

BENCHMARKING CONNECTICUT 2006: DETERMINANTS OF ECONOMIC GROWTH

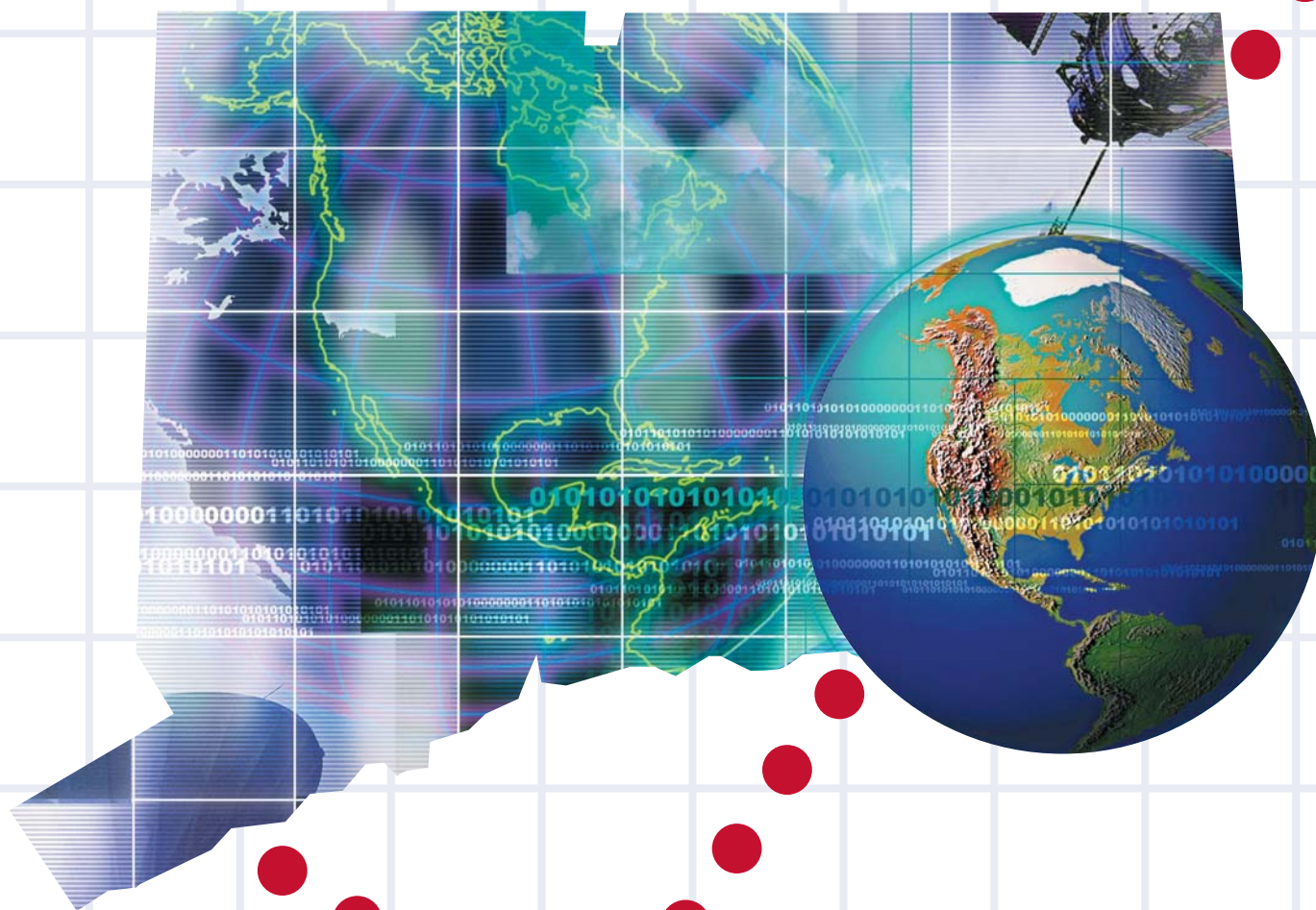


Table of Contents

Why Economic Growth is Important.....	page 2
Determinants of Economic Growth: Situation Analysis	page 7
Determinant #1: External Forces	page 8
Determinant #2: Regional and State Trends.....	page 19
Determinant #3: Urban Markets	page 56
Priorities for Sustainable Growth.....	page 59

This report presents the key findings from the 2006 Edition of the Connecticut Benchmarks study – a report that identifies some of the forces impacting economic growth in Connecticut, and recommends five priority areas for sustainable growth.

WHY ECONOMIC GROWTH IS IMPORTANT

Economic growth is essential to continuously improve the overall opportunity, prosperity and quality of life of people in any jurisdiction. Growth fosters greater opportunity for current and succeeding generations by promoting a rising standard of living. Growth drives changes in the economy, creating new products and firms and leading to countless innovations. It provides a basis for businesses to start and expand and for enabling public revenue to keep pace with growing demands for services. Widely shared economic growth is imperative for Connecticut's future economic vitality and quality of life.

Economic growth is measured by multiple sets of metrics. Conventional metrics, including state gross domestic product (GDP), income growth and job growth, explain only part of the growth puzzle. Other metrics to be considered include income distribution, human capital, demographic shifts, foreign investment and entrepreneurial activity. Growth is too complex a concept to be measured by any single indicator; a broad array of interdependent variables needs to be addressed.

ECONOMIC GROWTH VERSUS ECONOMIC DEVELOPMENT

Economic growth—meaning a rising standard of living for the clear majority of citizens—more often than not fosters greater opportunity, tolerance of diversity, social mobility, commitment to fairness, and dedication to democracy.¹

Although economic growth and economic development are related processes, development is more fundamental. Economic development leads to and sustains competitiveness; economic growth results from competitiveness.²

There is a broad consensus that economic growth is not only desirable, but is essential to continually improve the overall opportunity, prosperity and quality of life in any jurisdiction.

¹ The Moral Consequences of Economic Growth, p.4, Benjamin M. Friedman, 2005.

² Understanding Local Economic Development, p. 248, Malizia, E. and Feser, E., 1999.

Economic Development

The Corporation for Enterprise Development (CFED) characterizes economic development in this way:

Economic development is frequently equated with economic growth, but in our view, the terms refer to different things. First, development is both a prerequisite to and a result of growth. Development, moreover, is a qualitative change, which entails changes in the structure of the economy including innovations in institutions, behavior, and technology. Growth, on the other hand, is a quantitative change in the scale of the economy – in terms of measures of investment, output, jobs, consumption, income, and others. Hence, development is prior to growth in the sense that growth cannot continue long without the sort of innovations and structural changes implicit in development. But growth, in turn, will drive new changes in the economy, causing new products and firms to be created as well as countless small incremental innovations. Together, these advances allow an economy to increase its productivity, thereby enabling the production of more inputs with fewer inputs over the long haul.

Economic development should be concerned with how all the people are faring in this development process, not just the most wealthy, or the most educated, or those with the longest family tree as American citizens. It is for this reason that CFED has always argued that economic development should help to achieve a more widely shared and sustainable quality of life. This overall goal may be broken down roughly into three elements:

- ❖ Development entails the enrichment and social wellbeing, which can be measured in the flow of money and goods to individuals over time; increases in the quality and quantity of public goods (such as clean air and water, freedom from fear of crime, better schools, etc.); and access to good jobs (e.g., with wages and benefits sufficient for supporting a family, and opportunities for advancement).
- ❖ Shared growth means that there is broad distribution of opportunities for meaningful participation in the economy and enjoyment of the benefits of an increased standard of living.

- ❖ Sustained growth means that the above goals are achieved in a manner that does not detract from – but rather enhances – the economy’s ability to achieve the same goals in the future.³

Growth Preceding Development

Economic growth may be one aspect of economic development but is not the same. Economic growth is a measure of the value of output of goods and services within a time period and for a certain jurisdiction. Economic development, on the other hand, is concerned with the welfare of humans in a society. Although fundamentally different concepts, there are certain overlaps or complementarities. One can have economic growth without economic development, such as the case where all of the growth accrues to a single person, group or region. However, it is difficult to imagine a situation where one has economic development without accompanying economic growth as such a scenario would assume a redistribution of a finite set of resources. Therefore economic growth is an essential precursor to economic development—absent growth there would not be development.

It is possible to have growth without development. Some might argue that this is becoming increasingly common in the U.S. and in Connecticut as the differences between the top and bottom income groups widen and the middle hollows out. Consider a fictitious economy with one million households each with an annual average household income of \$50,000 per year. If 10 families were introduced into this economy, each with annual incomes of \$1 billion, it would drive average household income up almost \$10,000 a year, or 20 percent. Relying solely on the macro indicator of household income one might reasonably conclude that the growth and development of this region is on solid footing. It is apparent, however, that in this extreme case the growth is confined to a select few households and the economic conditions of the remaining households remains basically unchanged. This provides one illustration of how economic growth, as typically thought (growth in average household income) does not necessarily translate into economic development (increased standard of living for all).

Connecticut’s Growth Problem

³ Schweke, W., Brian Dabson and Carl Rist (1996). “Improving Your Business Climate A Guide to Smarter Public Investments in Economic Development,” CFED, ISBN 1-883187-10-9, Washington, DC.

To the extent that economic growth as exemplified by job growth, entrepreneurial activity, wage and salary growth, and similar metrics, is sluggish or nonexistent in Connecticut, then most would agree that there is a growth problem.

As a result of this growth problem the northeastern region of the country is facing significant economic challenges which, if ignored, will continue to erode regional competitiveness, reduce personal income⁴, increase public fiscal pressures⁵, and detract from our overall quality of life.

Chief among these challenges is moribund economic growth, defined in this report to include:

- job growth;
- projected productivity growth;
- new business formation; and
- personal income growth and distribution.

Connecticut consistently lags the nation and most other northeastern states in these and many other measures of economic growth. The goal of the *Benchmarking Connecticut 2006* initiative is to achieve greater understanding and insights into the key impediments to economic growth in Connecticut. It is recognized that economists have been debating issues related to economic growth for a couple of centuries and CERC has no pretensions of adding to that voluminous body of economic research. Rather, it is CERC's intent, through a review of published literature and a closer examination of the Connecticut experience, both historic and projected, to identify some initial clues in this growth mystery and to offer thoughts as to what may lie ahead if the current course is maintained.

The bulk of the research related to economic growth has been carried out on a national basis (country to country comparisons) comparing macro growth rates and federal policies across a wide spectrum of countries and time frames. While this work is of

⁴ National Center for Public Policy and Higher Education , *Policy Alert: Income of U.S. workers Projected to Decline If Education Doesn't Improve*, November 2005; Coelen and Berger, *New England 2020: A Forecast of Educational Attainment and Its Implications for the Workforce of New England States*, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

⁵ Connecticut Office of Fiscal Analysis

limited value for present purposes inasmuch as states possess few policy tools relative to federal governments, it has proven useful in clarifying thinking in certain areas.

It is important to emphasize that this growth problem cannot and should not be laid on the doorstep of any one political party or administration. The changes impacting this region are decades long and driven primarily by larger national and global economic restructuring.

The goal of this research is to shed some light on the underlying dynamics of economic growth in Connecticut to inform public policy discussions and investments.

DETERMINANTS OF ECONOMIC GROWTH: SITUATION ANALYSIS

Explanations for and assumptions about economic growth that seemed reasonable even 10 years ago no longer hold sway in a global, knowledge-based economy that operates 24 hours a day, 7 days a week, 365 days a year.

This study identifies and analyzes three major areas of influence that act to dampen economic growth in Connecticut:

- External forces (global, national, technology)
- Regional and state trends
 - Job growth
 - Demographic shifts
 - Business growth
- Urban markets

These areas should not be considered in isolation; rather they act together in an extremely complex manner. Each is inextricably linked to the others, and the relationships among them are not readily discernible. Economists have been working for more than two centuries on the puzzle of economic growth and, although theories abound, it remains a construct that is not completely understood. Understanding the elements and their relationships and approaching them holistically is essential to developing effective strategies for promoting economic development and hence growth.

DETERMINANT #1: EXTERNAL FORCES

Numerous forces at the global, national and regional levels, as well as changes in technology, are increasingly having an impact on Connecticut's economy. More importantly, these forces will affect the future conditions in the state 10 and 20 years from now. These forces reduce the ability of the state to affect changes and play a much greater role in our economic fortunes than most people imagine.

TECHNOLOGY

Technological changes have contributed greatly to the creation of wealth throughout history. Starting in the early 1800s, technological advances in farm machinery resulted in fewer farmers needed to produce food for a region and allowed more people to move into manufacturing jobs that earned higher incomes. For Connecticut and New England, the relatively high population density and scarcity of land pushed the region into the forefront of technological advances in new manufacturing industries and resulted in high growth in the region's productivity.⁶

The industrialization that occurred in New England between 1830 and 1880 resulted in a population shift to the cities and a transformation of the New England economy "comparable in scope and intensity to the Asian 'miracles' of Korea and Taiwan in the half century since World War II."⁷ Despite the turbulence of two world wars and the Great Depression during the 1930s, the technological innovations that increased the productivity and competitiveness of the region resulted in manufacturing employment growth until the mid twentieth century. In the 1950s, a number of studies of New England's economy suggested that the region's textile mills, historically one of the most important growth engines in the region, would continue to fail because of low-cost, non-unionized competitors from southeastern states.

While the textile mills did fail, New England's economy did not. Through technological innovations New England made a successful transition "into defense and electronics and later into computers and software, in large measure due to unprecedented levels of

⁶ *Engines of Enterprise An Economic History of New England* edited by Peter Temin. "The Invention of American Capitalism: The Economy of New England in the Federal Period", by Winifred Barr Rothenberg. p93. Harvard University Press Cambridge, Massachusetts, 2000

⁷ *Engines of Enterprise An Economic History of New England* edited by Peter Temin. "The Industrialization of New England, 1830-1880" by Peter Temin. p.109

peacetime defense spending by the federal government.”⁸ The economic growth and vitality in Connecticut and the region during this time was largely driven by technology improvements arising from a skilled and educated workforce focused in the industries and companies associated with federal defense spending. For Connecticut, New York and Massachusetts, the finance and insurance industries continued to grow, providing services to the companies and people of the region and nation.

By the mid-1990s federal defense spending, especially in the New England states, started declining and the region’s competitiveness in electronics manufacturing had waned. During the late 1990s, technological improvements associated with computers and global communication networks resulted in increasing the exposure of the state’s and the nation’s companies to low-cost global competition. These recent technological changes have made it increasingly clear that Connecticut and the region will not be able to compete in the industries that historically provided the region with lots of jobs and relatively high wages. The state, the region and indeed the nation will need to learn to compete in a world where technology has reduced former regional and national competitive advantages and has made it possible for companies based in any country to impact a market.

THE GLOBAL ECONOMY

Global GDP increased \$11.5 trillion⁹ between 1990 and 2005. This increase in production is nearly equivalent to adding another country the size of the U.S. to the world economy. While the global economy grew at this time by 35 percent, from \$32.4 to \$43.9 trillion (2005 dollars), the U.S. economy grew by 38 percent and Connecticut by 37 percent (from \$141.5 to \$193.7 billion). To put the billions and trillions into perspective, working with the global economy being benchmarked to one million dollars would suggest that Connecticut’s economic growth rate of 37 percent (slightly above the global growth of 35 percent) would be equivalent to growth from \$4,357 to \$4,411, which is an increase from 0.436 percent to 0.441 percent of the world’s economy. During the years when Connecticut’s economic production grew by 37 percent, China’s economy

⁸ *Engines of Enterprise An Economic History of New England* edited by Peter Temin. “The Transition from Mill-Based to a Knowledge-Based Economy: New England, 1940-2000”, by Lynn Elane Browne & Steven Sass, p202.

⁹ Inflation estimates are based on the Bureau of Economic Analysis Real Gross Domestic Product Quantity Index for the National Economy, Table 1.1.3.

grew by 179 percent from \$641.7 billion to \$1.79 trillion in 2005 dollars, more than doubling its share of total world output. Connecticut's economy, which was 22 percent of the size of China's economy in 1990, was 11 percent by 2005. This example underscores a number of important facets of today's economic reality that need to be accounted for in the consideration of economic strategies for companies, states, regions or nations. In the future, the overall growth in the global economy will result in significant changes in the forces Connecticut faces and the relative scale of the state and regional economies in developing policies.

Technological changes have also resulted in the production of cheaper consumer goods that increasingly are produced outside of the U.S. and imported. Imports of goods into the U.S. grew by 118 percent between 1990 and 2005, from \$769.4 billion to \$1.673 trillion (2005 dollars). Again for comparison, during this time, imports into the U.S. from China grew from \$23.6 billion to \$243.5 billion (2005 dollars) for an increase of 1,031 percent¹⁰. To some extent these imports have crowded out sales of U.S.-made goods and thus have impacted U.S. wages and jobs. However, these imports were sold in the U.S. to consumers happy to pay less for those imported goods. With their savings they were able to buy more goods or invest more money. Thus, while these imports resulted in fewer jobs in the U.S. and lower wages they also benefited U.S. consumers.

Many companies in the U.S. also benefited from the growth in the global economy—between 1990 and 2005, the value of U.S. goods exported increased by 75 percent, from \$517 billion to 906 \$billion (2005 dollars).¹¹ During those years, companies in Connecticut increased their export of goods by 41 percent, from \$6.8 billion to \$9.6 billion. In the 2006 CERC Benchmarks, Connecticut ranked 19th among the 50 states in the dollar value of exports per worker. However, Connecticut ranked 38th in its growth in exports. For both these benchmarks it is important to recognize that they are based on comparisons with the other states and that Connecticut must compete in a global economy not against a set of states.

¹⁰ Bureau of Economic Analysis U.S. International Transactions Accounts Data. Table 2b. http://www.bea.gov/bea/international/bp_web/list.cfm?anon=71®istered=0 Data are adjusted for inflation using the purchasing price index for manufacturing industries from the Bureau of Labor Statistics.

¹¹ Bureau of Economic Analysis U.S. International Transactions Accounts Data. Table 2b. http://www.bea.gov/bea/international/bp_web/list.cfm?anon=71®istered=0 Data are adjusted for inflation using the purchasing price index for manufacturing industries from the Bureau of Labor Statistics.

NATIONAL FORCES

Federal policies have a tremendous impact on every state and certainly Connecticut is no exception. Just about every aspect of our personal and professional lives is touched in some degree by national policies. Federal budget decisions and policies in areas as diverse as basic research and development to education to defense to immigration policies impact our lives, and those of succeeding generations, in countless ways.

Connecticut's economic activities have been and will continue to be shaped by national as well as regional trends. For example, one source estimates that 93 percent of job change in Connecticut moves along with national job changes.¹² A critical reason why a state like Connecticut reflects national trends is that the state is subject to policy decisions set at the federal level in areas from education to research and development (R&D) funding to trade and monetary policies. Decisions made in Washington can have widely varying impacts on different states, often with little state participation in these discussions and outcomes. For example, unfunded federal mandates compete with other priorities for state investment.

