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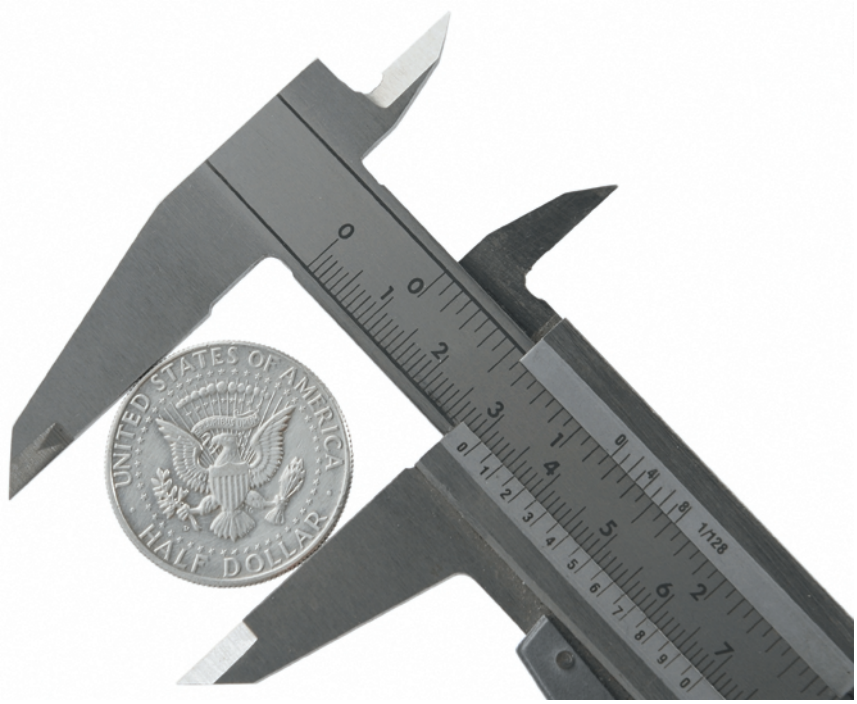
Measuring Up?

The Cost of Doing Business in Massachusetts



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GLOBAL INSIGHT

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Executive Summary

Massachusetts is perceived to be a high-cost state for doing business; indeed, existing literature has largely confirmed this point. This report zeroes in on nine specific industries that are key to the state economy, quantifying their cost differentials with six competitor states. Taking such a detailed look allows us to highlight the costs that matter most in each industry.

This study shows that, on average, Massachusetts firms have costs 20-30% higher than similar companies in Texas, North Carolina, and New Hampshire in nine key industries. As a result, average after-tax profit levels in those states are about twice as high as in Massachusetts. Doing business in nearby Rhode Island is also cheaper in most of these industries, leading to profit levels that are about 25% greater there. In fact, the only states in this study over which the Bay State has a competitive advantage are New Jersey and New York, where costs are typically 5% and 15% higher, respectively.

Among the nine industries analyzed, the Financial Services-Securities sector was more profitable in all competitor states except New York. The Aerospace/Defense, Biotech, Semiconductor Equipment, Software, Medical Devices, and Search & Navigation Instrument sectors had lower costs in four of the six competitor states.

The Commonwealth's main areas of weakness are in wage differentials, commercial rent/land costs, and unemployment insurance (UI). Massachusetts' high UI expenses are partially the result of system loopholes that, if closed, would cut business costs and aid the state's competitiveness.

Massachusetts' one clear cost advantage–workers' compensation–was too small to appreciably affect the overall results. The Bay State's other main advantage is its skilled labor force, which attracts firms to locate here despite the higher costs. In interviews with industry representatives, among the top reasons that firms remain in the Commonwealth are their established histories (inertia) and the skilled workforce. Inertia, however, is only so strong and can be overcome by a non-competitive business atmosphere.

Massachusetts's most significant disadvantage for business growth is high land costs. These costs affect existing and potential firms by pushing up the rental, purchase, or building costs for a facility. They also may damage the local economy by driving away residents because of the lack of affordability. Massachusetts is one of just three states to lose population in 2005, and it has lost a net of 19,000 over the past two years. To the extent that those out-migrating are highly skilled members of the workforce, prohibitive land costs may be costing Massachusetts its most valuable asset.

Our analysis shows that the Bay State is consistently among the least competitive in the nine key industries studied here. While improvements in health premiums, energy costs, and taxes would help, those are all secondary to the major factor: land prices, which affect business costs, standard of living, and affordability. The latter is perhaps the most important, as it is imperative that Massachusetts maintain its main competitive advantage -- a skilled labor force – to offset its higher costs elsewhere. Without a pool of highly educated workers, the state may have difficulties in business retention and development.

I. Introduction

The conventional wisdom among most regional economists, business leaders, and even policy experts is that Massachusetts is a high cost state for businesses. The purpose of this paper is to take a granular look at the issue by considering the specific components of business costs and how they vary across nine key industries in Massachusetts and six neighboring and competitor states.

Previous Studies

Many studies have examined business costs in Massachusetts. In *Made in Massachusetts*, Mass Insight outlined the manufacturing climate in Massachusetts in 1999.[1] Through interviews with manufacturers in more than 30 sectors, Mass Insight concluded that the manufacturing industry was thriving in the Commonwealth, though it had transformed from a traditional manufacturing state to one that increasingly employed high technology using highly educated workers.

