MASSACHUSETTS BENCHMARKS

The quarterly review of economic news & insight

summer 2000 volume three issue 3

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A PUBLICATION OF THE UNIVERSITY OF MASSACHUSETTS

IN COOPERATION WITH THE FEDERAL RESERVE BANK OF BOSTON

Massachusetts Benchmarks Editorial Policy

Massachusetts Benchmarks is a quarterly journal published by the University of Massachusetts in cooperation with the Federal Reserve Bank of Boston. It presents timely information concerning the performance of the Massachusetts economy, including periodic economic analysis of major geographic regions within the Commonwealth and an array of key industries that make up the economic base of the state. The journal provides commentary and interpretation of economic data aimed at business leaders, public policymakers, educational organizations, and the general public.

The editors of *Massachusetts Benchmarks* invite articles on topics of current interest from researchers on various aspects of the state economy, regional economic development, and key growth industries. The editors also welcome queries from academic or professional economists for future issues of the journal. Please send queries to Carolyn Dash Mailler at cmailler@external.umass.edu with a brief biography and topical outline. Authors considered for *Massachusetts Benchmarks* will be furnished with writers' guidelines.

All submissions are subject to rigorous review by the Editorial Board or other referees. Manuscripts of accepted articles are expected to adhere to the guidelines. Final publication decision rests exclusively with the editors.

MASSACHUSETTS BENCHMARKS

summer 2000

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This and past issues of *Massachusetts Benchmarks*, along with information about the Benchmarks Project, can be found on the Web at www.massbenchmarks.org.

Letter
From The President

Over 10,000 University of Massachusetts graduates entered a rapidly changing economy in recent weeks, along with thousands of their peers from other Massachusetts institutions of higher education. This issue of *Massachusetts Benchmarks*, unique in its analysis of U.S. Economic Census data, describes the new service-based, technology-driven Massachusetts economy facing the class of 2000.

Evidence of this dramatic shift is plentiful, even in the federal government's new measurement of the economy. Entirely new employment categories such as "information" and "professional, scientific, and technical" are now being used by the U.S. Census to model the shape of the economy.

As University of Massachusetts Professor of Political Economy Craig Moore points out in "A Shifting Balance: The New Service-Based Economy," our new economy offers great opportunities for those with high levels of communication and technology skills but difficult challenges for those lacking such skills. This transition from manufacturing to services is occurring nationwide, but faster in Massachusetts, placing a heavier demand on the leadership in state policymaking, business, and education.

Massachusetts continues to ride a wave of prosperity. But analysts such as University of Massachusetts Professor Alan Clayton-Matthews are becoming concerned that inflationary pressures on wages and home prices will begin to threaten the state economy. His "Economic Currents" article is a quarterly analysis of the state economy.

Because we are deeply committed to the task of providing economic opportunity to each of our citizens, the changing realities must be carefully monitored.

William M. Bulger
President
University of Massachusetts

EXCERPTS FROM THE BOARD

A number of factors indicate a slowing of the exceptional growth rates in the Commonwealth's economy. While the "tone" of the economy appears to be changing, the *Benchmarks* Editorial Board does not believe a cooling, if indeed one is really taking place, will lead to a recession.

Among the signs of a softening economy: The housing sector has been slowing, measured by housing permits and home sales. The stock market has continued to be volatile. While part of the state's financial services sector might benefit from increased market volatility, it would be adversely affected by a long-lasting stock market correction. Volatility or stock market declines may ultimately erode consumer confidence. A high level of consumer spending, often based on the wealth effect of stock market gains, is not always backed by sufficient income or savings. For this reason, consumer demand may not weather the recent softening in stock prices.

The state's exceptionally tight labor market is cause for both concern and celebration. Many jobs remain unfilled. This is a serious constraint on the future growth of many companies in the Commonwealth, especially those in the expanding high-technology sector. At the same time, segments of the population that have not participated in the labor force are being drawn in. In fact, Massachusetts seems to be tapping virtually every conceivable source for new labor: immigrants, out-of-state commuters, older re-entrants, and multiple jobholders.

Even with the cautionary signs, the state's economy seems more likely to experience a soft landing than to fall into a recession.

We are seeing signs of inflation on the national level. Oil prices receded only briefly following OPEC's production increase in April. Other commodity prices, after a couple of years of trending downward, have begun accelerating upward in recent weeks.

Even with the cautionary signs, the state's economy seems more likely to experience a soft landing than to fall into a recession. It is likely that growth will get closer to a sustainable long-term rate, on the order of 3 percent annually for the nation. Massachusetts is expected to moderate similarly. It seems as though the economy is successfully weathering a period of some uncertainty and instability.

JUNE 6, 2000

Economic currents

ILLUSTRATION: NAOMI SHEA

ALAN CLAYTON-MATTHEWS

The Massachusetts economy has not fully caught up with the news that labor shortages are constraining growth. Real gross state product (GSP), as proxied by the Massachusetts Current Economic Index, grew at an annualized rate of 4.3 percent in the first quarter of 2000, only moderately below the 5.4 percent pace of U.S. gross domestic product (GDP). Employment-related measures over the twelve-month period ending in April bear this out. The number of employed Massachusetts residents increased by 1.3 percent, and the number of jobs in the state grew by 2.1 percent, matching the expansion-average annual rate of job growth.[1] Employment gains continued to outpace both population and labor-force growth, driving the unemployment rate down to 2.8 percent in April.

Furthermore, the near-term outlook is for continued demand pressure, despite the sharp correction in stock markets in March and April. The Massachusetts Leading Economic Index for April, a forecast of real GSP over the next six months, stood at 3.1 percent. The index is composed of 10 indicators, including the Bloomberg Stock Index. Weakness in the stock index was more than offset by strength in employment, labor earnings, and motor vehicle purchases. Though the leading index is indicating a continuation of above-trend growth, the 3.1 percent projection does represent moderation from earlier in the year.

The Current and Leading Economic Indices for Massachusetts

The Massachusetts Current Economic Index for April was 127.3, up 4.4 percent from March (at annual rates), and up 3.9 percent from April of last year. The current index is normalized to 100 in July 1987, and calibrated to grow at the same rate as the Massachusetts real gross state product over the 1978–1997 period.

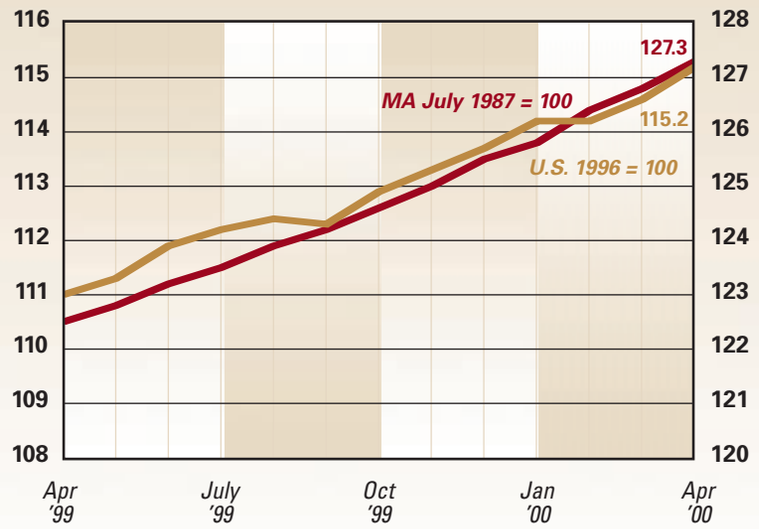
The Massachusetts Leading Economic Index for April was 3.1 percent, and the three-month average for February through April was 4.2 percent. The leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate. Thus, it indicates that the economy is expected to grow at an annual rate of 3.1 percent over the next six months. Because of monthly fluctuations in the data on which the index is based, the three-month average of 4.2 percent may be a more reliable indicator of near-term growth.

Continued growth in employment, soaring wages, and strong growth in motor vehicle purchases indicate that the Massachusetts economy is still hot. However, recent declines in stock markets, labor shortages, a leveling off in consumer confidence, and some weakness in sales tax collections suggest that growth may soon slow.

Submitted June 2, 2000

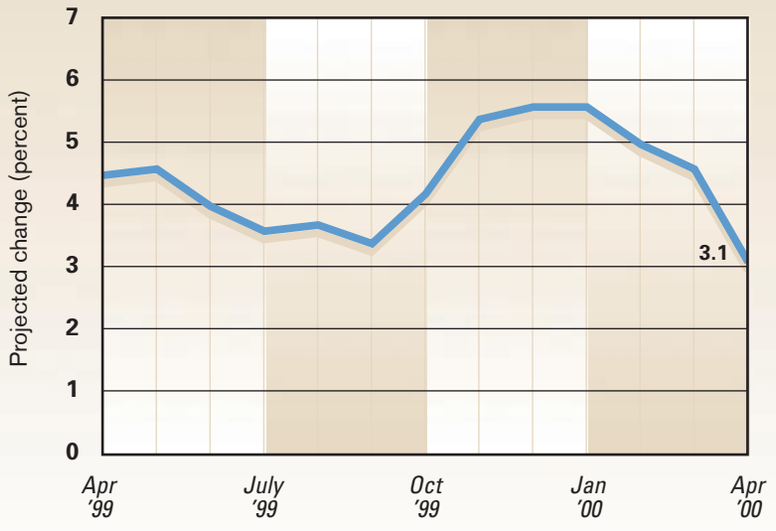
Current Economic Index
United States and Massachusetts

The U.S. Current Economic Index is measured on the left vertical axis; the Massachusetts Current Economic Index is measured on the right.



