

MASSACHUSETTS BENCHMARKS

• the quarterly
review of
economic
news &
insight

• spring '99 volume two issue 2

- **Economic Currents**
- **Massachusetts Current and Leading Indexes**
- **The Northeast Region: Progress and Paradox**
- **Y2K
A Public Opinion Poll**

A PUBLICATION OF
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IN COOPERATION WITH
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The editors would like to thank the Massachusetts Division of Employment and Training for their generous assistance to the Benchmarks project.

CORRECTION:

Due to a typographical error on page 10 of our winter issue, we reported that 20 percent of the state's labor force fell into the 45- to 69-year-old age bracket. The actual number is 28 percent.

Letter

FROM THE
PRESIDENT

The Massachusetts economy seems to be withstanding the global economic turmoil. Our rate of economic growth is falling, the Editorial Board tells us, but there currently appears to be only a slight risk of a recession in the near future.



In this issue of *Massachusetts Benchmarks*, Alan Clayton-Matthews discusses the resilience of the state economy and what the education level of our workforce contributes to this resilience. Further, he raises a caution about sources of weakness: Difficulties abroad continue to hold down demand for our exports, and the tightness in our labor markets still constrains our growth.

In our regional focus, Professor Robert Farrant of the University of Massachusetts Lowell campus describes the Northeast region of the state. Historically, this is a region that has experienced sharp swings in its economic condition: the growth and then sudden decline of the textiles industry; the swift emergence of the mini-computer industry, followed by its even swifter fall; and a buildup of the defense sector in the 1980s, which was followed by the end of the Cold War and a consequent decline. Professor Farrant goes on to describe the region's recent surge of growth in technology.

The Northeast region continues to rely more heavily on manufacturing firms than do the rest of the state and the nation. In some parts of the region, the current economic expansion has failed so far to overcome either a decline in the economic base or the relatively high rates of unemployment that mark this decline.

Our polling topic is the Year-2000 computer bug, now referred to simply as "Y2K." The poll finds that the level of public concern in the state reflects the level of public concern in the nation at large. It also reveals a wide gap between the level of concern felt by people with low incomes and that felt by those with high incomes. The poll report is written by Ralph Whitehead, Jr., and Lou DiNatale.

We hope this issue of *Massachusetts Benchmarks* provides you with insight into the economy of the Commonwealth.

WILLIAM M. BULGER
President
University of Massachusetts

E X C E R P T S

F R O M T H E B O A R D

The Commonwealth's strong economic performance continues, and there is no reason to think this will end in the near term. Along with modest employment growth, inflation is low and construction is booming.

The United States is currently the only really prosperous major economy in the world. Slow growth abroad has resulted in cheap imports, reduced energy costs, and low commodity prices, all of which have contributed to keeping inflation in check and interest rates down. Consumption rolls on uninterrupted as car sales, new home building, and durable goods show solid growth. In spite of the good news, though, there is a sense among Editorial Board members that both the national and the state economies are becoming increasingly unbalanced and ungrounded.

The issue of balance is tied to the continuing slump of many foreign economies. Their instability has battered our manufacturing industries, a classic tradable goods sector. Manufacturing employment in the state, exhibiting weakness since early in the year, continues its downslide. On the other hand, the nontradable construction and related industries have flourished. The board is concerned that this growing imbalance between the tradable and nontradable goods sectors is not sustainable.

Much of the strength in the state and national economies is based on the continuing wealth effects on consumption expenditure arising from stock market gains. Nationally, consumption has been increasing faster than income and, by the end of 1998, the officially measured savings rate was zero. Though comparable data are not available for Massachusetts, these wealth effects are certainly having similar impacts here, perhaps even more strongly than at the national level. This "grounding" for continued expansion, then, depends on continued appreciation in equity prices. If the view that equities are overpriced proves correct, we may see these wealth effects muted or reversed in the foreseeable future.

The board also cited evidence that the state's extremely tight labor markets are becoming increasingly problematic. Weakness exhibited in declining industries does not ameliorate our tightening labor pool, as unemployed workers from these sectors generally lack the requisite technical skills that are in short supply. There is a geographic dimension to this mismatch between jobs and skills: the Boston metropolitan area is experiencing the most poignant labor shortages, while the manufacturing-oriented regions of the state are dealing with labor dislocations.

In spite of all the instability and uncertainty, the Commonwealth's economy continues forward. The strength in construction pulls along a number of related industries. Financial services and information technology, two areas that require a continuing stream of skilled labor, remain strong forces in our economy despite labor market tightness. Recent data on state tax collections show impressive, broad-based strength.

While the board agrees that the expansion cannot go on forever, no one is willing to predict its end. It may be that our economic future will be shaped more by changing world markets than by our own economic policies. The speed at which Japan, Latin America, and other regions recover may have a strong influence on our prices, our interest rates, and ultimately, our expectations. ▮

Economic CURRENTS

The State of the State Economy



ALAN CLAYTON-MATTHEWS

ILLUSTRATION: NAOMI SHEA

Even as we are experiencing the full effect of the Asian crises that began in the summer of 1997, the United States and Massachusetts economies are displaying a surprising robustness.

We shuddered last August at the collapse of the Russian economy and the near collapse of the Long-Term Capital Management hedge fund. These events, along with plummeting domestic stock markets, tightening credit availability, and falling consumer and business confidence indicators, led to a near-term economic outlook that was characterized by significant downside risk. For some time, we held our collective breath, but our fears have failed to materialize. Instead, the national and state economies continue to grow with low unemployment and inflation, while realizing record levels in several stock indexes. Brazil's more recent devaluation should have little direct impact on Massachusetts, given the Commonwealth's limited trade with that and other Latin American countries.

The immediate threat of recession may be past, as our economy appears to have bounced back from its late-summer decline (see economic indexes, page 5). Still, risks remain. Manufacturing exporters will continue to suffer from lower foreign demand, and manufacturers supplying domestic markets will face stiff competition from foreign producers into the near future, at best. On the supply side, employment growth is now effectively constrained by low population and labor-force growth.

THE RESILIENT ECONOMY

The economy's strong performance in the face of the world economic crisis is evident in numerous aggregate indicators. Massachusetts employment in December was 1.8 percent higher than it was a year earlier; for the corresponding period, U.S. employment grew by 2.3 percent. The state ended 1998 with an unemployment rate of 3.1 percent and the nation, 4.3 percent. Consumer prices grew 2.3 percent in the Boston area in the year ending in November 1998 and 1.6 percent in the United States as a whole. The sum of the unemployment and inflation rates, commonly known as the Misery Index, is currently near the all-time low for both the state and the nation.

The Current and Leading Economic Indexes for Massachusetts

The Massachusetts Current Economic Index for January was 122.8, up 5.8 percent from December (at annual rates) and up 4 percent from January of last year. The current index is normalized to 100 in July 1987 and calibrated to grow at the same rate as the Massachusetts gross state product (GSP) over the 1978–1996 period. (GSP is not yet available beyond 1996.)*

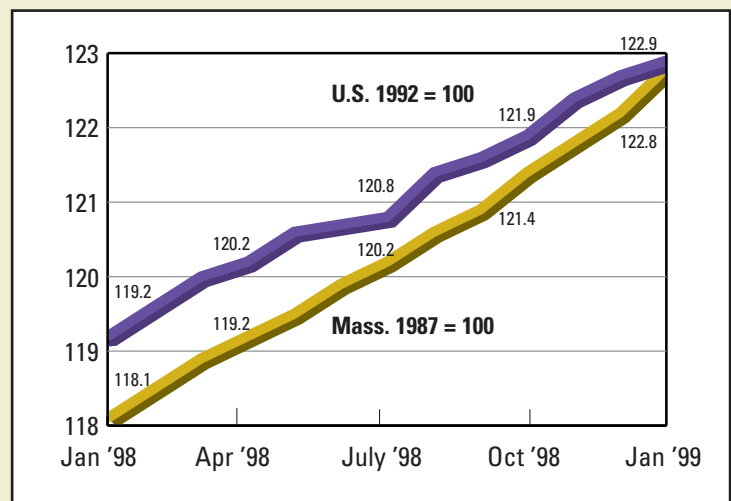
The leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate. The January index indicates that the economy is expected to grow at an annual rate of 4.4 percent over the next six months. Because of monthly fluctuations in the data on which the index is based, the three-month average (November through January) of 3.9 percent may be a more reliable indicator of near-term growth.

The outlook is much improved since August, when the collapse of the Russian economy, the bailout of the Long-Term Capital Management hedge fund, and the precipitous drops in domestic stock markets occurred.

