430	1,166	1.91	1.70
Primary Metal Industries	1,490	84	58,277	1,922	2.56	4.36
Fabricated Metal Products	1,429	49	51,490	2,092	2.78	2.35
Machinery, except Electrical	7,824	178	65,607	2,057	11.93	8.63
Electric and Electronic						
Equipment	3,296	137	53,154	2,601	6.20	5.27
Transportation Equipment	7,842	158	94,723	2,593	8.28	6.09
Instruments and Related						
Products	1,531	55	15,352	804	9.97	6.89

SOURCE: SURVEY OF THE ORIGIN OF EXPORTS OF MANUFACTURING ESTABLISHMENTS IN 1972, U.S. Department of Commerce, November 1974.

Changes in Industry Composition

In the previous sections we have frequently tried to adjust global manufacturing indicators for changes in industry composition. In this section we attempt a more systematic examination of industry mix. Our aim is to highlight the most characteristic changes that have occurred in New Jersey and other states since World War II and to suggest opportunities for future development. An extensive study of employment trends in New Jersey manufacturing industries was published in the 6th ANNUAL REPORT of the Economic Policy Council.* This section expands upon that study by introducing information on changes in output, in addition to changes in employment. It also attempts to apply findings from the literature on industry location to define a useful typology of New Jersey manufacturing industry. This will help to assess the future potential of various industries.

For an overview of changes that occurred in the period between 1947 and 1972 see Figure 6.11, which lists industries according to their descending share in the State's total manufacturing output as of 1972.

Several observations can be made on the basis of these data. First, New Jersey's leading industries—chemicals, electric and electronic equipment, food and machinery—did not change their leading position with regard to their share of total output. These four industries contributed over 51% to the State's manufacturing output in 1972. It is remarkable that three of these industries are leaders in technical progress. Their share in New Jersey is much higher than in the U.S. (51% vs. 38%). These are certainly industries in which New Jersey retains a wide margin of comparative advantage over other regions.

Second, the positions of several industries advanced both in New Jersey and in the United States. These industries are fabricated metal

* Arthur O'Neal, "Unemployment in New Jersey: The Role of the Manufacturing Sector", pp. 81-100, April 1973.

FIGURE 6.11
COMPOSITION AND RANK OF MANUFACTURING INDUSTRIES
IN NEW JERSEY AND THE U.S., 1947 and 1972

Industry	Share in Total Value-Added				Rank				Index of Change	
	1947		1972		1947		1972		1972/1947	
	N.J.	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.	U.S.
Chemicals and Allied Products	0.1796	0.0727	0.2417	0.0925	1	5	1	4	5.29	6.04
Electric and Electronic Equipment .	0.0950	0.0528	0.0982	0.0865	2	10	2	5	4.06	7.78
Food and Kindred Products	0.0856	0.1223	0.0948	0.1009	3	1	3	3	4.35	3.92
Machinery, except Electrical	0.0807	0.1059	0.0769	0.1071	4	2	4	2	3.75	4.80
Fabricated Metal Products	0.0507	0.0667	0.0704	0.0769	10	7	5	6	5.46	5.47
Transportation Equipment	0.0535	0.0795	0.0563	0.1147	7	3	6	1	2.78	6.84
Printing and Publishing	0.0263	0.0579	0.0447	0.0573	14	9	7	8	6.67	4.70
Apparel and Other Textile Products	0.0608	0.0602	0.0437	0.0378	6	8	8	9	2.82	2.98
Stone, Clay, and Glass Products . . .	0.0344	0.0313	0.0432	0.0359	13	13	9	11	4.93	5.45
Rubber and Miscellaneous Plastic Products	0.0193	0.0177	0.0383	0.0343	16	18	10	12	7.80	9.23
Primary Metal Products	0.0522	0.0781	0.0350	0.0662	8	4	11	7	2.64	4.02
Paper and Allied Products	0.0373	0.0390	0.0329	0.0369	12	11	12	10	3.47	4.50
Instruments and Related Products .	0.0195	0.0146	0.0313	0.0298	15	19	13	14	6.31	9.68
Textile Mill Products	0.0787	0.0724	0.0270	0.0330	5	6	14	13	1.35	2.16
Miscellaneous Manufacturing Industries	0.0480	0.0283	0.0262	0.0191	11	14	15	16	2.15	3.20
Petroleum and Coal Products	0.0513	0.0273	0.0181*	0.0166	9	15	16	18	1.38*	2.88
Furniture and Fixtures	0.0091	0.0187	0.0099	0.0175	18	17	17	17	4.28	4.45
Leather and Leather Products	0.0123	0.0208	0.0067	0.0082	17	16	18	19	2.16	1.87
Lumber and Wood Products	0.0058	0.0338	0.0047	0.0288	19	12	19	15	3.14	4.05
Nondurables	0.5510	0.4902	0.5479	0.4174	x	x	x	x	4.26	4.04
Durables	0.4490	0.5098	0.4521	0.5826	x	x	x	x	3.96	5.42
Total	1.0000	1.0000	1.0000	1.0000	x	x	x	x	4.12	4.75

* 1971 data from the ANNUAL SURVEY OF MANUFACTURES.

SOURCE: U.S. CENSUS OF MANUFACTURES, 1947 and 1972.

products, rubber and plastics, transportation equipment, stone, clay and glass, printing and publishing, and instruments. Their combined share of New Jersey's total manufacturing output increased from 20.37% to 28.42%. Similarly, the total share of these industries in the U.S. increased from 26.77% to 34.89%.

Third, the role of several industries has diminished both in New Jersey and in the nation. These include the following industries: primary metals, textiles, petroleum and coal products, apparel products, leather and miscellaneous industries.

Fourth, the remaining industries—paper, lumber and furniture—changed their positions in divergent directions and do not exhibit a clear pattern.

Fifth, only three industries have grown faster in New Jersey than in the U.S. These are the food industry, printing and publishing and leather and leather products. These are industries which mainly serve a local or regional market and were somewhat underrepresented in New Jersey.

Sixth, a glance at the industry compositions in 1947 and 1972 reveals that except for the chemicals industry, the differences between New Jersey and the U.S. have narrowed. This implies that the State's specialization has diminished relative to the rest of the country. Does this mean that the State's comparative advantage has declined too?

We can examine this question by means of an index of industry specialization which compares

the shares of New Jersey industries with those for the U.S., according to the following formula:

$$S = \frac{\sum_i \left[\frac{P^i_{NJ} - P^i_{US}}{2} \right]}{2}$$

Where:

S is the specialization index

P^i

P^i_{NJ} denotes the share of any industry i in total manufacturing output in New Jersey.

P^i

P^i_{US} denotes the share of any industry i in total manufacturing output for the entire U.S.

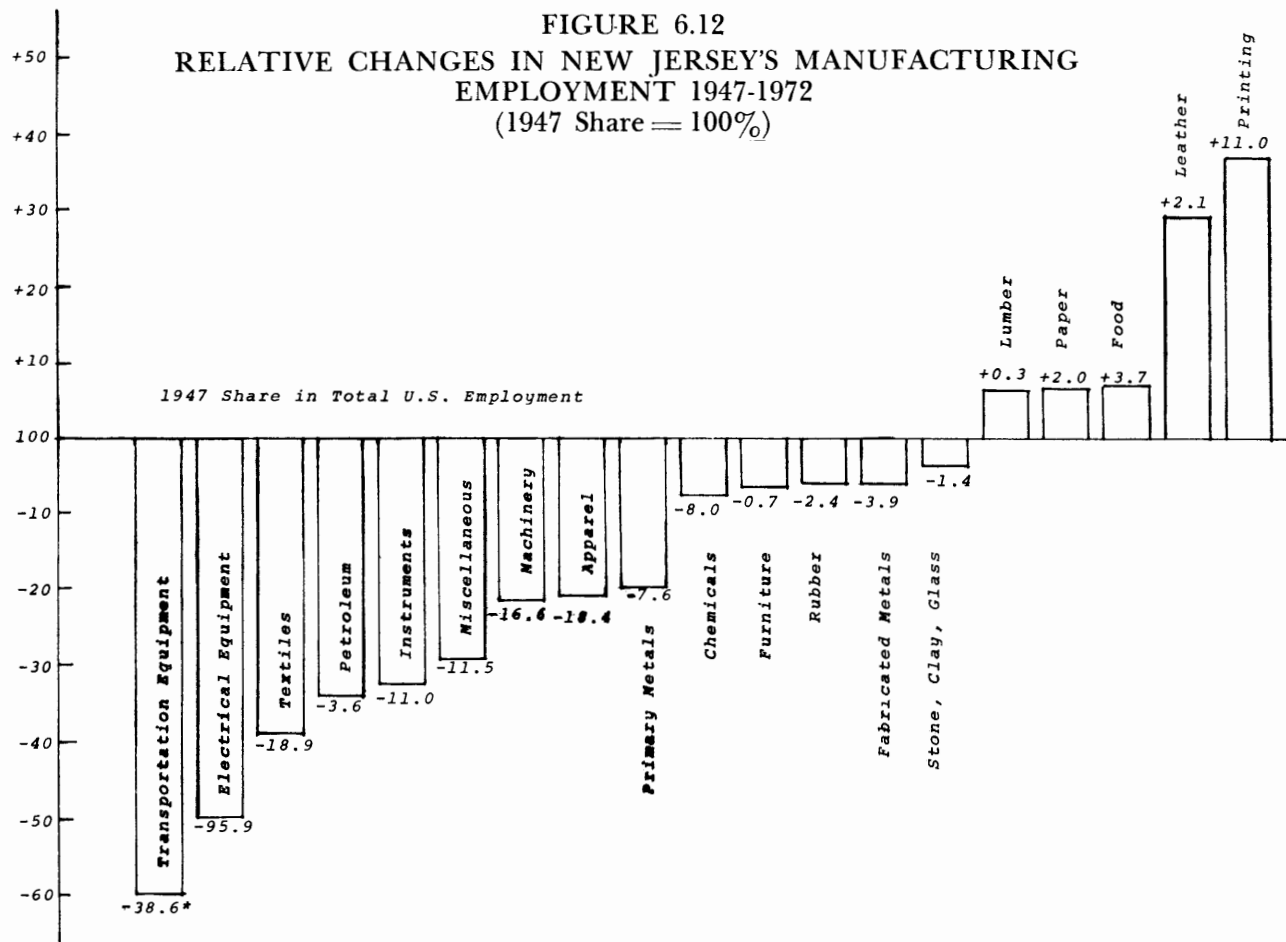
The S index ranges between 0 and 1. A high value of the index means that the State industry mix is highly specialized; a low value that it is

diversified. A declining S index would thus signify a less specialized composition of manufacturing industries. The index was calculated for 1947 and 1972. In one version (I) the output shares were used; in the other version (II) employment shares were used. The results are the following:

	1947	1972
Version I	0.2092	0.1882
Version II	0.2085	0.1802

Although these are not dramatic changes, they confirm the direction of change—towards less specialization in relation to the U.S.

The relative shifts in employment by two-digit industries can be measured using New Jersey's shares in total U.S. employment in 1947 as a baseline. The results are presented graphically in Figure 6.12.



* Absolute number of changes in employment from 1947-1972 (in thousands)

If we are to draw some practical conclusions, we have to adopt some working hypotheses about the main features of industry location. The vast literature on this subject is not unanimous in its conclusions. Nevertheless, we think no serious objections can be raised against the following very simple classification. First, a number of industries chiefly serve the local market and therefore tend to be influenced by shifts in population and income. Naturally, one needs a very fine industry classification to precisely identify such industries. Though on a two digit level the classification of industries is imprecise and inadequate, we cannot at this time assume the burden of working with a finer breakdown.* With this reservation in mind we think that the following industries can be said to be serving mainly a "local" market: food, textile, apparel, furniture, leather, printing and publishing, and so-called miscellaneous industries (SIC 39).**

The location of another class of industries is influenced by locationally specific resources. All extraction industries are in this category as well as those industries which rely heavily on bulky raw materials or produce intermediate products, the transportation of which is very costly. The primary metals industry, some segments of the chemical industry, lumber and wood, paper pulp mills, and the stone, clay and glass industry are examples of this class.

Third, the remaining industries can be located ubiquitously, but their actual location depends on a set of favorable factors. Among the latter are technological know-how, the availability of specialized skills in the labor force, the location of other industries to which a given industry may be linked through supply or demand channels, the availability of financial or information resources and perhaps other factors which are not ubiquitous because they depend on the spatial organization of the urban economy.

Following this tentative schematization, one can expect that industries which belong to the first group will decline in a region or state whose shares in the nation's income and population are declining, even though initially these industries were proportionately (or more than proportionately) represented. Similarly, industries which were for some reasons less than proportionately developed in the State or region have a chance to grow faster than elsewhere in the nation if population and incomes are growing in the area. But efforts to keep local-market industries from following the development of their market may be very costly and ultimately fail.

Shifts in the location of the second group of industries take place as a result of discovering new deposits of raw materials, depletion of existing deposits and other economic and technological changes. Economic conditions may lead to productive utilization of hitherto untapped deposits or make economically feasible the extraction of raw materials, the cost of which was previously prohibitive. Technological changes can have a similar effect. Recent changes in the petroleum industry offer the best example. Oil price increases have led to old wells being reopened as well as a search for new deposits. Rapid technological improvements now make it feasible to exploit deposits off the Atlantic coast. New Jersey does not have any significant extraction industries; however, changes in oil import policies may have serious repercussions for its petroleum industry and indirectly on industries related to refinery products. Conversely, development of the Outer Continental Shelf would provide a boost for petroleum and related industries. With this exception, the State cannot expect to be a site for extractive industries.

As already mentioned, specialization in industries belonging to the third group depends to a large extent on local factors and attributes.

* Proceeding from the two to the three digit level of classification increases the number of manufacturing industries by a factor of five—from 19 to 92. The number increases to 420 at the four digit level.

** The term "local" market as used here, is not precise. Does it include only a state, a group of states, or how large a group? The crudeness of this category when defined (as above) in terms of the two digit level of the Standard Industrial Classification is apparent in the case of the food manufacturing industry. In New Jersey, this industry includes the Campbell Soup Company, which obviously serves a national and even international market.

They are, presumably, susceptible to policies by State, regional or local authorities. If the State aims at maintaining a high standard of living and wants to reverse its unfavorable trend of high unemployment, efforts should be directed toward strengthening the comparative advantages and specialization in this class of industries.

The nineteen two digit industries (leaving out the tobacco industry) can be divided into five groups and ranked according to whether their attributes for growth in the State's economy are more or less favorable. These five groups are:

1. Industries not primarily oriented to local or regional markets and industries which are relatively insignificant in the Middle Atlantic Region. An industry was assumed to be relatively insignificant if its share in total U.S. output is less than the region's share in total U.S. population.
2. Industries which do not serve the local market but are traditional lines of specialization in the State and the Region. The State is faced by strong competition from neighboring states for a share of these industries. Efforts to strengthen the State's competitive position can be successful and are worth trying.
3. Industries with local market orientation which are relatively insignificant both in the region and the State (as defined above).
4. Local market industries which are relatively insignificant in the State but not in the Region.
5. Industries overrepresented in the Region and the State which serve mainly local markets. Also, industries depending on natural resources.

Classifications of New Jersey industries according to this scheme together with their 1972

shares of total U.S. value-added are presented in Figure 6.13. On a more detailed level (four digit) the classification can (and should) be made more precise. As it stands now the results of this grouping is nevertheless instructive. In order to show this we summarize the growth patterns of output and employment for the five classes of industries during the 1947-1972 period (see Figure 6.14).

In general, our five-way grouping of industries seems to make sense. Class 1 industries have done much better than those in Class 5. Aberrations within the classes can be explained by specific circumstances. Naturally, the performance of all industries was influenced chiefly by national trends and tendencies. Class 1 industries are mainly fast growing industries in both the U.S. and New Jersey. Similarly many industries in the other classes are growing slowly at both the State and national levels. Thus our classification bears a rough correspondence to a grouping of industries by rate of growth. However, there are several deviations which need to be explained; for instance, the poor growth performance of the transportation equipment and petroleum industries in Class 1. In the case of the former, the State's aircraft and especially shipbuilding industries were the ones which lost in favor of other (mostly Western) regions. The circumstances leading to these losses must be further examined. The petroleum industry's stagnation or slow development is related to the role of imported oil. Despite poor past performance, we think these industries should remain in Class 1 because they have future growth potential. Offshore oil drilling, a deep water port or other factors could reverse the fortunes of these industries. We also think that the State has not exploited all the opportunities existing in machinery and metal working industries. In particular, a more active involvement in foreign trade could spur the machine building industry.*

* Machine building and metal working industries form a genuine "industrial complex" because they are joined by input/output linkages, similar labor force requirements, and other relationships. This means that spatial proximity in the locational pattern of these industries can be an important factor in their growth and development. These industries are currently concentrated in the northern, highly urbanized counties and central cities. One strategy to spur the development of this sector might be a locational strategy which tries to develop metal working and machine building industrial "parks" in urban areas.

FIGURE 6.13
SHARE OF MIDDLE ATLANTIC STATES IN TOTAL VALUE-ADDED OF U.S.
MANUFACTURING IN 1972 (IN PERCENTAGES)

	Share in Total Value-Added (Percentages)			Classification of N. J. Industries by Five Groups				
	New Jersey	New York and Pennsylvania	Middle Atlantic Region	1	2	3	4	5
Chemicals	12.16	11.66	23.82	x				
Electrical Equipment	5.28	16.75	22.03		x			
Food	4.38	12.45	16.83			x		
Machinery, except								
Electrical	3.35	14.23	17.58	x				
Fabricated Metals	4.27	13.29	17.56	x				
Transportation Equipment	2.29	7.32	9.61	x				
Printing and Publishing	3.64	27.17	30.81				x	
Apparel	5.38	33.59	38.97					x
Stone, Clay, Glass	5.60	14.42	20.02	x				
Rubber and Plastics	5.19	10.14	15.33	x				
Primary Metals	2.46	20.53	22.99					x
Paper	4.15	12.61	16.76			x		
Instruments	4.89	39.50	44.39		x			
Textiles	3.81	13.06	16.87			x		
Miscellaneous	6.39	25.37	31.76					x
Petroleum	5.09	8.02	13.11	x				
Furniture	2.64	12.25	14.89			x		
Leather	3.82	21.22	25.04				x	
Lumber and Wood								
Products	0.76	5.41	6.17					x
Total	4.62	15.35	19.97					

NOTE: 1972 shares of population for the Middle Atlantic states were:

New Jersey—3.53, New York and Pennsylvania—14.54, and Middle Atlantic Region—18.07

SOURCE: CENSUS OF MANUFACTURES, Preliminary Reports, 1972

The situation of Class 2 industries is clear. Both electrical equipment and instruments are traditional New Jersey specializations with strong competition from surrounding states. The comparative advantages of New Jersey; for instance, its ability to contribute to technical progress in these industries, may provide a basis for a strong future performance by these industries.* In Class 3, the textile industry requires some comment. The industry's performance in the post World War II period was extremely poor. The textile industry has been a traditional New Jersey industry. It has now

fallen below a proportional share both in New Jersey and in the Middle Atlantic Region. This industry has been deserting the Northeast for many years seeking low-cost labor in the South. There is little chance for its resurgence in this region. In Class 4 the one outstanding industry is printing and publishing. Its better than expected performance in the past has been largely a result of the relocation of part of the industry from New York City. Although there is some doubt whether the relocation process can continue much longer, one can still be sanguine about the prospects for this industry in

* The question is whether we can take technical progress in *any* industry for granted. It may be necessary to establish public or semi-public agencies to spur the diffusion of technical innovations and their commercial exploitation. One model for such an agency is the Massachusetts Science and Technology Foundation. For a description of this agency, see Harrison, B. (1974), *THE ECONOMIC DEVELOPMENT OF MASSACHUSETTS*, A Report to the Massachusetts State Legislature, Joint Committee on Commerce and Labor. Also see Chapter VIII for a review of technical progress.

FIGURE 6.14
GROWTH PATTERNS OF FIVE CLASSES OF MANUFACTURING INDUSTRIES
IN NEW JERSEY, 1947-1972

Industry and Class	Value-Added In Millions of Dollars Current Prices			Employment In Thousands of Persons		
	1947	1972	Index 1972/1947	1947	1972	Index 1972/1947
Class 1						
Chemicals	745	3,939	5.29	82.5	100.5	1.22
Machinery, except Electrical	335	1,253	3.75	66.0	61.1	0.93
Fabricated Metals	210	1,148	5.46	42.0	60.2	1.43
Transportation Equipment	222	917	2.78	44.3	25.9	0.58
Stone, Clay, Glass	143	703	4.93	28.3	37.2	1.31
Rubber and Plastics	80	624	7.80	16.7	37.4	2.24
Petroleum	213	295	1.38	16.2	7.0	0.43
Total Class 1	1,948	8,879	4.56	296.0	329.3	1.11
Class 2						
Electrical Equipment	394	1,600	4.06	94.1	97.9	1.04
Instruments	81	511	6.31	17.7	22.8	1.29
Total Class 2	475	2,111	4.44	111.8	120.7	1.08
Class 3						
Food	355	1,545	4.35	47.2	54.7	1.16
Paper	155	537	3.47	21.3	32.0	1.50
Textiles	326	440	1.35	63.2	29.7	0.47
Furniture	38	162	4.28	8.0	10.8	1.35
Total Class 3	874	2,684	3.07	139.7	127.2	0.91
Class 4						
Printing and Publishing ..	109	729	6.67	20.2	40.5	2.00
Leather	51	110	2.16	10.2	9.2	0.90
Total Class 4	160	839	5.24	30.4	49.7	1.63
Class 5						
Apparel	252	712	2.82	70.0	69.4	0.99
Primary Metals	216	570	2.64	38.8	30.6	0.79
Miscellaneous	199	428	2.15	41.1	27.8	0.68
Lumber and Wood Products	24	76	3.14	5.0	5.7	1.14
Total Class 5	691	1,786	2.58	154.9	133.5	0.86
GRAND TOTAL	4,148	16,299	3.94	732.8	760.4	1.04

SOURCE: U.S. CENSUS OF MANUFACTURES, 1947 and 1972.

New Jersey. It is not strictly a "manufacturing" industry. Commercial printers are involved in providing specialized services to a variety of other industries including law firms and other non-manufacturing industries. Its significant links with the latter mean that printing and publishing is likely to continue to grow, although at a somewhat slower rate.

Some remarks are in order concerning possible refinements and extensions of our industry classification scheme. First, several other industry characteristics should be considered. Environmental pollution, wage levels, educational and skill requirements and linkages with other industries are some of the most obvious. We should realize, however, that the multiplica-

tion of industry features complicates the task of classification. While an enlarged list of industry characteristics might better reflect locational factors or the "desirability" of industries it may also obscure the notion of growth potential which is the focal point of this study. Second, granting that growth potentials remain our main concern, we can incorporate newly selected features as supplementary industry characteristics after classification according to the leading criterion has been made. Third, most of the shortcomings of our industry classification can be remedied if a growth criterion were applied to a more detailed industry grouping (three and four digit SIC). Industries will then be more homogenous and the resulting classification more convincing. Thus, the classification on the two digit SIC level should be considered a first step in this direction.

Some Conclusions

We can now briefly recapitulate the main findings of this study and draw some conclusions. We have considered a number of economic indicators which serve the purpose of highlighting some problems of the manufacturing sector in New Jersey. The analysis revealed two opposing tendencies. On the one hand, the more rapid growth of manufacturing in the South and West has caused a decline of New Jersey's (and other industrial states') role in the nation's manufacturing output and employment. However, among the old industrial states New Jersey is the only one which has continued to attract large in-migration of population. This has the effect of attracting industries which locate close to the local market and helps explain the slower decline of the manufacturing sector in New Jersey in comparison with other Eastern states. In-migration, however, may also aggravate the unemployment problem to the extent that the migrant stream includes a large proportion of poor and unskilled people.

The relatively better performance of New Jersey's manufacturing sector in comparison with other Middle Atlantic and New England

states can be partially attributed to its comparative advantages, including higher labor productivity. Comparisons of labor productivity over time imply that the comparative advantage of New Jersey manufacturing diminished during the 1960's. A similar tendency has been found in the State's declining participation in the nation's exports.

Our findings indicate that there is insufficient reinvestment of profits in New Jersey manufacturing industry, perhaps even disinvestment in some industries. Of course, this is the inevitable consequence of capital mobility in an integrated national economy where investment opportunities in other regions are more attractive. Somewhat offsetting these factors has been New Jersey's greater attraction for population among states of the Middle Atlantic Region. The findings suggest an obvious question: as population growth and in-migration decline, will New Jersey take on more of the problems and image of an "old industrial state"?

Our observations, when viewed in light of the State's poor economic performance over the last two recessions, suggest that "something happened in the 1960's" to bring New Jersey into a new phase of development which is fraught with problems. Three factors may have been important:

1. Decreased rates of population growth and in-migration;
2. The ending of the Vietnam War and its associated military procurement;
3. The initiation of accelerated depreciation allowances and tax incentives for investment by the Kennedy administration.

These certainly do not exhaust the list of plausible explanations, but they indicate that further analysis is needed to assess the impact of developments during the 1960's. If indeed New Jersey is now faced with economic problems typical of other old industrial states, there are serious and manifold implications for state development policy.

Without adequate policies, the State is apt to lose not only relatively but absolutely. Opinions differ with regard to the repercussions of an absolute decline of employment in the manufacturing sector. *We think a consensus can be built around the proposition that if the manufacturing sector declines absolutely, it will be more difficult to increase employment opportunities in the rest of the economy.* If at the same time significant immigration of population into New Jersey continues, the labor market situation might become intolerable. The political and social impact of such an outcome might be grave indeed. Thus, in order to avoid such a crisis situation a comprehensive program should be adopted.

A vigorous policy of intensive growth might at best attain a status quo, whereas a policy promoting zero growth or accepting slow growth will certainly lead to an absolute decline because the objective forces which work against the State would be enhanced by such policies.* New Jersey's manufacturing sector is on the verge of a trend of absolute decline and important features of its comparative advantage are declining.

If a comprehensive economic development policy is to be designed for the manufacturing sector, certain questions will have to be answered over the next year:

- a. How well do the equity and venture capital markets function in supplying equity capital for new investment in New Jersey?
- b. How rapidly and efficiently do technical innovations get translated into commercial applications?
- c. Do existing agencies (e.g., the Economic Development Authority, the Urban Loan

Authority) provide cost-effective ways of promoting economic development?

- d. How do various types of firms and industries respond to incentives or subsidies?
- e. What are the needs for technical or managerial assistance among various types of firms? In general, what services are complementary to manufacturing and is their supply sufficient?
- f. How mobile is New Jersey's labor force, both geographically and occupationally?

Answers to these questions will indicate what additional elements are needed in an overall strategy; for instance, (in order of the above) :

- a. A vehicle for providing equity finance and participation in new business investment (in addition to the current program of the Economic Development Authority, which provides debt finance to establish businesses).
- b. State assistance to further the diffusion and commercial exploitation of innovations;
- c. Modifications in existing programs;
- d. Incentives or subsidies—what type if any.
- e. "Customized" technical assistance for New Jersey firms;
- f. Relocation allowances, improvements in vocational education, adult education, on-the-job training, etc.

Failure to follow through on the suggestions and implications of this chapter could mean absolute decline and chronic problems in New Jersey's manufacturing sector.

* The Economic Policy Council currently has under preparation an analysis of the possible ramifications of a "zero-growth" policy in New Jersey.

VII

A CLOSER LOOK AT UNEMPLOYMENT AND JOB GROWTH: NEW JERSEY AND THE NATION COMPARED

In New Jersey as in the nation, the unemployment problem continues to be the focal point of debates on economic policy. The focus of policy discussions has, in recent months, been the higher unemployment rate in New Jersey. The reasons for this have been variously ascribed to ill-conceived efforts of environmentalists, to the high burden of local tax structures which motivate an industrial exodus, to changes in the demographic make-up of the labor force which have led to higher participation rates for unemployment-prone sections of the population, or to the decline of sectors in the economy which have traditionally been important sources of jobs in the State, such as manufacturing.

This chapter seeks to throw light on some of these issues. Its primary purpose is to provide a more adequate information base than currently exists, and one on which a better informed discussion might proceed. We have relied heavily on the 1970 *Census of Population*, and on the *Public Use Samples of Basic Records*.**

Our analysis is presented in four main parts: Section I presents a broad overview of the unemployment panorama as it appeared in 1970. In

this section we also explore certain issues in the on-going debate over New Jersey's unemployment rate vis-a-vis the U.S. rate. Section II presents a regional mix-and-share analysis of employment growth in the State in the period 1959-1974, seeking here to isolate the influence of labor force distribution and employment growth among broad industrial sectors. The following section adapts the mix-and-share approach to analyze unemployment data for 1970 so that the number of unemployed in each of the broad industry groups is broken into components reflecting national, industry mix and State factors. Finally, in Section IV, we present the results of a cross-sectional statistical analysis of New Jersey's industries in which sectoral deviations from the U.S. sectoral rates of unemployment are related to selected characteristics of the State's labor force. Among these explanatory characteristics are the sex, race and occupational structure of industries' labor force.

An Overview†

The 1970 Census data shows an unemployment rate for the civilian labor force in New

* Prepared by Romir Chatterjee, Department of Economics, Rider College with the assistance of Mr. James C. Hely.

** We are aware of certain criticisms of the Census data; in particular, its alleged undercount of certain groups of the population. Nonetheless, it remains the only adequate source of detailed information on unemployment at the State level. For a description of data sources see the appendix to this chapter.

† The data for this section draws on the *Public Use Sample* as well as the *Census Detailed Characteristics of the Population*.

Jersey of 3.8%. The comparable rate for the United States as a whole was 4.4%. Limiting one's attention to the experienced labor force, which includes those working or actively looking for work at the time of the Census and who had worked at any time previously, the rate for New Jersey was 3.6%. The analogous U.S. rate was 4.1%. A further refinement of the unemployment rate is possible if one excludes from the labor force those who had not worked since 1959. Under such a definition of the labor force, New Jersey's unemployment rate was 3.52% and the comparable U.S. figure was 3.98%. We shall use this latter figure for the purposes of the subsequent mix-and-share analysis since industry attachment is not provided for those who had not worked since 1959.

Confining ourselves to the experienced labor force, comparative rates of unemployment for broad industry groups in New Jersey and the U.S. are depicted in Figure 7.1. The significant feature of the data shown is that, with three exceptions, U.S. rates in fifteen industrial categories were higher than the New Jersey rates. The notable exceptions were: the Non-durable Goods Manufacturing Subgroup, with a New Jersey rate of 4.9% compared to a U.S. rate of 4.6%; the Agriculture/Forestry/Fishing sector, where the New Jersey rate was 4.4% as compared with the U.S. rate of 3.7%; and Entertainment/Recreational services where the New Jersey rate of unemployment was 8.7% as opposed to a U.S. rate of 8.4%.

Turning our attention to the twelve remaining sectors in which U.S. rates of unemployment were higher than the New Jersey rates, we find that the differential was widest for the Construction industry. In this sector the U.S. rate was 8.0% while the New Jersey rate was a comparatively low 5.3%.* In most cases the differential was less than 1%, the exception being the relatively small, miscellaneous, Not Specified Manufacturing category with a 4.7% unemployment

rate in the State as compared with a U.S. rate of 6.6%.**

Another useful overview of differences in unemployment structure between industry groups in the State and nation is provided by Figure 7.2. Here we have computed ratios for each industry showing its share of total unemployment relative to its share of the total labor force. The ratio may therefore be interpreted as an index of unemployment. It shows the percentage of total unemployment in a sector per one percent of the experienced labor force in that sector. A value greater than one means that a given sector's representation among the unemployed population outweighs its representation in the labor force as a whole. Thus, the higher the index for a given sector the worse is its relative position compared with other sectors. Conversely, an index of less than one may be taken to mean that a sector's unemployment share relative to its labor force share is small, and the lower the index relative to other sectors, the better its position.

Such an index is helpful in visualizing the comparative unemployment performance of New Jersey relative to the nation. Sectors in Figure 7.2 with locations in the northeast segment of the graph represent the large sectors, while those close to the origin are the smaller employing sectors. A sector's position relative to the forty-five degree line indicates the relative size of the unemployment index. Sectors *above* the line are those with a share of unemployment *higher* than their share of the labor force, while those with locations below the line bear a disproportionately lower burden of the unemployed compared with their share of the labor force. In this sense sectors above the line are worse off than those sectors below the line.

A quick perusal of Figure 7.2 reveals the following salient points:

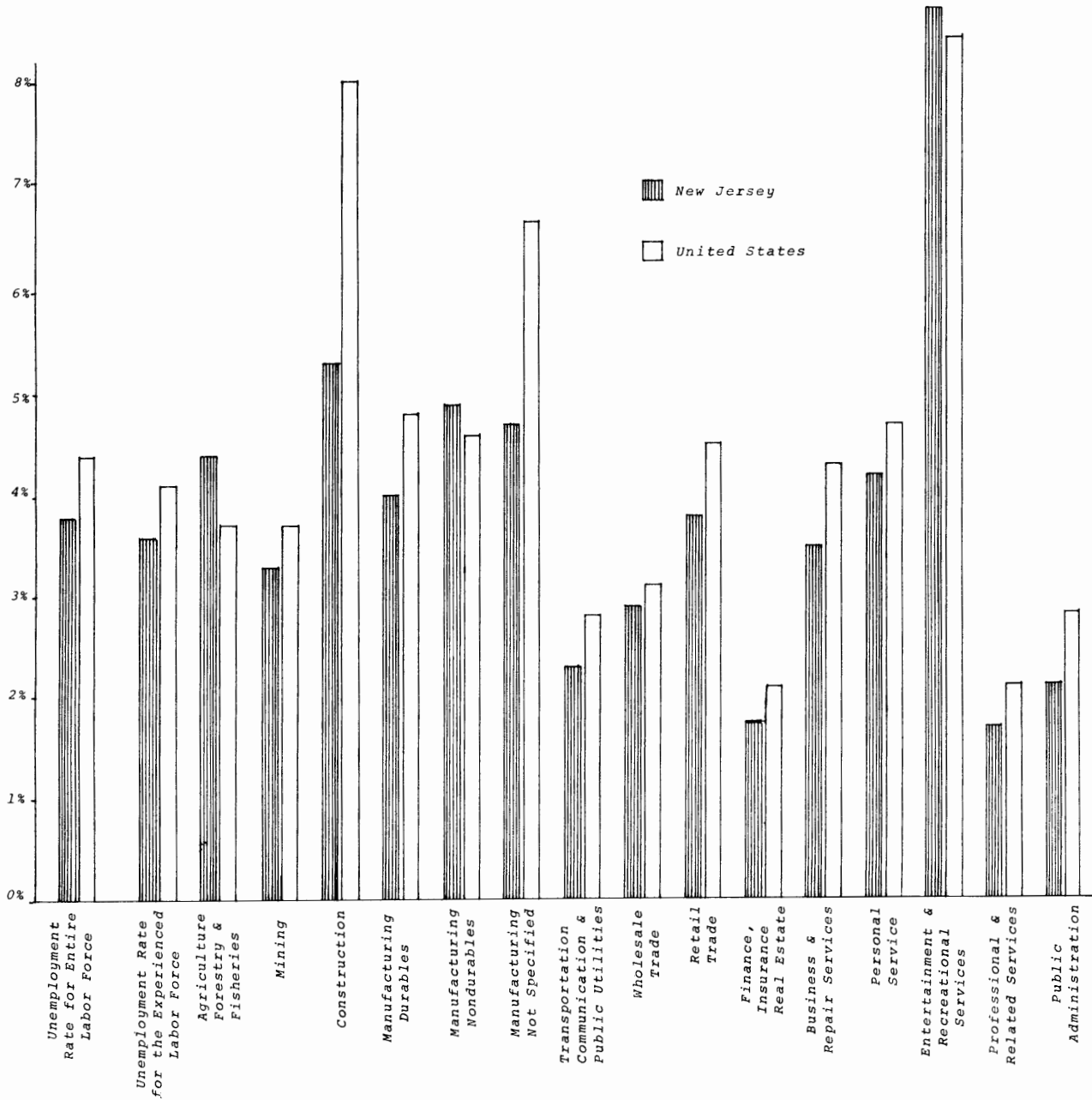
(1) The Manufacturing sector in New Jersey, in common with its U.S. counterpart, claimed

* Note that these comparisons pertain to 1970, before the dramatic rise in unemployment in the construction industry in N.J.

** Standard errors for the various rates are estimated in the statistical appendix to this chapter.

FIGURE 7.1

TOTAL UNEMPLOYMENT RATES IN NEW JERSEY AND THE UNITED STATES FOR
THE CIVILIAN LABOR FORCE AND FOR THE EXPERIENCED LABOR FORCE
BY INDUSTRY GROUP



SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS: NEW JERSEY and DETAILED CHARACTERISTICS: UNITED STATES. (Based on a twenty percent sample of the population taken in April, 1970.)

the lion's share of the unemployed population in 1970—40.5% for New Jersey and 30.4% for the U.S. Its share of the labor force, too, was large: 32.2% for New Jersey, and 26.1% for the U.S. The sector's unemployment index is considerably worse for New Jersey than for the U.S.—1.26 as opposed to 1.17 for the U.S.—which means that the sector's share of the unemployed outweighed its share of the labor force more so in New Jersey than in the U.S. In Figure 7.2 this poor performance appears as due largely to the position of the Nondurable Goods subgroup. The Nondurable Goods sub-sector in the State claimed both a larger share of the State's unemployed population and a larger share of the experienced labor force, than did the Nondurable Goods sector in the U.S. as a whole. The index for the sector was higher in New Jersey (1.39) than in the nation (1.13). By way of contrast, the Durable Goods industries in New Jersey were considerably closer to the U.S. performance in these industries (a New Jersey index of 1.13, and a U.S. index of 1.19).

(2) Next in order of importance as an employing sector in 1970 was the Service sector. The New Jersey sector, viewed as a whole, was clearly similar to the U.S.—a sectoral index of .73 for New Jersey, compared with .75 for the U.S. Since the index is less than unity in both cases, the sector's representation among the unemployed is less than its representation in the labor force as a whole. To this extent, then, the Service industries are relatively better off. However, a disaggregation of the index into four subgroups reveals some significant differences. New Jersey fared better than the U.S. especially in the Business and Repair Services and Professional Services categories. In the Entertainment/Recreational Services subgroup, however, the New Jersey performance was significantly worse.*

(3) The New Jersey index for the Trade sector is closely similar to that for the U.S. with values of 1.01 and 1.03, respectively. This

similarity emerges also in its wholesale and retail components. The retail subgroup in both New Jersey and the U.S. had an index only slightly greater than one: 1.07 for New Jersey and 1.10 for the U.S. The wholesale subgroup, on the other hand, had an index of slightly less than one: .81 for New Jersey and .76 for the U.S., indicating that the subgroup was slightly better off in both New Jersey and the U.S.

(4) Sizeable sectors with an index of less than one in both New Jersey and the U.S. were Transportation and Public Administration. In the Transportation sector the New Jersey and U.S. were closely similar—an index of .65 for New Jersey and .69 for the U.S. In the case of Public Administration, the disparity was also small: .58 for New Jersey and .68 for the U.S. Another sector in a roughly similar position was the Finance/Real Estate/Insurance sector with indexes of .47 and .51 for New Jersey and the U.S., respectively.

(5) The single remaining sector of significant size is the Construction sector. Here, the index stood at 1.5 for New Jersey vs. 1.95 for the U.S. Though in both cases this indicates that the industry's share of the unemployed population was significantly higher than its share of the labor force, the New Jersey sector fared somewhat better than did the U.S. sector.

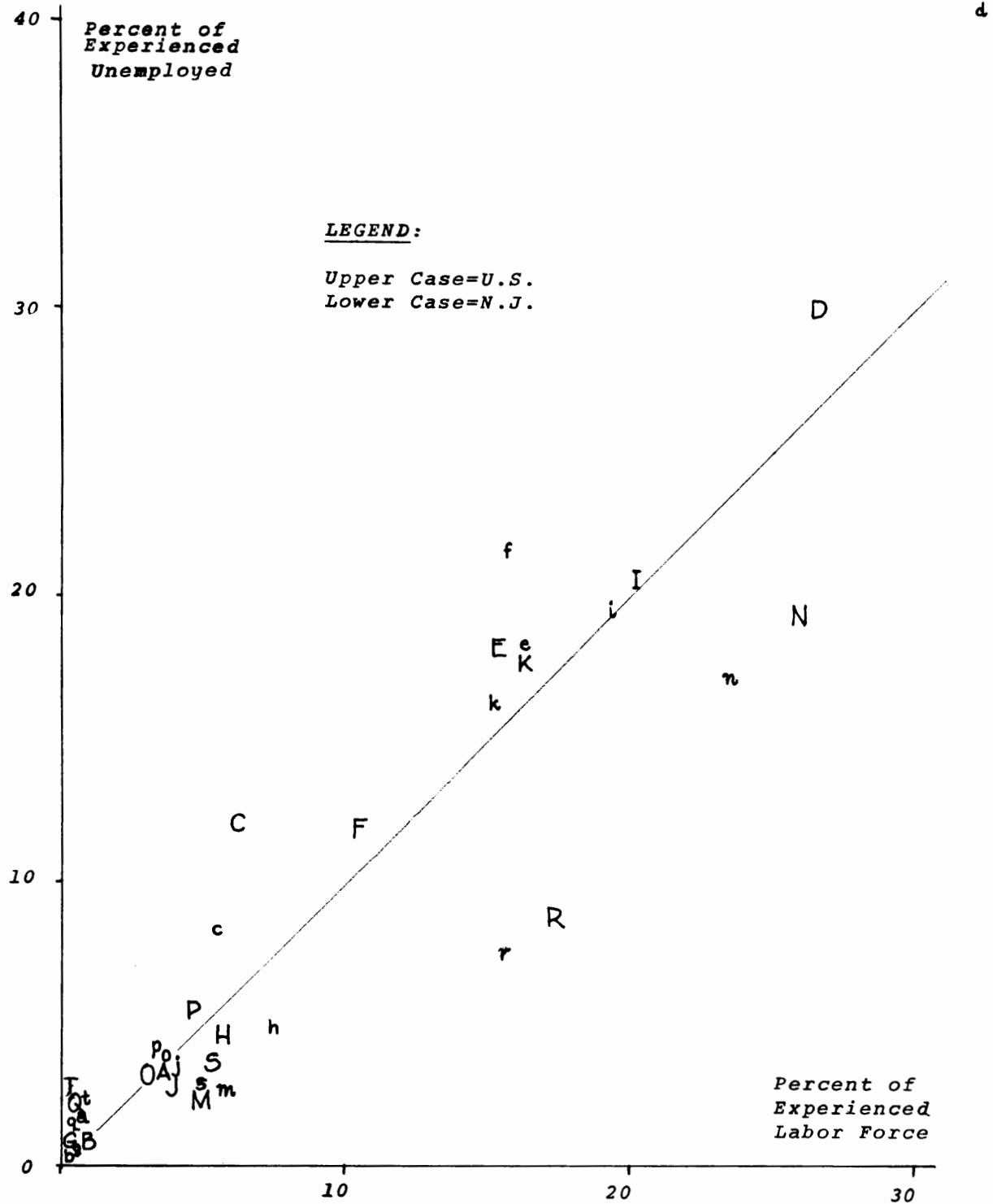
This pattern at the sectoral level of industry classification is confirmed when New Jersey's industries are examined at the more detailed level afforded by the Public Use Sample. U.S. unemployment rates across ninety-seven industry groups were, on the average, .97% higher than New Jersey rates (with a standard deviation of ± 0.03). Figure 7A.2 shows those industries with unemployment rates significantly higher than the U.S. rates.**

Turning, now to unemployment as it affects segments of the labor force we find that some significant differences exist between New Jersey and the United States. For women, it appears

* This is probably due to seasonal factors. These data refer to April 1970. Unemployment in New Jersey's Recreation sector is still high in the spring before the onset of the summer tourist season and shore activities.

