An analysis of regional employment growth, 1973–85

Shifts in regional economic performance
and job growth generally have been
from the Snowbelt to the Sunbelt;
however, many factors can alter
regional advantage, often suddenly

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Reference to the transfer of economic power from old industrial regions of the North to the South and West has become almost a cliche. The term "Sunbelt" is generally associated with population growth, economic prosperity, and a bright future, while "Snowbelt" connotes economic decline. How then do we reconcile these perceptions with the fact that New England, which a decade ago was rapidly losing population and jobs, presently has the lowest unemployment rate of any region; or that in late 1985, a considerable majority of the States in the West and South had jobless rates above the national average; or that, since the recession trough in late 1982, housing costs in Boston have risen dramatically while those in Houston, an often cited symbol of the prosperity of the new South, have declined?[1]

Such recent developments have made it clear that the situation is more complex than commonly thought. There has been, and most likely will continue to be, a shift in economic influence towards the South and West. Such movements are the expected result of historic differences in regional income, wages, and cost of living, as well as shifts in the importance of each region's geographic and resource endowments. Yet within that context, long-term changes in the structure of our economy, cyclical swings, and unanticipated "shocks" all can alter regional advantage. The economic "Power Shift,"[2] as it has been called, is clearly not as immutable as once thought.

The first section of this article describes some of the changes in regional employment over the past decade or so,

with particular emphasis on the industrial components of those changes. The second section examines some of the reasons for dramatically uneven regional employment growth, focusing on such aspects as population and business migration, regional income inequality, and economic shocks. Finally, because New England has done the most in recent years to break the stereotype of the Snowbelt versus Sunbelt economies, some of the causes of the resurgence of that region's economy are examined.

Shift-share analysis

The technique employed in examining trends in regional job growth is called shift-share analysis, a statistical method which has been commonly used in regional analysis for several decades.[3] It can be used to allocate regional growth among three components: national share, industry mix, and regional share. National share indicates the employment change that would have occurred if a region's employment growth rate had equaled the national growth rate over the study period. Industry mix shows the amount of regional employment growth attributable to the region's initial industry mix; that is, it reflects a region's mix of fast- and slow-growth industries. Finally, regional share indicates whether a region's industries performed better or worse than the national average for each industry.[4] This last component is essentially a measure of competitive advantage—the end result of the many varied factors which can cause uneven regional growth. For analytical purposes, the industry mix and regional share statistics are the more interesting, because they relate regional changes to developments at the national level.

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The data.   This analysis uses data from the Current Employment Statistics Survey, a nationwide survey of business establishments which provides information by industry on employment, hours, and earnings of workers on nonagricultural payrolls. The survey is a cooperative effort of the State Employment Security Offices and the BLS, through which data are obtained from employer reports filed monthly with the State agencies.

For this analysis, State data were aggregated into the nine census divisions, shown in exhibit 1. (The terms region and division, in reference to geography, often are used interchangeably in this analysis.) Industry data were treated at the major division level, with manufacturing divided into its durable and nondurable goods components.[5] The exclusion of agriculture from survey coverage would have only a minor impact on most regions, but for the West North Central area, the exclusion could be critical. Certainly, poor agricultural performance would be felt throughout that region's nonagricultural sector. Even so, estimates presented here probably understate the economic difficulties in that part of the country.

Region-by-industry employment matrices were prepared for 1973, 1975, 1979, and 1985. All years but 1975 were chosen because they represented relative high points in the business cycle. Data for 1975 were included to isolate the effects of the 1973–75 recession on regional performance.

There is often quite valid concern about the usefulness of the regional aggregations, because regions are not homogeneous economic units. For instance, population and employment growth in the South Atlantic region have been well above the national average principally because a single State, Florida, has dominated the region in terms of both size and relative rate of growth. California similarly dominates the Pacific region. However, the argument of a lack of homogeneity is probably no more valid in its application to regional data than it would be to State or local data. The local economies that make up many States are as diverse in their industrial makeup and performance as are the State economies that make up any region. Hence, there is enough to gain in using any of these "aggregated" data—local, State, or regional—to warrant their use in labor market analysis.

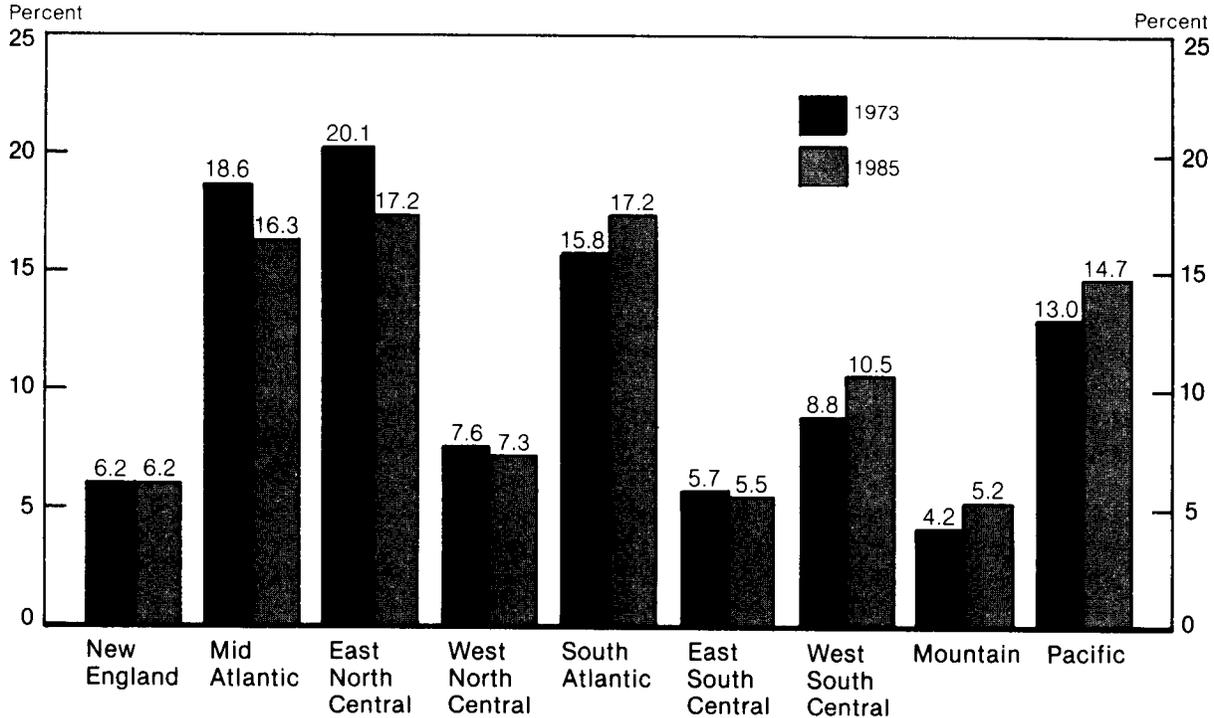*The results.*   The first two columns in table 1 show the actual change in each region's total employment between 1973 and 1985 and the national share component of the change. The national share represents the employment growth that a region would have experienced if its number of jobs had expanded at the national average rate over the 12-year period. Where the actual change in employment is greater than the national share, a region's employment grew at a faster rate than the national average. The West South Central region, for example, grew twice as fast as the Nation as a whole. Conversely, where actual growth is less than national share, a region's jobs grew at a slower than average rate. Employment in the East North Central region, for example, grew only one-third as fast as the national average.