**Since the last issue of Benchmarks, both the current and the leading indexes have been rescaled. Though the qualitative indications of the indexes have not changed, they are not directly comparable to previously reported values. For more information about the leading index, see Endnotes on page 20.*

Current Economic Index United States and Massachusetts

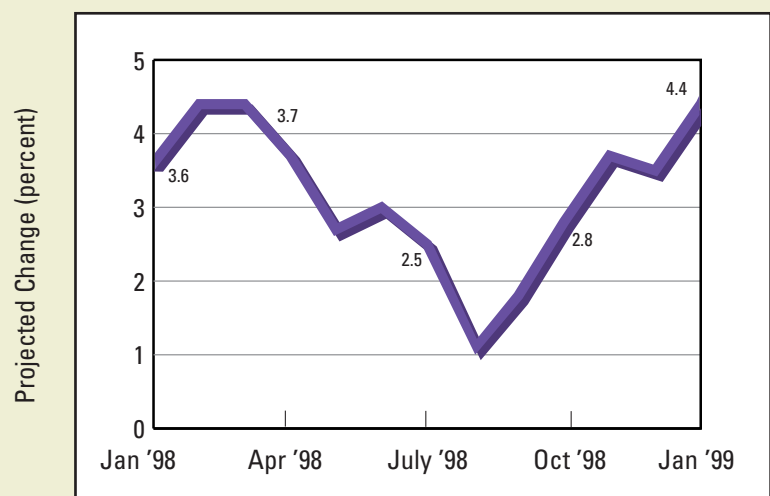
The trends rather than the levels of these indexes should be compared, due to different formulations and base points.



Sources: The Conference Board; University of Massachusetts; Federal Reserve Bank of Boston

Massachusetts Leading Economic Index

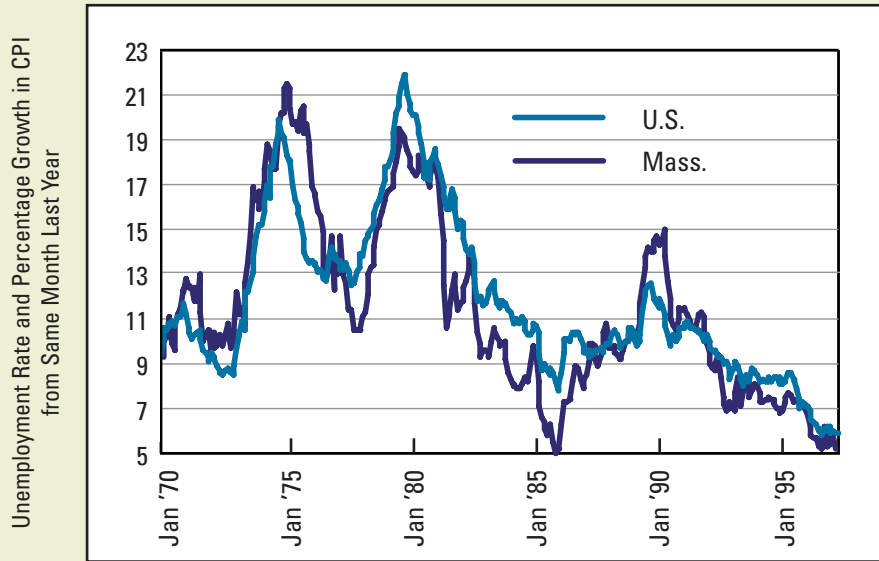
The leading index is the annualized, six-month projected change in the Massachusetts Current Economic Index. It suggests that the economic outlook has improved in recent months.



Sources: University of Massachusetts; Federal Reserve Bank of Boston

Misery Index

This index tracks the combined inflation and unemployment rates for Massachusetts and the United States. It is currently running near an all-time low.



Sources: Bureau of Labor Statistics; Massachusetts Division of Employment and Training; author's calculations

The U.S. stock market performed well and ended the year strong. The Dow-Jones average ended 1998 up 20 percent from a low point on October 1, while the Bloomberg Stock Index for Massachusetts¹ was up 39 percent from its low point on October 8.

Consumers played a major role in buttressing the economy. Nationwide, real consumer spending in 1998 was 3.4 percent higher than in 1997. In Massachusetts, the sales tax base, a retail spending proxy weighted toward durable spending, grew 5.4 percent over the same period.² This consumption binge was supported by strong earnings and income growth: Massachusetts real earnings in 1998 were 6.9 percent higher than in 1997.³ Housing markets in the state achieved record sales, as housing prices appreciated 5.5 percent in Massachusetts and 5 percent in the United States for the year ending in September.

What accounts for this resilience? One explanation, according to the "new economy" thesis, is that the nation is on a technologically based,

higher productivity growth trend. Another factor is low interest rates, supported in part by the world financial crisis itself, as investors worldwide have reallocated portfolios in favor of U.S. stocks and securities. These lower rates act to reduce debt burdens and borrowing costs for households and businesses.

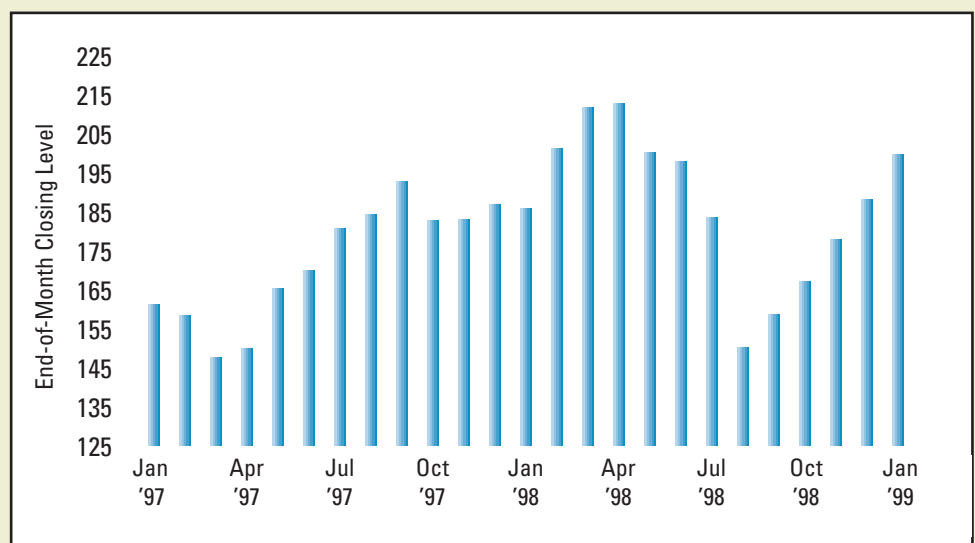
Perhaps the most powerful underlying factor is demographics. The post-World War II baby boom generation is now in its most productive years. Moreover, this generation is better educated than are its predecessors. The education-age profile peaks for people in their late forties. Nationally, nearly 30 percent of people in this age group have a bachelor's degree or higher; in Massachusetts, close to 40 percent of this group have college degrees.

This double boost to productivity may be an important contributor

to the economic good fortune of the 1990s. High productivity leads to high incomes, which in turn lead to high levels of consumption. These factors have kept the U.S. economy afloat in spite of the world's troubles. U.S. workers have been producing like ants and consuming like locusts. High incomes and spending also generate high tax revenues and, through budget surpluses, lower inter-

Bloomberg Stock Index for Massachusetts

The index hit a low point on October 8 (not shown). By the end of October, the index had recovered strongly.



Sources: Bloomberg L.P.; author's calculations

est rates and more funds for private investment. Higher productivity and investment boost corporate profits. These higher profits lead to increased asset valuations, capital gains, and more household wealth, which result in more tax revenues and more consumption, and so on—the “virtuous” cycle.

COUNTERVAILING FACTORS ARE LEADING TO SLOWER GROWTH

Two countervailing factors are contributing to the slowdown of the economy’s growth: the worldwide economic crisis, through its effects on manufacturing and corporate profits; and labor shortages, which are constraining employment and output growth. So far, Massachusetts has been harder hit by these factors than has the nation as a whole. For 1996 through the first half of 1998, employment growth in both Massachusetts and the United States averaged 2.5 percent. In the second half of 1998, employment growth slowed to just over 2 percent for the nation and just under 1 percent for Massachusetts.

