

# *New England's Links to the World Economy*

Boston State House is the hub of the solar system. You couldn't pry that out of a Boston man, if you had the tire of all creation straightened out for a crowbar.

Oliver Wendell Holmes,  
*The Autocrat of the Breakfast Table*

**H**ave New Englanders' horizons expanded since Oliver Wendell Holmes accused Bostonians of regarding their state house as the "hub of the solar system?"<sup>1</sup> At least the region's business managers are now more apt to view Boston as just one of many nodes on a geodesic dome, an intricate web of fibre optic cables and jet flight paths. This article examines a few of this structure's members: New England's trade and investment links with the world economy. How extensive and pervasive are they? How does New England compare with other parts of the country in terms of its "openness" to (dependence on) international trade and investment? What difference does "openness" make to a region's economic well-being?

This article argues that openness is beneficial because it encourages technology transfer and productivity growth. For a region like New England with few natural resources but its human skills, keeping up with the technological Joneses can be crucially important. In addition, openness may provide a degree of stability in the face of regional and national business cycles, an advantage that could also prove relevant to New England as the region experiences a period of comparatively slow growth.

To assess New England's relative openness, the article surveys New England's links with the world economy: its trade in goods and services, its banking ties, its inbound and (to the extent possible) its outbound foreign direct investments. This survey reveals that during the mid-1980s New England was one of the more open regions in the nation. Its manufacturing work force was highly dependent on exports and relied

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on imported inputs to an above-average extent. While still small, international trade in services was growing rapidly, and exporting service industries were relatively important in the region.

Limited evidence suggests that New England firms also had an above-average readiness to make foreign investments, a tendency likely to encourage a two-way exchange of goods and ideas. By contrast, inbound foreign investment played a below-average role in the regional economy, especially in the manufacturing sector. Although New England continued to attract a disproportionately large share of foreign high-tech investments, its advantage in this regard appears to be dwindling. Along with evidence that New England's recent export growth has been relatively slow, this development suggests that the decline in the region's manufacturing base may be adversely affecting its international trade and investment ties. This erosion does not augur well for New England's continued leadership of innovative industries. However, exporting to expanding foreign markets offers a way—possibly *the* most promising way over the short term—of stabilizing the local manufacturing base. The article concludes with some policy implications that follow from these observations.

### *I. The Benefits of Openness . . . and Some Costs*

A country or region is defined as open to trade when its exports plus imports loom large compared to its gross product. Similarly, it is open to international investment if a large share of its output or employment is linked to the activities of multinational corporations. Economists are accumulating evidence that technical progress is faster in countries that are open to international trade and investment.<sup>2</sup>

How do foreign firms penetrating the U.S. market encourage technology transfer? Foreigners exporting to or investing in this country force U.S. competitors to acquire new, more productive technologies and management systems. The workers and managers employed by foreign investors also absorb new ideas, skills and procedures that they can carry with them to other firms at a later date. In addition, suppliers frequently develop cooperative relationships with foreign investors and learn to meet their technical requirements.

Foreign affiliates or joint ventures of U.S. companies also represent channels through which foreign innovations are absorbed. In addition, such ventures

are able to locate or develop reliable sources of inexpensive foreign inputs. Such inputs may be crucial to meeting worldwide competition successfully. U.S. firms investing abroad may also stimulate U.S. exports by providing better marketing and servicing facilities or, being rooted on foreign soil, by qualifying for foreign government contracts. Currently, with U.S. demand expanding slowly, and demand in Europe and Japan growing relatively fast, many New England firms are acutely aware of the earnings

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*Technical progress is faster in countries that are open to international trade and investment.*

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benefits of a foreign sales base. Foreign sales provide some stability in the face of domestic business cycles. Foreign production facilities also provide some insulation from currency fluctuations.

Studies finding that openness to international trade and investment spurs productivity growth generally deal with nations. Nevertheless, in a country as big as the United States, regions do differ in their dependence on exports or the importance of foreign investment. While some benefits from technology transfer undoubtedly disperse to other parts of the country, others may adhere to the region where the multinational is located. Skills acquired by a local firm's work force or spin-offs established in its vicinity may remain relatively concentrated, for instance. For a region like New England that "lives by its wits" because it has few natural resources, the consequences of openness may be particularly important.

Although economists may point to the many benefits of openness, members of the business community are acutely aware of its costs and feel threatened by them. Because openness forces technology transfers largely by increasing competition, some firms and their employees suffer in its wake. Some firms may close or may abandon certain markets; others will arm themselves with more productive equipment that requires fewer or different workers. Still others will seek to cut costs by using imported inputs; the short-run impact will be a decline in the



demand for local products. Furthermore, while many studies suggest that foreign direct investment can stimulate exports, some foreign production clearly replaces them. For example, many New England firms report that they make 40 to 50 percent of their sales overseas but export very little because they serve foreign markets primarily from their overseas subsidiaries. Most likely, the net impact of foreign direct investment on exports varies over time and by industry.

Although openness involves both costs and benefits, regions that trade ideas and skills for resources have little choice but to embrace it with enthusiasm. By adopting a thoroughly global outlook, a region's leaders can maximize the benefits of openness; a half-hearted approach may maximize its costs.

## II. New England's Trade in Goods and Services

The following section describes New England's international trade links as a first step in assessing the region's relative openness. The section starts by discussing the region's overall trade orientation. It then briefly explores the general role of imports in the New England economy. A more specific review of the region's merchandise exports follows. Finally, the section surveys fragmentary information on the region's services trade.

### Orientation

As the seafarers' collections at the Peabody Museum in Salem attest, New Englanders have a long tradition of reaping the opportunities inherent in foreign trade. According to the latest data (based on manufactured exports in 1986), New England remains the most export-dependent region in the nation (Table 1). In Connecticut and Massachusetts (the first and third ranked states in the country) 79 and 68 out of every 1,000 private sector workers were employed in export-related jobs. The U.S. average was 53. All the New England states except Maine have above-average export dependence.

The region's reliance on exports reflects its industry mix: it has an above-average concentration of employment in electrical equipment, nonelectrical machinery, and instruments, three of the four industries with the highest fractions of export-related employment. In Massachusetts, New Hampshire and Vermont, moreover, this export-dependence also re-

flects above-average export activity within individual industries. In a majority of industries for which data are available, these three states had above-average export-related employment.

Export dependence does not necessarily imply export orientation, however. Export dependence varies with the share of industry (or regional) output that is exported either directly or indirectly as part of another product. Export orientation reflects the balance between direct exports and competing imports. For example, among manufacturing industries, primary metals is one of the most export-dependent industries, with 23 percent of industry employment related to exports in 1986. Nevertheless, most (87 percent) of this employment reflects metals used in other directly exported products rather than direct exports of steel or aluminum. Indeed, as the voluntary export restraint program for steel attests, the primary metals industry is more accurately characterized as import-competing than as export-oriented.

Table 2 shows the U.S. regions' overall trade orientation. In the table U.S. manufacturing industries are grouped according to the ratio of exports plus imports to industry shipments in 1986. Where exports plus imports represented more than 15 percent of total shipments, the industry is considered a

Table 1  
*Total Employment Related to  
Manufactured Exports as a Share of  
Private Sector Employment, 1986*  
Percent

New England	6.8
Mid Atlantic	5.4
East North Central	6.2
West North Central	5.0
South Atlantic	4.3
East South Central	4.7
West South Central	2.6
Mountain	3.9
Pacific	6.0
United States	5.3

Definition of regions: New England (NE) = CT, ME, MA, NH, RI, VT; Mid Atlantic (MAT) = NJ, NY, PA; East North Central (ENC) = IL, IN, MI, OH, WI; West North Central (WNC) = IA, KS, MN, MO, NE, ND, SD; South Atlantic (SAT) = DE, FL, GA, MD, NC, SC, VA, WV; East South Central (ESC) = AL, KY, MS, TN; West South Central (WSC) = AR, LA, OK, TX; Mountain (MT) = AZ, CO, ID, MT, NV, NM, UT, WY; Pacific (PAC) = AK, CA, HI, OR, WA.