** This figure (and other figures with an 'A' in their designation) may be found in the appendix to this chapter.

FIGURE 7.2
UNEMPLOYMENT COMPOSITION IN RELATION
TO LABOR FORCE COMPOSITION, BY INDUSTRY



Note: See Appendix Figure 7A.1 for the industry labels corresponding to the letters A-T or a-t.

SOURCE: The statistics from which this graph is derived are shown in the Appendix to this chapter as Figure 7A.1.

that unemployment rates in eleven of fifteen industrial categories nationally were higher than for New Jersey. The differences, however, which were generally below 1% (See Figure 7.3). Given the relatively higher rate of unemployment in the Nondurable Goods Manufacturing sector, it is not surprising to find that it was in this industrial group that the rate of unemployment for women was higher in New Jersey than in the nation as a whole.

For blacks in the labor force, N.J. rates of unemployment were lower than comparable U.S. rates in eight of fifteen industry groups. The widest differential occurred in the Business and Repair Services industry where the New Jersey rate was almost 3% lower than the U.S. rate (see Figure 7.4).^{*} There were two sectors in which the New Jersey rate for blacks exceeded the U.S. rates. In Nondurable Goods Manufacturing, once again, paralleling the experience of other groups in this sector, the rate in New Jersey was 8.5% as opposed to a U.S. rate for blacks in the sector of 7.5%. The other sector in which this group experienced a higher rate of unemployment was the Construction sector. Here, the New Jersey rate was 10.8% as opposed to a U.S. rate of 9.8%. This is especially noteworthy in the context of the fact that for the New Jersey sector as a whole, the unemployment rate was 2.7% *lower* than the national unemployment rate in the construction industry.^{**}

The relative position of women and blacks in the New Jersey labor force with regard to unemployment follows a well established national phenomenon. Predictably, the unemployment rates for each of these groups was higher than the overall rate in the State. In addition, their position closely paralleled the U.S. experience: women faced in New Jersey an unemployment rate of 4.7%, as did women in the U.S. as a whole; for New Jersey's blacks, the rate of 6.2% was close to the U.S. rate of 6.3%.

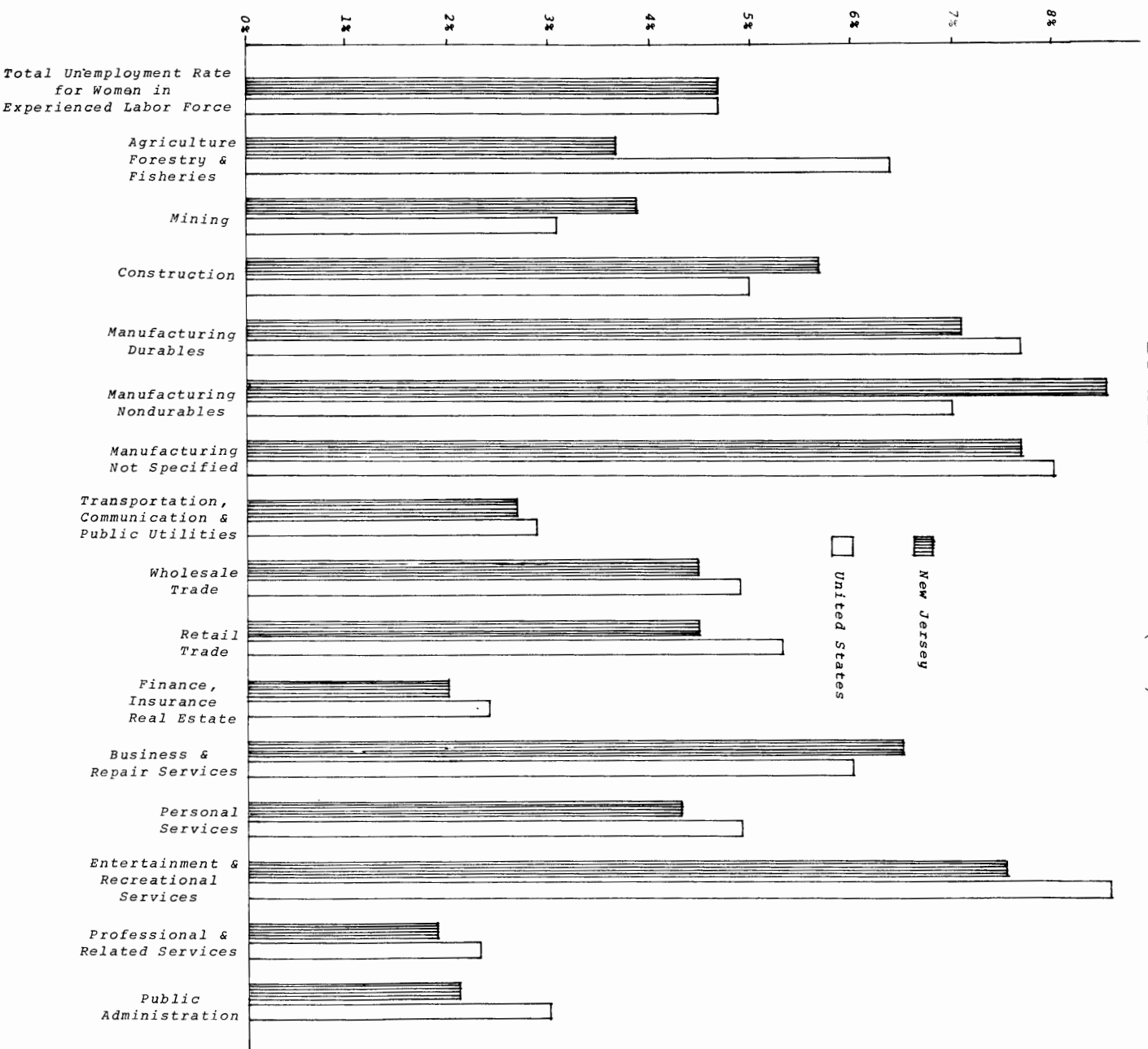
In another sense, however, blacks and women in New Jersey did not share the same labor market experience as their U.S. counterparts. Using the unemployment index approach, we find that their relative share of total unemployment outweighed their share of the labor force to a greater extent than in the nation as a whole. So, for example, women in New Jersey made up 49.4% of the unemployed, as compared to a share of 37.9% of the labor force—an index of 1.3. In the U.S. they formed 43.6% of the unemployed and 38% of the labor force—an index of 1.14. Using the same approach to measure the relative position of blacks, their share of the unemployed in New Jersey was 16.6% compared with a share of 9.7% of the labor force—an index of 1.7. In the nation as a whole they made up 15.1% of the unemployed and 9.8% of the labor force—an index of 1.54. The higher New Jersey indices in both cases signify that women and blacks bore considerably more of the burden of unemployment in New Jersey than their positions in the labor force would warrant.

As a final step in completing this overview of New Jersey's unemployment in 1970 we turn to unemployment rate differences among occupational categories. These are illustrated in Figure 7.5 for the case of all labor force categories, and in Appendix 7A.3 and 7A.4 Figures for women and blacks, respectively. These graphs indicate that, of the twelve major occupational categories, in three the New Jersey rates exceeded the U.S. rates, with the differential being in each case less than .5%. Operatives faced an unemployment rate of 7.0% in New Jersey compared with a U.S. rate of 6.6%; managers (non-farm) had an unemployment rate of 1.5% in New Jersey compared with a U.S. rate of 1.4% and farm-managers suffered a rate of 1.2% in the State as compared with .7% in the nation.

^{*} In our study of business and related services (6th ANNUAL REPORT) we observed the high rate of growth of this industry in New Jersey. It may be that the entry of minorities into employment, and the stability of that employment, are more probable in a relatively new, fast growing industry.

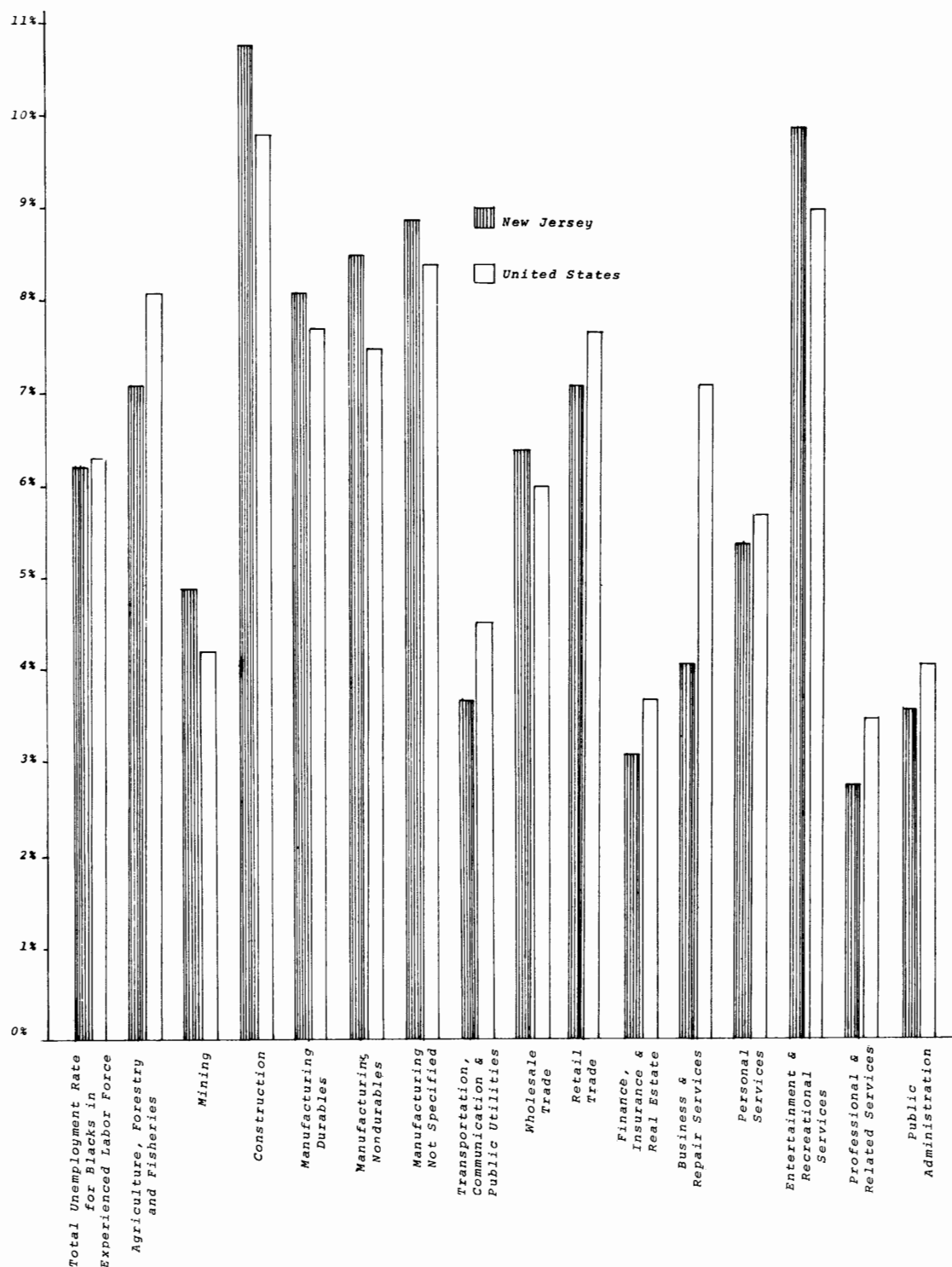
^{**} Note that we are still discussing 1970 Census data—*before* the recent steep rise of unemployment among construction workers.

FIGURE 7.3
UNEMPLOYMENT RATES FOR WOMEN IN NEW JERSEY AND THE UNITED STATES
BY INDUSTRY GROUP (1970)



SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS: NEW JERSEY and DETAILED CHARACTERISTICS: UNITED STATES. (Based on a twenty percent sample of the population taken in April, 1970.)

FIGURE 7.4
UNEMPLOYMENT RATES FOR BLACKS IN NEW JERSEY AND THE UNITED STATES
BY INDUSTRY GROUP (1970)



SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS: NEW JERSEY and DETAILED CHARACTERISTICS: UNITED STATES. (Based on a twenty percent sample of the population taken in April, 1970.)

Occupational categories in which the U.S. unemployment rates were well above the New Jersey rates were transport operatives, (N.J. 4.3%; U.S. 5.3%), laborers (N.J. 6.9%; U.S. 8.5%), farm laborers (N.J. 4.3%; U.S. 7.2%), and private household workers (N.J. 3.3%; U.S. 4.8%).

Our overview of unemployment in New Jersey as it presented itself in the 1970 Census of Population reveals rather unambiguously that from a comparative standpoint New Jersey fared better than the rest of the nation as of 1970. We have pointed to the fact that the New Jersey rate was lower in most labor force categories. We have qualified this last feature of the unemployment landscape by pointing to the disproportionately larger share that women and blacks occupy in the unemployed population, compared with their share of the labor force.

The Unemployment Rate Controversy

The summary view presented above clashes with a position that has, within the State, drawn increasing adherents—viz., that in the period roughly following the end of 1969 the rate of unemployment in New Jersey has been significantly higher than the national unemployment rate. Such a position, in fact, was articulated in the pages of this *Report* in 1973.*

Comparisons of New Jersey and the U.S. based on Census data conflict with those produced by the Department of Labor and Industry simply because different sources of data are involved. Such comparisons require, at the very least, consistent methods of measurement at the State and national levels. Unfortunately, earlier estimates that show New Jersey's unemployment rate to be considerably above the national level do not meet this criterion, since the method for computing the State unemployment rate in these earlier estimates is not comparable with

that used to estimate U.S. unemployment rates. The U.S. rate of unemployment as computed by the Bureau of Labor Statistics is based on the monthly Current Population Survey (CPS), a nationwide survey of a sample of households conducted by the U.S. Bureau of the Census. Estimates of New Jersey unemployment up to January, 1974 used, by way of contrast, the 'building block' technique for estimation. This technique (and the modified traditional method used since) uses the number of unemployment insurance claimants as its major source of information for estimating the State's unemployment rate in the labor force as a whole.

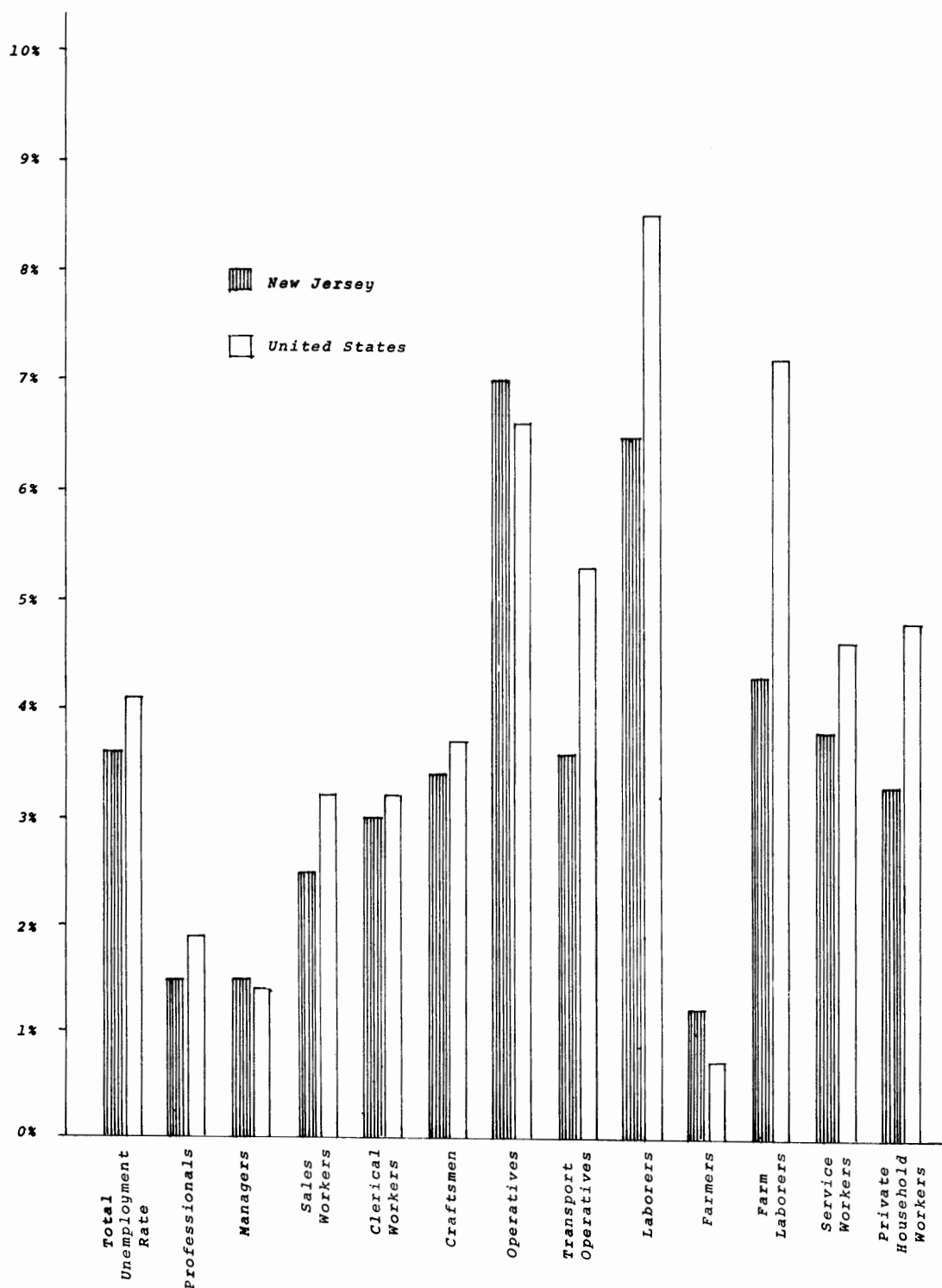
This method makes comparisons between states and the nation inadmissible. Comparisons even among states are tenuous, due in large measure to varying coverage and eligibility under individual State unemployment insurance programs. These difficulties have led the Bureau of Labor Statistics to mandate a new system for the measurement of State and local unemployment, as of January 1974. The new approach requires that states in which the CPS sample is deemed large enough benchmark their unemployment figures according to the CPS Survey results.

In the current debate about New Jersey's relative unemployment level, the New Jersey Department of Labor and Industry maintains that the CPS method is faulty for two reasons. On the one hand, it is claimed that the sample size in New Jersey is too small to yield accurate results. On the other hand, it is claimed that a systematic undercount of the numbers of New Jersey's unemployed results from an undercount in the 1970 Census upon which the current CPS sample bases itself.

It is not our purpose here to enter into the debate as participants. We do, however, suggest that inherent difficulties in the data make past contentions about New Jersey's alleged higher

* See "Unemployment in New Jersey: The Role of the Manufacturing Sector", 6th ANNUAL REPORT, Economic Policy Council and Office of Economic Policy, Department of the Treasury, State of New Jersey, April, 1973.

FIGURE 7.5
TOTAL UNEMPLOYMENT RATES IN NEW JERSEY AND THE UNITED STATES
FOR THOSE IN THE EXPERIENCED LABOR FORCE, BY OCCUPATION



SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS: NEW JERSEY and DETAILED CHARACTERISTICS: UNITED STATES. (Based on a twenty percent sample of the population taken in April, 1970.)

than average unemployment rates questionable and inconclusive.*

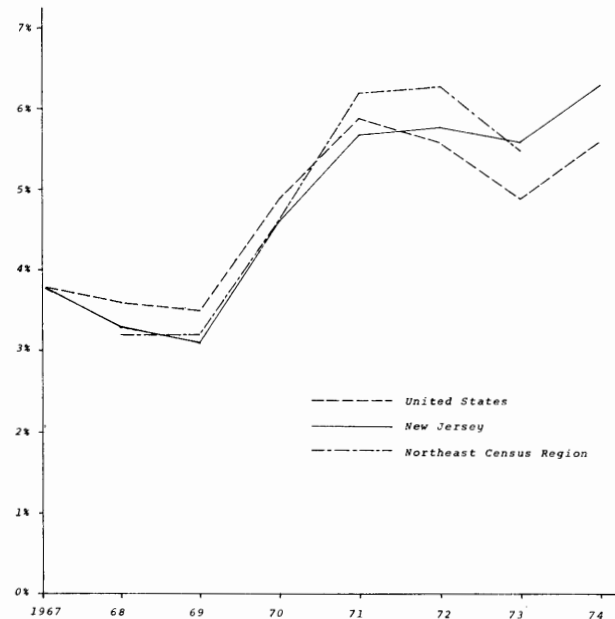
Consistent comparisons between the U.S. unemployment rate and those for certain areas and states are possible if one relies on the CPS data alone, published since 1967. From this source we present data below, in Figures 7.6 and 7.7, showing the comparative unemployment rates for New Jersey, the Northeastern States, and the United States. Contrast these with the New Jersey rates as estimated by the State (using its building block approach based on the insured unemployed). The latter estimates are consistently higher than the rates based on the CPS Survey. The CPS based figures indicate that the New Jersey rate inched above the U.S. rate only in the post-1971 period, reaching a differential of approximately .7% in 1974. Of the twenty-seven states for which CPS data are available, New Jersey ranked eighth in 1974, with New York, Louisiana, Washington, Massachusetts, California, Oregon and Michigan (in ascending order) showing higher unemployment rates.

Our overview of the 1970 Census data which shows a generally lower rate of unemployment in New Jersey than in the U.S. as a whole is consistent with the data in Figure 7.6 which covers a longer time-span and shows that in the pre-1972 period New Jersey enjoyed a generally lower unemployment rate than did the rest of the nation.** Needless to say, it makes a considerable difference for diagnosis of the State's

economic problems if high unemployment in New Jersey is chronic or of more recent vintage.

Views that stress the special character of New Jersey's unemployment problem base themselves on the well-known decline of employment in the

FIGURE 7.6
UNEMPLOYMENT RATES IN THE
UNITED STATES AND NEW JERSEY
1967-74



Note: Annual averages are based on the Current Population Survey

SOURCE: MANPOWER REPORT OF THE PRESIDENT 1974 and 1975 and published data from the Bureau of Labor Statistics.

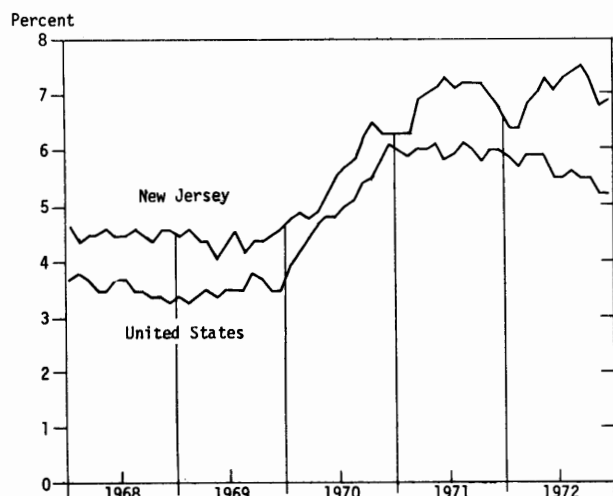
* This is based on reasoning similar, in essence, to the Department of Labor and Industry, whose Director of Research and Planning, Dr. Arthur O'Neal has pointed out: "While the estimating methodology is designed to yield statistics roughly comparable to those published for the nation as a whole, the data have limitations for geographic comparisons." NEW JERSEY ECONOMIC INDICATORS, September, 1974.

** While for reasons pointed to above, we cannot reconcile the variations in unemployment rate estimates due to differences in estimating procedure, we do believe that of the two methods, for purposes of comparison on an annual basis, the CPS data are more reliable.

Apart from the matter of consistency the building block technique runs afoul of other difficulties. Without detailing the technicalities, a more complete discussion of which is provided in several sources in the bibliography, we mention some of these problems below.

For one, the insured unemployed have typically represented about 40 percent of the unemployed. Projection of unemployment rates based on this group is difficult for the reason that the uncovered group may well possess differing characteristics: their distribution among industries may be quite different thus leading to differing unemployment rates. So, for instance, rate estimates based on New Jersey's insured group emphasize the experience of the Manufacturing sector in which many of the State's insured unemployed work. The overall estimate of unemployment may then be reflective of this particular group of workers. To generalize about the unemployment experience of workers in, say, the Trade or Service categories, or in Agriculture may be a statistically difficult task. Since the industrial composition of the labor force varies among and between states and the nation, the New Jersey building block estimate is bound to be misleading. The same difficulty might apply if the proportion of new entrants into the labor force varies among regions, states and the country as a whole. Since such workers are not covered by unemployment insurance, rate estimates based on the insured group will tend to be biased depending upon the degree of such variations.

FIGURE 7.7
TOTAL UNEMPLOYMENT RATES
NEW JERSEY AND UNITED STATES



Note: Rates have been seasonally adjusted. The New Jersey rates are derived from the "building block" estimation technique.

SOURCE: Economic Policy Council and Office of Economic Policy, 6th ANNUAL REPORT (1973), p. 82. (Prepared by Dr. Arthur O'Neal, Director of Planning and Research, Department of Labor and Industry).

State's Manufacturing sector.* Are there other trends in industrial employment that might lend support to the existence of a chronic unemployment problem in New Jersey? To what extent has New Jersey successfully shared in the nation's growth of employment, and to what degree have the State's special characteristics hindered such growth? The following section devotes itself to providing tentative answers to these questions, as well as to a more disaggregated view of New Jersey's unemployment in 1970.

* See for example, "Unemployment in New Jersey—The Role of the Manufacturing Sector", *op. cit.*

** Of course, this ignores the supply side of the labor market which no doubt influences the unemployment level: the growth of the regional labor force due to population change, or increased participation rates for groups within the labor force, or even changes in demographic composition such as the age-distribution of the population.

† Absolute declines have occurred recently but it is too soon to say whether there is a "trend" of absolute decline. On the other hand, relative decline has been apparent for a long time (see Chapter VI).

‡ 1974 employment levels are based on Third Quarter figures.

A Mix-and-Share Approach to Employment and Unemployment

(i) *Employment Growth in New Jersey, 1960-61 to 1973-74:*

It is commonly supposed that a causal relationship exists between growth in employment and the level of unemployment. At an intuitive level this seems plausible since growth may be viewed as an index of labor demand.** But frequently the analysis is extended to mean that declines in particular sectors can explain rising unemployment rates. More specific claims attribute relatively high unemployment in New Jersey to the declining regional share of the Manufacturing sector and its components.

It is true that manufacturing employment has declined both in absolute and relative terms in New Jersey.† On the other hand, over the period 1961 to 1974, overall employment growth in the State was positive.‡ Other sectors more than made up the loss of jobs in Manufacturing. In spite of this, however, employment growth in the State lagged behind the nation. In the fourteen year period 1960-1973, total employment in the U.S. grew at an approximate rate of 2.8% annually, where as New Jersey's growth was at the rate of 2.6%. This, of course, implies that the State's share of total employment in the nation has declined, which, if we ignore considerations affecting labor supply, may be considered adverse from the standpoint of unemployment.

Since it is misleading to focus single-mindedly upon the Manufacturing sector's decline in isola-

tion from the development of other sectors, we trace the behavior, in what follows, of employment growth in the major sectors of the New Jersey economy, in a fourteen year period. We find that New Jersey's employment base has, indeed, been adversely affected by an overall decline in its share of job growth, but there have been considerable fluctuations in this pattern, both for the economy as a whole and for individual sectors. We also find that the variations in this share and variations among sectors are strongly influenced by national industrial growth trends.

For policy purposes these trends have some important implications. There is reason to qualify the view that specific characteristics of the regional economy induce an exodus of jobs, especially jobs from the Manufacturing sector. The shrinking State share of national job growth is itself a function of national growth. The trends also suggest, by implication, that the value of State policies aimed at locational inducements to industry may be more limited in their impact than is commonly supposed. Furthermore, the *type* of industry the State attempts to attract is quite as important as the number of jobs created.

The Mix and Share Method

The logic of the mix and share approach to employment growth is that such growth (designated "R") may be decomposed into three components, or "effects". The national growth effect ("N"), indicates how much total employ-

ment in the State would have grown if it had grown at the same rate as total employment in the nation. The second component of job growth in New Jersey may be attributed to the State's particular mix of industry. The mix effect takes account of the fact that in any year certain industries in the nation grow faster, others more slowly, than *overall* employment growth in the nation. New Jersey's employment will grow faster than the nation's *if* a higher proportion of its labor force is employed in these faster-than-average-growth industries. Lastly, the shares effect is the change in jobs due to differences between the State's growth rate and the national growth rate for each specific industry. It is also a residual component; i.e., a change in jobs that is not accounted for by either of the two previous components.* New Jersey's share of total employment in the nation will rise in any year if the combined result of the mix and share effects is positive.

Employment Growth Trends in New Jersey

Using the approach outlined above, job growth in New Jersey is dissected in Figure 7.8 and Figure 7A.5. For all industries as a group the largest component of net employment growth from 1961 to 1974 (760.6 thousand jobs) was the national growth effect "N", which amounted to 849.2 thousand jobs. But employment grew less rapidly in New Jersey than in the nation as a whole. This was due to the large negative influence of the "shares effect" which lowered the increase of employment in the State

* Algebraically, the components of total employment growth are defined as follows:

$$R_i = PCR_t^{US} E_i^{NJ} + (PCR_i^{US} - PCR_t^{US}) E_i^{NJ} + (PCR_i^{NJ} - PCR_i^{US}) E_i^{NJ}$$

$$R = \sum_i R_i$$

The terms used in these expressions have the following meaning:

R_i = Change in the level of employment in industry (i) in New Jersey. A positive R_i means growth; a negative R_i means decline.

R = Change in the level of total employment in New Jersey. As indicated this is equal to the sum ($\sum$) of changes over all industries (i).

PCR = Percentage change or percent rate of growth for either the United States (US) or New Jersey (NJ) and for either industry employment (i) or total employment (t).

E_i^{NJ} = Base year employment in an industry (i) in New Jersey (NJ).

by 101 thousand jobs. The latter was slightly counteracted by the positive impact of industry mix, which accounted for 12.5 thousand of the additional jobs created over the fourteen year period. The close resemblance in State and national employment trends (Figure 7.8) reflects the large "N" component.

It is also clear from Figure 7.8 that the gap between New Jersey's employment growth and that of the nation fluctuated considerably in the period. These variations are explained by the changing impact of the mix (M) and share (S) effects. Of the two, the shares effect stands out rather prominently, with "M" exerting a relatively small influence (the exceptions being the years 1969-70 and 1970-71). In the years when State employment growth was significantly lower than the national level, as in 1963-64, 1965-66 and in 1971-72, a large negative shares effect was registered.* Conversely, in the years when "S" was positive, the State grew more rapidly than the nation. Thus the *pattern* of fluctuations in the shares effect may be important to an understanding of unemployment. What can be said about variations in "S"?

Most obvious is its overwhelmingly negative role over the years. Of employment changes in fourteen years, in ten we find that the State's employment growth was less than in the nation. In each case the gap is explained by its losing share. But there is also considerable variety in both the direction and intensity of the shares component. This is especially marked in the period after 1968 when the shares effect was positive in two years, negative in three and negligible in one.

At first glance this variability suggests a lack of any clear trend in State job losses. But a closer examination reveals a significant inter-relationship between the State's loss of share and

national employment growth. Changes in "S" follow changes in "N" with a one year lag. The State's job growth due to the shares effect *recovers in years following an upswing in national employment, and suffers a setback in years following slowdowns in national employment expansion.*** This is brought out in Figures 7.9 and 7.10. Figure 7.9 isolates the "N" and "S" effects of Figure 7.8. The shaded portions of the two trends reveal an improvement in the State's share of jobs in most years that follow upswings in national employment.

In Figure 7.10 this similarity is brought into sharper focus. Here we trace *changes* in the levels of "N" and "S" from year to year.† The similarity in movements of "N" and "S" become more obvious. We note, however, that changes in "S" do not exactly parallel changes in "N". In some years the changes in "S" may be more rapid than changes in "N", and in others less rapid. The similarity in the movement of the two effects is sufficiently strong for us to hypothesize that the rate at which New Jersey's share of job growth changes is itself a function of national employment growth.

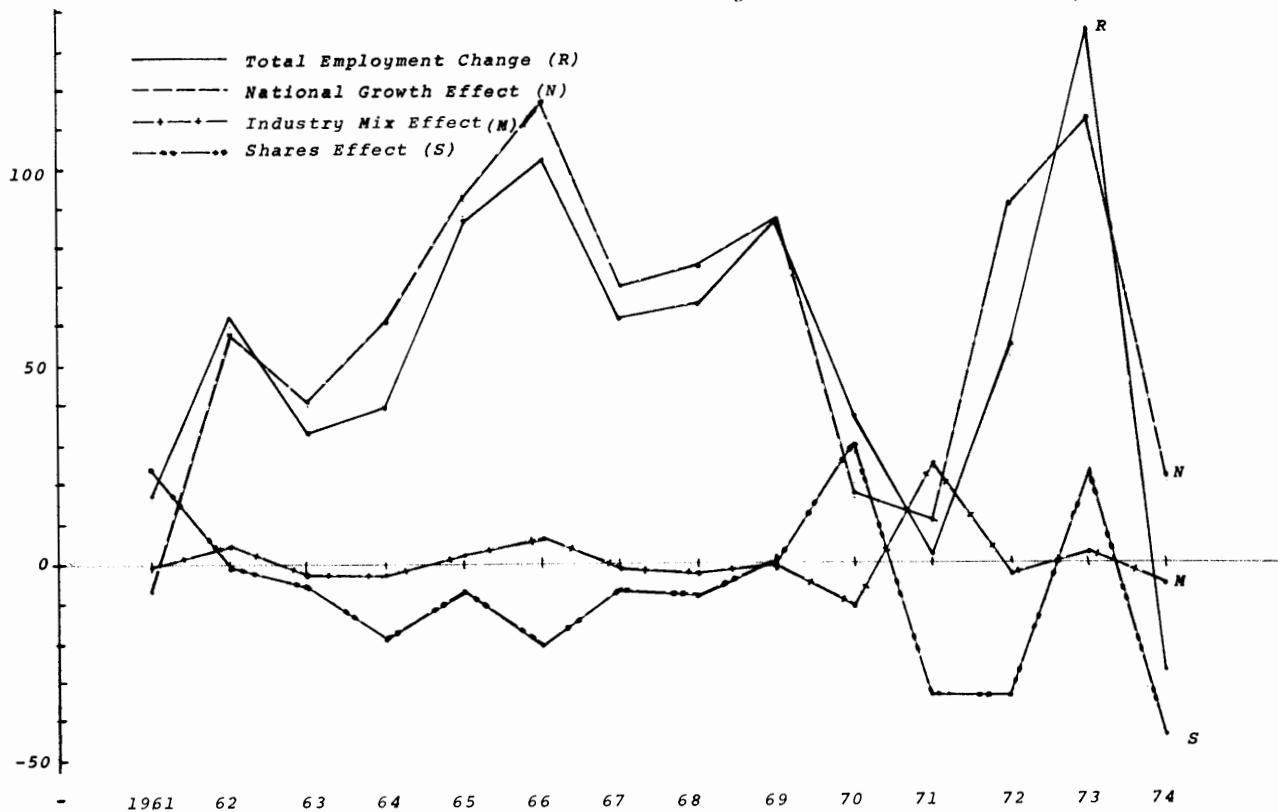
In examining various industry groupings, too, the lagged changes in "S" appear quite distinctly. But, as might be expected, the "strength" of the relationship varies from sector to sector (See Figures 7A.6, 7A.7, and 7A.8). So, for example, the relationship seems weaker in the Durable Goods subgroup of the Manufacturing sector than in the Nondurables subgroup. In the case of Durables, the lag appears in seven periods, four of these occurring consecutively in the period after 1966-67. In Nondurables, on the other hand, the lag appears in eight periods, five of them in the period following 1967. The latter pattern is also apparent in the Service sector. In Trade, while the lag appears in eight

* In other words, many N.J. industries were growing significantly slower than their national counterparts.

** This does not necessarily mean that the lagged effects tend to be offsetting over a business cycle; i.e., that jobs due to an improvement in share following an upswing make up for job losses due to a diminishing share following a downswing. The overall negative balance for the shares effect indicates that, since 1961, job losses due to New Jersey's slippage in shares of employment growth during downswings have not been made up during upswings. In the case of manufacturing, where the negative shares component is very large, this has meant an absolute loss of jobs over all but one of the business cycles since 1948.

† Since the data covers fourteen years of employment levels, Figure 7.10 and Figure 7A.6 trace thirteen changes in the component effects. The lagged relationship of "S" vis a vis "N" holds in nine out of eleven cases.

FIGURE 7.8
NATIONAL, MIX, AND SHARE COMPONENTS OF
EMPLOYMENT GROWTH IN NEW JERSEY 1960/61 to 1973/74



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, EMPLOYMENT and EARNINGS for STATES and AREAS.

periods, consecutive lag appears in the four years after 1962, with the behavior of "S" more random in later periods.

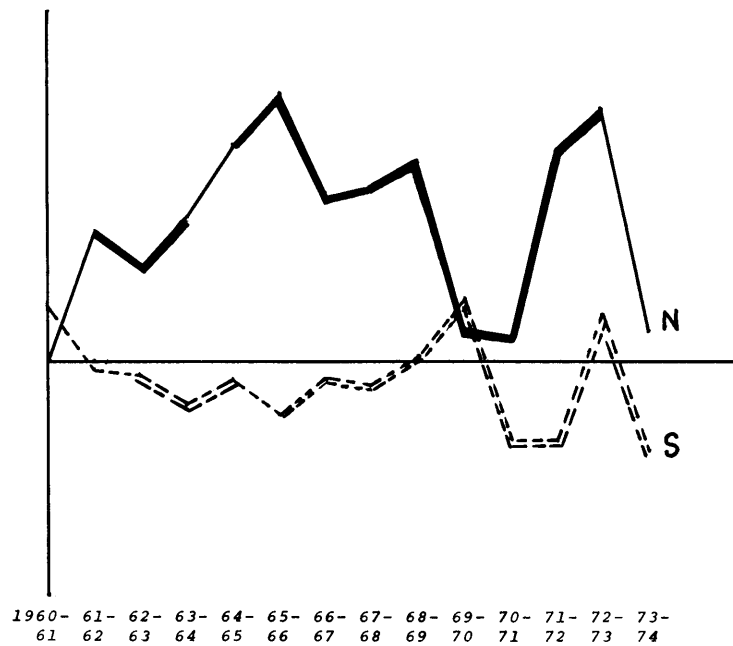
In our overview of unemployment we noticed an unemployment rate in the Nondurables sector that was higher than the national industry's unemployment rate. The picture of employment growth depicted above clearly suggests that this situation is probably worsened by *national* forces that tend to reduce New Jersey's share of jobs in the Nondurables group of industries. This detrimental loss of employment share was compounded in 1970 by *nationally* higher unemployment rates in this group of industries.

The variations among sectors emphasize, of course, that regional factors as well as forces at work within particular industries play a role in shifts of State shares. The patterns suggest that

recent variations in "S" are more random in the Trade sector and Durables than in other sectors. It is likely then that in these sectors regional influences are more influential than in other sectors. For the New Jersey economy as a whole, however, changes in "S" more closely resemble changes in "N" in the period following 1969, implying that in recent years, as national employment fluctuations have grown more volatile, the shares effect has become more sensitive to national trends. In view of the observed lags and sensitivity of the share component since about 1969, New Jersey may face a slow recovery of employment due to the current recession.

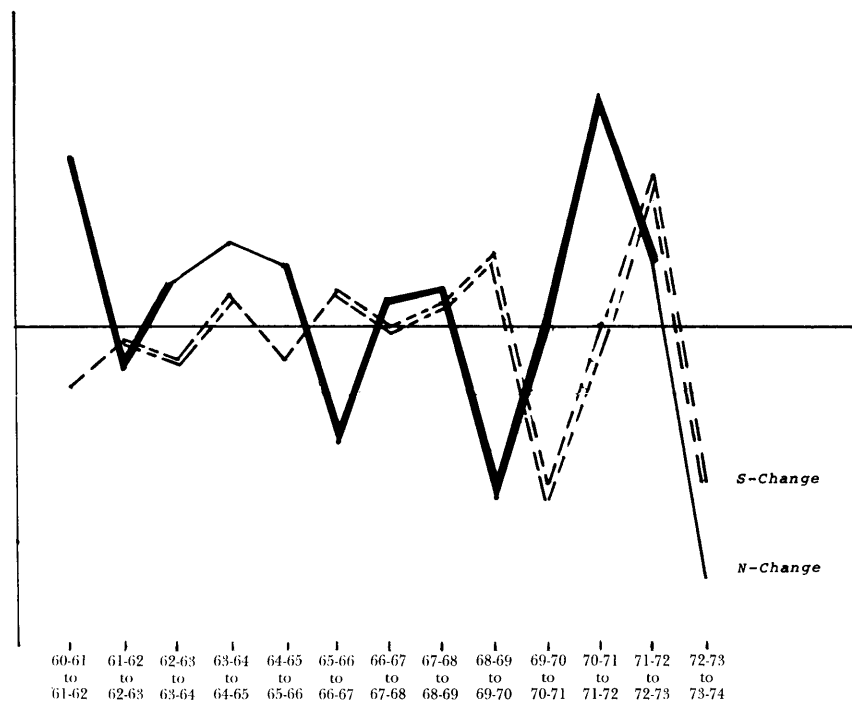
We have concentrated thus far on the overriding influence of the national shares components of employment change. What of the mix effect? We have already mentioned its comparatively small overall role during the fourteen-

FIGURE 7.9
NATIONAL AND SHARE COMPONENTS OF
EMPLOYMENT GROWTH IN NEW JERSEY 1960/61 to 1973/74



SOURCE: See Figure 7.8

FIGURE 7.10
ABSOLUTE ANNUAL CHANGES IN NATIONAL AND SHARE
COMPONENTS OF EMPLOYMENT GROWTH 1960/61 to 1973/74



SOURCE: See Figure 7.8

year period. This is not so, however, when we look at the experience of certain industrial categories.