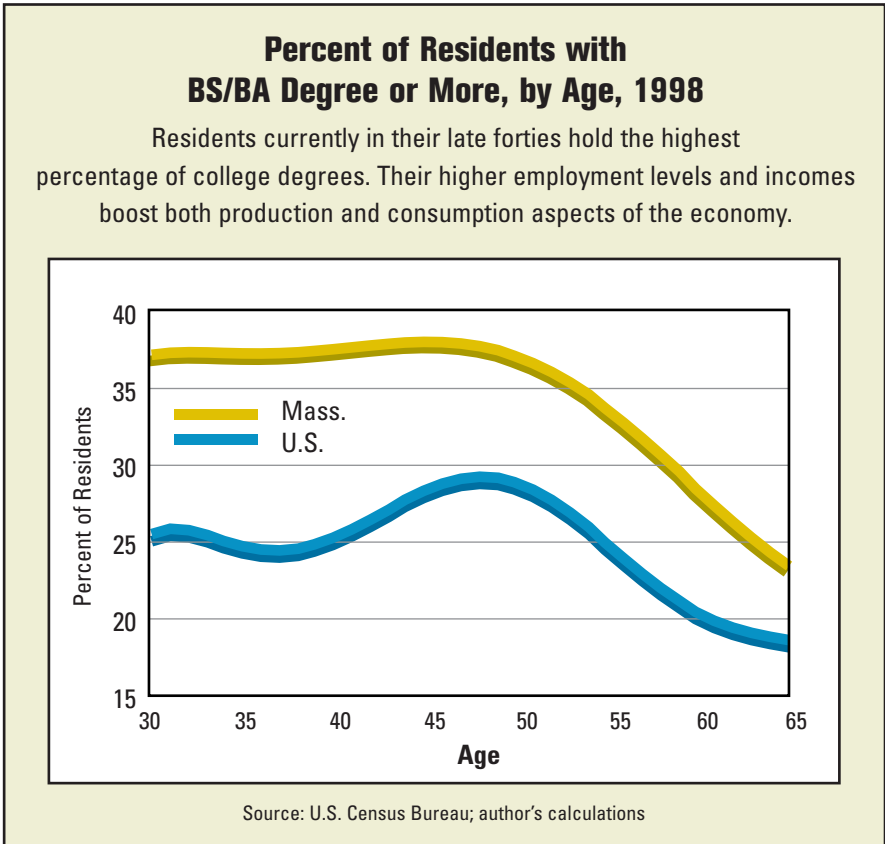
Rising imports and falling exports caused the U.S. trade deficit to increase by 50 percent in 1998 over 1997.⁴ U.S. and Massachusetts manufacturers were hard hit. In the Commonwealth, manufacturing employment declined steadily for most of 1998, with employment ending the year at 1.9 percent below the prior year. The state’s key export sectors—industrial machinery (which includes computers), electrical machinery and components (which includes semiconductor equipment), and instruments—all had significant employment declines throughout most of 1998. Manufacturers faced problems not only from losses in export sales but also in competition from cheap imports.

Only a handful of the Commonwealth’s manufacturing sectors avoided employment declines in 1998. These included furniture, transportation equipment (aircraft and automotive suppliers), printing and publishing, plastics, and chemicals. With the exception of aircraft, these industries serve almost exclusively domestic customers.

The problems manufacturers are facing are not unique to Massachusetts. The same patterns are occurring nationwide, although the declines have been proportionately less. And the slowdown is not limited to manufacturing. Since different sectors grow at different rates, it makes sense to compare recent performance with average annual growth rates during the expansion that began in mid-1991. Construction employment, bolstered by

strong residential and commercial markets, continued to grow at about its 1990s expansion-average annual rate.

Excluding manufacturing and construction (as well as agriculture and fishing, which are not counted in the establishment employment survey), the service-producing sector is growing at about one percentage point below its expansion average. Employment in 1998 actually declined in communications, electric utilities, and insurance—three sectors affected by mergers and restructuring. Employment growth remains positive, but below trend, in trade, transportation, and business services. Although some of the slowdown in business service growth may be due to demand-related cutbacks in manufacturing, the

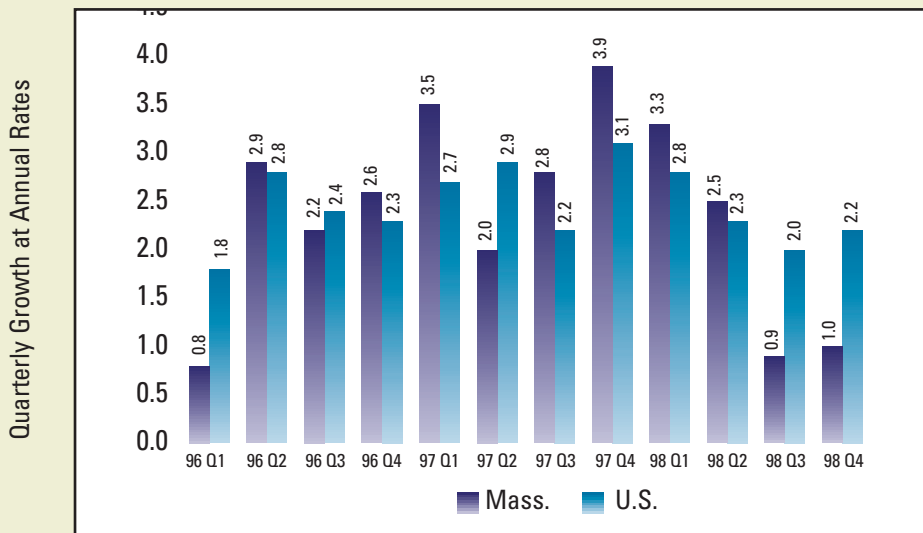


primary reason for slower growth in these sectors is simply that the pool of available workers is nearly empty. The job market is particularly tight for scientists, engineers, and “information technology” workers (those with computer-related skills). In many low-wage sectors, from restaurants to nursing homes, employers are having trouble maintaining staff levels, because their workers are upgrading to better jobs elsewhere.

A few sectors have managed to grow at or above their expansion-average rates. In the state’s financial sector, money management and mutual fund firms have continued to increase employment at the expansion-average (7 to 8 percent) rate, and banks, which had shed employment for years, are now hiring at a robust pace. Hospitals have also reversed direction and are increasing employment again. Despite the labor shortage, engineering and

Employment Growth, Massachusetts vs. United States

In the second half of 1998, the combination of labor shortages and worldwide economic events slowed the Massachusetts economy more dramatically than it did the U.S. economy.



Source: Bureau of Labor Statistics

consulting firms continue to add workers at rates above the expansion average.

SLOW GROWTH AHEAD, WITH SOME POSITIVE SIGNS FOR MANUFACTURING

There are some hopeful signs for manufacturing. Nationally, the fall in exports seems to have abated, in line with reports of stabilizing conditions in some East Asian countries. There is promise in the latest national data on shipments, orders, and inventories for the last half of 1998 in some key export industries. In computers, inventories fell rapidly as new orders rose, setting the stage for expanded production in the near future. Shipments, new orders, and unfilled orders in electronic equipment and components were all rising, as inventories declined moderately.

AIM's Business Confidence Index (including the portion for manufacturers) and BankBoston's Instant Reading Index—weighted heavily toward Massachusetts manufacturers—were both measuring levels above 50 in late 1998, consistent with expectations of better times ahead. Additionally, the Federal Reserve's *Beige Book* report of January 20 reveals that while half of New England manufacturing contacts reported level or declining business from the prior year, half reported expanding sales. The decline in manufacturing output, if not employment, may soon be over.

Although there is some upside risk that tight labor markets and strong consumer demand will rekindle inflation, more risk still remains on the downside. Consumer

confidence, though still high by historical standards, remains below its peak levels of early 1998, especially with regard to future expectations. There is also a well-publicized concern among experts that slower corporate profit growth and cash flow will lower both investment and stock market valuations. Through the wealth effect, stock market losses would negatively impact consumer spending. Finally, we do not yet know how severely Brazil's devaluation and impending recession will affect world financial markets and aggregate demand.

The expected outlook is for continued slow growth in the near term. This results from a protracted softness in exports,

preventing an employment rebound in the affected manufacturing sectors, and a general labor shortage restraining employment growth in most of the rest of the economy. With population and labor force expanding at an annual rate of approximately .5 percent, Massachusetts will do well to maintain the 1 percent per annum rate of employment growth maintained during the last half of 1998. Adding real productivity growth of roughly 1.5 percent, the state's economy can expand at 2 percent to 2.5 percent this year. ▀

ALAN CLAYTON-MATTHEWS is an assistant professor and the director of quantitative methods in the Public Policy Program at the University of Massachusetts Boston. He is also vice president and forecast coordinator for the New England Economic Project.

ENDNOTES

1. The Bloomberg Stock Index for Massachusetts is a price-weighted average of stock issues of companies that are either headquartered in the state or doing substantial business in the state. As of September 1998, 338 companies were included in the index.
2. Figures are based on sales tax receipts converted to a real sales tax base. Sales tax receipts include business purchases of taxable items not directly related to production, and exclude purchases of automobiles and boats.
3. Figures are based on withholding tax receipts converted to a real wage and salary tax base.
4. Increases in seasonally adjusted exports in the September–November 1998 period over prior months are suspected to be statistical flukes due to a change in underlying seasonal patterns.

From the Field



ILLUSTRATION: NAOMI SHEA

The Northeast Region: progress and paradox

ROBERT FORRANT



The map inside the back cover of this issue provides additional information about the Northeast region.