Massachusetts Leading Economic Index

The leading index is the annualized, six-month projected change in the Massachusetts Current Economic Index.



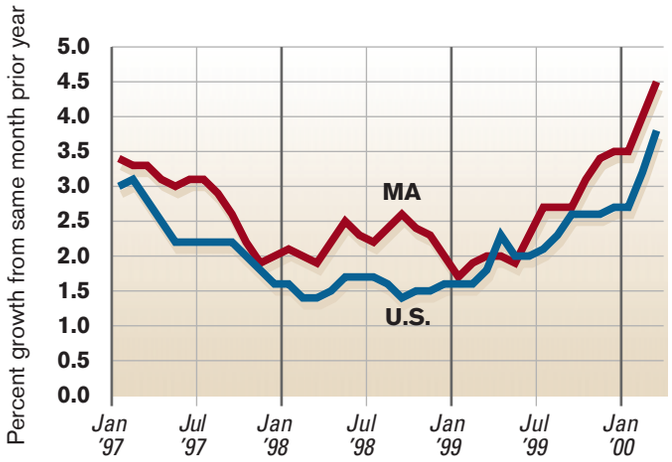
Sources: The Conference Board; University of Massachusetts; Federal Reserve Bank of Boston

Inflation Is Breaking Out on Three Fronts

Consumer Prices. The continued real growth has not come without a price. That price is inflation. Given the length and strength of the state's expansion, this is no surprise. Inflation is evident in consumer prices, wage rates, and housing prices.

Consumer price inflation has been slowly accelerating in Massachusetts and the nation since the beginning of 1999. Part of the rise is a reversal of the deceleration largely attributed to the East Asian crisis in 1997–98, which resulted in lower import prices and interest rates. As the recovery in Asia proceeded during 1999, import prices and interest rates rose, working their way into higher consumer prices.

Consumer Price Inflation



Source: U.S. Bureau of Labor Statistics

The increase in inflation since the beginning of 1999, however, has exceeded what would simply have been a return to pre–East Asian crisis conditions. In March, the year-over-year increase in consumer prices was 3.8 percent for the nation and 4.5 percent for the Boston metropolitan area. For the state, this is the highest rate of increase since 1991. A significant portion, somewhat more than one percentage point, is due directly to increases in oil prices. In March, energy costs were up 24 percent over the prior year in both Boston and the nation. Gasoline prices were up more than 50 percent.

OPEC and import prices, however, are not the sole forces behind accelerating inflation, especially in Massachusetts. Excluding food and energy, the Boston Consumer Price Index rose 3.5 percent in the year ending in March, indicating that inflation is gaining a broad-based foothold. Health care costs rose 5.2 percent during this time and will probably rise at a faster pace in the near future, as managed care providers adjust their rates upward to cover losses and operating costs. Housing costs were up by 5.4 percent and rents by 7.1 percent, the latter a reflection of the tight housing market. Perhaps the most telling indicator of core inflation is the increase in the broad services component of the Boston CPI, which rose 4.0 percent (versus 3.0 percent for the U.S.).

Consumer Price Index, All Urban Consumers
Percent Change March 1999 to March 2000

	Boston	U.S.
All Items	**4.5**	**3.8**
Energy	23.9	24.1
All Items Less Food and Energy	3.5	2.4
Apparel	0.1	0.3
Commodities	5.4	4.8
Durables	-0.6	-0.2
Education and Communication	0.1	1.2
Food and Beverages	2.2	2.1
Other Goods and Services	9.4	5.7
Housing	5.5	3.0
Shelter	5.3	3.1
Fuels and Utilities	9.4	4.6
Household Furnishings and Operations	3.1	0.9
Medical Care	5.2	4.0
Nondurables	7.5	6.5
Recreation	-1.6	1.1
Services	4.0	3.0
Transportation	8.3	9.3
Private Transportation	9.5	9.6
Food Away from Home	1.9	2.3
Rent of Primary Residence	7.1	3.2
Owner's Equivalent Rent, Primary Residence	5.4	2.7
Gas (Piped) and Electricity	0.1	2.3
Electricity	2.7	0.4
Utility Natural Gas Service	-3.4	7.2
Motor Fuel	53.7	52.5

U.S. is seasonally adjusted; Boston is not.

Sources: U.S. Bureau of Labor Statistics

The pace of inflation in the Boston metropolitan area is ahead of most of the rest of the nation, and in March exceeded the year-over-year growth in the 14 major metropolitan areas for which bimonthly CPI estimates are available. This is not unexpected. Massachusetts employment has grown at near the national rate during this long recovery (2.1 percent per year in Massachusetts versus 2.5 percent nationally). Since the state's population growth has been only half that of the nation, labor markets nine years into the expansion are necessarily tighter.

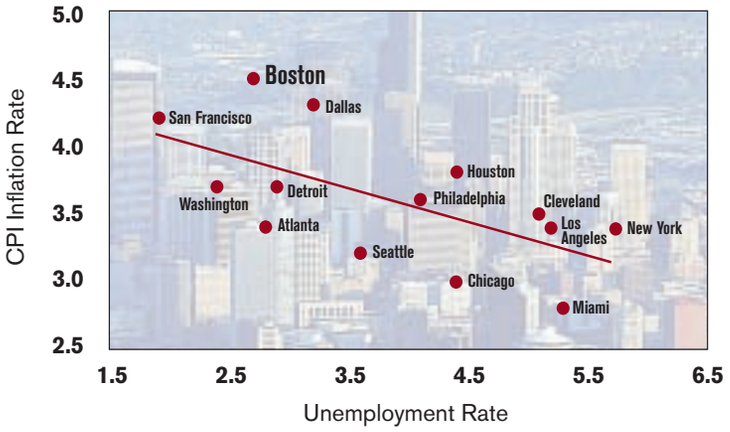
In April, the Massachusetts unemployment rate was only 2.8 percent, versus 3.9 percent nationally. The relationship between metropolitan area unemployment rates and consumer price inflation is in accord with a Phillips-type curve, meaning that regions with lower unemployment rates tend to have higher inflation rates.[2] This suggests that tight regional labor markets have a local effect on a region's core rate of inflation, which has important consequences for a region's business costs, competitiveness, and growth.

Wage Rates. The evidence on wage-rate growth is mixed, but a consistent pattern of acceleration is emerging. Outside of manufacturing, there are no direct, state-level measures of wage rates available, so we use measures of aggregate wages and salaries divided by payroll employment.

There are two reliable sources of data on wages and salaries paid to Massachusetts workers: wage and salary disbursements from the U.S. Bureau of Economic Analysis, and withholding taxes from the Massachusetts Department of Revenue.

Unemployment and Inflation, Selected Metro Areas

The pace of inflation in Boston is ahead of most of the rest of the nation and in March exceeded growth in 14 major metropolitan areas.



Source: U.S. Bureau of Labor Statistics

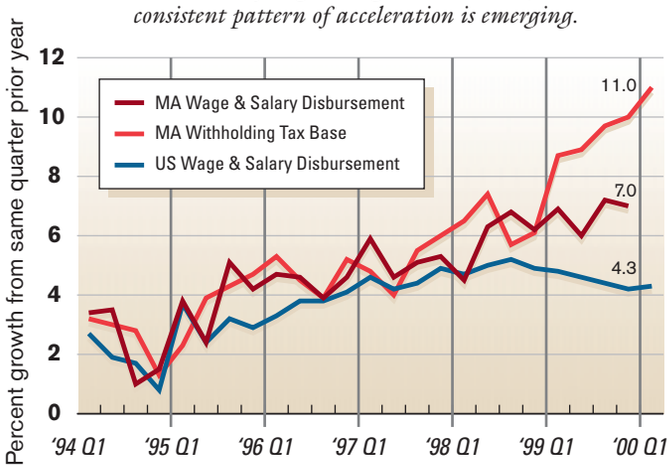
The latter are converted to wages and salaries by dividing by the tax rate and adjusting for personal exemptions.

The two measures give somewhat different messages about wage inflation. According to the most recently available BEA measure, wage rates in the fourth quarter of 1999 were 7 percent higher than a year earlier. The tax measure indicates wage-rate growth of 10 percent over the same period and 11 percent in the year ending in the first quarter of 2000. It is likely that the number lies somewhere between 7 percent and 11 percent.

Another source of information on wage rate increases, based on a relatively small survey of business establishments throughout New England, is from the Federal Reserve's *Beige Book* for the Boston district. The May 3 edition reports average pay increases in the 3 percent to 5 percent annual range, but with larger increases for technology workers. The *Beige Book* also reports that signing bonuses, stock options, promotion rates, and performance-based compensation are becoming more common for professional and technical employees. The discrepancy between BEA and tax-based measures and the Fed survey may be partly explained by slower wage-rate growth outside of Massachusetts.[3] Furthermore, the BEA and tax-based measures include bonuses and stock options (when exercised), and include increases in weekly hours of work. Unfortunately, there are no reliable measures of hours, outside of manufacturing, at the state level.