Source: U.S. Bureau of the Census, *Exports from Manufacturing Establishments: 1985 and 1986*, Analytical Report Series (AR86-1), Table 2a, January 1989.

Table 2

*Percentage of Regional Manufacturing Employment in the Export-Oriented, Two-Way, Import-Vulnerable and Nontraded Goods Industries, 1987*

	PAC	NE	MT	ESC	MAT	ENC	WSC	WNC	SAT	US
Traded Goods Industries	69.02	66.85	64.91	61.64	61.49	61.30	60.91	55.84	52.62	61.12
Export-Oriented	21.75	19.27	21.51	9.69	13.10	8.68	16.46	14.27	13.02	14.15
Chemicals	2.96	3.30	3.29	5.14	7.98	4.88	7.43	4.13	6.82	5.41
Office and Computing Machines	4.38	5.91	7.86	1.00	2.44	.67	2.12	3.64	1.49	2.55
Other Transportation Equipment	14.40	10.06	10.35	3.56	2.68	3.12	6.91	6.50	4.71	6.19
Two-Way	31.69	32.57	31.27	19.09	25.72	24.87	25.04	25.38	19.08	25.41
Other Machinery except Electrical	4.86	7.99	5.12	6.41	7.36	13.26	8.46	10.68	4.66	8.08
Electronic Components and Accessories	6.27	6.13	8.91	.74	3.14	1.45	4.54	2.52	1.97	3.31
Instruments	5.02	6.85	5.92	1.18	6.01	2.24	1.96	4.05	1.49	3.57
Lumber	6.63	2.51	7.18	6.23	1.76	2.26	4.75	3.02	4.82	3.91
Other Electric and Electronic Equipment	8.90	9.09	4.14	4.53	7.45	5.65	5.33	5.11	6.14	6.53
Import-Vulnerable	15.59	15.01	12.14	32.86	22.67	27.75	19.40	16.19	20.52	21.57
Apparel	5.21	3.07	2.50	13.80	8.65	1.60	5.55	2.80	8.82	5.77
Leather	.29	2.03	.33	.80	.99	.43	.86	1.43	.29	.71
Primary Metals	2.33	2.74	2.50	4.42	4.50	6.72	2.79	2.23	2.47	3.86
Misc. Manufacturing	1.68	4.48	2.61	1.83	2.97	1.53	1.40	1.70	1.04	1.96
Household Appliances, Radio and TV Receiving Equipment	.77	.54	.55	2.98	.55	1.99	.77	1.17	.61	1.14
Petroleum	1.15	.15	.71	.64	.90	.64	3.67	.52	.21	.88
Motor Vehicles and Equipment	1.57	.66	1.26	3.68	2.19	12.53	2.39	4.41	2.26	4.51
Furniture	2.58	1.34	1.68	4.70	1.91	2.30	1.98	1.94	4.82	2.72
Nontraded Goods Industries	30.98	33.15	35.09	38.36	38.51	38.70	39.09	44.16	47.38	38.88
Printing	7.11	7.92	10.54	5.17	10.63	7.14	7.32	10.47	6.74	7.88
Food	9.23	3.70	11.74	8.44	7.35	7.14	12.12	15.33	8.15	8.58
Tobacco	0	.04	0	.61	.09	0	0	0	1.37	.29
Fabricated Metals	5.90	7.82	4.82	6.66	6.89	11.35	7.67	7.23	4.41	7.39
Stone, Clay and Glass	2.42	1.82	4.36	2.83	3.48	2.85	4.33	2.70	3.50	3.07
Textiles	.72	3.01	.21	5.49	2.50	.31	.38	.20	15.75	3.79
Rubber and Plastics	3.07	4.46	2.62	5.10	3.72	6.22	3.86	4.00	3.95	4.36
Paper	2.53	4.39	.79	4.06	3.83	3.69	3.40	4.22	3.51	3.52

Source: U.S. Bureau of Labor Statistics, ES202 release for 1987.

traded-goods industry. The traded-goods industries are then divided into export-oriented industries (if exports were greater than imports), import-vulnerable (if imports were at least three times greater than exports) and two-way-trade-oriented (if imports exceeded but were less than three times exports). These criteria clearly reflect the United States' current sizable trade deficit.

According to Table 2, after the Pacific, New England is the most open region in the nation. Its

manufacturing work force has a well-above-average dependence on the export-oriented industries (chemicals, office and computing machines, and transportation other than autos). New England is also the region most dependent on industries where two-way trade is important. Two-way trade arises in imperfectly competitive industries to take advantage of economies of large-scale production and specialization. A significant part is likely to take place intrafirm when producers purchase inputs from abroad or



rationalize production among countries. Finally, Table 2 also indicates that New England's manufacturing employment is one of the least import-vulnerable in the nation. While leather and miscellaneous manufactures continue to play an above-average (but diminished) role in New England, apparel does not. Competition has been driving this once important regional industry south, west and abroad for decades now. By contrast, the other major import-competing industries, motor vehicles and primary metals, have never been prominent in the region.

### Imports

Imports mean "competition" first and foremost to many U.S. firms and their employees; however, as Table 2 established, the industries most vulnerable to import competition do not currently play a major role in New England. Less obviously, imports also serve an important role in the U.S. economy as components in domestically produced goods. Indeed, the share of imported inputs in total inputs seemingly grew significantly in the early 1980s as the huge dollar appreciation forced U.S. firms to seek low-cost components offshore. Estimates based on data from input-output accounts indicate that the ratio of imported manufactured inputs to total manufactured inputs rose from 9 percent to 15 percent between 1977

and 1985. Accordingly, certain industries and regions may be particularly dependent on imports rather than vulnerable to them.

The available state import data provide little satisfactory information about the products' ultimate destination. Nevertheless, input-output tables developed by the U.S. Department of Commerce permit estimating the role of manufactured imported inputs in each manufacturing industry. The role of imported inputs in each region can then be estimated by calculating an average ratio of imported to total manufactured inputs, with the industry ratios weighted by their shares of regional manufacturing employment.<sup>3</sup>

Table 3 displays the results of this procedure. According to these estimates, the regions vary remarkably little in their use of manufactured imported inputs. Nevertheless, New England and the East North Central are the two regions where manufacturers appear most reliant on imported inputs. By contrast, the South Atlantic appears least dependent on imports. These results are consistent with the fact that industries where two-way trade prevails are important in New England while industries producing nontraded goods predominate in the South Atlantic.

The results shown in Table 3 are likely to underestimate New England's dependence on imports because they take no account of regional differences in a given industry's use of imported components. New England's coastal and border position suggests that the region's manufacturers may be more likely to use imported inputs than their counterparts in other parts of the country. In addition, New England's limited resource base also implies above-average dependence on imported raw materials. For instance, New England accounts for a disproportionately large share of U.S. imports of petroleum, natural gas and electric power. Finally, New England firms appear to be relatively active in establishing foreign affiliates, as will be discussed in a later section. Such investments would alert parent firms to good foreign sources and encourage intrafirm trade. In other words, the numbers hint and common sense suggests that New England is relatively open to the use of imports even if it is no longer particularly vulnerable to import competition.

