

Massachusetts FY06 and FY07

Labor and Economic Analysis

Current Economic Status

After enjoying robust employment growth in the late 1990s, Massachusetts lost 207,100 jobs between the peak and the trough of the latest recession, or 6.1 percent of its non-farm jobs. This was the largest statewide decline in the nation. Although Massachusetts suffered greater job losses in the recession of the early 1990s, losing 359,700 jobs (an 11.4 percent job loss), it has been slowly recovering from the current recession and lags behind the rest of nation, having gained only 31,600 (as of March 2005) jobs since employment bottomed out in January 2004.

The bulk of the job loss was concentrated in three areas: manufacturing (nearly 95,000), professional, scientific, and business services (over 60,000), and information technology (nearly 30,000). The rates of job loss in information and manufacturing were 25 and 23 percent respectively. While Massachusetts was a victim of the national recession, its particular industry mix - the same industry mix that propelled the Massachusetts economy during the 1990s - led to a longer and much sharper rate of job decline than the U.S. Massachusetts has higher job concentrations than the U.S. in five key areas: Education and health services; professional, scientific, and business services; financial activities; information technology; and high tech manufacturing. Heavy losses in all of these areas except education and health services exacerbated its overall job decline.

From mid 2000 to mid 2003 the Massachusetts unemployment rate rose steadily to 5.9 percent, and in 2003 its gross state product grew by only 3.2 percent, the second lowest growth rate in the nation, trailing the U.S. rate of 4.8 percent.

Nevertheless, the state that rode the crest of the technology boom of the late 1990s, has finally begun, albeit slowly, to recover from the leveling off of the high-tech boom and to generate jobs in high-paying industries

Starting in mid 2003, the unemployment rate reversed direction and gradually declined to 4.7 percent by the end of 2004. The Massachusetts unemployment rate has managed to remain below the U.S rate since March 2005, except for two months in 2003 when the rates were identical. In March 2005, the Massachusetts rate of 4.9 percent remained below the U.S. rate of 5.2 percent. Massachusetts' 5.1 percent annual unemployment rate for 2004 ranked 24th lowest in the nation but third lowest among the eleven comparable large industrial states (behind Florida and New Jersey, which each had unemployment rates of 4.8 percent).

Business hiring is on the upswing and is based on a broader selection of industries according to the Commonwealth's latest job vacancy surveys. Demand for professional, scientific, and technical services, including the engineering, computer, and management consulting industries, surged during the 2nd quarter of 2004 and represented the largest

over-the-year increase in job vacancies posted in that quarter by the state's 20 major industries. Health care hiring also remained strong during the 2nd quarter of 2004 and again accounted for the largest number of job vacancies in the state as it has over the past two years. Hiring also remained relatively strong in the rapidly expanding bio-tech life sciences industries, although job vacancy rates seemed to peak once Novartis finished moving its North American headquarter to Boston. The demand for IT professionals, including engineers, systems analysts, programmers and other highly skilled workers, rose sharply during the 2nd quarter of 2004. Physical and life scientists and data analysts also had high hiring demand indexes, although there were relatively few job vacancies for them. Health care workers registered a robust hiring demand index and largest number of job vacancies of any occupation in the state.

Since the beginning of 2004, Massachusetts has rebounded by adding over 30,000 jobs or approximately 15 percent of the jobs it lost. Nevertheless, Massachusetts lags behind the U.S., which made good all of its job losses by January 2005.

State's Economic Base by Industry- Growth and Decline

Half of Massachusetts' job base is concentrated in three industry super sectors: education and health services (18.3%); trade, transportation, and utilities (18.0%); and professional, scientific, and business services (14.1%). With employment continuing to expand in education and health during the economic downturn, this super sector increased its employment share from 16.4 percent in 2000 to 18.3 percent in 2004, and just recently surpassed trade, transportation, and utilities as the Commonwealth's largest super sector. Conversely, manufacturing has continued to see erosion in its employment share, dropping from 12.2 percent in 2000 to 9.9 percent in 2004. In 1990 manufacturing held a share of 16.3 percent.

Massachusetts' economy remains technology-based, and despite the job losses in high-tech, these industries still employ a greater-than-average proportion of the workforce (10.5 percent in Massachusetts versus 7.5 percent nationwide).

