New England Developments

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Restarting Connecticut's Job Growth Engines

By Edward J. Deak

For some, it might be fairly easy to become lulled into thinking that all is well with the Connecticut economy. After all, we just went through a prolonged period of national recession or slow growth, and Connecticut still has an unemployment rate nearly a full percentage point below the U.S. average, an economy that gained 3,900 jobs in April 2004 and another 4,100 in May, and still has the highest per capita income in the nation.

Despite the positive data, the picture gets a lot less rosy when one looks at the problems of employment and job creation over the past four years. Of late, the national economy has bounced at least partway back, recovering some 1.5 million of the 2.8 million jobs lost from March 2001 through August 2003. However, compared to the U.S., Connecticut began losing jobs earlier (August 2000), has lost them longer (until July 2004), and lost a larger fraction of its employment base (-3.6% vs. -2.1%).

For some reason(s), the U.S. economy gained a 12-month head start on Connecticut in creating new jobs. Worse yet, while the July 2004 new job numbers at the national level were disappointingly small at +32,000, the numbers were downright frightful at the state level, where Connecticut employment actually fell by -4,900 positions. And a closer look at our relatively lower unemployment rate, down from its July 2003 high of 5.7%, shows that the success has resulted from a decline in the state's labor force as opposed to a rise in employment. Connecticut job conditions are so fragile there were 10,900 fewer persons in the July 2004 labor force than there were in July 2003. Many of those individuals just stopped looking for work because the job prospects were so bleak. Remember those big job gains in April and May? Well, Connecticut gave them all back and more in June and July. Incredibly, Connecticut hit a seasonally adjusted job low of 1,637,500 in July, with each of the 10 labor market areas showing a job drop that totaled 25,600 for the entire state using the raw employment data.

Thankfully, both the U.S. and Connecticut are expected to show employment increases for the second half of 2004. But serious economic questions remain for Connecticut, including: what employment categories accounted for the loss of Connecticut jobs? Why has our state been so late and hesitant in joining the national recovery party? And what might we do to correct for our own employment problems?

Searching for Answers

The first question is a lot easier to answer than the latter two. Connecticut data from the New England Economic Partnership (NEEP) May 2004 forecast, as originally constructed by Economy.com, showed that Connecticut lost almost 50,000 jobs from the second quarter of 2000 through the second quarter of 2004. Unemployment in the manufacturing sector accounted for the loss of some 41,500 of the positions, or 83 percent of the total. Other job losses were recorded in Professional and Business Services (-21,200 or 42.6%), Transportation, Utilities and Trade (-14,000 or 28%), and Information Services (-7,700 or 15.5%). You might notice that these percentages add up to more than 100 percent. That's because some sectors showed employment

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Toward a Cavalier Economy

By Joel Kotkin

Throughout their history, New Englanders have clung to the notion that theirs is a virtuous economy, based on hard work, entrepreneurship and skill. In comparison to the old Cavalier elites of the South, which relied on inherited wealth, commodities and sharp class distinctions, New England always stood for that which was tough, stolid and fundamentally down-to-earth.

Yet in the last years of the 20th century, and even more so in this one, New England is becoming ever more a reflection of an elitist culture, devoted to the protection of its privileged and largely dismissive of its hard-working middle class. The most recent demographic and economic trends suggest that New England—born of Roundhead rebellion against aristocracy—is becoming a Cavalier stronghold.

This represents a fundamental threat not only to the economic future of the region, but to its very character as a society. Yet the shift is barely recognized by the region's cognitive elites, for whom the much ballyhooed New England "miracle" stands untarnished, a light to the nations, as well as to undecided voters. As the usually sensible Robert J. Samuelson noted recently in *Newsweek*: "What New England has achieved economically is precisely what Democrats aspire to do politically."

To some extent, one can understand the celebratory point of view. Based on the huge endowments at its universities, inherited wealth, top medical facilities and high-end business services, those in New England's Cavalier economy continue to do well. The region enjoys both high housing prices and per capita incomes, signs of a prospering

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growth during the four-year time-span including Education and Health Services (+22,100 or 44.4%), Leisure and Hospitality (+7,700 or 15.5%), and Government including jobs at the two Indian Casinos (+2,000 or 4%). The heavy emphasis on employment gains in relatively lower paying service sectors raises concerns about the unfavorable quality of the changing job mix in Connecticut.