### Exports

The data in Tables 1 and 2 established that New England is both export-dependent and export-ori-

Table 3  
*Weighted Average<sup>a</sup> Share of Manufactured Imported Inputs<sup>b</sup> in Total Manufactured Inputs<sup>b</sup>, by Region, 1985*  
Percent

	Weighted Average Share
New England	14.1
Middle Atlantic	13.9
East North Central	14.3
West North Central	14.0
South Atlantic	13.0
East South Central	14.0
West South Central	13.8
Mountain	13.7
Pacific	13.9

<sup>a</sup>Weighted by 1986 employment.

<sup>b</sup>Plus noncomparable imports.

Source: US Bureau of Labor Statistics 1986 ES202 release, U.S. Bureau of Economic Analysis, "Annual Input-Output Accounts of the U.S. Economy 1985," *Survey of Current Business*, January 1990.



ented. This section will describe the commodity breakdown and geography of New England's merchandise exports. It will also discuss the implication of recent export trends.

What does the "land of the bean and the cod" export currently? Some cod, not very many beans, and primarily sophisticated machinery, aircraft equipment and instruments. Leather and paper products also loom large in Maine, miscellaneous manufactures and textiles in Rhode Island, and food and fabricated metals in Vermont.

The two primary sources of information on state exports confirm this general impression. The two series, both compiled by the Census Bureau, differ, however. The first (used above in the discussion of export-dependent employment) is titled "Exports from Manufacturing Establishments." It is based on export figures reported by manufacturers, with residual exports from wholesalers, export agents and so forth allocated according to state share of U.S. industry employment. This source probably provides the best available data on the states where production of manufactured exports occurs. The data appear with a considerable lag, however, (the latest are for 1986) and do not provide information on nonmanufactured exports or on export destinations.

A second, relatively new and more current series includes nonmanufactured exports and export destination. The data in this report, "U.S. Exports by State of Origin of Movement," indicate the state where the product began its foreign journey as reported by the exporter (wholesaler, broker, manufacturer). This "origin" may be the production site, assembly point, warehouse, location of wholesaler or port of exit. This new series suggests that the value of manufactured products exported from the New England states is significantly less (perhaps one-third less) than the value of manufactured exports produced in New England as shown in the "Exports from Manufacturing Establishments." Because they provide a view of New England's export markets and recent (albeit short) export trends, the rest of this section will focus on the data in the new series.

According to this new Origin-of-Movement data,<sup>4</sup> five industries—industrial machinery and computer equipment, electronic and electric equipment, instruments, transportation equipment (largely aircraft related) and chemicals—accounted for over three-fourths of the region's exports in 1988 (Table 4). The instruments and industrial machinery and computer industries were roughly twice as important in regional as in national exports. As a supplement to

the published data, conversations with New England exporters indicate that specialized, even made-to-order, capital goods and defense-related products form an important part of the region's export base. Since demand for this type of product is not very price sensitive, a significant portion of New England exports reflects foreign growth rates and government procurement policies rather than exchange rate movements. While currency movements remain important for many other New England products, the region may well be less sensitive to exchange rate developments than other parts of the country.

New England's primary export markets are Canada, the United Kingdom, Japan and Germany, as

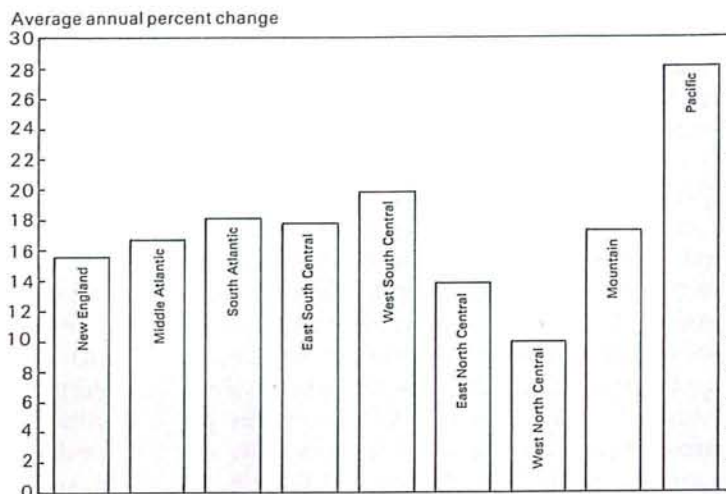
Table 4  
*Industry Composition of New England and U.S. Exports, 1988*  
Percent

	N.E.	U.S.
Total, All Industries	100.0	100.0
Industrial Machinery, Computer Equipment	35.3	18.2
Electronic, Electric Equip. exc. Computer	13.1	10.2
Instruments and Related Products	13.0	5.6
Transportation Equipment	11.1	17.7
Chemicals and Allied Products	4.4	10.9
Paper and Allied Products	3.0	2.4
Fabricated Metal Products	2.4	2.5
Scrap and Waste	2.3	1.4
Primary Metal Industries	2.2	4.0
Rubber and Misc. Plastics Products	1.9	1.7
Food and Kindred Products	1.9	5.4
Misc. Manufacturing Industries	1.6	1.4
Leather and Leather Products	1.3	.3
Used or Second-hand Merchandise	.9	.6
Textile Mill Products	.9	.8
Lumber and Wood Products	.9	1.8
Special Classification Provisions	.8	1.3
Stone, Clay, and Glass Products	.7	.8
Printing and Publishing	.7	.6
Agricultural Production—Livestock	.4	.4
Apparel and Other Textile Products	.4	.7
Agricultural Production—Crops	.4	7.1
Nonmetallic Minerals, except Fuels	.3	.4
Furniture and Fixtures	.1	.3
Petroleum and Coal Products	.1	1.2
Metal Mining	.1	.3
Bituminous Coal and Lignite Mining	.1	1.3

Source: Massachusetts Institute for Social and Economic Research, The State Data Center, University of Massachusetts, Amherst, based on U.S. Bureau of the Census, *U.S. Exports by State of Origin of Movement, 1988*.

Chart 1

*Merchandise Export Growth  
by Region, 1987-89*



Source: U.S. Bureau of the Census data, adjusted by Massachusetts Institute for Social and Economic Research, University of Massachusetts.

Table 5 shows. These four countries account for over 50 percent of the total. Compared with the nation, New Englanders are more dependent on exports to European countries, about equally dependent on exports to neighboring Canada, and less dependent on Mexico and the Latin American countries. Surprisingly, perhaps, New England exports about hold their own in sales to Japan, Australia, Hong Kong and Singapore (but not to Korea and Taiwan). Although the Japanese market is hard to penetrate, New Englanders have had some success with products embodying unique technology or with products sold through joint ventures with Japanese companies.

The relationship between the origin of movement and the production of exports will not become clear until several years of overlap between the two series have accumulated. Nevertheless, the new data presumably provide some clues concerning export performance. If so, the trend should cause New Englanders concern, because for the (very short) period for which these data are available, New England exports have been growing more slowly than those in the nation. Indeed, as shown in Chart 1, New England had the third slowest export growth in the country from 1987 to 1989.