Because Massachusetts has a higher-than-average concentration of firms in the high tech, finance, and health care industries, a greater-than-average proportion of its jobs are in professional and technical occupations.

Defense-related high-tech companies (in particular, those producing electronics and communications equipment) remain an important part of the Massachusetts economy. In FY 2004 Massachusetts ranked eighth in the nation in terms of Department of Defense prime contract awards at just under \$7 billion.

Small employers dominated Massachusetts business enterprises. Among the 200,798 establishments reporting employment in March 2004, 87.1% had fewer than 20 employees. These firms accounted for nearly a fourth (715,161) of the total number of jobs (3,080,831) in the Commonwealth. In contrast, 4,860 establishments (2.4%)

reported having at least 100 employees. These firms were responsible, however, for nearly half (1,490,735) of all the jobs.

Industry/Occupational Projections

Given (1) the state's historically lower-than-average rate of population and labor force growth and (2) the recent net out-migration of workers, Massachusetts will probably lag behind the U.S. in job growth in both the short- and long-term. Growth in the state's leading industries, however, could greatly enhance its overall economic performance compared to the U.S.

High-tech intensive industries, for example, are expected to account for an even greater share of US economic growth in the long run than they did in 2002. They currently employ 3 percent of all U.S. workers and are expected to generate 6 percent of all net new jobs in the nation between 2002 and 2012. This trend will greatly benefit Massachusetts. High-tech intensive companies employ 62 percent of all high-tech workers in the state compared to 46 percent of high-tech workers nationwide.

Software publishing, for example, is expected to be the nation's fastest growing job producer between 2002 and 2012 with a projected annual job growth rate of 5.3 percent. And Massachusetts firms employ 8 percent of all US workers in software publishing, although the state accounts for only 2.5 percent of the nation's total employment.

Massachusetts, moreover, has strong competitive advantages in the 4 of the 10 fastest-growing high-tech industries in the U.S., including: computer systems design and related services; management, scientific and technical consulting services; medical equipment and supplies manufacturing; and internet service providers.

With twice the average concentration of jobs in high-tech industries, Massachusetts will benefit tremendously if the promising job growth projections for high-tech are realized. High-tech industries employ 10.5 percent of the state's workforce versus xx (*need to check*) percent of the national workforce. And a full 6 percent of Massachusetts jobs are in 8 of the 36 high-tech industries expected to grow the fastest between 2002 and 2012 compared to 3.6 percent of jobs nationwide.

Health services will also remain one of the state's dominant sources of job growth in both the short- and long-run. Among the forces driving this growth are: an aging population requiring more care; a wealthier and more informed population that can afford better health care; and advances in medical technology that increase demand for their use.

In view of these projections, nearly all of Massachusetts' employment growth is expected to be generated by the service-producing sector, reflecting its relatively large size.

The historic decline in manufacturing should abate in the long run. Nevertheless, manufacturing's share of total statewide employment will continue to decline and will fall below 10 percent.

Continued growth in capital investments for computers, electronics and other high-tech products will increase demand, but gains in productivity will offset potential job growth. In some high-tech industries – most notably biotechnology, communications, and precision medical instruments – jobs should increase modestly. The rapid acceptance and use of the internet and of wireless technologies will also create new opportunities and lay the framework for additional technologies and investments in facilities, hardware, software, services and human capital. This trend should benefit high-tech Massachusetts manufacturers, who are leader in research and development.

Critical job/occupations

Given the state's knowledge-intensive industry base, employment in professional and technical occupations is expected to increase the fastest and add the most jobs over the next 10 years. Service occupations should also grow rapidly and are expected to generate the second largest numbers of new jobs. These major occupations, which are on opposite ends of the earnings spectrum, should account for half of the state's job growth.

Workforce Development Needs: Education and Retraining

As the US economy strengthens, business hiring in Massachusetts will increase and become more broadly based and raise the education and skill requirements of jobs. Results from the most recent Massachusetts Job Vacancy Survey found that even with a sizeable number of unemployed individuals in the Commonwealth, employers are still having difficulty finding qualified workers. Only 50 percent of employers indicated they were satisfied with their new hires' problem solving skills while only 41 percent were satisfied with their new hires' technical expertise.

