Regional Economic Performance and Industrial Composition

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During the last 25 years or so, major urban areas in the United States have experienced dramatic changes in their economic, demographic, and social structures. The inner cities have seen both jobs and people move to the suburbs; the nature of jobs in urban areas has changed with the decline in manufacturing and the rise of services. Advances in telecommunications and changes in the usage of various transportation modes have redefined the relevant region for urban areas; and the economic and fiscal linkages between the inner city and suburbs have become frayed. In this article we provide a regional economic context for understanding the prospects and challenges facing urban areas in the next several years.

To provide an "economic health snapshot" of the regions, we examine industry-specific employment growth and earnings per worker from 1969 to 1991. We begin with a description of the U.S. economy that examines changes in industrial mix, as measured by industry employment shares, and changes in industry-specific employment growth rates and earnings per worker. Next we examine differences in these variables across regions. Regional differences in industry employment growth rates are reflected in, and influenced by, regional differences in industry earnings per worker and in industrial compositions. Thus our diagnosis of a region's economic health relies on three pieces of information: industrial composition (as reflected in employment shares), industry-specific employment growth rates, and industry-specific earnings per worker.

In previous works (Garcia-Milà and McGuire, 1993a and 1993b) we explored the relationship between employment growth and the industrial composition of a region (or State). We found evidence that the industrial composition of an economy may exert an influence on regional growth above and beyond the obvious effect of having a mix of fast- or slow-growing industries. We argued that, through knowledge spillovers across specific industries or through industry-specific agglomeration economies or diseconomies, certain industrial compositions may be more or less beneficial for growth than others.

The possibility of knowledge spillovers across specific industries is suggested by the findings of Glaeser et al. (1992). The authors find empirical support for Jacobs' (1969) conjecture that cross-fertilization of ideas *across* industries is more important than

within-industry knowledge spillovers. If this is the case, certain industrial mixes—those involving a large presence of industries that generate spillovers—will be conducive to regional economic growth.

In our 1993b paper, we find evidence that a large service sector may be conducive to the employment growth of many industries. We also document that manufacturing is, in its use of intermediate inputs, increasingly dependent on business services. In addition it is argued that in recent years more service value has been added to each unit of manufacturing production and the line separating the two industries is blurring (Organization for Economic Cooperation and Development [OECD], 1992). The efficiency of economic systems seems to involve the integration of various industries rather than specialization by regions. Knowledge spillovers between industries, and in particular from services to manufacturing, may be behind the faster growth of regions, as suggested in three recent articles in *The Economist* (1993).

In this article we present descriptive statistics on the industrial compositions of eight broadly defined U.S. regions.[1] Using the results of our previous studies, we interpret the statistics on industrial composition with two purposes in mind: (1) to gain a deeper understanding of the differences across the regions in economic growth in recent years, and (2) to predict the likely performance of the regions in the years to come.

The data reveal an important shift in industrial structure from manufacturing to services, a change especially important in the regions that start the period with a high concentration of activity in the manufacturing industries, such as the New England, Mideast, and Great Lakes regions. These changes translate into regional industrial mixes that have become much more homogeneous by 1991 than they were at the beginning of the period we examine (1969).

Differences in regional total employment growth rates were less pronounced in the latter part of the period (1983–91) than over the whole period (1969–91). Between the earlier part of the period and the latter part, three regions changed positions relative to the U.S. average. This finding of a lack of persistence in regional employment growth rates contrasts with Blanchard and Katz (1992) who find reasonably strong persistence of State employment growth rates between the two periods 1950–70 and 1970–90.

The linkage between industrial mix and employment growth documented in Garcia-Milà and McGuire (1993a, 1993b) is evident across the regions for the 1969–91 period. Regions that were fast growing, both in terms of total employment and industry-specific employment, had relatively small employment shares of manufacturing and large employment shares of services and finance, insurance, and real estate (FIRE) industries in 1969. Regions with particularly slow employment growth—again both for total employment and for industry-specific employment—started the sample period with large shares of employment concentrated in manufacturing industries. By 1991 the regions had industrial mixes that were much more alike than they had been in 1969, indicating the possibility of less variation in employment growth rates in the future.

While average U.S. income per capita increased significantly over the period, average earnings per worker for the total of all industries decreased slightly. We find important differences in real income per capita and earnings per worker across regions, differences that remain almost unchanged over time. The question of income convergence across regions has been analyzed by Barro and Sala-i-Martin (1991). Our findings of essentially no change over time, which differ from their findings of convergence in incomes across the United States, could be attributable to the short time horizon over which we examine regional differences in income and earnings. The evolution of earnings per worker was

not uniform across industries and regions. While for many industries earnings per worker decreased, the two manufacturing industries experienced an improvement over the period that was most pronounced in the New England and Mideast regions. These two regions performed relatively well on earnings over the period, for the total and for most industries.

Our findings indicate that differences in industrial mix are relevant for explaining regional economic behavior, that a high concentration of manufacturing may have had negative consequences for employment growth across industries in the past, and that the shift to a service-based economy, which is occurring across regions, may result in more homogeneous employment growth across regions and stronger regional economies, in terms of both employment and earnings, in the future.

The U.S. Industrial Structure, 1969–91

The past 25 years have been a rather turbulent period for the U.S. economy. Soon after the Vietnam War boom period came to an end, the first OPEC (Organization of Petroleum Exporting Countries) oil shock rocked the economy, raising the costs of production for all industries but particularly for energy-dependent industries such as manufacturing. The high inflation of the late 1970s was wrung out of the economy by a severe recession in the early 1980s, which hit the industrial Midwest most severely. The length and strength of the growth period of the mid to late 1980s had not been seen since the 1960s. What was new about the expansion of the 1980s was that the distribution of income became more unequal as the economic growth failed to help those with the lowest incomes. By 1991, the most recent year for which reliable data are available, the United States was beginning slowly to pull itself out of a mild recession.