Growth in Wages by Source of Data

The evidence of wage-rate growth is mixed, but a consistent pattern of acceleration is emerging.



Source: BEA; BLS; Mass. DOR; author's calculations

The growth in wage rates is potentially dangerous for two reasons. First, wages are rising faster in Massachusetts than nationally. (A comparable measure for the United States indicates wage-rate growth of 4.3 percent in the year ending in the first quarter of 2000.[4]) This means that the state's labor costs are rising faster, and for Massachusetts firms that are competing in national or international markets, profits are lower. Second, firms whose markets are primarily local can pass these costs on, resulting in higher inflation. Given the tightness in the labor market, higher inflation may result in higher wage demands that employers must accede to, initiating a wage-price spiral.

Housing and Real Estate Prices. Housing prices continue to accelerate. According to the Freddie Mac and Fannie Mae Repeat Sales Index, home prices in Massachusetts appreciated by 12.7 percent in the year ending the fourth quarter of 1999, versus 6.6 percent nationally. This gap has been widening for the last three years, translating directly into a widening cost-of-living gap between Massachusetts and the nation. The consequence is that net migration may fall, thereby exacerbating the shortage of workers, as both sides of the net migration equation are adversely affected. In-migration could drop, as the region's employers find it more difficult to recruit workers from other areas of the country, and out-migration could increase as Massachusetts households find other regions more attractive in terms of the cost of living.

Commercial real estate is also becoming more expensive, especially in Boston. Vacancy rates are at a 20-year low. Class A office space in the Back Bay and Cambridge, for example, has vacancy rates at only a fraction of a percent.[5] In March, class A (that is, prime) commercial rents in Boston were up between 12 and 15 percent, and class B commercial rents were up between 18 and 20 percent over the prior year.[6]

What Will Happen When the Bubble Bursts?

It is a widely accepted hypothesis that the run-up in technology stocks was a bubble, and that a sharp correction was due. No one knows for sure when, by how much, or even whether the full price adjustment has yet occurred. The inability to determine the value of IT firms is at the core of the problem, combined with the rapid pace of "dot.com" business formation, the frenzy over new stock issues for technology companies, the rapid growth in the venture capital market, and the relentless flow of money from households into equity markets.

Recent movements in the Bloomberg Stock Index for Massachusetts, which have paralleled the NASDAQ of late,

illustrate the gyrations in stock prices. Between October 18 of last year and this year's precipitous drop on March 6, the Bloomberg rose 94 percent. By April 14, the index had lost 38 percent of its top value. It had recovered somewhat by May 22, rising 11 percent from its April trough.

The basic valuation problems remain unresolved, so markets continue to be volatile. The most significant outcome of recent events has been to cast a specter of doubt over the viability of newly formed Internet-related firms, diminishing their supply of equity financing.

Since stock markets are still well above the levels that prevailed before the surge last fall (on May 22, the Bloomberg index was still 33 percent above its October 18 level), stock markets could experience another precipitous and sustained drop in the near future. If that happens, what will be the impact?

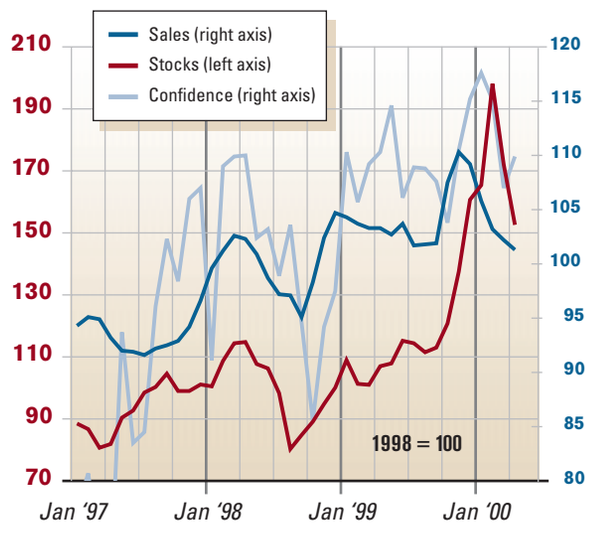
First, a drop would directly affect compensation in the high-paying financial sector. Employment in the security brokers and dealers industry represented 1.1 percent of total nonagricultural employment in the state in 1998 and accounted for 2.6 percent of total wages. Bonuses, a significant component of compensation in the industry, totaled roughly $600 million for 1998. This was about 20 percent of compensation on average, and 0.5 percent of total nonagricultural wages.[7]

The financial sector has also been fast growing, with average annual employment growth of 10.5 percent from 1980 to 1998. Bonuses would suffer in a bear market, and employment growth would decline. After the 1987 stock market crash, employment growth in the sector was stagnant for a year before resuming its trend rate of growth. If the industry were to stop hiring and bonuses were trimmed by half, the effect would be a reduction of a fraction of a percent of GSP growth. This is small, but significant.

A second, but probably larger, impact would be through what economists call the "wealth effect" of household asset values on consumer spending. Theory says that some portion of consumer spending derives from household wealth, in addition to consumer demand from income. Economists have estimated that the long bull market has added one percentage point to the nation's annual GDP growth via the wealth effect. There does appear to be a link between stock prices, consumer confidence, and consumer spending as measured by the Bloomberg Stock Index, consumer confidence in New England, and sales taxes.[8] There are already anecdotes about a softening in the demand for high-end homes in the wake of the sharp market dip in March and April.

A third impact is a reduction in investment flows to start-ups, especially for Internet-related firms. Many such firms are not yet profitable and rely on venture capital or new stock offerings for cash flow. In a sustained downturn of high-tech stocks, these firms may not be able to meet their payrolls and may be forced to drastically downsize, be acquired by cash-rich firms, or fail outright.

Stocks, Spending, and Consumer Confidence



Sources: Bloomberg L.P.; Conference Board; MA Department of Revenue; Bureau of Labor Statistics; author's calculations. Note: Stock prices and the sales tax base are in real dollars, using the U.S. CPI-U as the deflator.

The Silver Lining

So far, these impacts have been minimal, though the outlook for equity markets is still uncertain and risky. The silver lining in a near-term stock market downturn—if it is concentrated in those stocks that have reached unsustainable valuations, and if it is limited to bursting the bubble—is that it couldn't happen at a better time. Downtown office space for expansion of the finance industry is virtually unavailable, consumer demand is outstripping the capacity of the domestic economy to supply it, and employers across the state have unfilled vacancies for IT positions.

A moderate stock market downturn, if it restored a slower and steadier pace of equity price appreciation, would actually help solve these problems. Once again, as with the Asian crisis, the run of luck we have had in this expansion will turn bad news into good. The main price to pay when a bubble is burst—aside from reallocating wealth to those who jumped ship at the right moment—is that it reveals what was, in hindsight, a misallocation of resources. In this case, too many resources have been devoted to discovering new uses of the Internet and perhaps buying too many oversized houses and automobiles. Fortunately, the hardware, labor, and real estate released by failing start-ups can be easily reallocated to productive firms.

Manufacturing Exports Are Back on Track

Employment in the manufacturing sector declined by 0.7 percent in the year ending in April. Small declines were spread over most industries, with the largest percentage declines in apparel, transportation equipment, and computers. Most employment declines are consistent with stable or growing output and productivity gains.

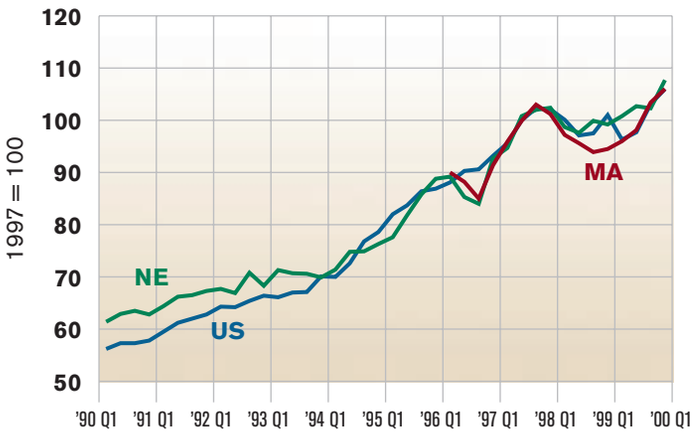
Semiconductor equipment manufacturers are doing well, as there is a large backlog of orders for re-tooling driven by new manufacturing technologies. The SEMI book-to-bill index for North American manufacturers in March was 1.42, indicating that future shipments are expected to in-

crease. Massachusetts manufacturers such as Helix Technologies are relying on maximum overtime in an attempt to keep the backlog from growing.