Adjacent to the Boston metropolitan area, the state's powerful economic core that was once its lifeline, today's Northeast region combines a strong economic engine of its own with the relative ease and affordability of suburban life. This composite has served as the basis of the region's modern growth.

The region is made up of 43 cities and towns. It borders New Hampshire to the north, the Atlantic Ocean as far south as Marblehead, and the 128/495 corridor from Wilmington to Chelmsford and Lowell (see map). It includes older mill cities, such as Lowell, Lawrence, and Haverhill, as well as cities and towns that have undergone explosive growth, including Andover, Danvers, Chelmsford, and Westford.

AT THE CENTER:

The university of Massachusetts economic benchmarks

	Jan. '99	Jan. '98
Current Economic Index	122.8	118.1
Leading Economic Index	4.4%	3.6%

The Massachusetts Current Economic Index for January was up 5.8 percent from December, and up 4.0 percent from January of last year (both at annualized rates). The Current Index is designed to track Massachusetts Gross State Product, the most comprehensive measure of the state's economy.

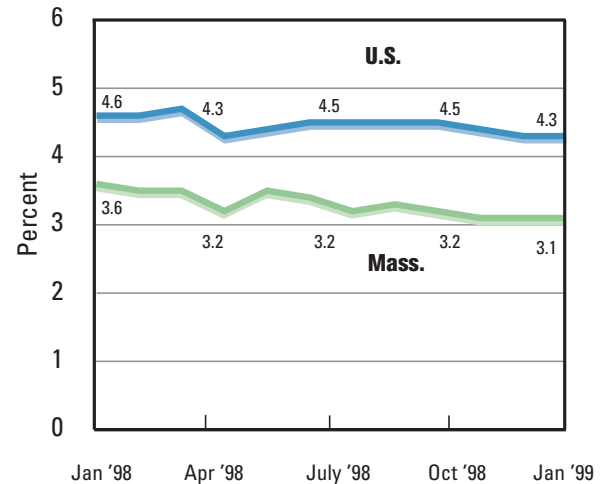
The Massachusetts Leading Economic Index for January was 4.4 percent. The leading index is a forecast of the growth in the current index over the next six months, at an annualized rate.

Both indexes suggested that the state's economy has rebounded strongly from the late summer and early fall.

Note: Rescaling of these indexes makes them not directly comparable to previously reported values.

Unemployment Rates United States and Massachusetts

Unemployment rates remain near historic lows in both the state and the nation.



Sources: U.S. Bureau of Labor Statistics;
Massachusetts Division of Employment and Training

Massachusetts indicators

	Period	Value	Change from Year Earlier (percent)
Employment (thousands of jobs)	Jan '99	3141.8 (p)	1.7
Manufacturing	Jan '99	437.7 (p)	- 3.2
Services	Jan '99	1120.8 (p)	2.4
Monthly Initial Unemployment Claims	Jan '99	37,366	2.7
Help Wanted Advertising Index, Boston (1987 = 100)	Oct '98	56	- 6.7
New Housing Permits (12-month average)	12 months ending Jan '99	1,566	6.6
Personal Income (\$M)	1998 Q3	202,095	5.3
Real Personal Income (\$M 1982-84)	1998 Q3	123,681	3.7
Housing Price Index (1987: Q1 = 100)	1998 Q3	139.7	5.5
Boston Consumer Price Index (1982-84 = 100)	Jan '99	174.1	1.7

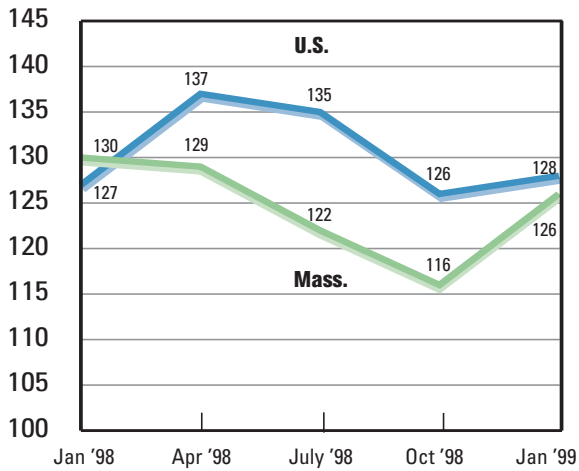
Sources: The Conference Board; Fannie Mae and Freddie Mac; Massachusetts Division of Employment and Training;
U.S. Bureau of Economic Analysis; U.S. Department of Commerce; University of Massachusetts



THE MEASURE OF MASSACHUSETTS

Consumer Confidence Indexes United States and Massachusetts

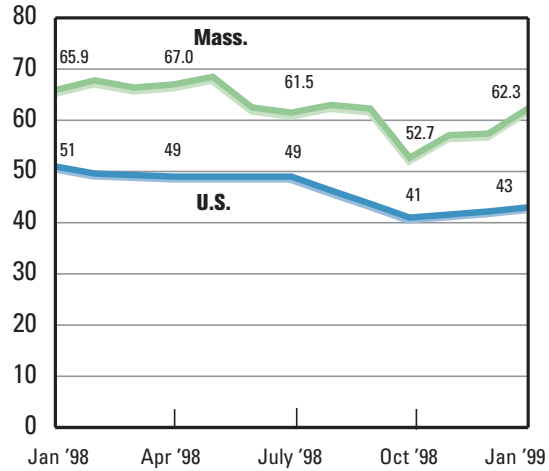
The Massachusetts index is measured quarterly;
the U.S. index is measured monthly.



Sources: The Conference Board;
Mass Insight/New England Economic Project

Business Confidence Indexes United States and Massachusetts

Employers have generally positive views on
current and prospective business
conditions when the index is above 50.



Sources: The Conference Board;
Associated Industries of Massachusetts

REGIONAL ECONOMIC PERFORMANCE

	Employment Jan '99	Change from Jan '98 (percent)	Unemployment Rate (percent)	
			Jan '98	Jan '99
CENTRAL				
Fitchburg-Leominster PMSA	65,512	0.2	5.0	4.7
Worcester, MA-CT PMSA (MA only)	237,149	-0.7	3.9	3.7
CAPE AND ISLANDS				
Barnstable-Yarmouth MSA	64,320	3.3	8.0	6.6
BOSTON METRO				
Boston, MA-NH PMSA (MA only)	1,745,220	0.0	3.4	3.0
NORTHEAST				
Lowell, MA-NH PMSA (MA only)	153,648	1.5	4.0	3.7
Lawrence, MA-NH PMSA (MA only)	117,470	-1.2	5.1	5.1
SOUTHEAST				
Brockton PMSA	125,921	2.1	4.8	4.0
New Bedford PMSA	76,547	1.7	9.3	7.9
Providence-Fall River-Warwick, RI-MA MSA (MA only)	111,495	0.0	7.2	6.2
PIONEER VALLEY				
Greenfield LMA	31,450	1.4	4.7	3.8
Springfield MSA	266,494	-0.6	5.1	4.5
BERKSHIRE				
North Adams LMA	12,699	0.1	4.9	4.5
Pittsfield MSA	37,567	0.1	6.0	5.1

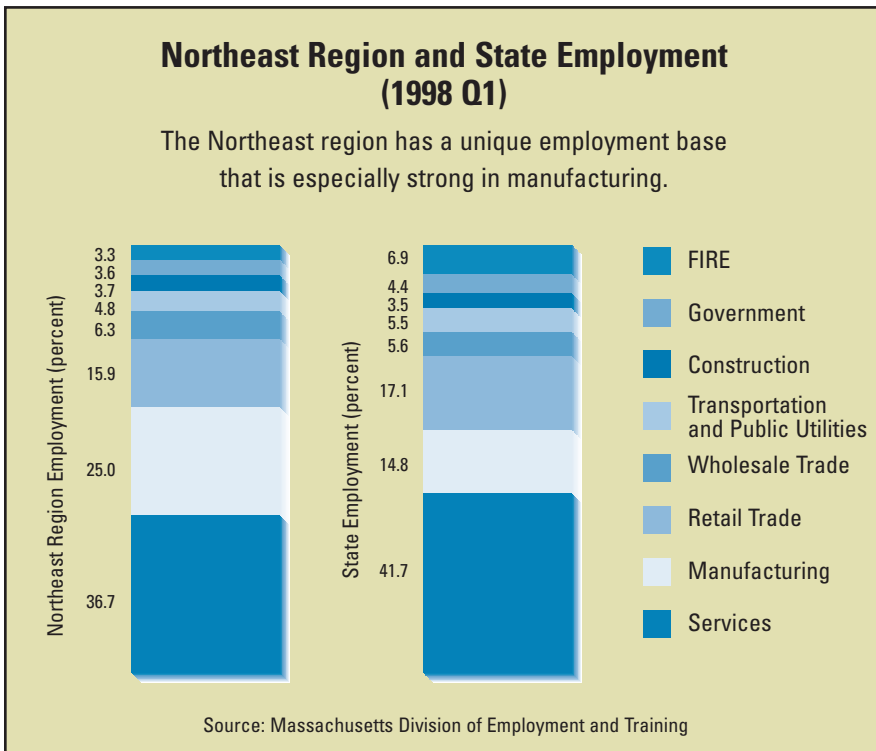
(Household-based data)

Source: Massachusetts Division of Employment and Training



The Northeast region is served by increasingly crowded interstate highways (495, 95, 93) and state routes (128, 1, 3), with public transportation to Boston accessible from many communities. Its proximity to Logan International and Manchester, New Hampshire, airports, as well as Hanscom Field and Pease International Tradeport, situate the region for a new phase of economic growth. Trade is increasing in business travel, in addition to the manufacturing, sales and transport of fragile cargo, medical instruments, and measuring/controlling devices. From the sea, the Port of Gloucester serves the northern part of Essex County, and the Port of Boston is no more than an hour from any regional location.