The various industries comprising the U.S. economy have been affected differently by the shocks of the last two and a half decades. In Table 1 we examine real earnings per worker, employment shares, and average annual employment growth rates on an industry-by-industry basis over the period from 1969 to 1991. Table 1 presents information for industries defined at both the one- and two-digit Standard Industrial Classification levels.

The first two columns of Table 1 display real earnings per worker for 1969 and 1991. Total private nonfarm real earnings per worker fell over the period. This fall is in contrast to real income per capita (see the exhibit at the top of the table), which increased by about one-third between 1969 and 1991, perhaps reflecting a rise in the number of two-earner families, an increase in the importance of capital income, or a relatively high rise in earnings per worker in the public sector. Within a broad industry category, there is much variety across subindustries in the average earnings per worker. Within nondurable manufacturing, for example, earnings per worker in 1991 varied from $12,983 in the apparel subindustry to $44,007 in the petroleum subindustry, and within the services industry earnings per worker in 1991 varied from $4,995 for private household services to $41,715 for legal services.

While real earnings per worker for the total fell between 1969 and 1991, this was not the case for every industry. Average real earnings per worker rose slightly over the period for mining and wholesale trade, and more substantially for both nondurable and durable manufacturing, TCPU (transportation, communications, and public utilities), and services. Average real earnings per worker fell significantly for ASFF (agricultural services, forestry, and fisheries), construction, and retail trade, but only slightly for FIRE.

The 1969 and 1991 industrial compositions of the United States are displayed as employment shares in the third and fourth columns of Table 1. The most striking changes over

the period are the significant declines in the employment shares for the manufacturing industries and the significant increases in employment shares for the services industries. The share of total private nonfarm employment in the combined durable and nondurable manufacturing industries declined from 29 to 17 percent over the period. Every subindustry within the manufacturing industry except instruments saw its employment share decline. Concomitantly the services sector increased from 23 percent of total employment in 1969 to 34 percent in 1991. While the services subindustries did not uniformly increase their shares of employment, for several subindustries—business services, amusement services, health services, legal services, and museums—the employment shares either more than doubled or nearly doubled over the period.

Two important related questions are raised by these figures. First, do employees in the declining manufacturing industries have the skills, or the desire to gain the necessary skills and training, to be able to shift to the growing services industries? Second, are existing Federal, State, and local job training and placement programs for displaced workers adequate, given the massive restructuring? These questions are particularly relevant for many central cities, because the local labor force consists primarily of former manufacturing workers while the employment opportunities are in the fast-growing service industries.

Further evidence of the differing fortunes experienced by the manufacturing and services sectors is found in the final two columns of Table 1, which display average annual growth rates of employment over the full period, 1969 to 1991, and over the period from 1983 to 1991, which begins soon after the major recession of the early 1980s and ends at the close of the most recent mild recession. Total private nonfarm employment grew at a faster pace between 1983 and 1991 than it did over the entire period. Thus by this measure of economic health—the ability to create employment—the United States performed better in the last 8 years of the period than it did in the previous 14 years. Except for ASFF, mining, wholesale trade, and FIRE, all one-digit industries had higher employment growth rates in the latter period than in the earlier period.

Focussing on the 1983–91 period, a majority of durable manufacturing subindustries experienced a decline in employment (reflected in the small decline for the overall industry), and half of the subindustries comprising nondurable manufacturing experienced employment losses. (Employment declines in manufacturing were also prevalent in the earlier 14 years.) The average employment increase of 1.92 percent in 1983–91 for TCPU reflects a large decline in employment for railroads and a large increase in employment for the category of other transportation, primarily in air transportation and mass transit. The 1983–91 employment growth rates of the two largest (by 1991) services subindustries were 5.50 percent for business services and 4.19 percent for health services. For both subindustries, these numbers reflected a slowdown in employment growth compared with the earlier period.

Our major findings regarding the U.S. economy are summarized as follows:

■   While total private real earnings per worker fell slightly over the period, the earnings of workers in the two manufacturing industries had improved greatly by 1991. For the two largest industries, earnings per worker in the services sector also improved substantially, while the retail trade industry experienced a large decline in earnings per worker.

■   The industrial composition of the United States changed dramatically between 1969 and 1991, in that the employment shares for the two manufacturing industries fell significantly, with services capturing most of the increase in employment share.

By 1991 the services sector represented one-third of total private employment, while the two manufacturing industries combined contributed only one-sixth.

■ From 1969 to 1991, average annual employment growth was negative for only two one-digit level industries: nondurable and durable manufacturing. Two industries had employment growth rates twice or nearly twice the national average: ASFF and services. While on average employment growth rates were higher during the 1983–91 period than over the full period, the relative performance of the industries was virtually the same in the two periods, with the manufacturing industries having nearly the slowest employment growth rates and ASFF and services displaying high employment growth rates.

Regional Employment Growth and Industrial Mix

In Table 2 we present the shares of total employment and the average annual employment growth rates for the major industries for the eight U.S. regions. We display employment shares for 1969 and 1991, as well as average annual employment growth rates for the entire period (1969–91) and for the most recent 8 years of the period (1983–91). In general the southern and western regions displayed higher employment growth rates for total employment than did the rest of the country, although the differences were more apparent in the earlier part of the period than for the last 8 years. In fact the Southwest and Rocky Mountain regions, which grew very fast in the first part of the period, had below-average growth rates in the latter period. As mentioned above these findings of a lack of persistence over time in regional growth rates are in contrast to the findings of Blanchard and Katz (1992).