The decline in exports associated with the East Asian crisis is over, and we can begin to measure impact. Merchandise exports from Massachusetts grew at an average annual rate of 8.2 percent (roughly $1 billion per year) from 1992 to 1997. In terms of the overall impact on the state's economy over this time, merchandise exports have been adding about one-third of a percentage point to the economy's annual rate of GSP growth. The decline in merchandise exports in 1998, largely attributable to the East Asian crisis, subtracted between one-half and two-thirds of a percentage point from GSP growth, and the recovery in Asia the following year added nearly one-half a percentage point.[9]

Merchandise Export Index

The decline in exports associated with the East Asian crisis is over.



Quarterly data for Massachusetts are available beginning in 1996, and for the United States and New England in 1990.

The Fed to the Rescue

After reducing interest rates in the fall of 1998 in response to the financial turmoil following the collapse of the Russian ruble, the Fed raised rates six times between June 1999 and May 2000. This increased the target federal funds rate by 175 basis points. So far, this has had little apparent impact on the U.S. or Massachusetts economies, aside from a very moderate reduction in housing permits. Partly, this is because the first 75 basis points merely offset the earlier reductions. Also, there is a lag between the time interest rates change and their effects are felt. This lag makes Fed policy a crude tool—like driving a car with a very loose steering wheel—but it is the best tool available to nudge the U.S. economy.

Inflationary pressures are threatening to do long-term damage to the Massachusetts economy. Increases in the cost of labor (in excess of productivity gains) and the cost of living are slowly pricing Massachusetts out of national business investment and labor markets. It is important to stop the growing gaps between state and national wage rates and home prices, as these prices are "sticky" downward. It would take time to erase price differentials, because Massachusetts would have to wait until the rest of the country's wages and home prices caught up. During this time the state would lose investment and migration flows to other regions. As we know from the last cycle, this process could take several long and painful years to reverse itself.

Fed action to slow the economy is in the state's interest. The medicine is not tasty. Higher interest rates will raise business and credit costs and lower household wealth. If the Fed missteps and tightens too much, the ensuing recession will disproportionately hurt minorities and low-skilled workers, who had to wait several years for the expansion to lift them into jobs. Nevertheless, the risks are worth taking, because the alternative is a sure stagnation.

Submitted May 22, 2000

1. The current expansion in Massachusetts began in June 1991, the trough of the Massachusetts Current Economic Index.

2. The data in the graph consist of unemployment rates and year-over-year changes in the CPI in the 14 metropolitan areas for which bimonthly CPIs are available. The unemployment rates are for March and are not seasonally adjusted. Rates of inflation for Chicago, Los Angeles, New York, Boston, Cleveland, Dallas, and Washington, D.C., are calculated using data for March; inflation rates for other metropolitan areas use February data. The correlation between unemployment rates and inflation is -.62.

3. That wage rates in New England are growing more slowly outside of Massachusetts is a hypothesis that cannot be checked by the *Beige Book* for disclosure—and sample size—reasons. However, the BEA-based wage rate measure is available for all states and, based on this measure, Massachusetts has the fastest growth in New England in the year ending in the fourth quarter.

4. The U.S. measure is U.S. wage and salary disbursements divided by U.S. employment. This measure is not the same as the widely quoted employment cost index, but is comparable in definition to the state measures used.

5. Andrew Hoar, President of CB Richard Ellis/Whittier Partners, quoted vacancy rates for class A office space of .41 percent in the Back Bay and .35 percent for Cambridge (at the Greater Boston Real Estate Conference, April 25, 2000).

6. Ibid.

7. The data for security brokers and dealers are for 1998, and are from the Division of Employment and Training's Unemployment Insurance "202" reports. Bonuses for 1998 are estimated as the difference between wages for the 4th quarter of 1998 and the 1st quarter of 1999, less wages for the 2nd and 3rd quarters of 1998.

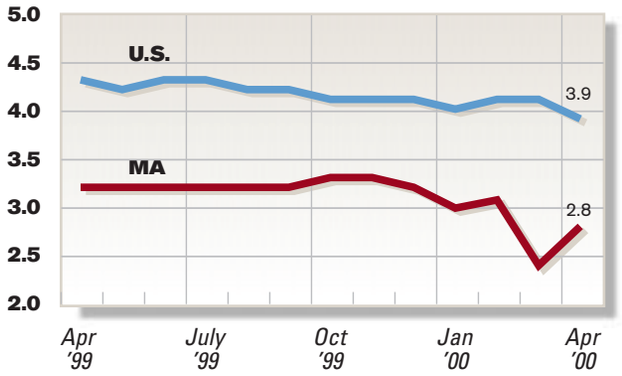
8. Consumer confidence for New England is from the Conference Board. The sales tax base is constructed from tangible property and services sales tax revenues from the Massachusetts Department of Revenue and converted into a tax base by adjusting for changes in the tax base and rates.

9. The methodology and calculations are available from the author upon request.

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 president of the New England Economic Project.

The Measure of Massachusetts

Unemployment Rates



State Labor Force, Employment, & Income

	Period	Value	Change from Year Earlier (%)
Labor Force *(Household-based)*	4/00	3,266,700	-0.2
Employment *(Establishment-based)*	4/00	3,293,600	2.1
Manufacturing		431,300	-0.7
Services		1,188,300	2.9
Monthly Initial Unemployment Claims	4/00	23,364	-11.5
Income	'99 Q4		
Personal Income ($M)		226,867	7.6
Real Personal Income ($M 1982–84)		134,826	4.8
Help Wanted Advertising Index, Boston (1987 = 100)	2/00	49	0.0

Regional Employment

	Employment		Unemployment Rate	
	4/00	Change from Year Earlier (%)	4/00	4/99
Central				
Fitchburg-Leominster PMSA	64,811	-1.5	3.3	3.5
Worcester, MA-CT PMSA (MA only)	239,117	0.3	2.6	2.8
Cape and Islands				
Barnstable-Yarmouth MSA	71,749	4.5	3.1	3.5
Boston Metro				
Boston, MA-NH PMSA (MA only)	1,772,615	1.3	2.1	2.4
Northeast				
Lowell, MA-NH PMSA (MA only)	158,454	1.5	2.3	2.9
Lawrence, MA-NH PMSA (MA only)	124,590	2.1	3.1	3.9
Southeast				
Brockton PMSA	131,480	2.5	2.7	3.0
New Bedford PMSA	76,639	1.7	4.3	5.4
Providence-Fall River-Warwick, RI-MA MSA (MA only)	112,065	-0.3	3.6	4.1
Pioneer Valley				
Greenfield LMA	31,569	0.9	2.3	2.5
Springfield MSA	276,010	1.6	2.8	3.2
Berkshire				
North Adams LMA	12,429	1.4	3.0	3.2
Pittsfield MSA	37,481	0.7	3.5	4.0

The University of Massachusetts Economic Benchmarks

	Apr. '00	Apr.'99
Current Economic Index	127.3	122.5
Leading Economic Index	3.1%	4.5%

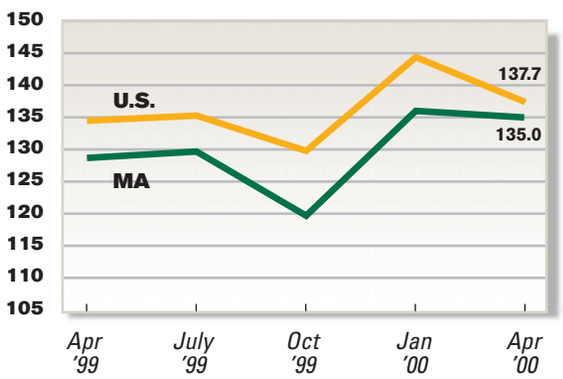
The current economic index for Massachusetts for April was 127.3, up 4.4 percent from March (at annual rates), and up 3.9 percent from April of last year. The current index is normalized to 100 in July 1987, and calibrated to grow at the same rate as Massachusetts real gross state product over the 1978–1997 period.

The leading economic index for Massachusetts for April was 3.1 percent , and the three-month average for February through April was 4.2 percent. The leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate.

Consumer Confidence U.S. and Massachusetts

QUARTERLY DATA

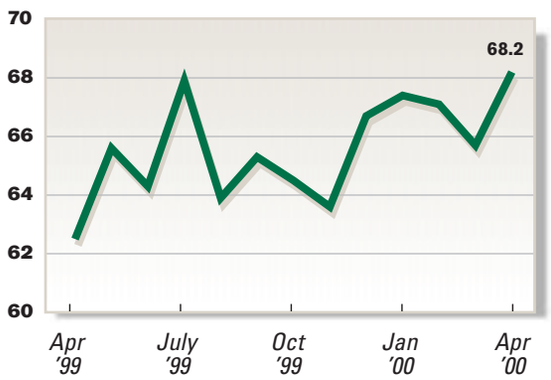
The trends rather than the levels of these indices should be compared, due to different base points.



Business Confidence in Massachusetts

MONTHLY DATA

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



Boston Consumer Price Index

(1982–84 = 100)

3/00	Change from Year Earlier (%)
182.7	4.5

MA Home Price Index

(1987 Q1=100)

'99 Q4	Change from Year Earlier (%)
138.4	12.7

MA New Housing Permits

(monthly average, 5/99–4/00)

Through 4/00	Change from Year Earlier (%)
1,545	-3.0

State and Local Government Employment, 1997

While included in the discussion of services employment on pages 16–17, these figures are from the Census of Governments rather than the Economic Census.