Interviewees for that report acknowledged the high cost of local labor but generally cited high productivity as the reason. Those interviewed confirmed that the Massachusetts legislature had made the Bay State more competitive in terms of state taxes, but several non-tax business costs and hurdles were of concern. They included unpredictable future taxes, high electricity costs, inadequate transportation infrastructure, oppressive permitting requirements, a lack of available developable land, and high unemployment insurance costs. Mass Insight also interviewed companies and consultants from outside the Commonwealth who confirmed that Massachusetts was still viewed as a high cost state by outsiders.

In 2003, the Massachusetts Taxpayers Foundation published *Fragile Progress: Reining in Massachusetts' High Business Costs* that examined the state's relative competitiveness in five areas: healthcare, workers' compensation, unemployment insurance, electricity, and taxes.[2] The study found that health premium hikes had slowed somewhat, but remained well above the national average, while the state's electricity prices remained above the national average but were coming into line—the report cited the deregulation of the market as the cause. Unemployment insurance costs were found to be high but improving, and workers' compensation premiums had significantly improved through the 1990s but were at risk of rising due to healthcare costs. Massachusetts' tax burden was found to be higher than and uncompetitive with other states.

In addition, indexes of business costs frequently rank Massachusetts as a high cost state. For example, the Tax Foundation puts the Bay State 27th in its 2006 State Business Tax Climate Index that incorporates all state-specific business taxes.[3] Massachusetts also ranked 47th in the Milken Institute's 2005 Cost of Doing Business Index,[4] and 42nd in

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[1] Mass Insight. 1999. **Made in Massachusetts: Competitive Manufacturing in a High Skill Location**.
[2] Massachusetts Taxpayers Foundation. 2003. **Fragile Progress: Reining in Massachusetts' High Business Costs**.
[3] Curtis S. Dubay and Scott A. Hodge. 2006. State Business Tax Climate Index. Tax Foundation. No. 51. February.
[4] The Milken Institute. 2005. **2005 Cost of Doing Business Index**. August.

the Small Business and Entrepreneurship Council's Small Business Survival Index for 2005.[5]

This paper extends the existing research in two ways. First, it provides an update on business cost factors as they stand in 2006. More importantly, it examines how these business cost factors affect specific industries. By looking at nine industries that are integral to the state's economy and their cost structures, we are able to determine at a more precise level how Massachusetts' costs affect different industries.

Industries

The selection of the key industries for this report was based on the list of traded clusters[6] from the state's Regional Competitive Councils.[7] This was culled to eliminate location-specific industries (e.g., tourism, private higher education), but augmented with major regional or statewide employers. In order to focus on very specific, homogenous sectors, we selected fairly detailed NAICS categories.[8]

Table 1: Nine Key Industries

		Massachusetts 2005		Location
	NAICS	Avg Pay	Employees	Quotient
Plastics Product Mfg	3261	$47,997	14,728	82
Precision Metal Mfg	332	$59,897	35,660	102
Biotech Manufacturing	3254	$100,167	7,771	167
Financial Services – Securities	5231 / 5239	$165,971	46,417	322
Aerospace/Defense	3364	$81,990	11,476	49
Software	5112	$112,148	20,538	278
Information Tech -- Semiconductor Equip. Mfg	334413 / 334419	$76,482	13,220	184
Medical Devices Mfg	3391	$62,619	11,981	170
Search & Navigation Instruments Mfg	334511	$91,541	5,170	432
All 9 Key Sectors		$100,646	166,961	191
State Average, Non-Govt		$50,419	2,757,402	

The nine industries ultimately chosen represent vital sectors for the Massachusetts economy for two main reasons: high pay and, in most cases, a significant concentration of activity. As Table 1 shows, eight of these nine industries have average annual wages

[5] Raymond J. Keating. 2005. **Small Business Survival Index 2005: Ranking the Policy Environment for Entrepreneurship Across the Nation**. Small Business & Entrepreneurship Council. October.

[6] A traded cluster is an industry that, roughly speaking, serves more than just the local community. As such this industry draws dollars into the local economy, generating wealth.

[7] Michael Porter and the Institute for Strategy & Competitiveness at Harvard Business School. 2003. "Massachusetts Regional Competitiveness Councils: Regional Competitiveness Profiles." Presentation for the RCC Meetings, 9/30/2003.

[8] NAICS is the North American Industrial Classification System – the government standard for classifying industries. Each sector has a detailed definition which may differ (or be narrower) from the common understanding of that industry name. For more information and the exact definition of each industry used here, look up the NAICS code in Table 1 at http://www.census.gov/epcd/naics02/naicod02.htm.

well above the state average of $50,419 (in 2005); in six of the sectors, the pay is more than fifty percent higher. The lowest paid sector, Plastics Product Manufacturing, has more than half its operations outside of the high-income greater Boston area; using a county-by-county comparison, the Plastics sector pays about 17% more than the local average wage where it operates. Indeed, these nine sectors' high-wage jobs are a major factor in Massachusetts having the third-highest per capita income in the country, at more than $45,000.

Many of these sectors are also noteworthy because the Commonwealth has developed an above-average concentration in them. The location quotient (LQ) in Table 1 is the ratio of an industry's share of activity (in this case, sales) in Massachusetts to the industry's share of activity in the U.S. An LQ>100 shows sectors in which the state has had success compared with the rest of the country in growing or attracting firms. In six of the sectors—most notably Search and Navigation Instruments, Financial Services, and Software—Massachusetts has a very significant concentration of the industry.

These areas of specialization represent both an opportunity for further growth, as well as a vulnerability, since they are integral to the state economy. While Massachusetts has been successful in these industries, the state's advantage in these sectors has been eroding. In Semiconductor Equipment, the Commonwealth's location quotient has dropped 20 points since 1997, while it has risen in North Carolina and New York. In two sectors, Medical Devices and Software, Massachusetts' LQ has dropped more than any of the comparison states in this study; in other words, the state is losing ground to its competitors in these sectors.