For many of the industries, the regions look similar to one another (and to the United States) in terms of employment shares and employment growth rates and changes in these variables over time. For example, the employment shares for ASFF were small in all regions in both 1969 and 1991, and the employment shares increased over the period for every region. This increase in employment shares is a reflection of the very high employment growth rates for this industry in every region over both the entire period and the last 8 years.

The two largest industries in terms of employment shares in both 1969 and 1991—retail trade and services—showed only minor differences across the regions. In 1991 the employment shares for retail trade were all within a band of 18.35 to 21.67 percent. Employment growth in this industry was relatively high for the southern and western regions, especially in the early part of the period. The services industry displayed fast employment growth across the regions, but especially in the South and West. The employment share for services increased between 1969 and 1991 for every region. By 1991 services employment share ranged from 31.30 percent in the Southeast to 37.31 percent in the Mideast.

Among the industries with significant employment shares, the two that displayed the most regional variation in growth rates and employment shares were nondurable and durable manufacturing. Over the 1969–91 period, while the southern and western regions experienced large employment increases, employment actually fell in both types of manufacturing industries for the United States and for three regions—New England, Mideast, and Great Lakes—in which the manufacturing presence was traditionally very large. During the 1983–91 period, the Great Lakes region bounced back in terms of employment growth, especially in nondurable manufacturing; New England and the Mideast continued to lose employment in the manufacturing industries; and the regions of the South and West, with small manufacturing shares, continued to gain employment in manufacturing at a faster pace than the U.S. average. This strong regional readjustment in manufacturing

employment resulted in a more homogeneous distribution of manufacturing across the country. By 1991, except for one or two outlier regions, the regions looked quite similar in their manufacturing shares.

In previous works (Garcia-Milà and McGuire, 1993a, 1993b) we presented evidence suggesting a linkage between employment growth and employment shares. In particular we found in our 1993a article that total employment growth (after controlling for the mix of fast- and slow-growth industries) is higher in regions with smaller shares of employment in manufacturing, and in our 1993b paper that industry-specific employment growth is higher in regions with greater shares of employment in services. The statistics displayed in Table 2 not only consistent with our previous findings, but also can be interpreted in light of those findings for the likely performance of the various regions over the remainder of the 1990s.

When considering the whole period, the three regions that tended to have relatively fast growth—both in terms of total employment and for most industries—were the Southwest, Rocky Mountain, and Far West—the regions with the smallest shares of manufacturing employment (combining durable and nondurable) in 1969. These same regions had the largest shares of services in 1969. The regions that tended to have the slowest growth, both in terms of total employment and for most industries, were also the regions with the largest shares of manufacturing and relatively small shares of services in 1969—the New England, Mideast, and Great Lakes regions. These facts are consistent with the findings from our previous work that total and industry-specific employment growth is higher in regions with less employment in manufacturing and more in services.

Thus the decline in manufacturing experienced throughout the country, which was most severe for regions with large concentrations of manufacturing at the beginning of the period, may have been a blessing in disguise. Based on the 1991 employment shares, with most regions having similar industrial mixes characterized by smaller shares of employment in manufacturing and larger shares of employment in services, we would expect the long-run growth rates of the regions not to differ greatly from one another (at least not as much as in the recent past) and to be relatively high.

Regional Real Earnings Per Worker

The shakeout in the manufacturing industries and the phenomenal growth of the services industry over the last few decades have had an impact on the earnings structure of the various regions. In Table 3 we present relative indexes of real income per capita and real earnings per worker by industry for the eight regions for 1969 and 1991, where the indexes are defined with respect to the U.S. averages in 1969 and 1991. In the third column of Table 3, we display the average annual growth rate of real earnings per worker over the 1983–91 period.

Real income per capita in the United States increased over the period from $10,390 to $14,018. In 1969 four regions—New England, Mideast, Great Lakes, and Far West—had real incomes per capita greater than the U.S. average, ranging from 5 percent greater for the Great Lakes to 15 percent greater for the Far West. By 1991 the Great Lakes region had fallen slightly below the U.S. average, the Far West was only 7 percent above the U.S. average, and New England and the Mideast had gained ground on the U.S. average. The other four regions, while remaining below the U.S. average, had slightly improved their relative positions.

These relative standings and trends in regional income per capita are largely reflected in regional earnings per worker for the total private nonfarm sector. Total private nonfarm earnings per worker declined slightly for the United States over the entire period. In 1991 total earnings per worker were above the U.S. average in the New England, Mideast, Great Lakes, and Far West regions—the same regions that had relatively high per capita income. While differences across the regions were largely preserved over time, there was a slight realignment among the regions that favored New England and the Mideast over most other regions.

During the 1983–91 period, the average annual growth rate in earnings per worker for the total private nonfarm sector was positive, though small. The New England and Mideast regions had the highest growth rates for both income per capita and total private earnings per worker, while the Southwest and Rocky Mountain regions had the lowest growth rates for both measures, with actual declines in earnings per worker compared to a positive rate of growth for the U.S. average.

The relative advantage of New England and the Mideast over other regions in earnings per worker seems to hold, for the most part, across the various industries. By 1991 New England and the Mideast were among the regions with the highest earnings per worker in every industry except mining. In terms of the average annual growth rates in earnings per worker over the 1983–91 period, New England and the Mideast outperformed nearly every other region for virtually every industry. At the other end of the scale, the Southwest and Rocky Mountain regions, which began the period with earnings per worker generally below the average, tended to fall behind even further during the 1983–91 period, with average annual growth rates in earnings less than the U.S. average for 7 of the 10 industries.