It is not surprising that the slowest employment growth areas were generally in the Northeast and Midwest and the fastest in the South and West. The regional variation, however, was quite dramatic. At the extremes, the East North Central region's nonfarm payroll jobs grew by only 8 percent over the study period, while employment gains of 57 percent were registered in the Mountain States. The range of employment growth performance is reflected in the changing regional distribution of national employment, shown in chart 1.

As previously stated, the industry mix column of the table reflects the advantage or disadvantage bestowed on a region by virtue of its industrial makeup in the initial year of the study. A region would stand to grow more slowly than the average if it had a relatively large share of industries with slower than average growth over the 12-year period—government, construction, and, more importantly, manufacturing, particularly nondurable goods. A region would be favored if it began the period with a higher than average

Exhibit 1. Census regions and divisions

Northeast	South—Continued
New England	West Virginia
Maine	North Carolina
New Hampshire	South Carolina
Vermont	Georgia
Massachusetts	Florida
Rhode Island	
Connecticut	East South Central
	Kentucky
Middle Atlantic	Tennessee
New York	Alabama
New Jersey	Mississippi
Pennsylvania	
	West South Central
Midwest	Arkansas
East North Central	Louisiana
Ohio	Oklahoma
Indiana	Texas
Illinois	
Michigan	**West**
Wisconsin	Mountain
	Montana
	Wyoming
West North Central	Colorado
Iowa	Utah
Missouri	Idaho
Nebraska	Arizona
Kansas	Nevada
Minnesota	New Mexico
North Dakota	
South Dakota	Pacific
	California
South	Hawaii
South Atlantic	Washington
Delaware	Oregon
Maryland	Alaska
District of Columbia	
Virginia	

Chart 1. Distribution of nonagricultural payroll employment by census division, 1973 and 1985

Percent

employment concentration in mining and in any of the service-producing industries other than government. Because this statistic compares a region's industry mix to a national average, the net impact of the industry mix (and regional share, for that matter) across regions is by definition zero.

It should be kept in mind that the industry mix statistic has substantial limitations. Because manufacturing showed relatively slow growth over the study period, a region with little or no manufacturing would appear to have a positive industry mix. Manufacturing activity, however, is generally viewed as a prerequisite for strong growth in the service sector. Thus, the effect of this hypothetical industry distribution would undoubtedly show up as poor regional share performance in other industries.

As expected, the area most hurt by its poor industry mix was the East North Central region, with its initially high proportion of heavy manufacturing jobs. That region's employment would have increased by an additional 420,000 over the study period if the area had had an "average" industry mix in 1973. But in virtually all cases, the industry mix statistic is a poor second to regional share in explaining the gap between actual regional job growth and the national average. The Middle Atlantic States, for instance, experienced little industry mix impact and yet had very slow growth, while the South Atlantic region, also with a neutral

industry distribution, experienced quite rapid growth. The West South Central, Mountain, and Pacific regions all prospered, in terms of the industry mix measure, from their emphasis on mining (except in recent years) or service-sector jobs and their relative lack of factory employment. However, in none of these rapid-growth regions did the 1973 industry mix explain as much as 20 percent of employment change above or below the national share.

The regional share measure explains most of the geographic differences in employment growth. The Middle Atlantic and East North Central regions combined registered 5 million fewer jobs than their industry mix alone would have predicted, while the Southern and Western gainers (minus the East South Central) added 5 million jobs more than their "fair share." The following analysis, then, will focus on the regional share component of change, identifying the industries in which regional growth has been particularly strong or weak and examining the change in regional advantage and disadvantage that occurred within three subperiods of the 1973–85 span.

The regional share component reflects how a region's industries performed compared to the national average for each industry. The interpretation of the results is simplified by the use of the indexes shown in table 2 in place of absolute numbers.[6] If an industry within a particular region grew at the same rate as that industry nationwide, then the

index figure would be 1. An index greater than 1 represents better than average performance (a figure of 1.100, for example, represents employment growth 10 percent above average), and an index of less than 1 represents below-average performance.

The regional share index, RSI, is calculated as follows:

$$RSI = \frac{E_{ir}^{t+1}}{E_{ius}^{t+1}\left(E_{ir}^{t}/E_{ius}^{t}\right)}$$

where E_{ir} is employment in each industry (i) and each region (r) (or division); E_{ius} is employment in each industry for the United States as a whole; and t and $t+1$ are the base year and final year in any comparison—either 1973 and 1985, respectively, or some narrower time frame.

More simply, the calculation divides actual industry employment in each region in 1985 (or another target year) by what the figure would have been had the region maintained its base-year share of industry employment. The calculation ignores the rate of growth of each industry nationally, a factor that shows up in the industry mix statistic. For example, New England had 5.47 percent of U.S. construction industry employment in 1973. Had it maintained that proportion in 1985, it would have had .0547 × 4,646,000 (total 1985 construction employment), or approximately 254,000 construction jobs. Actual employment slightly exceeded that mark—258,000. Thus, the regional share index is 258,000/254,000, or 1.016.

In this presentation, the mix and share components of regional change are separated as if they were unrelated factors, but in reality, they are quite interrelated. In a study of the effects of industry mix on State unemployment rates, Robert McGee estimated that the indirect (or "spillover") effect of industry mix was, on average, about 15 percent higher than the direct effect.[7] For example, an area with an unfavorable industry mix is likely to experience above-average unemployment (or below-average employment growth) not only in its disadvantaged industries but also in its stronger ones. The measure used here identifies only the

direct effects of industry mix; the spillover effects are incorporated in the regional share component. Thus, the true impact of a poor industry mix is understated in the results for that component, and the dichotomy used here to some extent oversimplifies a complex relationship.