So why all of the bleak data on the job front when the evidence shows that the state's workforce is highly skilled, well educated, and very productive? After all, Connecticut has an advantageous location within the Northeast, and consistently ranks among the top states in terms of quality-of-life measures. If Connecticut is such a good place to live, work and raise a family, then why don't more firms locate and expand here? Part of the answer to this second question lies in the fact that Connecticut is among the most expensive states within which to do business. Business taxes, energy costs, land values, labor costs and construction charges leave the state at a competitive disadvantage relative to some of our neighbors and many other parts of the country, to say nothing of nations in Asia. Worker productivity and Yankee ingenuity can only compensate for lower costs up to a point. And for many Connecticut firms, outsourcing and offshoring have become competitive necessities.

A second employment obstacle involves the state's transportation system, especially the levels of congestion and accidents on the interstate highways through Fairfield, New Haven and Hartford counties. As the bottlenecks grow, and road repairs drag on for what seems to be forever, the state becomes nearly impassable, raising the cost of doing business and reducing the reliability of the local workforce as it struggles with the daily commute. The problem of too many cars on I-95, I-84 and I-91 is compounded by the fact that much of what is consumed throughout New England arrives there via trucks from the Port of Elizabeth in New Jersey. If you are fortunate enough to be traveling in the opposite direction away from a typical Connecticut traffic jam, count the number of trucks you pass mixed in, bumper-to-bumper, with the commuter autos. The total is usually an eye-opener.

A potential third cause of the slow job growth problem can be traced to the high cost of housing and local zoning rules that make it increasingly more difficult for workers to find affordable homes or rents at a reasonable distance from their place of employment. Workers are pushed farther and farther east and north from Fairfield County. In Greater Hartford, the most affordable housing is found in Tolland and Windham counties, or farther along I-84 towards Waterbury or out Rt. 44 into Litchfield County. The increasing distance between work and home means that there are more workers on the roads for longer periods of time during the morning and evening rush hours. The problem isn't that there are more jobholders, but rather more long distance commuters, who are on the road for longer periods of time, mostly driving in single occupant vehicles.

Ratcheting Job Growth

So now to the really tough question: What can we do about our problems? Historically, when our ancestors overdeveloped a geographic area or encountered growth problems, they simply picked up stakes and moved on. While some are doing that today, for most of us this is not a realistic option. We need to face the problems head-on and work together to resolve them. I offer the following suggestions to the new governor and the state political and business leadership:

- Convene one or more strategic summits before the next legislative session in January. Topics to cover include: 1) creating jobs and improving Connecticut's business climate; 2) a review of the state's tax, spending and borrowing policies; and 3) easing the state's traffic congestion. There is an existing menu of suggestions to deal with most of these problem areas. For example, the work of the new state Transportation Strategy Board is a good place to start to examine the congestion issue. The trick is to forge a bipartisan legislative agenda on these topics to guide the 2005 session.
- Reaffirm the value and upgrade the activity of the industry cluster-based partnership between state government and business. The clusters, which include various units of manufacturing, tourism, aerospace, and bioscience, bring together normally competitive companies to form an interrelated business unit and make recommendations on topics that are intended to improve the competitive position of these Connecticut firms. Insofar as these clusters have been up and operating for several years and have an existing body of work means there are ideas that may merit legislative action.
- The state should redesign but continue its support for attracting and retaining firms that lead to tangible net job creation. Connecticut must deal with other states and nations that offer financial aid, tax incentives, and supplemental inducements to entice firms to relocate and otherwise create an un-level playing field. Connecticut assistance is well spent if it leads to a return on state investment through the private creation of new jobs or an increase in the tax base. An important part of a restructured assistance plan should be that aid is extended to recipients in stages, over time, in exchange for the achievement of measurable performance milestones. While some successes have been achieved, a portion of past aid has been given in total, at the outset, in exchange for vague pledges of economic enhancement that fail to live up to their promise.