The improvement in earnings per worker of the two northeastern regions could be a reflection of the diversification of their industrial mixes from a heavy concentration of manufacturing to a variety of activities, most notably services. This interpretation is counterintuitive if high-wage jobs in manufacturing are being replaced by low-wage jobs in services. However, if the shakeout in manufacturing has been among its least productive subindustries, and if the growth in services has been among the most productive subindustries, in services, then this improvement in earnings for the two northeastern regions is plausible. If the shift to services has involved an increase in knowledge-intensive services, the potential for knowledge spillovers from services to manufacturing may also contribute to an explanation of our findings.

When these facts on earnings per worker are combined with the employment growth figures, we get a picture of different fortunes for different regions in recent years. The facts seem to indicate that the employment boom experienced by the Southwest and Rocky Mountain regions, clearly evident in the earlier part of the period, was not sustained into the latter period, nor did the employment boom help these regions gain position in terms of income per capita and earnings per worker. The situation for New England and the Mideast appeared to be brighter. While these two regions had relatively slow growth rates in employment throughout the period, during the 1983–91 period they experienced the largest increases in both income per capita and earnings per worker.

The apparent negative relationship between employment growth and growth in earnings per worker is particularly evident in the manufacturing and services industries. For nondurable manufacturing, New England and the Mideast were the only two regions to experience declines in employment from 1983 to 1991, while the rates of increase in their

earnings per worker were more than three times greater than the U.S. average and were the only positive rates except for the Southeast.

The pattern for durable manufacturing is a little less clear. While it was still the case that New England and the Mideast experienced relatively large declines in employment, the other regions all had anemic increases that fell in a relatively tight band. New England had the greatest increase in earnings per worker from 1983 to 1991, but was followed by the Far West rather than the Mideast.

All regions experienced fast growth in employment in services during the 1983–91 period. New England and the Mideast had the slowest rates of employment growth compared with the other regions, while the four regions in the West and South had the fastest growth. Earnings per worker in services also increased significantly for all regions over the latter period. The largest increases were again for New England and the Mideast.

We have not carefully considered the timing of the employment changes relative to the earnings changes, but the finding of slow employment growth in regions with high earnings growth seems to run counter to typical studies of labor market responses to economic conditions. For example, Gabriel, Shack-Marquez, and Wascher (1993) found that differences in wages across regions are a strong determinant of interregional migration in the United States, indicating that people are attracted to regions offering the potential for higher wages. The relationship we found between slow employment growth and high earnings growth for regions is a puzzle for which we do not have a good explanation.

The results on regional earnings per worker must be interpreted with care. We cannot say whether the differences across the regions are a reflection of differences in regional costs of living (the U.S. consumer price index was used for all regions), differences in productivity, or differences in the rigidity of regional labor markets. The finding that regions with relatively slow employment growth have experienced relative improvements in earnings per worker is nonetheless intriguing and warrants further investigation.

Conclusion

An analysis of the employment and earnings figures of eight major regions comprising the United States during the period 1969–91 indicates that there was great variety across regions in employment growth rates and in income per capita and earnings per worker. Nevertheless, in terms of employment patterns, the regional differences became less pronounced by the end of the period. There was less variety across regions in employment growth rates during the latter part of the period, and regional industrial compositions were more uniform by 1991. The story is different for income and earnings, as the differences in income per capita and earnings per worker that existed in 1969 prevailed at the end of the sample period. While income per capita improved from 1969 to 1991, earnings per capita decreased on average. Not all industries experienced a decrease over time in earnings per worker, with the two manufacturing industries, TCPU, and services witnessing important increases in earnings per worker over the period. The regions most favored in income per capita terms—New England, the Mideast, Great Lakes, and the Far West— were also the regions well positioned in terms of earnings per worker.

The regions in the South and West had relatively high employment growth rates, both for the total and for most industries, especially in the earlier part of the period. These regions began the period with relatively small shares of manufacturing and large shares of services. In contrast the regions with large concentrations of manufacturing at the beginning of the period—New England, the Mideast, and Great Lakes—had the slowest

employment growth rates for most industries for the 1969–91 period. These findings support the idea of a link between industrial mix and regional employment growth presented in Garcia-Milà and McGuire (1993a, 1993b). Given that the industrial compositions of the regions were much more alike in 1991 than they were in 1969, the differences across the regions in industry-specific employment growth rates are likely to be smaller in the next several years.

During the 1983–91 period, New England and the Mideast experienced weak growth in employment but strong growth in earnings, both for the total and for many industries. One possible explanation for the strength of earnings growth in these two regions is the massive restructuring of their economies over the past several decades, away from manufacturing and toward services. This restructuring could have benefitted the regions in two ways: First, the restructuring may have involved a decline among the least productive subindustries in manufacturing and an increase in the most productive subindustries in services; and second, the increasing integration of these two industries and knowledge spillovers between services and manufacturing may have resulted in greater efficiency and relatively high earnings growth.

The apparent negative relationship between employment and earnings growth for the two large northeastern regions represents a rich area for future research. Our findings run counter to traditional labor market theories, which posit workers moving in response to wage differentials. The two possible explanations that we pose for our findings could be subjected to empirical testing. Future research would seek evidence on changes in the composition of the manufacturing and services industries, with an analysis of the relative productivity and wages of the various subindustries. The extent and nature of the integration between subindustries in the two sectors would be an important part of the analysis.