Table 2 shows the regional share indexes for all nonfarm payroll employees for the entire 1973–85 period and for three subperiods. The top line indicates that, at the extremes, the West South Central and Mountain divisions had competitive gains of about 20 percent, while the East North Central and Middle Atlantic had losses of more than 15 percent relative to the national average.

The RSI patterns for many regions have changed markedly over time. (For simplicity of language, RSI's significantly greater or less than 1 will be termed "gains" or "losses," although, technically, they describe movements *relative to a national average* rather than absolute changes.) Among the highlights of the RSI trend results:

- New England, formerly one of the worst performers in terms of employment growth, is now among the best.

- The Middle Atlantic States suffered their worst performance in the late 1970's; even in recent years, Pennsylvania continued to exert a downward pull on the 3-State totals.

- The failure of the East North Central to recoup manufacturing job losses has been felt in all sectors in recent years. The cumulative effects are the worst suffered by any region.

- The entire West North Central region has fared poorly in the 1980's, largely because of weakness in the agricultural sector. The exclusion of agriculture from the employment data probably serves to understate the weakness in the region's economy.

- The South Atlantic and East South Central areas both mirrored national performance through the late 1970's. Since then, the former, paced by Florida's boom, has outperformed all other regions, while its more industrialized neighbor has fared quite poorly.

- The West South Central, Mountain, and Pacific regions each experienced gains throughout the three subperiods.

The health of a region's manufacturing industries is generally regarded as the most important and most visible indicator of the area's economic performance. It is in the construction industry, however, that a region's fortunes are most dramatically reflected in the index. In all of the regions in each of the three subperiods examined, only three times (out of 27 chances) was the construction RSI closer to 1 than the region's total RSI; that is, construction almost always showed more dramatic shifts in regional advantage than did the all-employee totals. This is because construction is the industry most dependent on population growth. Many urban

Table 1. Components of change in nonagricultural payroll employment by census division, 1973–85

[Numbers in thousands]

Census division	Employment change, 1973–85	Components of change		
		National share	Industry mix	Regional share
New England	1,317	1,267	12	62
Middle Atlantic	1,512	3,840	51	-2,379
East North Central	1,252	4,148	-419	-2,477
West North Central	1,306	1,562	68	-324
South Atlantic	4,600	3,249	-60	1,411
East South Central	970	1,173	-146	-57
West South Central	3,475	1,809	127	1,539
Mountain	1,852	869	150	833
Pacific	4,317	2,677	234	1,406

NOTE: See text footnote 4 for description of components of change.

Table 2. Regional share index for nonagricultural payroll employment by major industry and census geographic divisions, selected periods, 1973–85

Period and industry	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
1973 to 1985									
Total	1.009	.873	.853	.966	1.087	.963	1.193	1.238	1.129
Mining	—	.616	.788	.750	.662	.949	1.410	.855	1.231
Construction	1.016	.882	.790	.948	1.017	.854	1.244	1.201	1.171
Durable goods	1.287	.808	.776	1.008	1.241	1.003	1.271	1.509	1.293
Nondurable goods	.804	.843	.986	1.088	1.022	1.009	1.178	1.331	1.243
Transportation and public utilities	.962	.847	.860	.986	1.100	1.055	1.157	1.294	1.089
Trade	1.001	.863	.877	.920	1.111	.998	1.159	1.175	1.109
Finance, insurance, and real estate	1.018	.865	.905	.963	1.031	.954	1.201	1.244	1.130
Services	1.006	.900	.904	.950	1.111	.941	1.104	1.188	1.068
Government	.933	.907	.903	.939	1.090	1.040	1.175	1.119	1.003
1973 to 1975									
Total	.978	.968	.974	1.020	.991	1.000	1.063	1.048	1.037
Mining	—	.949	.963	.896	1.000	1.172	1.013	.991	.976
Construction	.872	.927	1.005	1.151	.891	1.055	1.186	.948	1.090
Durable goods	1.040	1.005	.952	1.023	.989	.966	1.106	1.043	1.048
Nondurable goods	.959	.942	1.004	1.033	.986	1.011	1.089	1.088	1.078
Transportation and public utilities	.956	.962	.980	1.019	.996	1.014	1.064	1.065	1.021
Trade	.976	.957	.991	1.023	.985	1.007	1.055	1.036	1.030
Finance, insurance, and real estate	1.000	.965	1.007	1.010	.998	1.033	1.033	1.018	1.010
Services	.995	.959	.999	1.022	.998	1.002	1.039	1.049	1.014
Government	.973	.994	.985	.964	1.024	1.005	1.006	1.020	1.013
1975 to 1979									
Total	.991	.920	.969	.997	1.017	1.013	1.059	1.104	1.056
Mining	—	.845	.908	.963	.853	.958	1.141	1.043	.981
Construction	.889	.841	.957	1.006	.960	.956	1.096	1.254	1.145
Durable goods	1.127	.890	.942	1.025	1.059	1.017	1.088	1.173	1.085
Nondurable goods	.861	.952	.997	1.019	1.018	1.010	1.053	1.093	1.090
Transportation and public utilities	.959	.918	.965	1.021	1.011	1.063	1.060	1.120	1.037
Trade	.968	.920	.970	.983	1.026	1.019	1.053	1.088	1.061
Finance, insurance, and real estate	.960	.909	.978	.997	.991	.978	1.051	1.150	1.131
Services	.992	.944	.969	.992	1.020	.991	1.007	1.091	1.068
Government	1.011	.929	.976	.986	1.051	1.071	1.059	1.036	.972
1979 to 1985									
Total	1.041	.980	.903	.950	1.078	.950	1.059	1.070	1.031
Mining	—	.776	.897	.882	.779	.843	1.222	.825	1.280
Construction	1.310	1.133	.820	.819	1.190	.851	.956	1.015	.939
Durable goods	1.098	.904	.865	.962	1.184	1.021	1.054	1.235	1.136
Nondurable goods	.973	.940	.985	1.033	1.017	.988	1.028	1.119	1.059
Transportation and public utilities	1.050	.960	.911	.947	1.092	.978	1.027	1.083	1.028
Trade	1.061	.981	.912	.914	1.099	.974	1.044	1.042	1.016
Finance, insurance, and real estate	1.061	.987	.920	.957	1.044	.939	1.110	1.060	.989
Services	1.020	.995	.934	.938	1.092	.949	1.055	1.037	.986
Government	.947	.981	.939	.988	1.015	.966	1.103	1.057	1.019

NOTE: A regional share index greater than 1 represents faster than average industry growth; a value less than 1 represents slower than average growth. See text for further explanation.

areas in the Northeast and Midwest regions have shown very slow growth or absolute declines in population in recent decades, a factor which results in excess housing stock, depressed housing prices, and vastly reduced demand for new residential construction. Likewise, substantial expansion of commercial footage would be unlikely in a stagnant local economy. Conversely, those Southern and Western regions experiencing a rapid influx of both population and business have had to provide new housing, plants, and office space for newcomers.