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Correction

The recent article on Vermont's microtechnology industry should have read that the microsystems industry is expected to reach a global sales volume of $100 ***billion*** *by 2010 (instead of $100 million).*

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Douglas G. Fisher
Director, Economic & Business Development

Michael B. Levin
Editor

Comments about ***New England Developments*** *or requests for copies are encouraged. Please contact the editor by e-mail at levin44@comcast.net or telephone at 860-673-6382. This newsletter paid for by NU System customers.*

Guest COLUMN

UConn Develops Technology Incubator

By Rita Zangari

Public universities have been operating different forms of business incubators for more than 25 years, but the University of Connecticut only seriously started to consider the possibility of having its own Technology Incubation Program (TIP) in 2000 when the university obtained agreement from the U.S. Department of Energy (DOE) to commit $ 7.2 million for the construction of a building to house “incubator activities.” The DOE money was combined with additional funds to build the Advanced Technology Laboratory at UConn’s Bio Science Complex in Storrs. The laboratory now houses the headquarters of UConn’s incubator program.

In addition to the laboratories and offices in the technology laboratory, the TIP has space at the UConn Health Center in Farmington and also at the university’s Avery Point branch campus in Groton. The program offers new technology companies lab and office space with access to university researchers, facilities, equipment and a variety of business and university services to help insure their success. Started less than two years ago, the TIP already has six company clients occupying two of its three sites.

Aimed at accelerating the success of entrepreneurial companies, the TIP has multiple benefits. Incubators enhance educational opportunities for students, help to keep and attract top-notch faculty by providing research opportunities, and generate revenue for the university. UConn is the state’s land grant university and as such has an obligation to support the community. That effort will be enhanced through the TIP’s ability to create jobs and grow new companies for economic development locally and statewide.

Cutting Edge Technology

Each of the companies in the TIP has either new or historic linkages to the university that brings value to the state’s economy. Here are some examples:

- The cannabinoid technology that forms the basis of MAK Scientific was developed in the laboratory of UConn scientist Alexandros Makriyannis. Using UConn licensed technology, MAK Scientific is in the process of investigating medications for treatment of pain, obesity and glaucoma. The market potential for the company exceeds $9 billion annually in the U.S. for pain therapeutics and $1.2 billion for obesity treatments, their two initial targets. The company’s cannabinoid technology will provide favorable alternatives to current products and address unmet needs.
- Inframat came to the TIP through its long-term relationship with UConn which originated with the Precision Manufacturing Center. Multiple collaborations with the Institute of Materials Science landed UConn $7.3 million in federal funding with UConn as the prime contractor and an additional $2.3 million with Inframat as the prime contractor. Inframat is one of only a few nanomaterials companies that have commercial product in the marketplace. Inframat is already successful in military markets where the company’s coating products employ nanotechology to preserve heavy equipment. However, Inframat’s TIP operation will work to combine nanotechnology with aspects of biotechnology to develop biosensors. The 2003 Forbes/Wolfe Nanotechnology Report featured Inframat as a company to watch, and Inframat has made Deloitte’s list of the fastest growing Connecticut companies for the last three years.
- I’mPACT World’s President Dr. Yuji Hayashi has produced joint research, patents and publications for many years with UConn’s Dr. Steven Suib. I’mPACT chose to be located at the UConn TIP because joint research with Dr. Suib was necessary to accelerate the rate at which they bring their Plasma Assisted Catalytic Technology (PACT) to market. PACT utilizes the effective chemical reactions in plasmas (electrical discharges) and catalysis to decompose toxic materials such as dioxin and air pollutants. PACT can also be applied to reform methane and other waste gases to produce valuable feedstocks for chemical synthesis and future energy generation.
- Sensor Research and Development Corporation (SRD) is located at the UConn Health Center and is collaborating with emeritus professor of biochemistry Jay Glasel, whose work concentrates on defense against chemical and biological weapons. SRD products detect micropathogens in food and water, and provide rapid and early detection of active infectious disease in humans.

Poised for Growth

According to Dr. Ian Hart, UConn’s director of industry initiatives, there have been many more companies interested in the program than could be accommodated in the start-up phase, but with a new executive program director in place, the program is now poised for growth.

The TIP facilities at Storrs consist of 3,500 sq. ft. in the technology laboratory, where companies have access to five offices of 100 sq. ft. each, five labs of 550 sq. ft. each, two conference rooms, a lunch room and access to greenhouse facilities. In Farmington, there is 3,500 sq. ft. of space with nine 300 sq. ft. laboratories and nine 70 sq. ft. offices. At Avery Point, the program has 3,600 sq. ft. available with 14 offices of about 250 sq. ft. each.

