The Role of Services in New England's Rise and Fall: Engine of Growth or Along for the Ride?

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The downturn in the New England economy has surprised almost everyone by its severity and breadth. Even those who foresaw that the rapid expansion of the mid 1980s could not be sustained warned of slower growth rather than a sharp contraction. Several factors account for this failure to predict the region's decline. Most important, the region's manufacturing sector was expected to perform much more strongly. Between 1984 and 1990, New England lost over 240,000 jobs—more than 15 percent of 1984 manufacturing employment. Almost all of this decline reflected a loss in the region's share of U.S. manufacturing employment. This was not supposed to happen; New England's share of U.S. manufacturing had grown during the late 1970s and early 1980s and it was widely believed that the increased importance of high technology industries in New England's manufacturing mix had made the region more, not less, competitive.[1] As a consequence, forecasters persisted for some years in expecting the decline in the region's manufacturing to end.

Second, the weakness in manufacturing was "masked by the spectacular surge in the construction sector" (Moscovitch 1990, p. 62). Increases in construction and related employment more than offset the decline in manufacturing during the mid 1980s. More generally, rapid growth in almost all the nonmanufacturing industries caused the region to achieve unprecedented levels of prosperity. The regional unemployment rate fell to 3.1 percent in 1988. In the face of such a record, it would have been a brave forecaster indeed who suggested that the region was about to suffer a serious downturn.

This is not to say that the loss of manufacturing jobs and the increased dependence upon construction and other nonmanufacturing industries did not make some observers uneasy. Manufacturing has long been seen as providing the impetus to a region's economic growth, with most nonmanufacturing activity dependent upon what is happening in the local manufacturing sector as well as on demographic trends.

However, the unease did not turn to alarm, first, because the decline in New England's manufacturing sector was expected to end and, second, because the events of the mid 1980s suggested an alternative model of regional economic development.

Both New England's own economic success in the face of declining manufacturing employment and the strong economic performance of the neighboring New York City area seemed to argue that certain financial and other services could play the role of regional economic drivers in the manner traditionally attributed to manufacturing. In this model, dubbed the "Manhattan effect" by one analyst, growth is driven by the activities of firms such as insurance companies, investment banks, mutual funds, consulting firms, and computer software companies (Norton 1987). In contrast to traditional financial and other services activities, these companies frequently serve national and international markets. Far from being dependent upon the local economy, the expansion of these firms serves as a stimulus. With growth propelled by these nationally oriented services and financial services companies, New England's continued prosperity did not appear so puzzling. The construction boom, while extraordinary, seemed justified by the rapid expansion in such industries.

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Do New England's current difficulties invalidate this services-driven model of regional development? Certainly, financial and other services have not been able to sustain the regional economy. On the contrary, with the region's banking industry facing severe problems and growth in services grinding to a halt, it would appear that most financial and other services remain very dependent upon the local economy. The prevailing view today is that the rise in real estate values and the surge in construction stimulated the growth in financial and other services, rather than the reverse.

However, another possibility is that the services-driven model remains valid, but that the more nationally oriented services ran into problems in the late 1980s and could no longer function as engines of growth. In support of such a view is the sharp curtailment in national financial services employment, and particularly employment in the New York City area, following the stock market crash of 1987.

This article attempts to assess the role played by services and financial services in New England's fluctuating economic fortunes. How large is the nationally oriented component? And is a more service-oriented economy a more stable economy, or do services become less stable as they assume greater importance? If financial and other services can serve as regional economic drivers in a significant way, these industries are a potential source of regional economic recovery and economic development initiatives should take these industries into account.

Part I reviews employment patterns in the 1980s, focusing on 1984 to 1987. In that period, overall growth remained strong, even as manufacturing declined. Part II proposes two explanations for the strong growth in this period—one in which construction played the role of economic driver, one in which growth was generated by nationally and internationally oriented financial and other services industries. Parts III and IV look at the market orientation of New England's services and its finance, insurance, and real estate (FIRE) industries. Part V considers whether states with larger shares of employment in services and FIRE are more stable. Conclusions follow.

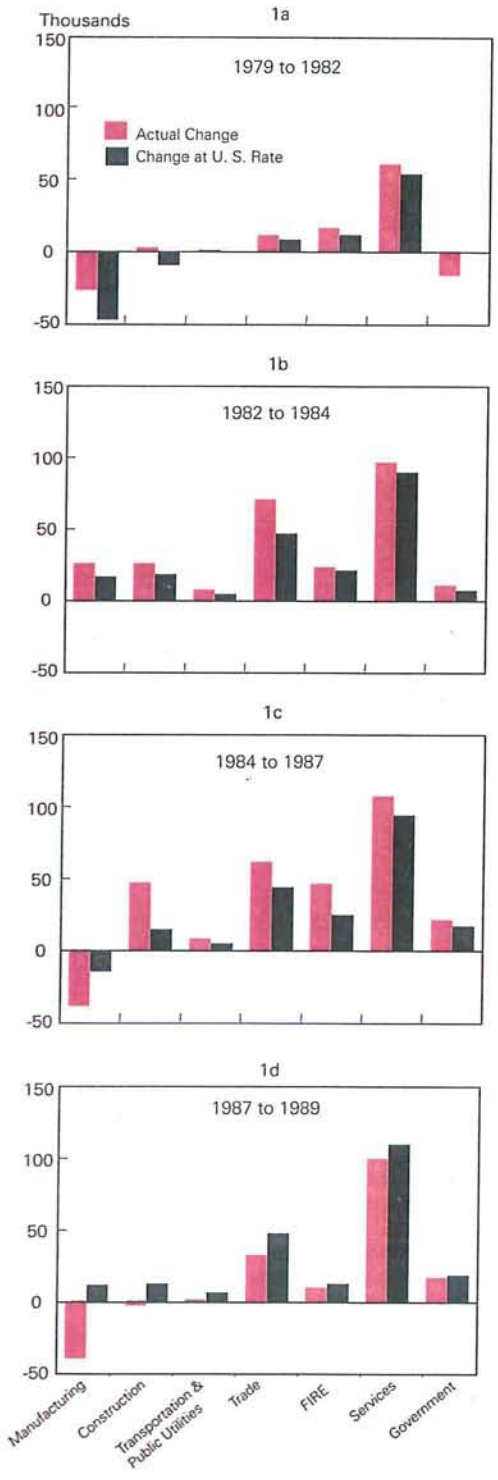
I. Employment Patterns of the 1980s

For New England, the decade of the 1980s consisted of four distinct periods. These periods, 1979–82, 1982–84, 1984–87 and 1987–89, differed in terms of the region's overall rate of growth, the relationship between the region and the nation, and the performance of the region's key industries.

1979–82. This was a period of recession. Total employment growth was sluggish, but stronger in New England than the nation. Figure 1a compares the employment changes in the region's major industries with the changes that would have occurred if New England's experience had been the same as the nation's. As can be seen, all major industries except government fared better in the region than the nation. However, the manufacturing and construction sectors accounted for most of the difference between New England and the nation. (Manufacturing and mining have been combined in these figures because

Figure 1

Annual Employment Changes in New England



Source: See Table 1.

both industries are commonly seen as regional economic drivers; mining is insignificant in New England.)

1982–84. During the early stages of the recovery, growth in New England continued to surpass that in the nation, with all major industries growing more strongly in the region (Figure 1b).