The RSI's reflect the relationship between construction activity and both population and job growth. For example, while construction activity nationwide was down substantially during the years 1973–75, New England's employment performance for the industry was about 13 percent worse than average, but the West South Central States experienced a relative increase of nearly 20 percent. The construction RSI's reflect the West South Central division's standing as the best performer during that recessionary period in terms of employment growth; it was second only to the Mountain region in population growth.[8]

Outside of developments in mining, the 1979–85 performance of construction in both Midwest divisions was the worst of any region-industry combination. The loss of nearly 20 percent in the regions' employment share is in marked contrast to the 30-percent gain for New England. The former is a dramatic indication of the Midwest's industrial and agricultural woes, while the latter reflects not only New England's improved overall economy but also a catching-up after years of lagging construction activity.

For the entire 1973–85 span, manufacturing is the only industry division for which a decline in regional share reflects an absolute drop in jobs. This is because nationwide manufacturing employment declined by about 800,000 during that period. Thus, the RSI's for durable and nondurable manufacturing closely reflect the regional redistribution of factory jobs. Virtually all of the durable goods job losses occurred in the Middle Atlantic and East North Central divisions. (The East South Central and West North Central's near-unity RSI's reflect a small absolute loss due to the sector's national employment decline.) Their regional share losses, in terms of jobs, were more than 400,000 and 800,000, respectively, or about 19 and 22 percent. Five regions were strong gainers, paced in relative terms by the Mountain States, followed by the Pacific, New England, West South Central, and South Atlantic.

The Middle Atlantic States were the only region to experience serious job losses in both durable and nondurable manufacturing. New England continued to suffer from the long-term decline in its textiles and apparel industries in the earlier years of the study period, but experienced little further erosion of nondurables employment after 1979. The only substantial winners in nondurables were the West South Central, Mountain, and Pacific regions.

The industries in the service-producing sector tend to follow the overall regional pattern of population and economic growth. The use of aggregated industry data limits the analysis of these industries. For example, while real estate employment probably follows the economic trends of each region, finance and insurance, which are "exportable," may follow a different pattern. The aggregated data, of course, cannot be used to address this point.

Government employment trends are interesting in that they often differ substantially from regional averages. For example, between 1979 and 1985, New England gained more than its fair share of employment in virtually every industry, but had one of the lowest rates of government employment growth. In the Pacific States, government employment also lagged total regional job growth, largely reflecting California's imposition of restrictions on State and local taxing power.

In summary, the Nation's regions have experienced virtually every pattern of job growth over the 12-year study period—consistently good, as in the Pacific, Mountain, and West South Central; consistently bad, as in the East North Central; improving, as in New England; and deteriorating, as in the East South Central. Strength in manufacturing probably has the broadest impact on regional economic well-being (with certain exceptions, such as the West North Central States where farming is so critical). However, that well-being is most dramatically reflected in construction activity, which can increase or decrease precipitously in response to changing regional fortunes. Service-sector employment most closely mirrors a region's overall population and employment patterns.

Why these shifting fortunes?

Up to this point, the evidence presented has documented the change in regional employment performance, particularly as it relates to regions' relative competitive position in each industry. What causes these changes in regional advantage? The complexity of this question is reflected in the fact that analysts have not been successful in explaining a substantial portion of regional growth differences. Several important regional growth factors are discussed here—migration, regional income and wages, business location decisions, and economic shocks. The list obviously is not exhaustive, but only representative of the wide range of possible regional growth forces. Finally, some key elements of the economic renaissance in New England are examined.

Migration and jobs.   The relationship between population and job growth is complex. It is perhaps best viewed as a cycle that, once begun, is self-sustaining and reinforcing. Certainly, the availability of jobs in an area is an attraction to jobseekers from other regions. Michael Greenwood and Gary Hunt have estimated that in metropolitan areas each 100 additional jobs attract about 45 employed net migrants, with local residents filling the remaining openings.[9] However, migration in and of itself results in a substantial increase in employment above and beyond the migrant's own job. These jobs can be filled by either additional migration or increased labor force participation of the indigenous population. This direction of causation—with population growth causing job expansion—would be reflected in the regional share indexes for industries providing locally consumed products.

Migrants may influence labor demand in several ways.[10] For example, they may bring with them assets or income sources above their wages. Retirees are the prime example of the indirect effect of migration on jobs because the retirees themselves have little or no direct effect on local labor markets. Migrants may cause an increase in demand for infrastructure (roads, schools, utilities, and housing). They may also transport qualities that change the human capital makeup of the sending and receiving areas, to the extent that their age, skills, education, or entrepreneurial talent may be different than the average in either area. Migration may directly affect local labor force participation rates, in that the demographic characteristics of the migrants may differ from the averages in the receiving area. In fact, migrants tend to be concentrated in the 20-to-34 age range, have the highest levels of education, and are somewhat disproportionately male.[11] Also, migrants may influence the prices and profitability of goods and services by changing demand for those items; housing would be the most common example of this.

Table 3 shows percentage changes in population and nonagricultural payroll employment by geographic division between 1973 and 1985.[12] The columns in which the regions are ranked from 1 to 9 according to those changes show that

New England and the East South Central division break an otherwise close match between population and employment change rankings. The jump in New England's employment, despite slow population growth, resulted in a 5-point increase in the region's employment-population ratio, a gain which was more than triple the national average.[13] The East South Central's employment ratio declined a percentage point, for the worst regional performance. The strong relationship between employment and population growth, with causation running in both directions, is obvious.