Function	Employment	Percent	Payroll ($ thousands)	Percent	Payroll/Employee ($)
Education	148,272	50.8	5,324,916	50.0	35,913
Social Services	42,743	14.6	1,436,352	13.5	33,604
Transportation	11,799	4.0	457,404	4.3	38,766
Public Safety	42,618	14.6	1,754,832	16.5	41,176
Environ. & Housing	13,392	4.6	441,840	4.1	32,993
Administration	21,668	7.4	774,336	7.3	35,736
Public Utilities	11,342	3.9	470,760	4.4	41,506
Totals	291,834	100	10,660,440	100	36,529

SOURCES: Associated Industries of Massachusetts; The Conference Board; Mass Insight/New England Economic Project; Fannie Mae and Freddie Mac; Massachusetts Division of Employment and Training; U.S. Department of Commerce; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; University of Massachusetts; The Alliance for the Commonwealth

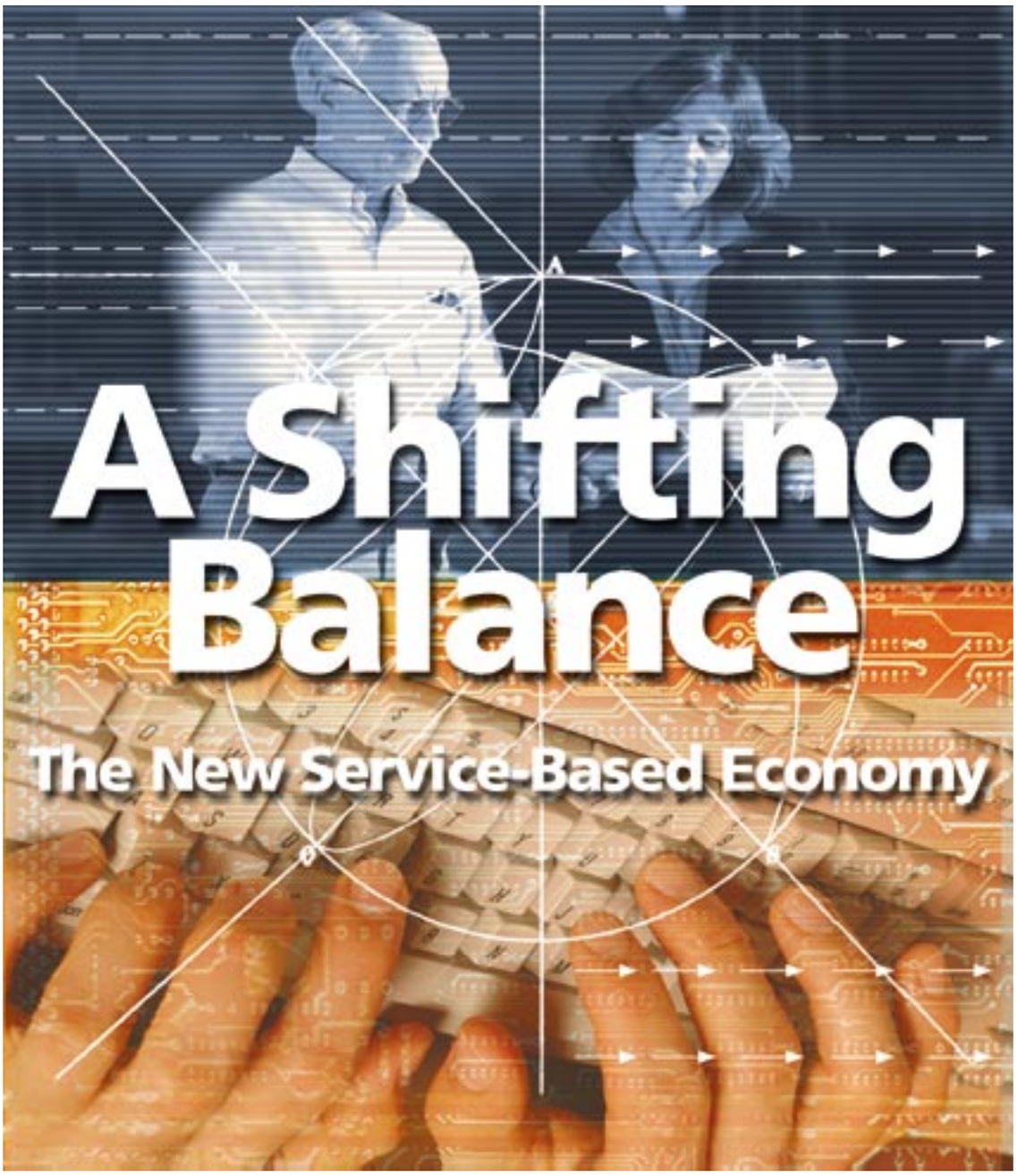


ILLUSTRATION: NAOMI SHEA

Craig Moore

Measuring a changed economy sometimes requires a changed yardstick. While it made sense to analyze our manufacturing-driven economy by considering the products we made and exported, restructuring has created the need to look more closely at other economic sectors and group them in different ways. Old methods of measurement no longer present an accurate picture.

For this reason, the Standard Industrial Classification system is being replaced by the North American Industrial Classification System. But the transition is not a seamless one. For the time being, at least, old data and new can be compared only by considering broad categories—in this study, two-digit classifications. With the information that comparison provides, it becomes clear that we have experienced a major shift from a manufacturing to a service economy.

Economists once believed that services were not important in the grand scheme of economic growth and prosperity. This is not the case. The service sector, not production, is probably the most critical factor in the future of the Massachusetts economy. Understanding how this balance has changed in recent years is essential to formulating future economic policy.

Today, of approximately 3 million people working in Massachusetts, 1.3 million are employed in the services industry, as traditionally defined. When broadening the definition to include any sector in which the main activity is to provide a service, the "service sector" includes finance and insurance; real estate and leasing; and government.

Under the broader definition, there are 1.9 million people employed in this sector. This broadly defined service sector experienced growth of over one-half million employees between 1992 and 1997. During the same period, total state employment increased by roughly 300,000 employees, implying that while the state's service sector was growing, most other sectors were shrinking. In fact, the only industries outside the service sector that exhibited job growth were construction and wholesale trade. Mining, utilities, manufacturing, retail trade, and transportation all experienced declining employment. Manufacturing jobs in Massachusetts fell by more than 63,000, or 13.2 percent, while manufacturing employment nationwide remained almost unchanged.

The shift from manufacturing to service employment in our economy is not new. In Massachusetts, however, that shift is more rapid than elsewhere. A fundamental restructuring of our state economy during the 1990s is reflected in this trend.

The Growing Importance of Services

As recently as 1970, most regional economists viewed the service sector as a secondary one. Manufacturing was the engine of the economy. The regional exports that generated income had always been products. During the past 30 years, however, economists have come to realize the critical role that services play, as a larger and larger portion of jobs is found in the service sector.

Service jobs have long been considered lower paying and less desirable than jobs in other sectors. While there are still low-paying jobs in a number of service industries, much of the sector's growth includes jobs that pay well.

The fastest-growing segments of the service sector—and our state economy—involve new technology and require people with advanced education and training. The best opportunities for higher income are in these businesses. Moreover, service exports generate significant flows of regional income and contribute significantly to the state's economic base.

NAICS Categories Shed New Light on Service-Sector Employment

The Economic Census, taken every five years by the Department of Commerce Bureau of the Census, measures the economy rather than the population. It is a census of our major employers: firms, nonprofit organizations, and governments.

The 1997 census, released in the spring of 2000, utilizes the North American Industrial Classification System (NIACS) to provide a new and more accurate picture of our economy. This replaces the familiar Standard Industrial Classification (SIC) system (see Endnotes, page 20). The new data reveal an economy that saw explosive growth in technology-based industries during the 1990s. While the new classification system offers us considerable advantages over the old, it also has an important limitation: It is virtually impossible to compare these new figures with data from prior special census publications. Only a comparison using very broad categories is possible.

The 1992 census figures reported 847,164 "service sector" jobs in the Bay State. Another 207,539 people were employed in finance, insurance, and real estate. Government employment, which is almost all service related, numbered 378,346. Taken together, these three categories accounted for about 53 percent of all employment in the Commonwealth.

Retail trade, according to this census, accounted for 469,519 jobs and wholesale trade for 141,497. Manufacturing provided 480,300 jobs, and mining and construction accounted for another 87,955.