According to the National Business Incubator Association, 87 percent of incubator companies are still in business today, and 84 percent of that number stays in the community. Considering half of all small businesses fail within four years, the value of locating and operating an incubator is immense. Start-ups that join university incubator programs can take advantage of business and technology experts provided from within the institution and through outside networks. Access to technology and human resources can help win funding and recognition that can increase a company’s likelihood of success. Flexible leases, networking opportunities and shared services make incubator sites an attractive alternative for very small companies that often face uncertainty and need to focus on their business without becoming isolated.

Connecticut is well positioned for growth of its technology sector and programs like UConn’s TIP will help the state retain its edge. The Milken Institute’s 2004 State Science and Technology index ranked

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Cavalier Economy, *cont'd. from page 1*

wealthy elite and upper middle class.

Little noticed, however, is how the region is gradually losing its demographic vitality, its job base and, one might argue, its economic soul. New England as a region, with the notable exception of New Hampshire, is losing jobs and middle class families about as quickly as any part of the country.

Massachusetts, the heart of New England, epitomizes this trend. Between May 2001 and May 2003, Massachusetts alone lost over 110,000 jobs. Since 2002 some 40,000 people have dropped out of the workforce in greater Boston alone. Some have left town while others have simply quit looking for work. Not surprisingly, the city itself, after enjoying a small population gain in the 1990s, has been losing residents since 2000.

Nor is New England, particularly Boston, simply losing "crummy" jobs. Since 2000, Boston has been losing, at a more rapid rate than the rest of the country, employment in such critical fields as information, financial, business and professional services. It is gaining jobs only in fields such as education, health care and tourism, most of which are not exceptionally high paying.

Conservatives and Republicans will tend to blame these problems on the relatively high rate of taxation in the region. Yet, as Michael Goodman, an economist at the University of Massachusetts' Donahue Institute, notes, the notion of "Taxachusetts" as an anti-business hellhole needs to be rethought, partly because of a long period of rule by business-minded Republican governors.

Fundamental Issues

The greatest problems, he suggests, lie in more intractable geographic and demographic issues. "By the 1990s the nature of our problems really changed," Goodman believes, "from being one of the costs of business to the cost of living."

Throughout the 1990s Massachusetts lost more educated people (some 83,000 net) than it attracted, among the highest rates of "brain drain" in the country. Although young people continue to swarm in for the region's excellent schools, when they hit their 20s and 30s they also tend to leave, both for neighboring New Hampshire and for more expansive technology regions elsewhere, most notably California, Colorado, Florida, Texas and North Carolina.

Perhaps even more ominous, New England is falling behind in the production of college students, according to the New England Board of Higher Education. The decrease is particularly notable at the "lower" end, associate degrees, where the number of New England graduates actually declined between 1990 and 2002, while growing by nearly 30 percent nationwide. A small increase (2 percent) took place among the region's colleges and universities in terms of bachelor degrees, at a time when nationwide new bachelor's degrees grew by more than 20 percent.

Behind these numbers lays a deeper demographic crisis. All the New England states have relatively low numbers of children compared to the national average. This is not surprising given that the region is losing bachelor's degree holders, usually people in their 20s and 30s, more than any region of the country. Simply put, New England, particularly Massachusetts, is not producing the future workers needed for its economy. Boston, in particular, like Seattle and San Francisco, is rapidly becoming a "childless city."

For an area whose greatest asset is its youthful brain-power this demographic erosion suggests a potentially deepening crisis. Like many European countries, the region's Cavalier economy seems unable or unwilling to expand its living base, its stock of housing, to keep prices within reason. This means that, even in a weak economy, the cost of housing continues to go up.

That's good for tenured professors who bought their homes in Brookline 20 years ago, but terrible for that bright young scientist from Oklahoma, who knows he must go somewhere else once he or she graduates from MIT or Harvard. It also, suggests the Donahue Institute's Goodman, increasingly reflects itself in the migration of many Massachusetts natives, precisely the people critical to maintaining community and cultural continuity in this most tradition-oriented region.