While the state economy is fueled by hundreds of sectors, these nine industries alone employ nearly 167,000 workers, about 6% of non-government employment in the Commonwealth, and one-third of Massachusetts' manufacturing. The sectors also account for 12% of all sales and 12% of total non-government wages paid in the state. The industries are discussed in greater depth in Section III.

Geographies

Six states were chosen to serve as comparison geographies: two neighboring (New Hampshire and Rhode Island), that offer access to the economic drivers in Boston but at a potentially lower cost; two large northeastern (New York and New Jersey), which serve as regional competitors; and two national competitors (North Carolina and Texas), both of which are fast growing, perceived as low-cost states, and have a base of technology and research industries, possibly putting them in position to challenge the Bay State's main areas of strength.

For the purposes of comparison, each sector was assigned a representative metro area, corresponding to where the industry is predominately located within that state. For seven of the Massachusetts industries, the chosen metro area was either the Boston Metropolitan Statistical Area or one of its divisions--Boston-Quincy, Cambridge-Framingham (Middlesex County), or Essex County.[9] Both the Plastics and Precision

[9] Metropolitan Areas and Divisions are defined by the U.S. Office of Management & Budget (OMB). For more information and the exact list of counties included in each metro, see http://www.census.gov/population/www/estimates/metroarea.html.

Metal sectors are more heavily concentrated in the Worcester MSA. The main comparison metro areas used in this study are Manchester, Providence, New York, Nassau-Suffolk, Edison, Raleigh, Charlotte, Houston, and Dallas.

The Representative Firm

We have employed a Representative Firm approach to compare business costs across a variety of geographies and industrial sectors. This method involves the hypothetical creation of a firm in each industry with a specific level of employment, capital use, energy use, and tax structure. Each of these representative firms is then subjected to the area-specific costs. Revenues are held constant across geographies, enabling us to examine how each firm's profitability changes depending on the cost structure in each location. The Representative Firm approach is used here because it most closely mimics the manner in which firms make location decisions.[10] Firms have many considerations when deciding where to operate, but the profitability of their venture will be the primary factor.

Fisher and Peters (1998) outline a representative firm approach designed for evaluating tax incentive programs.[11] They create a hypothetical balance sheet using IRS data for representative firms across locations and examine the resulting tax burden. We have modified the construction of the representative firms using the Benchmark Input-Output Accounts published by the Bureau of Economic Analysis to estimate the labor and energy inputs to their production functions.

This hypothetical company is not intended to specifically represent any existing firm, but instead has the characteristics of a typical firm in the industry. In fact, trying to use information pertaining to a specific company is problematic: not only can such data be difficult to come by, but the idiosyncrasies of a single firm may mean that any results cannot be generalized to the rest of the industry.

The number of employees in each hypothetical firm is taken from the state average in Massachusetts in 2005, unless otherwise noted. To establish total annual sales for each firm, we use each firm's total wage bill (average salary multiplied by the number of employees) and the average share of total output devoted to employee compensation for the industry as shown in the Input-Output Accounts. More details on the construction of the representative firms is included in the Appendix.

The rest of this report looks at these cost differences and their implications. Section II discusses each cost component and how it varies across states. Section III analyzes how these costs differences in aggregate affect business costs in the nine industries. Section IV provides analysis and implications.

[10] The Representative Firm Approach is applicable both to existing firms considering expansion or relocation, and to startup firms which are considering multiple locations according to potential profitability.
[11] Peter S. Fisher & Alan H. Peters. (1998). **Industrial Incentives: Competition Among American States and Cities**. W.E. Upjohn Institute for Employment Research.

II. Business Cost Details

Because the purpose of this report is to compare business costs across states, we are only concerned with those expenses that vary based on location. The ten components examined below capture those costs,[12] and provide the basis for our analysis. Those ten items can be broken into five groups: labor (wages, unemployment insurance, workers' comp), health care, energy, rent/property, and taxes (sales & use, capital stock, corporate, municipal property, and net income).

Wages and Salaries

Compensation of employees is usually one of the largest costs that a firm faces in its production process, although its share of total costs varies considerably by industry. For the industries covered in this analysis, compensation of employees ranged from as low as 10.6% of total output to as high as 42.2%.

Even with detailed government data, it is difficult to tell what job functions are being undertaken in any one location. One state may have a plant full of engineers, while another has lesser-skilled manufacturing workers – as long as they are in the same industry, they are classified in the same sector. As a result, looking at geographical wage differences by industry could be misleading – at least some of the discrepancies will be due to productivity and skill-level differences which are difficult to measure.

Instead of using government-reported wages in each sector and state, we examine the cost of living across geographies, which influences the wages paid by firms. This is because workers are not just concerned with the nominal amount that they are paid in return for their labor, but they also consider the purchasing power of each paycheck, which varies depending on local costs. It is this premium that we use to compare wages across locations, and since it is not (directly) related to workers' output, in doing so we are therefore holding labor productivity constant across states within each industry.