The significance of "M" is most obvious in Manufacturing. In both subgroups of the Manufacturing sector the importance of the mix effect is evident. In Durables, where the loss of manufacturing jobs was concentrated, the large job loss due to the shares effect of 145 thousand jobs was compounded by a substantial negative mix effect of 53 thousand jobs. The same negative influence of mix is observed in Nondurables, where it *outweighed* the shares impact; i.e., it worsened the job loss of 25 thousand attributable to the shares effect by a further 91.5 thousand jobs. Thus the slight expansion in Nondurables employment can be attributed to national employment growth alone.

In sharp contrast to its negative role in manufacturing, the mix effect was positive in both the Government and Services sectors, reflecting the generally higher rates of employment growth nationally in these sectors, as well as the sizeable proportion of the New Jersey labor force in these sectors.

The significance of a mix and share analysis of employment growth lies in its ability to sharpen one's focus on factors contributing to the State's employment growth. Furthermore, divergent trends in job growth among industrial sectors are highlighted. New Jersey's decline in its share of jobs is the result, largely, of State or regional factors represented by the shares effects. Year to year and among industries, however, there has been considerable variation in these effects. The analysis suggests that, while the poor performance of the State's manufacturing sector has been the primary source of "job losses," any policies which intend to effect employment growth overall must go beyond a focus on the decline of the manufacturing alone. Services and Government, especially, have contributed more to employment growth and less to unemployment than other sectors. The observations also suggest that "State or regional factors" are sig-

nificantly influenced by changes in the national economy. This, in turn, suggests the need to go beyond traditional explanations that emphasize locational influences that are supposedly more adverse in New Jersey than other states—such as tax burdens, environmental laws, and the like.

(ii) *Unemployment: A Mix and Share Approach to the 1970 Data*

Having described the broad regional trends in employment, we now turn to a similar analysis of the unemployment data for 1970. Though we do not have the data to decompose total unemployment into its component parts for more than one year the procedure is nonetheless analogous. We have decomposed the total number of unemployed in each of New Jersey's fifteen broad industry groups into three components: (1) the number of unemployed that would have resulted in a particular sector had only the national unemployment rate influenced this level of unemployment. This component "N" is arrived at simply by applying the national unemployment rate (for the experienced labor force, since we limit ourselves to this group) to the labor force in each sector. (2) As in the case of the employment mix and share analysis above, a second component of unemployment is the mix effect "M" obtained by multiplying the particular sector's labor force by the *difference* between the national *sector* unemployment rate and the national *overall* rate. (3) A third component of unemployment, analogous once more to the share effect "S" in the analysis of employment trends, is the remainder of unemployed, which is obtained by multiplying a particular sector's labor force by the difference between the national and *State* unemployment rates pertaining to that specific sector.

We can imagine a number of specifically State or regional factors which might influence the share components of changes in employment and unemployment. These include such factors as the influence of industry age or life cycles;* the

* These concepts are not well defined but embrace such things as the vintage of capital stocks in industry, market penetration and product diversification.

impact of long-term trends in investment; change in the age and skill compositions of the labor force, and interdependencies within the technological matrix of the State's industrial structure. These, quite obviously, are only a few key items from a long list of other factors, dynamic in character, the impact of which is hard to capture adequately at a single point of time in a descriptive undertaking such as this. We can conclude that any interpretation of the shares component "S" will be ambiguous and tentative. Nonetheless, an estimate of its contribution to overall unemployment (and employment) helps us to assess the importance of factors other than purely national factors in the determination of any given level of unemployment within a region. Furthermore, variations in the size of "S" between industry groups provide a rough indication of the importance of these other factors in particular industries. We apply the above approach at two levels of description: estimates of mix and share components by industry groups and by occupational groups among the labor force.

Industry Groups

Figure 7.11 summarizes the results of the mix and share analysis applied to the unemployed labor force categorized by industry groups. The number of unemployed in the State at the time of the 1970 Census stood at 102,440.* The national unemployment rate effect "N" for all industries in the State was a higher figure of 117,550, representing the level of unemployment as it would have been had the U.S. rate (for the experienced labor force) of 3.97% been the only factor determining the State's unemployment figure. The fact that the actual figure was lower may be attributed to the combined impact of the mix and residual effects, "M" and "S." The mix effect alone, however, was negligible (+850 persons). Thus, in effect, it was the residual effect "S" that lowered the New Jersey numbers by 15,960 persons. The net effect, then, of "M"

and "S" was to lower the numbers of unemployed by 15,110 persons.

As in the case of the employment mix and share analysis, a careful interpretation of these figures is warranted. Two cautionary points are worth noting. It should be borne in mind, given the earlier interpretation of "S" provided above, that an observation that the share component was a significant factor in lowering the overall numbers of unemployed persons does not indicate *what* State or regional factors contributed to this lowering. (We turn to such an explanatory effort in the next section.) Secondly, as in the employment analysis, the industry mix effect "M" is itself the result of two interacting factors: the *national* industry deviation from the *national* unemployment rate, and the particular distribution of the New Jersey labor force among the fifteen industry categories. Its size, therefore, is influenced by the *national* unemployment performance of the various industry groups—a matter largely exogenous to the region—as well as by what is primarily a State characteristic.

With these points of caution in mind we turn to examine industry sectors in order of their relative size.

Nondurable Goods Manufacturing: We have already noted the importance of this subgroup in the New Jersey economic landscape. Its poor comparative position vis-a-vis its U.S. counterpart was influenced by the relatively large proportion of the State's experienced labor force in this sector. This, when combined with the fact that the national unemployment rate in this sector was significantly higher than the overall U.S. unemployment rate, produced a positive mix effect "M" of 2,930 persons. The shares effect was also large, adding 1,480 persons to the ranks of the unemployed. Given the fact that the shares component of *employment* growth in the 1969-70 period was positive in this sector, we cannot attribute this to the short run (1969-70) behavior of the industry but to a

* NOTE: In the Figures, it should be noted that a *negative* entry actually signifies a beneficial influence on the total numbers of the unemployed since it means that the particular effect being measured *lowered* the total figure. Slight discrepancies in the Figures arise due to rounding.

FIGURE 7.11
MIX AND SHARE COMPONENTS OF UNEMPLOYMENT BY INDUSTRY
(in thousands)

	Unemployed	"N"	"M"	"S"
Agriculture	1.19	1.08	— .07	+ .18
Mining	.15	.18	— .01	— .02
Construction	8.70	6.46	+ 6.56	— 4.32
Manufacturing				
Durables	19.30	19.13	+ 4.00	— 3.83
NonDurables	22.90	18.49	+ 2.93	+ 1.48
Unspecified	.48	.40	+ .27	— .19
Transportation	5.10	8.71	— 2.57	— 1.04
Trade				
Wholesale	3.50	4.81	— 1.05	— .26
Retail	17.00	17.77	+ 2.37	— 3.14
Finance	2.95	7.00	— 3.30	— .75
Services	...	...	— 6.53	— 3.01
Business/Repair	4.08	4.57	+ .38	— .87
Personal	4.25	4.00	+ .74	— .49
Entertainment/Recreation	1.80	.82	+ .92	+ .06
Professional/Related	7.91	18.19	— 8.57	— 1.71
Public Administration	3.13	5.94	— 1.75	— 1.06
Totals	102.44	117.55	+ .85	—15.96

SOURCE: 1970 PUBLIC USE SAMPLE for New Jersey (See Appendix). Derivations are described in the text.

longer run trend of decline since both the mix and share components for this industry are negative for most of the years from 1951-73 (see Figure 7A.5).

Durable Goods Manufacturing: In this group of manufacturing industries a considerably different picture presents itself. The mix and share effects here approximately neutralize each other. The mix effect added 4,000 persons to the jobless figure while the shares effect reduced the figure by 3,830 persons. In sum, the number of jobless in the subgroup was very close to what it would have been had the national unemployment rate been the only influence. "N" amounted to 19,130 persons as compared with the actual number of 19,300 unemployed persons. Again, it is intriguing to note an *asymmetry* between the *employment* shares effect and the *unemployment* shares effect. In spite of a decline of 4,190 jobs in the year 1969-70, the relative numbers of the unemployed in the State

were *reduced* by regional factors at work in the state economy.

Services: In the Service sector, the New Jersey unemployment rate was lowered jointly by "M" and "S" to a level well below the U.S. unemployment rate. The mix effect was about twice as influential as the shares effect (−6,530 persons and −3,010 persons, respectively). The relative impact of "M" and "S" showed considerable variations, however, among subgroups within the sector. The sizeable overall impact of the mix effect was due largely to considerable numbers in the Professional and Related Services subgroup. This subgroup of the labor force had a lower than average national unemployment rate accounting for the beneficial (i.e., negative) mix effect of −8,570 from the subgroup. In other Service categories the mix effect was detrimental in its impact on the number of unemployed. The "S" effect was uniformly strong in all Service subgroups with the single exception

of Entertainment and Recreational Services. In Professional and Related Services it was strongest (a figure of -1,710).

Trade: As in the previous case, the national unemployment rate was more than offset in the Trade sector by the combined influence of "M" and "S." In this instance, however, the mix effect was positive and, therefore, added to the numbers of unemployed in the sector. This was due to a higher than average rate of unemployment in the Retail Trade industries. The fact that the Trade sector performed relatively well in the State may be attributed to 3,400 fewer persons unemployed due to State or regional factors, most of which seemed to exert an influence in the Retail Trade industries.

Occupational Groups

Turning to the mix and share unemployment effects as they appeared for various occupational groups in the labor force, we find that for the labor force as a whole, the number of unemployed was significantly reduced by the combined influence of the State's occupational structure (analogous to the industry mix effect) and the shares effects.

In seven of the nine largest occupational categories, New Jersey unemployment rates were lower than the U.S. unemployment rate. The exceptions were the unemployment rates for non-transport operatives and non-farm laborers. For these two groups unemployment rates were 6.6% and 8.5%, respectively. The numbers of unemployed in the operatives group were raised significantly above what they would have been had only the U.S. rate been applied to the labor force in this group, and so also in the case of non-farm laborers. In the case of both groups the mix effect was the overwhelming component due to the fact that the unemployment rates for these occupations were so much higher than the rate for the labor force as a whole. Of the approximately 32,000 operatives unemployed in 1970, the three components were: 18,000 due to the national unemployment rate of 3.97%, an additional 12,000 due to the higher occupational unemployment rate for operatives, and the remainder of 2,000 due to share factors. In the case of non-farm laborers the mix effect outweighed the national effect and the share effect actually contributed to a slight reduction of the numbers: "N" amounted to approximately 4.6 thousand, "M" was 5.3 thousand and the residual "S" was -1.84 thousand.

FIGURE 7.12
MIX SHARE COMPONENTS OF UNEMPLOYMENT BY OCCUPATION
(In Thousands)

	Unemployed	"N"	"M"	"S"
Professionals	7.01	18.51	— 9.37	— 2.13
Managers	3.80	10.10	— 6.60	+ .30
Sales	5.69	8.91	— 1.73	— 1.49
Clerical	17.88	23.24	— 4.59	— .77
Craftsmen	13.61	16.10	— 1.10	— 1.39
Operatives	31.68	17.88	+ 11.85	+ 1.95
Transport Operators	4.17	4.57	+ 1.53	— 1.93
Laborers (Non-Farm)	8.10	4.64	+ 5.30	— 1.84
Farmers and Farm Managers	.09	.30	— .25	+ .04
Farm Laborers	.37	.34	+ .28	— .25
Service Workers	10.93	11.53	+ .18	— .78
Private Household	.90	1.07	+ .22	— .39
TOTALS	104.23	117.12	— 4.24	— 8.64

SOURCE: See Figure 7.11.

Among the occupational groups where rates of unemployment were lower than the national unemployment rate, the most notable influence was also the mix effect, signifying that the occupational structure in New Jersey was biased *favorably*—toward relatively more people in occupations where the national unemployment rates were lower than the overall national unemployment rate. This was especially significant in the case of clerical workers (the single largest occupational category in 1970) and in the case of professionals. In these two groups, both “M” and “S” contributed to lowering the numbers of unemployed but “M” far outweighed the share effect “S”. Among craftsmen, however, while both “M” and “S” contributed to a lowering of the numbers, the share effect was more significant.

In summary, regional factors (summarized by the shares effect) seem to have played a favorable role, lowering the numbers of unemployed in most industry and occupation groups. Again, the notable exception was the Nondurable Goods Manufacturing sector. Industry mix in New Jersey was slightly biased in the direction of those sectors where unemployment rates in the national industries were higher than the overall national rate. The occupational structure of the New Jersey labor force, by way of contrast, contributed significantly to lowering the numbers of unemployed persons.

Analyzing Unemployment Rate Differences Between New Jersey and the U.S. in 1970

The Census Public Use Sample allows us to estimate unemployment rates for the New Jersey labor force, by industry affiliation, at a fairly detailed level for the purpose of comparisons with the U.S.

Differences between New Jersey and U.S. unemployment rates for 67 industry groups in 1970 are shown in Figure 7.13.* We analyze New Jersey’s comparative performance in 1970 with the help of standard statistical techniques.** Our procedure is to correlate the *differences* between New Jersey and U.S. unemployment rates by industry with corresponding differences in the proportions of employed males, blacks, and labor force in six occupational groups (professionals, clerical and kindred workers, craftsmen, operatives, non-farm laborers, and service workers).

Explanatory Variables: A word is in order as to the significance and limitations of these particular measures as explanatory variables. The sex and race proportions in the employed labor force have been chosen for the well known reason that unemployment rates for both blacks and women tend to be high relative to the prime labor force group (white males in the 25-64 year age group).† Their inclusion in the analysis serves the purpose of understanding the influence of these demographic features of the New Jersey labor force on the comparative unemployment situation in the State.

The occupational variables, on the other hand, focus on differences of a technological order. So, for instance, differences between the U.S. and New Jersey in the proportions of employed professionals and operatives for any given industry probably reflect essential differences in the structure of the industry, and in the composition of its output. Thus our explanatory variables delineate important aspects of economic structure in the U.S. and in New Jersey. We relate *differences* in this structure to the observed differences in unemployment rates.

A caveat is in order. First, it should be obvious that we have selected, at best, only a

* U.S. data are compiled from published information contained in DETAILED CHARACTERISTICS OF THE POPULATION—U.S. and CENSUS OF POPULATION SUBJECT REPORT: OCCUPATION BY INDUSTRY, based on a 20% sample of Census records for 1970. New Jersey data are based on the 1% PUBLIC USE SAMPLE OF BASIC RECORDS from the 1970 Census. The 67 industry groups are roughly comparable to the two-digit level of classification set forth in the STANDARD INDUSTRIAL CLASSIFICATION MANUAL (Executive Office of the President, Office of Management and Budget, 1972).

** In this case, the techniques are correlation analysis and linear regression analysis as defined in standard texts.

† For a full treatment of these differences see Lowell E. Gallaway and Zachary Dyckman, “The Full Employment-Unemployment Rate, 1953-1980”, JOURNAL OF HUMAN RESOURCES, Summer 1970.

FIGURE 7.13
U.S.-N.J. UNEMPLOYMENT RATE
DEVIATIONS IN 67 INDUSTRIES
(in percent)

Agricultural Production	+1.9	Wholesale Trade	0.0
General Building Contractors	+2.9	Lumber and Hardware	+1.5
General Contractors	+1.9	Department and Mail Order to General Merchandise Establishments	— .2
Special Trade Contractors	+ .2	Grocery and Food Stores	+ .7
Not Specified Construction	+2.9	Motor Vehicle Dealers	+ .3
Construction Allocated	+5.0	Apparel and Shoe Stores	+1.5
Stone, Clay, and Glass Products	+ .3	Furniture and Appliance Stores	— .1
Primary Metal Industry	—1.0	Eating and Drinking Places	+1.0
Fabricated Metal Industry	+1.5	Drug Stores to Miscellaneous Retail Stores	+4.2
Non-electrical Machinery	+1.1	Retailing Allocated	+2.1
Electrical Machinery	+ .6	Banking	+1.0
Not Specified Electrical Machinery	—1.4	Brokers and Investment Companies	— .9
Transportation Equipment	0.0	Insurance	0.0
Professional Photo Equipment	+1.9	Real Estate	+ .8
Miscellaneous Manufacturing	—1.5	Finance, Insurance and Real Estate Allocated	+1.5
Manufactured Durable Goods Allocated	+2.3	Advertising to Business Services	+ .3
Food and Kindred Products	+1.4	Automobile Services	+1.9
Textile Mill Products	0.0	Electrical and Repair Shop Services	+1.5
Apparel and Fabricated Mill Products	—4.7	Private Household Services	+ .9
Paper and Allied Products	+ .9	Hotels, Motels and Lodging Places	—8.6
Printing, Publishing and Allied Industries	+ .9	Personal Services	— .1
Chemical and Allied Products	— .7	Personal Services Allocated	— .8
Not Specified Chemical Products	— .2	Miscellaneous Entertainment and Recreational Services	— .6
Petroleum and Coal Products	+1.0	Health Services	— .2
Rubber and Miscellaneous Plastics	+2.7	Legal Services	+ .7
Manufactured Nondurable Goods Allocated	— .4	Educational Services	+ .2
Railroad and Railways	+ .7	Religious and Nonprofit Institutions	+1.3
Street Railways and Taxi Cabs	— .3	Engineering and Miscellaneous Services	+ .9
Trucking and Warehousing	+1.5	Professional and Related Services Allocated	+ .6
Water Transportation	+4.6	Postal Services	— .1
Air Transportation	— .5	Federal Government	+1.0
Communications	+ .6	State Government	+ .2
Utilities and Sanitary Services	—1.3	Local Government	+ .9
Transportation, Communication and Utilities Allocated	—2.9		

SOURCE: See first footnote on p. 81 and also the appendix to this chapter.

very limited number of structural variables, confining ourselves to data on the employed labor force at one point in time due to the problem of a lack of comparable information for the nation and the State for other periods. In the process, we have left out explanatory factors,

especially those related to cyclical variations in labor demand and compositional differences on the supply side.* Secondly, correlations revealed by statistical analysis cannot be viewed as causal explanations but only as suggestive of underlying causes.

* Differences in composition of the labor force (which include both employed and unemployed persons) are only considered to the degree that they are reflected in statistics for the *employed* subgroups.

Statistical Analysis—The Results

The comparative New Jersey-U.S. data reveal statistically significant relationships between unemployment rate differences and differences in the proportions of men (conversely, the proportions of women), the proportions of craftsmen or operatives or non-farm laborers. Figure 7.14 summarizes the results for sixty-seven industry groups.* In the case of other variables, the correlation coefficients are small and of slight statistical significance.**

The highest observed correlation is between the difference in the proportion of operatives and unemployment rate differences among industries. The relationship is a positive one. This means that in comparing one industry with others, its unemployment rate relative to the U.S. is likely to be higher than others if it employs a larger proportion of operatives. A similar conclusion can be drawn about the proportion of males employed. Here the significance of the employment of women stands out, since the implication is that the higher the relative proportion of women employed in a New Jersey industry, the lower will be its unemployment rate

relative to the U.S. industry. Similarly, an industry may be judged relatively unemployment prone if it employs a proportionately large number of laborers. In the case of craftsmen the *negative* correlation indicates that industries relying on a larger proportion of this occupational group are likely to perform better relative to the U.S. Interestingly, though statistically less significant, the proportion of blacks in particular industries has a similar beneficial impact on comparative unemployment rates.

While the degree of interrelationship between the explanatory variables and New Jersey's comparative unemployment rates cannot be judged as statistically high, more interesting from the standpoint of understanding the State's particular problems are the *direction* of influence and the *relative strength* of these explanatory variables.

Multivariate Analysis

Simple correlation coefficients do not tell much about the combined effects of explanatory variables. This is better explored through the

FIGURE 7.14
SIMPLE CORRELATIONS BETWEEN UNEMPLOYMENT RATE
DIFFERENCES AND EMPLOYED LABOR FORCE CHARACTERISTICS

Independent Variables	R	R ²	Significance	Standard		
				Error	Intercept	Slope
U.S.-N.J. Differences in Employed Labor Force—Proportions in 67 Industries:						
Males ("X ₁ ")	.184	.0340	.070	.02	.006	.080
Non-whites ("X ₂ ")	— .115	.0130	.180	.02	.005	— .070
Professionals ("X ₃ ")	.133	.0180	.140	.02	.006	.080
Clerical/Kindred Workers ("X ₄ ")	.131	.0170	.150	.02	.007	.010
Craftsmen ("X ₅ ")	— .223	.0500	.040	.02	.005	— .020
Nontransport Operatives ("X ₆ ")	.324	.1050	.004	.02	.005	.030
Nonfarm Laborers ("X ₇ ")	.184	.0340	.070	.02	.004	.120
Service Workers ("X ₈ ")	.012	.0001	.460	.02	.005	.002

SOURCE: See Figure 7A.2.

* We have focused on the sixty-seven industry groups in which New Jersey employment was at least ten thousand persons. (See the appendix to this chapter with regard to sampling errors.)

** The correlation coefficient is a measure of the degree of association between two variables; it is numerically always a number between zero and one—the higher coefficients signifying a higher degree of association. Significance levels, also between zero and one, indicate the probability of error.

use of a statistical technique called "regression analysis" which helps to evaluate the joint impact of explanatory variables as well as their separate contributions to the differences in U.S.-N.J. unemployment rates. The results of a multiple regression of unemployment rate differences versus labor force differences are shown in Figure 7.15.*

The interrelationship between unemployment rate differences and the differences in labor force proportions taken as a group was significant (Multiple $R=.43781$, significant at the 95% confidence level). About 19% of the observed differences was therefore accounted for by variations in the explanatory variables. Among these, the proportion of males and of operatives stood out as statistically significant. (In the case of the other variables, standard

errors were judged to be too high to allow any inferences.)

An increase of 10% in the difference in the proportion of operatives is accompanied by a 4.6% increase in the U.S.-N.J. unemployment rate difference. It follows also that in comparing the State with the nation, a New Jersey industry will have a lower unemployment rate than its U.S. counterpart if it employs fewer operatives. On the other hand, comparing one New Jersey industry with another within the State, the one with the lower number of operatives relative to its U.S. counterpart will also tend to have a lower unemployment rate.

In the case of male proportions in the employed labor force, the direction of interrelationship with unemployment rate differences is

FIGURE 7.15
MULTIPLE REGRESSION RESULTS
U.S.-N.J. UNEMPLOYMENT RATE DIFFERENCES VS.
EMPLOYED LABOR FORCE CHARACTERISTICS

Independent Variables (See Figure 7.14 for Variable Labels)	Estimated B	B (Standardized B)	Standard Error of B	Significance
Log X_1	.3100	.2700	.138	Significant
Log X_2	.0210	.0200	.125	Not Significant
Log X_3	.1062	.1059	.120	Not Significant
Log X_5	— .2630	— .1800	.177	Not Significant
Log X_6	.4700	.3790	.169	Significant
Log X_7	—10.4000	— .1290	10.340	Not Significant
Log X_8	.2060	.2110	.130	Not Significant
Constant	— .9740			
Multiple R	.4600			
R ²	.2100			
Standard Error of Estimate	2.2600			
F (at 95% Significance)	2.3000			Significant

Note: The form of statistical estimating equation is. $Y=K \cdot X_1^{B_1} \cdot X_2^{B_2} \cdot X_3^{B_3} \dots X_8^{B_8}$

Where Y =U.S.-N.J. unemployment rate in sector, K =an estimated constant in the employed labor force, and X_1 - X_8 are differences between U.S. and N.J. proportions of males, non-whites, professionals, clericals, craftsmen, operatives, laborers, and service workers.

* The data were fitted to a linear logarithmic form which assumes that there is a constant percentage change in the rate deviations in response to percentage changes in the explanatory variables. Since the procedure was to introduce the variables stepwise, the proportion of clerical and kindred workers was eliminated from the set of explanatory variables due to its low statistical significance.

similar, though weaker in its influence. An increase of 10% in the difference in the proportion of males is accompanied by an increase of 3.1% in the unemployment rate difference.

This result implies that a New Jersey industry's unemployment rate will be lower than in the U.S. industry if it employs proportionately more women. Alternatively, the unemployment performance of an industry will be better (relative to the U.S.) if it employs a higher proportion of women than other industries in the State. Given the generally higher unemployment rates for women in the labor force this result is surprising.

However, it should be recalled that we are analyzing *differences* between rates of unem-

ployment in New Jersey and the U.S. With this in mind, it is possible to hypothesize that the proportion of women will tend to lower industry unemployment rates relative to the U.S. due to significantly lower occupational rates for women in New Jersey (again, *relative* to the U.S.). This fact is illustrated in Figures 7.16 and 7.17. Figure 7.16 highlights the generally lower relative unemployment rates in industries where women make up significant proportions of the employed labor force in the State. (We have focused on these sectors where this proportion is higher than 40%; the proportion of women in the New Jersey labor force is 37.9%.)

Figure 7.17 contrasts the proportions of women in major occupations and their unem-

FIGURE 7.16
THE EMPLOYMENT OF WOMEN AND UNEMPLOYMENT RATES
(for all workers) BY INDUSTRY, 1970

Industry	Proportion of Women In Employed Labor Force		Industry Unemployment Rate (1970) (%)	
	N.J.	U.S.	N.J.	U.S.
Private Household Services	.900	.905	4.2	5.10
Professional Health Services	.760	.750	2.4	2.20
Apparel and Fabricated Textile Products	.750	.780	11.6	6.80
Personal Services (Allocated)	.730	.770	6.7	5.90
Professional/Related Services (Allocated)	.680	.680	4.2	4.80
General Merchandise Stores	.640	.690	5.0	4.80
Educational Services	.630	.630	1.3	1.50
Apparel and Shoe Stores	.590	.640	2.8	4.30
Personal Services	.560	.610	3.1	3.05
Banking	.550	.630	.6	1.56
Legal Services	.539	.460	.5	1.20
Religious, Welfare, to Nonprofit Institutions	.536	.510	1.6	2.90
Retail Trade Allocated	.500	.530	4.0	6.10
Eating and Drinking Places	.494	.590	5.8	6.80
Hotels, Motels, and Lodging Places	.488	.580	15.3	6.70
Communications	.460	.490	1.2	1.80
Finance, Insurance, Real Estate Allocated	.450	.530	3.0	4.50
Real Estate	.440	.380	1.8	2.60
Nondurable Goods Allocated	.418	.460	5.8	5.40
Food Stores	.415	.390	2.7	3.40
State, Public Administration	.410	.380	1.4	1.60
Miscellaneous Manufacturing	.400	.410	8.0	6.50

Note: This table includes only those cases where the concentration of women in the New Jersey labor force of an occupation or industry is at least 40%.

SOURCE: See Appendix

FIGURE 7.17

THE EMPLOYMENT AND UNEMPLOYMENT OF WOMEN IN 1970 BY OCCUPATION

Occupations	Proportion of Women in the Employed Labor Force		Occupational Unemployment Rates (%)		Differences (U.S.-N.J.)
	N.J.	U.S.	N.J.	U.S.	
Professionals	.36	.39	1.50	2.00	+ .50
Managers	.13	.16	1.40	1.30	+ .10
Sales Workers	.38	.43	2.10	3.90	+1.80
Clerical Workers	.72	.75	3.20	4.00	+ .80
Craftspersons	.05	.03	3.40	3.80	+ .40
Operatives (Including Transport)	.36	.31	6.20	7.10	+ .90
Laborers (Non-farm)	.06	.04	7.90	9.50	+1.60
Service Workers	.47	.60	3.90	5.50	+1.60
Average Deviation (U.S.-N.J.) of Unemployment Rates	...	...	...	...	+ .05
Percent of Employed Labor Force	.38	.38	...	...	...
Unemployment Rate for Women in Experienced Labor Force	...	...	4.70	4.70	...
Unemployment Rate for Experienced Labor Force (Male and Female), excluding those who had not worked since 1959	...	...	3.52	3.98	...

SOURCE: See Appendix

ployment rates in New Jersey with those of the U.S. The markedly lower rates for women in the State are clearly visible. These observations help explain the surprising result noted above.

Conclusions

We have analyzed in this chapter the unemployment performance of New Jersey relative to the nation in 1970. We have also described trends in employment growth since these are of obvious significance to any understanding of the State's unemployment predicament.

We have drawn attention to the following major points as they emerged through our analysis.

a) Analysis of the 1970 unemployment data suggests that the number of unemployed persons in the State was lowered by regional influences. Among industrial sectors, the Nondurable Goods Industries were an exception to this pattern. Among occupations, operatives fared poorly relative to their counterparts in the

nation. Non-whites and women in the State had lower unemployment rates in most industrial categories. But, in terms of numbers, these two groups shouldered a greater burden than their counterparts in the U.S. Their share in the State's total number of unemployed persons outweighed their representation in the labor force to a greater degree than in the nation as a whole.

b) The mix and share analysis of unemployment in 1970 has quantified the degree to which New Jersey's unemployment can be attributed to other than national factors. There were approximately fifteen thousand fewer unemployed persons due mainly to regional factors that lowered numbers in the Durable Goods, Services and Trade sectors, especially. These regional influences outweighed the fact that in general, New Jersey's labor force was distributed among industries with higher than average unemployment rates. Occupationally, the number of unemployed persons was significantly lowered by the State's labor force distribution which was

biased in favor of occupations (such as professionals) where unemployment rates were lower than the national unemployment rate.

c) The statistical analysis of variations in unemployment rates among industries has focused on the structural differences in the employed labor force of New Jersey compared with the nation. The relative proportions of operatives and of women appear as significant determinants of unemployment rate differences in the comparison of unemployment rates between the State and nation. Higher proportions of operatives exert an adverse influence on New Jersey's relative unemployment, while higher proportions of women have the reverse effect.

d) The analysis of employment growth points to comparatively slower growth in the State. Its share of total employment in the nation in the period 1960-61 to 1973-74 has fallen. The gap between job growth in New Jersey and the nation is due largely to a negative shares component. However, we have noticed considerable variation in this component from year to year and from industry to industry. It has also been emphasized that the rate of regional decline is itself closely related to national employment growth, a fact that bears closer examination.

Policy Implications

Though much of the analysis in this chapter has been largely descriptive, we can draw certain inferences relevant to current policy issues in the State.

The description of unemployment and the analysis of employment growth indicate considerable variety in the performance of major employing sectors in the State. They suggest that variations in job growth cannot be adequately understood by reference to the decline of the Manufacturing sector alone. If it is true that the State's share of jobs in the nation changes with varying intensity from year to

year, and that such changes are themselves a product of national growth then we are more closely bound to the fate of the national economy than might commonly be supposed.

From the standpoint of framing State policy this fact, however, should not be taken to imply a policy of benign neglect! Quite to the contrary, the importance of structural influences such as the occupational and demographic composition of the State's labor force on relative levels of unemployment suggest considerable scope for active planning.

For instance, our description of the unemployment landscape in 1970 emphasizes the lack of symmetry in the experience of particular occupational groups. In certain occupations the numbers of unemployed were significantly lowered by regional influences, as in the case of professionals; in others, for example—operatives, regional factors significantly raised the numbers. We have also pointed to significantly lower occupational unemployment rates among New Jersey's women workers. If we hypothesize that the occupational distribution of workers in the State, the quality of its labor force and its industrial structure all influence each other interactively, the implications for policy are clear. We need to try to influence not merely the aggregate number of jobs created but also the *pattern* of industry and skills encompassed in the State economy.

An obvious candidate for expansion is the Service sector. The rapid growth of this group of industries in the nation and in the State has been well documented.* While it cannot be stated unequivocally that this trend is irreversible, there are reasons to believe that this sector is far from having exhausted its full potential for growth. The trend of technological change continues to foster a demand for specialized services. Furthermore, a substantial portion of growth in the Service sector reflects rising expectations and perceptions of a better quality

* Bearse, Peter (1973), Chapter VI, "Industry Study: Business Services in New Jersey", 6th ANNUAL REPORT, Economic Policy Council and Office of Economic Policy, April. Many of these services are complementary to manufacturing or are purchased by manufacturing firms; i.e., the simple-minded dichotomy between services and manufacturing industry is misleading and irrelevant. For a more catholic view of the Services sector see: Hirshhorn, Larry (1974), TOWARD A POLITICAL ECONOMY OF THE SERVICE SOCIETY, Working Paper No. 229, Institute of Urban and Regional Development, University of California, Berkeley.

of life in our communities. The demand for health care or education is hardly likely to abate, in spite of capricious governmental or cyclical changes in the pace of economic life.

Such a policy of planning, therefore, merits a close monitoring of industrial structure and its interdependence with national economic trends. It calls also for a judicious goading of those sectors where we know dynamic growth trends

exist and which complement the skills with which workers are equipped. It needs only to be added that such an attempt is a major undertaking; without a comprehensive approach to the problem, it is unlikely that relative unemployment levels in the State can be influenced by State policy. Clearly we cannot rely on ad hoc policy measures alone that merely seek to provide financial incentives to "attract" industry into the region.

APPENDIX

1. SOURCES OF DATA

a) *Unemployment Data*

Data for unemployment in New Jersey in 1970 draws upon the following Census publications and sources: *Population Census Reports*, Volume 1, Characteristics of the Population, Series PC (1) D, "Detailed Characteristics", and *Public Use Samples of Basic Records from the 1970 Census*, U.S. Department of Commerce, Bureau of the Census.

U.S. data is drawn from *Population Census Reports*, Volumes I and II, Characteristics of the Population, Series PC (L) -C and PC (1) -D, and Subject Reports, Series PC (2) -7c, Occupation by Industry.

Since the Public Use Sample upon which the regression results are based are unfamiliar to most people a short note on this source is useful.

The Bureau of the Census description is as follows:

"Each 1970 public use sample is a representative sample of the records from the 1970 census sample questionnaires. The primary sample size is one-in-a-hundred, or one sample unit (household, vacant unit, or person in group quarters) for every one hundred such units in the population. . . .

Two long-form census questionnaires were used in the 1970 Census of Population and Housing: one for a 15% sample, the other for a 5% sample of the population. Public use samples of 15% and 5% data are created separately, since the two questionnaire forms contain many different questions. Because the 1/100 sample size represents a fraction of the total population, each 1/100 sample actually contains either one-fifteenth of all 15% basic records or one-fifth of all 5% basic records, representing slightly over two million persons in either case."

In either case, three geographic options are available: (1) County Groups, (2) States, and (3) Geographic Divisions with Neighborhood characteristics.

We have made use of the Public Use Sample for New Jersey drawn from the 5% Census questionnaire responses. The total size of this sample is 29,584 persons. The composition of unemployment in New Jersey has been estimated from this sample of the labor force.

b) *Employment Data*

The analysis of employment growth in New Jersey and the U.S. has used annual data compiled by the Bureau of Labor Statistics and published in *Employment and Earnings*. The mix and share analysis up to 1970 draws upon calculations from the staff of the New York Council of Economic Advisors.

c) *Unemployment Rates—N.J./U.S. Annual Averages:*

The Current Population Survey (CPS)-based rates were drawn from the U.S. Department of Labor's *Manpower Report of the President*, 1974 and 1975, and from CPS data published in *Employment and Earnings*.

A useful review of the basic differences in measurement procedures using the CPS and building block methods is provided in Arthur J. O'Neal's "N. J. Unemployment Statistics: A Dispute Over Methodology" *New Jersey Economic Indicators*, September, 1974.

2. STATISTICAL ERRORS

The regression analysis and comparisons of U.S.-N.J. rates of unemployment in the case of 67 industries were based on samples of the labor force. U.S. data was drawn from a 20% sample, and the New Jersey data from a 1% sample. Standard errors of the estimated rates or proportions in the New Jersey population are provided below: These indicate that there is a 68% probability that the difference between the estimated rate or proportion will be less than the estimated standard error. Unfortunately, standard errors are not published for proportions, in the case of the U.S. data, where the base of the percentage is larger than 250,000 persons.

We were unable therefore to apply exact tests of significance to the estimated rate or proportion differences. Instead we applied a rough-and-ready rule to our data to minimize the chance of sampling variability: We excluded from the regression analysis sectors with a labor force smaller than ten thousand.

Since the New Jersey data is actually a sub-sample of the 20% sample on which U.S. estimates are based, standard errors for the U.S. rates as well as for the estimated differences in rate will necessarily be smaller than the ones shown below.

Estimated Proportions or Rates	Standard Errors of Estimated Proportions Number of Persons in the Labor Force Category (in thousands)			
	10	25	50	100
1%	.011	.007	.004	.003
2%	.015	.009	.007	.005
5%	.024	.015	.011	.008
10%	.033	.021	.014	.010
15%	.040	.025	.018	.012

3. ADDITIONAL FIGURES

FIGURE 7A.1
AN INDEX OF UNEMPLOYMENT BY INDUSTRY GROUP

Industry Group	Key for Figure 7.2	NEW JERSEY			UNITED STATES			
		Percent of Total Unemploy- ment A	Percent of Total Labor Force Experience B	Index of Unemploy- ment A/B	Key for Figure 7.2	A	B	A/B
Agriculture	a	1.64	.9	1.820	A	3.39	3.7	.920
Mining	b	.14	.1	1.400	B	.75	.8	.940
Construction	c	8.26	5.5	1.500	C	12.19	6.3	1.950
Manufacturing	d	40.53	32.2	1.260	D	30.41	26.1	1.170
Durables	e	18.33	16.2	1.130	E	18.29	15.4	1.190
Nondurables	f	21.75	15.7	1.390	F	11.90	10.5	1.130
Not Specified	g	.45	.3	1.500	G	.22	.2	1.100
Transport	h	4.84	7.4	.650	H	4.64	6.7	.690
Trade	i	19.46	19.2	1.010	I	20.80	20.1	1.030
Wholesale	j	3.32	4.1	.810	J	3.04	4.0	.760
Retail	k	16.14	15.1	1.070	K	17.76	16.1	1.100
Finance	m	2.75	5.9	.470	M	2.48	4.9	.510
Services	n	17.16	23.5	.730	N	19.32	25.9	.750
Business/Repairs	o	3.89	3.9	.997	O	3.32	3.1	1.070
Personal	p	4.06	3.4	1.190	P	5.36	4.6	1.170
Enter./Rec.	q	1.71	.7	2.440	Q	1.79	.9	1.990
Professional/Related	r	7.50	15.5	.480	R	8.85	17.3	.510
Public Administration	s	2.90	5.0	.580	S	3.69	5.4	.680
Unemployed Since 1959	t	2.30	0.1	23.000	T	2.31	.1	23.000
		100.00	100.00			100.00	100.00	

SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS: NEW JERSEY and DETAILED CHARACTERISTICS: UNITED STATES.

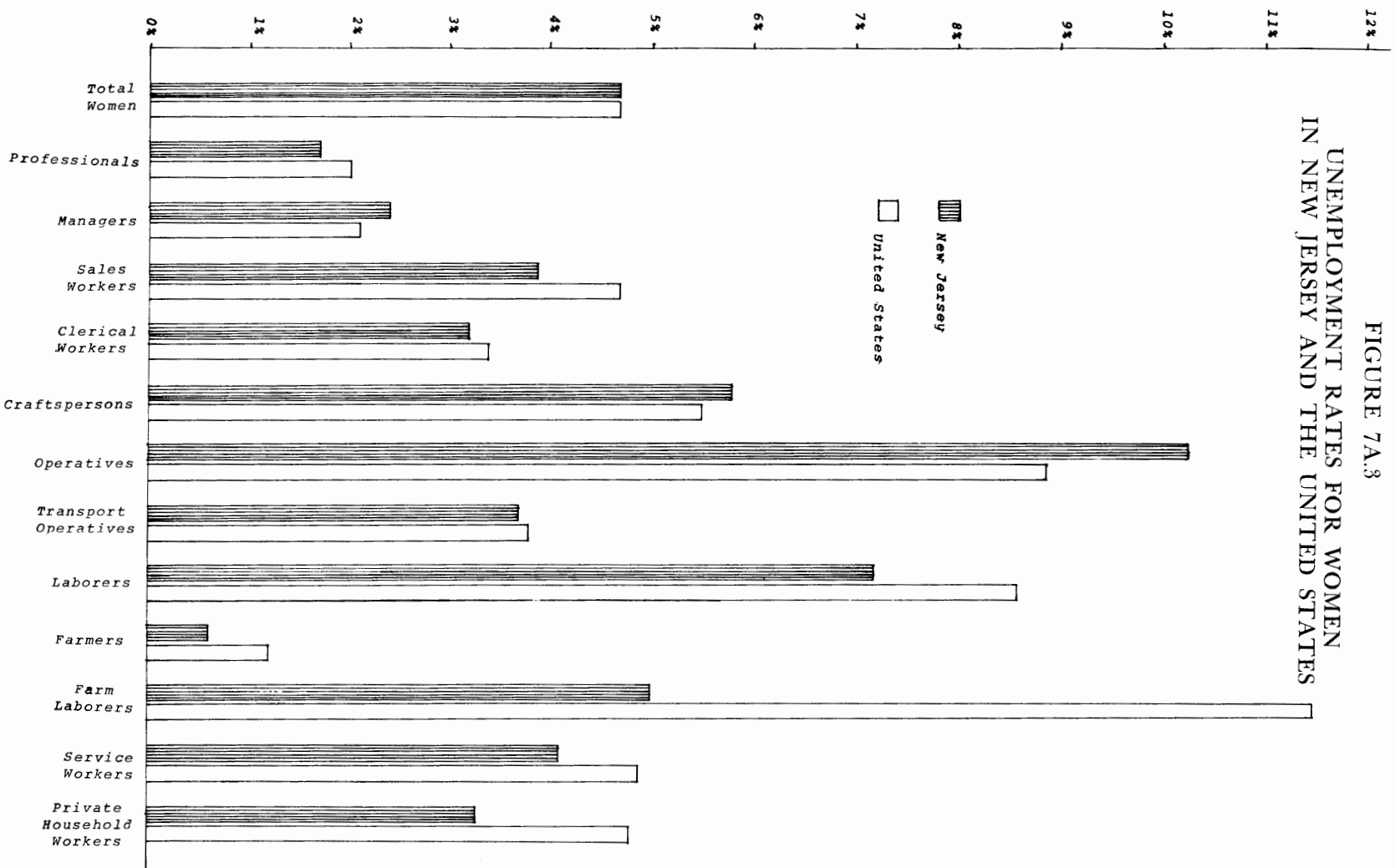
FIGURE 7A.2
LARGE INDUSTRIES IN NEW JERSEY WITH HIGHER
UNEMPLOYMENT RATES THAN THEIR U.S. COUNTERPARTS

	Deviation from U.S.	Labor Force	
		Number	Percent
Hotels, Motels and Lodging Places	-8.600	15,000	.5
Apparel/Accessories and Miscellaneous			
Textile Products	-4.800	78,700	2.7
Not Specified Metals	-4.250	5,100	.2
Transportation Equipment	-3.270	39,100	1.3
Transportation/Communication Allocated	-2.860	12,800	.4
Credit Agencies	-2.800	8,200	.3
Miscellaneous Manufacturing	-1.450	31,300	1.1
Not Specified Electrical Machinery	-1.430	21,300	.7
Utilities and Sanitary Services	-1.280	36,600	1.2
Metal (SIC 3312-3399)	-.988	32,200	1.1
Security Brokers	-.910	20,300	.7
Real Estate	-.830	27,300	.9
Chemicals and Allied Products	-.690	95,500	3.2
Air Transportation	-.450	10,200	.3

Note: Only industries with a labor force of at least 5,000 are included.