Table 5  
*New England's 15 Major Foreign Markets,  
as Measured by Export Share, 1988*  
Percent

	New England	United States
Canada	20.0	19.5
United Kingdom	12.3	5.9
Japan	12.1	12.1
Federal Republic of		
Germany	6.6	4.6
Netherlands	4.8	3.2
France	4.3	3.2
Australia	3.4	2.2
Ireland (except		
Northern Ireland)	2.9	.7
Italy	2.8	2.2
China, (Taiwan)	2.4	3.9
Korea, Republic of	2.3	3.6
Belgium	2.2	2.3
Singapore	2.2	1.8
Mexico	2.0	6.6
Hong Kong	1.9	1.9
Total Shown	82.2	73.9

Source: Mass. Institute for Social and Economic Research, The State Data Center.



What explains New England's relatively weak export performance? The region's industry mix could provide a partial explanation. Because New England exports are not very price sensitive, they may not have benefited from the post-1985 dollar depreciation as exports from other regions have. Nevertheless, Data Resources, Inc. has developed data indicating that even when industry mix is taken into account New England's export growth did not match its potential, as measured by national performance, over this period (Walls 1990). Alternatively, market mix may have contributed to the region's relatively weak export growth, because New England firms send a well-below-average share of their exports to Mexico, Taiwan and Korea, three important markets where U.S. exports grew particularly rapidly over this period. Moreover, among the four regions with the slowest export growth rates, three—the East North Central, New England and the Mid Atlantic—have an above-average readiness to establish foreign affiliates, as will be discussed in a later section. Accordingly, overseas production at foreign affiliates may have reduced exports from these regions to an above-average extent.<sup>5</sup>

Nevertheless, as the bar graph shows, the regions with the most rapid export growth are generally Sunbelt areas. Recently, these regions have been gaining while New England has been losing manufacturing employment share. Unless New England regains its attractiveness as a manufacturing site, it may lose its export business and reduce its ability to weather periods of slow domestic growth by increasing foreign sales.

Indeed, with current softness in defense, computers, real estate and finance—the major sectors propelling the New England economy over the past decade—rapidly expanding foreign countries may provide the most promising markets for many New England firms. Although the region has been the most export-dependent in the country, New England manufacturers appear to have ample scope for further increasing exports. Three firms appear to supply half of all Massachusetts merchandise exports; twelve firms account for 80 percent (Franko 1990). If Massachusetts is representative, not very many New Englanders have expanded their horizons very far.

For starters, New England should be in a good position to benefit from the European Community's 1992 initiative and the opening of markets in Eastern Europe. After all, as Tables 4 and 5 show, the region's primary exports are capital goods, its primary markets are European, and some European countries are

enjoying a capital spending boom. The New England states are also in a good geographic position to benefit from export opportunities in neighboring Canada as the U.S.–Canada Free Trade Agreement reduces trade barriers over the next decade.

### *Services Trade*

In addition to its \$319 billion in merchandise exports, the United States sold \$62 billion in travel, passenger transportation and other private services in 1988. Although only one-fifth the value of merchandise exports, service exports have grown faster than goods trade in recent years. For instance, travel receipts rose 64 percent from 1984 to 1988, compared with 45 percent for merchandise trade. While several breaks in the series (reflecting improved coverage) make a proper comparison impossible, "other private services" seem to have grown several times faster than merchandise exports during the 1980s. Regional information is available for a few categories of private service exports.

*Travel.* The Boston Marathon, the Head of the Charles Regatta, even a trip through Harvard or Copley Square on a summer morning have become international events, as more and more foreign travelers are finding it possible to visit the United States. According to a U.S. Travel and Tourism Administration (USTTA) survey, foreign travelers spent \$29.9 billion in the United States in 1988 (plus another \$8.9 billion for passenger services provided by U.S. companies).

The USTTA's latest regional data (for 1985–86) indicate that foreigners spent 4.7 percent of their U.S. travel expenditures (or \$1.4 billion) in New England. By comparison, New England earned 5.6 percent of domestic tourism expenditures and contained 5.3 percent of the U.S. population at that time. Massachusetts ranked sixth in foreign travel receipts in 1985–86, after California, Florida, New York, Hawaii and Texas. Beautiful as Cape Cod and the Berkshires are, fascinating as the Freedom Trail, it would probably not be realistic to expect Massachusetts to outshine those other five states. Because New England earns a larger share of domestic than of foreign travel expenditures, some observers worry that New England may not be attracting its "fair share" of foreign tourists and urge greater efforts to entice them. While additional promotion aimed at international tourists might well prove productive, it is worth remembering that foreign travel spending amounts to less than 10 percent of domestic tourism expenditures.



Table 6  
*Selected Services Share of Total Private Sector Employment, for 1988*  
 Percent

	NE	MAT	ENC	WNC	SAT	ESC	WSC	MT	PAC	NE/US <sup>a</sup>
Higher Education	1.9	1.4	.6	.8	.6	.5	.5	.3	.7	14.7
Insurance	3.4	2.7	2.3	2.6	1.9	1.7	2.1	1.8	2.1	9.6
Financial Services	3.5	4.8	3.0	3.0	3.0	2.7	3.1	3.2	3.4	6.4
Business Services	5.2	5.9	4.9	4.5	5.6	4.0	5.1	5.1	5.8	6.3
Accounting, Auditing and Bookkeeping	.5	.6	.6	.5	.4	.3	.5	.6	.7	6.0
Advertising	.2	.4	.3	.2	.1	.1	.2	.2	.3	4.5
Computer and Data Processing	1.0	.8	.6	.6	.9	.4	.7	.7	.9	8.1
Engineering, Architectural Construction and Mining	6.9	6.3	5.5	5.9	9.2	7.7	9.5	9.2	7.0	6.0
Legal Services	.9	1.2	.8	.8	.8	.6	1.0	1.0	1.1	6.2
Management and PR	.8	.6	.2	.6	.6	.3	.5	.5	.7	7.0
Medical Services	9.0	8.9	8.7	9.5	6.9	7.9	8.2	7.5	7.1	7.2
R&D, Commercial Testing	.3	.3	.2	.1	.2	.3	.2	.7	.4	5.8
All Selected Services										7.0
All Private Sector										6.5

<sup>a</sup>New England's share of U.S. employment.

Source: U.S. Bureau of Labor Statistics, 1988 ES202 release.

*Other Private Services.* Table 6 provides employment data for the service industries included in the Commerce Department's recent efforts to improve its trade statistics. As the data show, a majority of these industries play a larger role in New England than in the national economy. The New England work force is more dependent than that of any other region on higher education, insurance, computer and data processing, and management consulting and public relations, and is second most dependent on financial services (after the Mid Atlantic) and on medical services (after the West North Central). Accordingly, private service exports should have particular importance for this region.

U.S. exports of "other private services" amounted to \$24.3 billion in 1988. In the absence of any information on regional service exports, allocating these export earnings by regional share of U.S. industry employment suggests that New England could claim \$1.7 billion (or 7 percent). (See the box for additional information on exports of educational, medical, and insurance services.)

While foreign trade remains a peripheral activity for several service industries, service exports are growing fast and have already reached significance in travel, education and computer software. Given New England's relatively heavy dependence on these ser-

vice industries, the region has an important stake in the successful outcome of the current General Agreement on Tariffs and Trade (GATT) negotiations on services trade and investment.

### *Banking Links*

A region's banks provide key links to the world economy: they facilitate trade and investment by providing finance and knowledge to local companies and to foreign firms entering the region. Although a few New England banks have been active overseas for generations, Boston's development as an international banking center has undoubtedly been curbed by its proximity to New York. Large regional corporations can easily turn to the major money center banks in New York to handle their international banking needs. Similarly, Boston has relatively few foreign banking facilities,<sup>6</sup> in part because these institutions have found they can serve New England from New York, which many have chosen as their "home state."