To compare the cost of living in the selected areas, we use data from the ACCRA Cost-of-Living Index.[13] This quarterly publication provides uniform comparisons of the costs of many consumer goods in nearly 300 metropolitan areas. The index includes several categories such as grocery items, housing, utilities, health care, and transportation, and uses a weighting scheme based on government reporting of consumer spending patterns. We use the index to scale up or down the wages used in the base case (a firm located in Massachusetts) to calculate the average pay and annual payrolls for the representative firm in the other geographies.[14]

For example, in the Plastics Industry, the representative MSAs and their respective costs of living are shown in Table 2. Each of the index values shown are relative costs compared with the U.S. average of 100. Thus, living in the Worcester area is 13.3% more

[12] Conversations with industry contacts confirmed that we had measured all significant costs likely to vary appreciably by geography. For a discussion of other costs, see the Appendix Methodology.
[13] For more information on the ACCRA Cost-of-Living Index, see http://www.coli.org. Data shown here is from the first quarter of 2006, and is reprinted with permission.
[14] Average Massachusetts wages are annual 2005 values and are taken from the Quarterly Census of Employment and Wages from the Bureau of Labor Statistics.

costly than the U.S. average, while both Houston, TX (-9.8%) and Charlotte, NC (-8.9%) are less expensive than the U.S. average.

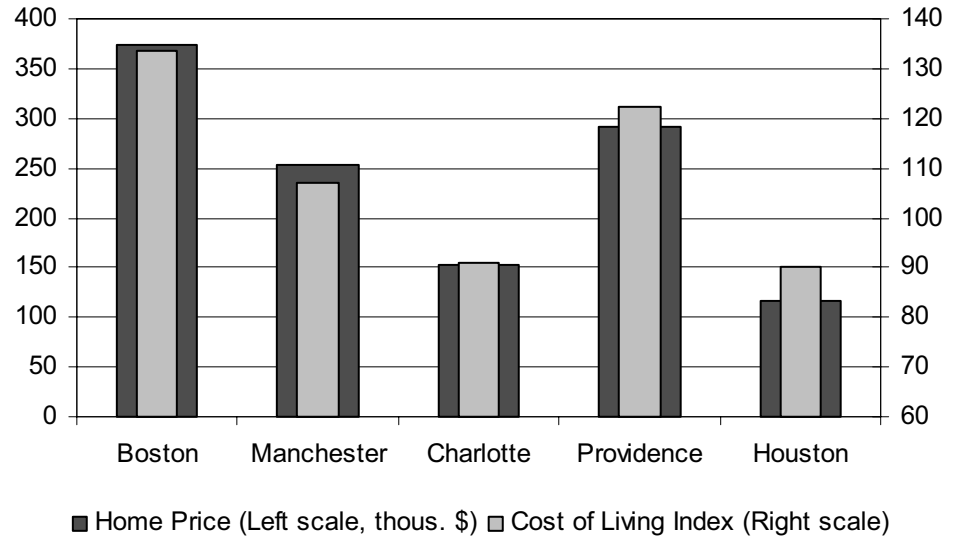
Table 2: Cost-of-Living Index

Table Shows MSAs used for Plastics Mfg.

Worcester, MA	Manchester, NH	NY MSA NJ Portion	NY MSA NY Portion	Charlotte, NC	Providence, RI	Houston, TX
113.3	106.9	136.8	165.8	91.1	122.5	90.2

One of the major determinants of cost-of-living value is the cost of housing in an area. Households devote a large share of their income to housing, so the ACCRA gives a large weight to housing in the calculation of its index. Global Insight's Real Estate service estimates the median value of existing homes in metropolitan areas and was used for the following data. In the first quarter of 2006, the median value of a single family home in the Worcester MSA was an estimated $263,070, about 21% higher than the U.S. median. Not surprisingly, the areas with lower overall cost indexes have significantly lower home values: Manchester ($252,700), Charlotte ($153,500), and Houston ($115,900).

Figure 1: Cost of Living is Closely Related to Home Prices



Cost-of-living adjustments have significant effects on the business costs for each representative firm in the study. The Finance firm has 2,000 employees, so the payroll differences there are the most acute. While the firm pays an average salary of approximately $165,971 in Boston, in Charlotte it realizes labor cost savings of 31.8%, paying an average wage of $113,173 and reducing total payroll by more than $100 million. It achieves similar savings in Texas. Within the Northeast, the firm could also reduce payroll by 14.3% ($47M) in Portsmouth, NH, 8.3% ($27M) in Providence, and 2.4% ($8M) in northern New Jersey. Only in the New York Division of the New York MSA would the firm's labor costs would be higher (24.1%), with a total payroll increase of about $80 million.

In every one of the sectors, the representative firms have an opportunity to save on labor costs by considering locations outside of Massachusetts. In the Semiconductor Equipment sector, the firm would realize savings by moving to any of the other six states in consideration. The Medical Devices and Aerospace firms can save on payroll costs in five of the six competing locations. The Software firm can save in four of the comparison states.

Only in Plastics and Metal manufacturing is Massachusetts competitive. The representative firm can locate in the Worcester MSA and have lower labor costs than in New Jersey, New York, and Rhode Island. Total payrolls in Worcester would be higher than in Manchester, NH, but only by 5.9%. The lower cost of living in the Worcester area makes central Massachusetts relatively more competitive than its peers.

Unemployment Insurance

Unemployment insurance (UI) is available to all workers under federal law, but states have significant control over the amount paid by firms within their borders. In each state, the amount paid by a firm is determined by several state-controlled factors, including the amount of wages paid, the amount of wages subject to the UI tax, and the UI tax rate. The tax rate, in turn, is affected by firm-specific and state-specific factors. Firms are required to pay higher or lower tax rates per employee based on their past experience within the system. Each state calculates an experience rating for each firm and adjusts that firm's tax rate using a pre-determined schedule. If a firm lays off many workers and draws more from its UI account than is deposited, the company will be required to pay higher rates than a firm that "uses" its account more prudently. Additionally, if the state account runs low in aggregate, then all firms see an increase in their UI tax rates.