The findings presented herein point to several lessons for regional economic development policy. Traditional economic development policy, which focusses on attracting and retaining manufacturing firms through tax breaks and other subsidies, may no longer be appropriate. Our findings, which indicate that service-based economies may be more prosperous than manufacturing-based economies, are supported by a recent OECD study, which concludes that governments should not target one industry but instead should seek to improve the workings of the whole integrated system of industries. This finding leads to two additional policy lessons. Regional economies in the United States appear to be highly adaptable to changes in economic conditions, which implies that governments should try to ease the transition rather than attempt to cause important changes in the economy. The most effective policies for easing transitions would appear to be policies to assist displaced workers (or workers likely to be displaced in the near future) and policies to ensure that future workers can adapt easily to structural changes in the economy. These are human capital policies of job training, apprenticeship programs and, perhaps most importantly, basic education at the elementary and secondary levels.

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Note

1. We use regions as defined by the Bureau of Economic Analysis. The New England region consists of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. The Mideast region consists of Delaware, the District of Columbia, Maryland, New Jersey, New York, and Pennsylvania. The Great Lakes region consists of Illinois, Indiana, Michigan, Ohio, and Wisconsin. The Plains region consists of Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. The Southeast region consists of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. The Southwest region consists of Arizona, New Mexico, Oklahoma, and Texas. The Rocky Mountain region consists of Colorado, Idaho, Montana, Utah, and Wyoming. The Far West region consists of Alaska, California, Hawaii, Nevada, Oregon, and Washington.

Table 1

Real income per capita, real earnings per worker,
employment shares, and employment growth for U.S.
industries (Two-digit Standard Industrial Classification industries)

	Real income per capita					
	1969 $10,390	1991 $14,018				
	Real earnings per worker		Employment share		Average employment growth	
	1969	1991	1969	1991	1969–91	1983–91
Total private nonfarm	**$19,246**	**$18,448**	**100.00%**	**100.00%**	**2.13%**	**2.41%**
Agricultural services, forestry, and fisheries	**$15,096**	**$10,499**	**0.71%**	**1.29%**	**4.92%**	**4.59%**
Mining	**$23,562**	**$24,438**	**1.03%**	**0.86%**	**1.27%**	**-4.18%**
Construction	**$24,776**	**$20,455**	**6.29%**	**5.98%**	**1.89%**	**2.62%**
Nondurable manufacturing	**$20,569**	**$23,459**	**11.85%**	**7.15%**	**-0.18%**	**0.30%**
Food	$20,847	$21,807	2.56%	1.49%	-0.34%	0.41%
Textiles	$16,047	$16,859	1.43%	0.60%	-1.82%	-1.32%
Apparel	$13,980	$12,983	2.02%	0.94%	-1.35%	-1.51%
Paper	$23,840	$28,293	1.01%	0.61%	-0.15%	0.50%
Printing	$22,467	$22,065	1.62%	1.48%	1.70%	2.24%
Chemical	$27,245	$37,711	1.51%	0.97%	0.10%	0.40%
Petroleum	$35,545	$44,007	0.26%	0.14%	-0.75%	-2.40%
Tobacco	$19,588	$38,016	0.11%	0.04%	-2.22%	-3.44%
Rubber	$22,303	$22,059	0.84%	0.77%	1.71%	2.46%
Leather	$15,072	$15,578	0.49%	0.12%	-4.37%	-6.09%
Durable manufacturing	**$24,767**	**$26,802**	**17.14%**	**9.70%**	**-0.47%**	**-0.12%**
Lumber	$17,584	$18,770	0.96%	0.70%	0.64%	0.77%
Furniture	$17,880	$17,353	0.70%	0.44%	0.03%	0.80%
Primary metals	$27,728	$30,282	1.92%	0.64%	-2.84%	-1.75%
Fabricated metals	$23,651	$24,991	2.06%	1.22%	-0.28%	-0.17%
Machinery	$26,274	$28,437	2.92%	1.82%	-0.04%	-0.08%
Electrical equipment	$23,285	$26,487	2.88%	1.42%	-1.10%	-2.96%
Transportation	$28,291	$32,025	1.64%	0.98%	-0.20%	1.37%
Motor vehicles	$30,916	$34,393	1.30%	0.70%	-0.71%	0.55%
Stone and glass	$22,622	$21,369	0.95%	0.53%	-0.54%	-0.34%
Instruments	$24,780	$30,515	0.68%	0.86%	3.26%	4.25%
Miscellaneous manufacturing	$17,594	$17,690	0.68%	0.39%	-0.40%	-0.33%

Table 1 (continued)