Nevertheless, by some measures banks in the Boston Federal Reserve district, which covers New England except for Fairfield County, appear to be as open to international business as their counterparts in the Chicago and San Francisco districts, the two



### *Private Service Exports*

Education is the one industry for which a good deal of detailed information on private service exports is available at the regional level. According to the Institute of International Education (1989), New England attracted 8 percent of all foreign students and 17 percent of foreign students attending private institutions in 1988–89. These figures are slightly greater than the region's shares of employment in all and in private institutions. Moreover, the region leads the nation in foreign students to total students in higher education, as Table 7 shows. With almost 20,000 foreign students from 163 countries, Massachusetts ranked fourth in absolute terms after California, New York and Texas. In all of New England, 29,000 foreign students spent \$329 million in 1988–89, according to estimates by the Institute of International Education. The region's share of the foreign student pool has been increasing, in part because New England schools appeal to Europeans and European representation has been growing. New England also attracts close to the national average share of students from the Pacific area, the largest group; it is less popular with students from Latin America, the Middle East (mostly Iran) and Africa, regions with declining shares of the student population.

Educating foreign students is probably an investment in the region's future. These visitors provide U.S. students with a world view and future business contacts. A few may eventually return to New England as foreign investors, lured by impressions gained in their undergraduate years. If some students stay, they enhance the region's supply of skilled labor. In the past, immigrants have made many significant contributions to U.S. technological advancement.

Within the business services industry, New England computer software companies also ap-

pear to benefit importantly from foreign sales. Among 800 Massachusetts software companies listed in *The Complete Guide to the Massachusetts Software Industry*, over half have foreign distribution and one-fourth offer foreign language versions of their products. Of those providing foreign sales data, one-fourth estimate that foreign sales are greater than 30 percent of total sales (Massachusetts Computer Software Council, 1989, p. 58).

From time to time, royalty and other famous foreigners travel great distances to seek help from New England's prestigious teaching hospitals. Accordingly, one might suspect that the region earns more than its proportional share of medical service export receipts. Support for this hypothesis is not readily available, but other data indicate that hospitals still have something in common with barber shops—their services are largely directed to local populations and are not widely traded. Only 0.1 percent of all patients treated in Massachusetts hospitals in 1989 were foreigners. Moreover, at several of the area's well-known teaching hospitals, foreigners accounted for a mere 1 percent or less of the patients treated on an inpatient basis in that year.

The U.S. insurance industry also remains largely closed to trade. Insurance industry export receipts equaled 0.7 percent of life insurance company premiums (life, annuity and health) in 1988. Including other types of insurance premia in the comparison would reduce the ratio even further. (The asset links were somewhat stronger, with foreign securities accounting for 3.5 percent of total life insurance company assets in 1988.) Apparently, foreign insurance companies have been more active in the United States than U.S. companies abroad: insurance is one of the few private services where U.S. payments exceed receipts—in part because of barriers to entry into foreign insurance markets.

other regions that have developed as second-tier international banking centers. Table 8 provides several measures of domestic bank involvement in international activities. In column 1, total acceptances and commercial letters of credit plus commercial and industrial loans to foreigners as a share of commercial bank assets serve as a proxy for bank involvement in

trade finance.<sup>7</sup> The ratio of foreign assets to total bank assets, shown in column 2, measures the role of international lending more broadly. According to the data in these first two columns, banks in the New York and San Francisco Federal Reserve districts are way ahead of all the others in involvement in international activities. Next most active were banks in the



Table 7  
*Foreign Students as a Share of Total Students in Higher Education, by Region*  
 Percent

New England	4.6
Mid Atlantic	4.0
East North Central	3.3
West North Central	3.5
South Atlantic	3.5
East South Central	2.3
West South Central	4.2
Mountain	3.7
Pacific <sup>a</sup>	4.3
United States	3.9

<sup>a</sup>Excluding Hawaii and Alaska.

Sources: Brizius & Foster, *State Policy Databook 1989*, Table G-36 and Institute of International Education, *Open Doors 1988-1989*, Table 5-5.

Chicago and Boston districts. Nevertheless, compared to national average figures, the ratio of Boston district trade finance to regional exports was below average in 1989. This result may suggest that New England exporters are turning to banks outside of the district to finance their international trade. It has also

been posited,<sup>8</sup> however, that New England's high-tech exporters tend to sell "open book," in effect providing their customers with short-term credit themselves. In addition, intra-firm trade is largely company-financed, and many New England firms export through their foreign subsidiaries.

Columns 3 and 4 of table 8 provide measures of bank dependence on income from foreign operations. Column 3 shows non-interest income from international operations in relation to total non-interest income. Non-interest income from international activities includes foreign exchange earnings and fees related to letters of credit, mergers and acquisitions, and private banking, money transfer and custodial services. For example, one Boston bank has developed a specialty in providing safekeeping services for the mutual fund industry, which requires income collection, settlement, cash management and portfolio information on a global basis. This bank also provides worldwide custodial services for corporate and other pension funds. Column 4 relates net interest income from international operations to total net interest income. Together columns 3 and 4 indicate that banks in the Boston, Chicago and San Francisco districts are similarly dependent on international operations. Currently, moreover, the Boston district is one of the few where international operations are

Table 8  
*Selected Bank Performance Ratios for All U.S. Commercial Banks, Fully Consolidated, by Federal Reserve District, for the Fourth Quarter of 1989*  
 Percent

District	Total Acceptance and Commercial Letters of Credit plus C&I Loans to Foreigners/Total Assets (1)	Foreign Assets/Total Assets (2)	Non-interest Income from International Operations/Total Non-interest Income (3)	Net Interest Income from International Operations/Total Net Interest Income (4)
Boston	2.2	1.6	8.2	4.3
New York	9.3	10.9	39.4	20.4
Philadelphia	.8	.7	1.5	-1.2
Cleveland	1.3	1.0	2.3	1.5
Richmond	.6	.4	1.9	.2
Atlanta	.6	.2	.8	.1
Chicago	2.1	1.8	7.3	2.4
St. Louis	.9	.1	.1	.0
Minneapolis	.7	.1	1.1	.3
Kansas City	.7	.1	.2	-.0
Dallas	1.0	.7	.2	.4
San Francisco	4.6	4.4	9.7	3.0
U.S. Total	3.5	3.7	14.2	5.0

Source: Call report data from the Board of Governors of the Federal Reserve System.



providing a significant positive contribution to return on assets. This outcome reflects the Boston banks' decision to write off their loans to heavily indebted developing countries relatively early—in 1987 and 1988, whereas banks in Chicago, San Francisco and New York continued to make large charge-offs of LDC loans in 1989. The regional banks have had more flexibility in this regard than have the major money center banks that were more heavily encumbered by their LDC loans.

### III. New England's Investment Links

The article now turns to New England's direct investment links to the world economy. These investment transactions provide important channels for the international dispersion of technology. By diversifying a firm's market and production base, they also help to stabilize earnings in the face of national business cycles and exchange rate swings. Because the Commerce Department publishes no state data related to U.S. investment abroad, the section on outbound investment is very brief. A more detailed review of the changing role of inbound foreign direct investment in New England follows.