EFFECTS EXTERNAL FORCES ON INCOME AND PRODUCTIVITY

Income and productivity are two economic measures that reveal some of the impacts of technology, global change, national policies and directives and regional economies on the state's economy. Historically, companies in the state (many of them major manufacturing companies with strong exports) were characterized by being at the forefront of applying technology to increase their productivity. This strategy allowed them to remain competitive and resulted in the state's high productivity, traditionally reflected in high wages. The state's strong mix of competitive companies and highly skilled workers in productive industries has placed Connecticut at the top of the ranks among states in terms of productivity and per capita income.

But high incomes also feed back into the state's economy—increasing over time relative costs for households as most obviously housing prices will get bid up and for businesses as they will need to pay their workers more to live in a high income area than in other areas. As these costs are observed by businesses the higher incomes discourage employment growth especially for companies in industries that can more cheaply locate

¹² Moody's Economy.com, Connecticut Precis, May 2006.

their production outside the region. This reality is an accepted tenant of economic development theory and is easily confirmed with a simple statistical test examining the data for employment growth in all of the states between 1990 and 2000. CERC's research suggests that each \$1,000 increase in a given state's per capita income in 1990 resulted in a one percent lower growth rate in employment in that state between 1990 and 2000. This result links the cost of hiring and keeping workers in the state with higher per capita incomes. Moody's Economy.com "Cost of Doing Business" Index also confirms this important link between job growth and income levels of a state. The index explains 20 percent of the growth in employment in a state indicates that 75 percent of that explained growth is due to the cost of the labor in the state.¹³ The other 25 percent of the index is explained by energy costs and tax costs.

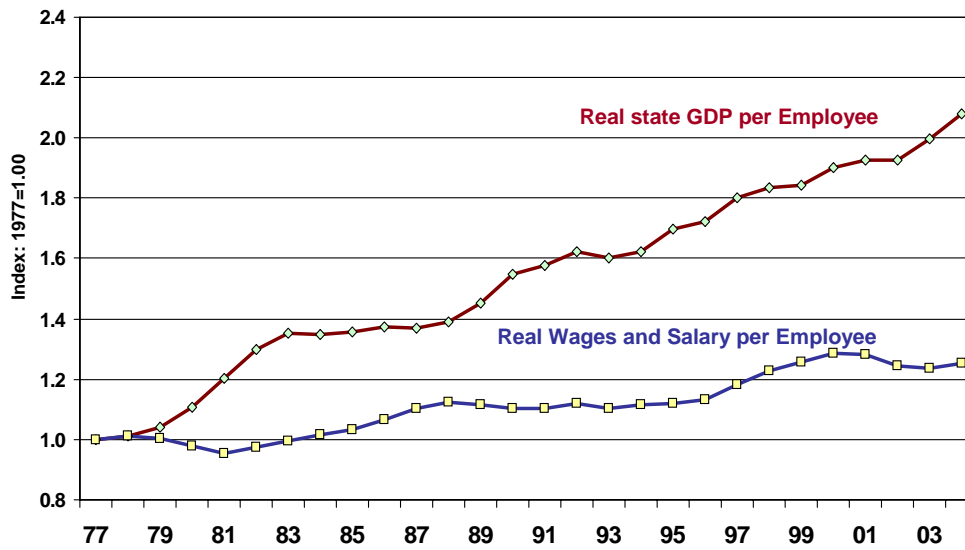
In addition, recent strong global pressures resulting from the growth of newly developing economies, especially China and India, and from further technological advances, have significantly reduced the cost of production outside the U.S. These developments have encouraged a shift in production to areas of the world with lower costs than Connecticut, the Northeast and the rest of the nation. This shift in production is reflected in the outsourcing of jobs that were based in Connecticut, the outsourcing of contracts for components that were once manufactured in Connecticut, and the purchasing of relatively inexpensive imported consumer goods. These pressures were initially felt in manufacturing industries, where low skill levels required for production made the exporting of that production to cheaper international locations relatively easy. Increasingly these pressures are also being felt in professional and technical service industries (such as call centers, accounting, radiology and other services) that require higher skill levels, relatively lower labor costs and often involve work that can easily be digitized and distributed across global communication networks. For example, X-rays can be digitally transferred and analyzed anywhere in the world.

CHANGING ECONOMIC REALITY

One of the important results of these changes for Connecticut is the increase in the gap between worker productivity and worker wages, as shown in Figure 1.

¹³ Moody's Economy.com index explains 20 percent of employment growth in the states. This weighted index has three components: 75 percent for labor, 15 percent for energy and 10 percent for taxes.

Figure 1: Productivity and Wage Growth in Connecticut



Source: U.S. Bureau of Economic Analysis, calculations by CERC

The growth in inflation-adjusted wages since 1977 for Connecticut was 25 percent; however, the growth in inflation-adjusted productivity for the state was slightly over 100 percent during the same time. The growth in this gap is due, in part, to the response of a dynamic economy as companies in various industries move in and out of the state, and as companies invest in the latest technology, using computers and automation to reduce employment and thus remain competitive. Changes to the distribution of income such as this indicate the presences of larger structural changes that call into question the standard economic paradigm that growth in worker productivity automatically translates into increases in worker wages.

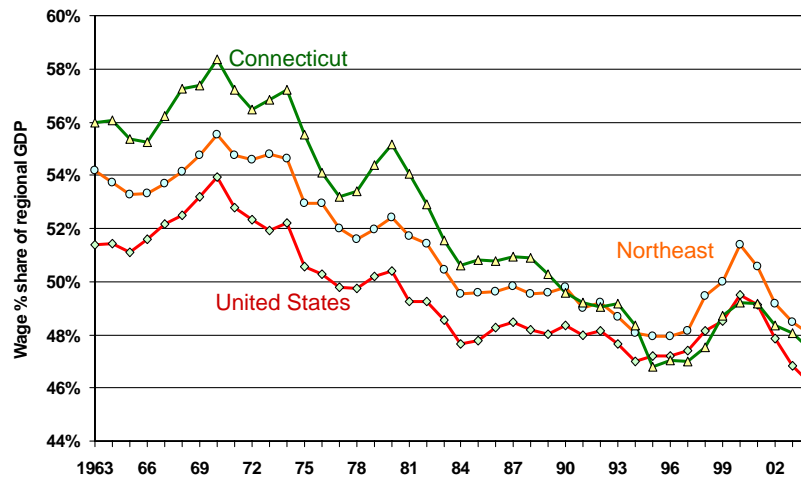
Although some of these forces are clearly recent and due to advances in technology and communication networks, technological change has been increasingly present as a factor associated with jobs in Connecticut's economy since around 1950. In 1948, nearly 56 percent of the state's total employment was in manufacturing. Acquiring a manufacturing job then did not require advanced training but rather a strong back and a willingness to work for your wages. And the wages for those workers were relatively high, making middle class living a reality for over 400,000 manufacturing employees and their families. Today, there are fewer than 200,000 employees in manufacturing,

accounting for less than 12 percent of the workforce.¹⁴ When available, new jobs in manufacturing often require training and expertise well beyond a high school degree. The changing character of manufacturing jobs due to technological innovations and movement to lower-cost locations from urban areas that were once manufacturing centers is a factor that discourages business investment and job growth.

National and Regional Wage Trends

Another way of looking at the increases in productivity and in wages is to examine the change in the share of total output that is accounted for by wages. Figure 2 shows that in 1970 the share of state gross domestic product (GDP) accounted for by wages peaked at slightly more than 58 percent in Connecticut. During the same year the share also peaked in the Northeast at slightly more than 55 percent and in the U.S. at just under 54 percent. The higher share of state GDP accounted for by wages reflects in part the industry mix in the states. The manufacturing share of total employment alone accounted for 42 percent of the variance in wages per state GDP in 1970 among the 50 states. Although there are other factors that determine the relative distribution of the benefits of production, states with higher employment concentrations in manufacturing industries in 1970 also had higher wage shares of production, which was passed on to the workers. Connecticut and the Northeast benefited from those employment and wage concentrations in the manufacturing sector.

Figure 2: Share of Regional GDP Accounted for by Wages and Salaries



Source: U.S. Bureau of Economic Analysis, calculations by CERC

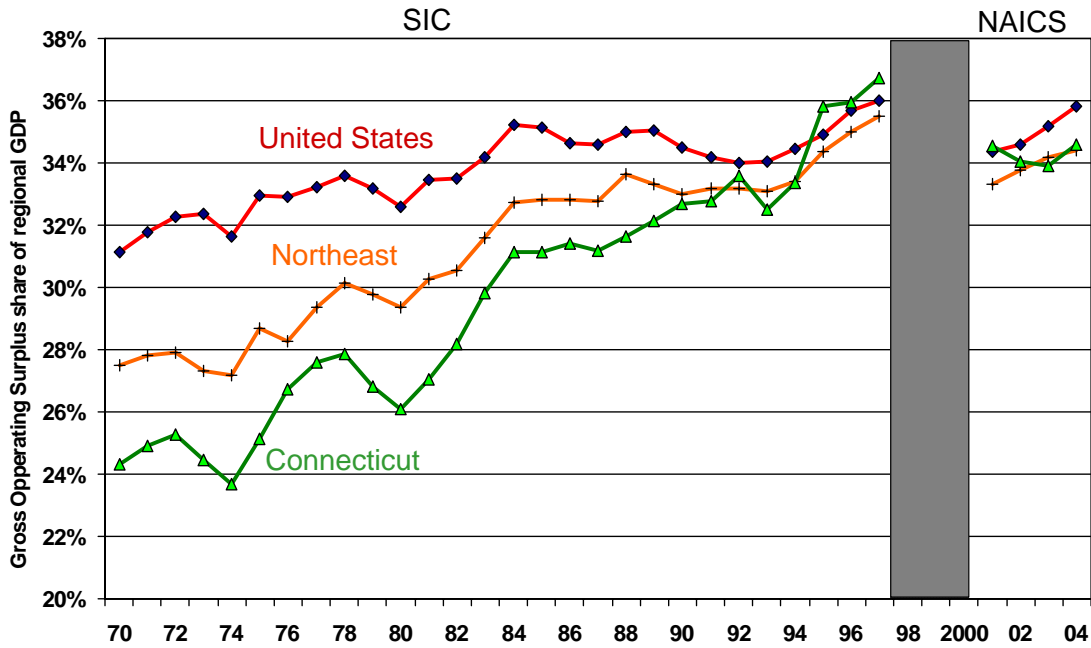
¹⁴ U.S. Bureau of Labor Statistics.

Industry mix also helps to explain why the wage share of state GDP for Connecticut falls faster than the Northeast or the U.S. Manufacturing employment (which in Connecticut accounted for 37 percent of the total nonfarm employment in 1970, 30 percent in the Northeast, and 28 percent in the U.S.) fell in Connecticut to 17 percent by 1996 when the wage share of the state's GDP bottomed out. The decline in the share of Northeast manufacturing employment to 14 percent by 1996 resulted in a change of 16 percentage points compared to the 20 percentage points seen for Connecticut. The U.S. saw a decline of 12 percentage points. Critically, the share for Connecticut dropped below the Northeast quickly after 1994 and below the U.S. the next year. Since then, Connecticut's share has remained below the Northeast but above the U.S. since 2000.

Profits

The trend in company profits, the other major component in state GDP, mirrors the trend in wages seen in Figure 2. In national and state measures of GDP, company profits are the major component in gross operating surplus which includes profits, proprietors' incomes, capital charges and taxes. The broader perspective on this measure shows that gross operating surplus measures the value of the returns to capital owners from investments in capital. Since 1963, gross operating surplus and employee compensation (primarily wages and salaries) have accounted for 91.6 percent of Connecticut's GDP with a variance only between 89.4 percent and 92.9 percent. As a result, the drop in wages and salaries is largely reflected in the increase in gross operating surpluses as noted in Figure 3.

Figure 3: Gross Operating Surplus Share of Connecticut Gross Domestic Product



Source: U.S. Bureau of Economic Analysis, calculations by CERC
 Gross Operating Surplus estimates between 1997 and 2002 are not available.

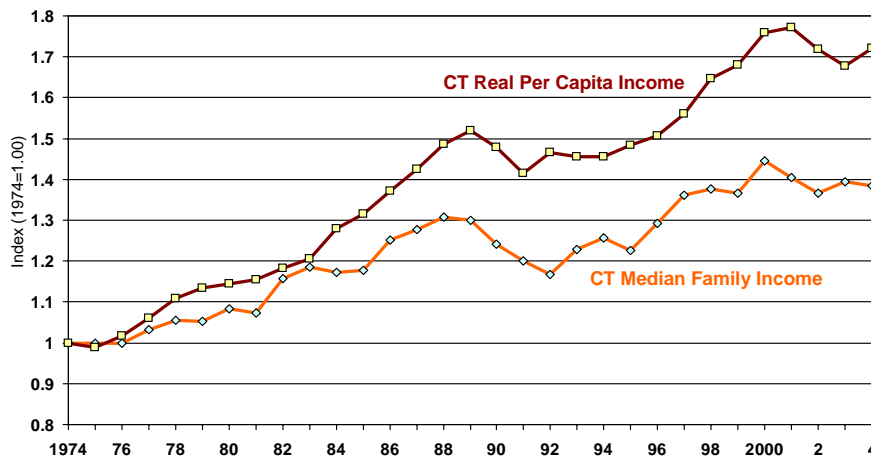
Figure 3 shows Connecticut's gross operating surplus's share of total GDP increasing faster than either the Northeast or the U.S., rising from 2 percent below the Northeast and nearly 7 percent below the U.S. to nearly 1 percent above the U.S. and more than 1 percent above the other Northeastern states by 1997. After 2000 the series are defined using a different industry structure but the data using the new North American Industry Classification system (NAICS) is again showing Connecticut slightly lower than the U.S. and basically even with the Northeast.

It is important to recognize that Figures 2 and 3 reflect tremendous changes in the economies of the region to industries and companies. The companies that have survived in Connecticut, in the Northeast and in the U.S. have been companies that have reduced labor costs as noted in Figure 2 but have also increased their productivity levels. The results of these evolutionary changes are reflected in the high growth rates in labor productivity and the slower growth in wages shown in Figure 1. The results are also reflected in some of the changes in the distribution of income.

IMPACTS FROM CHANGES IN INCOME DISTRIBUTION

Shifts in the type of goods being produced in a region as well as changes in technology resulting from the ways in which the goods are produced have direct effects on the distribution of income. Although there are many ways to measure the data associated with the changing distribution of income in the U.S. and Connecticut, the growing gap between median and average incomes as shown for Connecticut in Figure 4 captures a number of factors associated with this trend. These include a business cycle component (troughs after the peaks in 1989 and 2001), the recent (since 2001) decline in both per capita and median family incomes, and the fact that the gap is not recent and has been increasing over time.

Figure 4: Index of Growth in Connecticut's per Capita and Median Family Income



Source: U.S. Census Bureau and Bureau of Economic Analysis

This growing gap is especially evident between certain Connecticut cities and the rest of the state. Bridgeport, East Hartford, Hartford, New Britain, New London, New Haven, Waterbury and Windham had the lowest incomes in the state in 2001 and had the lowest growth in income between 1991 and 2001 of any of the municipalities in the state. These eight cities had on average an adjusted gross income in 2001 of \$33,030 per return and had on average a loss in real income between 1991 and 2001 of \$834. The remaining municipalities in the state had an average income of \$69,817 and growth in real income of \$17,111.¹⁵ These results suggest that this gap in income is not equally distributed

¹⁵ Internal Revenue Service, Statistics of Income. Income as measured by adjusted gross income per return.

across the state but that low incomes are concentrated in the cities and became lower during the growth of the “new economy” in the 1990s.

The income distributions among households in Connecticut’s municipalities broken down by quintiles in Figure 5 show a second important feature of the income distributions in the state. The average incomes of the 30 or so municipalities in the highest (5th) quintile were 48 percent higher than the 4th quintile in 1991. By 2001 they were 81 percent higher. The next largest gap between the quintiles was between the 1st and 2nd quintiles which was 17 percent in 1991 and 28 percent in 2001. One of the most important factors to realize from this distribution and the trends observed between 1991 and 2001 is that the needs and expectations for the populations in the municipalities in the 1st quintile are significantly different from the needs and expectations of the populations in the fifth quintile. These differences result in different services provided by local and state governments.

Figure 5: Distribution and Change in Income Among Connecticut’s Cities, 1991 and 2001

Connecticut Municipalities	Adjusted Gross Income Per Return			Change in Real Income
	1991	1991 (2001\$)*	2001	
1st Quintile	28,446	36,810	39,816	3,005
2nd Quintile	33,294	43,083	51,032	7,949
3rd Quintile	36,395	47,096	58,971	11,875
4th Quintile	40,813	52,814	67,246	14,432
5th Quintile	60,571	78,381	121,533	43,152
Percent Difference in Quintiles				
First / Last	47%	47%	33%	7%

Source: Internal Revenue Service.

* Inflation rate from Consumer Price Index Northeast Urban from Bureau of Labor Statistics.

The overall impact of these changes is not captured in any single metric but is visible in the lack of economic vitality in those cities. Some of the clearest impacts are seen in areas such as affordability of housing¹⁶ and education, particularly early childhood and post-secondary.¹⁷ These factors are critical in creating and enhancing an environment conducive for economic growth.

¹⁶ Alicia Sasser, Bo Zhao and Darcy Rollins, *The Lack of Affordable Housing in New England: How Big a Problem? Why Is It Growing? What are We Doing About It?* presented at: “Housing and the Economy: Trends, Impacts and Potential Responses,” May 22, 2006, New England Public Policy Center, Federal Reserve Bank of Boston.

¹⁷ Connecticut Center for Economic Analysis, University of Connecticut, *The Economic Impact and Profile of Connecticut’s ECE Industry*, <http://ceea.uconn.edu/studies/Child%20Care%20Report.pdf>; Committee for

DETERMINANT #2: REGIONAL AND STATE TRENDS

Connecticut's current economic position is in part determined by its economic history, which is similar to most other states in the Rust Belt, that group of contiguous states that includes the Northeast and Great Lakes. As noted above in the Technology section, these states developed similar technologies at the same time and their industrial structures have seen similar changes over time. The patterns record the development of dominant goods producing through the Industrial Revolution and into the mid-20th century. Since the 1950s, changes in the means of production from further technological advances and capital improvements have resulted in significant shifts in employment levels as well as in the types of companies and industries that can thrive in this region. These shifts have resulted in the states in this region facing similar economic challenges with respect to job and business growth and demographic change. Paul Krugman noted that even as recent as the 1980s it was not hard to identify the dominant export sectors that produced high-tech manufactured goods that drove growth for the New England region.¹⁸ Krugman's observation showed that even into the 1980s companies based in manufacturing industries still continued to be recognized among the critical economic drivers in the New England states. However, he notes that by 2000 the regional economy had changed and describes it with the term "amorphous". Amorphous, he continued, reflects the fact that today the economies of the New England states are harder to measure and understand—that the industries that record the highest exports of goods no longer clearly identify the regional drivers.