Indeed, if New England wants to prosper again, without suffering precipitous downturns, it may have to eschew the fundamental elitism of the Cavalier economy and refocus on rebuilding its economy on a broader, more expansive basis. ■

Joel Kotkin is an Irvine Fellow at the New America Foundation. He is the author of The City: A Global History *to be published by Modern Library early next year.*

Connecticut Job Growth, *cont'd. from page 2*

The above list of remedies is just one of many possible. However, if we act together, now, I have no doubt that all could be well for the Connecticut economy in the near future: not just because of national economic growth, but because of positive actions we undertake. ■

Edward J. Deak, Ph.D., is Roger M. Lynch Professor of Economics at Fairfield University and Connecticut forecast manager for the New England Economic Partnership.

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Connecticut 10th overall for its inventory of science and technology assets, research and development capabilities, entrepreneurial capacity, risk capital, infrastructure and human capital. This is a two-point drop from 2002. Connecticut primarily fell behind in the area of risk capital and infrastructure where the number of business incubators statewide is an important factor. ■

Rita Zangari is executive program director of the Technology Incubation Program at the University of Connecticut.

Power POINTS

Median Home Prices Sluggish in Massachusetts

The second quarter survey of median home prices in 128 metros by the National Association of Realtors shows that prices have stabilized in Boston (up 3.1 percent from a year earlier) and Springfield (up only 1.0 percent). Nationally, median home prices increased 9.1 percent. That rise was exceeded in Hartford and New Haven in Connecticut, Providence, Rhode Island, and especially in Portland, Maine, where housing prices grew 23.4 percent, the fastest of the New England metros represented in the survey. Across the nation, housing prices climbed the most in Nevada, California and Florida.

Poverty Up; Region Low

The nation's poverty rate rose to 12.5 percent in 2003, up 0.4 from the previous year, according to recently released U.S. Census Bureau report. The New England states continue to have much lower rates of poverty, led by New Hampshire, which had the lowest rate in the U.S. in 2003 (7.7 percent). Connecticut was close behind, with the third lowest rate nationally (8.1 percent), followed by Massachusetts (9.4 percent), Vermont (9.7 percent), Maine (10.5 percent) and Rhode Island (11.3 percent). The same report indicates that median household income exceeded the U.S. median of $43,318 in 2003 in all New England states except Maine.

New England Lags Nation in 'Business Churn' Rate

The New England states are losing ground in a leading indicator of how well state economies shake themselves up and cycle through new and old ideas. An analysis by the U.S. Small Business Administration (SBA) of "business churning" statistics says New Hampshire was New England's highest ranking state in 2003 at 34th, but had slipped from 25th the prior year. Business churn is a calculation of the births and deaths of businesses as a share of total firms and is described by the SBA as a major driver of innovation and growth. All the other New England states also fell in the rankings—Connecticut from 46th in 2002 to 44th in 2003; Maine, 44th to 33rd; Massachusetts, 37th to 35th; Rhode Island, 38th to 22nd; and Vermont, 42nd to 17th.

The region continues to shine in providing health insurance and access to primary care physicians to its residents.

Health Coverage (Part One)

The region continues to shine in providing health insurance to its residents. All of the New England states ranked in the top 15 nationally in the percent of population covered by health insurance in 2002, according to U.S. Census Bureau data. Rhode Island tied for third with just over 90 percent coverage while New Hampshire and Massachusetts tied for fifth best coverage in the nation. Connecticut and Vermont ranked 11th and 12th, respectively, and Maine was tied for 15th with 88.7 percent of residents with health insurance. New Hampshire, Connecticut and Massachusetts relied heavily on employer-based health insurance, while Maine, Vermont and Rhode Island relied more on government health programs like Medicare and Medicaid.

Health Coverage (Part Two)

The region does equally well in providing access to primary care physicians, especially important in preventing future medical problems. In 2003 data from the U.S. Department of Health and Human Services, New England states all bested the U.S. average of 11.5 percent of the population lacking primary care physicians (general practice doctors, internists, ob/gyns and pediatrians). Vermont led the way with only 3.3 percent of the population lacking access (second best nationally); Massachusetts had 5.4 percent; New Hampshire, 5.9 percent; Connecticut, 6.5 percent; Maine, 8.2 percent; and Rhode Island, 9.2 percent. The availability of primary health care has worsened in the U.S. over the past 15 years but generally less in New England.