#### *New England's Direct Investment Abroad*

Table 9 presents regional data on the number of firms with foreign operations in relation to private sector employment. The company data are from the *Directory of American Firms Operating in Foreign Countries*, which covers approximately 3,000 firms and is based on annual reports and survey responses. The data presented here do not reflect either the size or the number of the firm's foreign facilities—just the fact that foreign operations exist. The intent was to find a simple indicator of regional differences in business readiness to invest abroad—an indicator of "openness to outbound foreign investment."<sup>9</sup>

As Table 9 shows, New England firms are active foreign investors. According to our measure of openness to outbound investment, New England ranked second in the nation after the Mid Atlantic states. As outlined above, these foreign investments enhance the New England firms' ability to promote U.S. exports through improved marketing and servicing facilities. These affiliates also provide, or can scout about to locate, offshore sources of inexpensive inputs. With a foot in foreign markets, they can stabilize company earnings over national business cycles

Table 9  
*U.S. Firms Operating in Foreign Countries in Relation to Private Nonfarm Employment, by Region, 1987*

Region	Number of Firms	Firms Per Million Employed
New England	314	46.1
Middle Atlantic	952	56.7
East North Central	681	38.0
West North Central	136	17.6
South Atlantic	195	10.6
East South Central	49	8.5
West South Central	201	19.5
Mountain	59	10.8
Pacific	382	23.3
TOTAL	2969	28.1

Source: World Trade Academy Press, *Directory of American Firms Operating in Foreign Countries*, vol. 1, 1987, and U.S. Bureau of Economic Analysis, 1969–1988 BE 55 release.

and exchange rate swings. And, finally, these overseas outposts observe and absorb foreign innovations. In a highly competitive world these many advantages are crucial to New England firms' continued viability and probably more than compensate for the inevitability that some overseas production substitutes for New England exports.

#### *Foreign Direct Investment in New England*

Recent Japanese purchases of Tiffany and Company, Rockefeller Center, and Columbia Pictures raised eyebrows all across the nation. After all, these companies represent some of the country's crown jewels, and what could be closer to America's heart than its motion picture industry? New England institutions acquired by foreigners in recent years include the *Boston Herald*, Lafayette Place, and Jordan Marsh.<sup>10</sup> Accordingly, foreign ownership of these and other New England assets has produced a similar sense of disquiet at the regional level. Because Americans' fears that foreigners are acquiring control of the U.S. economy have been thoroughly addressed elsewhere (for example, Harris 1989; Rosengren 1988; Little 1988), the following discussion will focus more narrowly on concerns about the local impact of foreign investments.

These highly visible transactions arouse concern



at the regional level in part because local businesses fear increased competition for markets and scarce resources. Although foreigners could generally be expected to compete via exports if not via local production, establishing a domestic presence may increase their competitiveness by permitting them to improve their marketing and servicing capabilities. (Many U.S. companies certainly adhere to this theory when investing abroad.) Of course, in many industries increased competition for market share is diffused across the entire continent. Competition in retailing is more localized, however; thus, regional retailers may worry that their foreign-owned competitors will have advantages like privileged access to capital. In addition, competition for scarce resources is most likely concentrated at the regional level; thus, indigenous firms also fear the impact of foreign investment on the prices or even the availability of labor, land, and electric power. After all, soaring real estate prices, labor shortages, and brownouts were a part of New England's very recent past.

Although workers, like other sellers of scarce resources, often benefit from foreign investment, employees at some firms sought by foreigners fear that the new parent will close down plants or lay off significant fractions of the work force. As a case in point, Norton Company employees vigorously opposed BTR PLC's recent hostile takeover effort because the British company was reported to have a "notorious" reputation for eliminating jobs "on all levels" (*American Banker*, April 26, 1990). These impressions may reflect the prominence of large foreign companies like Campeau, BAT Industries, Shamrock Holdings and Saint-Gobain in certain well-publicized contested tender offers, usually as the hostile suitor but occasionally as the White Knight. However, while layoffs and dismemberments do follow some foreign acquisitions, foreign investors actually appear less likely than their domestic counterparts to engage in divestitures—the sale of product lines, subsidiaries or divisions. Between 1986 and 1988, divestitures made up 40 percent of all U.S. merger and acquisition activity, but divestitures by foreign sellers amounted to only 13 to 19 percent of foreign acquisitions in that period (*Mergerstat* 1988).

Another fear particularly relevant to high-tech New England concerns the loss of U.S. technological advantages. Numerous sad stories describe U.S. innovations bought, borrowed, or stolen by foreign companies that developed the new technologies aggressively abroad and ultimately pushed U.S. producers completely out of the market. A well-known

example involves the VCR technology first developed by Ampex but lost to Asian companies that now dominate the market.<sup>11</sup> Nevertheless, limiting foreign investment in U.S. high-tech industry is unlikely to limit or even slow the diffusion of U.S. technology. (The VCR technology transfer did not involve foreign investment, for instance.) Indeed, friendly mergers or joint ventures may represent one way of retaining some control over how and where the technology is developed.

In contrast to those U.S. managers and workers who see foreigners as competitors or unsympathetic employers, most state and local governments welcome foreign investment, particularly new establishments, and even spend resources to attract them. They view these investments as increasing capital spending, job opportunities and, eventually, local tax revenues. In addition, analysts favoring the U.S. traditional open door policy toward foreign direct investment believe these capital inflows are often accompanied by technology and management skills. Because foreign investors operate over long distances in an unfamiliar milieu, they must have compensating advantages to permit them to compete with domestic firms operating on their own turf. These advantages include company-owned technology, managerial skills, a well-known brand name, or favored access to resources, including capital.

Moreover, as foreign living standards and literacy rates have caught up with, or surpassed, those in the United States, an increasing share of the world's technological breakthroughs are being made abroad. A Nippon Steel Corporation–Inland Steel Industries joint venture in Indiana provides an example of technology imports linked to foreign direct investment. The new plant uses Japanese technology that reduces the time required for the cold rolled finishing process from ten days to less than one hour (*The New York Times*, April 25, 1990). In sum then, whether one fears or welcomes foreign direct investment, it has significant consequences at the regional level.

#### *Foreign Direct Investment and New England Jobs*

By 1988 New England had attracted more than 2,200 foreign-owned affiliates employing over 230,000 people. The employment impact of these affiliates was roughly similar to that of the industrial machinery and computer equipment industry, a major force in the region's economy. Because acquisitions account for over half the number and more than 80 percent of the value of foreign investments made



Table 10  
*Affiliate Employment by Nationality, 1988<sup>P</sup>*

Country	New England	United States
All Countries	100.0	100.0
Canada	18.5	19.4
Europe	65.3	59.6
France	9.1	6.7
Germany	11.3	10.2
Netherlands	8.3	8.2
Switzerland	3.2	5.5
United Kingdom	24.4	20.0
Asia and Pacific	8.8	15.1
Japan	7.4	10.9
Australia	1.2	2.6
Latin America	2.5	3.1
Middle East	1.2	1.2
Africa	.3	.6

P = Preliminary

Source: US Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies: Preliminary 1988 Estimates*, July 1990.

nationally since 1985, not all of these jobs are new. Indeed, data gathered by the U.S. International Trade Administration indicate that acquisitions play a more prominent role in New England than in the nation.<sup>12</sup> Nevertheless, some share of the jobs associated with foreign acquisitions might well have vanished in the absence of the foreign investment. For example, some acquisitions involve company divisions that are relatively weak or are unrelated to the U.S. seller's new corporate strategy. Moreover, the infusion of capital, technology and management skills that often accompanies foreign investment may strengthen the acquired firms and bolster their employment levels.