	Real income per capita					
	1969 $10,390		1991 $14,018			
	Real earnings per worker		Employment share		Average employment growth	
	1969	1991	1969	1991	1969–91	1983–91
Transportation, communications, and public utilities	**$24,672**	**$26,019**	**6.76%**	**5.77%**	**1.40%**	**1.92%**
Railroads	$26,328	$31,593	0.91%	0.24%	-3.85%	-4.26%
Trucking	$22,712	$18,975	1.86%	1.84%	2.09%	3.31%
Water transportation	$25,125	$25,208	0.33%	0.17%	-0.85%	-0.64%
Other transportation	$22,983	$22,984	1.19%	1.44%	3.03%	5.00%
Communications	$24,758	$32,865	1.49%	1.18%	1.06%	-0.45%
Electric, gas	$28,627	$35,030	0.98%	0.90%	1.73%	1.19%
Wholesale trade	**$24,506**	**$24,652**	**5.78%**	**5.84%**	**2.18%**	**1.83%**
Retail trade	**$13,658**	**$10,831**	**18.94%**	**20.10%**	**2.41%**	**2.51%**
Building materials	$18,255	$15,091	0.93%	0.74%	1.08%	1.67%
General merchandise	$13,314	$10,713	3.38%	2.30%	0.37%	1.62%
Food stores	$13,629	$11,312	2.91%	17%	2.53%	2.74%
Auto dealers	$17,284	$16,630	2.91%	2.02%	0.46%	1.78%
Apparel stores	$13,634	$9,758	1.16%	1.15%	2.07%	2.08%
Furniture stores	$17,783	$16,744	0.83%	0.85%	2.25%	2.84%
Eating places	$10,333	$7,956	4.09%	6.20%	4.08%	3.10%
Miscellaneous retail	$12,419	$10,254	2.72%	3.67%	3.53%	2.60%
Finance, insurance, and real estate (FIRE)	**$15,678**	**$15,586**	**8.32%**	**9.60%**	**2.80%**	**2.38%**
Depository	$19,459	$22,280	1.96%	2.29%	2.86%	1.32%
Other FIRE	$14,512	$13,488	6.36%	7.31%	2.78%	2.73%
Services	**$15,874**	**$17,764**	**23.18%**	**33.73%**	**3.89%**	**4.09%**
Hotels	$10,862	$14,217	1.37%	1.56%	2.75%	3.62%
Personal services	$12,534	$9,724	2.35%	2.02%	1.43%	1.52%
Private household	$5,124	$4,995	3.29%	1.17%	-2.54%	-2.52%
Business services	$20,304	$18,652	4.21%	10.16%	6.31%	5.50%
Auto repair	$18,254	$13,885	0.81%	1.20%	3.97%	3.54%
Miscellaneous repairs	$15,043	$13,986	0.57%	0.55%	2.02%	0.61%
Amusement	$10,910	$11,590	0.91%	1.79%	5.34%	6.44%
Motion pictures	$19,134	$19,635	0.30%	0.47%	4.15%	9.76%
Health services	$22,663	$23,340	4.43%	8.29%	5.09%	4.19%
Legal services	$38,147	$41,715	0.61%	1.21%	5.41%	4.24%
Education services	$14,364	$13,852	1.81%	1.77%	2.03%	2.83%
Social services	$12,950	$11,026	2.51%	3.48%	3.65%	4.58%
Museums	$16,188	$13,464	0.02%	0.06%	6.50%	7.90%

Notes:
  All nominal values have been deflated by the 1982–84 U.S. consumer price index.
  Business services include engineering and management services.
  Social services include membership organizations.
Source:
  U.S. Department of Commerce, Bureau of Economic Analysis. The employment data
  are the SA25 series, the earnings data are the SA5 series, September 1992 release.

Table 2

Industry employment shares and employment growth rates for U.S. regions

Private nonfarm employment		
	Average annual employment growth	
Region	**1969–91**	**1983–91**
United States	2.13%	2.41%
New England	1.65%	1.55%
Mideast	1.00%	1.63%
Great Lakes	1.25%	2.46%
Plains	2.00%	2.33%
Southeast	2.81%	3.08%
Southwest	3.25%	1.76%
Rocky Mountain	3.61%	2.21%
Far West	3.21%	3.14%

Agricultural services, forestry, and fisheries				
	Employment share		**Average annual employment growth**	
Region	**1969**	**1991**	**1969–91**	**1983–91**
United States	0.71%	1.29%	4.92%	4.59%
New England	0.70%	1.16%	4.00%	4.04%
Mideast	0.44%	0.85%	4.07%	4.12%
Great Lakes	0.37%	0.81%	4.98%	5.86%
Plains	0.80%	1.09%	3.44%	4.58%
Southeast	0.85%	1.33%	4.89%	4.69%
Southwest	0.93%	1.25%	4.67%	4.11%
Rocky Mountain	0.95%	1.48%	5.74%	4.57%
Far West	1.29%	2.30%	5.97%	4.52%

Table 2 (continued)

Mining				
	Employment share		**Average annual employment growth**	
Region	**1969**	**1991**	**1969–91**	**1983–91**
United States	1.03%	0.86%	1.27%	-4.18%
New England	0.11%	0.10%	1.49%	-2.18%
Mideast	0.39%	0.27%	-0.65%	-4.70%
Great Lakes	0.54%	0.44%	0.33%	-4.04%
Plains	1.05%	0.70%	0.19%	-4.53%
Southeast	1.43%	0.88%	0.58%	-3.64%
Southwest	4.26%	3.55%	2.40%	-4.68%
Rocky Mountain	3.51%	2.01%	1.01%	-5.93%
Far West	0.53%	0.45%	2.49%	-1.02%

Construction				
	Employment share		**Average annual employment growth**	
Region	**1969**	**1991**	**1969–91**	**1983–91**
United States	6.29%	5.98%	1.89%	2.62%
New England	5.95%	5.49%	1.28%	2.65%
Mideast	5.39%	5.54%	1.13%	3.26%
Great Lakes	5.72%	5.32%	0.91%	4.49%
Plains	6.58%	5.65%	1.30%	2.08%
Southeast	7.55%	6.86%	2.36%	2.58%
Southwest	7.89%	6.36%	2.25%	-1.71%
Rocky Mountain	7.10%	6.43%	3.14%	-0.33%
Far West	5.79%	5.91%	3.30%	4.85%

Nondurable manufacturing				
	Employment share		**Average annual employment growth**	
Region	**1969**	**1991**	**1969–91**	**1983–91**
United States	11.85%	7.15%	-0.18%	0.30%
New England	13.35%	5.97%	-2.00%	-2.68%
Mideast	13.76%	7.31%	-1.86%	-1.51%
Great Lakes	10.22%	7.34%	-0.26%	1.26%
Plains	10.25%	7.47%	0.55%	1.64%
Southeast	16.52%	9.58%	0.30%	0.32%
Southwest	7.75%	5.16%	1.36%	0.61%
Rocky Mountain	6.71%	4.75%	1.99%	2.40%
Far West	7.49%	5.27%	1.58%	2.03%