Regional income and wages. The second explanation for the shift in regional economic power towards the South and West falls under the general heading of regional income (or factor price) inequality. One common theory states that if the factors of production—labor, capital, and so forth—are free to move between regions in order to obtain their highest return, convergence of factor prices among regions will occur in the long run.[14] As an example, table 4 shows regional per capita income in relation to the national average. While per capita income changes may come from several sources, wage rates are by far the most important factor.[15]

All other things being equal, firms will tend to locate where labor costs are low. Workers, on the other hand, are attracted by high wages, but even so, there has been substantial migration from high- to low-wage areas, as from the Midwest to the South. One partial explanation for this trend is the historic regional difference in living costs, which gave wages earned in the South more real purchasing power than those earned in higher-cost regions. The key to migration is in the relationship between wages and job growth. Mancur Olson, citing his own work and that of Charles Hulten and Robert Schwab, provides a theoretical framework for such migration from high- to low-wage regions.[16] Olson proposes that regional economic growth in the United States (and worldwide) is largely dependent on the level of cartelization in each region. In this argument, cartelization refers to "any organizations or groups that lobby for favorable legislation and administrative rulings or act cartelistically to influence prices or wages."[17] Although labor unions are most often cited in this regard, the theory applies equally to producers, professional associations, and so forth.

Olson suggests that the older the region, the more established are these special interests and the more difficult it becomes for many firms to compete in the restrictive environment. One result of these forces is "supra-competitive" wages in the Midwest. Firms which do not benefit from location-specific advantages (proximity to markets or natural resources) or that are less efficient cannot compete in the high-wage environment and will fail or locate elsewhere. Hulten and Schwab conclude that this effect increases productivity and has reduced jobs in the North as employers in that region limit employment until the marginal product of labor equals the "inflated" wage.

Table 3. Percent change in total population and nonagricultural payroll employment by census division, 1973–85

Census division	Percent change, 1973–85		Regional ranking[1]	
	Population	Employment	Population	Employment
New England	4	28	7	5
Middle Atlantic	−1	11	9	8
East North Central	2	8	8	9
West North Central......	6	22	6	6
South Atlantic..........	22	38	4	4
East South Central	12	22	5	7
West South Central	29	51	2	2
Mountain	37	57	1	1
Pacific	26	43	3	3

[1] Based on percent change in columns 1 and 2.

SOURCE: Bureau of the Census and Bureau of Labor Statistics. See text footnote 12.

As the economic situation in the high-wage Midwest has deteriorated, particularly since 1979, the lack of adequate downward flexibility of wages in response to labor market changes has led to an outflow of jobs.[18] Thus, high wages are insufficient to attract migrants in the absence of job growth. In contrast, there has been considerable migration to the high-growth, and relatively high-wage, Pacific region.[19] Olson suggests, however, that low wages will cease to draw industry and workers to the South as the regional wage differentials disappear and as the South loses its economic and social peculiarities. The same institutional arrangements that have led to market inefficiencies in the North, he predicts, will accelerate in the South.

That a general convergence of regional incomes has occurred over time is clearly shown in table 4. During the past decade, however, regional changes have not necessarily led towards further convergence. Thus, it seems that while wage differentials have been an important factor in the location decisions of individuals and businesses, they may no longer contribute as heavily to those decisions in the future.

Regional location—the firm. As we have seen, many of the factors affecting an individual's decision to migrate may be similar to those that influence a firm's investment location decision. Other factors that may be as important to the firm as to the individual include climate, population density, and taxes. While the intricacies of location theory are beyond the scope of this analysis, it would be a serious omission to completely ignore the topic.

Two important conclusions can be drawn from a survey of the literature on business location: These decisions tend to be quite complex and to be firm- and industry-specific— why else would new business investment be so geographically dispersed, even within specific industries? Also, such predictable factors as wages, taxes, unionization, and energy costs fail to explain much of the differences in investment location.

Researchers are unanimous in their finding that the differences in regional employment growth rates generally are not the result of actual movement of firms out of the North and into the South and West.[20] The notion of firm relocation is

based largely on the observed migration of textiles manufacturers out of New England and into North and South Carolina in the 1940's and 1950's. In fact, regional employment growth is mostly the result of the formation of new firms and the expansion of existing ones.

How are business investment decisions made? One technique used in location factor studies is to list factors assumed to be, or identified by businesses as being, important in the location decision and to rank States according to those factors.[21] These may include taxes, wages, unionization, energy costs, and cost of living, among others. As expected, high-growth States tend to perform well in such rankings. Studies may also include such factors as supply and quality of labor and proximity to markets. Generalizations about regional advantages in the second group of measures are more difficult to make. However, the importance of such factors makes it clear that "business climate," in the low-wage, low-tax sense, is not enough to attract some investment. For example, a new firm may require certain highly technical consulting services available in only a few areas of the country. That requirement alone may make other considerations irrelevant.

Lynn Brown and fellow analysts have shown that the location factors do not overwhelmingly favor a particular region.[22] Substantial investment occurs in States with a high-wage or high-energy-cost profile, for example. In fact, the authors find that the most common factors associated with regional investment account for only a third of the regional variation. The conclusion is that States should not feel helpless in the face of uncontrollable negative business climate factors. Development strategies can be devised to attract those firms which may benefit from the State's positive attributes. As will be shown later in the discussion, New England has benefited from its historical position as a manufacturing and finance center, as well as from its history of academic excellence. Substantial economic progress has been made there in the face of other business climate factors which are not so favorable.

Economic "shocks."   The factor that may best explain recent regional shifts in economic performance is economic

"shocks," those largely unforeseen circumstances that not only change the Nation's competitive position in the world economy but also change the regional locus of economic power within the United States. Bernard Weinstein and others have described the takeoff in economic growth in the Southern and Western States in terms of W.W. Rostow's stages-of-growth model, in which sustained growth does not occur without some dramatic external stimulus.[23] Prior to World War II, the South was a relatively underdeveloped economy—the only employment shares above the national average were in the most basic sectors, agriculture and basic energy.[24] World War II saw the infusion of billions of dollars in investment into the Sunbelt, with an estimated 60 percent of the $74 billion wartime expenditures going to 15 Southern and Western States.[25] Particularly important was the birth and continued expansion of substantial high-technology and aerospace industries in the Sunbelt. This event is seen as the takeoff necessary for sustained growth according to the Rostow model. The distribution of defense funds continues to have a strong regional impact. However, as New England, another large defense contracting region, witnessed during the years following the Vietnam conflict, such dependence makes a region's economy susceptible to the vagaries of defense budgets.[26]

While not of the same magnitude as the effects of World War II on regional development, changing energy prices are generally cited as the most important shock event in the recent experience. First, rising energy prices, which prevailed throughout most of the study period, change the relative regional cost of production and transportation. To some extent, labor costs also may be affected, as workers attempt to recoup losses in their standard of living. Second, price changes affect the revenues of producers and, in effect, redistribute income from energy "have-not" to energy "have" regions. While the energy sector itself is not a large employer, the employment effects in related industries—finance, drilling equipment, and technical services, among others—can be quite large.