Although each state assigns a rate to be paid by new firms, we do not use those rates here. For some states the rate assigned to a new firm corresponds with a high account balance, while in others it corresponds with a low account balance. Because the range of possible rates varies considerably by state, the best comparison is the rate that would be charged to a firm with a zero account balance.

Table 3: Unemployment Insurance Wages Bases and Tax Rates

Data as of August 2006

	MA	NH	NJ	NY	NC	RI	TX
UI Tax Rate	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base	*$14,000*	*$8,000*	*$25,800*	*$8,500*	*$17,300*	*$16,000*	*$9,000*
Per Employee	*$767*	*$216*	*$1,109*	*$391*	*$561*	*$768*	*$315*
Compare to MA (%)		*-72%*	*45%*	*-49%*	*-27%*	*0%*	*-59%*

Wage bases and UI tax rates for a zero balance for each state are shown in the first two rows of Table 3. The wage base in Massachusetts is higher than three of the competing states and lower than the other three, while the MA tax rate is higher than all six competing states. Another important measure is the dollar tax per employee, and these are shown in the third line, rounded to the nearest dollar. In this measure, Massachusetts

has a higher tax than four competing states, a nearly identical tax to Rhode Island, and is exceeded only by New Jersey.

Because Massachusetts companies pay higher taxes per employee than four of the comparison states, firms will see increased relative UI tax costs as they add workers. The 2,000-employee Finance firm pays over $1.5 million in UI taxes, but would pay less than one-third of that ($432,000) if it were located in New Hampshire. In New York it would pay half as much ($782,000), and in Texas it would save more than $900,000. The Aerospace/Defense firm, with more than 360 employees, pays $278,000 in annual UI taxes to Massachusetts but would pay far less in the four competitive states with lower rates. The smaller firms obviously pay less in absolute terms, but UI remains a significant cost. The small Plastics firm has less than 50 employees and manages to keep its payroll costs low by locating in the Worcester MSA, but pays $25,000 more in UI taxes than it would in Manchester, $17,000 more than if it were in New York, and $21,000 more than in Houston.

Workers' Compensation

Workers' compensation (WC) is available and generally compulsory in each state, but again, the costs vary widely. The majority of states rely on the private market to provide insurance, but there are exceptions. Fourteen states, including New York and Texas, have public agencies that compete with private insurers. Massachusetts, New Hampshire, Rhode Island, and New Jersey do not have a state run WC fund. The private market provides all insurance in those states.

Rates paid by firms vary by geography, mostly due to differing legal frameworks. Some states legislate exact dollar amounts for specific types of injury. To the extent that one state requires higher or lower payments than another, the rates charged by the insurance company vary as well. States also have varying judicial histories that affect rates. A state that allows injured workers to sue companies for increased compensation is more likely to have higher rates. The cost of health care for an injured worker can also affect rates. The rates are applied to the wages for each representative firm.

Table 4: Workers' Compensation Rate Indexes[15]

MA	NH	NJ	NY	NC	RI	TX
1.70%	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*

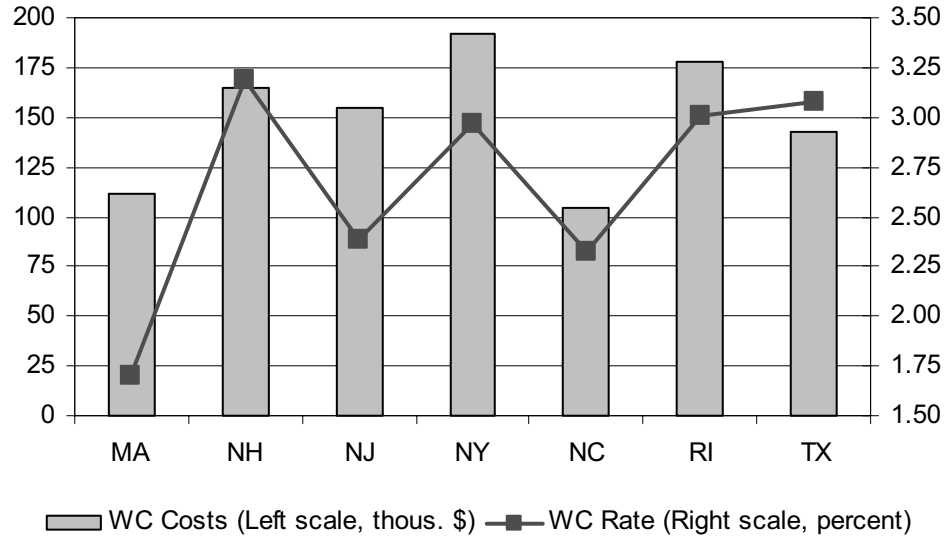
The representative firms face significantly lower WC costs in Massachusetts than in other states. Despite having generally higher wages in most sectors, the lower average rates in the state give it a competitive advantage in this business cost. The InfoTech/Semiconductor firm pays about $112,000 annually for WC coverage, but would pay nearly 50% more, $165,000, in Manchester, NH. The largest advantage for Massachusetts is over New York, where the annual cost would be $192,000.

[15] Workers' compensation premium index values are taken from the 2004 Oregon Workers' Compensation Premium Rate Ranking Summary, published by the Oregon Department of Consumer and Business Services.

Although the lower rates in Massachusetts give it a competitive advantage over five of the six competitor states, WC costs are lower in North Carolina for seven of our representative firms: Biotech, Finance, Aerospace & Defense, Software, Semiconductor Equipment, Medical Devices, and Instruments. This is because of the dramatically lower wages in North Carolina. Despite having one of the lowest WC index values in the nation, Massachusetts can still be less competitive in this category when other states have much lower wages.