Table 2 (continued)

Durable manufacturing				
	Employment share		Average annual employment growth	
Region	1969	1991	1969–91	1983–91
United States	17.14%	9.70%	-0.47%	-0.12%
New England	20.50%	12.03%	-0.78%	-2.49%
Mideast	16.28%	7.61%	-2.43%	-2.56%
Great Lakes	26.51%	14.17%	-1.59%	-0.06%
Plains	13.61%	9.38%	0.30%	1.18%
Southeast	12.06%	8.56%	1.22%	1.51%
Southwest	11.40%	7.91%	1.55%	0.54%
Rocky Mountain	9.47%	7.39%	2.45%	0.90%
Far West	16.44%	9.64%	0.73%	0.43%

Transportation, communications, and public utilities				
	Employment share		Average annual employment growth	
Region	1969	1991	1969–91	1983–91
United States	6.76%	5.77%	1.40%	1.92%
New England	5.06%	4.49%	1.10%	1.32%
Mideast	7.20%	5.96%	0.14%	1.08%
Great Lakes	6.19%	5.33%	0.57%	1.99%
Plains	7.63%	6.43%	1.22%	1.60%
Southeast	6.52%	6.03%	2.45%	2.54%
Southwest	7.10%	6.31%	2.70%	2.19%
Rocky Mountain	8.08%	6.51%	2.59%	1.44%
Far West	7.16%	5.36%	1.87%	2.24%

Wholesale trade				
	Employment share		Average annual employment growth	
Region	1969	1991	1969–91	1983–91
United States	5.78%	5.84%	2.18%	1.83%
New England	4.97%	5.64%	2.24%	2.07%
Mideast	6.05%	6.18%	1.10%	0.91%
Great Lakes	5.38%	5.78%	1.58%	2.16%
Plains	6.22%	6.35%	2.10%	1.37%
Southeast	5.47%	5.62%	2.95%	2.48%
Southwest	6.62%	5.81%	2.64%	0.63%
Rocky Mountain	6.17%	5.41%	3.00%	1.03%
Far West	6.01%	5.74%	3.00%	2.82%

Table 2 (continued)

Retail trade

Region	Employment share		Average annual employment growth	
	1969	1991	1969–91	1983–91
United States	18.94%	20.10%	2.41%	2.51%
New England	18.27%	18.75%	1.77%	1.38%
Mideast	17.47%	18.35%	1.23%	1.64%
Great Lakes	18.59%	20.68%	1.74%	2.66%
Plains	21.69%	21.04%	1.86%	2.18%
Southeast	18.50%	21.04%	3.42%	3.44%
Southwest	20.93%	20.83%	3.23%	1.96%
Rocky Mountain	22.79%	21.67%	3.37%	2.40%
Far West	19.61%	19.43%	3.17%	2.89%

Finance, insurance, and real estate

Region	Employment share		Average annual employment growth	
	1969	1991	1969–91	1983–91
United States	8.32%	9.60%	2.80%	2.38%
New England	7.50%	10.35%	3.16%	3.35%
Mideast	9.25%	10.61%	1.64%	2.20%
Great Lakes	7.00%	8.58%	2.20%	2.25%
Plains	8.92%	9.25%	2.17%	2.09%
Southeast	7.27%	8.80%	3.71%	2.94%
Southwest	8.39%	9.72%	3.95%	1.35%
Rocky Mountain	10.15%	9.83%	3.46%	1.06%
Far West	10.09%	10.45%	3.38%	2.65%

Services

Region	Employment share		Average annual employment growth	
	1969	1991	1969–91	1983–91
United States	23.18%	33.73%	3.89%	4.09%
New England	23.59%	36.03%	3.63%	3.53%
Mideast	23.77%	37.31%	3.10%	3.33%
Great Lakes	19.48%	31.55%	3.50%	3.90%
Plains	23.26%	32.63%	3.59%	3.59%
Southeast	23.83%	31.30%	4.09%	4.95%
Southwest	24.74%	33.09%	4.62%	4.26%
Rocky Mountain	25.08%	34.53%	5.13%	4.39%
Far West	25.60%	35.45%	4.75%	4.39%

Note:
   For a list of the States in each region, see note 1, page 104.
Source:
   U.S. Department of Commerce, Bureau of Economic Analysis. The employment data are the SA25 series, the earnings data are the SA5 series, September 1992 release.

Table 3

Real income per capita, real earnings per worker, and annual growth rate of real earnings per worker for U.S. regions

Real income per capita

Region	1969	1991	Annual growth 1983–91
United States	$10,390	$14,018	1.67%
New England	110	119	2.52%
Mideast	113	116	2.22%
Great Lakes	105	98	1.67%
Plains	93	94	1.67%
Southeast	80	89	2.05%
Southwest	87	88	0.50%
Rocky Mountain	89	90	0.90%
Far West	115	107	1.05%

Real earnings per worker by industry
Total private nonfarm

Region	1969	1991	Annual growth 1983–91
United States	$19,246	$18,448	0.17%
New England	99	109	1.57%
Mideast	108	115	0.88%
Great Lakes	110	101	-0.40%
Plains	92	87	-0.33%
Southeast	83	87	0.06%
Southwest	91	95	-0.54%
Rocky Mountain	89	87	-0.80%
Far West	110	109	0.41%

Agricultural services, forestry, and fisheries

Region	1969	1991	Annual growth 1983–91
United States	$15,096	$10,499	0.86%
New England	90	116	2.65%
Mideast	111	120	1.43%
Great Lakes	124	110	0.33%
Plains	127	103	-0.41%
Southeast	85	88	0.76%
Southwest	93	90	-0.81%
Rocky Mountain	87	83	-0.33%
Far West	95	99	1.47%