"Amorphous" also suggests that the regional economies are continuously changing. These changes are reflected in the region's competitiveness increasingly dependent on knowledgeable and skilled professional workers, service providers and managers. From this perspective it is important to note that the large consumer markets traditionally served by the region's manufacturing companies have shifted the types of goods they demand with the result that consumer demand reflects the global economy. Traditionally many of the goods produced by New England manufacturers were easily sold to the large urban markets of New York, Boston and other regional cities. New England

Economic Development, *The Economic Promise of Investing in High-Quality Preschool*, 2006, http://www.ced.org/docs/report/report_prek_econpromise.pdf.

¹⁸ Page 272 "The Future of New England" by Paul Krugman, *Engines of Enterprise An Economic History of New England*, ed by Peter Temin

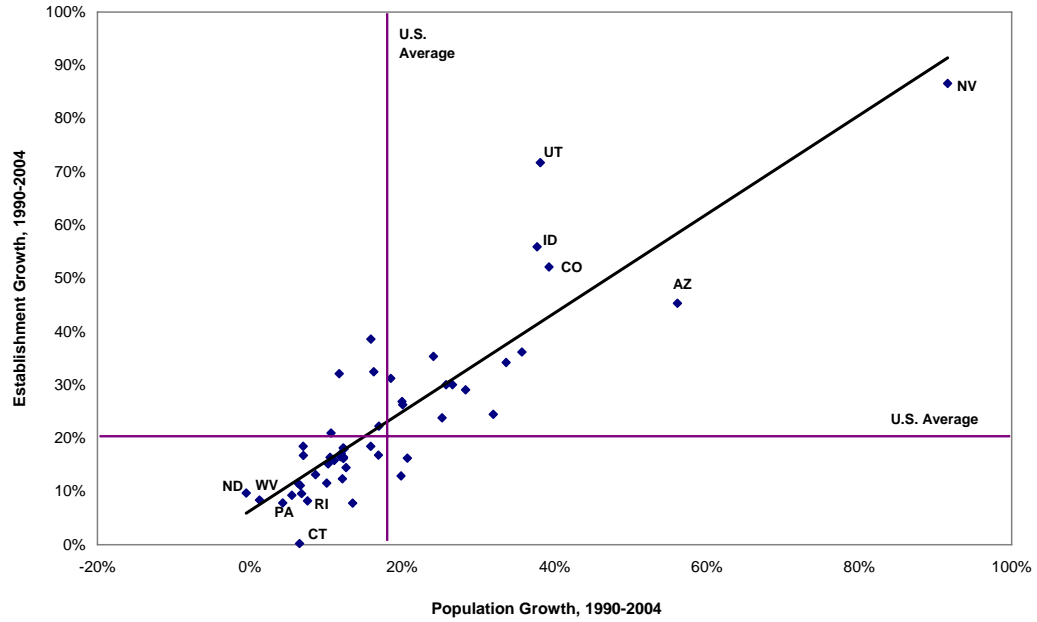
manufacturers also found ready markets in the high-income western European countries.

Two foundational factors that have significantly impacted New England's historic economic growth, transportation and energy, are increasingly viewed as problems stifling its economic growth. Manufacturers throughout New England were relatively close to New York City and the other large urban consumer markets. In addition, the ports of many of these urban markets provided easy access for the exports of New England's manufacturers to the rest of the world. Today, highway congestion and problems with rail transportation are viewed as regional problems increasing business costs and in general reducing the attractiveness of the region. Likewise, manufacturing in New England grew due to the availability of water power which provided energy to the mills throughout the high industrial growth in the 19th century. In 2003, the cost of electricity in the New England states was on average nearly 41 percent higher than the U.S. (\$30.67 per million Btu's for the six New England States when compared to \$21.81 for the U.S.) Likewise, total Energy costs from all sources was 22 percent higher (an average for the New England states of \$13.91 per million Btu's when compared to \$11.40 for the U.S.).¹⁹

In this section three significant, interdependent trends are discussed—job, business and population growth—that are impacting Connecticut and the Northeast. Although it is difficult to isolate cause and effect among these three variables, they move in unison, and the patterns of change are the same across most states in the Northeast. Figures 6, 7 and 8 show the correlations between these three variables by plotting each state's growth among job, business and population growth.

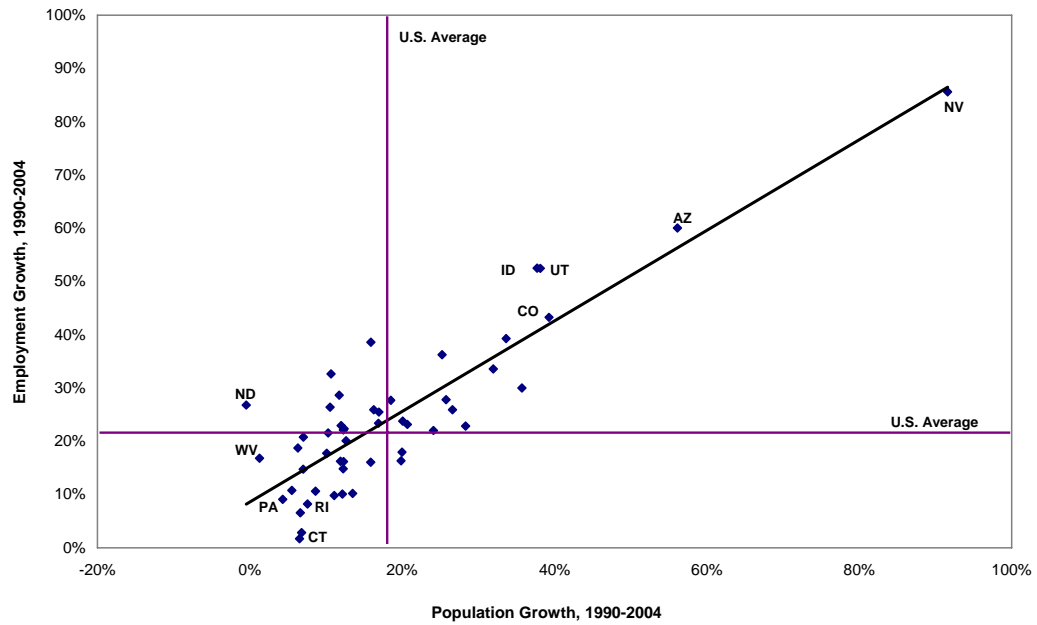
¹⁹Energy Information Administration, *Energy Prices by Source*, Table S1a, 2003, http://www.eia.doe.gov/emeu/states/sep_sum/plain_html/sum_pr_tot.html.

Figure 6: Population Growth and Business Activity are Highly Correlated



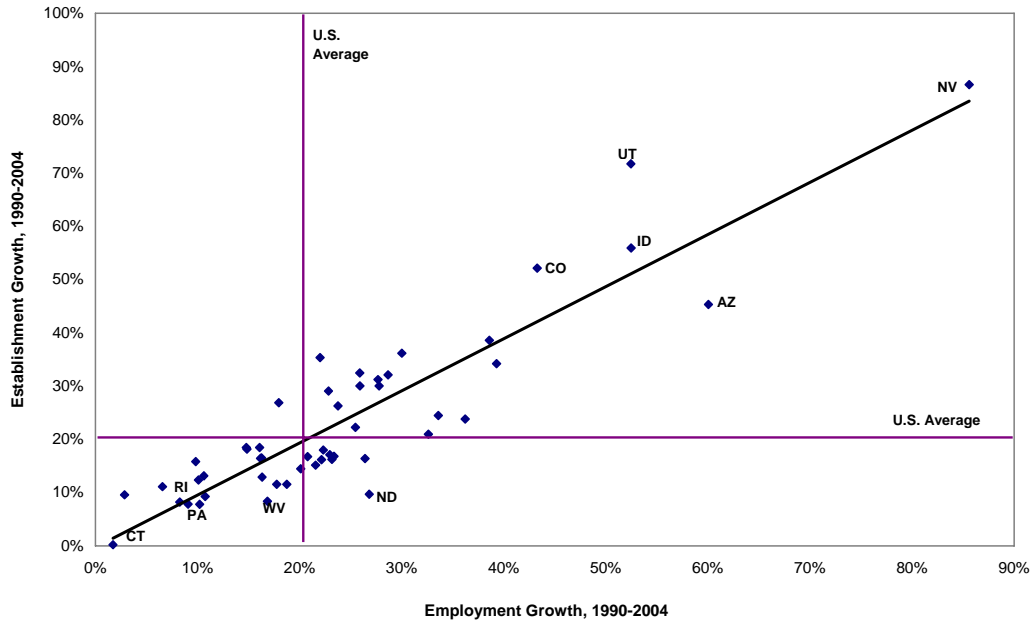
Source: U.S. Census

Figure 7: Population and Job Growth are Correlated



Sources: U.S. Census, U.S. Bureau of Labor Statistics

Figure 8: Employment and Establishment Activity are Correlated



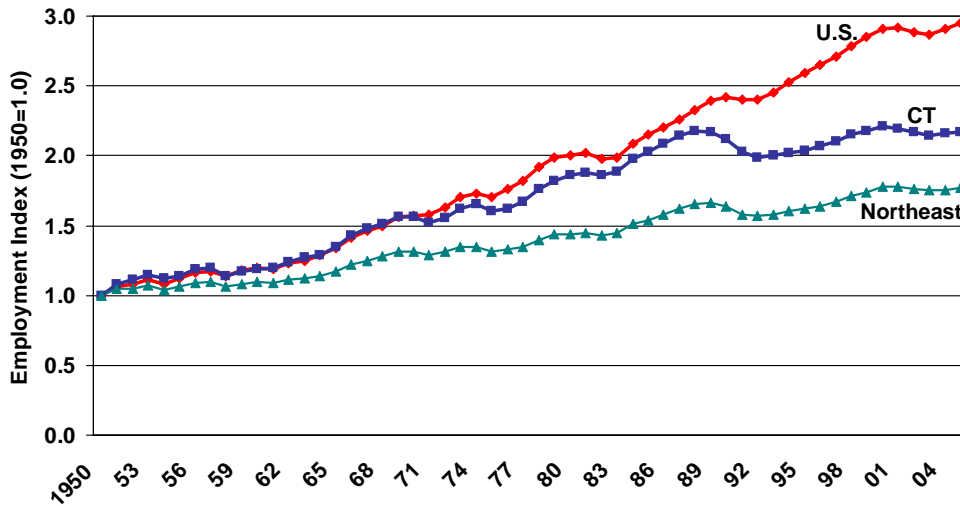
Sources: U.S. Bureau of Labor Statistics, U.S. Census

DETERMINANT 2A. JOB GROWTH

Job growth in the Northeastern states has lagged the nation for decades as seen in Figure 9. Low-cost air conditioning and the construction of interstate highways throughout the nation played a part in eroding the Northeast's employment level starting in the 1960s, because companies could more easily locate in lower-cost regions.

Connecticut started slipping from the national pace during the 1970s, and since 1990, Connecticut's growth rate shifted significantly from the U.S. For Connecticut, the reduction in defense spending, the construction build-up and bust, and the downsizing of insurance companies, combined with a recession, slowed employment growth substantially during the early- and mid-1990s.

Figure 9: Index of Employment Growth, 1950-2005



Source: U.S. Bureau of Labor Statistics; Calculations by CERC

Recently, like the Northeast and Midwest, Connecticut had declines in employment in average annual growth rate terms between 2000 and 2005, while the South and West made gains. The South and West have consistently outperformed the Northeast and Midwest, as seen in Figure 10.²⁰

Figure 10: Average Annual Employment Growth Rates (%)

	U.S.	Northeast	Midwest	South	West	Connecticut
1950-59	2.4	0.9	3.1	2.7	4.1	1.8
1960-69	3.0	2.0	2.7	3.9	3.8	3.0
1970-79	2.8	1.0	2.2	4.0	4.3	1.7
1980-89	2.0	1.6	1.3	2.4	2.4	1.7
1990-99	1.8	0.7	1.8	2.4	2.2	0.3
2000-05	0.3	-0.1	-0.4	0.6	0.9	-0.4

Source: U.S. Bureau of Labor Statistics

Between 1989 and 2005, the U.S. saw a 24 percent increase in jobs, while the state has slipped by 0.2 percent. While lackluster job growth is clearly a problem, it is a broader, regional one. Connecticut has seen some recent growth: between 2003 and 2005, the

²⁰ Except between 1950-1959 when the Midwest outperformed the South.

number of jobs in the state increased by 20,000 from 1.643 million to 1.663 million. However, this level is still lower than the employment peaks in 1989 and 2000.²¹

As seen in Figure 11, Connecticut’s job growth story is more than just an artifact of an artificial starting point. Relative to the other states and Washington, D.C., Connecticut’s employment changes are slow and lack the vibrancy found in other regions of the country.

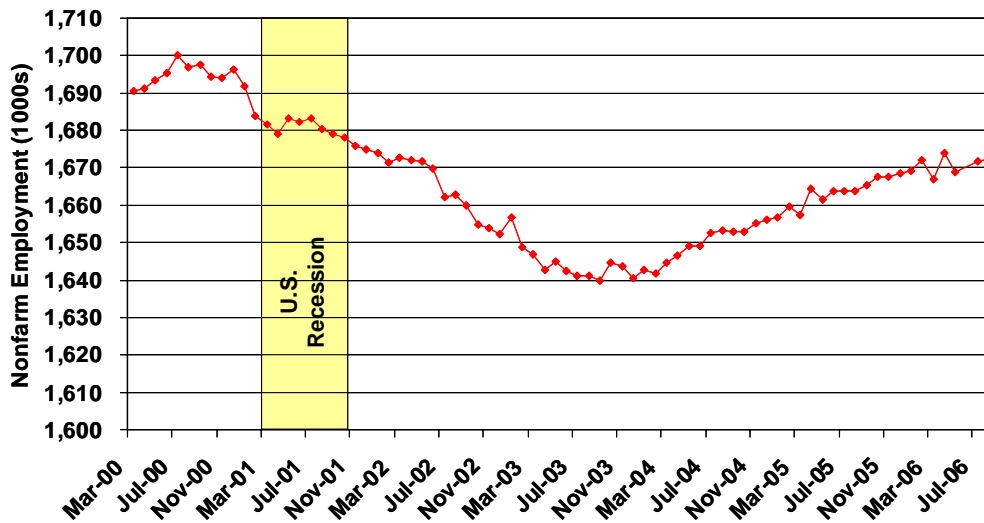
Figure 11: Connecticut’s Employment Changes

Time Period	Total Job Change	Avg Annual Growth (%)	CT Rank (Among 50 States and D.C.)
1990-2005	5,700	0.03	51
1995-2005	78,200	0.57	45
2000-2005	-32,500	-0.45	44
2003-2005	20,300	0.72	44
2004-2005	11,800	0.03	51

Source: U.S. Bureau of Labor Statistics

As Figure 12 shows, Connecticut began losing jobs several months before the official onset of the last national recession and continued losing jobs for almost three years after the recession ended. Since September 2003, Connecticut has gained back approximately half of the jobs lost since July 2000.

Figure 12: Connecticut’s Monthly Employment Trend (Seasonally Adjusted)



Source: U.S. Bureau of Labor Statistics

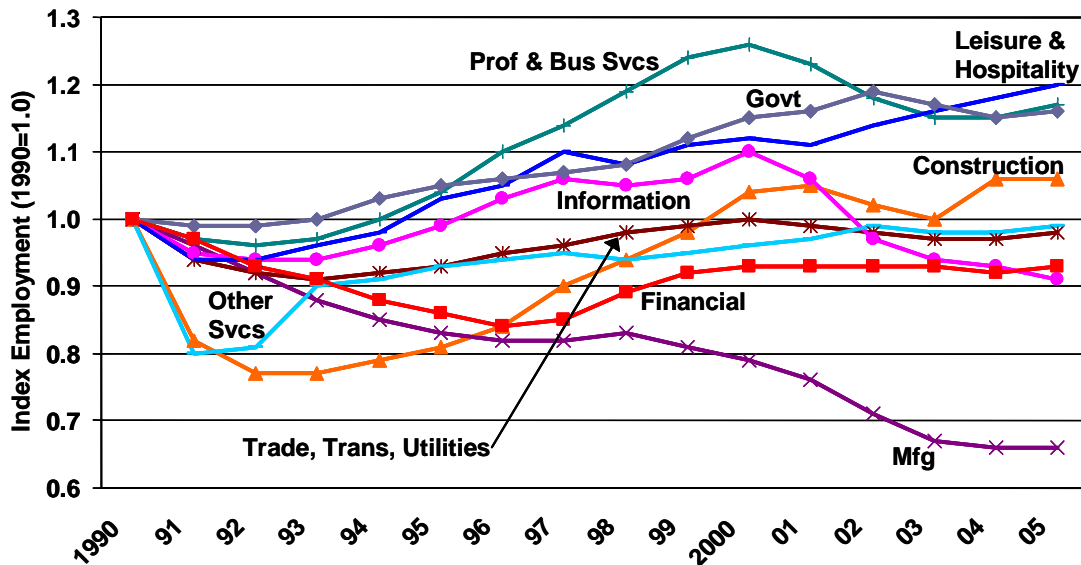
²¹ Connecticut Department of Labor, Office of Research.

Leisure and Hospitality is one of the industry sectors that has seen the fastest employment growth in Connecticut since 1990, with an increase of 20 percent (Figure 13). The number of government employees has also grown considerably (casino employment is classified under this industry), and Professional and Business Services employment, though no longer at its 2000 high, has grown nearly 20 percent since 1990.

Employment in Construction fluctuates according to business cycles—the industry took a hit during the early 1990s but has rebounded and in 2005 was approximately 8 percent higher than the base year of 1990. In 2005, two industries – Trade, Transportation and Utilities; and Other Services – were slightly below their 1990 level. Information posted sizeable employment gains leading up to 2000, but since has been in decline.

Manufacturing has seen the largest decline in employment; the industry in 2005 was off 34 percent from its 1990 level. This trend is consistent with the national one, although the relative decline has been more pronounced in Connecticut.