Figure 2: Mass. Has the Lowest WC Rate, But Not Always the Lowest Costs

Costs Shown Pertain to the Semiconductor Equipment Industry



The Massachusetts legislature undertook massive WC reforms in 1991, at a time when many states were acting similarly. The legislation in Massachusetts focused on creating incentives for the injured employee to return to work and for eliminating payments for those perceived to be taking advantage of the system. Included in the reforms was the provision of impartial medical professionals to eliminate the practice of multiple doctors disagreeing over the severity of an injury. The reforms also decreased the benefits received from an injury and reduced the duration of those benefits.

These reforms had a dramatic effect on business costs; from 1993 to 2000 the average premium was reduced by more than 50%. Although other states have also reformed their programs, Massachusetts was able to improve its relative standing in the country. In 1989, WC costs per $100 of payroll were 51% higher than the national average. By 2002 that had fallen to 20% below the national average.[16] The improved ranking reflected in the rates in Table 4 gives Massachusetts a competitive advantage in this area.

[16] Massachusetts Taxpayers Foundation. 2003. **Fragile Progress: Reining in Massachusetts' High Business Costs**.

Health Care

Health care is a significant cost for many companies, and has become increasingly important in recent years. Health care costs vary widely by state, and are primarily a function of the respective state's health care system. Higher-cost medical facilities will, on average, result in higher health care premiums for a state, all other things being equal. Although firms are not required by law to offer health care, most do in order to remain competitive in the labor market.

We use data from the 2004 Medical Expenditure Panel Survey (MEPS) conducted by the U.S. Department of Health and Human Services to estimate average health care premiums for each representative firm.[17] For each firm, we calculate a weighted average of single-person and family premiums and assume that 80% of employees enroll in the plan.[18] We include the entire premium as a cost of doing business.[19]

As shown in Table 5a, health care premiums for manufacturing firms are lower, on average, in Massachusetts than in four competitor states. The seven representative firms engaged in manufacturing could expect to see cost savings on healthcare by locating in Massachusetts instead of New Hampshire, New Jersey, Rhode Island, and Texas. There are lower healthcare costs to be found in both New York and North Carolina, where premiums would be 4.6% and 6.4% lower, respectively.

Table 5a: Health Care Premiums Per Manufacturing Employee

80% of employees enrolled in plan

	MA	NH	NJ	NY	NC	RI	TX
Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Compared to MA		*10.9%*	*28.9%*	*-4.6%*	*-6.4%*	*7.3%*	*3.2%*
Growth Since 2000	*32.9%*	*51.4%*	*51.9%*	*35.7%*	*30.5%*		*43.7%*

This data contrasts with a common perception that Massachusetts' health-care costs are the highest in the country as a result of the concentration of high-cost research hospitals in the Boston area. Indeed, the Commonwealth's costs have traditionally been high, but other states have caught up in recent years. In 2000, Massachusetts was the second most expensive state behind only New Jersey. Since then, however, premiums for manufacturing employees have risen at faster rates in each competitor state except for North Carolina.[20]

Massachusetts has less competitive healthcare premiums for the Finance and Software representative firms, as shown in Table 5b. The average premium for those sectors is

[17] The MEPS data includes premium data by sector. For each state, data is provided for Mining & Manufacturing sectors. The Financial Services and Software sectors are contained in an aggregated average denoted "All Other".

[18] The weight is 45% for the single-person premium and 55% for the family premium. This is based on a MEPS estimate of the national distribution. The 80% enrollment estimate is based on national enrollment averages in the survey.

[19] Although most firms require employees to pay a share of the premium, the firm often must take that share into account when determining wages. For instance, a firm that pays a lower share of the health insurance premium may need to compensate the employee with higher pay. Also, this assumption does not significantly affect our results for the relative costs across states.

[20] There is no data available for Rhode Island from 2000.

lower than in New Hampshire and New York, and the advantage over the latter is only 0.7%, or just over $50 per enrolled employee. Of the four states that have lower average rates than Massachusetts, North Carolina has the largest advantage; the representative firms could save 9.1% on healthcare premiums.

Table 5b: Health Care Premiums Per Finance/Software Employee

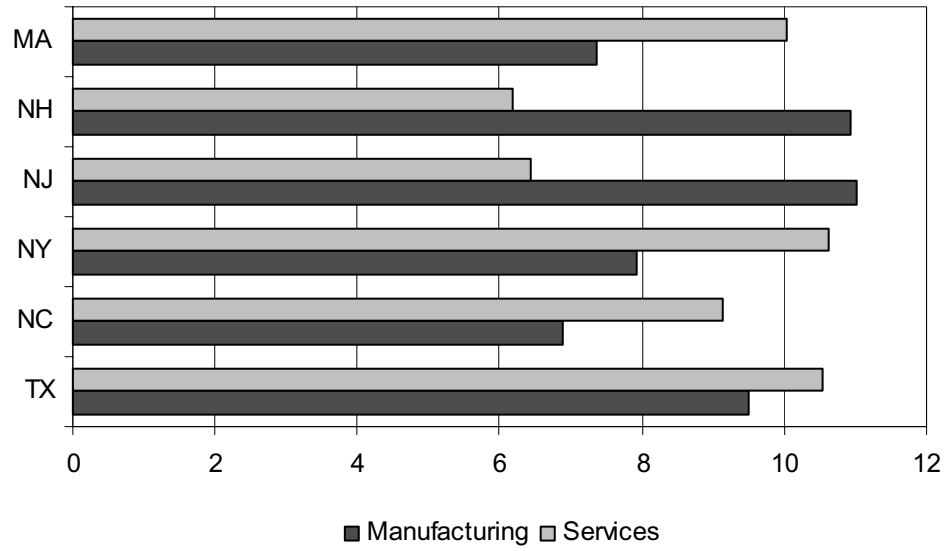
80% of employees enrolled in plan

	MA	NH	NJ	NY	NC	RI	TX
Premium	*$7,710*	*$8,363*	*$7,328*	*$7,766*	*$7,010*	*$7,309*	*$7,266*
Compared to MA		*8.5%*	*-5.0%*	*0.7%*	*-9.1%*	*-5.2%*	*-5.8%*
Growth Since 2000	*46.6%*	*27.1%*	*28.4%*	*49.7%*	*41.8%*		*49.3%*