In investment as in trade, New England leans toward Europe and Canada. As Table 10 shows, European investments accounted for over 60 percent of affiliate employment in 1988, with the United Kingdom alone making up 24 percent of the total. Canada, Germany, France, the Netherlands and Japan were all major players, with Japan in sixth place. New England is more dependent on European (especially U.K.) investors than is the nation; it is less dependent on Japan.

Table 11 provides data on the industrial character of New England's foreign investments and compares it with that of the United States. Manufacturing

accounts for 47 percent and retailing for another fifth of affiliate employment in the region. As the table shows, the region's foreign investments are focused slightly less on manufacturing and more on retailing and insurance than are foreign investments in the rest of the nation. (Measured by employment, foreign real estate investments are much less important in New England than in the country as a whole.)

The industrial nature of New England's foreign investments has changed considerably since 1980 when manufacturing accounted for 59 percent of foreign affiliate employment in the region—versus 54 percent in the nation. The increased importance of retailing (and insurance) undoubtedly reflects the growing importance of retailing nationally plus New England's high per capita income. Four New England states have above-average per capita income, with Connecticut and Massachusetts ranked first and third in the nation in 1988. The declining importance of manufacturing, which was greater at the regional than at the national level, may mirror the impact of the "miracle" years that transformed New England

Table 11  
*Affiliate Employment by Industry, 1988<sup>P</sup>*

Industry	New England	United States
All Industries	100.0	100.0
Petroleum	1.1	3.6
Manufacturing	46.6	47.9
Food and Kindred Products	4.2	4.6
Chemicals and Allied Products	7.0	10.3
Primary and Fabricated Metals	4.5	5.4
Machinery	12.4	11.1
Other Manufacturing	18.5	16.4
Wholesale Trade	6.5	9.0
Retail trade	21.7	18.5
Finance, except Banking	3.2	2.6
Insurance	4.2	2.8
Real Estate	.2	.9
Services	8.8	8.9
Other Industries	2.3	5.8

P = Preliminary

Source: U.S. Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies: Preliminary 1988 Estimates*, July 1990.



from a relatively low-wage to a relatively high-wage region with labor shortages and rising real estate prices.

Foreign direct investment currently plays roughly the same role in the region's as in the nation's economy. Table 12 presents the share of affiliate jobs in total and in manufacturing employment in New England and the other regions. As the table indicates, the New England states tied for third place by the total employment measure, and ranked fifth, or somewhat below average, by the manufacturing yardstick. By these criteria, foreign investment was most significant in the Mid Atlantic and South Atlantic states.

In contrast with the present situation, in 1977 New England had an above-average dependence on foreign investors. This change in the relative importance of foreign direct investment in part reflects New England's success in achieving rapid employment growth over this period. Foreign affiliate employment actually grew faster in New England than in the nation from 1980 to 1988 (90.5 percent versus 81.0 percent); however, New England's total employment also grew faster than the nation's (26.1 percent versus 21.5 percent). Accordingly, despite New England's success in attracting affiliate jobs, the region's *relative* dependence on affiliate employment declined.

In the manufacturing sector, foreign investors probably helped to cushion the impact of the region's manufacturing decline. From 1980 to 1988 manufacturing employment fell faster in New England (-10.6 percent) than in the nation (-4.0 percent). These were the years when many New England manufacturers were shifting production—especially labor-intensive production—south and west as well as offshore in search of lower operating costs. During this period, employment at New England's newly established and acquired manufacturing affiliates grew—albeit more slowly (50.8 percent) than in the nation as a whole (59.8 percent). Accordingly, without the increase in affiliate manufacturing jobs that occurred over this period (assuming that a large share of these jobs might have vanished in the absence of the foreign investment), the region's manufacturing employment could have declined by as much as an additional 2.4 percent. Nevertheless, while foreign investors helped slow the region's sharp decline in manufacturing employment, they played a less positive role in New England than at the national level. Seemingly, foreign investors—like domestic investors—did not find New England a particularly attractive area for manufacturing in the late 1980s.

Table 12  
*Employment Share of U.S. Nonbank  
Affiliates of Foreign Firms by Region, 1988*  
Percent

	Total Nonbank Affiliate Employment/ Total Private Nonfarm Employment	Manufacturing Affiliate Employment/ Total Manufacturing Employment
New England	3.4	7.8
Middle Atlantic	4.1	10.1
East North Central	3.4	8.4
West North Central	2.2	6.7
South Atlantic	3.9	10.5
East South Central	3.3	8.3
West South Central	3.2	6.7
Mountain	2.3	7.2
Pacific	2.9	7.0
United States	3.4	8.8

Source: US Bureau of Economic Analysis, 1988 BE 55 release, and *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies: Preliminary 1988 Estimates*, June 1990.

### *New England and Technology Imports*

As already mentioned, foreign investors must possess some company-specific advantage that permits them to compete with indigenous firms on home ground. Frequently that advantage is company-owned technology. Presumably, thus, foreign investments often introduce new technology or management procedures to a region. Knowledge of these innovations then spreads beyond the affiliate through the observation and movements of employees, partners, suppliers and competitors.

In addition to the technology and management skills that investors bring from abroad, they also conduct R&D activities in this country. The location of multinationals' R&D facilities has recently become a subject of international concern because the spin-offs from these innovative activities are thought to be greater than the spin-offs from assembly operations. The Commerce Department collects data on the U.S. affiliates' R&D expenditures by industry (but not by state).<sup>13</sup> Manufacturers account for almost 90 percent of affiliate R&D spending, with chemical and machinery firms providing three-quarters of the total.

New England undoubtedly benefits disproportionately from technology inflows because it has an



above-average share of high tech investment transactions. Nevertheless, the region appears to be losing its advantage in this regard. Even at the national level, the declining role of manufacturing in foreign direct investment may be weakening the ties between these investments and technology transfer. However, in contrast with the situation in the early 1980s, manufacturing now accounts for a smaller share of New England's foreign direct investment than it does nationwide. In particular, chemicals and machinery, the industries where affiliate R&D spending is concentrated, provide a smaller fraction of affiliate employment in New England than in the nation. Although New England continues to attract an above-average share of "high tech" foreign investments, including those in drugs, computers, communications equipment, electronics and most instruments, even there the region's advantage is dwindling. In the early 1980s, high tech industries accounted for 2 percent of the foreign transactions made in the nation, but for 20 percent of those made in New England. In 1987 and 1988 the figures were 9 percent for the United States and 14 percent for New England. (Of course, high tech foreign investors may also be most likely to absorb and export indigenous innovations from New England.)

In summary then, foreign direct investment has continued to gain importance in New England as in the nation. Foreign affiliates now provide 3.4 percent of the region's jobs—7.8 percent in the manufacturing sector, where they also own 10 percent of the gross book value of manufacturers' depreciable assets and make an estimated 9 percent of regional plant and equipment expenditures.<sup>14</sup> Contrary to the situation in the late 1970s, however, foreign investment now plays a more modest role in the region than in the nation, especially in manufacturing. Because New England continues to attract an above-average share of high tech investments, it may also benefit from an above-average share of technology imports. Manufacturing's declining role in regional foreign direct investment suggests, however, that New England may cease to be favored in this regard. Indeed, the nationwide shift away from manufacturing may reduce the technological benefits associated with foreign direct investment.

#### *IV. Summary and Policy Implications*

This article reviews New England's foreign trade and investment activities. According to the data it

presents, New England is one of the most open regions in the country—highly dependent on exports, import-reliant rather than import-vulnerable, and two-way-trade oriented. Its business managers also appear to be active foreign investors. Conversely, inbound foreign direct investment provides a significant but below average share of regional employment. Despite the recent shift in the industrial composition of the region's foreign investments from manufacturing towards retailing, New England still attracts an above-average share of high tech foreign investment transactions. Accordingly, this investment undoubtedly serves as a leavening agent with more than proportionate benefits for the region.