Figure 13: Connecticut’s Employment Changes by NAICS Industry, 1990-2005



Source: U.S. Bureau of Labor Statistics

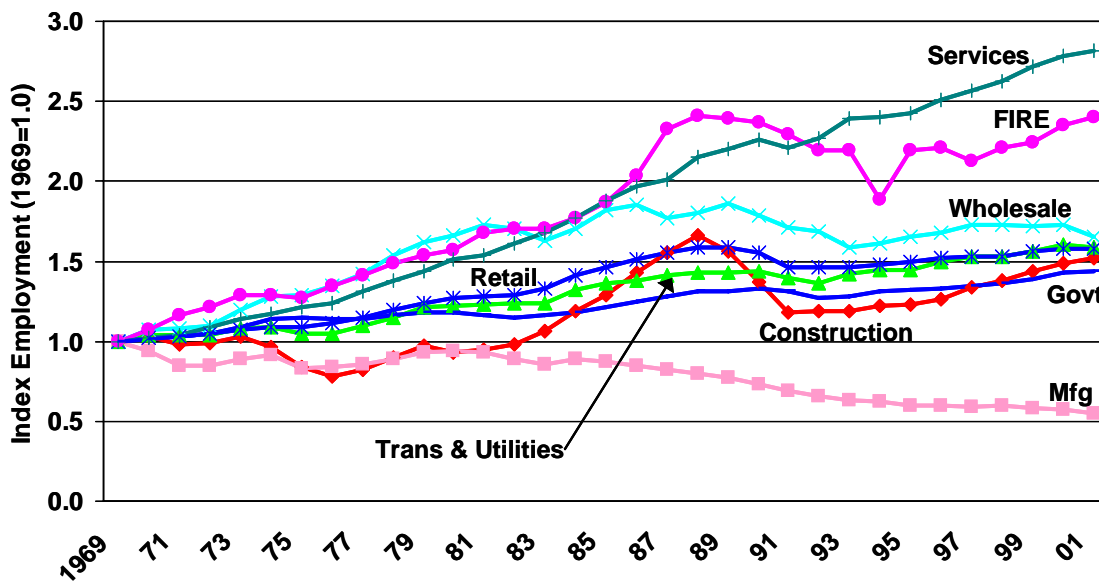
In order to take a longer historical view we must look at employment in terms of Standard Industrial Classification (SIC) codes instead of the newer North American Industry Classification System (NAICS) codes as seen above. NAICS replaced SIC

codes to incorporate newer industries that have emerged since the forming of the SIC system. We continue to look to SIC codes for worth of data until 2001.

According to the SIC chart of employment change in Figure 14, Services has been a driving industry sector, increasing employment by 335 percent in Connecticut between 1969 and 2000. The industries primarily fueling this ascent include business and health services. The Finance, Insurance and Real Estate (FIRE) sector also posted stellar performance. This sector, along with Construction, saw increases in employment during the mid- and late-1980s, due to housing speculation, with corrections occurring during the early- and mid-1990s. Wholesale Trade posted significant gains during the 1970s and early-1980s, but since then employment growth has flattened and even declined. Retail trade, Transportation and Utilities, and Government have all seen slight increases overall with cyclical fluctuations.

Manufacturing had relatively stable employment levels through the 1970s. Declines have been the trend since the 1980s. The Manufacturing industry with the single largest decline during this time period was Other Transportation Equipment, which includes aerospace and boats.

Figure 14: Connecticut's Employment Changes by SIC Industry, 1969-2001



Source: U.S. Bureau of Labor Statistics

Changes in the state's industry mix affect the type and quality of available jobs. According to *The State of Working Connecticut 2006*, the industry sectors with the largest employment declines between 2004 and 2005 were primarily manufacturing and professional services. The industry sectors with the largest job increases were service-related. For the five sectors showing the biggest declines, the average 2005 wage was more than \$63,000 versus almost \$36,000 for jobs in the sectors with the most growth.²²

Another way to look at shifts in industry structure is to compare hypothetical with actual employment growth rates. A hypothetical growth rate calculates how fast the state's employment could have grown in a particular industry, given the industry's share of total state employment and the growth rate of that industry in the nation. Figure 15 shows the calculations for the Financial Activities industry for Connecticut. As the figure shows, Financial Activities comprised 8 percent of employment in the state in 1989. Given this share of total employment, if Connecticut grew at the same rate as the nation between 1989 and 2005 (21 percent), the state would assume a growth rate of 1.7 percent between 1989 and 2005. However, actual employment in this industry declined by 9.1 percent in the state during this time period.

Figure 15: Hypothetical Growth Rate: Financial Activities Industry in Connecticut

	Year(s)	Connecticut
Finance % Total Employment	1989	8.0%
Actual Employment Growth	1989-2005	-9.1%
Hypothetical Employment Growth	1989-2005	1.7%

Source: Economy.com; Calculations by CERC

By summing the hypothetical growth rates of all of the industries, an overall hypothetical growth rate for total employment in the state can be calculated. If Connecticut's industries had grown at the same rate as the nation between 1989 and 2005, the state would have had an employment growth rate of 23.4 percent.²³ In reality, job growth declined by 0.2 percent.²⁴

²² Connecticut Voices for Children, *The State of Working Connecticut, 2006*, http://www.ctkidslink.org/pub_detail_308.html.

²³ Moody's Economy.com; Calculations by CERC.

²⁴ Ibid.

Regression Analysis Results

To better understand the influences of these factors on employment growth, a multiple regression model was developed. Using data measurements for 50 states, the analysis shows that the following variables explain about half of a state's employment growth between 1989 and 2005:

- **Ratio of Business Failures to Business Starts**, 1990 (negative correlation): When businesses are failing at a faster pace than starting up, it can be assumed that there are adverse effects on a state's employment growth. This regression model showed that, on average, a state with a high ratio of business failures to starts had relatively slower job growth.
- **Share of Population Age 25-34 Years Old**, 1990 (positive correlation): This age group is generally the most innovative and an available source of workers and talent. This model suggests that states with larger shares of this age group have stronger job growth.
- **Share of Income Held by Bottom Fifth of Households**, 1988-90 (positive correlation): This result suggests that as the share of income held by the bottom 20 percent of households increases, so does job growth during 1989 and 2005.
- **Average Annual Pay**, 1990 (negative correlation): The model suggests, on average, that states with higher average annual pay in 1990 have lower job growth than their lower-paid counterparts. This result is consistent with convergence theory, in which businesses locate in lower wage areas and people locate to find jobs.
- **Hypothetical Employment Growth**, 1989-2005 (positive correlation): This variable is based on industry mix. If a state's hypothetical growth, which is based on the growth patterns at the national level by industry, is positive, then actual job growth will also be positive.
- **Unemployment Rate**, 1989 (positive correlation): This result shows that an area with a higher unemployment rate in 1989 saw higher job growth between 1989 and 2005. This suggests that areas with higher unemployment rates have larger pools of available workers.

The adjusted R square of 0.49 indicates that almost half of a state's employment growth between 1989 and 2005 is explained by these factors. All of these variables have significant t-statistics, meaning that these variables all play important roles in this model.

Variables that were tested for this model but were found to not be significant include individual income tax collections per capita for 1992, the share of the population 25+ years with a bachelor's degree or more in 1990, industry R&D per capita in 1989, median housing value in 1990, and the share of highways that were deficient in 1989. The statistical details of the regression is below in Figure 16.

Figure 16: Summary Regression Output: Employment Growth 1989-2005

<i>Regression Statistics</i>					
Multiple R					0.74
R Square					0.55
Adjusted R Square					0.49
Standard Error					0.14
Observations					50

ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig F</i>	
Regression	6	1.04	0.17	8.78	0.00	
Residual	43	0.85	0.02			
Total	49	1.89				

	<i>Coefficient</i>	<i>Std Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-1.45	0.54	-2.69	0.01
Ratio: Failures to Starts 1990	-0.18	0.10	-1.80	0.08
Share of Population Age 25-34 Yrs Old 1990	9.44	3.00	3.14	0.00
Share of Income Held by Bottom Fifth 1988-90	0.07	0.03	2.74	0.01
Avg Annual Pay 1990	0.00	0.00	-5.45	0.00
Hypothetical Emp Growth 1989-2005	2.90	0.69	4.18	0.00
Unemployment Rate 1989	0.08	0.02	3.81	0.00

The results of the regression analysis attest to the complexity of the relationships between the various factors impacting economic growth. In each of the measures used in the regression above, except for Connecticut's unemployment rate, the state's measure was such that it should have had an even a larger loss of employment during the 1989 to 2005 time period than it saw. When these measures are taken as a group (as this statistical procedure allows), the overall effect on Connecticut would have expected to result in more than half of a percentage point lower growth than Connecticut actually saw. In summary, given what happened in the other states, Connecticut could have been expected to have lost 10,600 employees over that time. The loss of only 4,100 suggests that other features of state's economy limited the loss.

The statistical model tells much about factors that affect job growth, but it does not explain the entire story. There are additional factors that impact job growth, as mentioned in the sections below.

Housing

Housing affordability is a consideration in attracting and retaining workers. Many areas of the nation have experienced housing price appreciation, and Connecticut is no exception. Median values of housing units in 2005 were greater than \$200,000 in all of Connecticut counties as seen in Figure 17. The median value of housing units in Fairfield County was almost seven times its median household income. Tolland County had the lowest ratio of housing value to income, at just over three. In terms of median monthly costs for homeowners as a percent of household income, all counties were above 20 percent. But for renters, the share of median gross rent to income was higher, with three counties approaching 30 percent and New Haven County approaching 32 percent.²⁵ Spending 30 percent of income on housing is generally accepted as the limit for housing affordability; a number of areas in Connecticut are approaching or have reached that threshold, making it difficult for young professionals and middle-income families to afford housing near employment locations.

Figure 17: Median Income and Housing Costs, 2005

	Median HH Income, 2005	Median Value of Housing Units, 2005	Median Monthly Owner Costs % Household Income, 2005	Median Gross Rent % Household Income, 2005
Fairfield County	\$71,633	\$475,500	24.7	29.8
Hartford County	\$57,939	\$224,200	21.7	29.1
Litchfield County	\$64,544	\$254,200	23.3	27.7
Middlesex County	\$70,821	\$265,600	21.4	22.8
New Haven County	\$53,591	\$245,600	23.9	31.9
New London County	\$59,268	\$237,400	21.3	27.2
Tolland County	\$73,919	\$229,000	20.1	24.0
Windham County	\$47,684	\$204,000	23.0	29.4

Source: U.S. Census, American Community Survey

Figure 18 shows that all of the states in the Northeast, except for Pennsylvania, have ratios of median housing value to median household income that are greater than the national average. Connecticut has the 12th highest ratio among the 50 states, but compared to the Northeastern states, Connecticut has an average ratio.

²⁵ U.S. Census, American Community Survey.

Figure 18: Median Income and Housing Costs, Northeastern States, 2005

	Median Household Income, 2005	Median Value Owner-Occupied Housing, 2005	Ratio of Median Housing Value to Median Household Income	50 State Rank - Ratio of Median Housing Value to Median Household Income
U.S.	\$46,242	\$167,500	3.62	
Massachusetts	\$57,184	\$361,500	6.32	3
Rhode Island	\$51,458	\$281,300	5.47	5
New Jersey	\$61,672	\$333,900	5.41	6
New York	\$49,480	\$258,900	5.23	7
Connecticut	\$60,941	\$271,500	4.46	12
New Hampshire	\$56,768	\$240,100	4.23	14
Vermont	\$45,686	\$173,400	3.80	19
Maine	\$42,801	\$155,300	3.63	21
Pennsylvania	\$44,537	\$131,900	2.96	32

Source: U.S. Census, American Community Survey

Connecticut's affordable housing shortage is exacerbated by the way in which education is funded. Local property taxes provide the base for education. Currently, educational expenditures account for 60 to 70 percent of most municipal budgets. To control these costs, municipalities are taking steps to manage student enrollments by limiting certain housing development. The shortage of affordable housing, coupled with flat job growth, discourages young professionals and families from locating in the state and is driving them to other parts of the country. As recent research about Connecticut notes:

[The] housing shortage hampers the economy in some parts of the state. Employees can't find housing they can afford, so companies have trouble recruiting employees from other places. Further, businesses that consider relocating to Connecticut decide not to, because housing is too scarce and expensive.²⁶

Transportation

Transportation facilitates economic efficiencies of a region, reducing the costs to businesses and to commuters. The average commute time per worker has increased in Connecticut between 1990 and 2000.²⁷ Figure 19 shows the commute times per worker

²⁶ Partnership for Strong Communities, http://www.ctpartnershiphousing.com/index.php?option=com_content&task=section&id=6&Itemid=43.

²⁷ U.S. Census.

in 1990 and 2000 for all of the states in the Northeast, all of which experienced deteriorating 50-state ranks, except for New Hampshire. Commute times increased for every state in the Northeast, mimicking a nationwide trend. In fact, every state had increased commute times per worker, except for Kansas, which declined slightly.

Figure 19: Commute Times per Worker, Northeastern States, 1990 and 2000

	Commuting time							
	1990 Minutes			2000 Minutes			Increase	
	Total	Per Worker	Rank	Total	Per Worker	Rank	Absolutes	Percent
Connecticut	34,340,014	21.2	26	38,850,575	22.9	21	1.8	8%
Maine	10,374,037	19.4	35	13,354,055	22.1	28	2.7	14%
Massachusetts	66,062,729	22.1	16	81,026,635	24.4	13	2.2	10%
New Hampshire	11,957,933	23.5	8	15,496,205	24.9	11	1.4	6%
New Jersey	94,356,523	26.0	4	113,130,295	28.3	3	2.4	9%
New York	228,887,887	27.9	2	252,689,185	29.3	2	1.4	5%
Pennsylvania	112,234,399	21.7	18	135,778,830	23.9	18	2.1	10%
Rhode Island	9,044,539	20.0	30	10,799,990	22.7	26	2.6	13%
Vermont	4,688,636	18.2	41	6,367,500	21.3	34	3.1	17%

Source: U.S. Census

Connecticut commuter costs have increased through delays. For example, one recent study looked at the change between 1982 and 2003 in the number of hours a road traveler was delayed. The Bridgeport-Stamford area ranked 31st worst overall and 7th among cities of similar size.²⁸ As seen in Figure 20, 80 percent of Connecticut commuters drove to work alone so more individuals experienced delays.

²⁸ Shrank, D. and Tim Lomax, *The 2005 Urban Mobility Report*, Texas Transportation Institute, *The Texas A&M System*, 2005, <http://mobility.tamu.edu/ums/report/>. Rank out of 85 metro areas.

Figure 20: Modes of Transportation to Work, Connecticut, 2000

	# Workers 16+ Yrs in CT	% Total
Total:	1,640,823	100.0%
Car, truck, or van:	1,467,100	89.4%
Drove alone	1,312,700	80.0%
Carpooled	154,400	9.4%
Public transportation:	65,827	4.0%
Bus or trolley bus	36,097	2.2%
Streetcar or trolley car	156	0.0%
Subway or elevated	1,111	0.1%
Railroad	26,659	1.6%
Ferryboat	223	0.0%
Taxicab	1,581	0.1%
Motorcycle	776	0.0%
Bicycle	2,875	0.2%
Walked	44,348	2.7%
Other means	8,479	0.5%
Worked at home	51,418	3.1%

Source: U.S. Census

Connecticut's Transportation Strategy Board is analyzing factors that may impact commuters' travel times, including:

- New Haven-Hartford-Springfield Commuter Rail
- Transportation Demand Management (of multimodal connections)
- Incident Management
- Rail Station Parking Expansion & Platform Extensions
- West Haven/Orange Rail Station
- Freight Rail
- Land Use Issues (land use planning, fiscal programs, incentive programs, economic development and transportation)²⁹

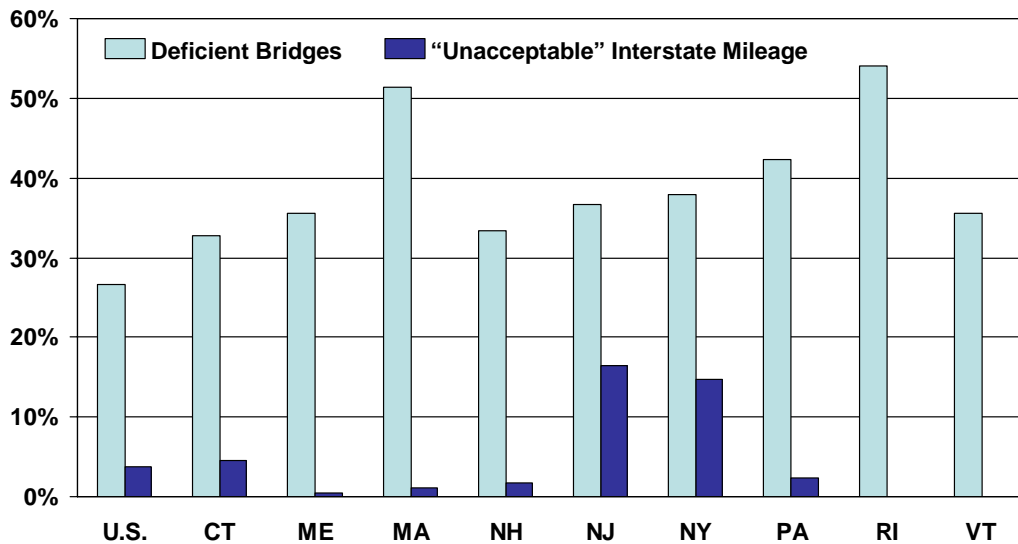
The quality of transportation is a common theme through many of the states in the Northeast. As seen in Figure 21, all of the Northeastern states had shares of "deficient"³⁰ bridges that were above the national average. Interstate highway quality

²⁹ Connecticut Transportation Strategy Board, 1/15/06 Background Update, <http://www.opm.state.ct.us/igp/TSB/tsbinfo.htm#TSB%20Members>.

³⁰ A bridge is deficient if it is deteriorating, has poor maintenance, or its design is not up to current standards.

was not an issue among all of the states in the region, but Connecticut had 4.6 percent that were “unacceptable”³¹ in 2004.

Figure 21: Transportation Issues in the Northeast: 2004



Sources: Department of Transportation; Federal Highway Administration

Entrepreneurial Climate

Connecticut ranked 48th (out of 50) among the best states for entrepreneurs in 2006, down from 43rd in 2005. In 2006, the Hartford metropolitan area ranked 50th out of the 50 largest metros that are best for entrepreneurs.³² Data from surveys conducted³³ of citizens, business executives (U.S. and international) and national site selection consultants found that “New England is perceived as ‘old and cold’-and no longer viewed as a major competitive threat by other parts of the United States.”³⁴

Relatively weak business vitality in Connecticut also dampens the spirits of potential workers. An area with higher business churn sees more companies start and stop

³¹ The measure is based on the International Roughness Index (IRI) which rates the smoothness of interstate pavement. An IRI rating of 170 or above is classified as “unacceptable.”

³² Entrepreneur and NPRC’s 2006 Hot Cities for Entrepreneurs, <http://www.entrepreneur.com/bestcities/region/states.html>.

³³ Surveys conducted by the University of Connecticut’s Center for Survey Research and Analysis.

³⁴ Douglas G. Fisher, *Old and Cold? Connection: New England’s Journal of Higher Education*, Fall 2004, http://findarticles.com/p/articles/mi_qa3895/is_200410/ai_n9454370.

operations. This “creative destruction,” a term first used by Joseph Schumpeter in the 1940s, is critical in building a culture of innovation. Relative to other states, Connecticut has slow business churn.³⁵ When business churn is low, fewer innovative companies are being created in the area, and potential workers are lured away to other areas. Of course, larger companies can be sources of innovation and lucrative positions for new workers, but the excitement of entrepreneurship is an attraction for workers, especially younger professionals.