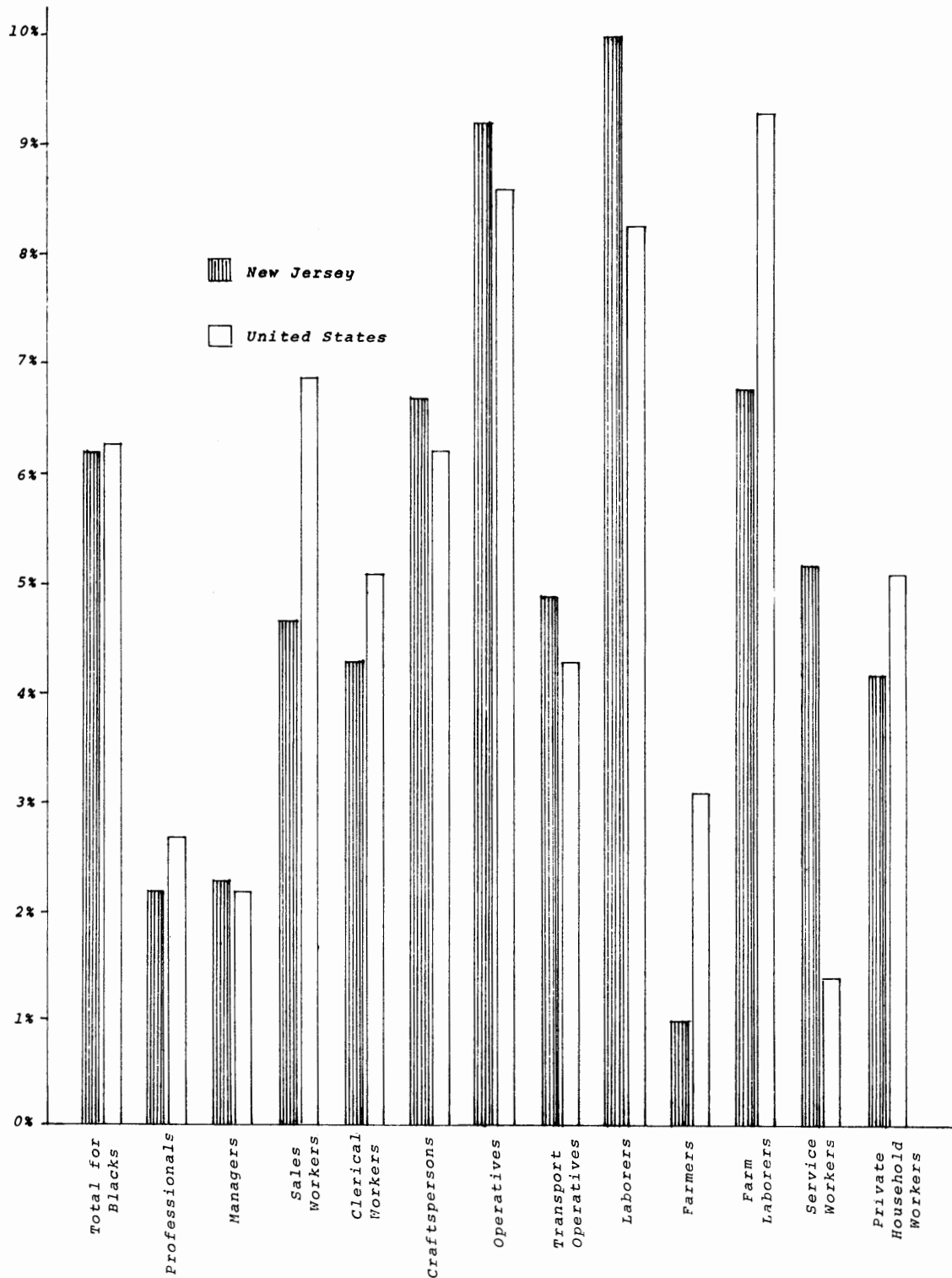
SOURCE: DETAILED CHARACTERISTICS OF THE POPULATION—U.S. SUMMARY, SUBJECT REPORTS—OCCUPATION BY INDUSTRY and the PUBLIC USE SAMPLE, 1970 Census of Population, Bureau of the Census, U.S. Department of Commerce.

FIGURE 7A.3
UNEMPLOYMENT RATES FOR WOMEN
IN NEW JERSEY AND THE UNITED STATES



SOURCE: U.S. Census, 1970, DETAILED CHARACTERISTICS OF THE POPULATION

FIGURE 7A.4
UNEMPLOYMENT RATES FOR BLACK PEOPLE
IN NEW JERSEY AND THE UNITED STATES



SOURCE: U.S. Census, 1970, DETAILED CHARACTERISTICS OF THE POPULATION

FIGURE 7A.5
NATIONAL, MIX, AND SHARE COMPONENTS OF
EMPLOYMENT GROWTH IN NEW JERSEY 1960/61 to 1973/74
(In Thousands)

<u>ALL INDUSTRIES</u>					<u>MINING</u>			
	Employment Change in New Jersey (R)	National Growth Effect (N)	Industrial Mix Effect (M)	Shares Effect (S)	(R)	(N)	(M)	(S)
1960-61	16.69	- 7.10	- 0.31	24.12	1960-61	- 0.10	- 0.010	- 0.180
1961-62	62.29	58.45	4.08	- 0.23	1961-62	0.00	0.090	- 0.200
1962-63	33.20	41.73	- 2.71	- 5.81	1962-63	0.10	0.060	- 0.140
1963-64	39.19	61.13	- 3.15	-18.77	1963-64	0.09	0.100	- 0.100
1964-65	87.20	92.35	2.22	- 7.38	1964-65	- 0.09	0.150	- 0.160
1965-66	102.59	116.54	6.30	-20.24	1965-66	- 0.50	0.180	- 0.200
1966-67	62.60	70.02	- 0.97	- 6.45	1966-67	- 0.20	0.080	- 0.150
1967-68	65.39	75.72	- 2.30	- 8.01	1967-68	0.30	0.080	- 0.110
1968-69	86.60	86.65	- 0.10	0.05	1968-69	0.19	0.100	- 0.040
1969-70	36.20	17.49	-10.86	29.58	1969-70	0.40	0.019	- 0.002
1970-71	2.30	10.95	25.12	-33.76	1970-71	- 0.20	0.013	- 0.120
1971-72	55.40	91.39	- 2.43	-33.56	1971-72	0.20	0.105	- 0.900
1972-73	138.70	111.98	3.17	23.55	1972-73	0.40	0.130	- 0.050
1973-74	- 27.70	21.95	- 5.56	-43.49	1973-74	- 0.30	0.070	0.120
TOTAL	760.60	849.20	12.50	-101.00	TOTAL	0.61	1.160	- 2.350
					<u>NONDURABLE MANUFACTURING</u>			
1960-61	1.30	-0.34	-2.00	3.64	1960-61	- 1.40	- 1.40	- 2.97
1961-62	1.30	2.85	0.17	-1.73	1961-62	9.09	11.42	- 2.28
1962-63	- .50	2.00	0.11	-2.61	1962-63	5.50	8.09	- 5.95
1963-64	5.50	2.87	.06	2.55	1963-64	6.19	11.83	- 6.11
1964-65	3.59	4.50	0.21	-1.11	1964-65	13.20	17.81	- 4.15
1965-66	.50	5.64	-2.59	-2.55	1965-66	15.99	22.29	- 4.30
1966-67	1.20	3.26	-5.50	3.44	1966-67	0.60	13.28	- 7.73
1967-68	3.29	3.47	-0.80	0.63	1967-68	6.39	14.01	- 4.26
1968-69	2.50	3.98	1.23	-2.71	1968-69	5.29	15.84	- 7.25
1969-70	2.40	.79	-0.44	2.05	1969-70	2.30	2.90	- 9.00
1970-71	- 2.90	.50	2.97	-6.37	1970-71	-12.00	1.80	-11.10
1971-72	4.20	4.07	2.09	-1.96	1971-72	1.00	14.60	- 8.70
1972-73	14.80	5.06	1.08	8.65	1972-73	3.60	17.50	- 9.58
1973-74	-14.30	2.64	-5.24	-11.70	1973-74	-13.00	8.20	-11.40
TOTAL	22.80	41.31	-7.92	- 9.81	TOTAL	38.15	158.17	-94.78
					<u>DURABLE MANUFACTURING</u>			
1960-61	1.30	-0.34	-2.00	3.64	1960-61	-16.00	- 1.44	-11.02
1961-62	1.30	2.85	0.17	-1.73	1961-62	12.50	11.31	7.64
1962-63	- .50	2.00	0.11	-2.61	1962-63	- 9.20	8.08	- 3.58
1963-64	5.50	2.87	.06	2.55	1963-64	- 9.09	11.39	- 4.76
1964-65	3.59	4.50	0.21	-1.11	1964-65	16.59	16.52	7.42
1965-66	.50	5.64	-2.59	-2.55	1965-66	26.09	20.89	18.58
1966-67	1.20	3.26	-5.50	3.44	1966-67	3.20	12.78	- 4.42
1967-68	3.29	3.47	-0.80	0.63	1967-68	- 2.60	13.56	- 7.74
1968-69	2.50	3.98	1.23	-2.71	1968-69	2.39	15.02	- 4.01
1969-70	2.40	.79	-0.44	2.05	1969-70	-28.40	3.20	-30.50
1970-71	- 2.90	.50	2.97	-6.37	1970-71	-28.70	1.80	-24.80
1971-72	4.20	4.07	2.09	-1.96	1971-72	- 1.40	14.20	1.60
1972-73	14.80	5.06	1.08	8.65	1972-73	11.30	17.00	12.60
1973-74	-14.30	2.64	-5.24	-11.70	1973-74	-19.60	8.10	- 7.30
TOTAL	22.80	41.31	-7.92	- 9.81	TOTAL	42.90	152.41	-50.29

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, *Employment and Earnings for States and Areas*. The calculations for 1960-1970 were supplied through the courtesy of Dr. Robert Lindsay, New York State Council of Economic Advisors.

FIGURE 7A.5 (Cont'd.)

<u>TRANSPORTATION AND PUBLIC UTILITIES</u>				
	(R)	(N)	(M)	(S)
1960-61	0.59	- 0.52	- 3.24	4.37
1961-62	0.70	4.31	- 4.19	.58
1962-63	1.10	3.00	- 3.11	1.21
1963-64	1.50	4.36	- 2.49	- 0.36
1964-65	3.60	6.53	- 3.23	0.29
1965-66	5.19	8.11	- 3.63	0.72
1966-67	4.10	4.81	- 0.51	- 0.19
1967-68	0.00	5.20	- 3.28	- 1.91
1968-69	9.89	5.79	- 1.20	5.30
1969-70	6.00	1.20	1.60	3.20
1970-71	- 1.10	0.80	- 2.60	0.70
1971-72	.50	6.30	- 4.00	- 1.90
1972-73	3.50	7.60	- 2.40	- 1.80
1973-74	- 3.40	3.60	- 1.60	- 5.40
TOTAL	32.20	61.10	-33.90	4.80

<u>TRADE</u>				
	(R)	(N)	(M)	(S)
1960-61	6.10	- 1.31	- 0.49	7.91
1961-62	12.59	10.94	- 3.22	4.88
1962-63	12.20	7.83	- 0.61	4.97
1963-64	14.69	11.64	1.48	1.57
1964-65	18.80	17.89	1.34	- 0.43
1965-66	20.99	22.68	- 4.40	2.72
1966-67	12.10	13.65	- 1.11	- 0.44
1967-68	16.79	14.76	1.82	0.20
1968-69	26.19	17.03	2.21	6.94
1969-70	23.10	3.50	8.30	11.20
1970-71	20.20	2.30	9.00	8.90
1971-72	19.70	19.50	3.30	- 3.20
1972-73	38.30	24.30	0.60	13.40
1973-74	- 3.30	12.00	0.90	- 16.20
TOTAL	238.40	176.70	19.12	42.40

<u>FINANCE, INSURANCE, REAL ESTATE</u>				
	(R)	(N)	(M)	(S)
1960-61	2.60	- 0.31	2.37	0.54
1961-62	2.19	2.62	- 0.31	- 0.10
1962-63	2.10	1.85	0.70	- 0.46
1963-64	2.29	2.74	- 0.08	- 0.35
1964-65	2.10	4.16	- 1.98	- 0.08
1965-66	2.50	5.16	- 2.61	- 0.04
1966-67	3.60	3.04	1.08	- 0.52
1967-68	3.69	3.31	1.84	- 1.46
1968-69	2.89	3.82	2.08	- 3.00
1969-70	5.10	0.80	3.20	1.20
1970-71	4.00	0.50	3.10	0.40
1971-72	3.20	4.30	0.20	- 1.30
1972-73	7.30	5.20	- 1.10	3.20
1973-74	3.20	2.60	0.20	0.40
TOTAL	46.80	39.80	8.70	- 1.60

<u>SERVICES</u>				
	(R)	(N)	(M)	(S)
1960-61	12.19	- 0.88	9.06	4.01
1961-62	14.70	7.59	4.95	2.15
1962-63	12.60	5.55	4.76	2.28
1963-64	10.09	8.36	5.07	- 3.37
1964-65	14.00	12.84	0.24	0.90
1965-66	15.20	16.30	0.19	- 0.91
1966-67	20.79	9.82	9.15	1.81
1967-68	22.29	10.99	7.24	4.05
1968-69	21.50	13.03	8.29	0.17
1969-70	14.60	2.70	11.10	0.80
1970-71	9.30	1.70	8.10	- 0.50
1971-72	15.70	14.70	2.50	- 1.50
1972-73	24.20	18.30	2.60	3.30
1973-74	10.00	8.90	9.40	- 8.40
TOTAL	217.6	129.90	82.60	4.80

<u>GOVERNMENT</u>				
	(R)	(N)	(M)	(S)
1960-61	11.39	- 0.85	8.15	4.09
1961-62	9.20	7.28	1.54	0.37
1962-63	9.29	5.23	5.11	- 1.04
1963-64	7.89	7.81	3.77	- 3.68
1964-65	15.40	11.92	2.54	0.93
1965-66	16.59	15.26	5.67	- 4.33
1966-67	17.20	9.26	8.24	- 0.30
1967-68	15.20	10.29	3.00	1.89
1968-69	15.69	12.00	- 1.42	5.11
1969-70	15.00	2.40	8.00	4.60
1970-71	14.20	1.60	8.20	4.50
1971-72	18.90	13.60	0.00	5.30
1972-73	24.80	17.10	- 4.90	12.50
1973-74	17.90	8.40	8.60	0.80
TOTAL	208.60	121.30	56.50	30.70

FIGURE 7A.6
MANUFACTURING

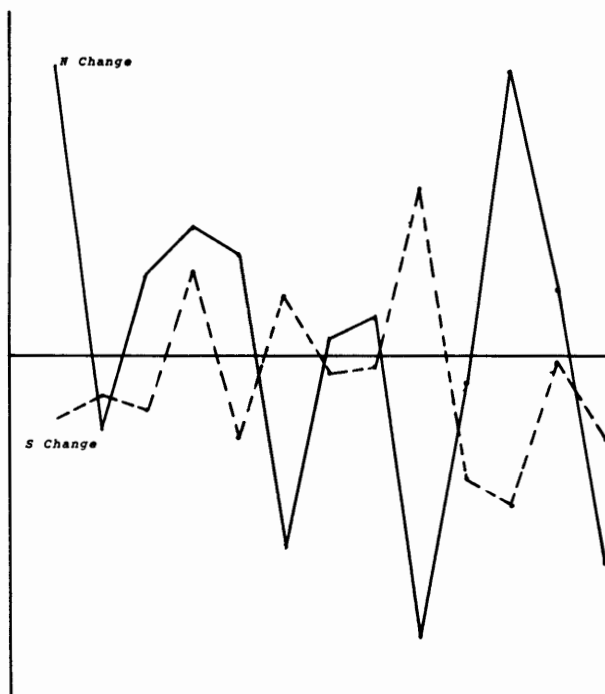


FIGURE 7A.8
TRADE

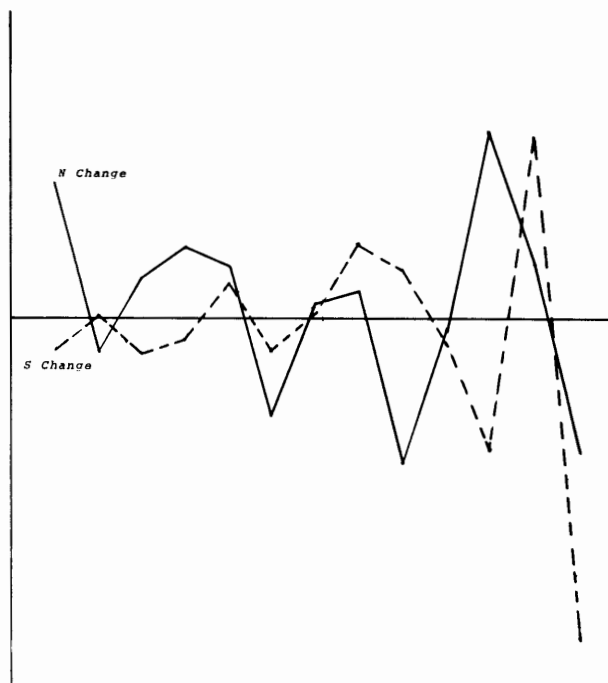
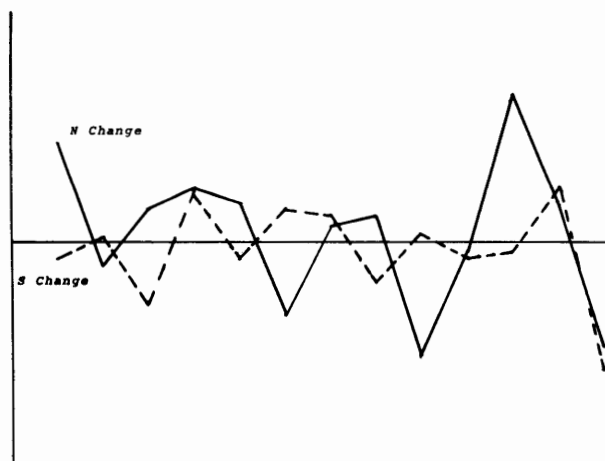


FIGURE 7A.7
SERVICES



4. A SHORT BIBLIOGRAPHY ON THE MEASUREMENT OF UNEMPLOYMENT

1. Bregger, John E., "Unemployment Statistics and What They Mean", *Monthly Labor Review*, November, 1971.
2. O'Neal, Arthur, "How Unemployment is Measured in New Jersey", *New Jersey Economic Indicators*, October, 1972.
3. U.S. Department of Labor, Bureau of Labor Statistics, and U.S. Department of Commerce, Bureau of the Census, "Concepts and Methods Used in Manpower Statistics from the Current Population Survey", *BLS Report*, No. 313, and Current Population Reports, Series P-23, No. 32, Washington, DC, 1967.
4. Wetzell, J.R., and Zeigler, Martin, "Measuring Unemployment in States and Local Areas", *Monthly Labor Review*, June, 1974.
5. _____, "New Procedures for Estimating Unemployment in States and Local Areas", *U.S. Statistical Reporter*, May, 1974.

VIII

THE QUALITY OF THE NEW JERSEY LABOR FORCE*

It is widely believed that New Jersey maintains a highly skilled, highly educated labor force, which predisposes the State's economy towards sophisticated and high-skill industries. The history of New Jersey's industrial development confirms this belief. Our study of the long-run trends of New Jersey's manufacturing sector ** indicates a higher level of labor productivity compared with average productivity in both the U.S. and other mid-Atlantic states.

The objective of this chapter is to examine, in some detail, the degree to which New Jersey's comparative advantage, arising from the productivity of its labor force, depends on its quality.

We should add that an examination of the various factors which contribute to the quality of the labor force is especially important in light of socio-economic changes in New Jersey which have occurred in the nineteen sixties. They have meant, inter alia, a shift in the demand for labor.

The ability of the State's economy to adjust to the new skill mix requirements, depends upon the various factors which, in their entirety, contribute to the quality of its labor force.

Our analysis of labor force quality focuses on the changing educational level of the labor

force in comparison with other states of the nation and the effect on the State's labor force of changes in the industrial mix. A further piece of evidence on New Jersey's labor force potential is the contribution of New Jerseyans to technical progress as this is reflected in the number of patent awards. Finally, the quality of the labor force is also illustrated by the number of research and development facilities located in New Jersey. Though these three aspects of labor force quality do not do full justice to the complexity of the term, they nevertheless do contribute to a description of it.

Educational Attainment of New Jersey's Labor Force

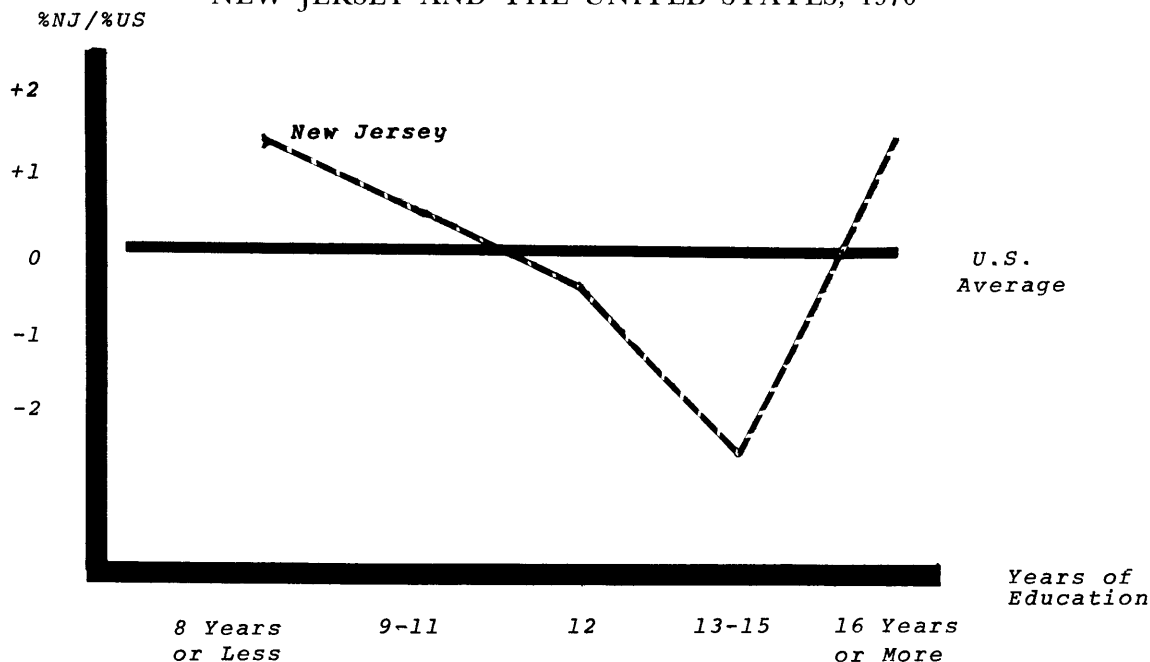
Although the overall increase in educational attainment is well documented, our purpose here is to assess the relative superiority, if any, of New Jersey's labor force. Before proceeding to a detailed analysis we can make some fairly simple comparisons using aggregated data. Figure 8.1 compares the per capita level of educational attainment of employed persons in New Jersey and the U.S. It is immediately apparent that New Jersey has a greater share of workers with low levels of education in all categories below twelve years of schooling. In

* Prepared in a joint effort by Adam Broner, George Nagle and Peter Bearse of the Office of Economic Policy.

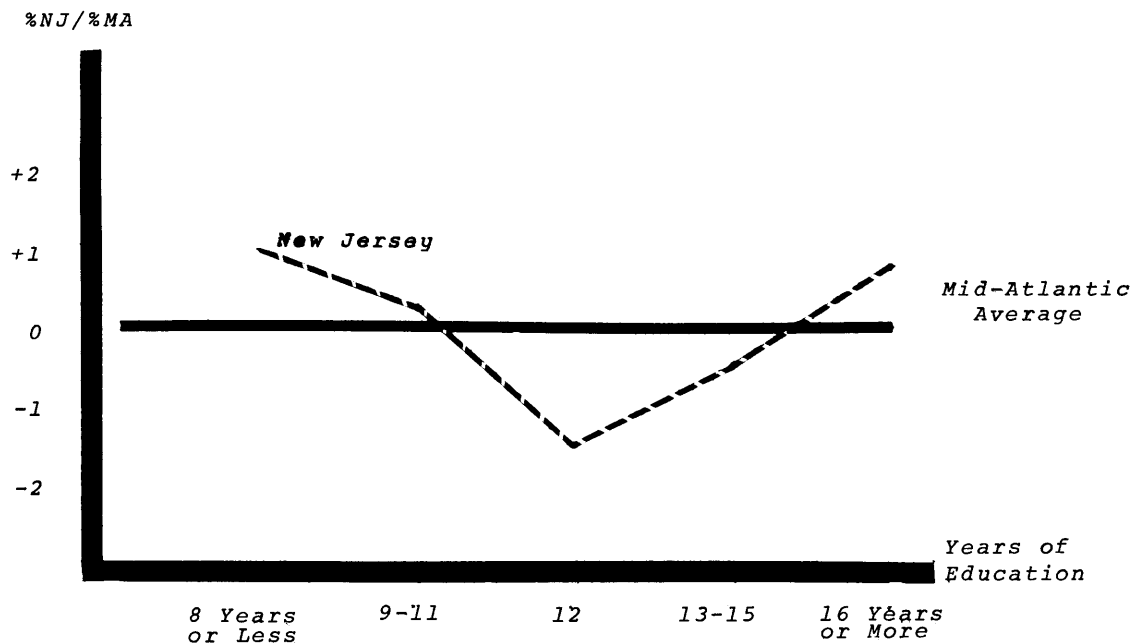
** See Chapter VI of this report.

FIGURE 8.1

DIFFERENCES IN PER CAPITA EDUCATIONAL ATTAINMENT FOR
NEW JERSEY AND THE UNITED STATES, 1970 *



DIFFERENCES IN PER CAPITA EDUCATIONAL ATTAINMENT FOR
NEW JERSEY AND THE MID-ATLANTIC STATES, 1970 *



* The graph compares the distributions of educational attainment of the labor force in New Jersey and the U.S. The comparison is made on a per capita basis; that is, the number in each range of educational attainment as a percent of total population for both the State and nation (indicated by %N.J.; %U.S.). The U.S. per capita figures provide a base line for comparison (indicated by the thick horizontal line). What the graph shows is how much more or less, percentagewise, are the national per capita levels relative to the State's levels for each of five educational ranges. Whenever the dashed (N.J.) curve lies above the base line, the State has a relatively larger labor force with that range of educational attainment. A similar comparison between N.J. and Mid-Atlantic States is presented in the lower graph.

SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS, New Jersey and the United States, 1970.

more specific terms, New Jersey has almost 2% more workers with less than eight years of schooling. At the level of twelve years of schooling New Jersey has only a slightly larger share of high school graduates than the nation as a whole. New Jersey is relatively deficient in workers with 13 to 15 years of education. Since this category includes most vocational, technical, and two-year college graduates, we can tentatively surmise that New Jersey has lagged in developing specialized training opportunities. New Jersey has also a slightly higher share of college graduates.

Comparing New Jersey's labor force to the Mid-Atlantic Region reveals a somewhat similar pattern. New Jersey has a larger share of its work force at both ends of the education distribution; that is, New Jersey has more workers with less than eight years of school and more workers with a college education. The State, however, does fall close to the regional average in the 13-15 years-of-school category, so it is possible that the entire region is at a comparative disadvantage with regard to labor trained at intermediate or technical school levels.

Theoretically, New Jersey's larger share of uneducated and presumably unskilled labor has implications from the standpoint of unemployment levels in the State. Unexpected declines in market demand probably affect firms' hiring decisions. Workers with few skills and training are more prone to lay-offs. Highly trained labor, on the other hand, is more likely to be retained even though, in a cyclical downturn their contribution to production is low relative to the associated wage cost incurred by the firm. The assumption here is that firms hold on to highly skilled labor in economic downturns more so than in the case of less skilled labor.

Summary data from the 1970 Census of Population indicate increased educational attainment of the State's labor force. Over the past decade, 1960-70, the proportion of high school graduates increased 29% while the share of college gradu-

ates increased 38%. The median years of school completed rose from 10.6 years in 1960 to over 12 years in 1970. Since 1960, the New Jersey worker who has had at least four years of high school has become the rule rather than the exception. The general upgrading in workers' education over the past decade has not been confined to occupations which require considerable formal training or education. In every major occupation group there have been gains in educational attainment.

Apparently the job market has successfully absorbed the increased supply of highly educated labor. This may reflect an improvement in the quality of education which now better prepares the labor force for the requirements of a changing job market. There has been a rapid growth in technical-vocational schools, manpower programs, and community colleges, all of which depart significantly from the traditional liberal arts education to more specific job oriented schooling. If the increase in educational attainment persists, we should witness a continuing trend to increase the share of white collar jobs, with professional-technical occupations, managers and officials experiencing the highest rates of growth in employment.* In contrast, blue collar occupations such as craftsmen and operatives, which are dominated by less educated workers, have been declining and are expected to continue to decline in relative importance.

Educational Attainment and Job Opportunities

One explanation for the phenomenon of a more highly educated work force is the changing composition of industry and hence of output produced in the State. The connection between such a changing basket of goods and services produced and the demand for a more highly educated labor force is straightforward. As output changes so also do labor requirements. We cannot explore this matter fully given the limited scope of this chapter. But we need only note that changes in technology may be such that demand for skilled labor increases more dramati-

* King, Gary, "New Jersey's Manpower Challenge of the 1980's", New Jersey Department of Labor and Industry Bulletin—ECONOMIC INDICATORS, March 1975, No. 139.

cally than that of unskilled labor. Let us, therefore, try to see what changes in the occupational and industrial structure of the State's economy imply with regard to the educational attainment of the New Jersey labor force.

Figure 8.2 shows how the New Jersey labor force is distributed among major occupational groups, and average educational attainment within each.

The professionals, etc. category averages 15.6 years of education and represents 16.3% of the employed labor force. Managers, officials and proprietors average 13.4 years of education, sales workers 12.1 years and clerical employees, 11.7 years of schooling. Workers in the remaining occupations, Craftsmen, Services, Laborers, and Operatives, all average less than a high school education and, as such, experience higher rates of unemployment. We can make some cursory observations of how employment within these occupations has changed during the 1960's and relate these changes to the shifts in the State's industrial and occupational mix.

Total employment in New Jersey during the ten year period, 1960-70, grew by 620.8 thousand,

or by 28.7%. For each occupation we can distribute its total growth into three components:

- (1) A "statewide growth component," which is the gain in employment if that occupation grew at the statewide average rate of 28.7%;*
- (2) An "industry mix" component, which is the change in employment (relative to the statewide average) due only to shifts in the composition of employment among industries but not to changes in the occupational composition of employment *within* industries;
- (3) An "occupational share" component, which is the change in employment (relative to industry growth rates) due to shifts in the occupational composition of employment within each industry;

The sum of the "mix" and "share" components, which may be positive or negative, measures the difference between actual employment growth within an occupation and the growth that would have resulted if it had grown at the

FIGURE 8.2
DISTRIBUTION OF OCCUPATIONS AND LEVEL OF EDUCATIONAL
ATTAINMENT, NEW JERSEY LABOR FORCE, 1970

Rank	Occupation	% Employment	Average Education
1	Professional, Technical and Kindred Workers	16.3%	15.6 years
2	Managers, Officials, Proprietors	8.9%	13.4 years
3	Sales Workers	7.8%	12.1 years
4	Clerical Workers	20.5%	11.7 years
5	Craftsmen	13.9%	10.3 years
6	Services	9.9%	9.9 years
7	Laborers	3.9%	9.3 years
8	Operatives	18.8%	9.3 years

SOURCE: U.S. Department of Commerce, 1970 CENSUS OF POPULATION

* The term "rate" here is used for convenience, even though a simple percentage change over as long a period of ten years by no means represents a time rate of change since there is a lot of month-to-month, year-to-year variation in growth rates.

statewide average rate.* This can be labelled the "net relative change."

During the 1960's the number of Professional/technical employees increased by 163.2 thousand. This growth is distributed among a statewide average growth component of 80.4 thousand, an industrial mix component to which an additional 32.3 thousand jobs can be attributed, and an occupational share component of 50.5 thousand. Subtracting the statewide average growth component from 163.2 thousand yields a net relative change of 82.8 thousand jobs. Thus, not only has the growth in employment opportunities for professionals been well above average, but both occupational and industrial shifts have contributed positively to this above average change. Similarly, the Managers, etc. category grew by 46.2 thousand, but experienced a declining occupational share, which resulted in a negative net relative change of -11.4 thousand jobs.**

The heart of the problem lies within the four occupations at the bottom of the educational scale. Overall, employment for Craftsmen, Ser-

vices, Operatives, and Laborers grew by 193.1 thousand, but after average statewide employment growth is subtracted, these occupations have suffered a net relative loss of 128.8 thousand jobs! *Industrial shifts have led to a (net relative) loss of 57.0 thousand jobs* while occupational shifts have led to a loss of an additional 71.8 thousand jobs. Only the Services occupation escaped the fate of the other less educated occupations, posting a total employment change of +93.1 thousand, or 33.7 thousand over and above the statewide average growth rate. Even in this case, however, the occupational share component was negative.

In summary, employment growth in New Jersey has been generally favorable to those with above average levels of schooling. Growth in the Services occupation, which is well below average in educational attainment, is due to systematic changes in the State's industrial mix towards service industries and occupations.† Net relative employment losses for Craftsmen, Operatives and Laborers are directly linked to the overall decline in the State's manufacturing sector.

* The breakdown of occupational employment growth into these components is another example of the "shift-share" technique, which was used in Chapter VII to analyze employment and unemployment by industry. In algebraic terms, the breakdown is defined as follows:

$$\begin{aligned}\Delta O &= SW + IM + OS \\ SW &= \sum_i S \cdot O_i^{1960} \\ IM &= \sum_i (PCI_i - S) O_i^{1960} \\ OS &= \sum_i (PCO_i - PCI_i) O_i^{1960} ;\end{aligned}$$

Where:

ΔO = the increase in employment in a *given* occupational category in New Jersey.

SW = "Statewide Growth Component"

IM = "Industry Mix Component"

OS = "Occupational Share Component"

$\sum_i$ = "The sum, over all industries (i) "

S = The percentage change in *total* employment, statewide, from 1960-1970.

O_i^{1960} = The number of people employed in a given occupational category in industry (i), as of 1960.

PCI_i = The percentage change in employment in industry (i) from 1960-1970

PCO_i = The percentage change in O_i from 1960-1970,

Note that the result is dependent on the number of industry categories (i) one uses. We believe, however, that a finer breakdown would not contradict the above conclusions.

** There is some question of data comparability for managers and proprietors between 1960 and 1970. Additional questions included in the 1970 Census of Population enabled researchers to reclassify some portion of self-employed workers, which has resulted in an underestimate in the number of managers in 1970 by 1960 standards. Thus, the net relative loss in "managerial" jobs should be viewed as an indication of the direction of change but not as an exact measure of jobs lost in this category.

† The occupational category "services workers" should not be confused with the industry category "services." The fastest growing services *industries* (e.g. health, education, business services) employ labor with above average educational attainments (see Figure 8.4). At the same time, the use of services *occupations*, including Service workers, has been increasing in many industries, including manufacturing.

FIGURE 8.3
EMPLOYMENT AND SHIFT-SHARE COMPONENTS OF OCCUPATIONAL CHANGE,
NEW JERSEY, 1960-70 (in Thousands)

Occupations	Employment		Changes Related To:			Total Change	Net Relative Change
	1960	1970	State Growth	Industrial Mix	Occupational Share		
New Jersey (Total)	2,160.2	2,781.0	620.8	0.0	0.0	620.8	0.0
Professional, Technical and Kindred	279.7	442.8	80.4	32.3	50.5	163.2	82.8
Managers, Officials, Proprietors	200.3	246.4	57.6	5.8	-17.2	46.2	-11.4
Sales	178.7	217.9	51.4	11.6	-23.8	39.2	-12.2
Clerical	376.9	554.8	108.3	7.3	62.3	177.9	69.6
Craftsmen	344.9	388.7	99.1	-28.5	-26.9	43.7	-55.4
Operatives	485.0	527.1	139.4	-59.2	-38.0	42.2	-97.2
Laborers	87.8	103.2	25.2	- 5.8	- 4.1	15.3	- 9.9
Services	206.9	300.1	59.4	36.5	- 2.8	93.1	33.7

SOURCE: Office of Economic Policy.

Thus, we have shown that the burden of employment loss has rested on occupations at the lower end of the educational ladder.

The distribution of educational attainment within major industrial categories is shown in Fig. 8.4, which should be read one row at a time.* For example, in manufacturing about 23% of the employed work force had an eighth grade education or less, 34% were high school graduates, and nearly 11% were college graduates. The mean for manufacturing, 11.09 years, is an average of all levels of education weighted by the size of the work force at each level. The lowest mean level of educational attainment is to be found in the contract construction industry (10.8 years per worker).

Among other sectors, Transportation, Communications and Utilities; Wholesale and Retail Trade; and Public Administration all show averages well above 11 years' attainment but below 12. By contrast, the Finance, Insurance and Real Estate (FIRE) sector and several services industries average over 12 years of education. The exceptions in the services sector (those with relatively low levels of educational attain-

ment by their labor force) are the Hotels, Motels and Rooming House industry, Personal Services and Miscellaneous Repair Services.

The use of averages tends to hide significant variation in any distribution and the distribution of educational attainments is no exception. Two industries may have the same mean; one of them may have a bimodal distribution with large proportions of the labor force with either very high or very low attainment; the other may have most of the labor force bunched in the mid-range. These two situations are, of course, very different. Consider, for example, some pairs of industries with nearly identical mean levels of attainment. One such pair is Chemicals and Allied Products and Public Administration, with means of 11.75 and 11.73 years, respectively. Yet the former has a labor force with significantly higher proportions in the high and low educational ranges than the latter, whose labor force attainments are more bunched in mid-range. Similar comparisons can be made between the Electrical and Electronic Machinery and Equipment industry and the Retail Trade industry; and the Hotels, Motels, etc.

* Data on the distribution of educational attainment within industry has not heretofore been available from any source, including the U.S. Census. These data were specially derived by the Office of Economic Policy for the analysis in this Chapter.