1984–87. As the expansion progressed, growth in New England accelerated and became more unbalanced (Figure 1c). Employment in the manufacturing sector fell sharply, more sharply than in the recession years. In contrast, construction employment in the region soared. Rapid growth in finance, insurance, and real estate (FIRE) also contributed importantly to the region's overall vigor, as did continued strength in trade.

1987–89. The final years of the decade saw a pronounced slowdown in employment growth in New England. The manufacturing sector continued to shrink. Construction turned down and growth slowed in the other major industries (Figure 1d).

From this brief review, 1984–87 stands out as the critical period. This was the time when warnings of problems ahead would have been helpful. By 1988 the regional decline was already in the works. It also appears to be the period when the region's current problems developed. Before 1984, the various components of the New England economy were more or less in sync. Manufacturing, the traditional engine of regional economic growth, had performed better in New England than the nation in the recession and the early years of the recovery. Given this strength in manufacturing, conventional wisdom would lead one to expect a relatively strong performance from other sectors of the economy. Between 1984 and 1987, by contrast, manufacturing weakened, but growth accelerated in construction and remained strong in the rest of the economy.

II. Two Views of Growth, 1984–87

The acceleration of construction employment and the strength of trade and services, at a time when manufacturing employment was declining, fly in the face of the conventional model of regional growth. In 1990, Moscovitch argued that construction and related industries took over as the economic engine for the region; the jobs and income generated by growth in this sector had a multiplier effect on the rest of the economy akin to that associated with manufacturing. A variant on this view has recently been suggested by

Case (1991): the wealth created by the escalation in housing values was a powerful spur to consumption, as well as construction, and stimulated the growth in trade and services. For a time, this growth in the rest of the economy fed back and reinforced the demand for real estate and the expansion of construction.

Eventually, however, the rapid growth in construction produced market saturation. And market saturation led in turn to declining real estate values and a sharp falloff in construction. This removed the underpinnings of the region's prosperity, setting in motion a downward spiral. Falling construction employment and declining real estate values negatively affected other sectors of the economy, exacerbating the weakness in the real estate market and further depressing construction.

At the time, however, New England's prosperity seemed solid enough. Concern was expressed about the weakness in manufacturing, especially high tech, but this weakness was expected to be short-lived.[2] Additionally, the strong growth of services and FIRE was seen as generated by companies selling in national and international markets rather than to the more traditional, locally oriented services firms. Anecdotal evidence to support such a view was abundant. Mutual funds such as Fidelity and Scudder, insurance companies such as John Hancock and Aetna, consulting firms such as the Boston Consulting Group and Bain, software companies such as Lotus and Cullinet were doing well and were clearly national rather than local players.

The growth of such companies, far from being driven by construction, contributed to the demand for office space and indirectly, residential and retail space. Just as manufacturing had fostered the expansion of other sectors, so too the growth of these financial and other services was thought to be creating opportunities for suppliers and, through the generation of jobs and income, providing a general stimulus to the economy.

In the "services as economic driver" view of the mid 1980s, the boom in construction and real estate would still have come to an end. With construction employment growing more than 10 percent per year, the capacity of the industry would eventually outstrip the ability of the economy to absorb new housing and new commercial and industrial space. However, the effect of a leveling off or even a falloff in construction would not be very serious. While growth in trade and those portions of services and FIRE that were truly local would be adversely affected by a decline in construction, the nationally and internationally oriented services and FIRE companies would continue to expand. Overall growth would be slower without the added stimulus of construction; but with slow growth in the working-age population, such a slowdown was compatible with continued low unemployment rates and high levels of prosperity.

Of course, were nationally oriented FIRE and services to encounter difficulties, the situation would be very different. But this seemed a remote possibility, as services and FIRE were thought to grow through bad times and good. Indeed, it was commonly observed that a more services-oriented economy, such as New England was becoming, was a more stable economy.

In the "services as economic driver" view of the mid 1980s, the boom in construction and real estate would still have come to an end.

Was the idea that nationally and internationally oriented services and financial services could sustain the regional economy misguided? Was the region's prosperity in the mid 1980s really built on a construction and real estate boom that was destined to end? Or did growth in nationally oriented segments of FIRE and services drive the region's strong performance in the mid 1980s and was the region's subsequent decline attributable to difficulties in these industries? The two alternatives are not mutually exclusive. Moscovitch, while emphasizing the prominence of construction in the region's rise and fall, considers insurance and private education to be part of New England's economic base and, like manufacturing, capable of stimulating growth.

The two views have implications for the region's future and for economic development strategies. The degree to which New England is "overbuilt" depends, in part, upon this issue. If much of the demand for housing and commercial space was ultimately generated by the construction and real estate industries themselves, the overhang is likely to be considerably larger than if the underlying source of demand was the growth in nationally and internationally oriented financial and other services indus-

tries. While the latter industries may be experiencing problems today, their problems are not as severe as those in construction and real estate.

Moreover, if nationally and internationally oriented financial and other services industries did contribute importantly to New England's prosperity from 1984 to 1987, they may do so again. Recent reports by Howell (1990) and Porter (1991) paint rosy pictures of the future of Boston and Massachusetts, respectively, based upon the areas' suitability as locations for knowledge-based services. If, however, New England's financial and other services are primarily local in their orientation and their growth was a response to developments in other sectors, the region's prosperity remains heavily dependent upon its manufacturing sector.[3] Policymakers looking for ways to foster economic development would want to pay considerable attention to services industries in the first instance, but focus more on manufacturing in the second.

One implication of both views is that economists do not know enough about the nonmanufacturing segments of the economy and their links to one another. For example, while the view that some elements of services and FIRE compete in national rather than local markets gained adherents in the 1980s, little thought was given to how this national orientation might affect their growth. Services continued to be seen as a reliable, ever-expanding generator of jobs and it was commonly asserted that a more services-dominated economy was a more stable economy. Historically, employment in services and financial services industries has been more stable than manufacturing employment, but the services industry of historical experience may not be the services industry of today.

III. A Closer Look at the Composition of Growth in Services and FIRE

A first step to understanding the role of services and FIRE in New England's fluctuating economic fortunes is to look more closely at where the growth occurred. Was it in real estate or insurance or health care? One's model of the regional growth process may differ depending upon which industries grew most rapidly in the years 1984 to 1987 and which led the subsequent slowdown.

Table 1 shows the composition of the growth in New England's services and FIRE employment during the boom years from 1984 to 1987. Also shown is the growth that would have occurred if employment in the individual services and FIRE industries had increased at the same rate in New England as the nation. (Appendix Tables A1 and A2 present year-by-

Table 1
Changes in New England Employment, Compared to Changes if New England Grew at the U.S. Rate, 1984–87
Thousands

Industry	Annual Change	Change if N.E. Grew at U.S. Rate	Difference
Services	108	98	9
Hotels and Other Lodging Places	5	3	1
Personal Services	11	9	2
Private Households	−1	−1	...
Business Services	37	34	3
Auto Repair, Services, Garages	4	3	1
Miscellaneous Repair Services	1	...	1
Amusement and Recreation Services	4	3	1
Motion Pictures	...	...	...
Health Services	16	23	−7
Legal Services	5	4	1
Education Services	5	5	...
Social Services	7	7	...
Museums, Botanical, Zoological Gardens	...	...	...
Membership Organizations	3	2	1
Miscellaneous Services	10	5	5
Finance, Insurance, Real Estate	47	25	22
Banking and Other Credit Agencies	10	5	5
Security & Commodity Brokers and Services	3	2	1
Insurance Carriers	6	5	1
Insurance Agents, Brokers and Services	3	2	1
Real Estate	21	9	13
Combined Offices	...	...	...
Holding and Other Investment Companies	3	1	2

Note: Components may not sum to totals because of rounding.
... = less than 0.5.
Source: U.S. Bureau of Economic Analysis Regional Economic Information System, employment data and author's calculations.

year patterns of employment in New England and the nation for services and FIRE, respectively.) If nationally and internationally oriented services and FIRE companies served as regional engines of growth during the mid 1980s before sputtering late in the decade, one would expect the composition of their growth to differ from both the national pattern and the pattern that would arise if construction were the driver. Specifically, one would expect nationally and internationally oriented activities to figure more prominently in the mix of new jobs. By contrast, if construction propelled economic growth, one would expect more locally oriented activities, particularly those with a direct tie to construction or real estate, to exhibit particular strength.