Other Worker Supply Issues

International pressures play a role in the supply of workers as well, since Connecticut, like all states, participates in a global labor market. The state has witnessed the out-migration of high-skilled jobs abroad for at least a decade. In addition, the outsourcing of jobs and production has placed downward pressures on job growth in the state. However, estimates of job losses are difficult to calculate, as is the potential for offshoring to bring job gains.³⁶ So international issues are affecting job growth in the state and the region, but the degree is unclear. Related to the supply of workers, there is a mismatch between the skills current workers and future workers can offer companies, and the skills companies are seeking. The skills mismatch is discussed further in the demographics section.

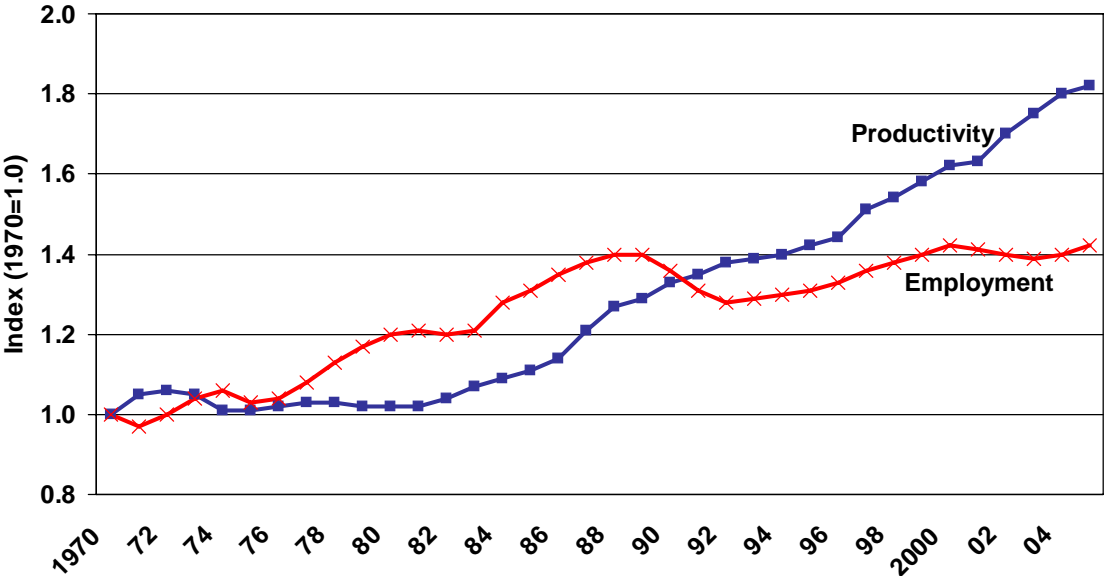
Productivity

Another issue affecting the demand for workers is labor productivity; as productivity increases, demand for workers frequently declines. Productivity increases can be caused by international pressures, which decrease the costs of producing items, and by technological advances at home or abroad. It is interesting to note that productivity and employment can both increase at the same time, although in mature economies it is likely for one to improve while the other declines. The relationship between productivity and employment over time for Connecticut is depicted in Figure 22.

³⁵ U.S. Small Business Administration, Small Business Economic Indicators, <http://www.sba.gov/advo/stats>; Calculations by CERC.

³⁶ Center for American Progress, *Offshoring By the Numbers*, 5/21/04.

Figure 22: Relationship Between Real Productivity and Employment for Connecticut



Source: Moody's Economy.com

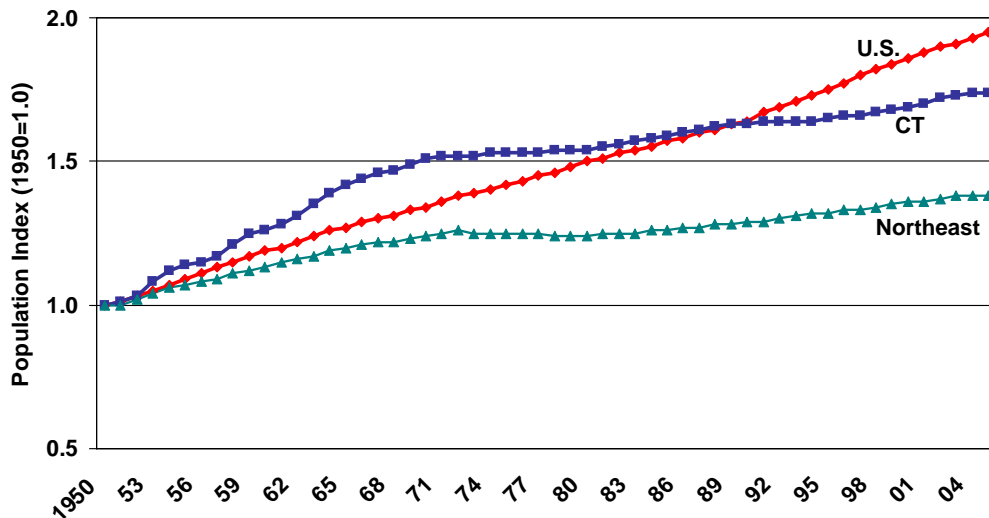
DETERMINANT 2B. DEMOGRAPHIC SHIFTS

Although Connecticut still has a highly-educated workforce, and arguably one of the most productive economies in the world, there are fundamental trends pertaining to human capital that will impact our long-term economic growth. According to recently published research, these impacts will become more pronounced over the next 10 to 20 years. Included among the areas of concern are:

- Slow population growth
- Aging population
- Declining younger worker cohort
- Net exporter of college freshmen
- Out-migration of young professionals
- Changing skill mix
- Science, technology, engineering, math (STEM) pipeline
- Relative educational attainment

Slow Population Growth

Figure 23: Population Growth in the U.S., the Northeast, and Connecticut: 1950-2005



Source: U.S. Bureau of Economic Analysis

Like most other states in the Northeast, Connecticut's population has been much slower than the national average for some time, as seen in Figure 23. Whether population follows jobs or jobs follow population, these two variables march in a very tight cadence.

In Connecticut over the past quarter-century, job growth has followed population growth with a lag of three years.³⁷ That is, on average we see a positive employment response about three years after a population increase. The data for Connecticut suggest that without population growth we cannot expect much job growth. The implications of slow population growth are manifold and extend to workforce availability, new family formation, new housing starts, tax revenue growth, demand for public services and more.

Access to a sufficient supply of skilled labor is essential to the ability of a regional economy to grow jobs and income and reduce poverty. A shortage of skilled workers is a significant speed bump in the overall competitiveness of any regional economy. A flat or declining rate of labor force participation compounds the slow population growth problem, which is the case in Connecticut.³⁸ Declining labor force participation coupled with slow population growth comprises a powerful one-two punch that effectively removes most of the vitality from the Connecticut job market.

Aging Population

Adding to our demographic challenges is the fact that Connecticut has the eighth oldest median age of any state in the country, at 39.3 years (very close to Florida with a median age of 39.5). Six of the 10 oldest states are found in this region of the country as are 13 of the 20 oldest. Through natural demographic change and out-migration of younger workers to faster growing regions, Connecticut and most of the other states in this region are “graying” much more quickly than states in the South and West. Utah, for example, has a median age of 29.3 years, fully 10 years younger than Connecticut.³⁹ When businesses wish to expand or entrepreneurs are starting up new firms, they are likely to look to those regions with a skilled, younger workforce.

Declining Younger Population Cohort

As Connecticut’s population ages, there is a deficit in the younger age groups. Between 1990 and 2000 Connecticut had the largest relative shrinkage in the 18-34 year age cohort of any state in the nation. The decline in this age group was 23 percent, a loss of

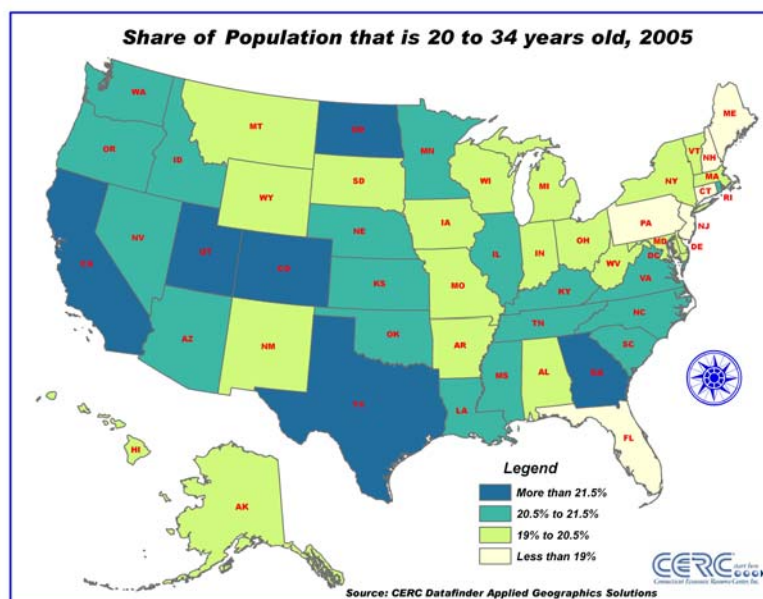
³⁷ U.S. Census, U.S. Bureau of Labor Statistics; Calculations by CERC.

³⁸ Connecticut Department of Labor, Office of Research.

³⁹ U.S. Census.

more than 200,000 individuals.⁴⁰ This is a critical cohort of individuals who are completing their education, embarking on their careers and establishing families. The loss impacts businesses as they seek new entry-level workers or cope with declining sales of building materials, appliances, cars and other products associated with new families and young adults. In the section of this report dealing with job growth, CERC's research shows that there is a strong statistical correlation between the relative size of the 25-34 age cohort and overall job growth. The greater the overall share of this cohort, the greater the job growth. Connecticut, with the greatest relative decline of any state in the nation, is at a significant disadvantage, one that has been manifested in sluggish to nonexistent job growth. This trend is also being experienced in the Northeast, as seen in Figure 24.

Figure 24: Share of Population that is 20-34 Years Old, 2005



Net Exporter of College Freshmen

Although the situation in Connecticut has improved steadily since 1992, every year the state still exports more college freshmen than it imports. In 2004, the latest year for which data are available, the difference between out-of-state students enrolling as freshmen in Connecticut (8,383) and state residents enrolling as freshmen in other states (10,735) was -2,352. This is down considerably from 1992 when the deficit was -

⁴⁰ U.S. Census; Calculations by CERC.

4,617 as shown in Figure 25.⁴¹ However, the share of Connecticut high school graduates remaining in-state as college freshmen was almost 58 percent in 2004, a significant improvement from 48 percent in 1992. So more Connecticut high school graduates are deciding to remain in the state, but fewer students attend Connecticut colleges from out-of-state than Connecticut high school students attend out-of-state colleges. Given that college freshmen tend to settle in the area where they attend school, many will not return to Connecticut, but will begin their careers and start their families elsewhere.

Figure 25: Recent High School Graduates Enrolled As First-Time Freshmen

	1992	1994	1996	1998	2000	2002	2004
CT H.S. grads enrolled as freshmen in CT	9,550	9,011	9,202	10,429	11,824	12,796	14,533
CT H.S. grads enrolled as freshmen elsewhere in U.S.	10,218	10,332	10,375	10,970	10,988	10,732	10,735
H.S. grads from elsewhere in U.S. enrolled as freshmen in CT	5,601	6,044	6,552	6,779	7,789	8,199	8,383
CT H.S. grads remaining in CT as freshmen (%)	48.3%	46.6%	47.0%	48.7%	51.8%	54.4%	57.5%
Net Migration	-4,617	-4,288	-3,823	-4,191	-3,199	-2,533	-2,352

Source: Connecticut Department of Higher Education

Out-Migration of Young Professionals

The impacts of an aging, slow-growing population are further exacerbated by the steady attrition of young, college-educated professionals leaving for other areas of the country that provide more economic opportunity. Within the past few years reports from the Census Bureau⁴² and the National Science Foundation⁴³ have documented Connecticut's loss of young professionals and engineers. Again, this trend is echoed regionally and is heavily influenced by the lack of affordable housing in the region as well as slow to no job growth. The steady loss of young professionals results in increasing concentrations of those without the skills or resources to move elsewhere.⁴⁴

⁴¹ Connecticut Department of Higher Education, *Most Connecticut Students Choose Connecticut Colleges*, August 2005, <http://www.ctdhe.org/info/pdfs/2005/2005MigrationReport.pdf>.

⁴² U.S. Census, *Migration of the Young, Single, and College Educated: 1995 to 2000*, <http://www.census.gov/prod/2003pubs/censr-12.pdf>.

⁴³ Basmat Parsad and Lucinda Gray, *Interstate Migration Patterns of Recent Recipients of Bachelor's and Master's Degrees in Science and Engineering, Special Report*, National Science Foundation, August 2005, <http://nsf.gov/statistics/nsf05318/pdf/front.pdf>.

⁴⁴ U.S. Census, *Migration of the Young, Single, and College Educated: 1995 to 2000*, <http://www.census.gov/prod/2003pubs/censr-12.pdf>.

Changing Skill Mix

Like many other industrial cities in the Northeast, test scores in Connecticut's urban schools signal serious skill gaps. On average only 6 percent of urban 10th graders pass all four sections of the Connecticut Mastery Test. Average SAT scores for Hartford and Bridgeport are less than 800 (out of 1,600) combined for math and verbal subtests. High school completion rates are as low as 50 percent for black and hispanic students.⁴⁵ These students, who represent almost half of tomorrow's workers, lack skills to compete in a knowledge-based global economy. Connecticut's continued economic prosperity relies on the availability of a skilled, globally competitive work force. These future workers do not come close to that goal and, according to recently released reports, this weakening skill base will result in declining income and productivity by 2020.⁴⁶ One report⁴⁷ examined the changing ethnic and skill mix of a dozen states and projected those trends forward to the year 2020. The report forecasts that real personal income in Connecticut will decline 4 percent by the year 2020 due to declining skill levels of future workers. In a second report,⁴⁸ the authors' forecast is that by 2020 each New England state will experience a decline in the fraction of its young population holding a bachelor's degree or higher. The primary demographic issue in this educational transition is the change in the region's minority population. Both studies forecast a loss of human capital in Connecticut and the region due to the retirement of baby boomers and the growing reliance on urban cohorts with demonstrably lower basic educational attainments.

STEM Pipeline

In order to take advantage of jobs in new and growing industries, Connecticut's labor force must be poised to fill them. Connecticut requires a replacement pool of workers for its aging and slow-growing workforce, and must supply its workers with increasingly higher skills and better training in order to meet the demands of jobs in the future.

⁴⁵ Connecticut Department of Education; Urban Institute, *Who Graduates? Who Doesn't? A Statistical Portrait of Public High School Graduation, Class of 2001*, February 2004, <http://www.all4ed.org/states2/Connecticut/>.

⁴⁶ National Center for Public Policy and Higher Education, *Policy Alert: Income of U.S. workers Projected to Decline If Education Doesn't Improve*, November 2005; Coelen and Berger, *New England 2020: A Forecast of Educational Attainment and Its Implications for the Workforce of New England States*, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

⁴⁷ National Center for Public Policy and Higher Education, *Policy Alert: Income of U.S. workers Projected to Decline If Education Doesn't Improve*, November 2005.

⁴⁸ Coelen and Berger, *New England 2020: A Forecast of Educational Attainment and Its Implications for the Workforce of New England States*, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

One of every two new jobs will require some level of post-secondary education or training.⁴⁹ The training needs are especially critical in the areas of science, technology, engineering and math (STEM)—particularly in information technology (IT) where seven of the 10 fastest growing jobs are found. STEM occupations are at the very core of the knowledge economy, which thrives on continuous innovation and technical advances. Connecticut's long-term ability to compete successfully at a global level will be directly related to quality and rigor of STEM training at all education levels. In the near term, the availability and caliber of post-secondary education is essential to the growth of technology jobs and, therefore, regional and global competitiveness, particularly in the face of a coming worker shortage.

Relative Educational Attainment

Connecticut has always prided itself on its high level of college-educated adults. In 1990 the state was tied at 27 percent with Massachusetts as having the highest level of educational attainment among adults 25 years and older. By the time of the 2000 Census the state's college attainment rate had risen to 31 percent. Despite that improvement, Connecticut was no longer ranked first—it was now 6th, 7th if the District of Columbia were included.⁵⁰ Connecticut's competitive advantage is eroding as other states get better, faster. According to studies⁵¹ cited earlier, Connecticut can expect to see declining levels of college attainment over the next 10 to 15 years.

However, the U.S. Census 2005 estimate of college attainment for Connecticut is 36.8 percent, ranking the state first in the nation once again⁵². If this estimate is accurate (which we will find out in 2010 after the next national census), then the negative forecasts made in the study mentioned above may be mitigated.

⁴⁹ Connecticut Department of Labor, *Connecticut Forecast 2014*, <http://www.ctdol.state.ct.us/lmi/misc/forecast.htm>.

⁵⁰ U.S. Census; Calculations by CERC.

⁵¹ National Center for Public Policy and Higher Education, *Policy Alert: Income of U.S. workers Projected to Decline If Education Doesn't Improve*, November 2005; Coelen and Berger, *New England 2020: A Forecast of Educational Attainment and Its Implications for the Workforce of New England States*, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

⁵² U.S. Census

Benchmark Variables

Human capital, as expressed in the sections above, contributes to sustainable economic growth. The metrics that were examined in last year's *Benchmarks*⁵³ report have been updated this year, including:

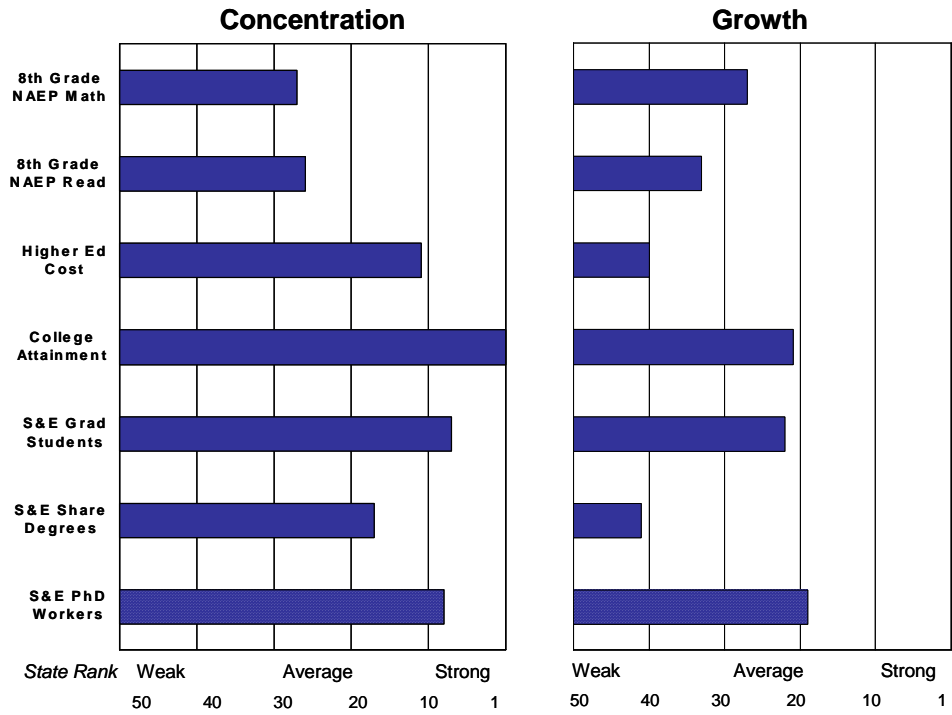
- Percent of public eighth-grade students who achieved at or above basic level on National Assessment of Educational Progress (NAEP) exams, 1992-2005 (math), 1998-2005 (reading)
- Average annual cost of public, in-state, degree-granting, four-year higher education institutions as a share of median family income, 1991-2004
- Percent of population over 25 years of age with at least a bachelor's degree, 1991-2005
- Science and engineering graduate students per 1 million people, 1992-2003
- Science and engineering share of higher education degrees, 1990-2003
- Doctoral scientists and engineers per 1,000 workers, 1993-2001

Figure 26 shows the ranks for this category, which focuses on the academic success of students and residents, relative to the other states. As a whole, Connecticut appears to have an edge in terms of concentration. Connecticut's composite score on the eight variables that make up this category place it 7th in the nation, which is compelling evidence of the state's strengths in this area, although the concentration rank for this category last year was 5th.