Regarding the first issue, table 5 suggests the effects on residential business consumers of the two large OPEC price increases during the 1970's. Hans Landsberg stresses that

Table 4.   Index of per capita income by region, selected years, 1940–85

[National average=100]

Year	Region									Standard deviation
	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
1940	126	132	112	81	77	49	64	87	132	30.9
1950	107	117	111	95	81	61	81	95	120	19.5
1960	110	116	108	92	84	69	82	93	119	17.5
1970	109	113	104	94	91	75	85	91	111	13.0
1977	102	106	105	97	93	81	92	94	111	9.1
1985	114	110	99	99	96	77	92	92	110	10.9

SOURCE: Bureau of Economic Analysis, U.S. Department of Commerce. Data through 1977 are published in Lynn Brown, "Narrowing Regional Income Differentials," *New England Economic Review* (Federal Reserve Bank of Boston), September/October 1980, p. 37.

one must consider both actual cost levels, in that certain regions characteristically have greater energy costs, and changes in those levels.[27] The latter would be most likely to affect regional competitive positions. For example, while industrial energy users in the South paid 26 percent less than the national average in 1970, that advantage had declined to 12 percent by 1980. Landsberg indicates that "it may be much more punishing for the prosperity of an area with low energy prices to suffer drastic boosts, while still remaining *below* the national average, than for a high-cost area to undergo modest boosts and still stay *above* the national average."[28]

Residents of the Northeast may have suffered the most from energy price rises because they were triply penalized; they use more energy, they depend disproportionately on expensive fuel oil, and fuel oil prices rose faster than those for natural gas, its chief competitor. But with recent decontrol of natural gas prices, the current softness in the world oil market, and the additional cost some low-energy-price areas have faced since 1980 due to nuclear plant construction, regional advantage in the energy area has tended to narrow.[29]

While the above discussion focuses on the energy consumer, recent shifts in world oil prices have considerably altered the fortunes of energy-producing areas as well. For example, Weinstein and others have commented, not too facetiously, that "the OPEC oil embargo did more to revive Appalachia than ten years and $10 billion of federal aid."[30] Partly as a result of strong growth in its mining sector, West Virginia's jobless rate was about the national average in the late 1970's.[31] However, as weak energy prices, conservation, and concerns over pollution have lessened the demand for coal, more recent jobless rates for the State have been twice the national average. Likewise, Texas had very low jobless rates, with some labor shortages, during the late 1970's and early 1980's, and the State was relatively unaffected by the 1981–82 recession. More recently, however, lower energy prices have contributed to a deterioration in the State's job market. Jobless rates in early 1986 were above the national average, housing prices were weak, and housing foreclosure rates were the highest in the country.[32] Similar examples of energy-price induced boom and bust economies can be seen in Alaska, Wyoming, and several other States in the Mountain and West South Central regions.

While defense expenditures and energy prices may be among the most visible of shock factors which are exogenous to regional economies, many other such events occur continuously. For example, foreign exchange rates, foreign policy objectives, social expenditures, and technological discoveries all affect regions differently. Thus, while certain redistribution of regional wealth and economic growth is structural in nature, unanticipated events can render many regional "power shifts" transitory.

New England's restructured economy

The key ingredient in the economic turnaround in New England probably has been time. While the deterioration of the economy in the industrial Midwest is fairly recent, New England had begun a period of "deindustrialization" at least four decades ago. The region's economy initially was dominated by textiles; in 1950, for example, textiles firms employed 265,000 of the region's workers.[33] By 1984, that figure had been reduced to 50,000, both because of the early outmigration of firms to the Carolinas and the long-term structural decline in the industry nationwide. However, even as the region's economic performance deteriorated, New England already had in place many of the requirements for reindustrialization. That this process has occurred is dramatically demonstrated by the regional share indexes in table 2; over the 1973–85 period, New England's performance in nondurable goods was the worst in the Nation, while that in durables was nearly the best. Time and certain other prerequisites have allowed a major industrial restructuring of the region's economy.

What were the prerequisites for the reindustrialization of New England? John Hekman and John Strong suggest that development of a high technology industrial region is most likely when three factors are at work—a strong research, or scientific, component; industrial experience; and financial resources.[34] In tracking New England's development, the authors cite the region's strong historical standing in all three areas.

The Massachusetts Institute of Technology was founded in the 19th century partly as a way of advancing industrial technology. By the early 1900's, the relationship between MIT and the area's industry was beginning to make original scientific contributions in the areas of electrical and chemical engineering. Many companies in the region were formed or expanded based on the skills and discoveries of MIT-trained scientists.

Because scientific manpower tends to be in short supply, high tech firms cluster around academic centers. Many

Table 5. Average residential and industrial energy prices by region, 1970 and 1980

[Dollars per billion BTU's]

Region	1970	1980	Percentage increase, 1970–80
Residential:			
United States	$1,403	$4,472	219
Northeast	1,598	5,808	263
Midwest	1,430	4,388	207
South	1,411	4,136	193
West	1,098	3,603	228
Industrial:			
United States	628	3,166	403
Northeast	847	4,256	402
Midwest	723	3,130	333
South	462	2,795	505
West	651	3,167	386

SOURCE: *National and State Energy Expenditures 1970–1980* (Washington, Northeast-Midwest Institute, July 1981).

firms are then spawned from these early enterprises, and these start-ups virtually never involve relocation.[35] One reason is that new firms need access to the same limited pool of technical manpower. Thus, the regional manpower advantage of a major academic center is in product design and development, not necessarily in the production phase.

For over a century, New England has been on the cutting edge of new technology—in the manufacture of textiles, guns, and machine tools, for example, and later, in applications of electricity. Some older firms have continued their technological innovations into today's high tech fields; others can trace their lineage back to those firms.[36] Thus, to some extent it is inaccurate to describe today's high-tech firms as having "chosen" to locate in New England. To a large degree, they were already there.

One reason for the continuation of the region's tradition of industrial innovation is that it has remained a center for venture capital. Not only are the region's banks and other major financial institutions more inclined toward venture finance than those in other areas, but the region has also been a leader in the formation of venture capital firms. And, in another example of the university-business link, some academic institutions, such as Harvard and MIT, have been actively involved in risk financing.[37] Conversely, the lack of venture capital has been cited as an impediment to the growth of high tech firms in other regions, such as the Southeast.[38]

New England was hit very hard by the 1973–75 recession, in large part because of the combined effects of the oil price increases and earlier defense cutbacks. However, this overall weakness tended to obscure the fact that certain of the region's industries were expanding. Many of the budding high tech firms were little affected by the downturn. As these firms matured, they entered the production stages, in which labor costs begin to take on a greater role in profitability. While New England's per capita income levels have never fallen below the national average, its wage rates have been low and were driven lower by the 1969–70 and 1973–75 recessions.[39] (The reader should also note that the per capita income figures are inflated by the region's traditionally high labor force participation rates.) The evidence indicates that capital/labor ratios in New England have been very low over the study period, and firms have taken advantage of these relatively low labor costs.[40] Recently, New England and other regions have seen the movement of some production facilities to very low-wage foreign countries such as those in the Pacific Basin. This is to be expected in the highly cost-sensitive and labor-intensive mass production phase of the firms' growth cycle. What employment effect these movements will have in the future is unclear.