Even in this tepid recovery, early warning signs of a growing skills mismatch are emerging. In the 2nd quarter of 2004, for example, Massachusetts employers posted 60,000 job openings, 40 percent of which required an associate's degree or higher. The proportion of job vacancies requiring an associate's degree or higher is now greater than the proportion of filled jobs requiring an associate's degree or higher.

This education and skills mismatch may intensify in the long run as more job opportunities arise in knowledge-intensive high-tech industries than in goods producing industries. The skills of workers in the goods producing industries are not easily transferable.

In this age of rapid technological and economic change, the importance of education and training and indeed lifelong learning cannot be overstated. Jobs will continue to exist at all levels of education and training, but jobs for more highly skilled workers will increase faster than jobs for less skilled workers. All jobs, moreover, will require more technological know-how as companies make better use of technology.

Population and Educational Characteristics of the State Labor Pool

Massachusetts' population grew by only 5.5 percent, or about 333,000 to 6,349,097 between 1990 and 2000, and its rate of growth has declined further since the 2000 census. Between April 2000 and July 2004, Massachusetts population grew by only 1.1 percent

and ranked 44th in the nation. Among comparable large industrial states, only Ohio and Pennsylvania had lower rates of growth. Preliminary estimates for the most recent year (July 2003 to July 2004), indicate that Massachusetts was the only state in the nation to lose population, albeit a loss of only 3,852 or 0.1 percent.

Massachusetts had a 10.3 percent poverty rate in 2003, lower than the U.S. poverty rate of 12.5 percent.

Only about one of ten (10.7 percent) Bay State residents were without health insurance in 2003, compared to 15.6 percent nationally.

Impact of the Labor Pool/In and Out Migration

The foreign born population in Massachusetts included 772,983 residents in 2000 and represented 12.2% of the total population. This was an increase of almost 200,000 or 34.7% from 1990. The foreign born population was responsible for 60% of the population growth in Massachusetts between 1990 and 2000.

Between July 2000 and July 2003, Massachusetts had a net positive inflow of about 1,500 persons. The contrast between domestic and foreign migration, however, was dramatic. Net domestic out-migration for the three year period was 98,800 while net international in-migration was 100,400. Net domestic out-migration, caused in part by the severity of the recession, increased in each of the three years and has led to fears that the state is losing college educated workers. But as the recovery continues, the net outflow is likely to reverse.

The educational background of recent immigrants to Massachusetts are quite diverse. While nearly 32 percent hold a bachelor's degree or higher, another 30 percent lack a high school diploma or equivalent. Most new immigrants came from non-English speaking countries.

The state's growing dependence on foreign immigration for the growth of its population and labor force will pose serious challenges to the workforce delivery system as many immigrants will be hindered in competing for good jobs and good wages by their lack of formal education and English language skills.

Potential Future Skill Gaps

MassInc predicts that as a result of the aging of baby boomers Massachusetts will see its population of 55 to 64 year olds jump from 546,000 in 2000 to 742,000 in 2010. At the same time, there will be a reduction in the population of 25 to 54 year olds, i.e., people in their prime working years. This may have serious implications for Massachusetts businesses seeking to hire new employees so that they can expand. Employers will need to devise creative strategies to keep skilled and educated older workers in the labor force as well as to recruit and train other segments of the population that may not be fully participating in the labor force (e.g., youth, minorities, the disadvantaged, and the disabled).

Among adults 25+, the number of High School dropouts in Massachusetts fell by 141,564, or -17.9%, between 1990 and 2000. The total number of dropouts, 651,093, represented 15.2% of the Commonwealth's adult 25+ population.

The number of individuals possessing a bachelor's degree or higher increased by 339,296 or 31.4% during the 1990-2000 period. One third (33.2%) of the Massachusetts adult 25+ population held at least a bachelor's degree in 2000, the highest percentage in the nation, compared to less than one-fourth (24.4%) nationally. Separate 2003 estimates from the American Community Survey place Massachusetts' share at 35.8 percent, well above the national estimate of 26.5 percent.