Connecticut's performance on the growth dimension has not been as strong. Most of the variables post sluggish growth, placing Connecticut 41st for overall growth in this category, down from 35th last year. The state has weak growth in its number of science and engineering degrees and is losing ground in math and reading NAEP scores relative to other states.

⁵³ www.cerc.com/benchmarks

Figure 26: 2006 Connecticut Ranks: Human Capital Metrics⁵⁴



CT Composite Rank: Concentration: 7

Growth: 41

⁵⁴ The doctoral scientists and engineers metric is not updated from last year because the data were not available.

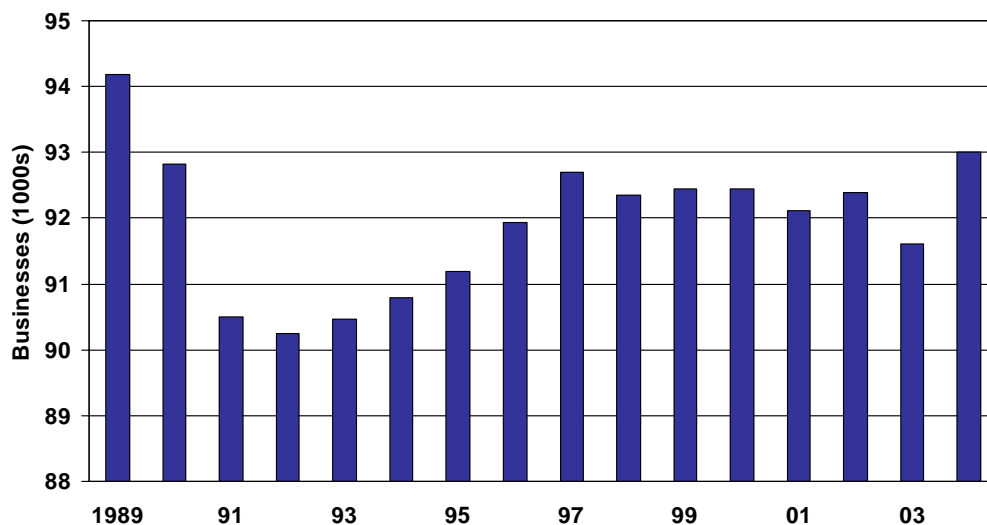
DETERMINANT 2C. BUSINESS GROWTH

Why is it important for a state to maintain a vibrant business climate? A region that is home to growing startup companies and expanding larger companies provides employment opportunities for residents and enables them to secure their livelihoods. A vibrant business climate also attracts workers into the region to take advantage of the opportunities.

Connecticut is notable as the only state in the nation with negative business growth between 1989 and 2004.⁵⁵ Even though the state has seen increases between 1998⁵⁶ and 2004, its growth was slow, ranking it 47th among all states during this time. If its cities and markets are not growing, a region is dormant, and there is little incentive for potential entrepreneurs to risk capital in establishing a business. CERC's research found a strong regional effect in this metric as well; net new business formation in the Northeastern and Great Lakes states lags the national average.

Between 2003 and 2004, the most recent year for this source, the state saw sizeable growth to 93,011 establishments, its highest level not seen in more than one decade, as seen in Figure 27.

Figure 27: Establishments in Connecticut



Source: U.S. Census

⁵⁵ U.S. Census Bureau, County Business Patterns; Calculations by CERC.

⁵⁶ Start year determined by availability of NAICS data

As a whole, the Northeast saw a 9 percent increase in establishments between 1989 and 2004 while the other Census regions and the nation saw faster growth (Figure 28). The share of total establishments that are located in the Northeast decreased from almost 22 percent in 1989 to just under 20 percent in 2004.

Figure 28: Establishment Growth by Census Region, 1989-2004

Region	Establishments		% U.S. Establishments		Establishment Growth, 1989-2004	
	1989	2004	1989	2004	#	%
U.S.	6,107,413	7,387,724	100.0%	100.0%	1,280,311	21.0%
Northeast	1,332,756	1,454,736	21.8%	19.7%	121,980	9.2%
Midwest	1,426,941	1,675,608	23.4%	22.7%	248,667	17.4%
South	1,998,066	2,536,867	32.7%	34.3%	538,801	27.0%
West	1,329,672	1,700,995	21.8%	23.0%	371,323	27.9%

Source: U.S. Census

From which industries has the recent growth in establishments occurred in Connecticut? The largest absolute increase came from Accommodation and Food Services, followed by Finance and Insurance, as seen in Figure 29. On the other hand, the Manufacturing and Trade sectors saw substantial decreases.

Figure 29: Change in Establishments in Connecticut, 1998-2004

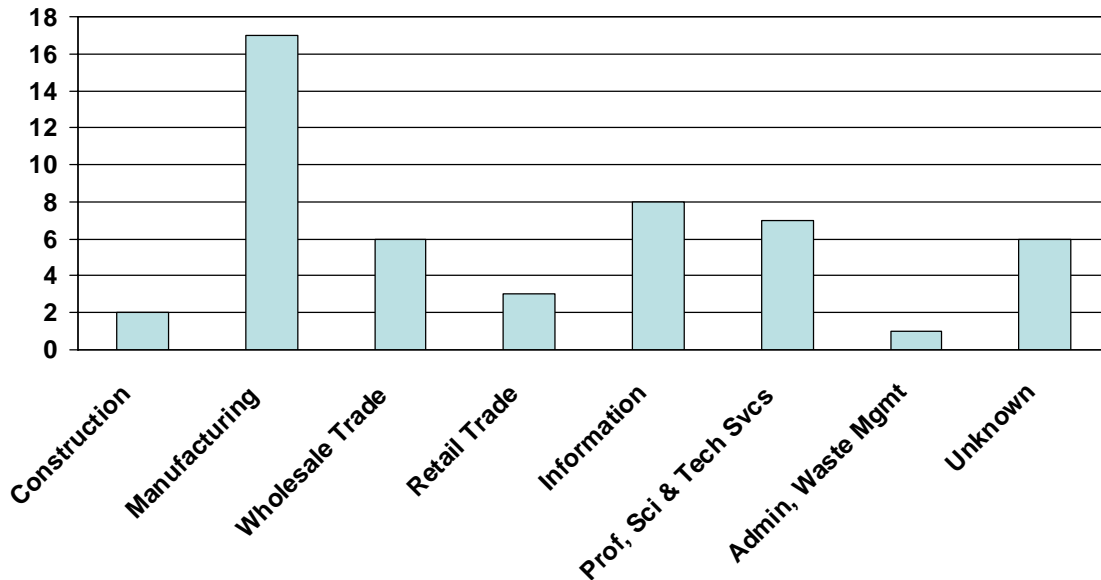
NAICS	Industry Code Description	1998	2004	1998-2004	
		Estabs	Estabs	#	%
-----	Total	92,362	93,011	649	1%
11----	Forestry, fishing, hunting, agriculture support	98	99	1	1%
21----	Mining	73	79	6	8%
22----	Utilities	138	144	6	4%
23----	Construction	9,279	9,566	287	3%
31----	Manufacturing	5,803	5,174	-629	-11%
42----	Wholesale trade	5,242	4,702	-540	-10%
44----	Retail trade	14,457	13,958	-499	-3%
48----	Transportation & warehousing	1,549	1,690	141	9%
51----	Information	1,539	1,778	239	16%
52----	Finance & insurance	5,657	6,212	555	10%
53----	Real estate & rental & leasing	3,320	3,427	107	3%
54----	Professional, scientific & technical svcs	10,200	10,250	50	0%
55----	Management of companies & enterprises	638	603	-35	-5%
56----	Admin, support, waste mgt, remediation svcs	5,461	5,368	-93	-2%
61----	Educational svcs	967	1,179	212	22%
62----	Health care and social assistance	9,259	9,555	296	3%
71----	Arts, entertainment & recreation	1,472	1,619	147	10%
72----	Accommodation & food svcs	6,749	7,414	665	10%
81----	Other svcs (except public admin)	9,657	9,478	-179	-2%
95----	Auxiliaries	169	-	-	-
99----	Unclassified establishments	635	716	81	13%

Source: U.S. Census, County Business Patterns

Despite the overall rate of slow growth, a number of companies are thriving in Connecticut. For example, on the Deloitte Technology Fast 50, which is a list of the 50 fastest-growing technology companies in the state “based on five year [revenue] percentage growth,”⁵⁷ 17 of the 50 companies are in the manufacturing sector, as seen in Figure 30.

⁵⁷ Deloitte, *Technology Fast 50 and Rising Star List*, http://www.public.deloitte.com/fast500/fast_50/search/company_search.asp.

Figure 30: Deloitte Technology Fast 50 – Connecticut Companies by Industry Sector



Source: http://www.public.deloitte.com/fast500/fast_50/search/company_search.asp

Another factor that encourages business vitality is technology transfer and commercialization from universities to area companies.

Technology Transfer

According to an Innovation Associates report to the Connecticut Technology Transfer and Commercialization Advisory Board of the Governor's Competitiveness Council,⁵⁸ some of the inputs that are useful for a successful technology transfer process include:

- research and development (R&D) resources;
- investment capital, particularly early-stage capital;
- scientific and engineering workforce; and
- entrepreneurial incentives and culture.

R&D Resources

Public and private R&D investments in basic and applied research can lead to the development of new products and processes, provided that the groundwork is in place to

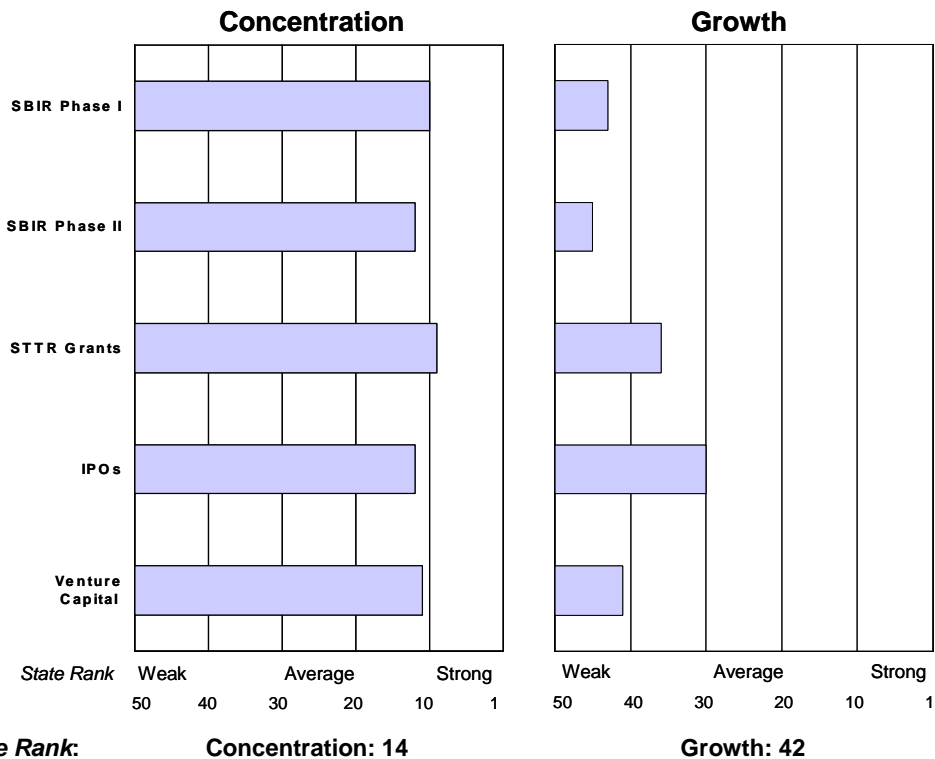
⁵⁸ Innovation Associates, *A Report to the Connecticut Technology Transfer and Commercialization Advisory Board of the Governor's Competitiveness Council*, October 2004, <http://www.youbelonginct.com/pupload/techtransreportweb.pdf>.

convert the research into goods for the market. New product development opens up additional markets for consumer and business products. Increasing productivity reduces business costs, enabling businesses to maintain or increase market share or increase workers' wages without increasing market prices. Productivity growth also can increase business revenues and profit growth, theoretically freeing up capital for R&D investments. Growth in worker wages stimulates increased consumer demand for new or improved products.

Investment Capital

Successful areas, in terms of entrepreneurs, have access to angel and seed capital, along with assistance in developing business plans and networking with potential investors.⁵⁹ These factors were all studied in last year's *Benchmarks* report and Connecticut's relative ranks have been updated in Figure 31.

Figure 31: 2006 Connecticut Ranks: Finance Metrics



⁵⁹ Edmund S. Phelps, *Understanding the Great Changes in the World: Gaining Ground and Losing Ground Since World War II*, Capitalism and Society, Vol. 1, Issue 2, 2006, The Berkeley Electronic Press, page 10.

The variables that comprise the Finance category include:

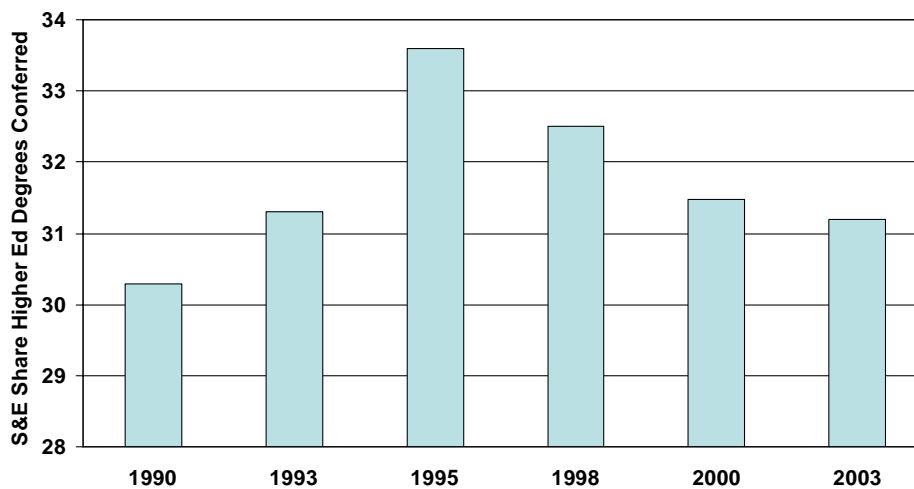
- Small Business Innovation Research (SBIR) Phase I awards per worker, 1997-2004
- SBIR Phase II awards per worker, 1997-2004
- Small Business Technology Transfer Program (STTR) awards per worker, 1994-2004
- Initial public offerings (IPOs) per 10,000 employer firms, 1999-2005
- Venture capital per worker, 1990-2005

On a relative basis, Connecticut is strong in its current concentration of these Finance metrics, however, the growth in these metrics is below average. Since last year, Connecticut's overall concentration rank for this category dropped from 13th to 14th, but growth improved from 45th to 42nd.

Scientific and Engineering Workforce

Connecticut has access to a good number of graduates in science and engineering fields. As a share of higher education degrees conferred, science and engineering disciplines make up about one-third (Figure 32).⁶⁰ This is a substantial percentage, but Connecticut ranks only 17th among the 50 states.

Figure 32: S&E Share of Higher Education Degrees Conferred



Source: National Science Foundation

⁶⁰ National Science Foundation; National Center for Education Statistics. Calculations by CERC.

Connecticut attracts a number of foreign students as well. In terms of foreign students as a share of total enrollment, the state ranked 6th in 2004.⁶¹ However, access to graduates does not ensure they will remain in the region after graduation.

Business Costs

It is generally agreed that, all else being equal, high business costs have an adverse effect on business and job growth. States and regions always strive for lower costs in order to maintain a competitive business base that provides jobs for residents and tax revenues for state and local government.

A frequently cited source of state and regional business cost measures is Moody's Economy.com Cost of Doing Business Index. This index, based on a weighted combination of labor, tax and energy costs, provides a useful base for comparing Connecticut over time and across states. The index explains about 20 percent of the variance in job growth among states over the long term (labor, energy and tax burden comprise the three components in this index).

The most recent edition of this index ranks Connecticut as having the 8th highest (most expensive) costs among the 50 states. Interestingly, eight of the 10 most expensive states are found in the Northeastern region of the country, a further affirmation of the regional nature of many of the challenges facing Connecticut. The report states that the "...list of highest cost states is dominated by the Northeast, which once again retains the distinction of being the costliest region in which to do business."⁶²

Since 1977 this source shows Connecticut has had one of the most stable and consistent cost structures of any state. If there is a positive side to high business costs, it would be consistency and stability, traits which make business planning easier. Connecticut's business cost index has averaged about 6 percent above the U.S. average for the past 30 years. Although it is important to be sensitive to business costs, they do not appear to be the primary driver of economic growth based on this research.

⁶¹ Institute of International Education; National Center for Education Statistics. Calculations by CERC.

⁶² Moody's Economy.com, North American Cost Review, 2005 Edition, May 2006.

Regression Analysis Results

In addition to performing a multiple regression analysis for employment growth, an analysis was conducted to better understand the influences on business growth. Using data measurements for 50 states, the analysis shows that all of the variables that explained employment growth and one additional metric, median housing values, explain about 40 percent of a state's establishment growth between 1989 and 2004 (Figure 33).