FIGURE 8.4
EDUCATION BY INDUSTRIES IN NEW JERSEY IN 1970

CODE	INDUSTRY	Years of Education					Mean	Employment in 1970	Percentage Change In Employment 1960-1970
		Less Than or Equal to 8	9-11	12	13-15	Equal to or Greater than 16			
CC	Contract Construction	0.2295	0.2542	0.3653	0.0823	0.0688	10.78	119.2	21.51
MAN	Manufacturing	0.2287	0.2342	0.3387	0.0889	0.1095	11.09	863.0	6.73
20	Food and Kindred Products ...	0.2426	0.2547	0.3375	0.0827	0.0826	10.79	63.5	0.95
22	Textile Mill Products	0.2587	0.2511	0.3382	0.0780	0.0741	10.65	29.6	- 5.73
23	Apparel and Other Textile Products	0.3161	0.2771	0.3129	0.0557	0.0383	10.02	72.3	- 6.95
24-25	Lumber and Furniture	0.2515	0.2566	0.3487	0.0785	0.0648	10.62	15.4	- 0.65
26	Paper and Allied Products ...	0.2437	0.2482	0.3413	0.0832	0.0836	10.81	35.3	26.07
27	Printing and Publishing	0.1577	0.2078	0.3907	0.1139	0.1299	11.71	44.8	38.70
28	Chemicals and Allied Products.	0.1860	0.2052	0.3364	0.1074	0.1649	11.75	122.3	41.55
30	Rubber and Plastics Products ..	0.2597	0.2514	0.3320	0.0767	0.0802	10.68	40.0	37.00
32	Stone, Clay and Glass Products	0.2654	0.2593	0.3307	0.0734	0.0711	10.57	39.6	17.51
33	Primary Metal Industries	0.2470	0.2496	0.3414	0.0799	0.0822	10.77	37.2	-12.88
34	Fabricated Metals	0.2438	0.2462	0.3444	0.0812	0.0844	10.81	66.4	22.51
35	Machinery, except Electrical ...	0.2075	0.2219	0.3450	0.0969	0.1287	11.36	72.8	19.34
36	Electrical Equipment and Supplies	0.2095	0.2146	0.3285	0.0977	0.1497	11.49	116.9	- 4.49
37	Transportation Equipment	0.2397	0.2386	0.3357	0.0834	0.1026	10.96	26.3	-45.77
TCU	Transportation, Communication, Utilities	0.1991	0.2435	0.3650	0.0956	0.0968	11.17	182.2	21.87
42	Motor Freight Transportation* Warehousing	0.2477	0.2889	0.3449	0.0747	0.0438	10.45	61.4	47.95
WT	Wholesale Trade	0.1548	0.2176	0.3843	0.1225	0.1208	11.67	145.3	52.31
RT	Retail Trade	0.1726	0.2309	0.3710	0.1192	0.1063	11.45	392.9	40.72
53	Retail General Merchandise ...	0.1411	0.2163	0.3878	0.1342	0.1206	11.77	85.3	95.64
54	Food Stores	0.1870	0.2348	0.3781	0.1113	0.0888	11.24	70.4	28.23
55	Automotive Dealers and Service Stations	0.2064	0.2384	0.3651	0.1003	0.0898	11.11	46.0	38.55
58	Eating and Drinking Places ...	0.2442	0.2695	0.3367	0.0879	0.0616	10.64	85.6	41.96
FIRE	Finance, Insurance, and Real Estate	0.0911	0.1842	0.4456	0.1445	0.1346	12.22	117.7	32.84
70	Hotels, Rooming Houses, etc. ...	0.2106	0.2471	0.3650	0.0981	0.0793	11.00	17.6	26.62
72	Personal Services	0.2637	0.2771	0.3326	0.0774	0.0492	10.42	35.3	5.06
73	Business Services	0.1197	0.1732	0.3642	0.1344	0.2085	12.50	86.0	98.61
76	Miscellaneous Repair Services ..	0.2133	0.2455	0.3819	0.0874	0.0718	10.92	8.8	2.33
79	Amusement and Recreation Services	0.1641	0.1997	0.3278	0.1203	0.1881	12.05	14.5	35.51
80	Health Services	0.1344	0.1688	0.3033	0.1319	0.2616	12.74	98.9	87.31
82	Educational Services	0.0702	0.1076	0.2674	0.1620	0.3928	14.07	40.3	85.71
89	Miscellaneous Services	0.0702	0.1207	0.3168	0.1569	0.3355	13.69	27.9	136.44
PA	Public Administration	0.1496	0.2072	0.4004	0.1176	0.1252	11.73	375.1	54.87

SOURCES: 1970 Census of Population, EMPLOYMENT AND EARNINGS, and New Jersey Department of Labor and Industry.

industry vs. the Transportation Equipment industry, among others. One might say that in juxtaposing these industries (manufacturing vis a vis nonmanufacturing) we are comparing apples with oranges. Such a response would not be justified. What if, as one can expect, certain manufacturing industries are declining at the same time that certain non-manufacturing industries are expanding *but* the quality of the labor force in the expanding industries differs significantly from that in the declining industries? Then the State's economy will face a

difficult problem in adapting its labor force to the changes in the composition of employment. Let us see to what extent New Jersey has such a problem.

Has employment growth in New Jersey tended to be in those industries which require relatively greater or relatively lesser educational attainments on the part of the labor force? The answer seems to be "greater." This conclusion is suggested by a positive correlation between the mean educational attainment and industry

employment growth, using the data shown in Figure 8.4. In other words, those industries which have grown fastest from 1960-1970 are those whose employees, on the average, have attained relatively higher levels of education. This observation is supported if, instead of using averages, we use the proportions from the lower (elementary) and higher (college) ends of the educational distributions. As expected, there is an inverse correlation between industry growth and the proportion of workers with only an elementary education. In other words, the faster growing industries require relatively less labor with little education.* This change in the composition of employment *could* contribute to unemployment if the work force in slow growing or declining industries is also older and less able to make educational or occupational transitions required by jobs in growing industries.

What industries are typical of the above relationship? First, there is an obvious contrast between manufacturing and services. The figures clearly indicate that the shift to a "services economy" is accompanied by a demand for a better educated labor force. This is especially apparent in the area of intermediate, business, public and semipublic service industries. Within the manufacturing sector, Printing and Publishing exhibited the greatest increase in employment and its labor force is characterized by a high average level of educational attainment (11.75 years). The Chemical Products industry (mean attainment also 11.75) also grew at a rate well above the manufacturing average. Non-electrical machinery maintained above average employment growth and educational attainment. Among slow growing or declining industries only the Electrical and Electronic Machinery and Equipment industry had a labor force with above average educational attainment.

The faster growing manufacturing industries employed a labor force with a somewhat higher average level of education, 11.2 years. Slow growing or declining manufacturing industries employed a labor force with a below average level of education, 10.8 years.

These observations indicate that New Jersey has a problem of adapting its labor force to changes in the composition of employment, but they do not necessarily indicate that the problem is not being solved. So far, we really only looked at the "demand" side of this problem—the educational requirements of industry—without considering the "supply" side—the workers themselves. It may well be that existing institutional arrangements—schools, colleges, vocational schools, manpower programs, on-the-job training, etc.—are adequately helping the State's labor force to adapt to changing job demands. Consider, in this regard, Figure 8.5. The graph shows that there have been significant improvements in educational attainment of the labor force at both the lower and upper ends of the scale. In relation to the nation, however, New Jersey is falling behind in the "post secondary" education range (13-15 years). This is the range in which people receive specialized training in technical areas, sophisticated skills and semi- or para-professional occupations. The corresponding institutions are community colleges, vocational schools and specialized private academies. The "gap" indicated by the graph raises a question whether the State is doing enough to meet the needs in the "post secondary" range. This is a question we cannot deal with here but which the Commission on Financing Post Secondary Education should address.

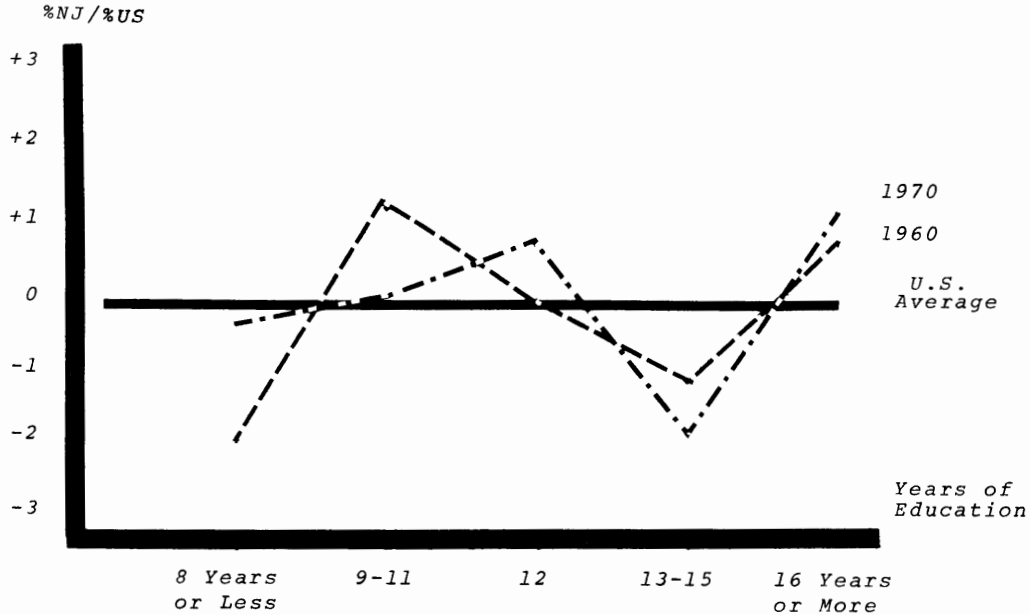
There is still no way of assessing, on the basis of the statistics shown, whether, or how efficiently, supply and demand is being "matched" in the New Jersey labor market.** The apparent improvements at the lower and

* All the correlations discussed in this paragraph are based on the 28 industries listed in Figure 8.4 which are defined at the two digit level of the U.S. STANDARD INDUSTRIAL CLASSIFICATION. For the statistically minded, the correlation coefficients (r-values) are respectively, 0.775, -0.775 and 0.697 for the correlations of percent change in industry employment with the mean, elementary proportion and college proportion of the educational attainment distribution.

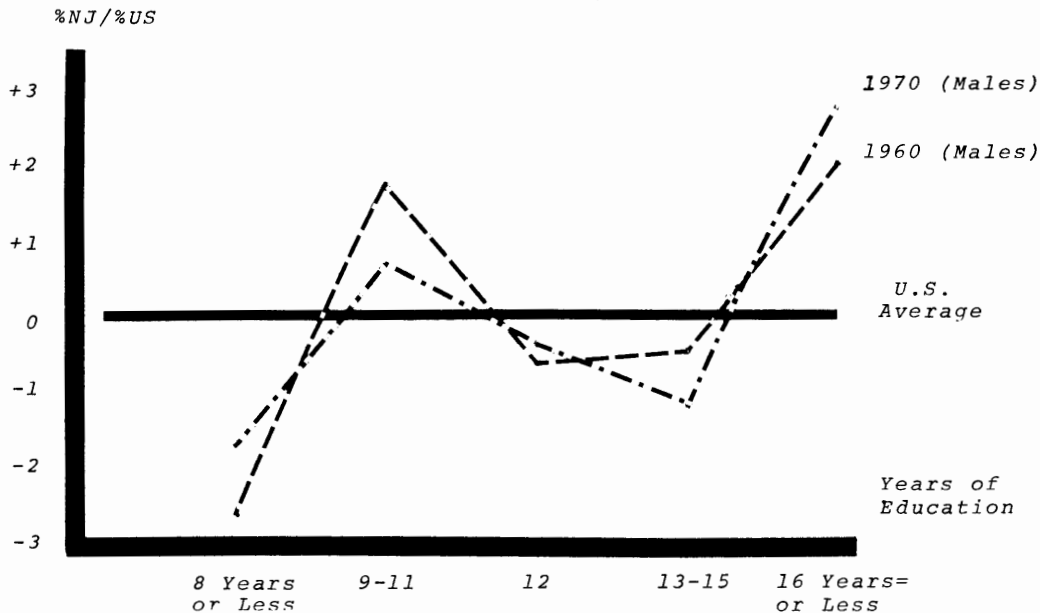
** One of the difficulties is that the relevant labor market for New Jerseyans extends far beyond the State's political boundaries, so the supply side depends on the commuting radius for different classes of workers.

FIGURE 8.5

DIFFERENCES IN PER CAPITA EDUCATIONAL ATTAINMENT, TOTAL
POPULATION 25 YEARS AND OLDER, NEW JERSEY AND THE
UNITED STATES, 1960-70*



DIFFERENCES IN PER CAPITA EDUCATIONAL ATTAINMENT,
MALES 25 YEARS AND OLDER, NEW JERSEY AND THE
UNITED STATES, 1960-70*



* The graphs compare the distributions of educational attainment of the labor force in New Jersey and the U.S. The comparison is made on a per capita basis; that is, the number in each range of educational attainment as a percent of total population for both the State and nation (indicated by %N.J.; %U.S.). The U.S. per capita figures provide a base line for comparison (indicated by the thick horizontal line). What the graph shows is how much more or less, percentagewise, are the national per capita levels relative to the State's levels for each of five educational ranges. Whenever the dashed (N.J.) curve lies above the base line, the State has a relatively larger labor force with that range of educational attainment.

SOURCE: U.S. Department of Commerce, Bureau of the Census, DETAILED CHARACTERISTICS, New Jersey and the United States, 1970.

upper ends of the scale may or may not be sufficient. Indications are that there is a problem which is not just confined to the post-secondary range. Over the past few years, complaints by businessmen that there is a "jobs-skills gap" have cropped up repeatedly. A recent article in the Wall Street Journal indicated that this may even be a national problem. Here in New Jersey, also over the last few years, we have seen unemployment rise above the national rate, the burden of which falls especially hard on lower-status occupational groups. Yet the geographic mobility of people in these occupations (likelihood of their moving out-of-state) is relatively less than those in higher status occupations. Thus there is a danger that pools of long-term or "hard core" unemployment will build up in New Jersey if the economy does not recover rapidly. Meanwhile, there are "help wanted" ads for many types of highly skilled jobs that business seems to have trouble filling.*

These superficial observations do not make a case, but they may indicate that "where there is smoke there is fire;" i.e. there is a problem of adapting the State's labor force and industry structure to accomplish a better, more efficient process of matching jobs with people. Future work by the agencies most concerned with manpower problems will have to go far beyond this chapter in diagnosing the nature of the problem and prescribing some solutions.

A Composite Index of Educational Attainment in the Labor Force

We have calculated a state index of education as a characteristic of the quality of the labor force using the education by industry matrix developed in the previous section. The index of education measures the level of schooling attained by individuals employed in various sectors of the economy, and is calculated for persons 16 years and over participating in the labor force.

To obtain such an index, we cannot simply add the numbers of school years completed. School years completed are not equally valuable at different levels of education. In other words, one year of high school is more valuable than one year of elementary school. Similarly one year of college has a higher value to the individual and society than one year of high school or elementary school. Assuming this contention conforms with reality, we have expressed the number of actual school years completed in equivalent years. To each category of schooling** we attach a number which reflects the differentials in annual earnings of persons in each category of educational attainment.† Thus, assuming a high school graduate's annual earnings equal 1.0 we set the weight for persons in the 0-8 class equal to 0.692, for a person in the 9-11 class equal to 0.861, for an individual in the 13-15 category equal to 1.208 and for the last category equal to 1.761. Such an index now allows comparisons between states. A state which has proportionately more persons in the upper educational brackets will have a higher index than one which has fewer individuals in the upper brackets, though the two states might be identical in terms of a simple average of school years completed.

Different industries require different mixes of educational backgrounds among their employees due to differences in the mode of production or industrial organization. The apparel industry, for example, employs a labor force which is characterized by 16.7 equivalent school years, while the educational industry (all kinds of schools) employs persons which have attained over 23 equivalent school years. The more a state has developed the apparel industry and the less educational services, the lower will be the overall state index of education. However, this does not necessarily mean that in the apparel industry itself or in the educational industry the state employs persons of lower educational at-

* See the article: "Help Wanted: Over 400,000 Jobs Go Begging in an Era of 8.5 Million Jobless—Highly Skilled and Unskilled Sought but Unemployed Are Usually Neither One," WALL STREET JOURNAL, June 10, 1975, page 1.

** The following ranges of educational attainment were considered: 0-8 years, 9-11 years, 12 years (full high school), 13-15 years and 16 and more years (full college education and more).

† Annual earnings are U.S. averages for 1970, i.e.: 0-8 years = \$6,826, 9-11 years = \$8,496, 12 years = \$9,862, 13-15 years = \$11,919, 16 years or more = \$17,170.

FIGURE 8.6

COMPOSITE EDUCATIONAL INDEX OF THE LABOR FORCE
(NUMBER OF EQUIVALENT SCHOOL YEARS COMPLETED: NONSTANDARDIZED)

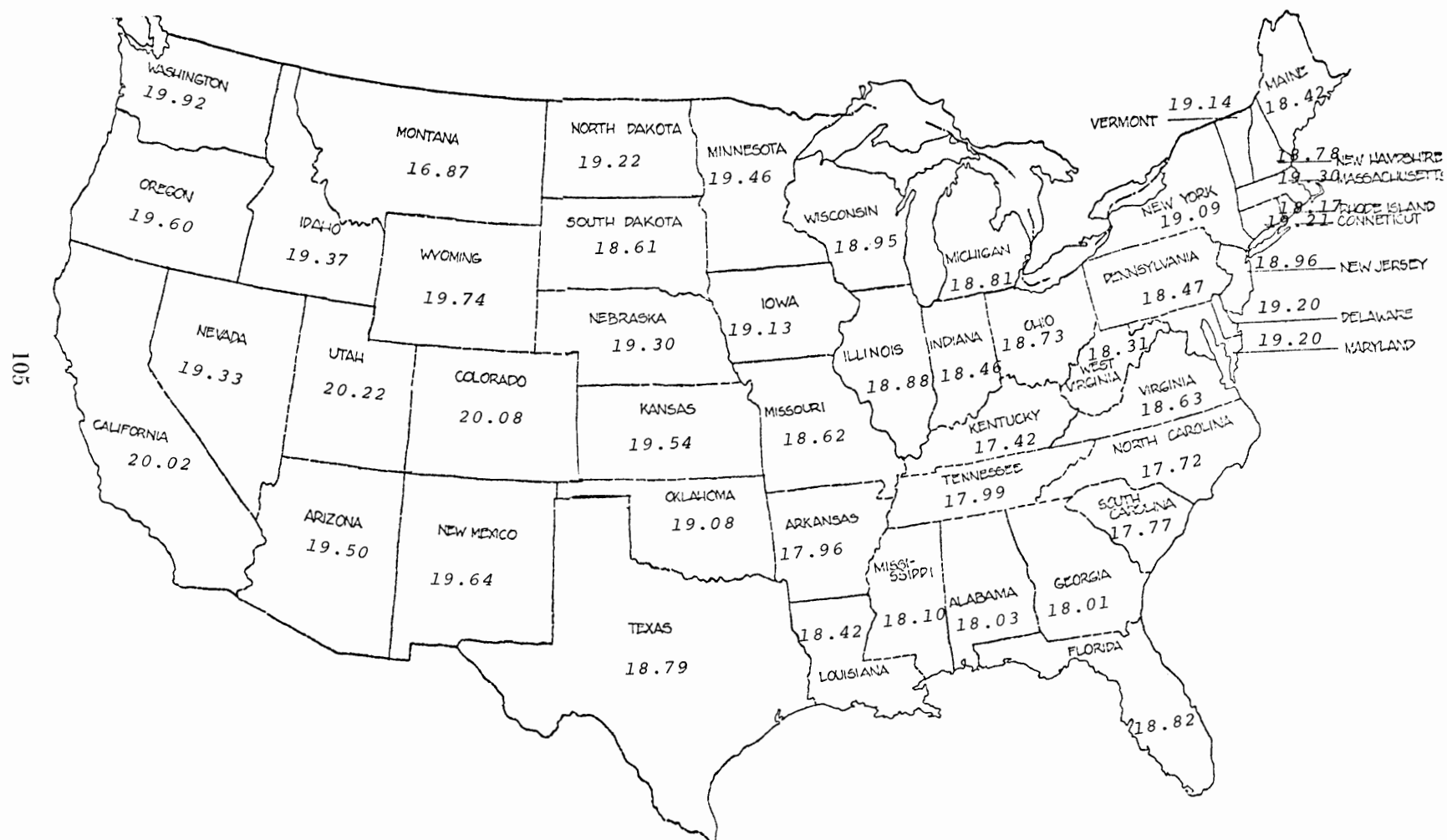
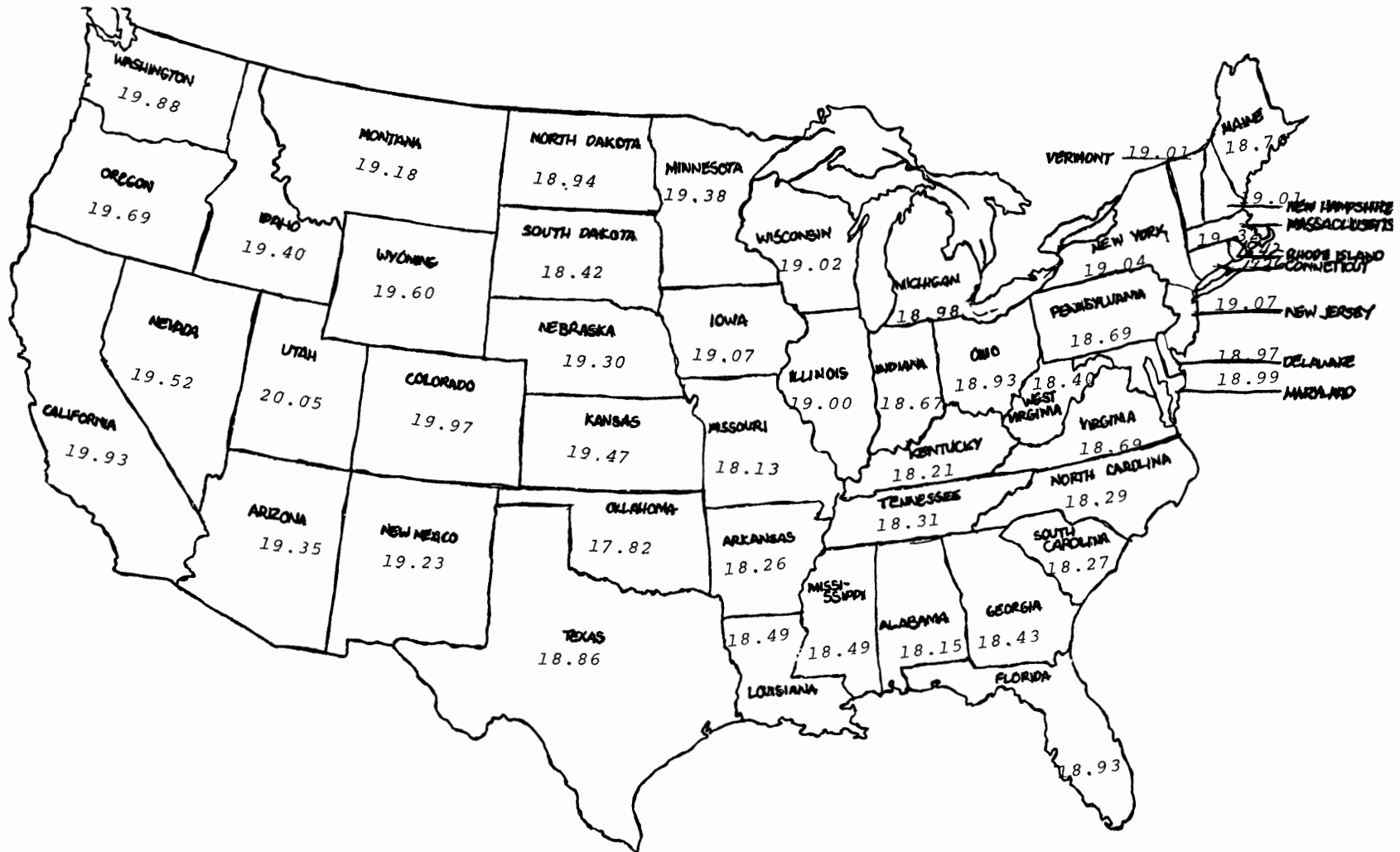


FIGURE 8.7

COMPOSITE EDUCATIONAL INDEX OF THE LABOR FORCE
(NUMBER OF EQUIVALENT SCHOOL YEARS COMPLETED: STANDARDIZED)



tainment. In order to distinguish between the impact of the industry composition and the industry-wide level of education we calculated the state indices of education in two versions. One--which will be called the "nonstandardized" index--does not adjust for differences in industry composition while the other--"standardized" index--does.

The diversity of these indices can be conveniently summarized by three broad levels of educational quality of the labor force. A number of Southeast states can be characterized by the lowest level: Kentucky has an index of 17.4, North Carolina--17.7, South Carolina, Tennessee, Georgia, Alabama, Mississippi and Arkansas all in the neighborhood of 17.7 - 18.0. At the other extreme are several Western Pacific states, with the highest index in Utah--20.2 followed by such states as Colorado, California, Washington, New Mexico and Oregon with indices in the neighborhood of 19.6 - 20.1. The Northeast and North Central states have indices which lie between the two extreme ranges, in most cases from 18.5 to 19.0. Roughly speaking, we can say that the difference between the South and East is one "equivalent year" of education. The same difference exists between the East and West coast states. The largest differential between states is that of Kentucky and Utah: almost three equivalent years of education. When expressed in percentages the biggest differential between states is about 16%. The difference between the South and East is almost 5%, as is the difference between the East and West.

Quite similar results are obtained when the indices are standardized for state differences in composition of employment among industries. In general, the differences between state indices are somewhat reduced. The indices for the Western states come out somewhat lower (California, Washington, Utah, Colorado, Arizona and New Mexico). For a number of other states the differences between the standardized and nonstandardized indices do not reveal a particular pattern. The inference which can be drawn from these differences is that in Southern states

proportionately more industries are located which require less educated personnel, while the opposite appears to be the case in most other states.

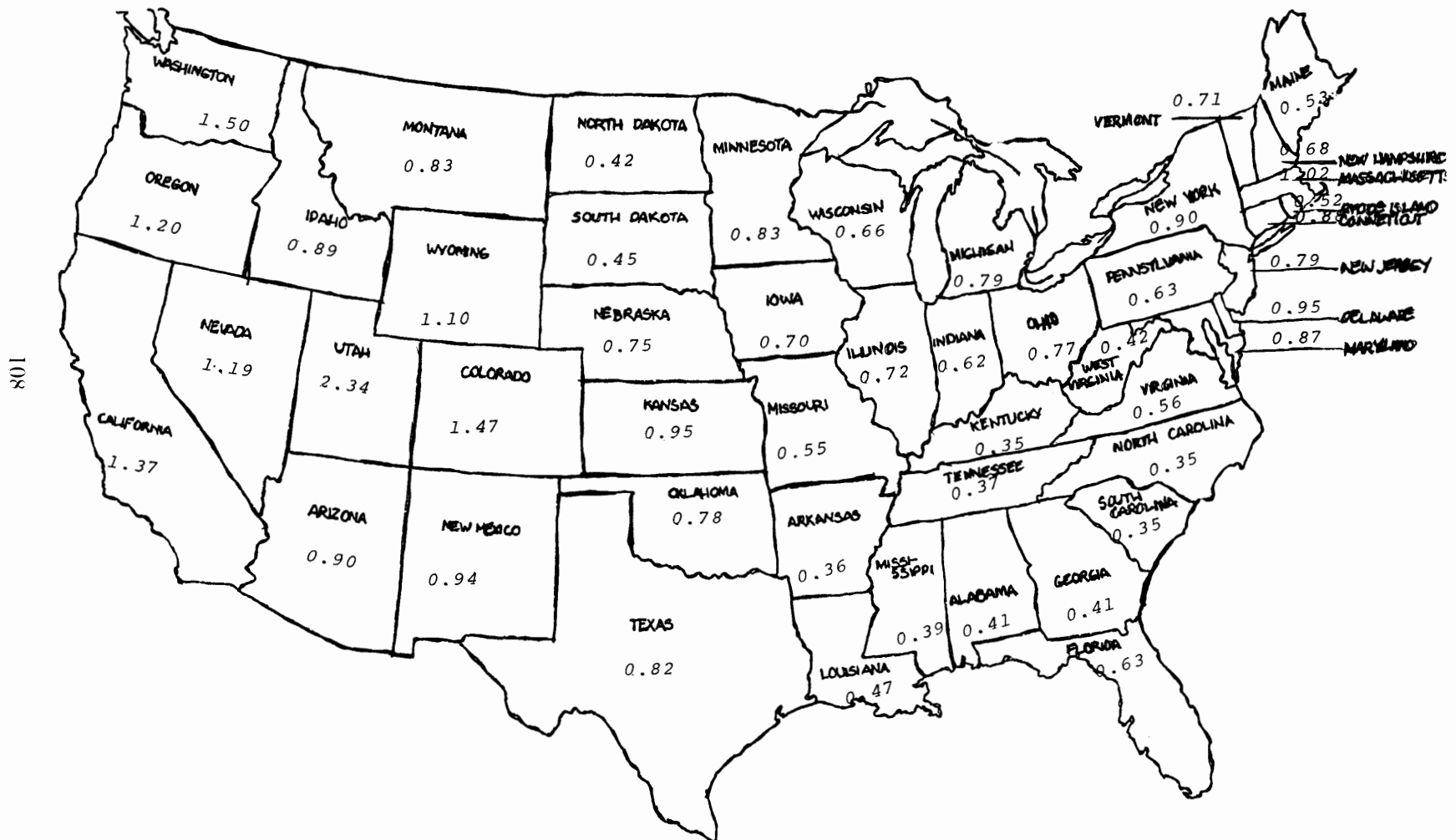
New Jersey's index of education equals 18.96 (nonstandardized) and 19.07 (standardized). These indices are precisely in the mid-range and do not significantly exceed the indices for other Northeastern states. As a matter of fact, Massachusetts and Connecticut have somewhat higher indices, while New Jersey prevails over Pennsylvania. The differences are, however, too small to be considered statistically significant. The prevalence of New Jersey over the Southern states is nevertheless unquestionable.

This broad picture of educational quality of the labor force in various regions and states based on our average index of education has been supplemented by a more detailed examination of the lower and upper ends of the educational spectrum in each state. In other words, the question we ask now is whether the observed differences in the average indices of education are a result of differences in the number of persons with low (0-8 years) or high (16 and more years) levels of education. In order to save space and simplify the analysis, we present the results of these calculations in a combined index. The combined index is a ratio of the number of persons having 16 and more years of education to persons having only 0-8 years. Thus, an index above 1.0 would imply that persons with a college education prevail over persons with, at most, elementary school education. Conversely, an index below 1.0 would mean a higher share of persons with elementary education.

The results of the "combined" index give an even more striking impression of variations in labor force quality among states. As of 1970, Utah, Washington, Colorado, California, Oregon, Nevada and Wyoming have attained a number of college educated persons exceeding the number of persons with elementary education. The only Eastern state in this category is Massachusetts (combined index--1.02). New Jersey's index (0.79) is rather on the low side compared

FIGURE 8.8

RATIO OF PERSONS HAVING COMPLETED 16 YEARS AND MORE OF EDUCATION
OVER PERSONS WITH 8 OR LESS YEARS OF ELEMENTARY SCHOOL



to a group of neighboring states, excluding Pennsylvania. The Southeastern and some Midwestern states have the lowest ratios, with several below 0.5. A ratio of this magnitude means that the number of persons in the labor force who have attained no more than eight years of elementary school is at least twice as large as the number of people who have completed a college education.

It is extremely important to understand the factors underlying these differences in the levels of education among states and regions. We have already indicated the effect of differences in industry composition. We do not know, however, whether the location of industries is a response to the quality of the local labor force, or whether the latter is influenced by the type of industry located in the area. Whatever the line of causation, industry composition is a factor explaining differentials in the educational level of the labor force. As we have seen, however, even after adjusting for differences in industry composition, the differentials in the educational indices still remain significant. Other factors which might be helpful in the analysis of educational differences are the age composition of the labor force, the size of the educational industry itself and the age and the educational composition of the migratory streams between various states and regions.

We now turn to an exploration of these additional influences. As far as the age composition of the labor force is concerned, let us consider the following hypothesis. The younger the age composition of the labor force the higher will be its educational level, because of the general tendency of educational attainments to rise over time. The following data for the U.S. will clarify this point. (See Figure 8.9.)

In spite of an increase of over 10 million persons in the U.S. population of age 25 and more during the decade 1960-1970, the number of people with only 0-8 years of schooling declined by more than 9 million. Accordingly, all other educational groups considerably increased. The younger generation of the U.S. population has attained higher educational levels. Therefore, states which have a larger proportion of the labor force in the younger age bracket are apt to have a higher average index of education. What remains to be examined is whether, for example, the Western states, which have higher indices of education, do actually have larger proportions of the labor force in the younger age bracket. In Figure 8.10 we present the salient information for a sample of 14 states including New Jersey.

The evidence clearly verifies our hypothesis. The Western states do have a younger labor force and, assuming all other factors to be equal,

FIGURE 8.9
YEARS OF SCHOOL COMPLETED, U.S. POPULATION
25 YEARS AND OLDER, 1960 AND 1970

School Years Completed	1960		1970	
	Number	%	Number	%
0-8	39,499,342	39.72	31,087,390	28.29
9-11	19,115,915	19.22	21,285,922	19.37
12	24,455,484	24.59	34,158,051	31.08
13-15	8,742,070	8.79	11,650,730	10.60
16+	7,625,273	7.67	11,717,266	10.66
TOTALS	99,438,084	100.00	109,899,359	100.00

Source: U.S. Population Census, 1970, *Detailed Characteristics*.

FIGURE 8.10
PERCENTAGE OF LABOR FORCE AGED 20-34
IN THE TOTAL STATE LABOR FORCE IN 1970

	Total Labor Force (in Thousands)	Labor Force Aged 20-34 (in Thousands)	Percentage of Labor Force 20-34 in Total Labor Force
New Jersey	3,048	928	30.45%
Wyoming	135	43	31.86%
Nebraska	615	196	31.87%
Idaho	282	91	32.27%
Oregon	852	277	32.52%
Kansas	936	306	32.70%
Washington	1,419	494	34.82%
Arizona	676	240	35.51%
Texas	4,510	1,617	35.86%
Utah	411	148	36.01%
Nevada	221	80	36.20%
California	8,418	3,054	36.28%
New Mexico	363	132	36.37%
Colorado	923	338	36.62%

SOURCE: General Social and Economic Characteristics 1970 Census of Population, Table 46.

should have higher indices of education. So, for example, in California and New Jersey, the *six-point* difference in the share of persons in the 20-34 years age bracket (36.28% minus 30.45%) must explain a significant part of California's relatively higher educational index.* This finding does not explain why these states have a younger labor force, but an examination of migratory movements between various regions will shed some light on this question.

Another factor of some importance is the size of the higher education sector. We use per capita student enrollment in colleges and universities as an indicator of the relative size of this industry.** The 1970 per capita student enrollment in various states is shown in Figure 8.11. Quite a strong correlation exists ($r = 0.69$) between the per capita enrollment of students in colleges and the standardized index of education. This positive correlation can be explained by (a) the underlying fact that a larger student enrollment reflects stronger demand for highly

educated people in all sectors of the economy and (b) a higher student enrollment leads to higher employment of college graduates in local (state, regional) industries.

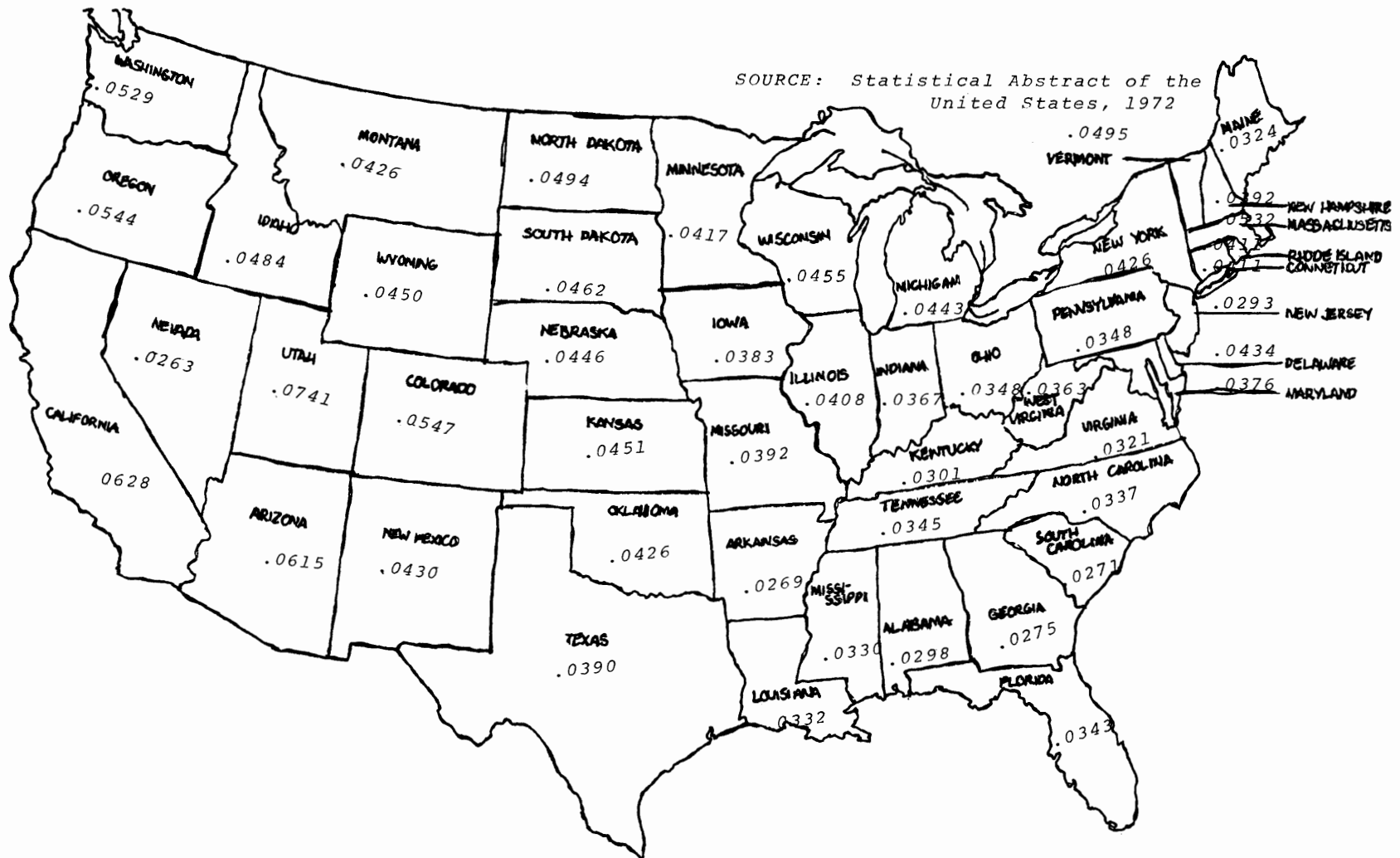
The levels of the state student enrollment indices follow the general pattern of the indices of education. The Western states, with few exceptions, have usually higher enrollment indices whereas the Southern states have lower enrollment indices. Again, the old industrial states of the Northeast have enrollment indices between these two extremes. It is, however, surprising that New Jersey's enrollment index is the lowest among the Northeast states and compares closely to the Southern pattern. As a matter of fact, the New Jersey enrollment index is the fourth lowest index in the U.S. following Arkansas, Georgia, and South Carolina. Naturally, this does not directly reflect higher educational attainments among New Jersey's population, part of which has been educated elsewhere or is sending children to study in other states. The index, how-

* We would like, in the future, to expand the analysis to include more rigorous statistical methods.

** A recent book by John Helmer (1975), *THE DEADLY, SIMPLE MECHANICS OF SOCIETY*, shows how the "mode of production" in the educational sphere is essentially no different from that in any other "industry".

FIGURE 8.11

PER CAPITA ENROLLMENT OF STUDENTS IN COLLEGES AND UNIVERSITIES



ever, does suggest a rationale and perhaps a need, for further development of the state's educational industry.* Beyond increasing job opportunities in education, this would help to upgrade the state's labor force (i.e., raise its general index of education).

It is also possible that the enrollment index is higher in those states which have a larger proportion of their population in the college age range. This might be true for Western states where large immigration alters the age composition of the state-born population. In New Jersey, however, net in-migration coexists with a relatively low enrollment index, indicating that its enrollment index is influenced by other factors.

Current data limitations make the study of migration's impact on labor force quality extremely difficult. We can argue that a person will move to another region if he can improve his present earnings (such an improvement in earnings would have to be calculated *net* of moving costs), find a better market for his existing skills, or increase his occupational mobility which will allow him to acquire new skills and higher earnings in the future.

A preliminary hypothesis that follows from the above is that the stream of migratory movements worsens the educational level of the labor force in most Eastern states and improves the educational index of Western states. In order to test this hypothesis we need information about the educational level of out- and in-migrants moving between various regions and states. Unfortunately, at this time, we only possess information on the educational attainment of migrants for various regions, not for states.** We therefore must confine our analysis to the Middle Atlantic states as a group. Moreover, because of the different behavior of New Jersey's migration from the other states of the

region, we think it too risky to draw any conclusions about the situation in the state from the results of the regional analysis. The regional analysis is, nevertheless, quite revealing.

We present in Figure 8.12 the results of our calculations of the migratory stream for three representative regions: New England and Middle Atlantic on the East coast and the Pacific region on the West coast.

The Middle Atlantic states are net importers of labor at the lower end of the educational ladder and are net exporters of labor in the higher educational brackets. New England follows the same pattern except for a near balance of in and out migration for the college group. This is due, presumably, to the role of highly-developed educational institutions in New England, especially in Massachusetts. A different pattern of migration is evident for the Pacific region. The Pacific states are net importers in all classes of education, but percentage-wise the largest net in-migration occurred in the college educated group.

A clearer picture can be obtained by calculating the ratio of net migration in the college group to net migration in the elementary school group. For New England this ratio is nearly zero ($+0.0179$) which reflects a balanced migration pattern. The ratio in the Middle Atlantic region is much less favorable. Its negative value (-0.5161) indicates an exchange of people with elementary education for people with college degrees. This "brain drain" cannot be a favorable factor for the economic health of the region. In fact, it might be a symptom of deterioration. In both East coast regions the educational characteristics of migration flows lead to a significant decline of the indices of education.

A diametrically different pattern emerges in the Pacific region. The ratio of in-migrants at

* "The efforts of the past decade, while they have greatly improved the state system, made no dramatic changes in New Jersey's standing relative to other states in the provision of higher education. New Jersey still stands at the top in the percentage of its students attending college in other states and well below the median in per capita expenditures on higher education." "New Jersey Higher Education: Back From the Brink," 189 SCIENCE 619 (22 August, 1975).

** Data for states and areas can be obtained from computer tape files containing the Public Use Sample of Basic Records for the 1960 and 1970 Censuses. A separate study of how in- and out-migration affects New Jersey's labor force, based on these files, is now being carried out by the Office of Economic Policy and will be reported in our 9th ANNUAL REPORT.

FIGURE 8.12
NET MIGRATION BY LEVEL OF EDUCATION DURING THE PERIOD 1965-1970,
SELECTED REGIONS

Region	Educational Attainment				Ratio 16+ Years 0-8 Years
	0-8 Years	9-12 Years	13-15 Years	16 and More Years	
<i>New England</i>					
Net Migration (persons)	+ 38,609	— 16,000	— 3,400	+ 689	+0.0179
Percent of Population in the Class . .	+ 3.91	— 0.55	— 0.55	+ 0.10	
<i>Middle Atlantic</i>					
Net Migration (persons)	+113,745	— 85,757	—47,111	— 58,700	—0.5161
Percent of Population in the Class . .	+ 3.15	— 0.87	— 2.89	— 2.80	
<i>Pacific</i>					
Net Migration (persons)	+112,573	+208,219	+86,259	+130,667	+1.1608
Percent of Population in the Class . .	+ 6.50	+ 3.23	+ 4.22	+ 7.58	

SOURCE: 1970 Census of Population, Supplementary Report, LIFETIME AND RECENT MIGRATION BY EDUCATIONAL ATTAINMENT FOR THE UNITED STATES: 1970, Table 12.

the higher and lower educational brackets is above 1.0 (1.1608). This means that the region is importing more people with college degrees than with elementary education. This helps keep the educational index at a relatively high level. If these divergent trends continue for a long period of time, a polarization of population by educational level of wide proportions might occur.