Services

As can be seen from Table 1, roughly one-third of the services jobs created in New England between 1984 and 1987 were in business services. However, New England's experience in this regard was not very different from that elsewhere. Although business services grew more strongly in New England than the nation during this period, the difference was small (9.1 percent per year compared to 8.4 percent).

Difficulties in services did not precipitate the regional downturn.

Business services is a very diverse grouping. It includes computer services and other activities commonly cited as examples of nationally and internationally oriented services industries.[4] However, it also includes a number of activities that, superficially at least, seem local in character, such as window cleaning and temporary help services.

Health services ranked next as a source of new services jobs, although it grew less rapidly in New England than in the nation. Personal services and miscellaneous services were also important generators of employment opportunities. Personal services includes laundry and other stereotypically local services. Miscellaneous services, which grew considerably faster in New England than in the country as a whole, includes accounting, engineering, and architectural services.[5] Companies in these industries could serve a national clientele, but they could also be locally oriented; and engineering and architectural services are closely linked to construction.

Thus, a closer look at the composition of the increase in services does not resolve whether nationally oriented services played a key role in maintaining the region's high growth rate or whether the growth in services was largely a response to the strength in other sectors. In particular, the large increase in business services and the rapid growth in miscellaneous services could be compatible with either scenario. Subsequent sections consider the local or national orientation of these and other services industries.

Difficulties in services did not precipitate the regional downturn, however. As can be seen from the year-by-year employment changes in Appendix Table A1, growth in services employment, including business and miscellaneous services, remained strong in New England in 1988—after construction and overall employment had started to slow—before weakening in 1989. It should also be noted that the weakness in business and miscellaneous services in 1989 was not part of a national slowdown. This pattern seems more consistent with services responding to developments in other sectors of the regional economy than with their being an independent cause of the regional downturn.

Finance, Insurance, and Real Estate

Growth in finance, insurance, and real estate was much stronger in New England than the nation from 1984 to 1987. All the major segments of the industry grew more rapidly in the region, but banking and real estate accounted for most of the overall difference (Table 1). Roughly 45 percent of the jobs added in FIRE during this period were in real estate. Insurance carriers, which are generally thought to be a nationally oriented industry, accounted for less than 15 percent of the regional increases in FIRE. Thus, the growth of New England's FIRE industry during the mid 1980s clearly had a large local component with a direct tie to construction and real estate. However, the yearly changes in FIRE employment, shown in Appendix Table A2, reveal an interesting pattern. Something or some things cooled the expansion in FIRE in 1988 and that something was not unique to New England. Nationally, growth slowed sharply. Most segments of the industry were involved—banking, securities, insurance carriers. The situation worsened in 1989; slower growth in some industries became no growth.

As FIRE had been a rapidly growing segment of the New England economy, this slowdown undoubtedly contributed to the regional downturn. While the slowdown in construction, which began at the same time, may have been part of the same phenomenon, the fact that nationally FIRE ran into difficulties points to an influence from outside the region.

A Bad Time for Financial Services and Real Estate

The finance, insurance, and real estate industry suffered a number of blows in the second half of the 1980s, starting with the Tax Reform Act of 1986. Among New England bankers, developers, and others, tax reform is commonly cited as an important contributor to the decline in the market value of rental properties. Tax reform, it is said, took many investors out of real estate.

While the incentive to invest in other assets was also reduced by the Tax Reform Act, certain categories of real estate were particularly affected by the curbs imposed on tax shelters. This result was foreseen by policy-makers, even welcomed. By removing tax-created biases in favor of certain investments, the overall efficiency of investment would be increased. Since real estate had previously been favored, more uniform tax treatment of different assets would necessarily affect it adversely. Moreover, at least some analysts recognized that such a shift might have painful consequences.[6]

The problems in FIRE in New England were not only a product of regional overbuilding, but also a reflection of forces originating outside the region.

Aaron, in the winter of 1987, observed (p. 10):

> While the tax reform will have only modest effects on the economy as a whole, it will have important impacts on particular industries and companies. For example, the cost of capital for such 'tax shelter' investments as office buildings and multifamily housing will increase. . . . And when tax incentives, which have contributed to overinvestment in favored activities, are reduced, the adjustments may be difficult and protracted. For example, the vacancy rates for offices, which exceed 20 percent in many cities and which are attributable in part to tax shelters that encouraged construction. . . will take many years to decline to economically efficient levels.

Hints of trouble ahead also emerged in the securities industry in 1986 with revelations of insider trading involving employees of Drexel, Burnham, Lambert. Drexel had largely created the junk bond market, which had generated huge profits for the securities industry. Some observers believe that Drexel's difficulties eventually contributed to the decline in the demand for junk bonds and a slowdown in merger and acquisition activity.

A more obvious turning point for the securities industry was the stock market crash of October 1987. The crash had a number of consequences that shifted the industry from go-go expansion to retrenchment. First, the crash caused losses at some important securities companies. Second, even before the crash, securities companies were becoming concerned that expenses were growing faster than revenues; the crash provided a rationale for painful cost-cutting. Third, the crash scared off some investors, so that the brokerage business slowed following the crash. Finally, by raising the specter of recession, the crash increased investor skittishness about junk bonds: would highly leveraged borrowers be able to handle their debt service obligations?

In the banking industry, problems with energy, agricultural, and real estate loans in the mid 1980s caused many bank failures in the central and southwestern portions of the country. Thrift institutions began to incur huge losses in 1987, for similar reasons. Nor did the large banks come through 1987 unscathed. Led by Citicorp, most of the largest banks established substantial reserves against their loans to less developed countries; earnings were reduced and some banks suffered sizable losses. These difficulties prompted both legislative and regulatory changes, significantly altering the industry's mode of operation.

These developments, in conjunction with the national character of the slowdown in FIRE, suggest that the problems of the industry in New England were not only a product of regional overbuilding, but also a reflection of forces originating outside the region. To some degree at least, events in FIRE may have been a cause—as well as a result—of the downturn in construction and the decline in real estate values.

In summary, the extraordinarily rapid growth of FIRE in New England during the mid 1980s was due largely to the sectors linked most closely to the

construction and real estate boom—real estate itself and banking. However, forces external to the region seem to have played a role in the sector's subsequent downturn. In the case of services, industries that may include both nationally and locally oriented elements were responsible for much of the employment increase.