Premiums for the Finance and Software firms have risen 46.6% in Massachusetts since 2000. That rate is exceeded only by New York and Texas among the competitor states. In 2000 Massachusetts had lower average costs than New Jersey, but because New Jersey's average premium rose significantly less (28.4%) over that period, it now has a 5% cost advantage over the Bay State.

Figure 3: Health Care Premiums Have Soared Since 2000

Average Annual Increase (Percent), 2000-2004



Although Massachusetts has a slight cost advantage for manufacturing firms, it is clear that health care premiums have grown at a rapid rate and are a concern for businesses regardless of location. Although slower than price increases in competing states, the 32.9% premium growth for Massachusetts manufacturers amounts to average annual increases of 7.4%, which far exceeds wage growth and inflation for other goods and services. Each of the company representatives contacted for this report cited health care costs as a major concern for business going forward. Among the seven states considered here, Massachusetts had the third highest growth in Finance and Software health premiums, averaging 10% a year, only slightly below the 10.6% in New York and 10.5%

in Texas. Continued growth at that rate is a concern due to the high cost both in absolute terms and relative to competitor states.

Energy Costs

Energy costs are a significant cost item for many firms, especially those engaged in a manufacturing process that requires high energy inputs. Both electricity and natural gas prices vary greatly by state for a variety of reasons. Each is influenced by the existing infrastructure and market structure, and electricity prices are also shaped by the fuels used in power generation.

Because of its form, the transportation of natural gas is challenging. Most of the gas transported in the United States is moved through pipelines, and the farther it must travel the more expensive it gets. The Northeastern United States has virtually no local production, so all of its gas is imported, and the transportation cost drives up the ultimate price paid by the user. Texas produces a large percentage of the country's total output, so it is not surprising that prices there are lower.

Electricity prices are affected by a multitude of factors including fuel mix and the structure of the market. In general, natural gas and oil are more expensive fuels for electricity generation. New England uses a relatively high share of natural gas in electricity production when compared with the Middle Atlantic (which includes New Jersey and New York) and the South Atlantic (North Carolina) regions. Texas does use a similar share of natural gas as New England, but at a much lower cost. The relative share of oil used in electricity production in New England is the highest in the continental United States.

Market structure has great potential to affect electricity prices. Massachusetts recently completed its transition to a deregulated market in which large commercial and industrial users can purchase long-term contracts from power companies instead of purchasing on the spot market. Although the overall effect on electricity prices is unclear, the deregulated market has affected Massachusetts businesses in at least two ways. First, prices have generally become more subject to market fluctuations and are more volatile than when prices were regulated. Second, as a result of such market fluctuations, large commercial and industrial users have the incentive to develop energy portfolios in an effort to minimize their costs. Some large users have taken the step of developing their own electricity generation systems to remove themselves from the market altogether.

We used the Input-Output Account data from the BEA to determine the electricity and natural gas energy bill for the base case representative firm in Massachusetts. We then used relative energy prices across states from Global Insight's proprietary databases derived from Energy Information Administration data for 2005. Prices for electricity and natural gas vary by user, with residential, commercial, and industrial users paying different rates. We used industrial prices for the manufacturing sectors in consideration,

and commercial prices for non-manufacturing sectors. Table 6 shows each state's relative price for both goods in each sector compared with the U.S. average.[21]

Seven of the nine representative firms are manufacturing industries and use the Industrial rates. As seen in Table 6, average industrial electricity costs in Massachusetts are 59% above the national average. Still, three of the comparison states – New Hampshire, New Jersey, and Rhode Island – have industrial electricity prices that are even higher, while the other three are lower. The most electric-intensive representative firm is in Plastics, which uses 1.7% of its annual sales to pay the electric bill. By locating in Massachusetts that firm saves over $50,000 compared with its potential bill in New Hampshire, and saves about $20,000 when compared with New Jersey and Rhode Island. In states outside the region, though, Massachusetts is less competitive. The largest cost savings can be found in North Carolina, where rates are 8% below the U.S. average. The Plastics firm could save $69,000 in electricity costs alone by locating there instead of Massachusetts.

Table 6: Relative Energy Costs

U.S. Average = 1.00

	MA	NH	NJ	NY	NC	RI	TX
Industrial Electricity	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Industrial Natural Gas	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Comm. Electricity	*1.48*	*1.40*	*1.28*	*1.52*	*0.81*	*1.35*	*1.02*
Comm. Natural Gas	*1.20*	*1.20*	*1.11*	*1.13*	*1.10*	*1.24*	*0.91*

Two representative firms – Finance and Software – are assumed to pay commercial electricity rates which, in Massachusetts, are 48% above the national average. Only New York has higher commercial rates, and they are only slightly higher than Massachusetts, at 52% above average. This greatly affects the business costs of the Finance firm, whose annual electric bill would be reduced by $2.8 million if it were located in North Carolina, or $1.9 million in Texas.