Industry Categories by NAICS Codes

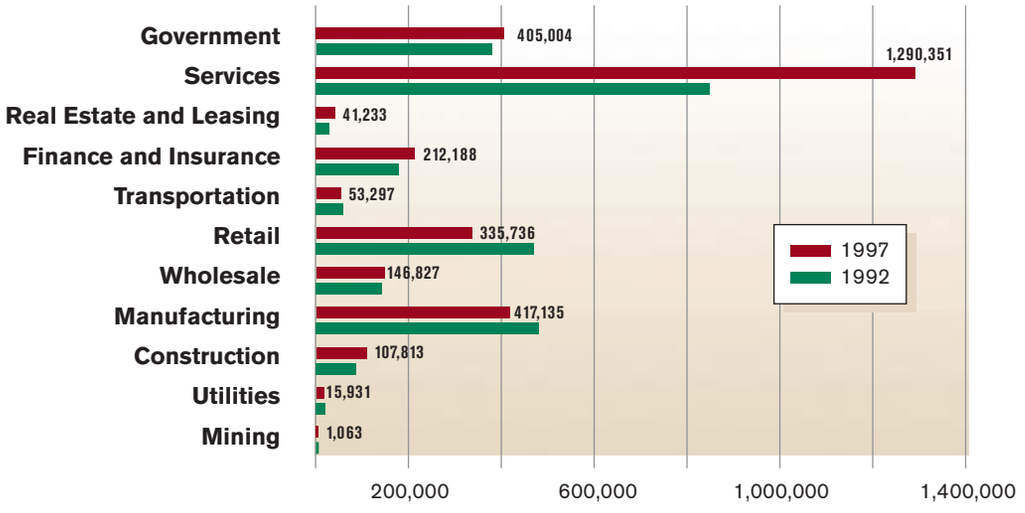
Category	NAICS Codes
Mining	21
Utilities	22
Construction	23
Manufacturing	31, 32, 33
Wholesale	42
Retail	44, 45
Transportation	48, 49
Services (broadly defined)	
Finance & Insurance	52
Real Estate & Leasing	53
Services (traditional)	51, 54, 56, 61, 62, 71, 72, 81
Government	(from Census of Governments)

Data from the 1997 census show a considerable shift. Service-sector employment accounted for 1,290,351 workers. Finance, insurance, and real estate employed an additional 253,421, and the public sector employed 405,004. Taken together, services provided 65 percent of the jobs in the state, with almost all of the increase coming from private-service businesses. Employment in retail trade declined to 335,736, while wholesale trade increased slightly, to 146,827 jobs.

From 1992 to 1997 manufacturing employment continued to shrink in Massachusetts. Figures since 1997 suggest that this decline has slowed, while service employment continued to experience rapid growth. Increasing productivity, a shift to outsourcing to cut costs, and other factors tend to exaggerate the size of this displacement, but it is clear that a larger portion of personal and household consumption involves services rather than products.[1]

Change in Employment 1992 – 1997

Virtually all the state's growth in employment during the mid-1990s was in the service sector.



Sources: 1992 Economic Census; 1997 Economic Census; 1997 Census of Governments: State, Local and Federal

The Growing Significance of Service Exports

In the late 1980s, deep cuts in defense spending, the failure of the minicomputer industry, and financial problems plaguing the construction industry were responsible for the worst regional recession in years. The prosperity the Commonwealth now enjoys is largely a result of the restructuring that took place during the mid-1990s, launching strong growth in the service sector.

Historically, the state economy has depended on regional exports of manufactured goods to generate jobs and income. This is no longer the case. Much more of our employment today depends on selling professional services beyond our borders. More and more companies are also offering these services in the global marketplace. Firms provide financial services worldwide, engineering companies design large-scale projects abroad, management consulting groups have international reputations, and medical and educational institutions serve a significant number of foreign clients.

The degree to which this is happening is impossible to document, as there are no export data for services. As the service sector continues to grow and sales outside the region play a larger role, it becomes more and more difficult to quantify the phenomenon. At present, census data tell us only that service employment is surprisingly high. Anecdotal evidence suggests that a significant portion of that is based in exported service sales.

Even without any way to measure service imports and exports, census data do provide an important new view of the state economy. The NAICS categories are particularly helpful in recasting our thoughts about the structure of the economy that has emerged in Massachusetts during the past decade. They also provide a better picture of the changing earning patterns across service industries.

Viewing the Service Sector through the NAICS Lens

The census breaks the service sector into nine major categories. The new NAICS codes and the name of each category are examined below.

Information. The establishment of an "information" category reflects the new revolution in telecommunications, software publishing, and information technology. In 1997, these activities provided more than 113,000 jobs in the state economy.

More than half of all publishing jobs in the state were in software publishing. Broadcasting and telecommunications, another major component of this group, includes the rapidly expanding areas of cable and wireless communication services. The information and data processing services category accounts for over 14,000 jobs.[2] An examination of the data reveals impressive wages and increasing opportunities in the information sector, particularly in high-tech areas.

Finance and Insurance, and Real Estate and Leasing. The SIC sector commonly referred to as FIRE has become two categories: finance and insurance, and real estate and leasing. Finance and insurance accounted for over 33,000 new jobs between 1992 and 1997, an increase of almost 19 percent. This industry is very important to the Massachusetts

The Service Sector in Massachusetts, 1997 Economic Census

NAICS	Description	Firms	Employees	Payroll / Employee ($)	Receipts / Firm ($)
51	**Information**	**3,282**	**113,698**	**47,457**	**6,261,081**
511	Publishing	1,426	57,901	52,855	7,323,338
512	Motion Picture & Recording	433	4,921	17,792	1,166,180
513	Broadcasting & Telecommunications	917	36,815	45,501	8,568,767
514	Information & Data Processing	506	14,061	40,727	3,445,204
52	**Finance & Insurance**	**8,875**	**212,188**	**53,857**	**n/a**
521	Monetary Authorities, Central Bank	1	1,143	46,215	1,403,000,000
522	Credit Information and Related Activities	3,416	66,993	42,470	6,695,757
523	Securities Intermediation & Related Activities	1,623	54,795	88,227	9,363,243
524	Insurance Carriers & Related Activities	3,781	65,515	42,287	n/a
53	**Real Estate & Leasing**	**5,834**	**41,233**	**29,445**	**1,015,662**
531	Real Estate	4,407	28,223	30,589	903,553
532	Rental & Leasing Services	1,395	12,058	24,536	1,231,967
533	Lessors of Intangible Assets	32	952	57,730	7,025,500
54	**Professional, Scientific & Technical**	**18,371**	**188,329**	**52,008**	**1,312,694**
5411	Legal Services	5,074	29,550	48,804	776,306
5412	Accounting	2,144	21,727	33,254	829,532
5413	Architectural Engineering	2,694	38,025	48,931	1,866,830
5414	Specialized Design	689	3,012	40,529	597,179
5415	Computer Systems Design	2,759	32,595	62,485	1,577,210
5416	Management Consulting, Scientific & Technical	2,719	23,426	72,414	1,332,039
5417	Scientific Research & Development	685	22,489	53,230	4,315,350
5418	Advertising	989	12,967	43,851	1,660,705
5419	Other Professional	618	4,538	32,729	623,837
56	**Administrative Support & Waste Management**	**7,098**	**181,929**	**21,755**	**1,239,692**
561	Administrative Support Services	6,643	173,474	21,020	1,116,742
562	Waste Management Services	455	8,455	36,846	3,034,760
61	**Educational Services, Private**	**1,413**	**12,693**	**21,564**	**666,195**
62	**Health Care & Social Assistance**	**16,424**	**449,870**	**28,277**	**1,671,512**
621	Ambulatory Health Care	10,457	140,485	34,610	975,969
622	Hospitals	143	148,972	32,650	76,688,105
623	Nursing & Residential Care	2,199	100,072	19,953	1,807,244
624	Social Assistance	3,625	60,341	16,544	636,324
71	**Arts, Entertainment & Recreation**	**2,466**	**35,992**	**21,447**	**934,469**
711	Performing Arts, Sports, etc.	553	7,758	43,185	1,653,854
712	Museums, Historical Sites, etc.	230	3,674	19,707	1,001,074
713	Amusement, Gambling, Recreation	1,683	24,560	14,841	688,992
72	**Accommodations & Food Service**	**14,800**	**227,476**	**11,322**	**626,346**
721	Accommodations	1,169	29,407	18,225	1,711,536
722	Food Service & Drinking	13,631	198,069	10,298	533,279
81	**Other Services (except Public)**	**13,238**	**80,364**	**21,871**	**475,075**
811	Repair & Maintenance	5,330	28,744	28,064	505,854
812	Personal & Laundry Services	5,476	32,813	16,210	303,792
813	Religious & Civic Organizations	2,432	18,807	22,282	793,290

economy, as a major portion of its sales are outside the region and add significantly to the economic base.

Professional, Scientific, and Technical Services. Another new category is professional, scientific, and technical services. There are more than 188,000 jobs in this category, and they include many high-paid professionals. Massachusetts accounts for about 4 percent of all jobs in this category nationally. Many of these services are sold outside the region, but there are no reliable data to provide exact numbers.

Anecdotal information from companies in computer systems design, architectural design, technology management, and research and development indicate a growing national and international component. Even a significant amount of legal and accounting services are being sold to firms in other states and countries.