Population Growth Faster in Region

Population growth accelerated in several New England states in the period from April 2000 to July 2003, compared to growth rates during the 1990s. Population growth in Rhode Island, Connecticut and Maine in the three-year period was more than half of the growth for the entire preceding decade (for example, 2.7 percent in Rhode Island in 2000-2003 compared to 4.5 percent in 1990-2000). New Hampshire population growth remained the best in the region, with 4.2 percent growth in 2000-2003 making it the only New England state to top the U.S. average of 3.3 percent. Increases in Vermont and especially Massachusetts slowed during the period, with Massachusetts population increasing only 1.3 percent.

Migration Trends Vary

Population growth in Massachusetts and Connecticut continues to be driven by immigration from foreign lands, while growth in New Hampshire, Maine and Vermont is spurred by migrants from other states. Between 2000 and 2003, Massachusetts had (net) domestic migration of (-103,000) but gained 109,000 from (net) international migration. Connecticut also experienced negative domestic migration (-9,200) but the loss was overwhelmed by a net increase of 51,000 immigrants. By contrast, New Hampshire gained almost 30,000 from domestic migration but added only 7,000 from foreign immigration. Rhode Island demonstrated the most balance, gaining 8,000 from domestic moves and 12,500 from immigration during the period. ■

Update on Maine's Creative Economy Initiative

Editor's Note: From time to time* New England Developments *will update progress on initiatives described in articles appearing in the newsletter. In the March 2004 issue, Beth Siegel and Beate Becker discussed prospects for moving New England's creative economy from theory to practice, noting that Maine's governor was making the creative economy a focus of state economic development strategy. Since then much has happened on this front in Maine, which we report on here.

The Blaine House Conference

In May 2004, the Blaine House (governor's mansion) Conference on Maine's Creative Economy was held at the Bates Mill in Lewiston. Attended by 670 persons from arts organizations, the corporate and education communities, economic developers, entrepreneurs and government officials, the purpose of the conference was to educate civic leaders and the public to the importance and potential of Maine's creative economy and to begin to adapt strategies developed in cities to a largely rural state. The conference heard from Richard Florida, the nation's leading proponent of the economic power of the "creative class," that 30 percent of Maine's workforce was employed in creative work (broadly defined) and that Portland was particularly strong in this sector. Florida said that the state's biggest challenge was bringing the kind of strength in the greater Portland area to the rest of Maine.

Small working groups at the conference formulated some preliminary recommendations for moving the initiative forward, including identifying existing resources and mapping Maine's creative economy, incorporating the creative economy in state and local planning, and building political support for funding initiatives (such as marketing), as well as for basic support for arts education in the schools. The Blaine House Conference galvanized the participants to action and garnered immense press coverage on the creative economy initiative.

Measuring the Impact of Maine's Arts and Culture Cluster

A report on Maine's creative economy was released in July 2004 by a research team led by the Muskie School of Public Service at the University of Southern Maine. The researchers found that Maine's creative economy consisted of a broad technology category (including biotechnology, information and forest products) and the arts and culture sector. Creative economy industries accounted for 10 percent of total employment in 2002 and paid $2.5 billion in wages in 2002 (almost 14 percent of total wages). Of note, arts and culture industries continued to grow in the past few years as other sectors, including some technology industries, have experienced employment declines. Significantly, the report found that, unlike many states, Maine has a flourishing arts and culture sector in rural as well as urban areas, with the economic impact in rural communities especially strong during the summer months.

Focusing on boosting the arts and culture sector, the report offered several recommendations including:

- ☞ enhance arts and cultural tourism;
- ☞ develop the interrelationships between arts and culture industries and supporting organizations such as higher education and public agencies like the Maine Arts Commission into an economic cluster, as has been done in the technology sector;
- ☞ continuously expand and renew the creative workforce;
- ☞ devise community development strategies for small cities and rural places;
- ☞ build and extend networks across economic sectors within communities; and
- ☞ develop regional approaches.

Governor Receives Creative Economy Recommendations

On September 1, Maine Governor John Baldacci received the final report and recommendations of the Blaine House Conference from the conference co-chairs and announced a series of steps to enhance and promote Maine's creative economy.