Another key factor most frequently cited in New England's resurgence is the overall quality of education in the area, from the public schools through the top levels of higher education. The region has higher than average rates of high school and college graduation and a disproportion-

ately large cadre of scientific manpower.[41] Bernard Weinstein and Harold Gross cite educational attainment of the population as one of the key impediments to continued growth in some Sunbelt areas and the critical factor in New England's prominence.[42]

Thus, New England has benefited from the close and long-standing relationship among the business, academic, and financial communities. Employment growth has accelerated due to the combined influence of low real wages and a highly skilled and educated work force. At the same time, slow population growth has allowed much of the region's economic expansion to show up in a rapid rise in its employment-population ratio and in declining joblessness.

While the region suffered from rising energy costs and defense cutbacks in the early 1970's, energy prices have remained soft in recent years, and the region's defense contracts have grown in the 1980's. It should be pointed out that New England's economy remains susceptible to changes in those two factors.[43] The region provides clear evidence that an area can key its growth to the manufacturing sector if its industries are innovative and government is responsive.[44]

Conclusions

Over roughly the last decade, the Nation has seen a continuation of the long-term trend of employment and population shifts from much of the Northeast and Midwest to the South and West. However, the rather poor recent performance of the East South Central region and the economic rebirth of New England demonstrate that the shift in economic power from Snowbelt to Sunbelt is far from immutable.

Many of the factors that have made the South and West so attractive to both firms and individuals are becoming less pronounced. Interregional differences in wages and cost of living have narrowed, as have differences in nonpecuniary factors of urban life—population density, pollution, crime, and congestion. Just as much of the North is affected by a declining tax base and aging infrastructure, some areas of the South have been unable to keep pace with the growing demands for new infrastructure. For example, water availability may be the "shock" factor that some day forces a halt to the Southwest's rapid growth.[45]

Other developments may place limits on growth in some rapidly expanding areas. The economies of the West South Central and Mountain regions benefited greatly from the energy boom of the 1970's and early 1980's, but have been hurt badly by the recent collapse in the price of oil. And, as mentioned earlier, the quality of education in much of the South is often perceived as a limiting factor. Also, the South's attractiveness as a low-wage area for production may be declining as the drawing power of foreign competitors increases.

None of this is to say that an economic shift back towards the North is inevitable, or even expected. Rather, the evi-

dence suggests that regional advantage is often short-lived. The lesson of New England is that it takes time to restructure a region's economy to meet the requirements of changing national and world economic environment. But the period of decline may actually create the conditions for future growth, while the forces of growth may ultimately result in a loss of competitive edge.

A decade ago, an analysis of the future of the Northern regions' economies typically read like a eulogy. Today, the scenario of continued deterioration of the Northern areas and rapid growth in the South and West seems not nearly so inevitable. ☐

———FOOTNOTES———

[1] Unemployment data are presented in *Employment and Earnings* and Consumer Price Index data in *CPI Detailed Report*, both published monthly by the Bureau of Labor Statistics.

[2] Kirkpatrick Sale, *Power Shift* (New York, Random House, 1975).

[3] For examples of the application of shift-share analysis, see M.F. Petrulis, "Regional Manufacturing Employment Growth Patterns," *Rural Development Research Report No. 13* (U.S. Department of Agriculture, Economics, Statistics, and Cooperative Service, June 1979); and Edgar S. Dunn, Jr., "A Statistical and Analytical Technique for Regional Analysis," *Papers and Proceedings of the Regional Science Association*, Volume 6, 1960, pp. 97–112.

[4] The three components of regional change are defined as follows:

$$E^{t+1} - E^t =$$

$$E^t ((E_{us}^{t+1}/E_{us}^t) - 1) \qquad \text{(National share)}$$

$$+ \Sigma_i E_i ((E_{ius}^{t+1}/E_{ius}^t) - (E_{us}^{t+1}/E_{us}^t)) \qquad \text{(Industry mix)}$$

$$+ \Sigma_i E_i^t ((E_i^{t+1}/E_i^t) - (E_{ius}^{t+1}/E_{ius}^t)) \qquad \text{(Regional share)}$$

where:

E	= total regional employment;
E_i	= regional employment in industry i;
E_{us}	= total national employment;
E_{ius}	= national employment in industry i; and
t and $t+1$	= the base and target years, respectively.

[5] The use of this technique does have several limitations. First, as applied here, the use of broad aggregate industries ignores the possible effects of industry distributions within those aggregates. For example, if a region had a higher than average proportion of durable goods industries in the base year, that would have a negative effect on the region's industry mix statistic. However, it is possible that the particular region had a very large share of employment in fast-growth durable goods industries. In that event, the industry mix statistic would paint too negative a picture of the manufacturing sector's effect on the region's industry mix. It would be unusual, however, for a region's employment mix within a broad industry group to differ so markedly from the national average as to change the sign of the industry mix statistic for that particular industry (unless, of course, if the statistic were already close to zero).

Second, because the technique must be applied over a discrete time period, the choice of the base year distribution for the industry mix statistic may bias the results. Changes in a region's industry mix over time may alter the ratio of slow- to fast-growth industries. The longer the period to which the technique is applied, the greater the effect of a change in a region's industry mix relative to a national average. A check of the data used here shows that this potential problem has little effect. The industry mix statistics for the most recent period, 1979 to 1985, show essentially the same pattern as those for the entire 1973–85 span, although the levels are much smaller because they have a much smaller regional employment growth to explain. Thus, regional industry distributions have not changed in a pattern markedly dissimilar to that of the entire Nation.

[6] Unlike individual industries, the regional totals are affected by industry mix in that they reflect the growth rates in each industry, weighted for the change in the relative size of the industry. The top line totals thus incorporate the (usually small) effects of industry mix—that is, they measure the combined effects of regional share and industry mix.

[7] Robert McGee, "State Unemployment Rates: What Explains the Differences?" *Quarterly Review* (Federal Reserve Bank of New York), Spring 1985, pp. 28–35.