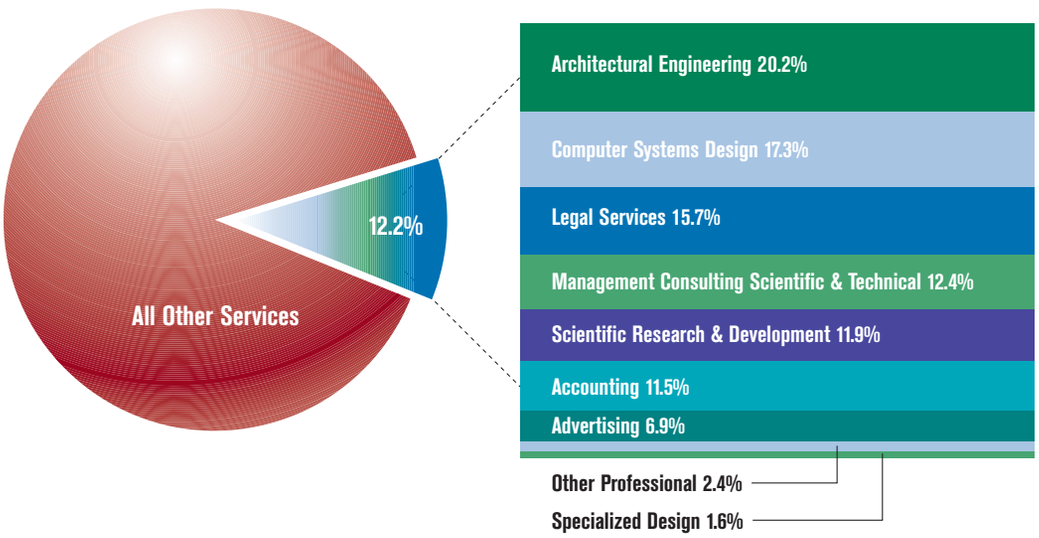
Health Care and Social Assistance. In terms of employment, health care and social assistance is the largest services category. With approximately 450,000 employees, it makes up about one third of the Commonwealth's service economy. Ambulatory health care includes doctors, dentists, therapists, and other outpatient activities. Along with hospital workers, this accounts for the majority of healthcare employment. Not included in these figures are an additional 42,743 public-health employees who work for state or local governments.

This industry continues to be a major concern for policymakers at both the state and national levels. Given its large employment base in Massachusetts, any change in the health services industry is likely to have a significant impact on our economy.

There is a clear difference between the earnings of people working in hospitals and those in nursing homes and social assistance. It is also likely that significant differences exist, within these categories, across occupations, but these new data do not provide enough detailed information to examine that question.

Professional, Scientific, and Technical Services, 1997

Professional, scientific and technical services account for 12.2 percent of service-sector employment and break down according to the activities highlighted below.



Source: 1997 Economic Census

Arts and Entertainment, Accommodations and Food Service. Across the state, over 200,000 people earn their livings in the food services and drinking business. Payroll per employee is the lowest of the service categories and includes many people who are unskilled or semiskilled.[3] Data also suggest that many firms in this industry have relatively low payrolls, reflecting in part a significant use of part-time employees.

Both of these categories have a relationship to tourism. The impact of the tourism industry continues to be underestimated because of the difficulty in differentiating tourism-related sales from other sales.

Administrative Support and Waste Management. The trend toward business flexibility and outsourcing has made administrative support services increasingly important, accounting for approximately 173,000 jobs in 1997. Particularly significant is the number of people in employment services: more than 80,000 workers who provide a kind of "labor liquidity" in the market.

The use of part-time employees, even for professional occupations, has been growing. Companies utilizing them remain more flexible, reduce the cost of employee benefits, and have a chance to "try out" potential full-time employees.

Government Services. In 1997, more than 400,000 people in Massachusetts were working for local, state, and federal government agencies. The focus of this section is on state and local government employees. Of almost 300,000 such employees in 1997, over a third (107,279) worked for state agencies. Only a very small portion (7,197) were county employees, as that level of government in Massachusetts continues to fade away. Cities accounted for more than a third (104,750), and towns about one third (97,833) of public employees. Of these, 22,097 were employed by school districts and 11,668 worked for special districts.

One of the largest sources of employment in the Commonwealth is public education, accounting for over half of all state and local public jobs and public payrolls. Higher education accounts for some 22,000 jobs in the public sector. Private education employed 12,693 people in 1997, many of which, presumably, were in higher education. (For data on state and local government employment, see table on bottom of page 11.)

Other Services. Rounding out the data is a catchall category that accounted for about 6 percent of employment in 1997. Payroll per employee is below average and includes many small companies, such as dry cleaners and repair shops. A major component of this category is religious and civic organizations.

Earnings in the Service Sector

In spite of the many high-paying occupations in the service sector, there are many others that pay some of the lowest wages in the state. As expected, the factors that differentiate higher-paying service jobs from lower-paying ones are education, training, and higher demand in growth industries.

Allowing for some distortion due to the variation in earnings within each category, the data indicate that payroll per employee is higher than the average ($33,110) for 44 percent of workers and average or below for the remainder. More than 28 percent of all service employees earn less than $22,000 annually.

Key Drawbacks of the New Data

While the 1997 Economic Census, with the new NAICS codes, provides a very useful research tool for understanding the state's economy—and services in particular—there are still important concerns.

First, the data include information from employers only and fail to pick up an increasing number of single proprietorships that offer a wide variety of services. In addition, many partnerships hire only consultants, particularly in services. There is no mechanism in place to measure and monitor these data. This factor understates both the size and the contribution of the service sector.

Second, as our economy becomes more and more service-based, some method of measuring imports and exports of products and services is critical. Trade-deficit figures for the national economy are not accurate in view of this data gap. Additionally, there are problems adjusting for sales to and from American companies with foreign operations. Without service-export data, our view of the state and national economies will become more and more distorted, increasing the likelihood of serious miscalculations about the economy.

Third, public education and worker training should become more responsive to these trends. Data that link occupations and the new NAICS codes would help identify any mismatch between the capabilities of our labor force and the labor-market needs of service-sector employers. Without this, the state will become less attractive as a place to invest, slowing our economic growth.

Finally, the NAICS codes themselves are a mixed blessing. While providing a comprehensive set of up-to-the-minute industry codes, leaving behind the old Standard Industrial Classifications (SIC) makes comparisons over time very difficult.

Conclusions

The data from the special census, even given their shortcomings, show much about the important role of the service sector in the new Massachusetts economy. The Commonwealth is expanding its service base at a faster rate than are other regions of the nation, while manufacturing employment is shrinking at a faster rate. This alone should focus more attention on an understanding of the service sector. If the shift toward services continues, there will be major workforce implications that will affect our underlying education and training policies.

The creation in the census of a new "information" category indicates the increasing importance of information technology and technical knowledge. Software publishing and telecommunications provide a large number of high-paying jobs. While prior census data cannot be compared to 1997 numbers, data published more recently show that the information technology sector is a driving force in the state economy.[4]

While this overview is only superficial, the special census data do support the idea that the service sector is a major driving force in our state economy. It is the focus of consumer demand. It provides more and more of what we sell to other regions to generate income and employment. Programs are necessary to provide the skills, education, and training needed to enter fast-growing, high-paying service occupations.

It is essential that we continue to measure and monitor the influences of the service sector on the Massachusetts economy. Either we respond to the tides of change that are sweeping our economic world or we get swept away by them.

1. The productivity index based on output per hour has risen steadily from 2.2 in 1993 to 6.9 in the first quarter of 2000.
2. For an analysis of the IT sector showing its growth since 1997, see *Information Technology; The New Foundation*, University of Massachusetts Donahue Institute, May 1999.
3. Earnings data in the food services industry may be understated, as some gratuities continue to go unreported.
4. See *Information Technology; The New Foundation*, University of Massachusetts Donahue Institute, May 1999.

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The 1997 Economic Census: A Regional Perspective

Because the PMSAs do not conform to state boundaries, the census totals include activities outside the state.

The Economic Census provides data for the Commonwealth's eleven primary metropolitan statistical areas (PMSAs) and three metropolitan statistical areas (MSAs). A look at the largest of these reveals some important regional characteristics.

Service-Sector Employment Is Impressive Across the State

Statewide, the 1997 Economic Census finds that the ten service sectors (defined by NAICS) employ roughly 1.3 million people. This represents $50 billion in payroll and nearly 92,000 establishments. Excluding the finance, insurance, and real estate sector, establishments generated in excess of $105 billion in revenues. FIRE employed 212,000 people, who earned over $11 billion, more than 22 percent of the state total. Revenue data for FIRE are not available.

Services Employment in Major Statistical Areas

	Service-sector employment	*Percent of total employment*	*Percent of service-sector employment across five PMSAs*
PMSA/MSA			
Boston	1,010,899	57.9	76.1
Lawrence	61,998	33.0	4.7
Lowell	49,706	31.8	3.7
Springfield	107,633	39.6	8.1
Worcester	98,884	41.0	7.4
Totals	1,329,120	51.1	100

Includes services, finance and insurance, and real estate and leasing employment. Does not include government.

Income and Revenue Vary by Region

On a more detailed sectoral level, the census fully reports payroll and employees for seven industries and number of establishments and receipts for six. Data on health care and social assistance are reported for four of the areas. Due to confidentiality concerns, data for the Lawrence PMSA are not available.