IV. Market Orientation

The variation in location quotients provides a rough indicator of the national or local orientation of different industries (Groshen 1987; Keil and Mack 1986). Location quotients are ratios, comparing industries' shares of employment in an area with their shares of employment nationwide:

$$\frac{x_{ij}/x_j}{X_i/X}$$

where x_{ij} is employment in industry i in area j
x_j is total employment in area j
X_i is national employment in industry i
X is total employment in the nation.[7]

Location quotients are commonly interpreted as indicating the degree to which industries sell outside the local area. A location quotient exceeding 1, meaning that an industry's share of employment in an area is greater than its share of employment nationwide, is often said to signify that a portion of the area's output is sold to the rest of the country. Conversely, a location quotient of less than 1, indicating that the industry is less important in the area than it is elsewhere, implies that the area is importing from other parts of the country.

Such reasoning has led to using the variation in location quotients to measure industries' market orientation. Large variations, with some areas having very high location quotients and other areas location quotients well below 1, indicate substantial exporting and importing by different parts of the country. These industries would be considered more national in their market orientation than industries that account for similar shares of employment in all areas and for which the location quotients are all close to 1.

This argument, that large variations in location quotients indicate more nationally oriented industries while small variations are associated with industries serving local markets, is subject to several caveats. First, if areas have different consumption patterns or industry practices, location quotients can vary for purely local industries.[8] In many cases, common sense enables one to determine whether differences in location quotients reflect local preferences or a more national market orientation.

A second difficulty is that low variation in location quotients may reflect the industry's locational requirements, or lack thereof, more than its market orientation. The location quotient approach to identifying national industries assumes that areas specialize.[9] However, much trade, among nations as well as among different parts of the country, takes place within a given industry. An industry that has fairly general input requirements may account for similar shares of employment in a number of places (so that location quotients are close to 1); but trade may still occur because the products of one firm differ from those of another.[10] The broader the industry grouping and the more diverse the elements it encompasses, the more likely it is that trade will take place within the industry and that the variation in location quotients will understate the national orientation in the industry. Last, the variation in location quotients indicates general tendencies. It does not mean that every firm in a national industry has a national customer base.[11] And in an industry that is primarily local, some firms may sell in national markets.

Table 2 shows the standard deviations of the location quotients for the major industry groupings for all states and states with populations in excess of 3 million.[12] Also shown are the industries' shares of U.S. total employment and the location quotients for the New England region as a whole, Connecticut, and Massachusetts.

The pattern is generally consistent with conventional wisdom. Resource-dependent industries exhibit the greatest variation in location quotients. For mining, in particular, the industry's location is dictated by the availability of key resources; a few states supply the rest of the country. At the other end of the spectrum is retail trade, which is generally regarded as locally oriented and which does indeed seem to account for similar fractions of employment in most states. Manufacturing, usually considered a national industry, is distributed less uniformly than services and FIRE, which traditionally have been seen as more local. The relatively high variation for government reflects the concentration of federal workers in the District of Columbia and the presence of military bases in some lightly populated states.

New England appears to be an importer of farming and mining products. The low share of

Table 2
Standard Deviations of Location Quotients, Major Industries—1989

Industry	Standard Deviations		Share of U.S.	Location Quotient		
	All States	Large[a] States	Employment (%)	New England	Connecticut	Massachusetts
Farm	1.14	.67	2.3	.25	.18	.12
Agricultural Services, Forestry, Fisheries	.72	.38	1.0	.97	.83	.86
Mining	2.17	1.59	.7	.13	.17	.10
Construction	.21	.15	5.3	1.08	1.04	.97
Manufacturing	.37	.29	14.7	1.12	1.24	1.04
Transportation, Public Utilities	.17	.13	4.7	.80	.84	.82
Wholesale Trade	.20	.16	4.9	1.00	1.03	1.09
Retail Trade	.10	.06	16.6	1.00	.96	.99
FIRE	.18	.18	7.6	1.08	1.39	1.08
Services	.15	.12	27.0	1.10	1.04	1.21
Government	.31	.17	15.2	.80	.76	.79

[a]Populations exceeding 3 million in 1988 (AL, AZ, CA, CT, FL, GA, IL, IN, KY, LA, MA, MD, MI, MN, MO, NC, NJ, NY, OH, OK, PA, SC, TN, TX, VA, WA, WI).
Source: See Table 1.

employment in transportation and public utilities is attributable to transportation and may simply reflect the region's high density. Low government employment means that New England "imports" federal government services; the region may also have a lower-than-average preference for the activities of state and local government workers.[13]

New England's relatively large share of employment in manufacturing would suggest that the region is a net exporter of manufactured products to the rest of the country, while the high fraction of employment in construction appears, with hindsight, to have been an aberration.[14] Both the low variation in location quotients and common sense would argue that construction is a local industry.

The high shares of employment in FIRE and services could indicate that New England exports to other areas but might also mean that New England has a preference for such activities. The low variation in location quotients suggests that these are not national industries. However, such broad aggregation may hide much intra-industry exchange, creating an impression of more local orientation than is actually the case. Services, in particular, is composed of many distinctive industries. Different states may specialize in different industries; but when these diverse industries are combined, the shares of employment in the aggregate are similar.

Accordingly, Table 3 breaks manufacturing, FIRE, and services into their major components. Since manufacturing industries, with a few exceptions, are thought to serve national markets, one might reasonably infer that those segments of the services and FIRE industries with standard deviations similar to those in manufacturing are also nationally rather than locally oriented (Groshen 1987).

As can be seen, the standard deviations for most industries in Table 3 are considerably larger than those for their broad groupings, indicating more specialization and presumably more exporting and importing among different parts of the country. Most manufacturing industries appear more national in their orientation than most industries in the services and FIRE categories. Only two manufacturing industries have standard deviations of location quotients as low as the majority of those in services and FIRE. Moreover, these two—stone, clay, and glass, and printing and publishing—have a clearly local element. Indeed, stone, clay, and glass is sometimes used as an example of an industry that tends to locate close to its markets because of the broad availability of resources and the high cost of transporting the product given its value. Printing includes newspapers, most of which serve a local or possibly regional market; many commercial printing jobs are custom orders for local clients.

Within FIRE, the securities and commodities industry seems to have a national orientation matching that of many manufacturing industries. The industry is concentrated in New York, but Massachusetts also

Table 3
Standard Deviations of Location Quotients for Manufacturing; Finance, Insurance and Real Estate; Services—1989