- **Ratio of Business Failures to Business Starts**, 1990 (negative correlation): When businesses are failing at a faster pace than starting up, it can be assumed that there are adverse effects on a state's establishment growth.
- **Share of Population Age 25-34 Years Old**, 1990 (positive correlation): This model suggests that states with larger shares of this age group have stronger establishment growth, because this age group is typically innovative and relatively more entrepreneurial.
- **Share of Income Held by Bottom Fifth of Households**, 1988-90 (positive correlation): As the share of income held by the bottom 20 percent of households increases, establishment growth during 1989 and 2005 also increases.
- **Median Housing Value**, 1990 (negative correlation): This variable was not significant in the employment model but is a contributing factor in this establishment model. This model suggests that a relatively higher median housing value results in lower establishment growth, perhaps indicating that the overall costs of a state have some impact on business location decisions.
- **Average Annual Pay**, 1990 (negative correlation): The model suggests that states with higher average annual pay in 1990 have lower establishment growth than lower-wage states.
- **Hypothetical Employment Growth**, 1989-2005 (positive correlation): This variable is based on industry mix. If a state's hypothetical employment growth, which is based on the growth patterns at the national level by industry, is positive, then actual establishment growth will be positive.
- **Unemployment Rate**, 1989 (positive correlation): An area with a higher unemployment rate in 1989 saw higher establishment growth between 1989 and 2004. This suggests that areas with higher unemployment rates have available resources, which could impact business location decisions.

Variables that were not significant in the establishment model include individual income tax collections per capita for 1992, the share of the population 25+ years with a bachelor's degree or more in 1990, industry R&D per capita in 1989, and the share of highways that were deficient in 1989.

Other researchers have conducted analyses to determine factors that impact business location decisions, many of which are consistent with the regression model explained here. A literature review of this subject can be found in Appendix A.

Figure 33: Summary Regression Output: Establishment Growth 1989-2004

<i>Regression Statistics</i>	
Multiple R	0.68
R Square	0.47
Adjusted R Square	0.38
Standard Error	0.14
Observations	50

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig F</i>
Regression	7	0.730	0.104	5.280	0.000
Residual	42	0.829	0.020		
Total	49	1.559			

	<i>Coefficient</i>	<i>Std Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-1.38	0.54	-2.56	0.01
Ratio: Failures to Starts 1990	-0.29	0.10	-2.88	0.01
Share of Population Age 25-34 Yrs Old 1990	8.61	3.00	2.87	0.01
Share of Income Held by Bottom Fifth 1988-90	0.07	0.03	2.56	0.01
Median Housing Value 1990	0.00	0.00	-2.02	0.05
Avg Annual Pay 1990	0.00	0.00	-2.30	0.03
Hypothetical Emp Growth 1989-2005	2.38	0.72	3.31	0.00
Unemployment Rate 1989	0.05	0.02	2.02	0.05

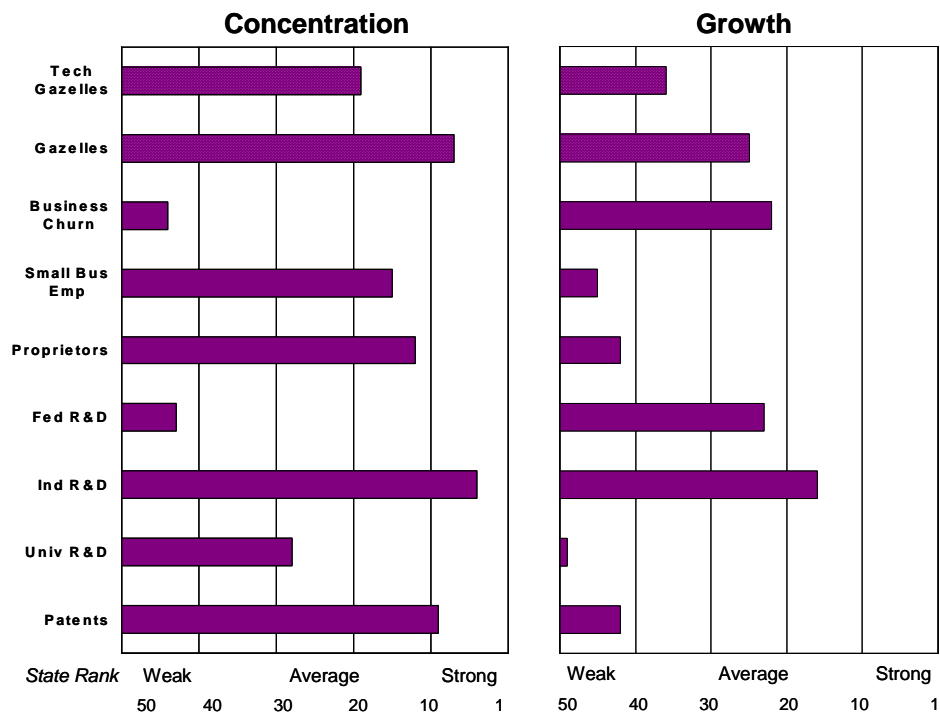
Entrepreneurial and Business Vitality Benchmarks

Metrics that describe a state's entrepreneurial and business climate were described in last year's *Benchmarks* report and have been updated for 2006 (Figure 34). The variables included in this category are:

- Technology gazelles as a share of total gazelles filing with the Securities & Exchange Commission (SEC), 1999-2003
- Gazelle companies (filing with the SEC) per 1 million nonfarm establishments, 1999-2003
- Business churn: business formations and terminations as a share of total firms, 1990-2004

- Small business (<100 employees) share of total employment, 1992-2003
- Nonfarm proprietors per 1,000 people, 1990-2004
- Federal Research & Development (R&D) expenditures as a share of gross state product (GSP), 1993-2003
- Industry R&D expenditures as a share of gross state product, 1993-2003
- University R&D expenditures as share of gross state product, 1993-2003
- Patents awarded per 1 million people, 1992-2004

Figure 34: 2006 Connecticut Ranks: Entrepreneurial and Business Vitality Metrics⁶³



CT Composite Rank: Concentration: 11 Growth: 44

Connecticut ranks 11th among all states in terms of its composite concentration score for this set of variables, down from 9th last year. Connecticut ranked in the top 10 in the industry R&D (4th), gazelles (7th) and patents (9th) metrics. Connecticut does not perform well in terms of federal R&D (43rd) and business churn (44th).

⁶³ The technology gazelles and gazelles metrics were not updated this year because the data were not available.

On the growth dimension the state was above average on three variables: industry R&D, where Connecticut ranked 16th; business churn, ranking 22nd; and federal R&D, with a rank of 23rd. The composite growth score across these measures ranked the state 44th, down from 42nd last year. Of particular concern is university R&D, where Connecticut had the second slowest average annual growth rate of the states between 1993 and 2003.

DETERMINANT #3: URBAN MARKETS

As an extensive body of published research has shown, prosperous regions depend on dynamic and vibrant cities. If cities are languishing due to high costs, out-migration of jobs and businesses and increasing poverty, it follows that not only are they not contributing to overall growth, they are consuming a disproportionate share of public resources and consequently increasing costs for all taxpayers. Perhaps of greater significance, the opportunity costs of under-performing and weak urban centers have a deleterious effect on any region's economic competitiveness and quality of life. As Jane Jacobs noted:

Whenever and wherever societies have flourished and prospered rather than stagnated and decayed, creative and workable cities have been at the core of the phenomenon...decaying cities, declining economies, and mounting social troubles travel together. The combination is not coincidental.⁶⁴

Bridgeport, Hartford and New Haven consistently appear among lists of the nation's poorest or most distressed cities. This situation has remained unchanged for decades, and by most signs the situation in these cities continues to deteriorate. In a study released in October 2006 by the Brookings Institute, Hartford is listed as the third most impoverished city in the nation along with Detroit and Newark,⁶⁵ despite its status as the capital of perhaps one of the most affluent jurisdictions in the world.

WEAK CITIES DRAIN RESOURCES

The condition of Hartford, Bridgeport and New Haven has had a pronounced impact on Connecticut's overall economic growth. More than 100,000 jobs have been lost from these urban centers over the past few decades. Since 1992, more than 1,800 businesses have either shut down or moved out of Bridgeport, Hartford or New Haven.⁶⁶ Compounding these trends, each of these cities has experienced a steady loss of

⁶⁴ Jane Jacobs, *The Death and Life of Great American Cities*, 1961.

⁶⁵ Kimberly Furdell and Hal Wolman, *Toward Understanding Urban Pathology: Creating a Typology of 'Weak Market' Cities*, Brookings Institution, 2006.

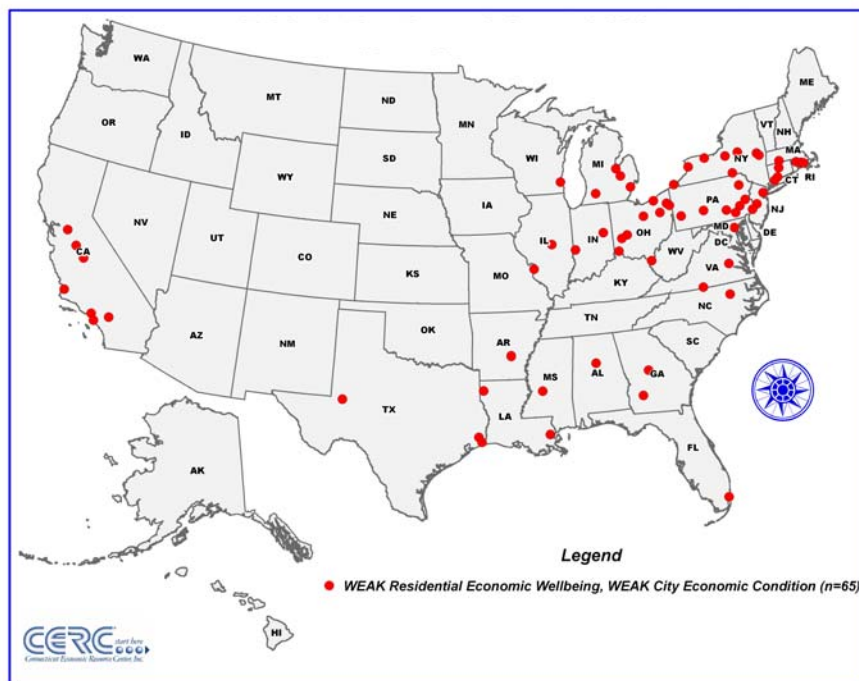
⁶⁶ U.S. Census, *County Business Patterns*.

population over the past 30 years,⁶⁷ although data analyzed by CERC suggests that New Haven may be improving.

The study⁶⁸ identified 65 cities, out of a pool of 302, that they described as “weak market cities” based on the economic conditions of the city and its residents (Figure 35).

Approximately two-thirds of these 65 “weak market cities” are in the Rust Belt, including three in Connecticut. Of the three Connecticut cities, Hartford and New Haven are classified with Detroit, Saginaw and Flint, among others, as having the worst Residential Well-Being Index in the nation.

Figure 35: “Weak Market” Cities



Source: George Washington Institute of Public Policy

Instead of being net contributors to economic vitality and growth in Connecticut, these cities consume more than they contribute to the state coffers. Some of Connecticut’s cities experience a cycle of poverty and dependency that affects opportunities for

⁶⁷ Kimberly Furdell and Hal Wolman, *Toward Understanding Urban Pathology: Creating a Typology of ‘Weak Market’ Cities*, George Washington Institute of Public Policy, funding by the Metropolitan Policy Program of the Brookings Institution, 2006, <http://www.gwu.edu/~gwipp/papers/wp021.pdf>.

⁶⁸ Ibid.

sustainable growth. Job and business losses combined with social service needs increase the financial burden on state and local government.

URBAN WORKFORCE LACKS SKILLS

Recent studies have demonstrated that up to one-half of all new workers in Connecticut will come from our urban centers by the year 2020.⁶⁹ This cohort of future workers is characterized by extremely low academic skills as evidenced by test scores, high school graduation rates and other metrics. Studies suggest that because of declining skill sets, inflation-adjusted personal income in Connecticut will decline 4 percent by 2020.⁷⁰ As noted elsewhere in this report, demographic shifts have been especially pronounced in Connecticut over the past few years, particularly with respect to the 18-34 year age cohorts in which the state has experienced a 24 percent decline since 1990.⁷¹ Compounding this decline is the fact that under-skilled urban youth will represent an increasingly disproportionate share of these younger cohorts.

IMPOVERISHED CITIES PRECLUDE STATEWIDE GROWTH

As centers of job and business losses, impoverished and under-skilled populations, and disproportionate consumers of public services, our cities represent a large challenge to improving economic growth in Connecticut over the long term.

It is unlikely that the "city problem" will confine itself to the cities. Published research has shown that urban problems frequently spill over into first-ring suburbs.⁷² There is already evidence of that in some of the communities abutting Hartford, Bridgeport and New Haven.⁷³

⁶⁹ Coelen and Berger, *New England 2020: A Forecast of Educational Attainment and Its Implications for the Workforce of New England States*, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

⁷⁰ National Center for Public Policy and Higher Education, *Policy Alert: Income of U.S. workers Projected to Decline If Education Doesn't Improve*, November 2005; Coelen and Berger, *New England 2020: A Forecast of Educational*

Attainment and Its Implications for the Workforce of New England States, 2006, www.nmefdn.org/uimages/documents/NE_2020_FR.pdf.

⁷¹ U.S. Census; Calculations by CERC.

⁷² Richard Voith, Federal Reserve Bank of Philadelphia, *Central City Decline: Regional or Neighborhood Solutions?* Business Review, March/April 1996, <http://www.phil.frb.org/files/br/brma96dv.html>.

⁷³ CERC, *An Economic and Demographic Analysis of the Southern Connecticut Gas Service Territory*, April 2005.

PRIORITIES FOR SUSTAINABLE GROWTH

Sustainable growth is essential for our state's long-term economic well-being. In light of the determinants reshaping Connecticut's economy — external forces, job growth, demographic shifts, business growth and urban markets — difficult choices must be made when prioritizing resources. We conclude that five critical areas must be addressed in order to sustain growth in the state:

Globally competitive education and training – Our current and future workforce requires “best of breed” pre-K through adult education and training, focused on meeting the needs of business in order to compete in a global economy. Science, technology, engineering and math (STEM) training and education must be emphasized.

Dynamic and vibrant cities – Strong cities are vital to regional growth. Dynamic urban centers encourage an influx of residents and businesses, driving investment, job creation, higher incomes and improved standard of living. Increased economic activity will result in greater tax revenues to support investments in education, infrastructure and public services.

Quality affordable housing – Affordable housing for middle-income families and young professionals is needed to both attract new workers and retain current workers. Availability of those workers is essential to businesses seeking employees and is a key component in building vibrant cities.

Integrated, cost-effective transportation infrastructure – Access to employment and recreation relies upon a cost-effective transportation network. The ability to efficiently move goods, provide services and connect to regional markets reduces costs for businesses.

Growth in business investments – A business climate rooted in innovation and R&D provides for the growth and expansion of business. Support for startups, business expansions, in-state, out-of-state and international investments will result in increased economic growth.

LOOKING AHEAD

Connecticut's future economic prosperity is less certain today than it has ever been. Traditional strategies that worked in the past must continue to be reshaped in light of a greater understanding of the factors that influence Connecticut's economic growth. Even in this era of globalization, the state is not powerless to achieve positive change. In some cases, the state may act on its own. In others, regional collaboration will be required. Without action, Connecticut's economic future will not resemble our economic past. Significant improvements in the five priority areas will result in an environment that will attract businesses, provide quality jobs and improve the standard of living for all residents.

Benchmarks 2006

Appendix A

Literature Review: Determinants of Firm Growth

Timothy J. Bartik, Small Business Start-Ups in the United States: Estimates of the Effects of Characteristics of States, *Southern Economic Journal*, Vol. 55, No. 4, (Apr., 1989), pp. 1004-1018.

Previous research shows:

- Large corporations often consider a number of states as possible sites for a new branch plant. However, most entrepreneurs consider only their current city as a possible site for a new business.
- The decision to change the employment level at an existing plant is often determined by costs.
- The decision to open a plant is typically based on changes in market demand; the location of the plant depends on costs.

Current model specifics:

- Focuses on small business starts
- Includes all manufacturing industries
- Utilizes panel data (cross-sectional data at several points in time) to correct for biases “caused by ‘fixed effects’ of states”
- Panel estimates use changes in business starts and independent variables from 1976-78 to 1980-82
- Dependent variable: start-rate (number of starts) among potential entrepreneurs (number of employees in that industry and state) in a given state, industry and time
- Independent variables tested (**bold** variables are significant in panel estimates):
 - **Population density** (proxy for market demand) ($\ln(\text{state population}/\text{land area})$)
 - **Industry density** ($\ln(2\text{-digit industry employment} / \text{land area})$)
 - **Per capita income** ($\ln(\text{per capita income})$)
 - Labor costs
 - Energy prices
 - **Property tax** (avg property tax rate on FHA insured single family houses times assessment / sales price ratio for C&I properties divided by assessment/sales price ratio for single family properties)
 - 1 – Personal tax
 - **1 – Corporate tax** ($\ln(1-t_f - t_s(1-t_f))$) where t_f and t_s are federal and state corporate income tax rates
 - **Small business tax relief** ($\ln(1-t_f^s - t_s^s(1-t_f^s)) - \ln(1-t_f^L - t_s^L(1-t_f^L))$) where s and L denote average corporate rates at \$25,000 and \$50,000 in profits respectively
 - Sales tax
 - **Sales tax differential for equipment** ($\ln(1+\text{state sales tax rate on machinery and equipment}) - \ln(1+\text{general state sales tax rate})$)
 - Public school spending
 - Police spending
 - **Fire protection spending** ($\ln(\text{spending per capita})$)
 - Higher education spending
 - **Welfare spending** ($\ln(\text{spending per capita})$)
 - **All other spending** ($\ln(\text{spending per capita})$)
 - Highway density

- **Statewide banking** (dummy variable for state allowing statewide branch banking or limited branch banking)
- Limited branch banking
- **Multibank holding companies** (proportion of bank deposits held by multibank holding companies if unit banking or limited branching; zero otherwise)
- Bank concentration
- Venture capital
- High school grads
- College grads
- Out of state migrants
- Foreign immigrants
- Age 35-44
- Scientists & engineers
- Unionization
- Environmental regulations
- Land area
- Regional dummies (for 9 U.S. regions)

Empirical results:

- Most important influence on small business starts is size of market demand
- Higher property taxes negatively affect small business starts
- Higher personal income taxes, higher general sales taxes, higher sales taxes on equipment have negative effects
- Fire protection services and local school spending have strongest positive effects
- Welfare spending has significant negative effect
- Entry barriers in banking market negatively affect small businesses
- Effects of labor costs are small
- Foreign immigrants has highly significant positive effect (cross-section model)
- Proportion of high school graduates has a highly significant positive effect (cross-section model)

Paul D. Reynolds, Brenda Miller, Wilbur R. Maki. Explaining Regional Variation in Business Births and Deaths: U.S. 1976-88, *Small Business Economics* 7: 389-407, 1995, pp. 389-407.