The computer industry saw spectacular growth between 1975 and 1980. Wages for the region climbed from 90 to 105 percent of the national average, and unemployment fell to 2.8 percent as Wang, Digital Equipment Corporation, AT&T, Raytheon, Data General, and Prime Computer, Inc., emerged. Lucrative subcontracts from large defense producers such as Raytheon, General Electric, Pratt and Whitney, Electric Boat, and the Portsmouth, New Hampshire, navy yard went to hundreds of small metalworking, electronics, and plastics firms. Between 1980 and 1994, the defense stimulus to companies, colleges, universities, and federal and private research laboratories in Massachusetts totaled approximately \$90 billion, an average of \$6 billion per year. The Northeast region accounted for an impressive share of this total. But the reduced defense budget—Massachusetts received \$8.7 billion in 1989, \$5.1 billion in 1994, and about \$4.2 billion in FY98—eroded once-dependable markets, as the decline of Wang, Digital, and other computer firms further hurt the region.



THE IMPORTANCE OF MANUFACTURING

There remains a concentration of manufacturing in the region that is well above the figure for the state as a whole. Manufacturing jobs comprise 25 percent of total employment, compared to the state figure of 15 percent. These jobs tend to pay well, especially when compared to many service-sector jobs. A number of manufacturers contract out for a portion of their engineering and business services, thus stimulating the economy beyond these employment figures.

Several communities, including Haverhill, Amesbury, Lowell, and Beverly, have launched successful programs to energize their downtowns. They have invigorated tourism and reutilized much of the once-dormant factory space for high-tech manufacturing and offices. From the first quarter of 1995 to the first quarter of 1998, the number of enterprises grew 10 percent, from 21,254 to 23,358, mirroring the statewide rate. Over the same period, about 31,000 jobs were added, a rate slightly above the state's 8 percent growth.

A BRIEF ECONOMIC HISTORY

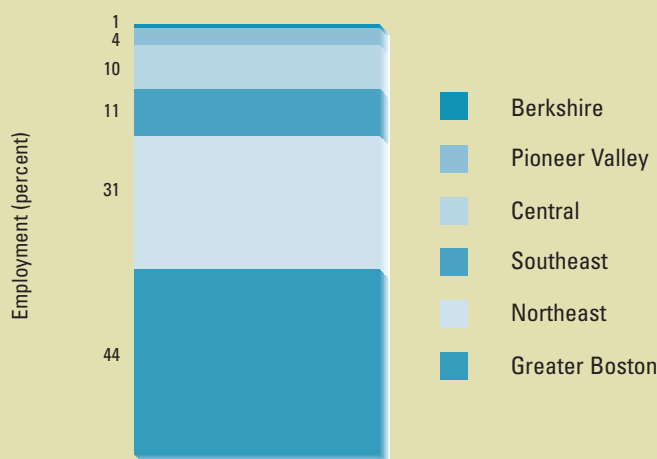
Since the end of World War II, three broad trends have brought about wild swings in the regional economy: the sharp decline of the textile industry, the buildup and drastic cut in defense spending, and the meteoric emergence and precipitous fall of the minicomputer industries, which was followed by a high-tech rebirth north and west of Boston.

The region has a high concentration of employment in computer and communications equipment, electronic and electrical components, and aircraft production. Four industries—industrial machinery and equipment (which includes computer manufacturing), electronic and other electric equipment, transportation equipment, and instruments and related products—account for well over 65 percent of all manufacturing jobs. When high-skilled metalworking and machinery industries are considered, the region has 24 percent of the firms and 31 percent of the jobs in the state; overall, it holds only a 13 percent share of total state employment.

Unlike manufacturing, the proportion of service sector employment is slightly less than in the state as a whole, with about 37 percent of the region's jobs, compared to 42 percent statewide. This represents only a slight increase since 1994, when it stood at 35 percent. Slow growth may be the result of the nearness to New Hampshire and the absence of a sales tax there, which appears to entice shoppers.

Machinery, Equipment and Instruments Manufacturing by Region

Thirty-one percent of the state's employment in these industries is in the Northeast region. The region accounts for 13 percent of the state's employment overall.



Source: Massachusetts Division of Employment and Training

17,600 people, and the average annual wage is close to \$53,000.

Computer equipment manufacturers in this sector have been losing employment in recent years. Two significant mergers, Digital Equipment-Compaq and Olivetti SpA-Wang, could lead to further job loss.

Medical Instruments and Measuring and Controlling Devices. At the start of 1998, just over 8,000 people were employed in these two sectors, comprising about 10 percent of the region's manufacturing employment base. While still small employment-wise, these two sectors had exports of nearly \$3 billion across the state in 1997—almost 16 percent of the Commonwealth's total exports.

Other Manufacturing. The printing and publishing industry accounts for about 8 percent of manufacturing jobs in the region. Textile mill products and apparel, which together make up close to 4.5 percent of manufacturing jobs, have survived in the region, often by specializing in niche products. In Lawrence, for example, Malden Mills Industries built a prominent business by manufacturing fleece products for a range of uses from automotive to apparel. In Lowell, Jo-Ann Fabrics has added jobs in the past three years. Plastics employs more than 3,600 people, accounting for about 3.8 percent of manufacturing jobs in the region. This industry is comprised of firms that manufacture plastic materials, resins, film, sheet, and foam.

Wholesale and Retail Trade. Wholesale trade (24,321 jobs) and retail trade (61,739 jobs) accounted for 22 percent of jobs in the region at the start of 1998. The average annual wage was \$50,556 in wholesale trade, but just \$16,476 (FTE) in retail trade. This difference is partly explained by the fact that many of the latter are part-time positions. The region's extensive highway network helps promote employment in wholesale trade. Route 128 connects two of New England's largest malls: the North Shore Mall in Peabody and the Burlington Mall. Routes 1 and 495 also have their share of large retail establishments, with a growing trend toward "superstore" chains.

Finance, Insurance, and Real Estate. Employment in the finance, insurance, and real estate (FIRE) sector accounted for only 3.3 percent of jobs in the region at the start of 1998, significantly lower than the total state share of 6.9 percent. At \$41,945, the average annual wage in FIRE here is significantly lower than the \$59,275 statewide average. This is explained at least in part by the concentration of the state's FIRE employment in the Boston area, especially the higher-wage money management jobs. Another trend contributing to smaller FIRE employment

Important service industries are health, business, education, and engineering and management services. Compared to the state, employment and average wages in the finance, insurance, and real estate (FIRE) sector are comparatively low. FIRE jobs tend to be in lower-wage areas of the sector, such as depository institutions, rather than in the higher-wage money management jobs that are concentrated in Boston.

KEY EMPLOYMENT SECTORS

Electronic and Electrical Equipment, and Electronics Components. The electronic and electrical equipment industry (215 firms) grew by approximately 3,800 employees between 1993 and 1997, reaching 24,000 by the start of 1998. Then the loss of business in Asia resulted in thousands of layoffs. Within the industry, manufacturers of communications equipment employ close to 7,500 people. With an average annual wage of \$59,804, these are among the best-paid workers. This particular sector has seen relatively strong growth; a significant number of start-up companies located along Route 495 in the Westford/Chelmsford area are supported by over \$100 million in venture capital.¹ Continued weakness in Asian economies, however, may slow this growth still further.

Industrial Machinery and Equipment. With nearly \$5.2 billion shipped in 1997, this sector was the top exporter in Massachusetts. (This figure dropped in 1998.) Firms make construction, metalworking, and general industrial machinery and form an important precision skill base for other manufacturers. Approximately 382 firms employ

has been the demise of regional banks through consolidation in the banking industry.