[8] "Estimates of the Population of States: 1970 to 1983," *Current Population Reports, Population Estimates and Projections*, Series P-25, No. 957 (Bureau of the Census, October 1984).

[9] Michael J. Greenwood and Gary L. Hunt, "Migration and Interregional Employment Redistribution in the United States," *The American Economic Review*, December 1984, pp. 957–69. Regions are not equal in their ability to attract migrants by offering jobs. Greenwood and Hunt found that 10 jobs in the South or West would attract 1 more migrant than an equal number of jobs in the Northeast or North Central regions, indicating some nonpecuniary component to migration.

[10] Greenwood and Hunt, "Migration," p. 957.

[11] "Geographic Mobility, March 1982 to March 1983," *Current Population Reports, Population Characteristics*, Series P-20, No. 393 (Bureau of the Census, October 1984).

[12] Employment data are from the Current Employment Statistics Survey. Population data are derived from "Estimates of the Population of States: 1970 to 1983," *Current Population Reports, Population Estimates and Projections*, Series P-25, No. 957 (Bureau of the Census, October 1984) and preliminary 1985 data.

[13] Employment-population ratios for 1984 are from *Geographic Profile of Employment and Unemployment, 1984*, Bulletin 2234 (Bureau of Labor Statistics, May 1985). Employment-population ratios for 1973 are unpublished BLS data.

[14] Bernard L. Weinstein, Harold T. Gross, and John Rees, *Regional Growth and Decline in the United States* (New York, Praeger, 1985), p. 49.

[15] Lynn E. Brown, "Narrowing Regional Income Differentials: II," *New England Economic Review* (Federal Reserve Bank of Boston), November/December 1980, pp. 40–59.

[16] Mancur Olson, "The South Will Fall Again: The South as Leader and Laggard in Economic Growth," *Southern Economic Journal*, April 1983, pp. 917–32; and Charles R. Hulten and Robert M. Schwab, "Regional Productivity and Growth in U.S. Manufacturing: 1951–78," *The American Economic Review*, March 1984, pp. 152–62.

[17] Olson, "The South," p. 917.

[18] Lynn E. Brown, "How Different are Regional Wages? A Second Look," *New England Economic Review* (Federal Reserve Bank of Boston), March/April 1984, pp. 40–47.

[19] This phenomenon is discussed in Bernard Okun and Richard W. Richardson, "Regional Income Inequality and Internal Population Migration," in John Friedman and William Alonso, eds., *Regional Development and Planning, A Reader* (Cambridge, MA, the MIT Press, 1964), pp. 303–18.

[20] See, for example, James P. Miller, "Manufacturing Relocations in the United States," in Richard B. McKenzie, ed., *Plant Closing: Public or Private Choices* (Washington, Cato Institute, 1982), pp. 19–36; and Carol L. Jusenius and Larry C. Ledebur, "Where Have All the Firms Gone? An Analysis of the New England Economy," in the same volume, pp. 65–104.

[21] See, for example, Fantus Company, *Comparative Business Climate Study* (Chicago, Illinois Manufacturer's Association, 1975); and Alexander

Grant & Co., *The Fourth Study of General Manufacturing Business Climates* (Chicago, Alexander Grant & Co., 1983).

[22] Lynn E. Brown, Peter Mieszkowski, and Richard F. Syron, "Regional Investment Patterns," *New England Economic Review* (Federal Reserve Bank of Boston), July/August 1980, pp. 5–23.

[23] Weinstein, Gross, and Rees, *Regional Growth*, p. 45, from W.W. Rostow, *The Stages of Economic Growth* (Cambridge, Cambridge University Press, 1960).

[24] William H. Miernyk, *The Changing Structure of the Southern Economy* (Research Triangle Park, NC, Southern Growth Policies Board, 1977), p. 18.

[25] Sale, *Power Shift*, p. 25.

[26] Lynn E. Brown and John S. Hekman, "New England's Economy in the 1980's," *New England Economic Review* (Federal Reserve Bank of Boston), January/February 1981, pp. 5–16. See p. 8.

[27] Hans H. Landsberg, "Energy 'Haves' and 'Have-Nots'," in Kent A. Price, ed., *Regional Conflict and National Policy* (Washington, Resources for the Future, Inc., 1982), pp. 52–53.

[28] *Ibid.*, p. 53.

[29] *Ibid.*, p. 55.

[30] Weinstein, Gross, and Rees, *Regional Growth*, p. 63.

[31] State unemployment rates come from *Geographic Profiles of Employment and Unemployment*, published annually by the Bureau of Labor Statistics.

[32] Bernard L. Weinstein and Harold T. Gross, "The Frost Belt's Revenge," *The Wall Street Journal*, Nov. 19, 1985, p. 30.

[33] Brown and Hekman, "New England's Economy," p. 7.

[34] John S. Hekman and John S. Strong, "The Evolution of New England Industry," *New England Economic Review* (Federal Reserve Bank of Boston), March/April 1981, pp. 35–46.

[35] Donald L. Koch, William N. Cox, Delores W. Steinhauser, and Pamela V. Whigham, "High Technology: The Southeast Reaches Our For Growth Industry," *Economic Review* (Federal Reserve Bank of Atlanta), September 1983, pp. 4–16. See p. 13.

[36] *Ibid.*, p. 40–43.

[37] *Ibid.*, p. 44–46.

[38] Koch and others, "High Technology," p. 13.

[39] Lynn E. Brown, "How Different are Regional Wages? A Second Look," *New England Economic Review* (Federal Reserve Bank of Boston), March/April 1984, pp. 40–47.

[40] James M. Howell and Linda M. Frankel, "Economic Revitalization and Job Creation in America's Oldest Industrialized Region," Paper presented at the American Enterprise Institute/Institut La Boetie Conference, Paris, France, October 24–25, 1985.

[41] Lynn E. Brown, "A Quality Labor Supply," *New England Economic Review* (Federal Reserve Bank of Boston), July/August 1981, pp. 19–36.

[42] Weinstein and Gross, "The Frost Belt's Revenge."

[43] Brown and Hekman, "New England's Economy in the 1980's," p. 15.

[44] See regional share indexes for government employment in New England.

[45] William Ashworth, *Nor Any Drop to Drink* (New York, Summit Books, 1982).

A note on communications

The *Monthly Labor Review* welcomes communications that supplement, challenge, or expand on research published in its pages. To be considered for publication, communications should be factual and analytical, not polemical in tone. Communications should be addressed to the Editor-in-Chief, *Monthly Labor Review*, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C. 20212.