Model Specifications:

- Dependent variable: annual birth rate (per 10,000 residents)
- All industries
- All state
- Linear model
- 6 two-year periods, 1976-1988

Start-up processes that have most impact on business start-ups include:

- Regional economic diversity
- Population growth
- Personal wealth growth
- Concentration of mid-career adults
- Low unemployment
- Employment flexibility

No impact from regional variation with:

- Density of customers
- Density of suppliers
- Density of workers
- R&D resources
- Costs of production
- Access to national transportation facilities

R.T. Hamilton, Unemployment and Business Formation Rates: Reconciling Time-Series and Cross-Section Evidence, *Environment and Planning A*, 1989, Volume 21, Pages 249-255.

Time-series analyses generally show rates of business formation increasing with unemployment

- At some level of unemployment, the model breaks down from one of these possible scenarios:
 - As unemployment rises, the ‘push’ to self-employment on those made unemployed will not be accompanied by enough ‘pull’ of new business opportunities. Beyond some high level of unemployment, the model should fail and one would expect a negative relationship between unemployment and business formation rate.
 - Or there is a fixed supply of potential business founders in labor force and increasing unemployment is trigger. Since new business founders tend to set up in industry and geography with experience, one could assume that formation rates rise with unemployment but reach a ‘plateau’.
- This model from the UK shows the critical unemployment level to be 20%.

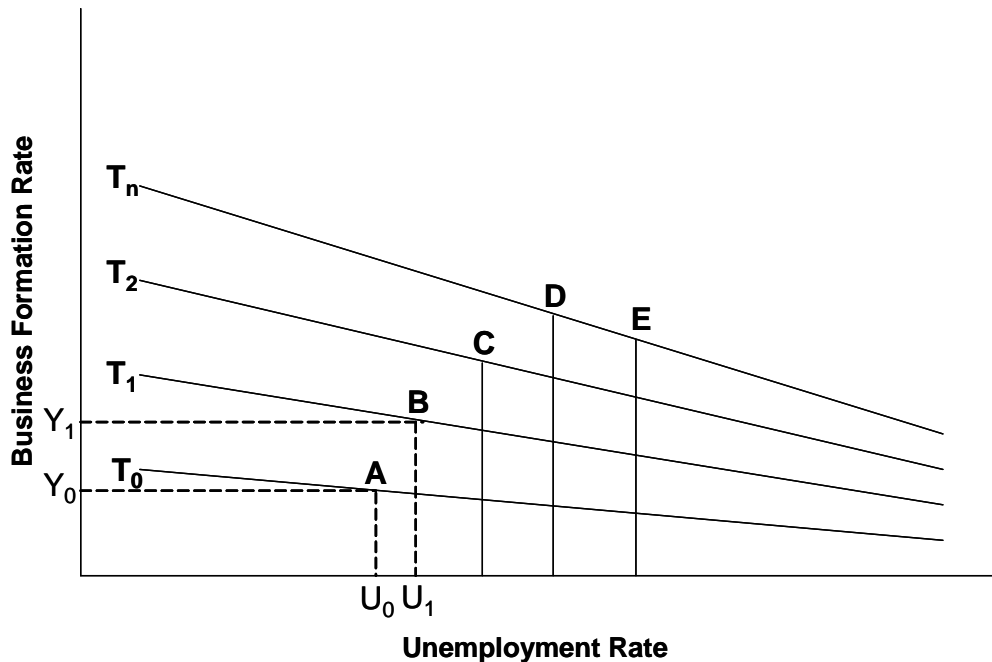
Cross-section studies generally show high rates of business formation with low levels of unemployment

- Many factors determine regional variation in formation rates
- Negative association between share of manual (manufacturing) workers in labor force
 - Steady decline in overall significance of manufacturing
 - Costs of entry are high

Reconciling the evidence

- Time-series relationship between unemployment and business formation rates may be nonlinear; at critical unemployment level, increases are associated with decreasing formation rates
- Figure contains a family of cross-section relationships for a number of time periods
 - Each graph is more negatively sloped to reflect that as time passes, the impact of policy incentives to start businesses have a disproportionate effect on formation rates in already prosperous (ie low unemployment rate) areas.
 - As the cross-section functions move out over time, the gap between them is reduced to reflect diminishing impacts of successive policy measures. This stops at time T_n when it is assumed that no more can be done to stimulate new business formation.
- From a position of “low” average unemployment (U_0), unemployment rises to U_1 , and the cross-section relationship rotates clockwise and shifts upwards. As a result, the business formation rate—which would otherwise have fallen along cross-section at T_0 —is observed to rise from Y_0 to Y_1 . This process repeats itself until a stage is reached at T_n when further increases in unemployment can only give rise to a movement down the negatively-sloped cross-section.

Time-Series and Cross-Section Findings on Relationship Between Unemployment and Business Formation Rates



Paul D. Reynolds, Predicting New-Firm Births: Interactions of Organizational and Human Populations, *Entrepreneurship Research: Linkages and Methodology*, Chapter 11, Pages 268-297.

National Analysis

- Total number of business organizations
- Birth and death rates of business organizations
- Effect of national characteristics on variations in national new-firm birth rates
- Distinguishing between business activity, business entity, business location/establishment, business firm (legal)
- Model used incorporation rate as dependent variable; five factors associated
 - Real GNP growth
 - Real plant and equipment expenditures growth
 - Unemployment rate changes
 - Real interest rate
 - Inflation
- Low ability to predict new-firm births at national level, masks significant changes occurring in local regions

Regional Analysis

- Suggested that regional economies go through a “long-wave” cycle
 - Rapid economic growth, marked by high number of new-firm births
 - Followed by periods of stability or decline
 - Then reduction in new-firm births
 - Followed by regional “rebirth” as new industries grow and replace those in decline
- Model (Kirchoff and McAuliffe, 1989) explored characteristics affecting absolute number of new-firm entries in all industries for three time periods: 1978-1980, 1980-1982, 1982-1984
 - Six were significant in one or more of the three models
 - Federal defense expenditures
 - Long-term growth in state personal income (1948-1980)
 - State population
 - Percent of labor force unionized
 - Public school expenditures
 - Median age
 - Five factors were not significant
 - Hourly wage in manufacturing
 - Percent of college graduates
 - Number of doctoral scientists and engineers
 - Total state tax revenue
 - Total state taxes per capita
- When using economic regions (LMAs) as geography for analysis, organizations beget organizations

- Critical for a firm birth: interaction of two processes 1) presence of market opportunity and 2) person predisposed to take advantage of opportunity
- Contemporary analyses indicate that new-firm births are related to the ease of start-up (low costs) and demand for product (high average industry profits or rapid increase in density of organizations)
- Analysis based on geographic regions
 - Population growth
 - Density of organizations
 - Growing markets
 - Appropriate infrastructure (education, transportation, efficient government)
 - Lower taxes does not seem to have much effect

Luis Suarez-Villa, Innovation, Entrepreneurship, and the Role of Small and Medium-sized Industries: A Long-Term View, *Small and Medium Size Enterprises and Regional Development*, 1988, pages 21-43.

Factors credited to entrepreneurship:

- Capital investments and accumulation
- Managerial or productive coordination
- Innovation and invention
- Strategic planning and decision-making

Entrepreneurship and Product Innovation and Development

	Phase			
	I	II	III	IV
R&D	Invention (individual/ corporate)			
Finance		Investment		
Marketing		Strategic Planning		Strategic Planning
Production			Coordination	Coordination
Enterprise Size*	Small	Medium	Medium- Large	Large- Medium^

*relative to average industry firm size

^subcontractors (small complementary firms) likely in many industries

Manfred M. Fischer, Business Formation and Regional Development: Some Major Issues, *Small and Medium Size Enterprises and Regional Development*, 1988, pages 85-103.

Increase in numbers of new and small firms in many advanced countries between 1970s and 1980s. Explanatory approaches include:

- Recession push theory
 - Increasing levels of unemployment and recession-induced blocking of promotions push people into business formation
 - Large businesses move away from less profitable activities and leave market niches where more flexible smaller firms can thrive
- Technological change theory
 - Changes in microelectronics and information technology allows for new product, process and market opportunities
- Income growth theory
 - Overall income growth increases growth in demand for more sophisticated goods

Based on empirical evidence from studies, Keeble and Wever (1986) draw generalizations:

- Areas with more diversified economies show higher new business creation rates
- Higher formation rates, but lower total volumes, can be found in rural areas
- Mature, industrialized regions have lowest rates and small volumes of new businesses

David Neumark, Junfu Zhang, and Brandon Wall, Public Policy Institute of California, *Business Establishment Dynamics and Employment Growth*, November 2005.

Employment change results from net effect of six dynamic processes

- Births of new businesses
- Expansion of existing businesses
- In-migration of businesses
- Business stops
- Business contractions
- Out-migration of businesses

Analysis utilized longitudinal database: National Establishment Time Series (NETS) to decompose sources of employment change in California, 1992-2002

- What drives employment growth? (this analysis addresses)
- What, if anything, can public policy do about it? (for future research)

NETS database includes (for each year), based on D&B data

- Current business name
- Location
- FIPS county code
- Type of location
- Employment
- SIC code
- If establishment moved, origin zip code, city, state; destination zip, city, state

Employment changes in California are primarily driven by expansion-contraction and start-stop processes rather than by relocation

- Establishment births contributed 62.4% of job creation, 36.7% was contributed by establishment expansion, and less than 1% due to in-migration
- Stops led to 71.4% of job destruction, contractions contribute 26.9%, and out-migration was 1.6%

Results lead to policy implications

- Negligible role of business relocation suggests that policy focus on this activity is misdirected
- Policies that encourage business starts should have a greater impact

Paul Reynolds, David J. Storey and Paul Westhead eds., Cross-national Comparisons of the Variation in New Firm Formation Rates: An Editorial Overview, *Regional Studies*, Vol. 28.4, pp. 343-346.

Focus of linear models is on explaining regional variation in firm birth rates; main objective of research is to identify the most important firm birth processes

Project involved comparisons of standardized analyses for seven countries: France, (West) Germany, Ireland, Italy, Sweden, United Kingdom and United States

Ordinary least squares regression analysis with forced entry of independent variables

Success in linear models developed to account for firm births, similarity across countries

- (West) Germany: more small establishments, higher unemployment, skilled workforce, population density enhance firm birth rates
- Ireland: proportion of small firms and urban residents leads to more firm births, indicates access to higher education, demand growth, share of professional and managerial workers, government assistance
- Italy: local specialization promotes firm births
- Sweden: higher levels of firm dynamics (starts and stops) have positive impact on economic growth
- United Kingdom: population growth, housing wealth, professional occupations, presence of small firms, urbanization and demand growth affect average annual births
- United States: urbanization, unemployment, personal/household wealth, small firm presence/economic specialization affect new firm rates; affects varied by region

Virginia Carlson, Studying Firm Locations: Survey Responses vs. Econometric Models, *The Journal of Regional Analysis and Policy*, 1999, pages 1-22.

Survey research asks respondents about factors that influenced location decisions

- Can ask qualitative factors
 - Can ask open-ended questions and perhaps identify factors not identified a-priori
- Statistical models estimate relative influence of factors on the plant location decision
- Can specify size and direction of relationships

This analysis surveyed 214 branch firms in Chicago metro area from 1992-1994 that had moved into the area during the 1980s.

- Survey asked about decision to locate in Chicago area versus other cities
- Assembled municipal-level database with quantifiable data about 85 cities
- Relative means of selected variables, grouped by factors in survey, were compared for firms that indicated factor was important versus not important
 - Transportation access
 - Land availability
 - Land costs
 - Building availability
 - Labor costs
 - Available labor force
 - Access to suppliers and customers
 - Quality of life
- Firms that responded yes to importance of factors, generally tended to locate in areas that contained that factor easily quantified
 - For example, firms that mentioned that transportation access was important tended to locate near an airport
- However, for factors that are less quantifiable, the relationships were not as strong

Virginia L. Carlson, *The Availability of Women Workers: Effects on Company Location*, Garland Publishing, Inc, 1997.

Study used statistical model and survey to explore reasons for business location decisions

STATISTICAL MODEL:

“...a complete statistical model which would accurately predict the quantity of branch activity in any one city would need to account for such variables as the size of the city, the availability and quality of land, infrastructure, labor, and other inputs; the costs of doing business such as tax rates; amenities and quality of life characteristics; and the city’s receptiveness to commercial and industrial development.” (page 46)

Six measures of branch activity (dependent variables) are used:

- Number of branch firms, 1992
- Employment, 1992
- Number of business service firms, 1992
- Business service employment, 1992
- Number of manufacturing firms, 1992
- Manufacturing employment, 1992

Independent variables:

- City size and site availability
 - Land area in kilometers miles in 1980 (+ significant)
 - City population 1980 in 1,000 (+ significant)
 - City population density (- significant)
- City location and access
 - Highway accessible from ramp (+ significant)
 - Highway accessible within 2 miles (- not significant)
 - Highway accessible 2-5 miles (- not significant)
 - City 2-5 miles from airport (+ somewhat significant)
 - City 2-10 miles from airport (+ somewhat significant)
 - City 10+ miles from airport
 - Distance to Chicago’s CBD, “The Loop”
- City characteristics
 - Age of city in years (+ significant)
 - Percent black population 1980 (- not significant)
 - Median household income (- significant)
- Tax rates
 - Municipal tax rate (- somewhat significant)
 - Effective tax rate
- Site quality
 - Municipal capital expenditures/land area
- Labor force
 - Density of surrounding women with kids (+ significant)
 - Density of surrounding elementary grads
 - Density of surrounding college grads (+ not significant)

- Density of surrounding men 18-44 (+ not significant)
- Proximity to other businesses
 - Density of surrounding employment 1981 (+ significant)
 - Density of surrounding manufacturing employment 1981

SURVEY:

Surveys allowed companies to tell what considerations they took into account when choosing a business location.

Note: The original format of the survey was two pages long (front and back of one page).

1. Business Name (Printed on questionnaire when sent)
2. City and Zip Code _____
3. Could you describe what kind of work is done at this plant? _____
4. About how long has this plant been in this city? _____
5. Are you the person to whom this questionnaire was addressed? Yes _____ No _____
 - a. Were you involved in choosing the city where your plant is now located?
Yes _____ No _____
6. Did your branch relocate from somewhere else or was this a new facility?
 - a. We relocated from (city and state) _____
 - b. This was a new facility
7. Why did your company decide to locate this plant in the Chicago suburbs?
 - a. Our plant used to be located in Chicago and we wanted to move out of Chicago.
 - b. Our plant used to be somewhere else and we wanted to move to be near Chicago.
 - c. The headquarters is in Chicago but we wanted to open a branch in the suburbs.
 - d. The headquarters is outside Chicago and we wanted to open a branch near Chicago.
8. What was attractive about the suburbs in general? Please circle all that apply.
 - a. Quality of life (schools, churches, etc.)
 - b. Close to another branch
 - c. Labor supply: good education/skill levels
 - d. Labor supply: good female labor force
 - e. Labor supply: availability
 - f. Labor supply: costs
 - g. Lots of available land
 - h. Other _____
9. What was attractive about this particular city? Choose all that apply.
 - a. Costs: labor
 - b. Costs: land
 - c. Good building available
 - d. Close to airport
 - e. Close to highway
 - f. Close to headquarters

- g. Close to other branch
 - h. Close to suppliers/materials
 - i. Close to customers
 - j. Close to manager/owner's home
 - k. Received a city subsidy
 - l. Quality of life (schools, churches, etc.)
 - m. Friendly city government
 - n. Other _____
10. About how many people are employed here? _____

11. Please fill in the following table, telling us what percent of your workforce fits into each of the eight categories. The total of the eight boxes should equal 100%. If you don't know the percents, just fill in the numbers.

	Male	Female
Professional/Managers		
Technical		
Production		
Clerical/Support		

12. How often do employees get promoted from this branch to a job at another branch or headquarters?
- a. Very often
 - b. Frequently
 - c. Sometimes
 - d. Not often
 - e. Don't know
 - f. This question does not apply to my plant.
13. Is there anything else you would like to add that we didn't ask you about?

THANKS FOR YOUR TIME

David Salvesen and Henry Renski, University of North Carolina Chapel Hill, *The Importance of Quality of Life in the Location Decisions of New Economy Firms*, 2002, pages 1-42.

The location decisions of firms have traditionally been driven by factors such as land costs, labor costs, access to materials and access to markets.

- Traditional economic theory sees the business firm as “an optimizing agent that selects a location to maximize profits.”

Quality of life for employees is becoming an important factor.

Lacking perfect information, many companies complete a site selection process by looking at alternative sites using a small set of criteria.

Two types of empirical studies of business location

- Revealed preference (econometric) – test theory and determine statistical significance of some variables
- State preference (survey) – learn about the site selection process

Empirical studies of the 1940s, 1950s, and early 1960s show that market access, labor costs and raw materials are the most important location factors for manufacturers.

More recent studies show that productivity, education, taxes, community attitudes about business and quality of life factors are also important.

Factors that affect industrial location decisions for a cross-section of businesses

- Labor climate/productivity/unionization
- Proximity to markets
- Labor availability
- Transportation
- Tax credits

The important factors change when industry and business type analyses are carried out

- Retail and personal services locate where sales can be maximized (rather than aiming to minimize transportation costs).
- Corporate headquarters aim to locate in central business districts.
- Manufacturing plans focus on cost differences of different locations.
- The availability and cost of technical labor, along with proximity to universities, are important factors for high-tech companies.

Dennis W. Carlton, “Why Do New Firms Locate Where They Do: An Econometric Model,” *Interregional Movements and Regional Growth*, The Urban Institute, 1979.

Created models of location for new single establishment firms and branch plants for three manufacturing industries:

- 3079 Miscellaneous Plastics Products
- 3662 Radio and Television Transmitting, Signaling, and Detection Equipment and Apparatus
- 3679 Electronic Components, Not Elsewhere Classified

Findings include (dependent variable= new births, 1967-71, 1972-75):

- For heavy energy using industries, energy costs are significant in location decisions.
- Not evident that taxes affect location decisions.
- For technical industries, technical labor force is important.
- A favorable “business climate” alone does not entice new businesses to locate in the area.

Marie Howland, "The Business Cycle and Long-Run Regional Growth,"
Interregional Movements and Regional Growth, The Urban Institute, 1979.

Arguments that longer-run secular growth is linked to short-run cyclic activity

1. Capital stock of fast growing regions is likely to be newer and efficient with latest technology

- In a period of downturn, firms would close inefficient plants first
- As economy recovers, older plants reopen
- So amplitude and severity of recession is greater where capital stock is older

2. Business community in faster growing region may be more optimistic than managers in slower growing areas

- Entrepreneurial expectations influence economic activity

3. Declining regions have larger secondary labor market, high unionization, less supportive government attitude

- Declining regions cannot respond to recessions as easily
- More likely to abandon facilities after layoffs