Industry	Standard Deviations		Share of U.S. Employment (%)	Location Quotients		
	All States	Large States		New England	Connecticut	Massachusetts
Manufacturing	.37	.29	14.7	1.12	1.24	1.04
Food and Kindred Products	.66	.34	1.2	.48	.45	.45
Textile Mill Products	2.21	2.82	.5	.88	.27	.76
Apparel and Other Textile Products	.91	.94	.8	.54	.37	.72
Paper and Allied Products	.89	.70	.5	1.43	.86	1.19
Printing and Publishing	.31	.30	1.2	1.15	1.17	1.24
Chemicals and Allied Products	1.52	.68	.8	.72	1.35	.62
Petroleum and Coal Products	1.00	1.12	.1	.24	.09	.35
Tobacco Manufacturers	2.73	3.57	...	.09	.34	.01
Rubber and Misc. Plastics	.62	.59	.6	1.09	.92	1.05
Leather and Leather Products	2.37	1.09	.1	2.98	.34	1.95
Lumber and Wood Products	1.42	.67	.6	.81	.31	.25
Furniture and Fixtures	1.10	1.06	.4	.54	.44	.47
Primary Metal Products	.85	.92	.6	.75	1.03	.57
Fabricated Metal Products	.56	.57	1.1	1.23	1.88	1.09
Machinery except Electric	.58	.54	1.6	1.46	1.48	1.64
Electric and Electronics Equipment	.54	.39	1.5	1.59	1.46	1.71
Transportation Equip. excl. M.V.	1.04	1.14	.9	1.84	4.40	.84
Motor Vehicles and Equipment	1.46	1.83	.6	.14	.24	.10
Stone, Clay, and Glass Products	.43	.32	.5	.79	.53	.69
Instruments and Related Products	.62	.63	.5	2.08	2.07	2.60
Miscellaneous Manufacturing Industries	2.14	.39	.3	2.44	1.52	1.62
Finance, Insurance, Real Estate	.18	.18	7.6	1.08	1.39	1.08
Banking & Other Credit Agencies	.25	.15	2.0	1.06	1.18	1.10
Security & Commodity Brokers & Services	.61	.78	.4	1.06	.96	1.51
Insurance Carriers	.45	.48	1.1	1.73	3.14	1.38
Insurance Agents, Brokers and Services	.25	.15	.8	.93	.93	.97
Real Estate	.28	.29	3.0	.94	1.10	.90
Combined Offices	.67	.41	...	1.79	2.00	1.61
Holding and Other Investment Offices	.59	.32	.4	1.05	1.12	1.25
Services	.15	.12	27.0	1.10	1.04	1.21
Hotels and Other Lodging Places	2.01	.32	1.3	.90	.57	.82
Personal Services	.14	.09	2.1	.97	.93	.97
Private Household	.37	.37	1.1	.70	.74	.58
Business Services	.24	.21	6.3	1.07	1.08	1.22
Auto Repair, Services, and Garages	.13	.12	1.0	.91	.77	.92
Miscellaneous Repair Services	.25	.12	.5	.89	.87	.86
Amusement and Recreation Services	.44	.24	1.1	.96	.90	.92
Motion Picture	.45	.55	.2	.65	.63	.74
Health Services	.18	.17	6.2	1.20	1.16	1.27
Legal Services	.58	.25	.9	1.08	1.06	1.22
Educational Services	.52	.45	1.4	2.00	1.46	2.62
Social Services	.28	.28	1.3	1.30	1.08	1.47
Museums, Botanical, Zoological Gardens	.89	.69	...	2.00	1.58	2.81
Membership Organizations	.39	.18	1.3	1.00	1.10	.99
Miscellaneous Services	.25	.21	2.1	1.09	1.01	1.25

Note: ... = less than .05.
Source: See Table 1.

has a relatively large fraction of employment in this industry. Insurance carriers also fall in the manufacturing range; and the New England states, especially Connecticut, are exporters to the rest of the country. Banking, along with the agent side of the insurance business, appears to be very locally oriented. Given the apparently local orientation of banking, how should one interpret New England's relatively large share of employment in this industry? One possibility is that the region's share of employment in banking and also in holding and investment offices, which includes bank holding companies, is related to the real estate boom. New England's location quotients for these industries were considerably lower (closer to 1) earlier in the decade.

Of the services industries, hotels and lodging places appears very oriented to a national market because tourism is so important to some of the smaller, lightly populated states. Museums, legal services, and educational services are also distributed unevenly. Museums is a tiny industry, even in Massachusetts where its share of employment is three times the national average. The national orientation of legal services is due largely to the concentration of lawyers in the District of Columbia. New England's above-average share of employment in legal services could indicate the presence of firms serving a national clientele or simply a local taste for litigation.

Education services have often been cited as an important export industry for New England and the figures in Table 3 tend to confirm this. The variation in location quotients is fairly high and New England's share of employment is far above that nationally.[15] Most of the remaining services appear to be distributed fairly broadly, suggesting a more local market orientation. New England's relatively high shares of employment in health and social services could simply reflect higher local use of such services. Business services warrants a closer look, however. It is a large, diverse industry. Its distribution appears very uniform, but it includes a number of firms commonly cited as examples of nationally oriented services companies.

The components of both business and miscellaneous services are presented in Table 4.[16] Computer and data processing services, research and testing, and management and public relations appear to be the most nationally oriented; and New England, especially Massachusetts, has relatively large fractions of employment in all three areas. In both New England and the nation, however, roughly one-half of business and miscellaneous services is composed of building services and other activities that appear very local in nature.

In summary, the market orientation of services and FIRE, as indicated by the variation in location

Table 4
Standard Deviations of Location Quotients, Business and Miscellaneous Services, 1989

	Standard Deviations			Location Quotient		
Industry	All States	Large States	Share of U.S. Employment (%)	New England	Connecticut	Massachusetts
Advertising	.38	.45	.2	.77	.88	.81
Credit Reporting and Collection	.33	.27	.1	.78	.61	.96
Mailing, Reproduction, Stenographic	.43	.40	.2	1.12	1.67	1.10
Services to Buildings	.35	.21	.7	1.04	1.25	1.15
Misc. Equipment Rental and Leasing	.36	.42	.2	.65	.54	.65
Personnel Supply Services	.31	.18	1.4	.98	1.07	1.06
Computer and Data Processing Services	.56	.58	.7	1.25	.90	1.84
Miscellaneous Business Services	.27	.20	1.1	.88	.86	.92
Engineering and Architectural Services	.33	.31	.7	1.26	1.05	1.45
Accounting, Auditing, and Bookkeeping	.25	.22	.5	.97	.99	1.07
Research and Testing Services	1.09	.53	.5	1.32	.74	1.70
Management and Public Relations	.60	.43	.5	1.24	1.06	1.64

Note: These figures are not exactly comparable to those in Table 2 and 3. Footnote 16 explains the difference.
Source: U.S. Bureau of Labor Statistics, ES-202 data and author's calculations.

Table 5
Composition of Employment According to Market Orientation, 1989
Percent

	Share of Total Employment (percent)			
	US	NE	CT	MA
Nationally Oriented Industries[a]	26.2	27.4	28.6	27.7
Farm	2.3	.6	.4	.3
Agricultural Services, Forestry, Fisheries	1.0	1.0	.8	.9
Mining	.7	.1	.1	.1
Manufacturing[b]	11.7	14.1	15.8	12.8
FIRE—National	1.5	2.4	3.9	2.1
Securities & Commodity Brokers and Services	.4	.4	.4	.6
Insurance Carriers	1.1	1.9	3.4	1.5
Combined Offices	...	...	...	...
Services—National	4.5	6.4	5.1	8.2
National Business and Miscellaneous[c]	2.8	3.3	2.8	4.2
Motion Picture	.2	.2	.2	.2
Education	1.4	2.8	2.1	3.7
Museums	...	.1	.1	.1
Government—Federal	4.4	2.9	2.4	2.8
Mixed FIRE and Services[d]	5.0	5.0	4.6	5.0
Locally Oriented Industries	68.8	67.6	66.8	67.8
Construction	5.3	5.8	5.5	5.1
Manufacturing—Local	2.9	2.4	2.3	2.4
Transportation and Public Utilties	4.7	3.8	4.0	3.8
Wholesale Trade	4.9	5.0	5.1	5.4
Retail Trade	16.6	16.7	15.9	16.4
FIRE—Local	5.7	5.6	6.3	5.6
Services—Local	17.8	19.0	18.7	19.9
Government—State and Local	10.9	9.3	9.1	9.2

Note: Components may not add to totals because of rounding.
... = less than 0.05.