Health Services. Since 1993, health services has added more than 6,700 jobs. Recent growth has been most significant in offices and medical clinics, which gained more than 1,900 jobs since 1993; home health care services, which gained over 1,700 jobs; and hospital employment, which gained approximately 1,200 jobs. Average wages in the sector, \$28,364, remain lower than those in the region as a whole, at roughly \$35,000. The growth of managed care, combined with mergers and affiliations of area hospitals, has contributed to layoffs at some area hospitals.

Business Services. Employment in business services exhibits a broad range of earnings. Overall, this sector employed 29,641 people, paying average annual wages of \$43,248. Personnel supply or “temp” services, an apparent low-wage sector of this industry (\$20,336 in 1997), employed 9,729. (Since much of this is part-year work, the annual wage figures may be misleading.) These firms added 5,372 jobs between 1993 and 1997 for a startling 123 percent growth rate.

On the high end of the pay scale, computer and data processing services provided an average annual wage of close to \$73,000, employing 10,753 people in 1997. This sector added 3,883 jobs and grew 57 percent between 1993 and 1997. (New jobs may have been filled by individuals who had previously worked in computer manufacturing.) Other business services include services to buildings; mailing, reproduction, and stenographic services; credit reporting and collections; and advertising.

Engineering and Management Services. This sector added more than 3,300 jobs between 1993 and 1997, employing approximately 11,028 people at an average wage of \$52,000. It is mostly comprised of firms in engineering and architectural services, management and public relations, and research and testing services, with some employment in accounting, auditing, and bookkeeping. Engineering and management services are likely to have absorbed skilled individuals laid off from high-tech firms. Growth can be partly explained by the outsourcing to these firms of functions such as payroll,

testing, advertising, and product and market research from high-tech manufacturers and software companies.

SOME CAUSES FOR CONCERN

Unemployment Levels, Uneven Growth, and Persistent Poverty. Since 1993, the economic health of the region has improved along with the state’s and nation’s unprecedented economic expansion. Unemployment dropped below 3.5 percent in 1998, down from 8.6 percent in 1991. There are indications that the present tight labor market may place severe growth constraints on software and high-tech firms, while the persistent failure to educate and train a new generation of machinists may prove disastrous to the hundreds of firms in the region in need of such workers.

In the midst of the overall boom, many communities grapple with jobless rates higher than the state average. Among the most severely affected are Lawrence (8.5 percent), Gloucester (5.3 percent), Methuen (4.9 percent), and Lowell (4.4 percent). These unemployment rates (for 1998) do not tell the entire story and, in fact, can be misleading. Unemployment rates have fallen for all of these cities since the low point of the last recession in the early 1990s. Over the same interval, however, total establishment employment (not including employment of residents who commute to other cities) has actually declined for Lawrence and Lowell, and has risen only slightly in Salem. These cities have seen a continuing erosion of their economic base, even as the state as a whole has expanded.

The burdens of joblessness fall on the young, the undereducated, the less skilled, people of color, and recent immigrants; in these populations, real unemployment is much higher. Many are congregated in old mill

Employment Change in Selected Areas
Employment has declined severely in some older Northeast cities.

	Employment			Change		
	1985	1992	1997	1985-92	1992-97	1985-97
Massachusetts	2,871,065	2,737,313	3,046,090	-4.7%	11.3%	6.1%
Gloucester	12,270	9,931	11,292	-19.1%	13.7%	-8.0%
Lawrence	29,466	21,147	20,925	-28.2%	-1.0%	-29.0%
Lowell	45,391	34,928	32,046	-23.1%	-8.3%	-29.4%
Salem	19,636	18,108	18,340	-7.8%	1.3%	-6.6%

Sources: Massachusetts Division of Employment and Training

cities, in spite of the long-running economic expansion. Indeed, the state's poverty rate is higher than at any time since 1980, the year the Federal Census Bureau began tracking the figure.²

Job Loss, Mergers, and Acquisitions. During the expansion, the region's manufacturing concentration has presented no major problems. It does, however, make the region vulnerable to prolonged downturns in the computer equipment, electronics, and telecommunications industries and to the deepening crisis among leading export destination countries. The loss of close to 9,000 manufacturing jobs statewide since February 1998 is worrisome. Within the region, roughly 3,000 jobs in the semiconductor, semiconductor equipment, and related industries have been lost since late 1997.³

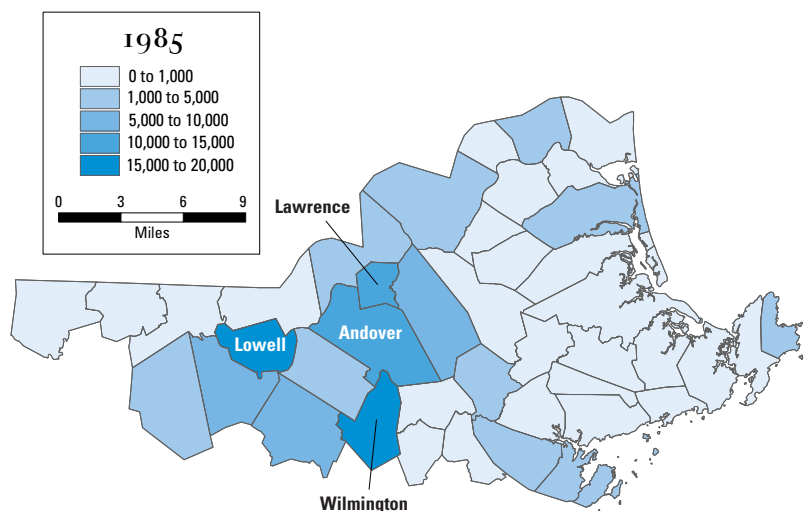
Why does this matter? Firms in these sectors subcontract portions of their manufacturing to the hundreds of small metalworking, electronics, plastics, and software firms that dot the region, creating important synergies and stimulating both manufacturing and business services job growth. Additional cuts will put the brakes on employment growth.

Six recent mergers of Massachusetts computer and software firms with California companies—including Stratus Computer, Bay Networks, Cascade Communications Corp., and Wellfleet Communications—should be monitored, as should electronics giant Tyco's pending purchase of AMP Distributors, Inc., for \$11.3 billion. (AMP is the owner of M/A-Com, Lowell's largest employer.) In addition, the acquisition of Arterial Vascular Engineering by Medtronic, Inc., may pose problems for workers, as Arterial Vascular owned a 600-employee plant in Billerica that made the same kind of medical devices as a Medtronic plant in Danvers.⁴ (The announced closing of the Billerica plant came in early February.) The telecommunications and Internet industries will remain volatile, as indicated by the fact that in the first month of this year NORTEL Communications Systems announced a cut of 8,000 workers (10 percent of its workforce) to lower its operating costs.

Other employment declines have been experienced in the apparel industry, broadly defined to include both

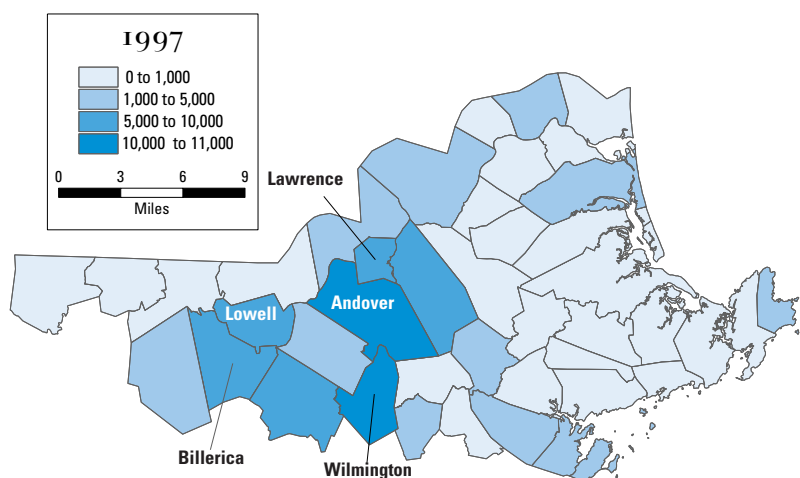
Northeast Region Manufacturing Employment (1985)

Total Manufacturing Employment = 125,623



Northeast Region Manufacturing Employment (1997)

Total Manufacturing Employment = 95,096



Manufacturing employment has declined since 1985, and its location has been dispersed from older industrial/mill cities, such as Lowell and Lawrence. Wilmington losses reflect substantial cutbacks at its GE plant.

Source: Massachusetts Division of Employment and Training; author's calculations

manufacturers and retail stores (where a total of 3,025 jobs have been lost since 1994), and in sectors of the transportation industry (where in transportation equipment and in trucking and warehousing, some 2,803 jobs have been lost since 1994).