The governor created a permanent council to oversee implementation of the various steps. Following Richard Florida's parameters for the creative economy, the governor recommended improvements relating to talent, technology and tolerance. He pledged that Maine would invest more in basic arts education in Maine schools and in the community college system, committed $100,000 for the 2005 Bangor Folk Festival, and will consider expanding the state's Pine Tree Zone program to include cultural and tourism investments.

The governor promised to build on the 2003 bond program to sustain the focus on technology and research and development investments through the Maine Technology Institute and the Office of Innovation in the state Department of Economic and Community Development. He said the state would work with the private sector to improve high-speed internet access and cell phone service in rural areas.

Lastly, the governor said Maine is committed to promoting tolerance and diversity as keys to economic success in the 21st century by supporting cultural celebrations around the state, promoting trade networks and immigration with Canada, and enacting non-discrimination legislation next session. ■

For more information on Maine's Creative Economy Initiative see the Maine Arts Commission website ***www.mainearts.com****.*

— Michael Levin

Regional Economic TRENDS

High Technology in New Hampshire: Is There a Future?

By Ross Gittell

The decline of high technology industries contributed significantly to the national recession in early 2001. The slow return of high technology investment and employment has dampened the nation's economic recovery.

From 2001-2002 high technology employment in the nation declined more than 8 percent (-8.3%), according to the American Electronics Association, while overall private sector employment declined only 1.6 percent (*Cyberstates 2003*). Forty-eight of the 50 U.S. states experienced declines in high technology employment (only two states with little employment in high tech, Wyoming and Montana, experienced increases in technology employment).

New England's decline in high technology and overall employment was more pronounced than the U.S. average. In just the single year 2001 to 2002, the region lost about one of every ten high technology jobs. Four of the six New England states—all but Connecticut and Rhode Island—had greater percentage declines in high tech employment than the national average. Massachusetts lost more than 13 percent of its high technology employment, or nearly 40,000 jobs, and had the third worst performance on a percentage change in employment basis among the 50 states. New Hampshire high technology employment declined by more than 18 percent—the most pronounced percentage decline in technology employment in the nation.

High Tech Employment Pct. Change 01-02

	%change	*rank*
Connecticut	-7.4%	29
Maine	-9.2%	37
Massachusetts	-13.4%	48
New Hampshire	-18.2%	50
Rhode Island	-2.6%	8
Vermont	-8.7%	35
New England Ave.	-9.9%	34.5
U.S.	-8.3%	

Source: *AeA, Cyberstates 2003.*

The technology decline in New Hampshire reflects a significant change. New Hampshire was among the leading high technology states in the 1990s and over the last two decades of the 20th century a leading state in overall economic growth, ranking among the top states in per capita income growth (2nd to Colorado) and per capita income (6th in the nation) by the end of the century. In the mid-1990s the state ranked first among the 50 states in high technology employment as a percentage of total employment (*AeA, Cyberstates* 1998) and consistently ranked in the top six of the 50 states in venture capital investments as a percentage of gross state product. By the end of 2002 the state's rank in employment concentration in high technology had declined to ninth and the state was last in high tech employment performance.

What Happened?

The main reason for the pronounced decline in high technology in New Hampshire was the state's significant concentration in technology product manufacturing relative to other states. Approximately two-thirds of technology employment in the state in 2000 was in manufacturing, compared to the U.S. average of one-third. About one-third of total technology employment in New Hampshire, and one-half of technology product manufacturing employment, was in two highly cyclical industries that were also adversely affected by outsourcing—instrumentation and semiconductor manufacturing.

The decline in technology product manufacturing is a national phenomenon, not New England or New Hampshire specific. Over the last two decades employment in instrumentation manufacturing in the U.S. declined 23 percent. Since 2001 employment in semiconductor manufacturing in the U.S. declined by 28 percent. The declines are a result of not only the late 1990s cyclical downturn in technology but also the globalization of technology production and services and the outsourcing of commodity-like technology product manufacturing to nations with the lowest labor costs and fewest environmental standards, such as China.