Table 3 (continued)

Mining			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$23,562	$24,438	-0.91%
New England	161	65	-6.01%
Mideast	123	96	-2.74%
Great Lakes	108	86	-2.00%
Plains	81	62	-0.97%
Southeast	101	108	-1.20%
Southwest	89	95	-0.33%
Rocky Mountain	98	118	-1.64%
Far West	123	134	-0.17%

Construction			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$24,776	$20,455	-0.41%
New England	99	109	0.47%
Mideast	106	113	0.39%
Great Lakes	114	104	-0.63%
Plains	95	89	-0.81%
Southeast	79	81	-0.40%
Southwest	90	95	-1.08%
Rocky Mountain	97	89	-1.72%
Far West	122	120	-1.12%

Nondurable manufacturing			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$20,569	$23,459	0.50%
New England	92	107	2.40%
Mideast	106	115	1.48%
Great Lakes	115	108	-0.05%
Plains	103	95	-0.33%
Southeast	83	86	0.46%
Southwest	102	109	-0.07%
Rocky Mountain	95	90	-0.35%
Far West	112	100	-0.04%

Table 3 (continued)

Durable manufacturing

Region	1969	1991	Annual growth 1983–91
United States	$24,767	$26,802	0.19%
New England	96	109	1.78%
Mideast	102	106	0.53%
Great Lakes	107	106	-0.47%
Plains	93	91	-0.54%
Southeast	78	81	0.32%
Southwest	92	97	0.27%
Rocky Mountain	94	94	0.12%
Far West	111	113	0.79%

Transportation, communications, and public utilities

Region	1969	1991	Annual growth 1983–91
United States	$24,672	$26,019	-0.75%
New England	96	103	0.31%
Mideast	105	109	-0.16%
Great Lakes	104	96	-1.33%
Plains	97	93	-1.14%
Southeast	88	91	-0.82%
Southwest	94	103	-0.70%
Rocky Mountain	97	99	-1.04%
Far West	110	108	-0.79%

Wholesale trade

Region	1969	1991	Annual growth 1983–91
United States	$24,506	$24,652	0.74%
New England	97	108	2.13%
Mideast	106	109	1.20%
Great Lakes	107	102	0.57%
Plains	100	91	0.09%
Southeast	87	90	0.70%
Southwest	92	98	0.07%
Rocky Mountain	94	89	-0.08%
Far West	105	106	0.83%

Table 3 (continued)

Retail trade			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$13,658	$10,831	-0.63%
New England	96	111	1.26%
Mideast	103	108	0.25%
Great Lakes	101	92	-1.06%
Plains	94	87	-1.09%
Southeast	92	94	-0.91%
Southwest	93	98	-1.59%
Rocky Mountain	94	90	-1.57%
Far West	116	117	-0.44%

Finance, insurance, and real estate			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$15,678	$15,586	0.57%
New England	114	111	1.54%
Mideast	122	146	1.28%
Great Lakes	100	93	0.15%
Plains	83	83	0.34%
Southeast	86	75	-0.31%
Southwest	90	88	-0.36%
Rocky Mountain	72	73	-0.15%
Far West	94	100	1.02%

Services			
			Annual growth
Region	**1969**	**1991**	**1983–91**
United States	$15,874	$17,764	1.53%
New England	104	109	2.97%
Mideast	116	116	2.07%
Great Lakes	103	94	1.03%
Plains	87	82	0.95%
Southeast	78	90	1.63%
Southwest	88	92	0.59%
Rocky Mountain	88	85	0.69%
Far West	116	112	1.58%

Note:
   In each panel, indexes reflect income per capita or earnings per worker relative to the U.S. average. For a list of the States in each region, see note 1, page 104.
Source:
   U.S. Department of Commerce, Bureau of Economic Analysis. The employment data are the SA25 series, the earnings data are the SA5 series, September 1992 release.

References

Barro, Robert J., and Xavier Sala-i-Martin, "Convergence Across States and Regions," *Brookings Papers on Economic Activity,* no. 1, 1991.

Blanchard, Olivier Jean, and Lawrence F. Katz, "Regional Evolutions," *Brookings Papers on Economic Activity,* no. 1, 1992.

The Economist, "America the Super-fit," February 13, 1993.

———, "The Final Frontier," February 20, 1993.

———, "Wealth in Services," February 20, 1993.

Gabriel, Stuart A., Janice Shack-Marquez, and William L. Wascher, "Does Migration Arbitrage Regional Labor Market Differentials?" *Regional Science and Urban Economics,* vol. 23, 1993.

Garcia-Milà, Teresa, and Therese J. McGuire, "Growth, Industrial Mix and Structural Change in U.S. Regions: The Shift to a Service-Based Economy," University of Illinois at Chicago mimeo, October 1993.

———, "Industrial Mix as a Factor in the Growth and Variability of States' Economies," *Regional Science and Urban Economics,* vol. 23, 1993.

Glaeser, Edward L., Hedi D. Kallal, José A. Scheinkman, and Andrei Shleifer, "Growth in Cities," *Journal of Political Economy,* vol. 100, no. 6, 1992, pp. 1126–1152.

Jacobs, Jane, *The Economy of Cities,* Random House: New York, New York, 1969.

Organization for Economic Cooperation and Development (OECD), "Industrial Policy in OECD Countries," *Organization for Economic Cooperation and Development Annual Review,* 1992.

U.S. Department of Commerce, Bureau of Economic Analysis, Earnings (SA5) and Employment (SA25) by Industry by State, data diskettes, September 1992.