In general, regional differences in payroll and revenues are most pronounced in sectors that are staples of our knowledge-based economy: information services, finance and insurance, and professional, scientific, and technical services. Gaps are smaller in areas not requiring specialized education: administrative support, waste management, accommodation and food services, and other services. Income and revenue differences across regions are also narrow in health care and social assistance, which employs both skilled and unskilled labor.

Boston leads all regions in payroll per employee. The Boston PMSA has the highest payroll per employee in all eight industries where payroll data are reviewed, but differences vary by industry. The largest differential is in finance and insurance, a reflection of the city's significance in financial services. In this sector, the Boston PMSA's average wage per worker is more than one and a half times that of Springfield, which ranks second among the metropolitan areas.

Large gaps in payroll per employee are also found in real estate and leasing; professional, scientific, and technical services; and arts, entertainment, and recreation. In these categories, Boston numbers range from 20 percent higher to double those of the other regions. In administrative support and waste management, accommodation and food services, health care and social assistance, and other services, payroll per employee in all regions is within 30 percent of Boston's.

Annual Payroll per Employee for Boston PMSA, and as a Percent of Boston Wages for Other Areas

NAIC	52 Finance & Insurance	54 Professional, Scientific & Technical Services	53 Real Estate & Leasing	62 Health Care & Social Assistance	71 Arts, Entertainment & Recreation	56 Administrative Support & Waste Management	72 Accommodation & Food Services	81 Other Services
PMSA/MSA								
Boston	$60,699	$55,435	$31,900	$29,509	$25,494	$23,607	$12,079	$23,747
Lawrence	57%	72%	80%	n/a	77%	100%	88%	96%
Lowell	46%	82%	69%	85%	52%	89%	79%	76%
Springfield	64%	58%	65%	88%	75%	77%	73%	79%
Worcester	60%	75%	76%	92%	46%	84%	77%	80%

Revenues are more evenly dispersed. Dividing revenue by the number of establishments helps gauge the relative health and significance of companies in each statistical area. Data reveal that revenues per establishment are dispersed more evenly than payroll per employee across Massachusetts.

Boston leads the metropolitan areas with average revenue per establishment in real estate and leasing; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and other services. Gaps are narrower, however, than the payroll gaps described above. Lawrence leads all regions for administrative support and waste management and in the important professional, scientific, and technical services sector.

In professional, scientific, and technical services, the average revenues earned by establishments in the Springfield, Lawrence, and Worcester areas are less than 40 percent of those in the Boston and Lowell PMSAs. These data illustrate the effects of clustering along the Cambridge–Route 128 areas in the Boston PMSA and the 495 area around Lowell.

The second-largest revenue gap is in real estate and leasing. Average real estate revenues in Worcester are about two-thirds those of Boston, and Springfield, Lowell, and Lawrence revenues are roughly half those of Boston area establishments. Gaps in other sectors are much less pronounced.

Within the service sector, as in other industries, there are clear differences in revenue and employment among the state's regions. Most pronounced are the differences in payroll per employee figures, while revenues per establishment are more stable across the state.

STREET Signs

The most recent UMass Poll surveyed Massachusetts voters about the amount of money they spend on various services. When asked about personal necessity and business services, 35 percent report spending more this year than last for professional services, such as banking, legal, and accounting, while 29 percent have increased spending for Internet and computer services.

We separated respondents into two categories: family incomes under $50,000 and those $50,000 and above. The most striking difference by income is in spending for health and social services, where 48 percent of wealthier families report increased spending, compared to 34 percent of the lower-income families. In the remaining categories, wealthier families more frequently show increased spending from the previous year by a rate 5 to 8 percentage points greater than lower-income families.

endnotes

The introduction of the North American Industrial Classification System (NAICS) has been a source of mystery and consternation, as a good deal of accumulated human capital has suddenly become irrelevant.

The Standard Industrial Classification (SIC) system is familiar to anyone who has studied economic activity at the industry level. The system is so often used, in fact, that appropriate SIC codes have been committed to memory by economists and specialists in every industry.

The SIC system began in 1938, with a basic list of manufacturing industries, and has been revised over the years with changes in the economy. Even as the most recently revised codes were being published, however, there was widespread agreement that the economy was changing so rapidly and so significantly that it was no longer adequate to update the old classification system. A common criticism was that the burgeoning information economy did not fit well into the SIC classifications. There was no explicit category, for example, to include firms doing Internet development. In addition, the economies of Canada, Mexico, and the United States, made more interdependent by NAFTA, needed some common ground for comparison. The NAICS codes were developed in consultation with our international trading partners, allowing data comparisons across international boundaries.

For much of the 1990s, the Office of Management and Budget coordinated the development of a new set of industry codes to create the North American Industrial Classification System (NAICS). The organizing principles around which the new codes were developed emphasized grouping together economic entities that shared the same basic production functions. The boundaries between the new industries would demarcate differences in production processes and production technologies.

The most dramatic changes in the new set of industry codes is found in the service sector. Roughly 250 of the 358 NAICS categories are service-related. Among the new service industry classifications are:

- Information
- Professional, scientific, and technical services
- Health care and social assistance
- Arts, entertainment, and recreation

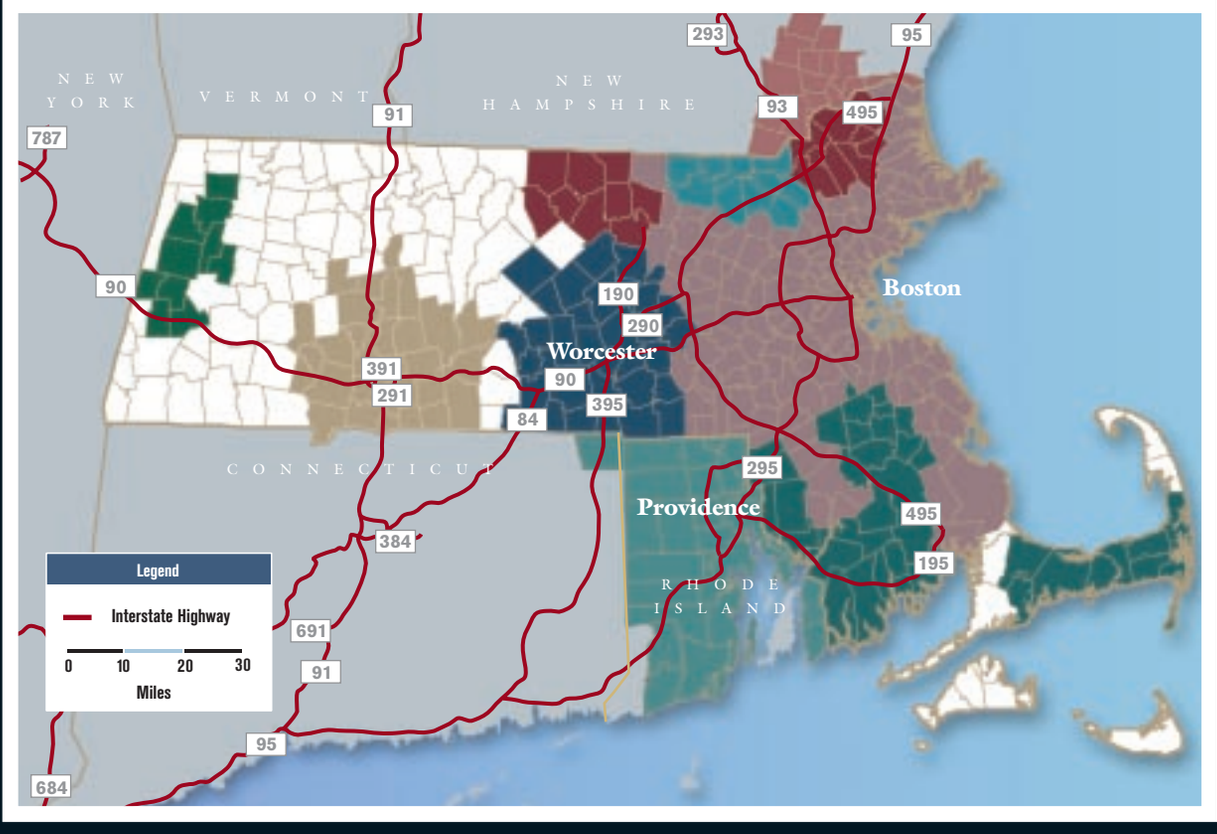
As is generally true of the NAICS codes, these "new" industries are groupings of activities that were previously scattered in a number of disparate categories. For example "management consulting," (NAICS category 5416) within the category of professional, scientific, and technical services, is pulled from, among others, the following SIC categories:

- SIC 8742, Management consulting
- SIC 7361, Employment agencies (executive placement services)
- SIC 8999, Services, NEC (actuarial consulting)
- SIC 4731, Arrangement of Transportation of Freight and Cargo (Freight rate auditors and tariff consulting)

Examples such as this illustrate the difficulty in making comparisons between SIC data and those gathered through the NAICS. This is the downside of the new NAICS system: because of the difficulty in translating from the old to the new codes, much historical data will not be converted for a considerable length of time, if at all. Having the NAICS codes in place will make historical comparison considerably more difficult.

More information can be found on the Web at http://www.ntis.gov/product/naics.htm.

Metropolitan Statistical Areas



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