1. Expansion of Commuter Economy

Massachusetts and most of New England are switching to a commuter economy, and the trend toward longer trips between home and job is not likely to abate. A young and mobile workforce is increasingly moving to housing development far removed from the metropolitan areas. Equipped with the latest communication tools, these modern workers can travel anywhere and remain connected to their jobs.

Massachusetts continues to draw workers from adjacent states into its labor market. Commuting pattern data from the 2000 U.S. Census indicate that the net inflow of workers from other states was over 75,000, with the largest numbers commuting from New Hampshire and Rhode Island. Massachusetts had an inflow of 81,500 workers from New Hampshire versus an outflow of only 23,500. Likewise, the inflow from Rhode Island was 56,100 versus an outflow 31,500. Nearly 83% of all workers drove to work. About 74% of all workers drove to work alone while 9% car-pooled. Fewer than 9% of all workers used Public Transportation. Further road improvements and increased commuter rail transportation will likely increase interstate and long distance commuting as lack of available land and housing close to the urban job centers drive housing development further away.

2. Globalization

Massachusetts' economic future is inextricably tied to global markets. The state's presence in these markets has grown substantially as many of our industries increase their exports and foreign investments and merge with foreign companies. Massachusetts ranked ninth in the U.S. in international trade with more than \$21.8 billion in foreign exports in 2004. Our export volume grew by 17.0 percent over the previous year, while national exports increased by only 13.0 percent.

The state's most important export sectors are: electric machinery; instruments; industrial machinery, including computers; pharmaceutical products; and organic chemicals. Reaching global markets requires not only fast Internet connections via the World Wide Web, but also a transportation infrastructure that can move people and goods efficiently to all corners of the globe.

This infrastructure is also necessary to attract foreign tourists and students to Massachusetts and New England. Our hospitality industries as well as our universities

and colleges have captured a growing share of the U.S. market. With a 5.4 percent market share of overseas visitors, Massachusetts ranked sixth in the nation, while the share of foreign students enrolled in Massachusetts colleges and universities is 5.0 percent, fourth in the nation. In contrast, Massachusetts' share of the national population is only 2.3 percent.

3. Business Prospects for the Future

Recent independent studies have pointed to the state's dominant position in the nation's emerging IT economy.

The Progressive Policy Institute's "New Economy Index" for 2002 (the latest index available) ranked Massachusetts first among all states in terms of adapting to the "New Economy." This assessment is based on the state's concentration of software, hardware, and biotech firms, which are supported by world class universities. The State Index includes 21 indicators, which are divided into five categories. Massachusetts received the following scores in these categories: digital economy (1st); technology innovation capacity (1st); knowledge jobs (3rd); economic dynamism and competition (3rd); globalization (12th).

The American Electronics Association gave Massachusetts the following rankings in its "Cyberstates 2003" report: 5th in the number of high-tech workers employed in 2002; 3rd in high tech industry wages in 2001; 4th in high tech exports in 2002; 2nd in venture capital investments in 2002; and 5th in R&D expenditures in 2000.

A March 2004 Milken Institute study ranked Massachusetts first in its State Technology and Science Index, the same ranking it held in the prior survey in 2002.

An October 2004 Milken Institute study of the bio-pharmaceutical industry ranked Massachusetts 1st in its Innovation Pipeline Index. The study noted that "among states with existing clusters of biopharmaceutical activity, Massachusetts and Maryland stand out as the projected top growth performers over the next decade." An earlier Milken study in June 2004 ranked Boston second in its metro area Biotech Index and first in the broader Life Sciences Index.

According to the Massachusetts Technology Collaboratives' 2004 report on the Massachusetts innovation economy through 2002 (latest data available), federally-supported research and development in Massachusetts totaled \$4.6 billion, up 10 percent from 1999 and second only to California among leading technology states. Patents awarded to Massachusetts inventors grew 8.3 percent in 2003, the highest among competing leading technology states and far higher than the 1.1 percent growth across the U.S. as a whole.

A recent report by LUX Research entitled "Benchmarking U.S. States for Economic Development from Nanotechnology" ranks Massachusetts first in terms of its ability to develop its economy through nanotechnology. The report states "Massachusetts has

excelled in nanotech because of its leading universities and high concentration of technology entrepreneurs, but does not have a coordinated statewide initiative.”