[a]Industries were classified as national if the standard deviations of location quotients for large states exceeded 0.35. Manufacturing, Services, and FIRE were allocated according to the industry standard deviations in Tables 3. Private households, however, were considered local. The choice of 0.35, while somewhat arbitrary, was based on the text discussion of the market orientation of manufacturing.

[b]Food and kindred products, printing and publishing and stone, clay, and glass were considered local manufacturing.

[c]Business and miscellaneous services were allocated using the location patterns shown in Table 4 and the employment shares indicated by Table 3.

[d]Services and FIRE industries for which the standard deviation exceeds 0.35 for all states but not for large states.

Source: Author's calculations based on Tables 2, 3, and 4.

quotients, is more local than that for manufacturing. However, some services and FIRE industries appear to serve national markets and these tend to account for larger fractions of employment in New England than the nation. In particular, New England as a whole seems to be a supplier of insurance and education services to other parts of the country, while at least Massachusetts seems to be an exporter of securities services, computer programming, research and management consulting.

These more nationally oriented industries account for a significant fraction of employment in New England, as can be seen from Table 5. Although the bulk of FIRE and services is more locally oriented, the national element accounts for 8.8 percent of New England's total employment. To put this in perspective, manufacturing, excluding a few locally oriented industries, accounts for about 14 percent of regional employment.

This review of the composition of New England's services and FIRE industries also sheds light on the role played by construction and real estate. Construction itself accounted for 5.8 percent of New England employment in 1989. But another 6 percent of employment was in real estate, building services, engineering and architectural services, and banking—all of which appear locally oriented according to this analysis and all of which have close ties to construction and real estate.

Table 6
Volatility of Major U.S. Industries, 1970 to 1989

Industry	Standard Deviations of Percentage Changes in Annual Employment
Total	1.68
Farm	1.94
Agricultural Services, Forestry, Fisheries	1.76
Mining	6.83
Construction	4.67
Manufacturing	3.81
Transportation, Public Utilities	1.98
Wholesale Trade	1.80
Retail Trade	1.56
FIRE	1.88
Services	1.21
Government	.87

Note: Total employment is less volatile than employment in most industries because the industries are not synchronized and an increase in one may offset a decrease in another.

Source: See Table 1.

V. Volatility of Services-Based Economies

Conventional wisdom holds that economies that are more services-oriented are also more stable, less subject to cyclical and other fluctuations. Indeed, in the early 1980s when New England's performance surpassed the nation's by a substantial margin, it was commonly asserted that the region's industry mix, with its relatively large shares of employment in high tech manufacturing—viewed then as recession-proof—and in services, made New England less vulnerable to economic downturns than many parts of the country or even the New England of the past.

The logic is simple. Employment in services and other services-producing industries, such as FIRE and trade, is less volatile than employment in manufacturing or mining (Table 6). Therefore, the more services employment in the mix, the less volatile will be overall employment. Even those concerned about the long-term shift in employment from manufacturing to services have usually not disputed claims that greater services orientation implies more stability.

Table 7 presents the results of regressions relating the volatility of overall state employment to the share of employment in services plus FIRE. (Appendix Tables A3 and A4 substitute FIRE and services, respectively, for the combination of the two.) Volatility is measured as the standard deviation of annual changes in employment. In some of the regressions, additional explanatory variables have been included: the shares of employment in the highly volatile mining and durables manufacturing sectors; state size (as measured by employment), on the grounds that large states might be more diversified and therefore more stable; and the percentage increase in overall employment over the relevant time span.

As can be seen from the results, the presumption that more services employment, or here, more employment in both services and FIRE, confers greater stability does not have a solid foundation. Larger fractions of employment in these industries are not associated with less volatile state economies. The relationship between volatility and employment in services and FIRE was negative in the 1980s; but the relationship was not statistically significant, indicating an association so weak or unstable that it could be attributable purely to chance. (Although the conclusions are generally the same if one substitutes either services or FIRE for the combination of the two, the relationship between volatility and share of employment in FIRE alone was negative and statistically significant for larger states in the 1980s.)

Table 7
Volatility of State Employment Relative to Share of Employment in Services and FIRE
Dependent Variable = standard deviation of percent change in annual state employment

	1970–1989				1970–1979				1980–1989			
	All States		Large States		All States		Large States		All States		Large States	
Constant	2.3	1.7	2.2	.9	1.7	1.5	1.5	.5	2.4	1.2	3.2	1.3
	(3.9)	(2.9)	(3.6)	(1.9)	(2.3)	(2.0)	(1.7)	(.8)	(4.8)	(2.0)	(5.0)	(2.0)
FIRE and Services Share	−.43	−2.5	−.29	−.75	1.5	−2.9	2.8	2.1	−1.6	−.03	−4.2*	−2.4
	(−.2)	(−1.3)	(−.13)	(−.44)	(.5)	(−1.0)	(.8)	(.8)	(−1.0)	(−.02)	(−2.0)	(−1.3)
Mining Share		10.7*		11.0*		−16.3*		−22.3*		15.2*		21.3*
		(2.6)		(2.5)		(−2.6)		(−3.1)		(3.4)		(3.5)
Durables Share		4.0*		7.3*		4.1		4.8*		4.5*		9.7*
		(2.2)		(4.7)		(1.8)		(2.7)		(2.3)		(4.0)
Average Total Employment		−.02		−.03		.02		−.04		−.03		−.02
		(−.6)		(−1.1)		(.3)		(−1.1)		(−1.2)		(−.7)
% Change in Total Employment		.01*		.01*		.04*		.03*		.01		.01
		(5.1)		(5.1)		(4.6)		(4.9)		(1.8)		(1.4)
$\bar{R}^2$	−.02	.38	−.04	.55	−.01	.27	−.01	.53	−.0005	.16	.1	.46

Note: Industry employment shares are the average employment in the particular industry divided by the average total employment for the time period.
*Statistically significant at .05 level; t-statistics in parentheses.

Table 8
Volatility of State Employment, 1970 to 1989

	Standard deviation of employment changes	Services and FIRE share of employment (percent)	Mining share of employment (percent)	Durables share of employment (percent)	Employment Growth (percent)	Average Employment (000s)
Most Volatile States						
Alaska	5.2	23.7	2.9	1.4	115.2	241.5
Wyoming	3.8	23.0	10.4	1.9	64.9	234.2
Michigan	3.2	27.0	.4	20.5	32.7	3,987.9
Arizona	3.1	32.6	1.6	8.9	153.5	1,245.5
Nevada	3.1	47.8	1.4	2.6	176.9	443.7
Least Volatile States						
North Dakota	1.4	27.1	.3	5.6	35.6	835.7
Hawaii	1.4	31.4	...	1.0	62.7	536.3
Nebraska	1.5	24.9	1.5	2.2	34.3	334.1
D.C.	1.5	37.4	...	.3	15.9	692.5
New York	1.5	36.1	.1	9.2	18.3	8,636.4
Greatest Concentration in Services plus FIRE						
Nevada	3.1	47.8	1.4	2.6	176.9	443.7
D.C.	1.5	37.4	...	.3	15.9	692.5
New York	1.5	36.1	.1	9.2	18.3	8,636.4
Florida	2.6	34.6	.3	5.5	132.9	4,607.1
Massachusetts	2.1	34.9	.1	12.9	42.7	3,090.8
Smallest Concentrations in Services plus FIRE						
North Carolina	2.2	21.7	.2	10.0	57.6	3,015.4
South Carolina	2.0	21.8	.1	7.7	59.1	1,494.3
Mississippi	2.0	21.8	1.0	12.0	31.3	1,061.4
Wyoming	3.8	23.0	10.4	1.9	64.9	234.2
West Virginia	1.8	23.4	7.6	9.2	16.1	727.8
New England Concentrations in Services plus FIRE						
Massachusetts	2.1	34.9	.1	12.9	42.7	3,090.8
Connecticut	2.1	31.8	.1	18.9	45.8	1,662.2
Vermont	1.9	30.8	.3	13.4	72.9	261.2
New Hampshire	2.8	30.0	.1	14.4	106.0	478.1
Rhode Island	2.3	29.3	.1	17.3	29.7	477.3
Maine	1.9	26.5	.1	8.1	62.7	544.9

Note: ... = less than 0.05.
Source: See Table 7.