With few resources but its people, New England prospers when it stands at the forefront of technological developments. Because international trade and investment foster the diffusion of technology and because technical innovation increasingly occurs abroad, these findings are generally auspicious.

For a region that depends on exports and uses imported inputs in its manufacturing processes, protectionist policies provide few benefits. Indeed, because they usually provoke retaliation, protectionist acts at the national level probably prove especially expensive for New England. Accordingly, continued progress in the current multilateral trade negotiations is important to the region. Given the potential significance of services exports and foreign investment activity for the region, New England also has a stake in current efforts to bring services and foreign investment under the auspices of the General Agreement on Tariffs and Trade. Finally, because of the potential spin-offs associated with inbound foreign direct investment, New Englanders should welcome foreign investors—without special favor, certainly, but also without suspicion and hostility.

Despite the encouraging nature of most of this article's findings, two provide cause for concern. First, the relatively slow growth in New England exports in recent years suggests that the decline of the region's manufacturing sector is undermining its export activity and, thus, its ability to stabilize earnings in periods of weak domestic demand. The second cause for concern is the shift in the industrial composition of inbound foreign direct investment from manufacturing to retailing and financial services—a shift greater at the regional than the national level. This development suggests that foreign manufacturers—like many of their domestic counterparts—do not find New England a particularly advantageous production site at the present time. The



shift does not augur well for New England's continued leadership of innovative industries.

The solutions? With continuing weakness in the sectors that usually drive the New England economy, expanding its export base provides one alternative for halting the decline in New England's manufacturing sector over the short run. Since remarkably few firms actually export, even in export-dependent New England, the scope for increased foreign sales seems considerable. In the longer run, New England must be made attractive to domestic manufacturers. What is good for the domestic goose would also be good for the foreign gander.

The role for policy-makers is probably somewhat limited. Many of New England's current disadvan-

tages—its relatively high-cost land and labor, for instance—are undoubtedly the consequence of cyclical pressures: a period of less robust growth will allow prices for scarce resources to come closer to national averages. State governments do have a role, however; they must ensure that the available labor supply is skilled and that the region's infrastructure (especially as it concerns transportation and energy) is adequate. State governments must also deal with the fiscal consequences of supplying these necessities. In other words, Oliver Wendell Holmes may have been partially mistaken. While the tire of international commerce has pried (some) New Englanders' parochialism from them, their state houses remain important after all.

<sup>1</sup> From *The Autocrat of the Breakfast Table*. Seemingly, Holmes viewed parochialism as a common human foible, for he also wrote, "The axis of the earth sticks out visibly through the centre of each and every town and city." (*Ibid.*)

<sup>2</sup> For example, in a study of 19 industrial countries, Helliwell and Chung (1989) find that productivity growth has been faster in countries that have increased their openness to international trade. Similarly, Blomstrom and Wolff (1989) find that productivity growth is higher in Mexican industries with a greater presence of multinationals.

<sup>3</sup> The Commerce Department's input-output tables permit calculating the ratio of U.S. imports to U.S. output for 51 manufactured commodities. Assuming that the ratio of imports to total output applied to that part of each commodity used in the production of other goods yields estimates of the role of imported inputs in each manufacturing industry. Then weighted averages of the ratio of imported to total manufactured inputs can be estimated for each region with each industry's ratio weighted according to the industry's share of regional manufacturing employment.

- If  $m_i$  = imports of manufacturing industry  $i$
- $o_i$  = total commodity output of industry  $i$
- $p_{ij}$  = inputs of industry  $i$  used in industry  $j$
- $mp_j$  = imported inputs used in industry  $j$
- $e_j$  = regional employment in manufacturing industry  $j$
- $e$  = total manufacturing employment in the region
- $\mu$  = regional weighted average ratio of imported manufactured inputs to total manufactured inputs
- $nk$  = noncomparable imported inputs,

then

$$mp_j = \frac{\sum_1^n \left[ P_{ij} \cdot \frac{m_i}{o_i} \right] + nk}{\sum_1^n P_{ij} + nk} \quad \text{and}$$

$$\mu = \sum_1^n \left[ \frac{e_j}{e} \cdot mp_j \right].$$

<sup>4</sup> Raw data are provided by the U.S. Bureau of the Census. The data presented have been adjusted by the Massachusetts

Institute for Social and Economic Research, University of Massachusetts at Amherst, to reduce reporting error.

<sup>5</sup> Here too, differences in the regions' geographic focus may have come into play. Many U.S. affiliates in Southeast Asia and Mexico were established relatively recently in the wake of the dollar appreciation of the early 1980s. They frequently provide low-cost assembly sites for products that contain U.S. components and that are destined for the United States or other industrial country markets. Accordingly, some of the recent growth in exports originating in Texas or the Pacific states may reflect this increased use of maquiladoras and their Southeast Asian equivalents. By contrast, U.S. affiliates in Europe are older, on average, and are more likely to be self-sustaining units serving host country markets. As already mentioned, exports originating in New England exhibit a European tilt.

<sup>6</sup> At the end of 1988, only twelve foreign banks had opened facilities in Boston, which ranked tenth after New York, Los Angeles, Chicago, San Francisco, Houston, Miami, Atlanta, Dallas, and Seattle.

<sup>7</sup> This measure is decidedly imperfect, however. According to national data, only half of all acceptances are related to international trade. Similarly, only a portion of all commercial letters of credit and of commercial and industrial loans to foreigners involve trade finance. Unfortunately, call report data do not permit segregating the trade-related share of these credits and commitments from the totals.

<sup>8</sup> By James Thornblade, Visiting Professor of International Economic Relations, Fletcher School of Law and Diplomacy.

<sup>9</sup> Since the data generally reflect the address of the corporate headquarters, they do not necessarily represent the region most affected by the firm's decision to invest abroad. For instance, production at an overseas facility may replace—or require—exports from a domestic plant located far from the corporate offices. For this reason the Commerce Department is reluctant to publish any state data related to U.S. direct investment abroad.

<sup>10</sup> Contrary to popular rumor (see Baker 1990), the Japanese did not buy the state of Massachusetts. A group of Japanese banks merely saved the Commonwealth some money when they permitted the state to borrow on the basis of their credit rating while the state's bond rating sank to the lowest level in the nation.

<sup>11</sup> Concerns about technology transfer are based on the proposition that economies of large-scale production or learning-by-doing may be very important in some industries. Accordingly, if a foreign company in such an industry buys/steals U.S. technology and develops it in a protected market with the help of foreign government subsidies, it may be extremely hard for U.S. firms to catch up.



<sup>12</sup> According to the U.S. International Trade Administration's list of inbound foreign direct investment transactions in 1987 and 1988, acquisitions accounted for 40 percent of all transactions but for 60 percent of the investments made in New England.

<sup>13</sup> An exact comparison of U.S. affiliates' R&D efforts in relation to sales with those of their domestic counterparts is not possible because the R&D figures for domestic companies are presented in relation to sales of *companies conducting R&D* while the

U.S. affiliate R&D expenditures must be related to *total industry sales*. The available data suggest that the R&D efforts of domestic and affiliate manufacturers are roughly similar but that the affiliates' efforts may be somewhat smaller. The Commerce Department does not publish data on the R&D expenditures of foreign affiliates of U.S. companies.

<sup>14</sup> Author's calculations.

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