At this juncture it might be helpful to draw a somewhat broader picture of migratory streams in the U.S. New England and the Middle Atlantic regions have a negative overall balance of migration; i.e., more people are leaving than coming in. At the same time these two regions are net importers of the black population, mainly from the South. It is known that the level of education of the in-migrants is lower than that of the out-migrants. The result is a lower index of education for these regions. (See Figure 8.13.)

Another important factor in these migration flows is the differential mobility of the population in the lower and upper categories of education. From the point of view of the Middle Atlantic region, the geographic mobility of the

population with only an elementary school education is very low. Once these in-migrants come to the region they remain here. On the other hand, the mobility of the college educated population is very high. They leave the region in greater numbers than they come in. We think that the unfavorable migratory movement of the entire Northeast (possibly also of the West North Central states) helps to explain why, in general, it has lower indices of education of the labor force than in the West. Migration is definitely a factor worsening the quality of the labor force in this region.

At this point we wish to remind the reader that the educational attainment of the labor force is only a partial indicator of labor force "quality." It does not embrace job experience, on-the-job training or other types of specialized training outside the formal educational network. Given trends in the pace of technological change, however, it is likely that overall labor force quality will tend to depend more and more on educational attainment.

The analysis thus far suggests that we cannot rely on the belief that New Jersey's labor force is relatively superior or will remain so. The

FIGURE 8.13
NET MIGRATION BY REGIONS

Region	Total Population Five Years Old and Over (1970)	In- Migrants	Out- Migrants	Net Migration	Percentages of Net Migration
<i>Total Migrants</i>					
New England	10,857,738	1,385,509	1,775,587	— 390,078	3.5
Middle Atlantic	34,199,098	3,207,281	5,477,784	—2,270,503	6.5
East North Central	36,751,657	6,348,802	5,951,421	397,381	1.1
West North Central	14,982,319	2,155,670	5,569,026	—3,413,356	22.7
South Atlantic	28,104,622	5,761,879	4,378,673	1,383,206	4.9
East South Central	11,702,380	1,438,773	4,818,411	—3,379,638	28.8
West South Central	17,619,839	2,673,166	4,187,827	—1,514,661	8.5
Mountain	7,535,708	2,988,875	2,010,694	978,181	13.0
Pacific	24,341,461	9,758,865	1,549,397	8,209,468	33.7
<i>Negro Migrants</i>					
New England	338,494	131,745	29,896	101,849	30.1
Middle Atlantic	3,526,030	1,077,675	162,816	914,859	25.9
East North Central	3,447,032	1,340,600	154,043	1,186,557	34.4
West North Central	623,092	210,466	116,930	93,536	15.0
South Atlantic	5,714,360	282,979	1,373,151	—1,090,172	19.0
East South Central	2,295,667	97,046	1,391,095	—1,294,049	56.3
West South Central	2,675,858	148,488	817,140	— 668,652	24.9
Mountain	158,947	91,613	27,223	64,390	40.5
Pacific	1,350,336	733,263	41,581	691,682	51.2

SOURCE: 1970 Census of Population. *Lifetime and Recent Migration*, Table 9, p. 54.

extent of the state's comparative advantage with respect to an educated labor force is not great and may easily diminish; it cannot be taken for granted. This means that State agencies will have to pay more attention as to the possible impact of various programs or policies on the quality of the labor force, including migration. One obvious area of concern is the joint area of taxation and public services. Does the State's tax structure provide incentives or disincentives for investment in human capital or migration? Is the tax structure such that, over the long run, it can provide a basis for improving the provision of public services, amenities and factors affecting the "quality of life" in New Jersey; factors which might attract or retain people with higher education or skills? Another obvious area of concern is the quality, diversification and specialization of the State's educational industry. How can improvements in the State

college and university system contribute to a continuous upgrading of the labor force and how can we retain those whose education the State has subsidized? These are just a few important questions that bear on the topic of this Chapter.

What our observations suggest with regard to policy is that attention must be directed to measures which can help raise skill or educational levels at the lower rungs of the skill and occupational ladders—either via increased investment in specialized education or on-the-job training. Simultaneously, additional jobs need to be created for workers with low skills or education. This is all the more important since unemployment serves only to further impair the skills of workers. During periods of idleness, human capital will deteriorate in much the same way as physical capital.

New Jersey Leading in Technical Progress

In the preceding sections we dealt with the educational characteristics of New Jersey's labor force, but we considered the group of persons who attained college education without also considering the utilization of their skills (for example, their employment in research and development). It is useful to supplement the previous characteristics by indicators which will at least partially highlight the creativeness of the New Jersey labor force. Available data allow us to measure the contribution of New Jersey residents to the stock of technological innovations as this is reflected in the number of patent awards. The available statistics on patents do not reveal the number of persons who were awarded patents. Often patents are awarded to a team, not a single person. We use the index "patents per capita" for comparisons between states, not as an absolute index of the "innovativeness" of the State's labor force. We should also bear in mind the distinction between the innovative potential expressed by per capita patent awards and the extent of their application in New Jersey industries.*

In Figure 8.14 we present calculations of the number of patents awarded in 1970 to residents of various states. As can be seen, New Jersey has achieved remarkable results in terms of patents awarded to its residents. Before commenting on this surprisingly favorable indicator let us put the analysis in a somewhat broader perspective. We should notice first that there is no significant correlation between the indices of education, examined in the previous section, and the patent indices analyzed here. More precisely, we should state that for most of the Southern and some other less industrially developed states both indices are closely related. Lower educational indices are associated with lower patent indices. However, for most of the Northeastern and Western states there is no positive relationship between these two indices.

It should be recalled that the educational index is surprisingly high in a number of Western states but this is not accompanied by equally high patent indices. On the other hand, in the old industrial states of the Northeast the patent index is higher than in other states, with the exception of California, while the educational indices clearly lag behind the Western states. The implication seems to be that old industrial states have retained a strong capacity for technical innovations. This should help them attract or develop new technologically oriented industries. Since, in spite of this obvious advantage, Northeastern states are losing their leading industrial position, other adverse factors must be at work. Key factors which come to mind are, possibly, a lack of sufficient venture capital and entrepreneurship.

The state's patent index (0.58) is the second highest in the Union, preceded by Delaware (0.97) and followed by Connecticut (0.52). In most other Northeastern states, the patent index oscillates around 0.30. In the Southern states the patent index is often well below 0.10, while in most Western states it lies between 0.10 and 0.20.** New Jersey is not only near the top of the list of states on a per capita basis but also in terms of the number of patents awarded. Only two larger states—California and New York—report patents which exceed the number awarded to New Jersey residents. New Jersey's share in total patents awarded to U.S. residents oscillated between eight and nine percent during the 1960's and 1970's, while the share of the State's population is only 3.5%.

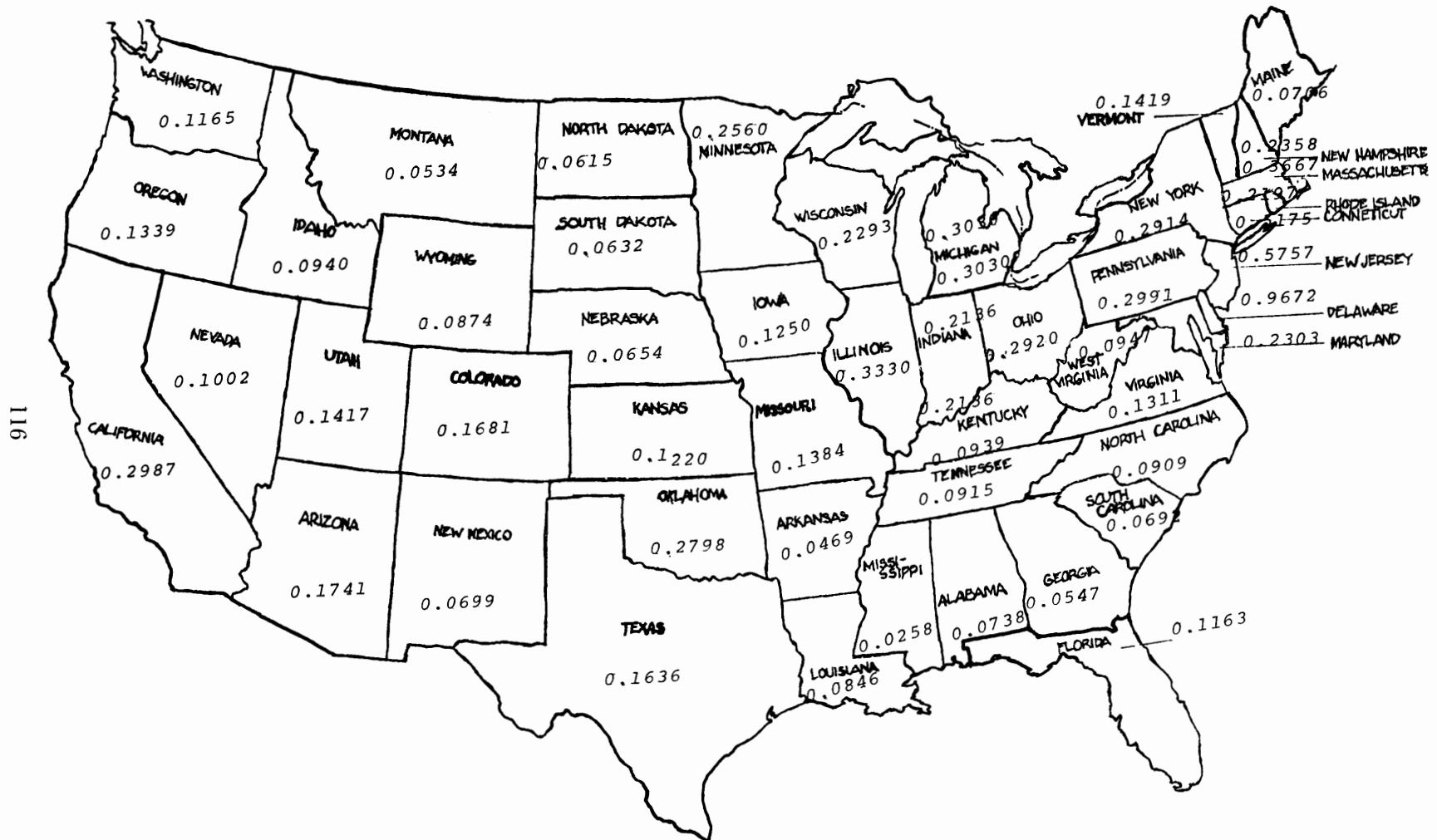
One can associate this excellent performance with New Jersey's concentration of research and development activities and its manufacturing industries which are at the leading edge of technical progress.† New Jersey has long been noted as a center of research and development activities. Studies have revealed that one out of every ten research dollars spent by American industry

* The uses, biases and limitations of patents data as an indicator of innovation are thoroughly discussed by Jacob Schmookler in: *PATENTS, INVENTIONS AND ECONOMIC CHANGE*, Harvard University Press, 1972.

** Patents per thousand of the population.

† See Chapter VI of this Report.

FIGURE 8.14
PATENTS PER CAPITA OF POPULATION IN 1970
(per thousand persons)



SOURCE: Technology Assessment and Forecast Third Report, June 1974. U.S. Department of Commerce

and government is spent in New Jersey. Consequently, New Jersey has the highest number of scientists and engineers per capita in the country, 25 per thousand, compared to a national average of 18 per thousand. The educational attainment of these professionals averages well above four years of college and median earnings are more than 55% above statewide averages.

Although, nationally, expenditures for research and development have declined (research and development account for 2.3% of GNP in 1974, down from 3.0% in 1964) this has not occurred in New Jersey. The Federal government supports more than one-half of all research and development expenditures with almost three fourths of this associated with defense and space exploration. Since New Jersey is not heavily dependent on these industries, research and development continues to thrive, in spite of recent federal cut-backs in such areas.

The capacity to produce technical innovations in New Jersey is clearly related to the State's concentration of chemicals, electric and electronic industries. This is illustrated by the fol-

lowing, Figures 8.15 and 8.16, which show ten product classes in which there has been the largest patenting effort.

In a number of cases New Jersey dominates all other states. Carbon compounds in chemistry, drugs, fermentation processes and chemical compositions are the fields in which New Jersey is number one. It is worth mentioning that in these areas neither New York nor California are the closest challengers to New Jersey's leading position. On the other hand, in the fields of electronics, optics and others listed in the tables, New York and/or California often appear as the leaders.

The general conclusion which follows from this presentation is that New Jersey has a number of fields in which it is very strong in terms of technical innovation and the competitive strength which innovation creates.

The Relationship Between Educational Attainment and Technical Progress

This chapter has pursued two lines of inquiry relating to the "quality" of the New Jersey labor

FIGURE 8.15

CLASSES WHERE NEW JERSEY'S RECENT PROPORTIONAL CONTRIBUTION TO THE TOTAL PATENTING EFFORT IS LARGEST

U.S. Patent Classification Number	Title	Number of Patents in the Years 1970-1973	Share in Total U.S. Patents (Percent)	New Jersey's Rank Among All States
260	Chemistry, Carbon Compounds	2,924	17.17	1
424	Drug, Bio-Affecting and Body Treating Compositions	1,140	26.45	1
307	Electrical Transmission or Interconnection Systems (includes solid state device circuits, timing circuits and electrical switching systems)	540	13.52	2
350	Optics, Systems and Elements	362	13.21	3
331	Oscillators	318	19.07	2
330	Amplifiers	230	19.01	1
195	Chemistry, Fermentation	115	17.22	1
71	Chemistry, Fertilizers	111	12.32	2
149	Explosives and Thermic Compositions or Charges	84	14.72	2
329	Demodulators and Detectors	50	18.19	2

SOURCE: TECHNOLOGY ASSESSMENT AND FORECAST, Third Report, June 1974, U.S. Department of Commerce, Patent Office.

FIGURE 8.16

CLASSES WITH THE LARGEST NUMBER OF NEW JERSEY'S RECENT PATENTS

U.S. Patent Classification Number	Title	Number of Patents in the Years 1970-1973	Share in Total U.S. Patents (Percent)	New Jersey's Rank Among All States
260	Chemistry, Carbon Compounds	2,924	17.17	1
424	Drugs, Bio-Affecting and Body Treat- ing Compositions	1,140	26.45	1
252	Compositions (e.g., catalysts, non- resinous mixtures of two or more substances)	927	14.30	1
340	Communications, Electrical (e.g., data processing, traffic control, telemetry systems)	718	9.68	3
117	Coating: Processes and Miscellaneous Products	654	10.65	2
307	Electrical Transmission or Intercon- nection Systems	540	13.52	2
317	Electricity (e.g., safety and protection systems, polarity reversing, igniting, switch board devices, circuits and relays, carrier layer devices)	406	11.82	3
29	Metal working	391	7.09	7
350	Optics, Systems and Elements	362	13.21	3
178	Telegraphy (includes television) . . .	258	11.37	3

SOURCE: TECHNOLOGY ASSESSMENT AND FORECAST, op. cit.

force—educational attainment and technological development. We have implicitly assumed that the two aspects are intimately related. The relationship most certainly is complex; the lines of influence can only be suggested, not documented. High educational attainment is not necessarily a prerequisite for innovation. Many creative inventors have been drop-outs. On the other hand, one often hears that the locus of innovation has switched, or is rapidly switching, away from the lone-wolf genius to large-scale team efforts in institutional settings. To the extent that this is true, technological progress may come to depend more and more on educational attainment or research and development activity closely tied to higher educational complexes. But at the same time, whatever the educational attainment of the personnel involved, we can expect the likelihood of innovation will come to depend more and more on the *type* of educa-

tional and institutional environments in which people learn and develop new ideas. Studies show that the likelihood of innovation is very sensitive to the way industries or institutions organize their research and development efforts. Some working environments—especially those characterized by a large degree of openness, flexibility and ease of communication—are more conducive to innovation than others.*

The channels which foster or impede entrepreneurship and the commercial application of new ideas are another important connection between education and innovation. An innovation, as distinct from an untested invention or new scientific discovery, is a new idea which can find practical application. It is generally acknowledged that overcoming the hurdle between a "good idea" and its commercial application is the biggest hurdle in the process we have called

* See "Innovation: How to Have It and How to Keep It," TECHNOLOGY REVIEW, March/April, 1975. This article recounts the "lesson" presented by four faculty members of the M.I.T. Sloan School of Management to a seminar on technical innovation at RCA's Sarnoff Research Center in Princeton, New Jersey.

"technical progress." This giant hurdle involves many little hurdles such as: bringing new ideas into the light of day (say, to the attention of marketing people or commercial developers), arranging venture-capital financing, and introducing the resulting new product or service to potential markets.

Another connection between an educated labor force and innovation can be observed in the area of business, professional and other intermediate services. It has been found that the location and geographical spread of the more "innovative" business services (e.g., management consulting, research and development laboratories and data processing services) is strongly conditioned by the location of people in the labor force categories "Professional, Technical and Kindred."* The latter's location, in turn, is more and more dependent on residential amenities and "quality of life" factors.

To demonstrate that the connections between education and technical progress are complex is not to demonstrate that they do not exist but to focus our attention on several questions that should directly concern those involved in promoting state economic development; for instance:

1. How well does the higher education network foster such activities as research and development, problem solving, innovation, and entrepreneurship—via either specialized curricular or research programs;
2. How aggressively and efficiently do market, non-profit and governmental institutions work to promote the translation of patents and new ideas into commercial applications or new businesses? In particular, how well does the venture capital industry work to provide front-end money for new entrepreneurs in New Jersey?

* See Bearse, Peter (1975), *THE SPATIAL ORGANIZATION AND DIFFUSION OF ECONOMIC ACTIVITIES*, Ph.D. Dissertation, Graduate Faculty, New School For Social Research, New York.

** This project was to have gotten underway as of July 1, 1975, funded by a \$200,000 grant from the U.S. Economic Development Administration.

† Harrison, Bennett, *THE ECONOMIC DEVELOPMENT OF MASSACHUSETTS*, A Report to the Joint Committee on Commerce and Labor, Massachusetts State Legislature, November 1974, p. 97 (our italics).

An attempt to answer the above questions should be a high priority task of the Governor's project to develop a State Economic Plan.** Since the answers are not now available, it is impossible to say to what extent there are "gaps" inhibiting technical progress in New Jersey which state government can help to fill. Some other highly industrialized states, however, have recognized that there are problems in this area which they need to take steps to solve. For example, the Massachusetts Commonwealth supports the Massachusetts Science and Technology Foundation, a quasi-independent entity. The rationale for this organization is described as follows:

"Although we could find no data to document this assertion, many knowledgeable people argue that the majority of "spinoffs" from the Massachusetts-based R & D complex leave the state and set up business elsewhere. Often, these are new companies developed by graduates of MIT, Harvard, or other schools in the Bay State. Also, many new inventions "sprouted" in the laboratories and workshops of the education R & D complex do not become commercial innovations because "connections" never get made, i.e., because of *inadequate diffusion of technical information*.

MSTF was created in 1969 in order to provide these information diffusion and technical assistance functions. It maintains a data bank on inventions, patents, processes, etc. MSTF's federally-financed Technology Exchange functions as a non-profit clearinghouse for the matching of process and product concepts with commercial product developers. MSFT also provides marketing assistance and liaison with the venture capital industry."†

A similar effort has been made in the State of Ohio under the aegis of the Governor's Business and Employment Council. The Council ini-

tiated an "Entrepreneurship Office" in 1972 to carry out the following activities:*

- a. "To design and implement training programs for executives of emerging companies.
- b. To assist individual firms in developing business plans and locating resources.
- c. To improve the "climate for entrepreneurship" in Ohio by bringing together the key officers of new companies with those who can help them, and by urging *changes in regulations and legislation that would encourage the start and growth of new Ohio companies.*"

Some apparent results of these programs have been:

- a. Creation of new companies and new jobs;
- b. Introduction of innovative products and services;
- c. Improvements in the overall "environment" for new enterprises; and for upper income professionals who either work for or settle near technologically progressive firms.

In both cases, links with the higher education systems in the respective states were very important. The Massachusetts Institute of Technology has long had courses or programs dealing with the overlap between education, innovation and entrepreneurship. In the case of Ohio, the Entrepreneurship Office and its "spin-off," The Entrepreneurship Institute, led to the establishment of courses for credit in 12 Ohio universities on starting and managing new enterprises.

Programs such as these can help avoid two outcomes that, over the long run, would insure stagnation for the New Jersey economy:

1. A "brain drain"—New Jersey exporting trained personnel to other states;
2. An "innovation drain"—the failure of economic institutions to insure that more

of the patents and other technological opportunities which arise within the State also lead to the creation of new economic activities within the State.

In fact, one nationally recognized authority on the topic of technological progress argues that "economic development" at the regional level proceeds through innovation and entrepreneurship, not through promotional or other programs which try to "attract" firms.** Innovation and entrepreneurship, in turn, proceed from programs and channels which effectively link the education and business sectors in the search for, diffusion and application of new technologies.

In view of the above, it would appear that New Jersey is not doing enough to exploit opportunities for development in this area. These matters should be a major focus for the State's Division of Economic Development, Research and Development Council, and Department of Higher Education, among others.

Concluding Remarks:

The analysis of this chapter can now be briefly recapitulated and some conclusions drawn. First, although during the 1960's New Jersey kept pace with the U.S. in terms of the median number of school years attained by the population 25 years and over, there are visible distributional differences between the State and the nation. New Jersey has moved closer to the national average in the lower levels of education while increasing its comparative advantage in the college graduate group. The lower percentage of people with 13-15 years of education, which was observed in New Jersey in 1960, has declined further. There is reason to infer that this gap is largely due to a much lower enrollment in vocational schools in New Jersey compared with the national average. The share of vocational school enrollment in New Jersey was 1.8% of the national total while its population share is over 3.5%.

* From the "The Entrepreneurship Institute Experience," courtesy of Mr. William McCrea, Phoenix International Corporation, Columbus, Ohio.

** Schon, Donald, "The New Regionalism," HARVARD BUSINESS REVIEW, February, 1965.

Second, the creation of jobs has been generally favorable for occupations and industries requiring higher levels of education. Although we could not present a full fledged demand and supply balance in each educational category we believe that, due to lower mobility, imbalances are more of a problem in the lower bracket of the educational ladder. Further studies of the labor market situation for low skilled workers and of the many adaptation problems arising from a rapidly changing economic environment are badly needed.

Third, the composite educational index of New Jersey's labor force is equal to the national index. The index exceeds most of the Southern states while it lags behind the Western states. New Jersey, however, does not deviate significantly from other Northeastern states.

Fourth, a significant factor which tends to lower the educational index of the labor force of Northeastern states is the large immigration of less educated people from Southern states. Over the same period (1965-70), Middle Atlantic states experienced a significant net out-migration of people with college education. This is a result of the high mobility of this population group, which can seek out the growing economic opportunities and environmental amenities of areas in the West and Southwest. It is not yet clear whether similar out-migration is occurring from New Jersey given the fact that the State is a net immigration area.

Fifth, the analysis of the New Jersey labor force does not reveal any superiority in terms of educational attainment. This does not, however, deny that the skills and long industrial tradition of New Jersey's labor force is a positive factor in the State's economic potential.

Sixth, New Jersey is especially noticeable for achievements in new technological development. The State contributes one-tenth of all research and development expenditures. New Jersey is

second in the number of per capita awarded patents. This is in part a manifestation of the creativity of its labor force. This achievement raises, however, a number of very important questions. It is widely held that inventions are influenced by the income expected from them. According to Schmookler, "the ebb and flow of investment or something associated with it, seems to induce a corresponding ebb and flow of inventive activity directed toward improving the capital goods."*

Our earlier analysis** has shown that New Jersey contributes only 4-5% to the nation's total output and capital expenditure in manufacturing while it spends nearly 10% of the nation's research and development funds and produces over 8% of the nation's patents. How can we interpret this apparent contradiction in view of the above relationship between investment and inventive activity? The only reasonable answer is that New Jersey's inventive activities are intended for a much broader market than that located within its borders. New Jersey specializes in research and development for the national and international markets. Many headquarters and research and development divisions of national corporations are located in New Jersey. Their output of inventions, patents and technical improvements are applied in industries of other states as well. But this also indicates the great potential for new business ventures in New Jersey. There is scope for new, technology based enterprise, in New Jersey.

Our examples of state encouragement for the diffusion and commercial exploitation of innovations become very relevant in light of this finding. The contribution of New Jerseyans to the nation's technological progress is one of the most convincing features of the high quality of the State's labor force and one of the most important aspects of its potential for future economic development.

* Schmookler, Jacob, PATENTS, INVENTIONS, AND ECONOMIC CHANGE, Harvard University Press, (1972) , Cambridge, Massachusetts, p. 75.

** See Chapter VI of this Report.

IX

EXCLUSIONARY ZONING IN NEW JERSEY: THE MOUNT LAUREL DECISION*

In what may well prove to be a landmark decision relating to land use regulation in this State, the New Jersey Supreme Court, on March 24, 1975, struck down exclusionary zoning provisions in the Township of Mount Laurel.** The outlawed zoning practices were by no means unique to Mount Laurel; they have been followed by most growing municipalities throughout the State, and the Court made it clear that its decision is generally applicable.

The *professed* purpose of the exclusionary zoning in Mount Laurel was to keep down local property taxes. In the words of the Court . . .

"We accept the representation of the municipality's counsel at oral argument that the regulatory scheme was not adopted with any desire or intent to exclude prospective residents on the obviously illegal basis of race, origin or believed social incompatibility." (p. 5)

"There cannot be the slightest doubt that the reason for this course of conduct has been to keep down local taxes on *property* (Mount Laurel is not a high tax municipality) and that the policy was carried out without regard for non-fiscal considerations with respect to

people, either within or without its boundaries"

"This policy of land use regulation for a fiscal end derives from New Jersey's tax structure, which has imposed on local real estate most of the cost of municipal and county government and of the primary and secondary education of the municipality's children. The latter expense is much the largest, so, basically, the fewer the school children, the lower the tax rate. Sizeable industrial and commercial ratables are eagerly sought and homes and the lots on which they are situated are required to be large enough, through minimum lot sizes and minimum floor areas, to have substantial value in order to produce greater tax revenues to meet school costs. Large families who cannot afford to buy large houses and must live in cheaper rental accommodations are definitely not wanted, so we find drastic bedroom restrictions for, or complete prohibition of, multi-family or other feasible housing for those of lesser income."

"This pattern of land use regulation has been adopted for the same purpose in developing

* Prepared by Dr. Lester V. Chandler, Chairman, Economic Policy Council.

** The formal citation of this case is: South Burlington County N.A.A.C.P. et al. v. Township of Mount Laurel, decided by the New Jersey Supreme Court on March 24, 1975. Page references are to the mimeographed decision.

municipality after developing municipality. Almost every one acts solely in its own selfish and parochial interest and in effect builds a wall around itself to keep out those people or entities not adding favorably to the tax base, despite the location of the municipality or the demand for varied kinds of housing One incongruous result is the picture of developing municipalities rendering it impossible for lower paid employees of industries they have eagerly sought and welcomed with open arms (and, in Mount Laurel's case, even some of its lower paid municipal employees) to live in the community where they work." (pp. 21-23)

The principal zoning practices employed by Mount Laurel to promote its fiscal ends are also used in many other municipalities. (1) Minimum requirements for house sizes that bear no substantial relationship to health needs. (2) Minimum lot size and frontage requirements in excess of those needed for health reasons. (3) Prohibition of multi-family housing. (4) Severe restrictions on the number of dwelling units with more than one bedroom. (5) Prohibition of mobile homes. (6) Over-zoning of land for industrial, commercial, and other non-residential purposes.

Officials of Mount Laurel contended that such policies and practices were in the best present and future fiscal interest of the municipality and its inhabitants and were legally permissible and justified. The Court found otherwise. It warned that zoning, as an exercise of the police power, must serve the general welfare, and that when a zoning regulation has a substantial external impact, the effects on those outside the municipality may not be disregarded.

" . . . It is fundamental and not to be forgotten that the zoning power is a police power of the state and the local authority is acting only as a delegate of that power and is restricted in the same manner as is the state. So, when regulation does have a substantial external impact, the welfare of the state's citizens beyond the borders of the particular

municipality cannot be disregarded and must be recognized and served." (p. 30)

" . . . It has to follow that, broadly speaking, the presumptive obligation arises for each such municipality to plan and provide, by its land use regulations, the reasonable opportunity for an appropriate variety and choice of housing, including, of course, low and moderate cost housing, to meet the needs, desires and resources of all categories of people who may desire to live within its boundaries. Negatively, it may not adopt regulations or policies which thwart or preclude that opportunity." (p. 34)

"We conclude that every such municipality must, by its land use regulations, presumptively make realistically possible an appropriate variety and choice of housing. More specifically, presumptively it cannot foreclose the opportunity of the classes of people mentioned for low and moderate income housing and in its regulations must affirmatively afford that opportunity, at least to the extent of the municipality's fair share of the present and prospective regional need therefore." (pp. 25-26)

At a later point, the Court summarized its requirements:

"As a developing municipality, Mount Laurel must, by its land use regulations, make realistically possible the opportunity for an appropriate variety and choice of housing for all categories of people who may desire to live there, of course including those of low and moderate income. It must permit multi-family housing, without bedroom or similar restrictions, as well as small dwellings on very small lots, low cost housing of other types and, in general, high density zoning, without artificial and unjustifiable minimum requirements as to lot size, building size and the like, to meet the full panoply of these needs. Certainly when a municipality zones for industry and commerce for local tax benefit purposes, it without question must zone to

permit adequate housing within the means of the employees involved in such uses. (If planned unit developments are authorized, one would assume that each must include a reasonable amount of low and moderate income housing in its residential "mix", unless opportunity for such housing has already been realistically provided for elsewhere in the municipality.) The amount of land removed from residential use by allocation to industrial and commercial purposes must be reasonably related to the present and future potential for such purposes. In other words, such municipalities must zone primarily for the living welfare of people and not for the benefit of the local tax rate."

Economic and Social Implications of the Mount Laurel Decision

If and when land use regulations by the many municipalities in the state are brought into conformity with the legal requirements enunciated in the Mount Laurel decision, the economic and social consequences could be striking indeed. A reduction in the average size of lots and a freeing of some land from overzoning for industrial and commercial purposes would make land more available for housing and would tend to keep the prices of lots lower than they would otherwise be. This, together with legalization of multi-family dwellings and removal of other restrictions not required for reasons of health, would bring more housing within the reach of middle- and low-income households, or would at least decrease the amount of subsidy required to provide housing for these groups. More people could live closer to places of employment. There would also be important effects on the distribution of population throughout the state, on the location of the various types of economic activity, on transportation patterns, and so on.

It seems unlikely, however, that such results will arise in the absence of marked changes in taxes and other public policies. Many municipalities will continue to oppose such changes

and will have recourse to various devices to delay action. One reason for this is the continued heavy reliance on local property taxes to meet the costs of public schools and other public services. Municipalities that have been unwilling to increase their tax rates to permit the provision of appropriate housing for medium- and low-income households living or working within their boundaries are likely to be even more reluctant to assist households from other parts of their regions. Even in the absence of adverse fiscal considerations some municipalities would probably attempt to continue exclusionary practices because of fear of and prejudices against other social, economic and racial groups. Judge Pashman, in his concurring opinion, noted that in a recent survey of suburban municipal leaders, 42.6% identified social and racial conflict as being the chief impact of low and moderate cost subsidized housing on the municipality.

Only 21.3% identified fiscal problems as the chief impact. As usual fear and prejudice have little to do with reality or reason. Even under the best of circumstances, the Mount Laurel decision would not lead to any "mass or sudden emigration of those low and moderate income from the central cities and older suburbs . . ." (p. 47, n. 21) simply because the bulk of the state's housing stock is located in those areas. As any economist knows, the stock of any durable, long lived commodity can only be changed very slowly.

The tax benefits of low density, residential housing as a defense for exclusionary zoning have been buttressed, at times, by arguments which suggest that beneficial environmental effects will accompany such zoning; e.g., the contention that "one to two acre zoning preserves open space." The Mount Laurel decision, however, does not imply that there is an inherent conflict between "more housing" and open space. In fact, the ramifications of the decision nicely point out the sometimes spurious conflict between economic development and environmental preservation and the

decision can strengthen environmental protection in New Jersey.

It is a well documented fact that the conventional low density residential-leapfrogging development pattern has adverse impacts on environmental quality. Planned high density zoning offers significant reductions in air pollution emissions (fewer autos, lower residential heating demands), water treatment costs (less storm runoff of sediment, fertilizers, etc.), energy consumption, and water use compared to the typical community of single family homes geographically distributed in a grid.* Also noteworthy is the fact that high density zoning can offer *more*, not less open space, especially space suitable for meaningful public use; that is, open space that would not be the aggregate of the back yards of one acre single family homes, but rather could be true recreational space devoted to a variety of public uses. Any local defense of low density zoning, therefore, cannot legitimately rest on plans of "environmental benefits".

A major obstacle to an early achievement of the purposes of the Mount Laurel decision is the stubborn economic fact that the provision of adequate amounts of new housing for medium- and low-income households will require subsidies of some sort, this despite the fact that the required changes in zoning regulations will decrease the cost of such housing. Municipalities will be even more reluctant to accept such housing if they are required to provide the subsidies, but it is by no means certain that adequate funds for this purpose will be forthcoming from higher levels of government. Unfortunately, the decision has been passed down during a period when the Federal government has cut its commitment of resources for subsidized housing. While the new Community Development Act of 1974 clearly establishes a policy of dispersing low income housing, it fails to provide funds in either the amounts or form needed for implementation of such a policy.

And, with few exceptions, state housing finance agencies are not meeting the need for low income housing.**

The Court's decision that it is the obligation of every municipality "to plan and provide for a fair share of regional housing needs" raises a number of difficult questions and problems. Judge Pashman observed that four steps would be involved if this requirement were to be administered by a Court:

1. Identify the relevant region.
2. Determine the present and future housing needs of the region.
3. Allocate these needs among the various municipalities in the region.
4. Shape a suitable remedial order.

All of these steps require large amounts of statistical information and difficult value judgments, and all are likely to arouse controversy. In at least some cases, and probably in many, the various municipalities involved will be unable to agree on the total housing needs of a region and on what constitutes a "fair" or "equitable" allocation of these among the municipalities. At least in such cases, the decision will have to be made by some entity other than the municipalities. To leave this function to the courts would endow them with extraordinary power and impose on them heavy burdens which they may not be well equipped to bear. This suggests that where land use regulations have substantial impacts throughout a region, such controls should perhaps be placed in the hands of an entity with broader jurisdiction, such as a truly regional board or a state agency.

Other problems will arise because what is in some sense a "fair" or "equitable" distribution of housing among municipalities may not be economic. For example, within a given region one municipality may be a more efficient place than others for the location of subsidized hous-

* See *The Cost of Sprawl*, Council on Environmental Quality *et al.*, 1974.

** See Pearlman (1974), "State Housing Finance Agencies and the Myth of Low Income Housing", 7 CLEARINGHOUSE REVIEW 649 (March).

ing because of its closer proximity to jobs, public transportation, or amenities such as adequate educational facilities. Some municipalities may be more economical locations for industry and commerce while others are better suited to residential use. Also, the land in some may already be so heavily committed to valuable uses that to introduce significant amounts of new housing for medium- and low-income families would be highly expensive. For such reasons, considerations relating to fairness in the distribution of such housing among municipalities must be balanced against considerations relating to economy and efficiency. It would seem to follow, however, that municipalities accepting more than their "fair shares" of such housing should not be penalized financially for doing so.

Conclusion

The Mount Laurel decision is a necessary condition for achieving the objective of providing appropriate and adequate housing opportunities for medium- and low-income families outside the central city and other congested areas. Until exclusionary land use regulations of the types described above were declared illegal, there was virtually no possibility that the many municipalities employing them would permit significant amounts of such housing. But the mere outlawing of such practices will not by itself be sufficient to assure attainment of the objectives of the Court. The extent to which the latter will actually be achieved will depend heavily on the nature of policies to be followed in the future by the municipalities, by higher levels of government within the state, and by the Federal government. Some of the most important of these are the following:

1. *Tax Policies*—So long as the present policy of requiring each municipality to bear a major part of the cost of its public schools through local property taxes is continued, one can expect many municipalities to resort to many types of delaying tactics. This reason for resisting could be removed by relying on state or Federal financ-

ing of such services. For example, the state should assume full responsibility for financing a "thorough and efficient" education for all children, thereby permitting sharp reductions of local property taxes. Such a policy would also have other advantages. It would allocate tax burdens more equitably in cases in which a municipality accepts more low-cost housing and their acceptance is at least partially to the benefit of other municipalities in the region or even further away. It would reduce inequalities of educational opportunities for children in the various municipalities. Also, by reducing the existing wide differentials in municipal tax rates, it would lessen artificial, and in many cases uneconomical, effects on the location of industry.

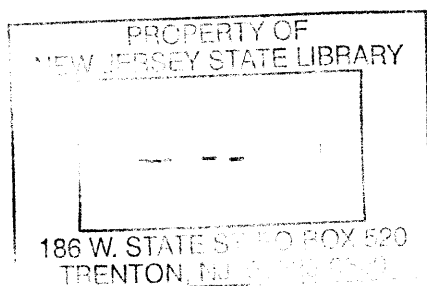
2. *Policies Relating to Housing Subsidies*—Many municipalities will continue to resist low-cost housing if they are required to provide tax abatement or other subsidies for such housing located within their borders. This reason for resisting could be removed if all such subsidies were financed at the state or Federal level.

3. *Policies Relating to Jurisdiction Over Regulation of Land Use*—Policies in this area should be reconsidered carefully, for they present a number of important political, social and economic problems. Where regulations have significant external impacts, the results are unlikely to be satisfactory if each municipality retains primary jurisdiction and power for formulating and administering regulations of land use, subject only to tests of legality in the courts. Better results will be obtained if regulations are more affirmative and administered by bodies with jurisdictions broad enough to encompass the areas most affected by the regulations. Each municipality would, of course, deplore the erosion of its "sovereignty", but in return each would receive some protection against unfavorable impacts of actions taken by other "sovereign" municipalities.

Courageous political leadership and affirmative action will be required if the favorable results envisioned by the Court are to become realities. To quote the Court again:

"There is no reason why developing municipalities like Mount Laurel, required by this opinion to afford the opportunity for all types of housing to meet the needs of various categories of people, may not become and remain attractive, viable communities providing good living and adequate services for all their residents in the kind of atmosphere which a democracy and free institutions demand. They can have industrial sections, commercial sections and sections for every kind of housing from low cost and multi-family to lots of more than an acre with very expensive

homes. Proper planning and governmental cooperation can prevent over-intensive and too sudden development, insure against suburban sprawl and slums and assure the preservation of open space and local beauty. We do not intend that developing municipalities shall be overwhelmed by voracious land speculators and developers if they use the powers they have intelligently and in the broad public interest. Under our holdings today, they can be better communities for all than they have previously been."



X

TAX REVENUE FORECASTING: CASE OF THE CORPORATE INCOME TAX*

The tremendous expansion of the public sector's influence on the economy, in terms of employment and governmental spending, has focused attention on the ability of state tax structures to support rising expenditure levels. Since the State government faces a constitutional prohibition of deficit financing, inadequacies in the State tax structure have resulted in increased borrowing, intergovernmental transfers, and tax rate increases in order to finance these expenditures. State governments are faced with a more restrictive fiscal environment than the Federal government; thus, they have a particularly great need for accurate revenue forecasts. In many states statutory restrictions provide that expenditures may not exceed forecasted revenues plus initial reserves. Thus revenue projections play a direct role in legislative and executive decisions regarding the aggregate budget. Given these constraints public officials would seem to have strong incentives to avail themselves of the growing body of analytical techniques for revenue forecasting. With few exceptions, this has not been the case in New Jersey.

Crude forecasting methods can impose significant costs on State government. They reduce confidence in predictions, accentuating the tendency of revenue forecasters to be overly cautious and understate their estimates. The track record of New Jersey budget forecasts illustrate this point. (See Figure 10.1.) Executive budget estimates for the past 15 fiscal years have been underestimated fourteen times with an average error of 5%. These errors have increased over the past three fiscal years and no doubt have been compounded by a revenue structure that is highly dependent on cyclically sensitive taxes** such as the Corporate Business Tax.

This phenomenon seldom goes unnoticed by the law makers and is often compensated for by legislative action. One must assume that there are real costs incurred by consistently underestimating revenue yields. Among these are foregone opportunity costs associated with the misallocation (or misappropriation) of resources.

The following is an attempt to develop a systematic technique for estimating the New

* Prepared by George R. Nagle, Office of Economic Policy

** There are numerous guidelines for tax policy, one of which is the adequacy criterion; that is, the ability of a given tax structure to meet the increasing demand for public goods and services. The problem of adequacy is essentially two-sided, for it implies stability of revenues when economic activity is declining and, on the other hand, ability of the tax structure to increase yields in response to meet new social needs. These goals are basically conflicting in that stability requires that revenues not change in response to income fluctuations. In New Jersey it has become apparent that adequacy requires revenues to rise more rapidly than income to meet unexpected expenditure increases. School finance reform, prompted by the Botter decision, is a good illustration.

FIGURE 10.1
EXECUTIVE BUDGET ESTIMATES OF REVENUE COMPARED TO
ACTUAL REVENUE, FISCAL YEARS 1960 TO 1975
TOTAL RESOURCES AVAILABLE

Fiscal Year	Estimated†	Actual†	% Difference
1960	408.8	409.7	— .2
1961	432.5	420.3	+ 2.9
1962	473.9	477.0	— .6
1963	502.7	517.5	— 2.9
1964	550.5	577.0	— 4.6
1965	593.9	631.1	— 5.9
1966	655.6	696.6	— 5.9
1967	938.2	953.7	— 1.6
1968	1,019.9	1,057.6	— 3.6
1969	1,069.5	1,258.1	—15.0
1970	1,374.8	1,492.7	— 7.9
1971	1,665.4	1,741.6	— 4.4
1972	1,795.5	1,913.0	— 6.1
1973	2,075.6	2,213.1	— 6.2
1974	2,407.6	2,653.3††	— 9.3
1975	2,771.9	.....	.....