Export Weaknesses. Negative export growth in 1998 is partly a consequence of the Asian economic crisis. For the first quarter of 1998, exports dropped 6 percent (\$273.3 million), as compared to the last three quarters of 1997. In the second quarter of 1998, they fell 1.1 percent.⁵

Layoffs at firms manufacturing powerful computers and computer chip-making equipment are a local manifestation of this. Stratus Computer, LTX Corporation, PRI Automation Inc., Eaton Corp., and Varian Ion Implant have all announced workforce reductions. Global production overcapacity and sharply reduced profits have prompted some semiconductor makers to develop alternatives to memory chips for digital television, consumer electronics, and data communications equipment. This could have a long-term negative impact on the chip-making equipment industry both regionally and statewide.

SKILLS, SPACE, LABOR MARKETS, AND SUSTAINABLE GROWTH

What does the future hold? In spite of the economic expansion, problems persist in the cities that were once the region's growth engines. It appears that the region is running out of two things that help keep an economic engine running: space for new construction, and workers with the skills required by growing firms.⁶ The word "appears" is used advisedly; there is vacant space in older cities in the region, and in spite of a very low official unemployment rate, there remain large pockets of high unemployment in these same cities. Thus, reuse of space in both urban and suburban areas becomes an important challenge, as does the development of job training and other strategies to unlock employment options for residents of these communities.

Sites in old mill complexes are either contaminated or inadequate in terms of highway access, power needs, and layout of operations. While improvements can be made—as is evident by the United Shoe Machinery makeover in Beverly, the Wannalancit Mills reuse plan in Lowell, and the highly successful Greenpoint Manufacturing and Design Center in Brooklyn, NY—the situation is circular.⁷ Owners cannot or will not spend the high sums needed to refurbish vacant space, and no one will occupy space absent refurbishment. Cash-strapped communities are often unwilling to waive back taxes, which makes redevelopment more difficult.

During the 1980s, the problems posed by these mills were ignored, and there was large-scale development of suburban industrial parks. While in the near-term the space problem was solved, this created a problem for workers unable to get to the jobs. Suburban development brought an ancillary problem: manufacturers moved out, retail establishments followed, and urban centers began to suffer high retail vacancy rates.

Driving in bumper-to-bumper traffic along Route 93 early in the morning, one can attest to the fact that for many these are the best of times, traffic jams and all. But developable land in suburban areas is scarce and very expensive, housing prices are skyrocketing, and many suburban communities want to preserve their few remaining areas of wetlands and open space.

Four keys to the region's past success were access to water power, skilled craft labor, transportation, and the latest in mill technologies. The area still enjoys a strong skill base and access to highways and other modes of transportation, and it benefits from a location in the middle of a high-tech research and development milieu. But extending the gains of the region's expansion to every resident will require the redevelopment of urban centers. A purposeful linkage between the start-up and expansion of firms and the jobs and necessary training would then be needed to maximize employment in or near the pockets of high joblessness. ▮

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ENDNOTES

1. Ronald Rosenberg, "Westford Ho! New Generation of Switch Makers Calling Suburb Home," *Boston Globe*, November 18, 1998, p. D1.
2. James R. St. George, "No Trickling Down in Massachusetts," *Boston Globe*, January 19, 1999, p. 11. For a discussion of similar persistent poverty for Latinos in Massachusetts during the late 1970s and early 1980s expansion, see Edwin Melendez and Miren Uriarte, eds., *Latino Poverty and Economic Development in Massachusetts*, University of Massachusetts Press, 1993.
3. Jerry Ackerman, "Ripples of Asian Crisis Spreading in State," *Boston Globe*, October 1, 1998, p. D1.
4. *Sun* staff, "M/A-Com's Owner Sold for \$11.3B," *The Sun*, November 23, 1998, p. 1; *Sun* staff, "Billerica Workers' Future Uncertain in Sale," *The Sun*, December 1, 1998, p. 21; Ronald Rosenberg, "Tethered but Thriving," *Boston Globe Sunday*, August 23, 1998, p. E1.
5. Kimberly Blanton, "Mass. Firms' Exports Dip 1.1 Percent in 2nd Quarter," *Boston Globe*, November 18, 1998, p. D5.
6. According to a recent DRI study reported on in the *Boston Globe*, a scarcity of available workers, along with less business from Asia, will slow New England's growth to 1.7 percent in 1999, down from 3.5 percent in 1998 ("Labor Deficit, Global Woes Loom in N.E.," *Boston Globe*, December 24, 1998, p. D3). See also Caleb Solomon, "Divergent Forces Likely to Slow Growth in 1999," *Wall Street Journal*, December 30, 1998, p. NE1.
7. For a discussion of the Greenpoint Manufacturing and Design Center, see Alex Prud'Homme, "Off the Urban Rust Heap, a Factory Goes to Work," *New York Times*, January 10, 1999, section 3, p. 1.

A PUBLIC OPINION POLL

How Big Is This Bug We Call Y2K?

RALPH WHITEHEAD, JR.

WITH LOU DiNATALE



ILLUSTRATION: NAOMI SHEA

When the world awakes on the first day of the next millennium, we will begin to know with certainty the impact of the computer problem called Y2K. At the core of the quagmire is this: Without correction, most older computer systems will begin the new year on a very old date: January 1, 1900.

Across the world—for years—countless efforts have been under way to find the sources of disruption and address them before all those 99s give way to 00s. We won't know until it happens, however, whether our efforts have been a complete success. What kind of damage might ensue for every bit of code that goes undetected and uncorrected? Will it cause an auto

engine to misfire momentarily or a power grid to go positively dead?

Expert opinion on Y2K's likely impact, as with so many things, is broadly divided. Some technology pundits foresee disaster, some only a slight disruption, and the others, everything in between. Forecasts rest on the confidence in experts' ability to search for the bits of code in question and to make the necessary adjustments—successfully.

AND WHAT DO YOUR NEIGHBORS THINK?

In the United States, the entities that carry or connect with the toxic code are spread across millions of workplaces and households. A majority of Americans use com-

How Serious Will the Year-2000 Computer Problem Be?

	US	NE	MA
Computer mistakes due to the Year 2000 issue will cause:			
Major problems:	34%	30%	31%
Minor or no problems:	61%	62%	59%
The Y2K bug will impact the economy in the following way:			
Serious or catastrophic impacts:	29%	36%	34%
Minor or no problems:	69%	53%	56%
The effects on me personally will be:			
Very serious:	14%	17%	16%
Minor or none:	83%	76%	74%

puters, and many of these, the Internet. Thus, while knowledge of the technology per se is the expertise of a few, a forecast of the possible impact may be better judged by the rest of us.

For this reason, the Donahue Institute's UMass Poll recently looked at public views regarding Y2K. We began with a set of four questions mirroring those in a national Gallup Poll. We put these questions and several others to 1,000 New Englanders, including 400 residents of Massachusetts. Almost eight of 10 people nationally and nine out of 10 locally are aware that there is a potential Year-2000 computer problem. National and local responses to more specific questions are indicated in the table above.

The regional and state polls both asked those who are employed (roughly two-thirds of the respondents) this question: "To your knowledge, do you or your employer have a Y2K problem?" The shares in the region and in the state who say yes are 23 percent and 25 percent respectively. The polls then asked: "Is your employer taking sufficient steps to correct any problems it might face because

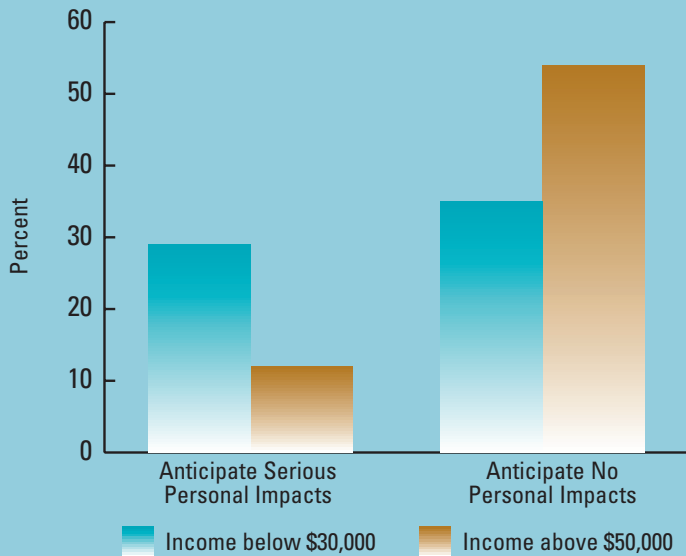
of Y2K?" In New England, of those who say that they or their employer has such a problem, three out of four say their employer is taking sufficient steps. Twelve percent say their employer is not doing so, and the same number aren't sure. In Massachusetts, three-fourths say their employer is taking steps, 15 percent say their employer is not doing so, and one in 10 aren't sure.

The income gap. What is striking is how views of the problem diverge on the basis of income. We have somewhat arbitrarily defined a "lower-income" household as one with \$30,000 or less in annual pretax income. A "higher-income" household is defined as one with an annual income of \$50,000 or more. Among those in the first group, the percentages who are apprehensive are markedly higher than they are for high-income households.