Although the presence of more services and FIRE employment does not significantly reduce volatility, by the same token these industries do not add to volatility. In contrast, the share of employment in durables manufacturing was positively linked to volatility. Particularly in the 1980s, states with more durables manufacturing experienced greater fluctuations in their overall employment. Faster-growing states also tended to be more volatile states. Somewhat surprisingly, large size does not significantly reduce volatility despite the potential for diversification within as well as among industries. The link between employment in mining and volatility is also puzzling, with more mining associated with greater volatility in the 1980s but less volatility in the 1970s.

One reason why the share of employment in services and FIRE does not result in more stable employment is that the degree to which industries move together can be as important as the volatility of individual industries (Rosengren 1990). If industries rise and fall at similar times, total employment will fluctuate more than if the industries' patterns offset one another or are simply unrelated. Thus, if many services and FIRE activities serve a local market—as they do—state employment in these industries will mirror the patterns of the more volatile sectors. This

co-movement may offset any stabilizing effect from greater services employment.

Moreover, in the preceding sections it was argued that a high share of employment in an industry could be taken as an indication that the industry serves a national rather than a local market. Thus, the nature of the services and FIRE industries may be different—and possibly more volatile—in those states where these industries are largest. Again, however, the volatility of individual industries is only part of the story. If the nationally oriented services industries do well when other nationally oriented industries do poorly, the overall pattern of employment may be fairly stable.

The bottom line is that a higher fraction of employment in services and FIRE is no guarantee of stability. As can be seen from Table 8, some of the most volatile states have large shares of employment in services and FIRE and some of the states with the largest shares of employment in services and FIRE are quite volatile. The New England states are neither the most volatile nor the most services-oriented.

VI. Conclusions

In conclusion, one can tell two stories explaining why New England achieved such a remarkable level of prosperity in the 1980s despite declining manufacturing employment and why the ensuing downturn has been so severe. In one, an unsustainable construction and real estate boom took over as the regional engine of growth. In the other, the impetus to growth was provided by nationally oriented FIRE and services industries, which subsequently ran into difficulty. An examination of the composition and timing of the changes in FIRE and services employment tends to support the critical role played by construction and real estate. Although nationally oriented FIRE and services industries grew strongly in the mid 1980s, more locally oriented segments of the industries, particularly those with links to construction and real estate, accounted for disproportionate shares of the new jobs. External factors may have contributed to regional difficulties in FIRE, however, and to the bursting of New England's construction and real estate bubble.

Even if nationally oriented FIRE and services industries were not the primary shapers of the region's economic fortunes, they account for a larger fraction of employment in New England than the nation and they grew vigorously during the 1980s while manufacturing was declining. Thus, policymakers seeking ways of reviving the regional economy should not neglect these industries. But whether nationally oriented services and FIRE can function as regional engines of growth in the manner traditionally associated with manufacturing remains an open question; and contrary to conventional wisdom, a larger fraction of employment in services industries is no guarantee of stability—as New England's recent experience has proven.

Appendix Table A1

Employment Changes in the Services Industries, New England and United States 1984–89

Thousands

	New England						United States					
	Employment	Change in					Employment	Change in				
	in 1984	85	86	87	88	89	in 1984	85	86	87	88	89
Services	1,914	125	98	99	116	83	28,975	1,687	1,291	1,454	1,706	1,624
Hotels and Other Lodging Places	73	5	4	6	5	3	1,420	78	48	75	80	75
Personal Services	118	19	8	6	8	7	2,133	321	117	58	131	123
Private Households	69	−2	−1	−2	−2	−3	1,637	−41	−10	−35	−58	−59
Business Services	377	41	36	35	39	18	5,822	614	450	523	592	545
Auto Repair, Services, Garages	60	5	4	3	2	2	1,107	83	41	55	44	59
Miscellaneous Repair Services	31	1	3	−1	2	2	650	13	22	—21	34	27
Amusement and Recreation Services	71	4	3	4	2	3	1,253	43	54	64	37	83
Motion Pictures	12	...	1	...	...	...	292	8	14	7	11	6
Health Services	509	18	10	20	20	28	6,822	279	278	380	321	392
Legal Services	63	5	6	5	2	2	1,015	65	64	60	44	44
Education Services	205	11	4	...	3	5	1,688	66	37	25	61	36
Social Services	96	7	7	7	10	7	1,242	90	86	88	109	117
Museums, Botanical, Zoological Gardens	5	...	...	...	1	...	39	3	4	3	4	3
Membership Organizations	88	1	2	6	8	2	1,545	2	8	84	110	33
Miscellaneous Services	136	9	11	10	16	6	2,310	62	80	88	187	141
% Change in Total Services		6.5	4.8	4.6	5.2	3.5		5.8	4.2	4.6	5.1	4.6
Memo:												
% Change in Construction		12.3	13.5	11.9	4.6	−5.2		5.8	4.6	2.5	3.5	1.7
% Change in Total Employment		3.8	3.2	3.6	2.7	.3		3.1	2.0	2.7	3.0	2.4

Note: Components may not sum to totals because of rounding. ... = less than 0.5.
Source: See Table 1.

Appendix Table A3

State Volatility and Share of Employment in FIRE

Dependent Variable = standard deviation of percent change in annual state employment

	1970–1989				1970–1979				1980–1989			
	All States		Large States		All States		Large States		All States		Large States	
Constant	2.4	1.5	2.0	.9	1.6	1.2	1.4	.8	2.6	1.6	2.9	1.2
	(4.8)	(3.0)	(4.7)	(2.6)	(2.6)	(1.7)	(2.6)	(1.5)	(6.3)	(3.2)	(6.4)	(2.5)
FIRE Share	−3.1	−8.9	2.8	−4.1	8.8	−7.2	12.7	5.8	−10.5	−7.5	−13.4*	−12.2*
	(−.4)	(−1.1)	(.4)	(−.8)	(.8)	(−.6)	(1.4)	(.7)	(−1.7)	(−1.1)	(−2.1)	(−2.2)
Mining Share		10.8*		11.0*		−15.4*		−22.0*		14.4*		23.9*
		(2.6)		(2.6)		(−2.4)		(−3.0)		(3.2)		(4.1)
Durables Share		4.2*		7.5*		4.4*		4.6*		4.2*		10.2*
		(2.4)		(4.8)		(2.0)		(2.6)		(2.2)		(4.5)
Average Total Employment		−.01		−.02		.02		−.04		−.02		−.01
		(−.3)		(−.9)		(.3)		(−1.1)		(−.6)		(−.6)
% Change in Total Employment		.01*		.01*		.03*		.03*		.02*		.02*
		(5.0)		(4.9)		(4.4)		(4.6)		(2.1)		(2.1)
$\bar{R}^2$	−.02	.38	−.03	.56	−.01	.26	.03	.53	.04	.18	.12	.52

Note: Industry employment shares are the average employment in the particular industry divided by the average total employment for the time period.
*Statistically significant at .05 level; t-statistics in parentheses.