† Dollars in Millions †† Revised Estimate
Average Error = -5.1%
Source: New Jersey State Budget, selected years

Jersey Corporation Income Tax over the short run. Given the normal budget cycle, short term forecasts are most likely to have either a six month or eighteen month horizon. Although it has been argued that State tax revenues are interdependent* this chapter will consider the Corporation Income Tax independently of other taxes and levies. The reason is simplicity. Analogous to a map, a statistical model does not attempt to reproduce every feature of the system. Although there is little information on how the State's economy is structured, one need not know everything about a system in order to construct a useful model of one part of it. In this sense the building of a model can be regarded as an on-going, sequential process which, in some ways, never terminates.

It should be kept in mind, however, that a statistical model is not precise; there is an error associated with each forecast. Thus, a model is rarely complete or perfect but its usefulness increases as more and more insight into the determining factors is gained.

Within this context revenue forecasts should be viewed as a management tool, providing input to the decision making process. Since the forecasts are dependent in part on the national economy and in part on the State's economy, differing assumptions about each will provide the manager with a full range of possible tax yields. Judgments or forecasts regarding the behavior of the State and national economy will then permit budget planners to select the most

* Legler, John and Shapiro, Perry, "It is necessary to consider the state's entire tax system rather than each tax individually. Secondly, taxes change relative prices throughout the entire economy. For instance, the imposition of a non-general sales tax changes the relative price of taxed versus untaxed goods. . . . From a policy as well as a theoretical point of view, it is important to recognize that tax rate changes distort the relative prices of the economy and thus effect work-leisure, as well as consumption choices. Consequently, these price distortions affect total sales tax revenues.", National Tax Journal, March, 1968.

reasonable revenue estimate among this range of yields.

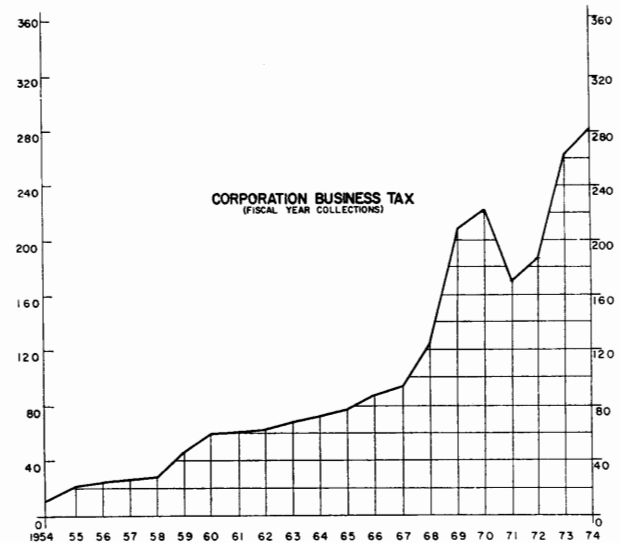
The Corporate Business Tax

The Corporate Business Tax dates back to 1884 when a franchise tax was imposed upon all domestic corporations organized under the laws of New Jersey. In 1958 the Corporation Business Tax was amended to include a tax based upon allocated net worth and allocated net income.* Increases in the rates and minor modifications to the allocation factors distinguish the present tax from the earlier. Since the Corporation Business Tax is really two separate taxes on different tax bases, techniques for estimating one are not appropriate for the other. The existence of data** problems has forced the exclusion of the Net Worth Tax from this analysis. Thus, we will focus on the fiscally more important Corporate Net Income Tax.

The Current Situation

How important is the Corporation Business Tax to New Jersey? In fiscal year 1974 the tax raised \$282 million, or 14% of all major State tax revenues; surpassed only by the broad-based sales and use tax. The Corporate Net Income Tax accounts for about three-fourths of the total Corporate Business Tax. The Corporate Business Tax also has the distinction of being the only major non-consumption tax levied by the State (except the Transfer Inheritance Tax). This presents a forecasting problem in that corporate profits are much less stable than consumption patterns. Even allowing for rate and other administrative changes in structure the Corporate Business Tax has followed erratic but upward growth over the past 20 years (see Figure 10.2).

FIGURE 10.2



Since the state's tax structure relies heavily on the Corporate Net Income Tax there are questions regarding the adequacy of the tax during a recessionary period typified by high rates of inflation. The 1974 year end Fiscal Report† reflects Corporate Net Income Tax revenues at \$157.1 million. This figure is 18% above the anticipated figure of \$133 million and 20% above last year's collections of \$130.8 million. In spite of this impressive growth rate there was justified concern that these receipts were not responding fully to the level of corporate profits being reported at the national level. In 1973 up to and including the early months of 1974, U.S. corporate profits mushroomed, but New Jersey Corporate Income Tax receipts did not. A possible source of this conflict lies in the State's industrial mix. New Jersey's industrial mix is shifting away from manufacturing activities to trade, services, and government employment. This changes the relative weights of the three variables (sales, property, and payroll) in the New Jersey allocation formula. The implication is that, while the three factor formula

* Nearly every state uses a formula in determining what income of a corporate business is to be attributed to that state for tax purposes. That formula is based upon various indicators of corporate activity. Approximately 60% of the state level taxing jurisdictions having a corporate net income tax (including New Jersey) utilize a three factor formula consisting of a sales factor, a payroll factor, and a property factor with each factor being weighted equally.

** Estimates of the Net Worth Tax have been excluded for several reasons: (1) There is no national counterpart to the New Jersey Net Worth Tax; (2) The quality of net worth assessment is questionable; and, (3) Administrative changes in 1968 to include a prepayment tax for the following year based upon this year's tax liability has "inflated" the Net Worth Tax data base. The established accounting procedure has lumped pre-payments into Net Worth Tax payments. Since one tax cannot be netted from the other, net worth estimates will have to be made on an ad-hoc basis.

† State of New Jersey Department of Treasury, Bureau of Budget & Accounting.

may be appropriate for the mercantile and manufacturing corporations to which it is generally applied, its application may be less appropriate to other types of corporations, such as construction contractors, service, transportation, and communication corporations.

If present trends prevail, the accuracy in using aggregate U.S. corporate profits alone as a guideline to forecast New Jersey tax revenues should decline and larger estimating errors will result. A simple example will illustrate this point as follows:

- (i) Technique — Use U.S. corporate profits to estimate New Jersey Corporation Income Tax revenues by way of a simple linear estimating equation of the form:
 $y = a + bx$.
- (ii) Data — Use New Jersey tax receipts data covering the 15 fiscal years 1960-1974. Adjust The New Jersey Corporation Income Tax receipts to a constant (5½%) rate;
 — Subtract financial sector profits from U.S. Corporate profits. Financial institutions in New Jersey are exempted from the Corporate Income Tax.
- (iii) Definition of Terms — y = Corporate Income Tax Revenues (NJCIT);
 — x = U.S. Corporate Profits (USPR).
- (iv) The Result — $\text{NJCIT} = -25.28 + 2.59 \text{ USPR}$ $R^2 = .85$.

The model explains 85% of the variation in New Jersey Corporate Income Tax revenues over the 15 year period.* However, the estimating errors in any one year range from -18.6% to +18.1%. The average estimating error of 7.7% is clearly excessive** for a useful forecast.

A New Forecasting Framework

Since the majority of State taxes are levies against either income, wealth, or consumption, the specification of tax revenue equations should explicitly recognize relationships between the tax base and the tax yield. For example, the

yields of New Jersey's tax on corporate income (hereafter NJCIT) is essentially a function of three variables: (1) the tax base (U.S. corporate profits); (2) the allocation factor, which depends on the State's relative share of corporate sales, payroll, and property; and (3) the tax rate:

$$\text{Corporate Tax Yield} = \text{Rate (5.5\%)} \times (\text{U.S. Corporate Profits} \times \text{N.J. Allocation Factor})$$

That is, given the value of the allocation factor, the yield of New Jersey's Corporate Income Tax is equal to the tax rate times the level of U.S. Profits allocable to New Jersey.

Of the three variables, the allocation factor causes the greatest difficulty in accurately forecasting corporate net income receipts. One must still forecast U.S. profits, but usable forecasts are available from several sources. The problem is estimating the relative importance of different industries in generating overall corporate profits in New Jersey. The allocation factor, although a simple fraction, is the resultant of a set of weights. Each corporation doing business in New Jersey has its own individual apportionment factor. While knowledge of each corporation's factor is not required to generate accurate forecasts, it is necessary to know the factors by industry division.† Since neither is available now nor in the foreseeable future we need to design a proxy for the allocation formula.

One approach is to explain State tax revenues by using other State economic indicators. The other approach is to express State tax revenues as a function of national variables. A problem arises because we have only a very partial understanding of interrelationships between the State and national economies. Corporate activities within a state depend on economic activity generated by a local demand and by export demand. One must not be excluded at the expense of the

* See Exhibit I in the Appendix for details.

** A review of other states' tax forecasting programs indicate that errors of 1% to 3% on total tax receipts are acceptable. But, in estimating aggregate tax receipts forecasters are allowed the luxury of offsetting errors because lower than expected revenues from one tax may be compensated for by higher than expected revenues from another tax.

† Since the corporate profits series is based on company tax returns, industrial classification must be on a company basis. This technique places the total profits of a firm in an industry group according to the major activity of the company as measured by the receipts of its activities. These total profits may be earned from different and unrelated activities, but the total profits are nevertheless assigned to one industry. Although this distorts the meaningfulness of inter-industry comparisons, there is no ready alternative solution to this problem.

other. By specifying a tax model using both state and national time series data, forecasts can be generated which take into consideration both local and national factors.

Although U.S. corporate profits have been shown to provide poor estimates of the NJCIT, they do in fact form the basis for income allocation to the State. Our first step, therefore, is to scrutinize the relationship:

$$\text{NJCIT} = F(\text{USPR})^*$$

The adjusted U.S. corporate profits series for 1960-1974 (in current dollars) reflects a trend averaging 9.4% per year which compares quite favorably with a 9.3% annual growth rate in New Jersey Corporate Income Tax revenues (adjusted for rate changes). The principal shortcoming of the above specification, however, is its apparent decline in accuracy for more recent time periods, a period typified by rising prices and sharply increasing U.S. corporate profits. Many analysts believe the outsize profit gains for 1974 were in many cases due largely to accounting practices. Most major corporations figure their inventories on a "first-in/first-out" basis. Under FIFO, the inventory acquired first is considered to be used first. During a period of rising prices, FIFO holds down costs and pushes up profits. Although they are more like capital gains, inventory profits are real. If the upward pressure on prices begins to ease, or firms accumulate stocks at a slower rate, inventory profits will decline. Through 1974 the magnitude of inventory profits has been startling. The Bureau of Economic Analysis has unofficially estimated inventory profits at \$36 billion, or more than one quarter of total U.S. corporate pretax profits.

These inventory profits must be counted and used to adjust U.S. profits before allocating income to New Jersey. This adjustment is made to remove the inventory profit or loss that occurs

in business accounting when the book cost of goods removed from inventories differs from the current replacement cost. Valuation in current prices of the costs of inventory used puts sales and costs on a consistent basis. Thus the forecasting model must be modified to include an inventory-valuation-adjustment (IVA). The estimating equation becomes:

$$\text{NJCIT} = F(\text{USPRIVA})$$

The adjustment for inventory profits improves the estimate of Corporate Income Tax receipts; however, the model still yields significant errors for periods which are near business cycle turning points.

One way to estimate the New Jersey corporate income tax base is to 'weight' U.S. profits by the relative shares of employment by industry in New Jersey. In other words N.J. Corporate profits could equal the sum, over all industries, of the product of U.S. corporate profits in each industry times the percent of N.J. employment in that industry; or,

$$\text{Profits}_{\text{NJ}} = \sum_{i=1}^N (\text{Profits}_{\text{US}}^i \times \% \text{ Employment}_{\text{NJ}}^i)$$

where i = industry. This adjustment did not improve forecasting accuracy.

Profits could be allocated by taking into account differences in unit labor costs between New Jersey and the U.S. Profits allocated in this manner could then be multiplied by the appropriate tax rate to determine corporate net income tax receipts. Unfortunately, wages and employment are far less cyclical than corporate profits; thus, poor revenue estimates arise during years of declining corporate activity.

What is needed is a measure of the value of output of firms in New Jersey relative to the U.S. When an analogous concept, value added in New Jersey manufacturing (NJVA),** is in-

* "F" represents "function of" so that this expression should be read New Jersey Corporate Income Tax revenues are a "function of" or, in other words, "depend on" U.S. corporate profits. Similar algebraic expressions should be read the same way.

The laws of N.J. impose a tax on corporations employing or owning capital or property or maintaining an office in N.J. However, financial institutions, utilities, Savings and Loan Associations, and banking corporations are expressly exempt from taxation. In order to provide a closer relation between nationally reported profits and the NJCIT, before-tax profits of financial institutions were deducted from U.S. profits (hereafter corporate profits means total nonfinancial corporate profits).

** Value added by manufacture is commonly defined as the difference between the value of goods and the cost of materials or supplies that are used in producing them. Value added is derived by subtracting the cost of raw materials, parts, supplies, fuel, goods purchased for resale, electric energy, and contract work from the value of shipments. It is the best dollar gauge of the relative economic importance of the manufacturing industry because it measures that industry's contribution to the economy rather than its gross sales.

troduced into the forecasting model, a noticeable improvement in revenue forecasts is obtained. Since the New Jersey corporate income tax is supported largely by manufacturing firms, the rate of change in manufacturing value-added provides a summary indicator of corporate output. This expands the simple forecasting model to:

$$NJCIT = F(USPRIVA, NJVA).$$

Since the New Jersey Corporate Income Tax is collected on a fiscal year basis related to corporate profits earned in the previous calendar year, estimates for fiscal year 1975 can be calculated from calendar year 1974 data. The time lag presents no real problem. However, current value-added data are not available. The model therefore needs a second equation to estimate current year value-added.

Ideally, the equation would take the form of a production function with capital and labor simultaneously determining the level of corporate output, but it is not yet feasible to specify relationships in this form. The next best alternative* is to estimate current year value-added as a function of the previous year's value-added and manufacturing employment, or:

$$NJVA_t = F(NJVA_{t-1}, MEMP_{t-1}),$$

where:

NJVA = New Jersey manufacturing value-added,

MEMP = New Jersey manufacturing employment,

t = current year.

Thus, 1974 manufacturing value-added could be determined using calendar year 1973 data.

The formula developed thus far does not reflect the fact that revenue equals rate times base, therefore the statutory corporate income tax rate was added to the formula.

When we put all of the above together, the final estimating model for the New Jersey Corporate Income Tax becomes a system of two "recursive" equations:**

$$1) \ln NJVA_t = \ln NJVA_{t-1} + \ln MEMP_{t-1}$$

$$2) \ln NJCIT_{FY} = \ln Rate + \ln USPRIVA + \ln \hat{NJVA}_t + D_1$$

"Recursive" means that the two equations are determined in sequence. Current year value-added is estimated from equation (1), then inserted into equation (2) to forecast New Jersey corporate income tax revenues. By transforming the equations into natural logarithms, the derived coefficients can also be interpreted as elasticities; that is, ratios indicating the expected percentage change in corporate income tax revenues arising from percentage changes in each independent variable. Initial estimates from these equations revealed a large, overestimate (in excess of 10%) in fiscal year 1968 despite an increase in the income tax rate. Investigation revealed that this was due to a change in collection procedures just prior to that fiscal year. Rather than manually adjust the data, a dummy variable (D_1) was used to capture the effect of this change in policy. The dummy variable carries the weight of one for fiscal year 1968 and zero for all other years.

Application and Limitations

In addition to being a more accurate representation of actual relationships, the two-equation

* A further refinement would be to allow for changes in employment and productivity from year to year. Data measuring the change in employment are available but a separate estimate of productivity change(s) needs to be developed.

** Glossary of Terms

ln = natural logarithm

t = calendar year

NJVA = New Jersey Manufacturing Value-added in millions of dollars

MEMP = New Jersey Manufacturing Employment, Annual Average, in Thousands

Rate = Statutory New Jersey Corporate Net Income Tax Rate

USPRIVA = U.S. Corporate Profits (Before tax, non-financial) adjusted for inventory valuation

D_1 = dummy variable (1968 = 1; otherwise = 0)

Source

Annual Survey of Manufactures,
U.S. Dept. of Commerce

Employment & Earnings,
U.S. Dept. of Commerce

New Jersey Dept. of the Treasury

Survey of Current Business,
U.S. Dept. of Commerce

See Text

See Appendix II for Regression Results and Statistics.

tion system affords several advantages. First, since it incorporates more prior information, it should have the effect of increasing accuracy and confidence in the revenue projections. It also forces forecasts of the corporate income tax to be consistent with other state and national variables. Unlike an econometric model, the tax revenue forecast is estimated without any direct input from other sectors. As a result, one can incorporate such relevant information as anticipated changes in employment and profits, even if these arise by way of a "subjective feeling" toward the impending economic climate on the part of the budget analyst.

The construction of a revenue model is severely limited by available data series. Thus one often finds specifications have been developed to match the data rather than vice-versa. The corporate income tax model is no exception. The scarcity of "current" data necessitated the expansion of corporate income forecasts to a system of two equations. In any case, the variables used are readily available from published references. They can be substantiated and up-dated periodically.

In regard to statistical proficiency, the corporate revenue model affords several advantages:

1. Given the parameters (in Appendix II) the Corporate Income Tax forecasts can be per-

formed on a desk-top calculator. This also allows the manager to generate forecasts based on varying assumptions with regard to the input variables.

2. The existence of user-oriented statistical packages on computer time-sharing systems simplifies the handling of data. Transformations and data up-dates are easily performed. Parameters can be easily recomputed once new data become available. Statistical properties and estimating errors can be quickly estimated, leaving only their interpretation up to the analyst.

Again it should be emphasized that the motive behind this approach to forecasting tax revenues is to provide flexible means for a manager to generate a range of possible tax yields given various assumptions about the future. Thus, the reliability of any forecast is only as valid as the assumptions and data which go into it. As information becomes more readily available the expected range of error will become smaller and the forecast more accurate. The availability of up to date data has allowed a single estimate of fiscal year 1975 income tax receipts. Two estimates for fiscal year 1976 are provided—one somewhat optimistic and the other cautiously pessimistic. Their stepwise derivation is shown below:

FISCAL YEAR 1975 FORECAST

Data:

1973 New Jersey Value-added = \$18,279 million (preliminary)
 1973 New Jersey Manufacturing Employment = 836.8 thousand
 1974 U.S. Corporate Profits+Inventory Value Adjustment = \$85.0 billion
 1974 New Jersey Corporate Income Tax Rate = 5.5%

Estimate:

$$(1) \ln NJVA_{74} = 4.644 + 1.12417 \ln NJVA_{73} - .85401 \ln MEMP_{73}$$

$$= 4.644 + 1.12417 \ln(18279) - .85401 \ln(836.8)$$

$$NJVA_{74} = \$20517 \text{ million}$$

$$(2) \ln NJCIT_{FY75} = -.95075 + .98017 \ln Rate + .66284 \ln USPRIVA + .63156 \ln NJVA - .1197 D_1$$

$$= -.95075 + .98017 \ln(.055) + .66284 \ln(85.0) + .63156 \ln(20517) - .1197 (0)$$

$$NJCIT_{FY75} = \$226.3 \text{ million}$$

FISCAL YEAR 1976 FORECAST

Data:

1974 New Jersey Value-added = \$20517 million (estimated above)
 1974 New Jersey Manufacturing Employment = 811.1 (thousand)
 1975 New Jersey Corporate Income Tax Rate = 5.5%
 1975 U.S. Corporate Profits + IVA = \$81.8 billion (Based on two nationally published forecasts of \$102 billion for total corporate profits + IVA)
 and = \$72.3 billion (Based on the Economic Policy Council forecast of up to a 25% decline in U.S. profits in 1975, but this decline will be cushioned to some extent by inventory value adjustment)*

Estimate:

$$\begin{aligned}
 (1) \ln NJVA_{75} &= 4.644 + 1.12417 \ln(20517) - .85401(811.1) \\
 NJVA_{75} &= \$23,990 \text{ million} \\
 (2) \text{ a. } \ln NJCIT_{FY76} &= -.95075 + .98017 \ln(.055) + .66284 \ln(81.8) + .63156 \ln(23,990) - .1197(0) \\
 \text{ b.} & \quad \text{and} + .66284 \ln(72.3) \\
 NJCIT_{76} &= \$243.5 \text{ million} \\
 \text{ and } NJCIT_{76} &= \$224.4 \text{ million}
 \end{aligned}$$

SUMMARY TABLE

Fiscal Year	\$ (Millions)	Growth Rate
1974	197.1**	12.2%
1975	226.3†	14.8
1976 (a)	243.5†	7.5
(b)	224.4†	- 0.8

(a) optimistic

(b) pessimistic

** Gross receipts for the New Jersey corporate net income tax totaled \$202.2 million in fiscal year 1974, but an extension of the accounting year overstated the actual tax liability of corporations doing business in New Jersey. This figure was, consequently, revised downward to \$197.1 million.

† forecast

* U.S. corporate profits and inventory value adjustment, in the case of nonfinancial corporations, amounted to \$85.0 billion for the calendar year 1974. We estimate that a 25% decline in total corporate profits would reflect a 15% decline in inventory adjusted, non-financial corporate profits; 15% of this is 12.8 billion, yielding an expected 1975 total of \$72.3 billion. The 15% assumption is a bit on the pessimistic side, in two respects:

(1) It relies on the upper end of the range (20-25% decline) forecast by the Economic Policy Council, and

(2) It assumes that significant inventory liquidation will carry over into the first half of the 1976 Fiscal Year so that, nationally, annual non-financial IVA for calendar 1975 will amount to *roughly* -\$20 billion.

After going to some length to explain and defend our approach to tax forecasting we should mention why the above forecasts could be wrong. The foremost reason is policy change. As mentioned above, a change in collections procedures created an artificially large error in one tax year. The results of future policy changes cannot be anticipated. Another example is the recent legislative action taken to increase the share of this year's tax a corporation must pay as a prepayment* toward next year's tax liability. The net effect of the change in prepayment will be to increase (decrease) corporate income tax collections relative to the increase (decrease) in corporate profits. For example, during a year of high profits a firm makes a large tax prepayment. If profits fall sharply the following year, tax liability falls (but not below zero), but if his prepayment was large enough, the firm may in fact qualify for a refund, resulting in a tax rebate. Thus, the prepayment provision creates instability in corporate net income receipts.

Since corporate profits fell somewhat in 1974 many New Jersey corporations would qualify for a refund (other things held equal), but the overall effect of the prepayment increase will be to increase (slightly) fiscal year 1975 corporate tax liability. Therefore, a policy change has imposed a downward bias on our forecasts.

Secondly, there is a distinct possibility of a tax rate change. Almost every attempt at tax reform involves some change in New Jersey's somewhat moderate corporate income tax rate. The estimated tax rate change elasticity (.98; the coefficient of the 'rate' variable in our estimating equation) implies that a 100% increase in the existing rate would increase revenues by 98%.

There also exists a possibility that a change in relationship between the equations will bias corporate income tax forecasts. For instance, the estimating system is dominated by the manufacturing sector. Some judgment must be applied to consider how profits in trade and services behave vis-a-vis profits in manufacturing

within the State. With a declining manufacturing sector we expect these "other" sectors to assume a larger burden of the corporation tax. But until disaggregated collections data becomes available, we are forced to rely solely on manufacturing.

Penalties and refunds will have an effect on our forecasts depending on the level of market interest rates relative to the mandated late payment penalty interest rate. Over the past 18 months, the prime lending rate reached 12% with other market rates, depending on risk and term of loan, commensurately higher. At the same time the State levies a 10% late payment penalty. Since market interest rates exceed the penalty rate, it would be advantageous for a corporation to delay its tax payment and invest (or lend) some portion of its before tax profits. Thus, when market interest rates rise above the penalty interest rate the model will overstate current receipts, giving our forecasts an upward bias.

Finally, one must consider the accounting principles behind that figure reported at the bottom line of the earnings statement. The outsize profit gains for 1974 in many cases were due largely to corporations figuring their inventories on a "first-in/first-out" basis. Under FIFO, the inventory acquired first is considered to be used or sold first. In a period when prices are rising, FIFO holds down costs and pushes up profits. In the past few months many firms have switched to "last-in/first-out" accounting. Under LIFO the inventory last acquired is considered to be used or sold first. In an inflationary period, LIFO pushes up costs and holds down (inventory) profits. Lower profits mean lower taxes, so corporations are able to maintain a more liquid financial status. The net result of accounting changes will lower corporate tax liability and will compound the upward bias in our estimates.

The Role of the Budget Analyst

With "other things held equal" our forecasts would be reasonable estimates of corporate in-

* In addition to the tax due for the current accounting year, a prepayment of tax (recently increased to 60% of a taxpayer's liability) for the following year must also be made. Credit against the current year's tax liability for such prepayments is allowed. Subsequent forecasts will have to be adjusted to include the profits of some financial institutions recently added to the corporate tax base.

come tax receipts. But as shown above it is erroneous to assume such a static state of affairs. There is considerable margin for subjective criteria to alter the forecasts. The role of the budget analyst is clear; he must evaluate the impact of these outside influences and apply appropriate adjustment factors to the forecasts.

The following is an illustration of how a revenue forecast can be adjusted to reflect the dynamic environment of state tax policy.

Our forecasts for fiscal years 1975 and 1976 are restated along with 1974 tax revenues:

CORPORATE INCOME TAX	
FY	\$(millions)
1974	197.1
1975	226.3*
1976 (a)	243.5*
(b)	224.4*

* Forecast

Secondly, adjustment factors are cited along with a discount factor estimating their potential impact.

Adjustment factor	Direction of Bias	Discount Factor	
		FY75	FY76
60% Prepayment	Down	+10%	-0%
Penalty Rate Manipulation	Up	- 5%	-2%
Accounting Switch to LIFO	Up	- 7%	-5%
Net Adjustment		- 2%	-7%

Clearly, the discount factors are a matter of judgment, but by considering each factor separately, the direction of bias can be identified and an appropriate weight assigned. The sum of these weighted adjustment factors are used to inflate/deflate our original forecasts:

(ADJUSTED) CORPORATE INCOME TAX		
FY	\$ (millions)	Growth Rate
1974	197.1	12.2%
1975	221.8*	12.5
1976 (a)	226.5*	2.1
(b)	208.7*	- 5.9

* Forecast

Our task is essentially complete at this point; however our adjusted corporate income tax forecasts are still not comparable with those reported in the 1975-76 state budget. The budget combines corporate net income and net worth receipts under a single heading, Miscellaneous Corporation Tax. In order to provide a common denominator, we must make two adjustments. First, a share of corporate income tax receipts are returned to New Jersey municipalities as part of the tax replacement program. This amounts to 22.7% of total net income tax collections, or:

(ADJ) CIT - Local Share = Net CIT			
1974	\$197.1 (million)	\$44.7 (million)	= \$152.4
1975	221.8	50.3	= 171.5
1976 (a)	226.5	51.4	= 175.1
(b)	208.7	47.4	= 161.3

Finally the adjusted corporate income tax is added to estimates for net worth and prepayments, or:

Fiscal Year	Adjusted CIT (in millions)	Net Worth* (in millions)	Prepayment* (in millions)	Miscellaneous Corporation Tax
1974	\$152.4	\$58.5	\$26.4	= \$237.3
1975	171.5	62.0	40.0	= 273.5
1976 (a) .	175.1	63.0	3.4	= 241.5
(b) .	161.3	63.0	- 7.3	= 217.0

* Estimates

Our final estimates show a large increase in revenues for fiscal year 1975 due to the 60% prepayment provision. However, this is a one year phenomenon so our two estimates for fiscal year 1976 revert to a more normal pattern of growth.

What are the implications of our forecasts?

As a source of revenue, the corporate income tax seems to be declining in importance. The manufacturing sector carries the burden of the corporate income tax, yet declining employment, declining investment, and an aging capital stock has eroded the manufacturing tax base. At this point it is clear that growth in other non-capital intensive industries will not result in proportionately higher corporate income tax revenues.

The changes occurring in the State's industrial mix dictate a comprehensive reevaluation of the

role of business taxation to raise revenue and as a tool to stimulate economic growth. In particular, there is a need to assess the business tax structure in regard to the distribution of tax burden among industries. For instance, calculation of effective corporate income tax rates by industry would add valuable insight to tax policy makers. Previous studies have indicated that special tax treatment does not have a uniform, relative impact on all industries which may or may not affect their ability or desire to locate in New Jersey. Further analysis would reveal evidence of corporate behavior with respect to firm size, market concentration, industry size, geographical dispersion of an industry's employment, and its profit rate. Other fundamental questions that need to be answered is to what extent does the New Jersey corporate income tax affect the structure and growth of the New Jersey economy through its biases against type of corporate form of organization, and against equity capital versus borrowed or leased capital.

The focal point of study should rest on the appropriateness of the three factor income apportionment formula as applied to multi-state businesses. For example, lawmakers in Wisconsin* retained the three factor formula but changed the weighting so that sales will be weighted 50% with property and payroll each accounting for 25%. Studies revealed that these

apportionment changes would be particularly beneficial to Wisconsin's export-oriented firms. Similar work, in other states, has criticized the use of the sales factor in income apportionment.** Use of the sales factor in apportioning business income implies that consumption is part of the business tax base. This result means more tax in states where sales are high, less where they are low, regardless of the location of production.

It is apparent that New Jersey faces its own particular set of circumstances with regard to business taxation and that legislation must mandate an appropriate, equitable allocation formula that has the least tendency to distort economic decisions.

Future Efforts

The model presented admittedly represents only the initial step in the development of a useful analytic and forecasting tool. Further refinement of key data series, particularly those for value-added and the corporate income tax by sector should be among the future research efforts. While the above methodology entails more time and effort than the simple linear relationship with U.S. profits, it would appear that the greater understanding of tax revenues and the range of policy application makes the effort worthwhile.

* "1973-75 State Budget Tax Relief and Policy Reform," Department of Administration, State of Wisconsin, August 1973.

** Harris, Lowell, "Income Apportionment Among States: A Sales Factor Does Not Belong in the Formula," in proceedings of TAXATION OF INTERSTATE BUSINESS, a Tax Foundation Seminar, Chicago, April 1970.

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APPENDIX

EXHIBIT I

ESTIMATING THE NEW JERSEY CORPORATE INCOME TAX

Where:

$$\text{NJCIT} = F(\text{US PROFITS})$$

variable	reg. coef.	std. error coef.	computed t	beta coef.
U. S. Profits	2.58760	0.29042	8.90972	0.92697

intercept	.....	-25.28372		
multiple correlation	.....	0.92697	(adjusted r = 0.92112)	
std. error of estimate	.....	14.46729	R ² = .85	

analysis of variance for the regression

source of variation	d. f.	sum of sq.	mean sq.	f value
attributable to regression	1	16615.082	16615.082	79.383
deviation from regression	13	2720.934	209.303	
total	14	19336.016		

Fiscal Year	case no.	y observed	y estimated	residual	% Error	
1960	1	87.100	90.123	-3.023	- 3.47	
1961	2	83.900	83.913	-0.128e-01	- .01	
1962	3	82.300	84.948	-2.648	- 3.22	
1963	4	98.100	97.886	0.214	+ .22	
1964	5	101.800	107.201	-5.401	- 5.31	
1965	6	113.800	125.832	-12.032	-10.57	
1966	7	138.000	149.120	-11.120	- 8.06	
1967	8	154.600	162.834	-8.234	- 5.32	Average Error=7.65%
1968	9	129.100	152.484	-23.384	-18.11	
1969	10	148.400	163.611	-15.211	-10.25	
1970	11	164.600	149.120	15.480	+ 9.40	
1971	12	145.700	118.587	27.113	+18.61	
1972	13	158.600	137.994	20.606	+12.99	
1973	14	174.600	167.492	7.108	+ 4.07	
1974	15	206.500	195.956	10.544	+ 5.11	

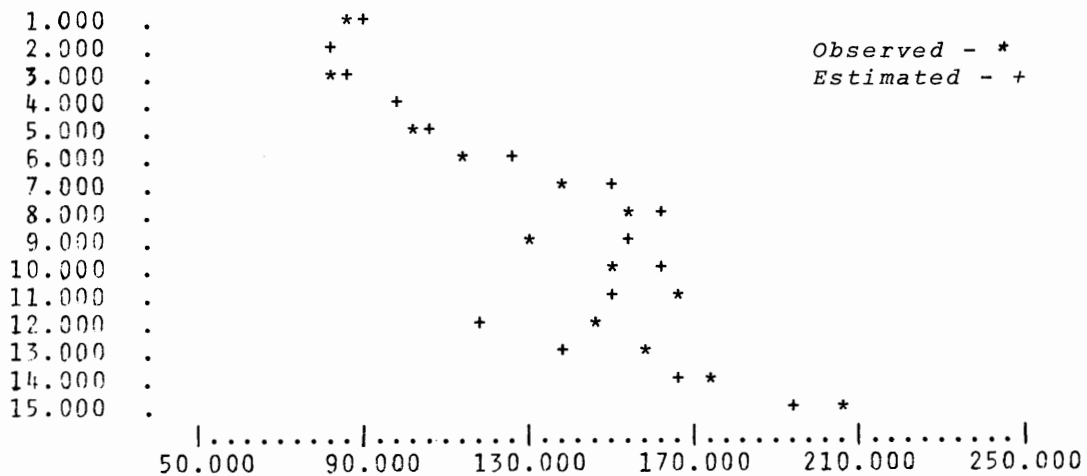


EXHIBIT II

ESTIMATING EQUATION: THE NEW JERSEY CORPORATION INCOME TAX

(i) Specification: $\ln \text{NJCIT}_{t+1} = F(\ln \text{Rate}_t, \ln \text{USPRIVA}_t, \ln \text{NJVA}_t, D_1)$

(ii) Terms: $\ln$ = natural logarithm
 NJCIT = NJ Corporate income tax receipts (fiscal year)
 Rate = NJ Corporate income tax rate
 USPRIVA = U.S. Corporate profits adjusted for inventory valuation.
 NJVA = estimate of NJ value added
 D_1 = policy change, dummy variable

(iii) Equation Parameters

variable	reg. coef.	std. error coef.	computed t	beta coef.
Rate	0.98017	0.07592	12.91128	0.65207
USPRIVA	0.66284	0.13020	5.09082	0.20216
NJVA	0.63156	0.21089	2.99470	0.20879
D_1	-0.11969	0.05700	-2.09966	-0.04188
intercept		-0.95075		
multiple correlation	0.99821	(adjusted r = 0.99749)		
std. error of estimate	0.05223	F value = 696.29		

(iv) Residuals

case no.	y observed	y estimated	residual	std. resid.
1	3.321	3.280	0.410e-01	0.784
2	3.285	3.303	-0.183e-01	-0.350
3	3.266	3.322	-0.558e-01	-1.068
4	3.440	3.423	0.169e-01	0.324
5	3.478	3.514	-0.356e-01	-0.681
6	3.589	3.637	-0.478e-01	-0.915
7	3.782	3.753	0.292e-01	0.560
8	3.896	3.850	0.464e-01	0.888
9	4.335	4.335	-0.954e-06	-0.183e-04
10	4.742	4.784	-0.412e-01	-0.789
11	4.846	4.770	0.076	1.452
12	4.724	4.681	0.430e-01	0.823
13	4.809	4.780	0.286e-01	0.547
14	5.162	5.174	-0.112e-01	-0.214
15	5.284	5.355	-0.071	-1.362

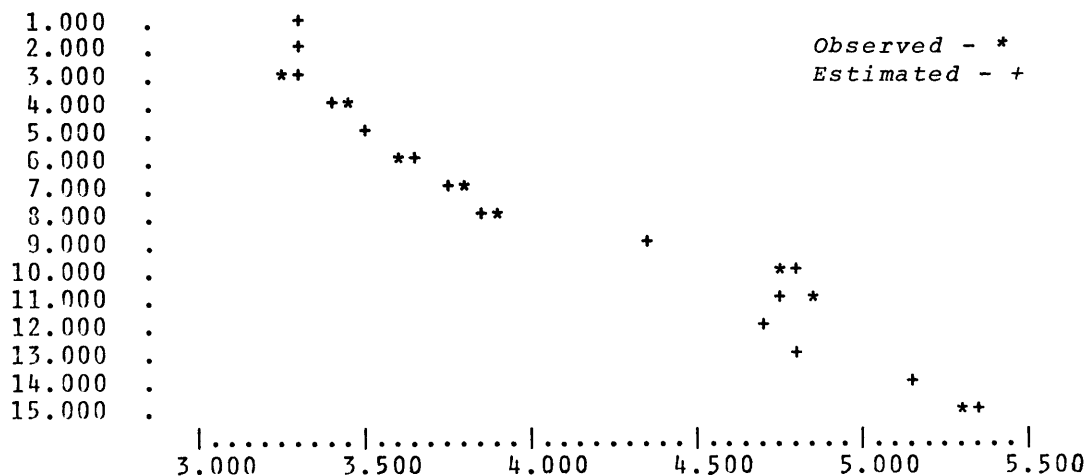


EXHIBIT II—Continued

ESTIMATING EQUATION: NEW JERSEY VALUE-ADDED (\$)

(i) Specification: $\ln NJVA_t = F(\ln NJVA_{t-1}, \ln MEMP_{t-1})$

(ii) Terms: $\ln$ = natural logarithm
 $NJVA_t$ = NJ value added
 t = time (current year)

(iii) Equation Parameters

variable	reg. coef.	std. error coef.	computed t	beta coef.
$NJVA_{(t-1)}$	1.12417	0.05432	20.69455	1.10192
$MEMP_{(t-1)}$	-0.85401	0.28775	-2.96792	-0.15803
intercept		4.64400		
multiple correlation	0.99208	(adjusted r = 0.99075)		
std. error of estimate	0.03337			

analysis of variance for the regression

source of variation	d.f.	sum of sq.	mean sq.	f value
attributable to regression	2	0.833	0.417	374.112
deviation from regression	12	0.134e-01	0.111e-02	
total	14	0.847		

(iv) Residual

case no.	y observed	y estimated	residual	std. resid.
1	0.031	8.992	0.383e-01	1.148
2	9.055	9.086	-0.312e-01	-0.934
3	9.078	9.106	-0.272e-01	-0.815
4	9.158	9.151	0.745e-02	0.223
5	9.205	9.217	-0.118e-01	-0.353
6	9.232	9.274	-0.421e-01	-1.261
7	9.326	9.307	0.189e-01	0.566
8	9.413	9.381	0.319e-01	0.957
9	9.452	9.437	0.154e-01	0.461
10	9.511	9.478	0.325e-01	0.973
11	9.572	9.540	0.316e-01	0.947
12	9.567	9.601	-0.338e-01	-1.014
13	9.574	9.626	-0.524e-01	-1.569
14	9.700	9.674	0.256e-01	0.767
15	9.814	9.817	-0.316e-02	-0.095

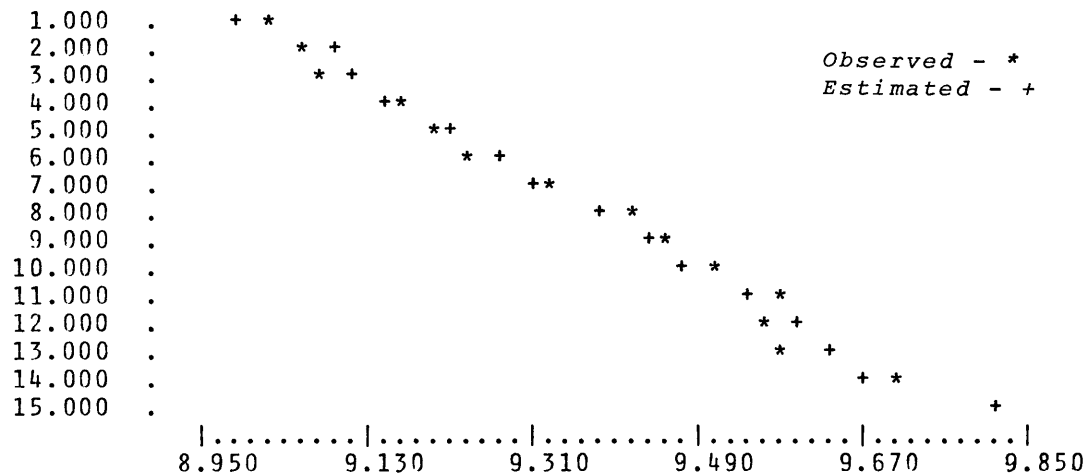
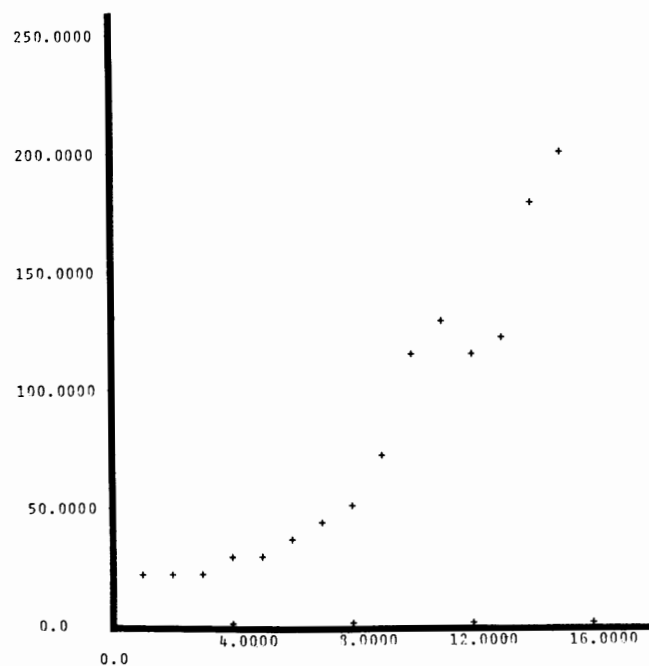


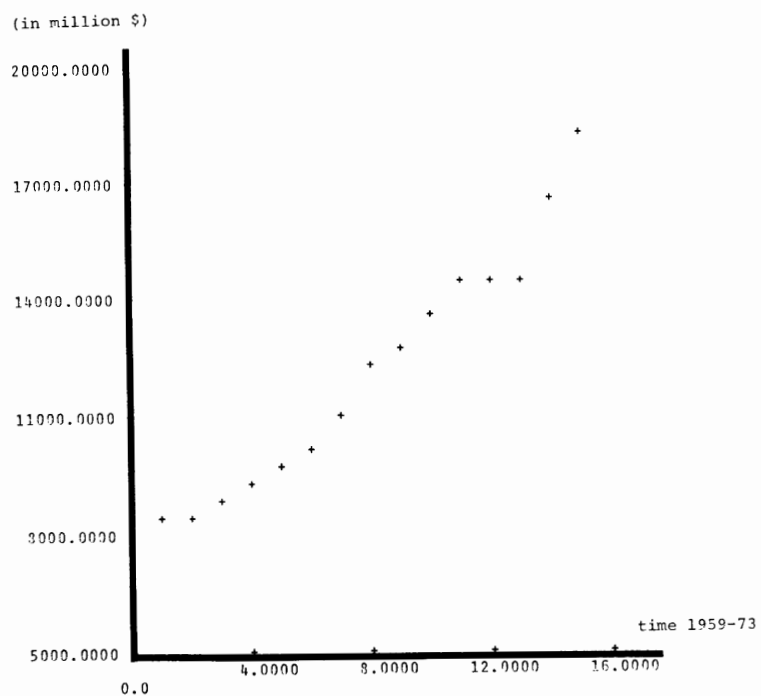
EXHIBIT III

NEW JERSEY CORPORATE INCOME TAX YIELD,* FISCAL YEARS 1960-1974



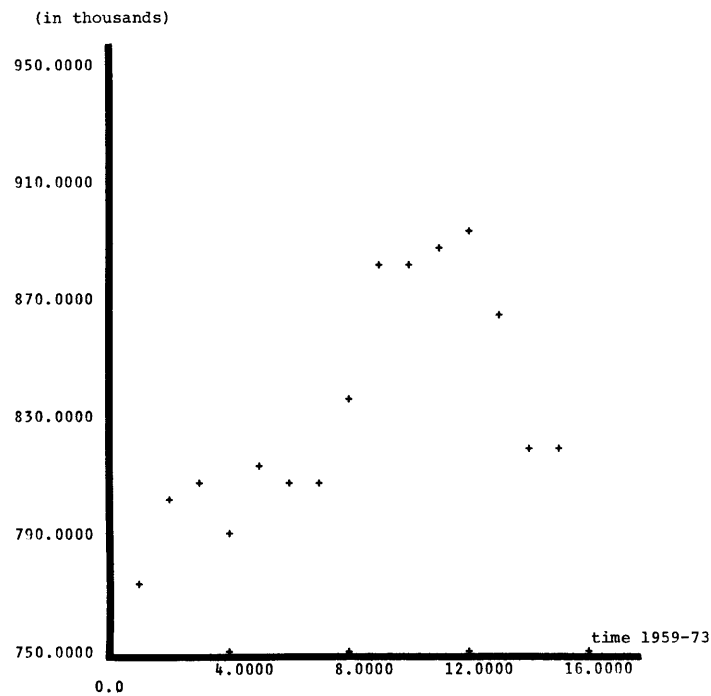
* Series is unadjusted for rate and other administrative changes.
 SOURCE: Division of Taxation, N.J. Department of the Treasury.