The percentage of lower-income respondents in Massachusetts who anticipate major problems from Y2K is more than double that of those in the higher-income category. As for direct personal impacts, 29 percent of the

Personal Impacts from the Y2K Bug

Fewer high-income people than low-income people believe that they personally will be affected seriously by the Y2K bug.



first group expect to be seriously affected, while only 12 percent of those with incomes above \$50,000 feel this way.

Fourteen percent of the state’s low-income respondents think Y2K’s impact on the state economy will be catastrophic, but only 4 percent of the higher-income respondents say this. The great majority of those with incomes of \$50,000 or more believe the economic impact on the state will be minor or none, while fewer than half of the lower-income respondents display this optimism.

A similar split in responses to these questions occurs across New England, but it is not as remarkable. Eleven percent of the low-income respondents think the impact on their state’s economy will be catastrophic. The share of the more affluent who think this is only 6 percent. Of the higher-income households, one in four think Y2K will cause major problems, but 39 percent of the less affluent think so. Fewer than one-quarter of lower-income households think they personally will be affected seriously, but only 14 percent of more affluent respondents think this.

There is a striking divergence by income group regarding who should be responsible for finding solutions to the Year-2000 bug. In the state, nearly half of

the upper-income strata believe it is the private sector’s responsibility to make repairs, while only 26 percent of low-income respondents feel this way.

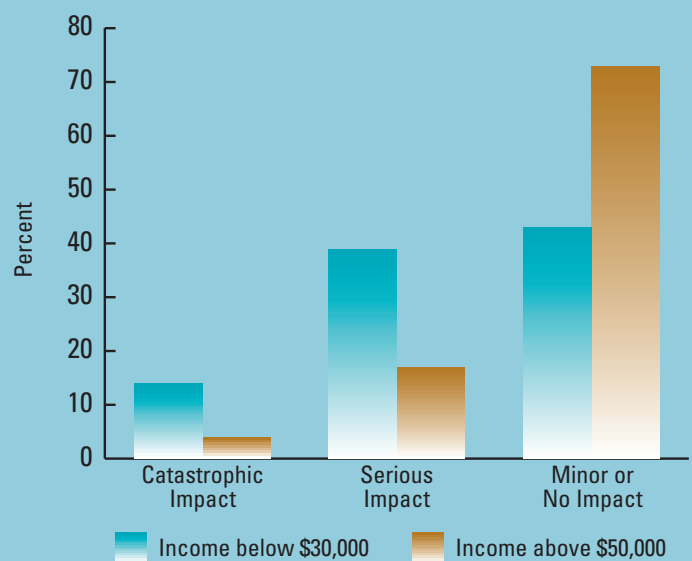
Why these differences? Factors that further characterize high- and low-income groups might help to explain the differences in their responses. Workplaces that depend on computers and access to the Internet receive more information about Y2K, and people with higher incomes are more likely to be in such workplaces. This is supported by respondents’ reported Internet use: Only 6 percent of low-income respondents use the Internet both at work and at home, compared to half of the high-income group. Fifty percent of those with lower incomes use the Internet at work, while four out of five households with earnings above \$50,000 are in this category. Perhaps the ultimate explanation for one group’s consternation is simply a fear of the unknown. ▮

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Feared Impacts on the Massachusetts Economy

People with higher incomes generally do not foresee the Y2K bug having a major effect of the state economy, but half of people with low incomes are fearful.



The Massachusetts Leading Economic Index

Adding Up the Numbers

The sidebar in Economic Currents (page 5) describes recent trends in the Massachusetts Current and Leading Economic Indexes. The leading index represents a forecast of the growth in the current index over the next six months, expressed at an annual rate.

The 10 indicators that comprise the leading index do not usually move in tandem. Typically, some may indicate an expectation of faster-than-average growth, while others indicate an expectation of slower-than-average growth. The following table accounts for the contributions of each toward growth that is faster or slower than the long-term trend of 2.6 percent. The index value is their sum.

For the three-month period ending in January, withholding taxes, sales taxes, the unemployment rate, the Bloomberg Stock Index for Massachusetts, and construction employment contributed to a forecast of above-trend growth. At the same time, employment, the interest rate spread between 10-year and 3-month U.S. Treasury securities, and motor vehicle sales taxes contributed to a forecast of below-trend growth.

Contributors to above-trend growth in January included withholding taxes, sales taxes, the unemployment rate, consumer confidence in New England, and the Bloomberg Stock Index for Massachusetts, while employment, the interest rate spread, and motor

vehicle sales taxes contributed to a forecast of below-trend growth.

Several recent months of the indexes are revised with each release. These revisions are a result of the statistical method used to create the index, as well as revisions in the underlying indicators.

	Jan 1999 (percent)	Nov 1998 – Jan 1999 Average (percent)
Trend	2.6	2.6
Employment	- 0.3	- 0.2
Withholding taxes	1.4	1.1
Sales taxes	0.7	0.5
Unemployment rate	0.1	0.1
Consumer confidence (New England)	0.2	0.0
Interest rate spread (10-year less 3-month)	- 0.4	- 0.4
Bloomberg Stock Index for Massachusetts	0.5	0.4
Initial unemployment claims	0.0	0.0
Construction employment	0.0	0.1
Motor vehicle sales taxes	- 0.4	- 0.2
Leading Index	4.4	3.9

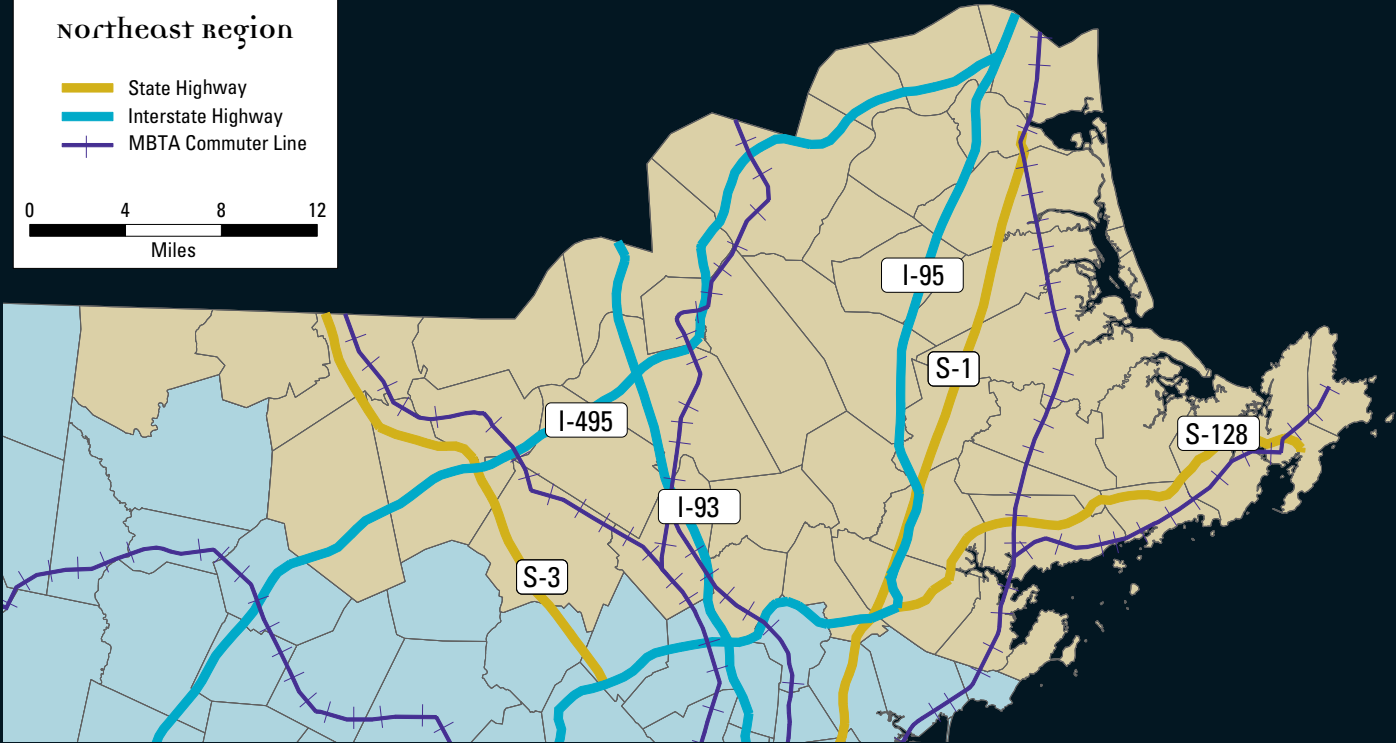
Note: Because of rounding, columns may not add exactly.

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northeast region

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- Interstate Highway
- MBTA Commuter Line

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