Appendix Table A2

Employment Changes in FIRE Industries, New England and United States 1984–89

Thousands

	New England						United States					
	Employment	Change in					Employment	Change in				
	in 1984	85	86	87	88	89	in 1984	85	86	87	88	89
Finance, Insurance, Real Estate	515	39	49	52	20	0	8621	491	424	379	241	149
Banking and Other Credit Agencies	135	7	13	11	3	−1	2397	81	109	71	0	8
Security & Commodity Brokers and Services	23	2	2	6	2	0	407	21	44	65	10	−7
Insurance Carriers	138	5	7	5	−1	−1	1296	31	73	47	27	17
Insurance Agents, Brokers and Services	45	2	2	4	4	1	858	18	30	78	55	19
Real Estate	153	23	21	20	9	0	3283	329	153	67	125	91
Combined Offices	2	0	0	0	0	0	26	0	−1	−3	1	0
Holding and Other Investment Companies	19	1	4	5	1	0	355	11	16	53	22	21
% Change in Total FIRE		7.5	8.8	8.6	3.0	−.1		5.7	4.7	4.0	2.4	1.5
Memo:												
% Change in Construction		12.3	13.5	11.9	4.6	−5.2		5.8	4.6	2.5	3.5	1.7
% Change in Total Employment		3.8	3.2	3.6	2.7	.3		3.1	2.0	2.7	3.0	2.4

Note: Components may not sum to totals because of rounding.
Source: See Table 1.

Appendix Table A4

State Volatility and Share of Employment in Services

Dependent Variable = standard deviation of percent change in annual state employment

	1970–1989				1970–1979				1980–1989			
	All States		Large States		All States		Large States		All States		Large States	
Constant	2.2	1.5	2.4	.9	1.8	1.4	1.7	.5	2.2	1.0	3.2	1.2
	(4.2)	(2.9)	(3.6)	(1.6)	(2.7)	(2.0)	(1.7)	(.6)	(4.8)	(1.9)	(4.6)	(1.6)
Services Share	−.30	−2.4	−1.2	−.6	1.3	−3.1	2.6	2.8	−1.2	.53	−5.1	−2.2
	(−.1)	(−1.1)	(−.4)	(−.3)	(.4)	(−1.0)	(.5)	(.7)	(−.6)	(.3)	(−1.8)	(−.9)
Mining Share		11.2*		11.0*		−15.8*		−22.5*		15.4*		21.1*
		(2.7)		(2.5)		(−2.6)		(−3.1)		(3.4)		(3.3)
Durables Share		4.0*		7.3*		4.1		4.9*		4.6*		9.6*
		(2.2)		(4.6)		(1.8)		(2.7)		(2.4)		(3.9)
Average Total Employment		−.03		−.03		.008		−.04		−.04		−.02
		(−.7)		(−1.2)		(.1)		(−1.0)		(−1.2)		(−.9)
% Change in Total Employment		.01*		.01*		.04*		.03*		.01		.01
		(5.0)		(5.2)		(4.6)		(5.0)		(1.7)		(1.2)
$\bar{R}^2$	−.02	.38	−.03	.55	−.02	.27	.03	.53	−.01	.16	.08	.44

Note: Industry employment shares are the average employment in the particular industry divided by the average total employment for the time period.
*Statistically significant at .05 level; t-statistics in parentheses.

[1] Many analysts now believe that the competitiveness of New England's manufacturing sector was undermined by the rapid increases in wages and other costs of doing business that occurred during the region's years of prosperity. However, the effect of higher costs on manufacturing competitiveness did not receive much attention until late in the decade; and some might argue that higher cost factors are still of lesser importance than defense cuts and the problems facing high tech industries from market shifts and new competitors.

[2] In particular, the decline in the foreign exchange value of the dollar in 1986 and 1987 was expected to invigorate New England manufacturing, which has traditionally exported more than manufacturing nationwide.

[3] Boston might still prosper as a supplier of financial and other services to the metropolitan area or even the New England region. The terms local and national are used loosely here to indicate a general orientation.

[4] The U.S. Bureau of Economic Analysis data used in this article are based on the 1972 SIC industry divisions; this classification assigns management and public relations, research and development laboratories, and several other industries to "business services." In the 1987 SIC divisions these industries are combined with miscellaneous services in "engineering, accounting, research, management and related services."

[5] Refer to footnote 4.

[6] That the possibility of such adverse consequences did not generate more protest seems, in retrospect, rather puzzling. Perhaps the momentum behind tax reform made protest appear fruitless. Perhaps those most obviously hurt, syndicators of tax shelters and their investors, did not have enough standing with the public or Congress to affect the outcome, while the many real estate and mortgage brokers, banks, insurance companies, and other individuals and institutions that had benefited indirectly from tax-induced increases in real estate values and frequent transactions were not fully aware of their vulnerability. Certainly in New England in 1986, rising real estate values and high levels of both turnover and new construction were generally seen as reflecting economic fundamentals rather than the artificial stimulus of tax shelters.

[7] An equivalent expression compares an area's share of national employment in an industry with its share of total U.S. employment:

$$\frac{x_{ij}/X_i}{x_j/X}$$

[8] If local residents prefer some goods and services over others, the fraction of employment devoted to the preferred industries will be higher than elsewhere even if all the industries' output is consumed locally.

[9] Areas with plentiful natural resources specialize in resource-based industries and sell the output to the rest of the country; areas well endowed with professional and technical workers specialize in high technology industries.

[10] Although classified within the same industry, the products may perform somewhat different functions. One firm may offer higher service quality at a higher price. Reputations may vary.

[11] For industries producing intermediate products, sales to other parts of the country may be indirect rather than direct. An example is the auto industry and its suppliers. If the original equipment auto parts industry is concentrated in the same areas as the auto industry, the former will appear as a nationally oriented industry even though its primary customer is located close by. The location quotient concept is based not on distance, but on the extent to which local production is for local consumption.

[12] The standard deviations for the large states probably provide the better indication of market orientation. In very small states location quotients can be quite extreme and may produce a distorted picture of the industry's pattern of location. However, for some industries, the difference between the standard deviations for the large states and all states may be meaningful. For example, the greater variation in hotels and lodging places for all states (shown in Table 3) reflects the importance of tourism to low population states.

[13] New England's low share of government employment may be related to its high share of employment in educational services. As noted later in the text, educational services appears to be a national industry but the extent of its national orientation may be overstated to the degree that states substitute private for public education.

[14] Other data sources indicate that construction employment in New England has fallen sharply since 1989 and is now a smaller fraction of overall employment.

[15] It should be recognized, however, that education services includes only private education. More employment in private education might be associated with less publicly provided education and less employment in government, rather than the export of education services.

[16] A closer examination of business services requires switching to the Bureau of Labor Statistics' ES-202 employment data. The ES-202 data classify industries according to the 1987 SIC code while the BEA data used elsewhere in this article are based on the 1972 SIC code. The 1987 SIC code combined several industries formerly in business services with miscellaneous services to form the category engineering, accounting, research, management and related services. The BLS and BEA data also differ in that the BEA figures include the self-employed.

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