NEW JERSEY MANUFACTURING VALUE-ADDED, 1959-73



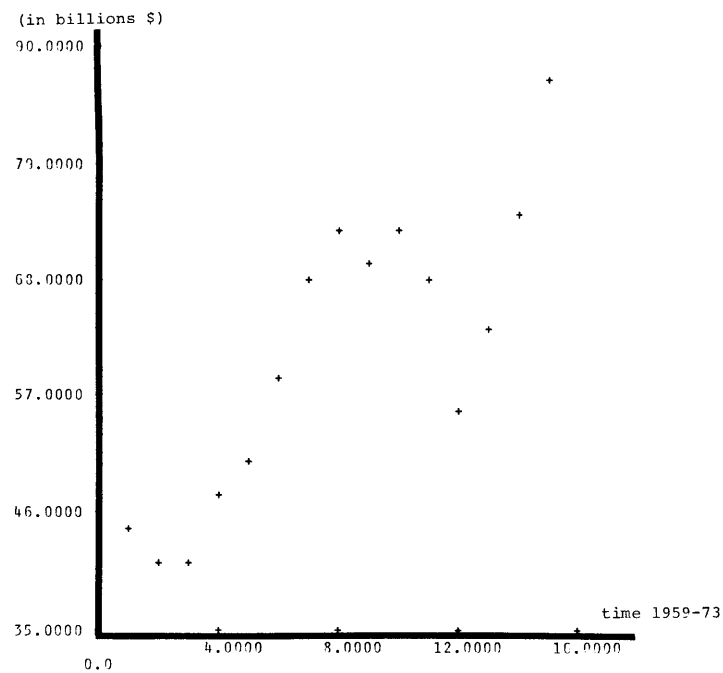
SOURCE: Annual Survey of Manufactures, U.S. Department of Commerce

EXHIBIT III, Continued
NEW JERSEY MANUFACTURING EMPLOYMENT, 1958-1972



SOURCE: Employment and Earnings, U.S. Department of Labor

U.S. NON-FINANCIAL CORPORATE PROFITS AND INVENTORY
VALUATION ADJUSTMENT, 1959-1973



SOURCE: Survey of Current Business, U.S. Department of Commerce

XI

APPENDIX

STATISTICAL TABLES

TABLE 1
POPULATION AND EMPLOYMENT, NEW JERSEY, 1956-1974

Year	Resident Population	Work/Labor Force* <i>In Thousands</i>	Total Employment	Unemployment		Insured Unemploy- ment Rate (Percent)
				Number (000)	Rate (Percent)	
1956 ...	5,516,100	2,406.6	2,263.2	138.6	5.8	4.6
1957 ...	5,631,700	2,448.1	2,290.0	156.8	6.4	5.3
1958 ...	5,739,800	2,472.6	2,248.1	222.5	9.0	7.6
1959 ...	5,960,000	2,483.1	2,303.2	175.5	7.1	5.5
1960 ...	6,070,780	2,507.4	2,337.2	168.5	6.7	5.7
1961 ...	6,222,160	2,543.5	2,355.9	185.5	7.3	6.0
1962 ...	6,370,650	2,575.1	2,415.0	159.0	6.2	5.2
1963 ...	6,503,190	2,618.4	2,447.9	168.8	6.4	5.4
1964 ...	6,614,560	2,655.5	2,489.6	162.1	6.1	4.8
1965 ...	6,720,300	2,724.5	2,582.2	140.0	5.1	3.9
1966 ...	6,821,050	2,790.3	2,665.3	122.6	4.4	3.2
1967 ...	6,917,450	2,854.5	2,721.1	128.3	4.5	3.4
1968 ...	7,012,750	2,920.9	2,783.3	132.1	4.5	3.3
1969 ...	7,103,310	3,019.5	2,882.8	133.5	4.4	3.3
1970 ...	7,192,805(R)	3,114.2(R)	2,940.4(R)	173.8(R)	5.6(R)	4.4
1971 ...	7,261,440(R)	3,159.8(R)	2,939.1(R)	220.8(R)	7.0(R)	5.4
1972 ...	7,322,685(R)	3,216.3(R)	2,996.9(R)	219.4(R)	6.8(R)	5.1
1973 ...	7,371,835(R)	3,304.7	3,080.9	223.8	6.8	4.7
1974 ...	7,413,680	3,370.1	3,091.9	278.2	8.3	5.7

* For data prior to 1970, persons involved in labor-management disputes are included in total workforce and excluded from employment and unemployment. After 1969, persons involved in labor-management disputes are included in employment.

NOTES:

The rate of insured unemployment is based on weekly averages of insured unemployment (State UI Program) expressed as a percent of the average total number of jobs covered by the State Unemployment Compensation Program.

Work/labor force, employment, and unemployment estimates are adjusted to first quarter 1974 benchmarks.

Annual average work/labor force and employment data from 1963 on are based on monthly data.

Annual averages for 1962 and prior years are based on bi-monthly data.

Estimates for July 1, 1974 are provisional.

All population data as of July 1.

Labor force estimates are developed from the State preferred estimating procedure rather than from the Federal (BLS) estimating procedure which is currently the subject of litigation. Workforce series prior to 1970 are on a place of work basis; labor force data after 1969 are compiled by place of residence. At the Statewide level these differences are insignificant. Prior to 1970, employment data are establishment-based; after 1969, employment data are residence based.

Annual averages may not add due to rounding.

(R) —Revised.

Source: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 2
WAGE AND SALARY WORKERS IN NONAGRICULTURAL ESTABLISHMENTS, MAJOR INDUSTRY DIVISIONS,
NEW JERSEY, 1947-1974
(In thousands)

<i>Year</i>	<i>Total Non-Agricultural Payroll Employment</i>	<i>Manu- facturing</i>	<i>Mining</i>	<i>Contract Construction</i>	<i>Transportation and Public Utilities</i>	<i>Wholesale and Retail Trade</i>	<i>Finance, Insurance and Real Estate</i>	<i>Services and Miscellaneous</i>	<i>Government</i>
1947	1,622.6	782.6	4.0	65.4	142.2	249.7	63.1	158.8	156.8
1948	1,657.1	786.3	4.1	74.6	141.0	260.5	67.0	163.7	159.9
1949	1,595.6	721.8	4.0	72.5	134.0	264.5	66.5	166.2	166.1
1950	1,657.1	756.4	4.3	81.2	135.4	273.7	68.3	166.8	171.0
1951	1,768.1	821.2	4.5	95.4	143.9	285.8	69.8	169.8	177.7
1952	1,804.0	832.9	4.6	91.9	146.7	295.6	70.7	174.0	187.6
1953	1,850.2	856.2	4.7	90.3	147.8	303.4	73.6	180.6	193.6
1954	1,820.8	802.1	4.3	93.6	146.1	312.4	76.1	186.0	200.2
1955	1,865.3	811.1	4.0	98.7	148.4	322.5	78.8	195.4	206.4
1956	1,933.5	834.8	4.3	100.7	153.8	336.6	81.8	208.4	213.1
1957	1,968.3	835.0	4.4	96.2	154.3	349.1	85.4	222.7	221.2
1958	1,911.3	775.4	3.7	88.6	148.2	351.2	86.7	230.5	227.0
1959	1,970.5	801.3	3.6	95.7	147.0	360.5	87.3	241.6	233.5
1960	2,017.1	808.6	3.5	98.1	149.5	374.6	88.6	252.0	242.2
1961	2,033.7	791.1	3.4	99.4	150.1	380.7	91.2	264.2	253.6
1962	2,096.1	812.8	3.4	100.7	150.8	393.3	93.4	278.9	262.8
1963	2,129.3	809.1	3.5	100.2	151.9	405.5	95.5	291.5	272.1
1964	2,168.5	806.2	3.6	105.7	153.4	420.2	97.8	301.6	280.0
1965	2,256.4	836.7	3.5	109.3	157.0	439.0	99.9	315.6	295.4
1966	2,358.4	878.2	3.0	109.8	162.2	460.0	102.4	330.8	312.0
1967	2,420.9	881.9	2.8	111.0	166.3	472.1	106.0	351.6	329.2
1968	2,485.4	886.2	3.1	114.3	166.3	489.7	109.7	372.6	344.4
1969	2,570.9	893.6	3.3	116.8	176.2	515.1	112.6	393.2	360.1
1970	2,608.6	863.0	3.2	119.2	182.2	538.2	117.7	410.4	374.8
1971	2,611.8(R)	822.2	3.0	116.3	181.1	558.4	121.7	421.2	388.0
1972	2,673.7(R)	821.7(R)	3.2	120.6	181.2	577.2	125.4	439.0	405.3
1973	2,760.8(R)	840.8(R)	3.3(R)	125.6(R)	186.3(R)	596.3(R)	131.8(R)	459.6(R)	417.1(R)
1974	2,781.6	822.0	3.1	117.7	184.4	604.8	137.1	474.9	437.6

Series have been adjusted to March 1974 benchmarks.

(R)—Revised.

SOURCE: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 3
WAGE AND SALARY WORKERS IN MANUFACTURING, DURABLE GOODS, NEW JERSEY, 1947-1974
(In thousands)

Year	Total Durable Goods	Lumber and Wood Products	Furniture and Fixtures	Stone, Clay and Glass Products	Primary Metal Industries	Ordnance and Fabricated Metals	Machinery, Except Electrical	Electrical Machinery	Trans- portation Equipment	Instruments and Related Products	Miscellaneous Manu- facturing Industries
1947	403.0	6.9	7.7	31.0	45.8	45.7	56.0	108.9	47.4	18.2	35.5
1948	397.2	7.0	8.2	31.4	44.2	44.3	53.8	106.7	45.9	18.8	36.9
1949	346.1	6.5	7.6	29.0	37.6	40.7	48.8	87.3	37.5	17.9	33.2
1950	372.3	6.8	8.9	31.7	40.5	44.2	49.9	97.2	40.1	17.8	35.3
1951	427.9	7.1	9.1	35.3	46.5	48.3	60.0	115.1	47.5	22.4	36.6
1952	446.6	6.4	8.5	33.4	45.3	50.5	61.7	121.7	60.2	24.7	34.3
1953	470.4	6.3	8.6	33.8	46.2	57.2	64.0	132.5	62.7	26.5	32.6
1954	431.3	6.4	8.2	32.5	42.6	54.6	60.6	116.7	56.5	24.9	28.3
1955	435.5	6.4	8.5	34.1	43.9	55.7	59.1	117.5	57.1	25.3	27.8
1956	455.9	6.4	9.1	34.3	47.3	55.5	65.8	124.3	57.4	27.9	27.9
1957	457.3	6.3	9.2	33.9	46.9	56.7	65.5	125.6	55.9	29.4	27.9
1958	411.9	5.6	8.7	31.9	40.9	50.9	57.0	115.0	48.7	27.4	25.8
1959	430.5	5.9	9.2	33.1	41.7	53.7	57.8	121.4	50.5	30.2	27.0
1960	436.5	5.7	9.8	33.7	42.6	54.2	61.0	122.3	48.5	31.7	26.8
1961	421.3	5.6	9.0	34.4	40.7	53.6	57.3	119.5	41.7	31.9	27.6
1962	436.1	5.8	9.7	34.6	40.1	55.6	60.3	125.2	42.5	32.4	29.9
1963	425.7	5.7	8.9	34.9	38.6	55.2	60.1	121.7	39.0	32.9	28.7
1964	418.6	5.6	9.0	35.6	37.9	56.7	61.4	115.1	35.6	31.0	30.7
1965	438.1	5.6	9.4	36.9	39.8	60.2	65.4	118.4	36.8	32.7	32.9
1966	462.5	5.2	10.5	39.3	40.4	63.8	70.8	129.9	36.4	34.3	31.9
1967	463.9	5.0	11.0	39.1	38.6	65.4	75.0	131.2	32.0	36.5	30.0
1968	460.8	5.3	10.2	38.8	38.5	67.0	75.8	128.1	31.7	35.8	29.7
1969	463.8	5.2	11.0	40.9	39.4	69.2	76.2	125.6	31.4	34.7	30.2
1970	435.4	4.9	10.5	39.6	37.2	66.4	72.8	116.9	26.3	33.2	27.5
1971	406.7	4.5	10.6	39.0	33.4	62.4	66.3	106.9(R)	25.3	32.4(R)	25.8
1972	405.2(R)	4.4	11.3	40.0	32.2	62.9	65.6	105.5(R)	25.7	32.0(R)	25.6
1973	419.2(R)	4.5	11.1(R)	41.0(R)	32.4(R)	65.5(R)	71.5(R)	110.9(R)	25.3(R)	30.8(R)	26.3(R)
1974	410.6	4.0	10.8	39.8	37.8	63.7	74.9	108.3	21.4	30.7	25.2

Series have been adjusted to March 1974 benchmarks. (R)—Revised.

SOURCE: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 4
WAGE AND SALARY WORKERS IN MANUFACTURING, NONDURABLE GOODS, NEW JERSEY, 1947-1974
(In thousands)

<i>Year</i>	<i>Total Nondurable Goods</i>	<i>Food and Kindred Products</i>	<i>Tobacco Manufactures</i>	<i>Textile Mill Products</i>	<i>Apparel and Related Products</i>	<i>Paper Allied Products</i>	<i>Printing, Publishing and Allied Industries</i>	<i>Chemicals and Allied Products</i>	<i>Petroleum Refining and Related Industries</i>	<i>Rubber and Miscellaneous Plastic Products</i>	<i>Leather and Leather Products</i>
1947	379.6	56.9	5.5	61.1	78.9	21.7	18.6	80.1	15.6	29.5	11.7
1948	389.1	57.1	5.1	64.7	85.6	22.2	19.9	77.6	16.2	28.4	12.3
1949	375.7	55.9	4.9	57.8	88.9	21.8	21.4	71.9	16.3	24.7	12.1
1950	384.1	56.5	4.6	58.2	89.0	23.5	22.8	73.7	16.5	26.4	12.9
1951	393.3	59.8	4.4	53.7	89.8	24.8	23.4	79.1	17.3	28.4	12.6
1952	386.3	61.3	4.4	50.1	88.7	24.2	23.5	78.5	16.3	27.3	12.1
1953	385.8	60.9	4.3	48.3	85.0	26.5	24.8	79.2	16.4	28.4	12.0
1954	370.8	62.2	4.0	41.9	79.7	26.0	25.9	78.0	15.2	26.7	11.2
1955	375.6	61.7	3.4	42.7	79.6	26.3	27.1	80.8	14.5	27.5	11.9
1956	378.9	63.5	2.6	41.6	79.7	27.2	28.1	81.8	14.3	28.3	11.8
1957	377.7	62.9	2.0	38.6	79.2	28.3	30.5	83.3	13.8	27.7	11.4
1958	363.5	62.9	1.9	33.0	76.7	28.0	30.3	80.8	12.3	26.6	11.1
1959	370.8	62.3	1.8	33.2	79.2	28.3	31.5	82.4	11.7	29.3	11.1
1960	372.1	62.9	1.7	31.4	77.7	28.0	32.3	86.4	11.5	29.2	11.0
1961	369.8	63.9	1.6	29.1	76.4	28.1	32.6	87.0	11.1	29.2	10.8
1962	376.7	64.2	1.5	28.6	75.8	29.7	33.0	91.0	10.7	30.7	11.5
1963	383.4	64.9	1.4	27.9	74.5	31.4	34.6	94.8	10.5	31.7	11.7
1964	387.6	65.0	1.5	27.8	74.6	31.5	35.8	96.4	9.6	34.2	11.2
1965	398.6	66.4	1.4	28.5	77.3	31.3	37.5	98.9	9.8	36.0	11.5
1966	415.7	67.2	.8	29.6	80.3	33.0	39.6	105.5	10.3	37.2	12.2
1967	418.1	65.3	.6	29.1	78.5	33.7	41.5	110.9	9.5	37.7	11.3
1968	424.6	64.5	.3	30.5	78.7	34.3	42.2	113.3	9.6	39.9	11.5
1969	429.9	63.2	.3	30.8	77.2	35.0	43.3	118.2	9.8	41.4	10.6
1970	427.6	63.5	.3	29.6	72.3	35.3	44.8	122.3	10.6	40.0	9.6
1971	415.5(R)	61.7	.3	29.4	68.9	35.9	43.7	119.5(R)	10.1	36.8(R)	9.4
1972	416.5(R)	59.9	.3	30.4	68.9	35.9	45.5	121.2(R)	10.4	35.2(R)	8.9
1973	421.7(R)	59.1(R)	.2	31.1(R)	68.7(R)	37.0(R)	46.2(R)	125.6(R)	10.7(R)	34.2(R)	9.0(R)
1974	411.4	57.4	.2	28.6	62.2	36.7	46.3	127.7	11.5	32.8	8.2

Series have been adjusted to March 1974 benchmarks. (R)—Revised.

SOURCE: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 5
EMPLOYMENT, HOURS, AND EARNINGS OF PRODUCTION
WORKERS ON MANUFACTURING PAYROLLS,
NEW JERSEY, 1947-1974

<i>Year</i>	<i>Employment (thousands)</i>	<i>Average Weekly Hours</i>	<i>Average Weekly Earnings (dollars)</i>	<i>Average Hourly Earnings (dollars)</i>
1947	n.a.	40.7	52.26	1.28
1948	n.a.	40.5	56.37	1.39
1949	n.a.	39.4	56.97	1.45
1950	n.a.	40.8	61.65	1.51
1951	n.a.	41.1	67.28	1.65
1952	n.a.	41.1	71.02	1.73
1953	n.a.	40.9	74.32	1.82
1954	n.a.	39.8	74.43	1.87
1955	n.a.	40.7	79.16	1.94
1956	n.a.	40.5	82.98	2.05
1957	n.a.	39.9	85.23	2.14
1958	563.7	39.4	86.80	2.20
1959	583.8	40.3	92.45	2.29
1960	580.8	39.6	93.93	2.37
1961	563.1	40.0	97.60	2.44
1962	576.0	40.5	101.66	2.51
1963	567.5	40.5	104.90	2.59
1964	564.4	40.6	108.40	2.67
1965	587.1	41.0	112.34	2.74
1966	616.5	41.3	117.29	2.84
1967	616.7	40.6	118.96	2.93
1968	616.9	40.7	125.76	3.09
1969	621.3	40.8	132.60	3.25
1970	592.6	40.3	139.44	3.46
1971	564.4(R)	40.4	150.29	3.72
1972	567.6	40.9	163.19	3.99
1973	582.4(R)	41.3	174.70	4.23
1974	563.7	40.9	186.50	4.57

FOOTNOTE

n.a.—not available.

(R)—Revised.

Series have been adjusted to March 1974 benchmarks.

SOURCE: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 6
CONSUMERS PRICE INDEXES*
FOR URBAN WAGE EARNERS AND CLERICAL WORKERS
1967 = 100.0

<i>Year</i>	<i>United States</i>	<i>New York SCA^a</i>	<i>Philadelphia SMSA^b</i>
1947	66.9	67.0	66.4
1948	72.1	71.5	71.7
1949	71.4	70.7	70.9
1950	72.1	71.2	71.3
1951	77.8	76.5	77.9
1952	79.5	77.7	79.5
1953	80.1	78.2	79.8
1954	80.5	78.7	80.7
1955	80.2	78.2	80.6
1956	81.4	79.4	81.6
1957	84.3	82.0	84.2
1958	86.6	84.5	85.8
1959	87.3	85.6	86.8
1960	88.7	87.3	88.4
1961	89.6	88.1	89.4
1962	90.6	89.4	90.1
1963	91.7	91.3	91.8
1964	92.9	92.8	93.2
1965	94.5	94.3	94.7
1966	97.2	97.5	97.3
1967	100.0	100.0	100.0
1968	104.2	104.3	104.8
1969	109.8	110.8	110.4
1970	116.3	119.0	117.8
1971	121.3	125.9	123.5
1972	125.3	131.4	127.0
1973	133.1	139.7	135.5
1974	147.7	154.7	151.6

FOOTNOTES

^a Standard Consolidated Area: New York-Northeastern New Jersey including Bergen, Essex, Hudson, Middlesex, Morris, Passaic, Somerset, and Union counties.

^b Standard Metropolitan Statistical Area, including Camden, Burlington, and Gloucester counties.

* Annual averages.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics.

Prepared by N.J. Department of Labor and Industry, Division of Planning and Research, April, 1974.

TABLE 7
PERSONAL INCOME, NEW JERSEY AND UNITED STATES,
1948-1974

Year	Total Personal Income		Per Capita Personal Income			
	New Jersey (millions of current dollars)	United States	New Jersey (current dollars)	United States	New Jersey ^a (1967 dollars)	United States ^b
1948	8,063	208,878	1,689	1,430	2,359	1,983
1949	8,131	205,791	1,663	1,384	2,349	1,938
1950	8,934	226,214	1,834	1,496	2,576	2,075
1951	10,151	253,232	2,028	1,652	2,627	2,123
1952	10,934	269,769	2,134	1,733	2,715	2,180
1953	11,750	285,456	2,247	1,804	2,844	2,252
1954	11,957	287,607	2,231	1,785	2,799	2,217
1955	12,688	308,266	2,306	1,876	2,904	2,339
1956	13,719	330,481	2,443	1,975	3,035	2,410
1957	14,550	348,460	2,536	2,045	3,052	2,426
1958 (R) .	14,885	358,252	2,527	2,067	2,966	2,387
1959 (R) .	15,946	381,890	2,651	2,166	3,075	2,481
1960 (R) .	16,651	399,947	2,728	2,222	3,107	2,505
1961 (R) .	17,746	415,984	2,789	2,274	3,141	2,538
1962 (R) .	18,622	442,078	2,921	2,381	3,253	2,628
1963 (R) .	19,602	465,234	3,001	2,469	3,276	2,692
1964 (R) .	20,830	497,268	3,128	2,603	3,363	2,802
1965 (R) .	22,492	538,690	3,324	2,785	3,517	2,947
1966 (R) .	24,280	586,736	3,544	3,001	3,639	3,087
1967 (R) .	26,206	629,204	3,783	3,188	3,783	3,188
1968 (R) .	28,612	688,978	4,085	3,457	3,905	3,318
1969 (R) .	31,194	751,425	4,397	3,733	3,976	3,400
1970 (R) .	33,853	808,223	4,705	3,966	3,974	3,410
1971 (R) .	36,392	864,989	4,982	4,195	3,995	3,458
1972 (R) .	39,529	947,066	5,379	4,549	4,163	3,630
1973 (R) .	43,026	1,057,825	5,874	5,041	4,269	3,787
1974 (P) .	46,798	1,148,720	6,384	5,434	4,167	3,697

FOOTNOTES

^a The average of the Consumer Price Indexes for the New York Standard Consolidated Area and the Philadelphia SMSA was used to express New Jersey per capita personal income in constant 1967 dollars.

^b The Consumer Price Index for the United States was used to express United States per capita personal income in constant 1967 dollars.

(P)—Preliminary estimates.

(R)—Revised.

SOURCES: U.S. Department of Commerce; U.S. Department of Labor, Bureau of Labor Statistics.

Prepared by N.J. Department of Labor and Industry, Division of Planning and Research, April 1, 1975.

TABLE 8
PRODUCTION AND TRADE, NEW JERSEY, 1948-1974

Year	Electric Power Sales				Value of New Dwelling Units Authorized (\$000)	Construction Contracts Awarded† (\$000)	Retail Store Sales* (\$000,000)	Registration of New Vehicles	
	Total (kilowatt hours in thousands)	Large Industrial and Commercial Users	Small Industrial and Commercial Users	Gasoline Consumption (000 gal.)				Passenger Cars (number)	Commercial Vehicles (number)
1948	6,887,131	3,736,931	1,359,854	1,108,524	n.a.	406,476	n.a.	116,847	25,504
1949	7,026,664	3,578,396	1,483,196	1,199,979	n.a.	408,007	n.a.	165,179	23,544
1950	8,023,122	4,161,454	1,630,075	1,337,876	n.a.	747,771	n.a.	210,436	27,229
1951	8,944,201	4,648,835	1,806,808	1,396,712	n.a.	676,458	n.a.	178,862	25,002
1952	9,578,722	4,837,880	1,969,215	1,487,026	n.a.	690,770	n.a.	149,168	19,335
1953	10,435,872	5,191,330	2,180,598	1,587,990	n.a.	793,889	n.a.	208,376	23,048
1954	10,931,039	5,214,694	2,348,391	1,677,573	n.a.	886,947	n.a.	207,252	20,601
1955	12,184,077	5,874,199	2,584,701	1,806,242	n.a.	1,010,459	n.a.	258,079	22,262
1956	13,224,653	6,323,544	2,807,035	1,846,099	n.a.	1,106,452	n.a.	219,297	21,903
1957	14,196,487	6,642,234	3,097,755	1,850,252	n.a.	1,048,449	n.a.	219,865	20,320
1958	14,949,906	6,829,115	3,322,774	1,907,497	n.a.	1,143,484	n.a.	183,770	17,616
1959	16,632,611	7,683,942	3,719,151	2,007,697	n.a.	1,303,736	n.a.	219,305	20,374
1960	17,569,054	8,125,141	3,967,306	2,050,208	497,534(R)	1,256,532	n.a.	266,299	22,532
1961	19,248,349	8,730,727	4,471,379	2,050,731	553,029(R)	1,307,832	n.a.	250,432	24,606
1962	20,630,556	9,506,486	4,848,024	2,045,680	549,825(R)	1,392,618	n.a.	285,955	24,713
1963	22,077,818	10,108,217	5,309,982	2,148,500	608,660(R)	1,534,448	8,992	318,127	26,804
1964	23,848,214	10,773,759	5,872,988	2,222,915	704,809(R)	1,622,048	9,768	325,293	28,417
1965	25,964,004	11,712,402	6,433,961	2,322,560	727,586(R)	1,555,689	10,396	378,768	30,980
1966	28,512,856	12,814,406	7,043,455	2,391,674	588,874(R)	1,651,494	10,711	352,573	31,072
1967	30,146,448	13,147,596	7,620,829	2,447,834	572,646(R)	1,906,577	10,947	302,680	27,471
1968	32,616,153	13,863,329	8,394,581	2,596,238	597,980(R)	2,380,846	12,030	356,762	30,724
1969	35,637,643	15,042,515	9,214,088	2,676,055	562,616(R)	2,205,705	12,582(R)	356,583	34,616
1970	38,156,144	15,394,352	10,185,005	2,818,317	599,034(R)	2,740,746	14,274	348,294	36,027
1971	39,919,508	15,564,483	11,056,580	2,918,695	876,144	2,409,797	15,359	393,123†	35,255†
1972	42,318,122	16,192,817	12,143,135	3,170,170	1,062,430	2,948,735(R)	16,399	443,628	50,545
1973	45,540,943	17,018,962	13,233,603	3,266,843(R)	1,030,506(R)	2,513,229(R)	17,874	453,334	53,735
1974	43,995,014	16,390,080	12,904,974	3,174,698(P)	508,346(P)	2,361,122(P)	18,024	351,103	51,663

FOOTNOTES

* Figures starting with 1968 are based on a new sample design and improved processing techniques developed as a result of the 1967 Census of Business by the U.S. Department of Commerce. The new series began September 1967 and subsequent figures are not comparable with earlier data.

† Years 1948-70 compiled by N.J. Auto List. Years 1972-74 are from the N.J. Division of Motor Vehicles.

‡ Beginning with January 1967, construction contracts awarded were adjusted to reflect more complete coverage of one family house construction.

(P) —Preliminary estimates. (R) —Revised. n.a.—not available.

SOURCES: Electric Power Sales: Edison Electric Institute. Gasoline Consumption: Federal Highway Administration. New Dwelling Units Authorized: N.J. Department of Labor and Industry in Cooperation with U.S. Department of Commerce. Construction Contracts Awarded: F.W. Dodge Corporation. Retail Sales: U.S. Dept. of Commerce. Registration of New Vehicles: New Jersey Auto Lists, Inc.; N.J. Division of Motor Vehicles.

Prepared by N.J. Department of Labor and Industry, Division of Planning and Research, April 1, 1974.

TABLE 9
BUSINESS ACTIVITY, NEW JERSEY, 1948-1974

Year	Business Telephones Net Gains	Business Failures (number)	Liabilities of Business Failures (\$000)	New Incorporations (number)	Apparent Consumption of Distilled Spirits (000 gal.)	New Jersey Turnpike	
						Toll Revenue (\$000)	Number of Vehicles (000)
1948	19,106	219	15,286	5,510	6,852	n.a.	n.a.
1949	10,014	366	16,246	5,411	6,688	n.a.	n.a.
1950	20,134	346	10,926	6,009	8,243	n.a.	n.a.
1951	29,806	307	11,961	5,581	8,216	n.a.	n.a.
1952	29,044	319	18,627	6,146	7,824	16,241	17,948
1953	26,613	360	25,856	6,651	8,443	19,193	22,005
1954	24,664	385	20,086	7,276	8,536	20,756	24,555
1955	31,659	456	29,753	8,386	9,045	21,123	25,888
1956	37,452	582	33,919	8,839	10,253	24,513	31,588
1957	29,856	565	39,604	8,097	9,331	29,023	39,270
1958	21,892	778	43,475	8,757	9,961	30,159	41,615
1959	35,051	639	27,619	10,436	10,702	33,318	46,199
1960	38,543	714	49,071	10,172	11,391	35,584	49,083
1961	28,825	717	53,282	9,650	11,743	37,193	51,738
1962	39,383	591	58,468	9,984	12,378	39,240	54,901
1963	29,716	509	256,075	9,716	12,810	40,779	56,677
1964	36,771	442	49,261	10,023	13,483	44,149	60,708
1965	47,251	512	96,334	10,439	14,383	46,122	64,958
1966	54,650	442	61,191	9,656	14,687	48,610	69,850
1967	48,620	414	64,215	10,220	15,064	51,230	73,529
1968	53,293	423	42,692	12,038	15,971	55,340	78,205
1969	73,211	343	53,141	13,168	16,572	57,637	80,618
1970	58,787	463	142,196	13,958	16,289	63,934	89,655
1971	45,401	428	102,738	15,563	16,440	70,124	98,553
1972	66,989	453	173,428	16,462	17,060	75,940	107,933
1973	87,064	491	201,463	16,312	16,690(R)	78,997	110,422
1974	55,327	643	110,411	15,410	16,527	75,243	106,628

FOOTNOTES

n.a.—not available.

(R)—Revised.

SOURCES: Business Telephone Net Gains: N.J. Bell Telephone Company. Number and Liabilities of Business Failures and New Incorporations: Dun and Bradstreet, Inc. Apparent Consumption of Distilled Spirits: Distilled Spirits Institute. New Jersey Turnpike-Toll Revenue and Number of Vehicles: New Jersey Turnpike Authority.

Prepared by N.J. Department of Labor and Industry, Division of Planning and Research, April, 1975.

TABLE 10
FINANCE, NEW JERSEY, 1948-1974

Year	Total Deposits (millions of dollars)	Total Assets (millions of dollars)	Bank Debits	Savings in All Insured Savings and Loan Associations	Savings in All Mutual Savings Banks	Ordinary Life Insurance Sales
			Five SMSA Areas ^a	(thousands of dollars)		
1948	.....	.....	.....	355,258	516,590	580,688
1949	5,164	5,603	.....	422,501	535,518	604,291
1950	.....	.....	.....	506,037	588,388	725,712
1951	.....	.....	.....	604,436	650,368	805,489
1952	.....	.....	.....	724,481	739,695	890,944
1953	.....	.....	.....	862,041	824,835	1,058,691
1954	6,218	6,767	.....	1,083,298	924,330	1,107,907
1955	.....	.....	.....	1,290,953	995,780	1,370,565
1956	.....	.....	.....	1,460,342	1,103,782	1,620,565
1957	.....	.....	.....	1,651,719	1,162,688	2,201,044
1958	.....	.....	.....	1,889,145	1,256,831	2,189,707
1959	8,115	8,890	.....	2,147,322	1,292,154	2,235,092
1960	.....	.....	.....	2,414,376	1,327,447	2,171,985
1961	.....	.....	.....	2,729,116	1,384,518	2,180,105
1962	.....	.....	.....	3,052,389	1,547,302	2,163,371
1963	.....	.....	.....	3,418,173	1,692,707	2,381,986
1964	11,470	12,758	79,920	3,801,004	1,833,533	2,748,766
1965	.....	.....	90,719	4,171,487	1,992,759	3,112,622
1966	.....	.....	104,426	4,261,895	2,122,482	3,258,043
1967	.....	.....	110,364(R)	4,634,388	2,317,453	3,582,284
1968	.....	.....	127,373(R)	5,059,085	2,480,412	3,977,629
1969	16,314	18,516	146,857(R)	5,361,151	2,585,228	4,418,204
1970	18,109	20,469	184,356(R)	5,936,761	2,967,846	4,948,757
1971	20,690	23,325	171,916(R)	7,648,154	3,545,904	5,407,376
1972	21,432	24,280	195,584(R)	8,908,940	4,146,721	5,825,622
1973	24,944	28,278	283,522(R)	9,971,596	4,462,416	6,273,806(R)
1974	25,722	29,499	354,996(P)	10,875,906	4,666,977(P)	7,080,308

FOOTNOTES

^a Standard Metropolitan Statistical Areas: Newark; Paterson-Clifton-Passaic; Atlantic City; Trenton and Jersey City.

(P)—Provisional estimates.

(R)—Revised estimates.

SOURCES: Bank Debits: Federal Reserve System. Savings in all Insured Savings and Loan Associations: Savings in all Mutual Savings Banks; Savings Banks' Association of New Jersey. Ordinary Life Insurance Sales: Life Insurance Agency Management Association, New Jersey Banker.

Prepared by N.J. Department of Labor and Industry, Division of Planning and Research, April, 1975.

TABLE 11
AGRICULTURE, NEW JERSEY, 1950-1974

Year	Number of Workers on Farms (thousands)	Cash Receipts from Farm Marketings		
		Total	(thousands of dollars) From Livestock and Products	From Crops
1950	66	292,430	188,694	103,736
1951	65	348,831	229,976	118,855
1952	61	342,447	215,156	127,291
1953	58	346,187	223,750	122,437
1954	59	314,259	194,605	119,654
1955	58	307,674	200,178	107,496
1956	53	330,372	202,117	128,255
1957	51	314,627	193,991	120,636
1958	51	304,569	191,946	112,623
1959	45	286,467	169,690	116,777
1960	44	295,411	167,222	128,189
1961	42	286,167	156,180	129,987
1962	41	278,001	146,024	131,977
1963	39	271,135	138,904	132,231
1964	37	252,632	123,334	129,298
1965	33	269,520	117,995	151,525
1966	27	265,390	119,938	145,452
1967	23	249,416	102,164	147,252
1968	23	250,061	98,510	151,551
1969	21	246,997	102,491	144,506
1970 (R)	20	246,047	98,821	143,226
1971 (R)	19	244,045	90,679	153,366
1972 (R)	20	240,842	90,910	149,932
1973 (R)	19	308,523	112,441	196,082
1974 (P)	18	341,470	115,988	225,482

FOOTNOTE

(P)—Preliminary estimates.

SOURCES: U.S. Department of Agriculture; N.J. Department of Agriculture.

Prepared by N.J. Department of Agriculture.

TABLE 12
STATE TAX REVENUES, NEW JERSEY CALENDAR YEARS 1949-1973
(Thousands of dollars)

<i>Year</i>	<i>Total State Tax Revenues</i>	<i>Cigarette Tax</i>	<i>Corporation Tax</i>	<i>Inheritance Tax</i>	<i>Motor Fuel Tax</i>	<i>Motor Vehicle Tax</i>	<i>Pari- Mutuel Tax</i>	<i>All Other Taxes†</i>	<i>Sales Tax</i>
1949	155,135	17,713	15,633	10,179	35,167	33,542	11,801	31,100	
1950	162,402	18,240	17,238	9,535	35,601	36,486	11,834	33,467	
1951	177,994	18,996	18,992	11,103	38,293	41,309	14,661	34,640	
1952	188,557	19,854	20,265	12,069	40,048	45,181	18,047	33,096	
1953	203,033	20,079	22,294	12,357	42,660	48,577	20,710	36,355	
1954	217,526	19,482	23,435	10,515	53,552	52,095	21,871	36,576	
1955	256,142	19,952	36,811	14,316	67,196	57,835	22,822	37,210	
1956	292,232	30,622	39,235	17,338	70,307	71,226	23,798	39,666	
1957	292,059	34,806	41,831	18,123	70,538	62,492	24,484	39,783	
1958	309,674	36,754	43,952	10,608	80,046	64,731	23,886	39,697	
1959	357,756	39,529	69,327	18,771	97,184	68,476	24,571	39,898	
1960	383,503	42,130	76,940	24,988	99,945	71,733	25,155	42,610	
1961	410,832	56,075	78,724	22,051	111,210	74,958	25,309	42,506	
1962	455,131	59,966	82,496	29,810	124,446	77,658	29,408	51,347	
1963	492,835	66,243	88,060	48,568	128,952	81,980	27,213	51,818	
1964	529,068	68,720	94,142	44,801	135,157	87,383	28,580	70,285	
1965	561,971	75,031	101,838	50,278	141,938	91,094	28,826	72,966	
1966	688,469	87,868	119,462	55,246	147,765	95,179	29,209	70,391	83,349
1967	859,639	97,241	134,406	54,097	150,166	97,288	31,215	73,119	222,107
1968	1,061,032	111,713	146,407	60,166	172,835	109,059	34,461	157,979	268,412
1969	1,219,074	117,603	223,814	64,266	193,534	127,631	34,829	179,644	277,753
1970	1,408,667	121,677	212,019	68,367	204,309	132,353	34,023	193,777	442,142*
1971	1,490,943	125,794	125,968	69,192	213,930	139,131	34,781	228,557	553,590
1972	1,873,010	154,181	151,162	71,531	248,191	147,468	35,872	442,239	622,366
1973	2,261,598	167,078	225,939	83,000	279,154	159,588	36,525	571,657	738,657
1974 (P)	2,434,826	168,253	240,717	86,198	266,821	162,481	39,492	714,566	756,298

FOOTNOTE

* Reflects rate increase to 5% as of March 1, 1970.

(P) Preliminary estimates.

SOURCE: New Jersey Department of the Treasury, Bureau of Budget and Accounting, FISCAL REPORT.

Prepared by Office of Economic Policy, Dept. of Treasury.

† Also includes budgeted federal aid and interfund transfers.

TABLE 13
COUNTY POPULATION ESTIMATES†

County	1971	1972	1973	1974‡
Atlantic	176,885	178,225	179,530	180,545
Bergen	904,315	907,565	909,070	910,695
Burlington	330,060	328,195	324,235	324,055
Camden	464,115	470,625	475,400	480,800
Cape May	60,075	61,140	62,350	63,400
Cumberland	124,050	126,145	127,450	128,405
Essex	935,245	935,735	935,905	935,845
Gloucester	175,760	178,040	180,205	182,430
Hudson	611,005	612,345	611,745	611,640
Hunterdon	71,145	72,230	73,140	73,940
Mercer	308,735	312,660	316,205	320,015
Middlesex	592,240	598,320	603,345	607,385
Monmouth	469,680	472,850	476,265	479,905
Morris	391,385	396,100	400,200	403,395
Ocean	218,110	234,520	250,820	257,785
Passaic	465,260	467,635	469,675	471,330
Salem	61,110	62,165	62,805	63,575
Somerset	201,070	202,910	204,165	205,620
Sussex	79,595	81,535	83,360	85,245
Union	546,960	548,565	549,765	550,625
Warren	74,640	75,180	76,200	77,045
Total	7,261,440	7,322,685	7,371,835	7,413,680

FOOTNOTES

† Estimated populations as of July 1 of each year.

‡ Provisional estimates.

SOURCE: N.J. Department of Labor and Industry, Division of Planning and Research.

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