What is specific to New Hampshire is its very high concentration in high technology product manufacturing and more specifically commodity-like semiconductors and instrumentation manufacturing and the consequences thereof. Semiconductor manufacturing employment in New Hampshire declined by more than 40 percent between 2001 and 2003 and instrumentation manufacturing employment by more than 40 percent over the last two decades. Indeed, the vulnerabilities in the manufacture of commodity-like technology products in the U.S. and New Hampshire have been "exposed."

Is There a Future for High Technology in NH?

There are sectors within high technology that have performed well in New Hampshire and have potential to grow in the future. The service sector within high technology in New Hampshire—in particular such industries as computer system design, computer software development and publishing, research and development services, and engineering and related services—have grown significantly in employment over the last two decades. This includes growth rates over the last decade similar to or greater than the U.S. average and other top-ranked technology states and enduring relatively well during the early 2000s tech downturn. For example, computer system design employment in New Hampshire grew by 14 percent over the last decade compared to 13 percent nationally and 12 percent in Massachusetts, and employment in the industry declined less in New Hampshire during the recent recession than in Massachusetts and the nation.

There are signs that the state's high technology future is bright. The entrepreneurial spirit in the state is still prevalent. There were more than 4,600 companies started in the New Hampshire in 2003, or about 3.6 per 1,000 population, higher than the national average of 1.96 and the highest start-up rate, per capita, in New England (Sohl, *Seed and Start-up Equity Capital Market in New Hampshire*, 2004). New Hampshire is well positioned to benefit from future growth in high technology service industries. The state can also benefit from a shift in employment within high technology product manufacturing.

Some critical areas, however, must be addressed to keep New Hampshire among the leading high technology states. Initiatives are required to help facilitate an effective transition in the technology sector in New Hampshire from concentration in commodity-like product manufacturing to new product manufacturing and higher concentration in technology services. A group in New Hampshire—NetworkNH, with representatives from the state's High Technology Council, Software Association, Department of Resources and Economic Development and the University of New

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Hampshire—has organized to identify and address the challenges ahead in the technology sector.

NetworkNH's overall objective is to help focus economic development efforts throughout the state on the high technology sector, and to build on technology strengths and address weaknesses. The goal is to retain the state's position as a desired destination for capital investment and employment in the next technology growth period.

For high technology manufacturing NetworkNH proposals include strengthening product development capabilities, including industry ties to University-based and federal government funded research and development (R&D) funds. It also includes efforts to help position NH companies and the state's economy in the global supply chain to provide high quality innovative new products and services (such as new industrial machinery to manufacture commodity-like technology products in lower cost nations). And it includes positioning different regional "centers of activity" in the state, including the I-93 corridor from Nashua to Concord and the Seacoast and Dartmouth University-Hanover areas: 1) in relation to the research and technology base in Boston, Cambridge and Route 128; 2) as part of "the other coast" for Silicon Valley firms looking for a strategic East Coast location for R&D; and 3) to attract foreign manufacturers.

Currently the state ranks relatively low in R&D investment per capita. The state in 2000 ranked only 21st of the 50 states in R&D per capita with less than one-third the investment per capita of Massachusetts and less than one-half the levels in Connecticut and Rhode Island (Milken Institute, Science and Technology Index, 2004). To increase research and development investment in the state some combination of targeted incentives for businesses and enhancement to the federal R&D pipeline of Department of Defense, National Institute of Health and Homeland Security Department R&D funding is required.

When it comes to high technology, efforts need to be focused on industries with favorable long-term growth prospects in the U.S., such as computer system design, software development and Internet and related systems development and services. Efforts across the state need to link the development of high tech service industries to research and educational centers of excellence at Dartmouth, UNH and other colleges in the state.

Always at the foundation of high technology in New Hampshire—and needing continued support and attention—will be the quality of life and the state's relative cost advantage. The unique quality of life in the state serves as a magnet for high skilled workers and technology entrepreneurs. The cost advantage is primarily a personal income tax and sales tax advantage (New Hampshire is the only state in the nation other than Alaska without either a personal income or sales tax), but the state also has a relative cost advantage in housing and real estate compared to other high technology centers and Northeast states.

The recent tech bust offers issues and lessons that are New Hampshire specific, but many are also relevant to the other New England states. ■

Ross Gittell, Ph.D, is James R. Carter Professor at the University of New Hampshire's Whittemore School of Business and Economics.

Northeast Utilities System

P.O. Box 270
Hartford, CT 06141-0270

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