Massachusetts has an even more significant disadvantage in industrial natural gas prices. At 62% above the U.S. average, the state's gas prices are higher than each of the competing states. Texas is the only state with prices below the national average, owing mostly to its proximity to production and importation of the product. The Instruments firm incurs high costs in Massachusetts compared with in other states. It would save more than $100,000 a year on natural gas by locating in Texas or $55,000 in North Carolina, and approximately $40,000 in either New York or New Jersey.

[21] The reader may notice that most of the values presented are above the national average. Most low-cost electricity states (concentrated in the Northwest and Southeast) and low-cost natural gas states (concentrated in the South and Southwest) are not included in this study.

Property Costs: Rent and Municipal Property Taxes

Commercial/Industrial Rent

Each of the representative firms in the study is assumed to rent the property used in production. It is possible that any or all of the firms would choose to purchase an existing property or construct their own facilities instead of renting, however, the purchase of property carries with it an implied rental cost, or the opportunity cost of purchasing. Rental prices are also appealing for this type of analysis because they capture several differences between the geographies in consideration, including the differences in land values, relative cost of similar new construction, and local permitting costs. Rental rates do not include municipal property taxes, however. We calculate those separately using estimates of effective tax rates for commercial and industrial property in the relevant metropolitan area.[22]

As can be seen in Table 7, rental costs vary greatly by location.[23] The industrial rents used in the table are for the representative Biotech firm. Massachusetts has a competitive advantage over New York, but is at a significant disadvantage when compared with the other five areas. The most significant difference is in Texas, where average industrial rents are less than half of the cost in Massachusetts. With a 50,000-square-foot production facility, the representative Biotech firm could save approximately $2.5 million in annual rent in Texas compared with Massachusetts.

Table 7: Rental Costs

Costs (per sq. ft per year) pertain to the Biotech (Industrial) and Finance (Office) Sectors

	MA	NH	NJ	NY	NC	RI	TX
Industrial	*$7.76*	*$5.35*	*$5.52*	*$9.09*	*$6.08*	*$6.42*	*$3.57*
Compare to MA (%)		*-31%*	*-29%*	*17%*	*-22%*	*-17%*	*-54%*
Office	*$39.99*	*$11.20*	*$29.00*	*$36.74*	*$22.55*	*$15.00*	*$18.05*
Compare to MA (%)		*-72%*	*-27%*	*-8%*	*-44%*	*-62%*	*-55%*

Office space comes at a significantly higher cost than industrial space, and rents vary considerably as well. The office rents shown in Table 7 are for the representative Finance firm. The data show that Massachusetts is at a competitive disadvantage to all other states in the analysis. At $40 per square foot, office rental costs in downtown Boston exceed those in the New York MSA[24] by 8%. The most extreme difference is the comparison with the Rockingham Division in New Hampshire, where rents are more than 70% lower than in Boston. For the large Finance firm that is expected to need 300,000 square feet, the cost savings in competing locations are significant. It would save more than $8.5 million on rental costs in New Hampshire, nearly $7.5 million in Rhode Island, and $6.5 million in Texas.

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[22] **50-State Property Tax Comparison Study: Payable Year 2005**. Minnesota Taxpayers Association and National Taxpayers Conference. April 2006.

[23] Data is from CB Richard Ellis's local market reports for the most recent period available (usually the second quarter of 2006) for all areas except Providence, where the 2005 Rodman Report was used.

[24] For Financial-Securities firms, we use downtown Manhattan office rents.

Municipal Property Taxes

Municipal taxes were calculated using tax rate estimates from the Minnesota Taxpayers Association's (MTA) annual Property Tax Study. The MTA gathers tax rates from municipalities in all 50 states and computes Effective Tax Rates (ETRs) for 123 urban areas. Pure tax rates in this business cost are not directly comparable because of the idiosyncratic nature of assessment criteria, classification differences for commercial/industrial, and available property tax credits. The MTA corrects for these distortions and computes ETRs that are comparable for residential, commercial, and industrial properties. A summary of ETRs used for the representative firms are presented in Table 7b.

Table 7b: Municipal Property Taxes

Costs pertain to the Biotech (Industrial) and Finance (Office) Sectors

	MA	NH	NJ	NY	NC	RI	TX
Industrial	1.634%	0.550%	0.946%	2.321%	0.841%	2.036%	3.066%
Compare to MA		*-66%*	*-42%*	*42%*	*-49%*	*25%*	*88%*
Commercial	2.968%	0.917%	1.951%	3.868%	1.136%	3.807%	2.826%
Compare to MA		*-69%*	*-34%*	*30%*	*-62%*	*28%*	*-5%*

The representative firm in the Biotech sector faces a municipal tax rate in Massachusetts that is higher than three competitor locations and lower than the other three. The lowest ETR is in New Hampshire while the highest is in Texas. The Finance firm faces an ETR in Massachusetts higher than in four competing locations. It would face higher taxes in New York and in Rhode Island.

Sales & Use Tax

Sales taxes are generally levied on retail items at the point of sale to the final user. There is no national sales tax, so all business costs in this area are under the control of state and local governments. The Massachusetts state constitution authorizes the state to impose such a tax and requires that the tax be applied uniformly. This means that local governments are unable to impose additional sales taxes.[25] In other states, such as New York, there is a state sales tax and municipalities are also able to levy their own tax.

In this analysis we have used the current sales tax rates for each state. New Hampshire is the only state considered here that does not levy a sales tax. For states that additionally levy municipal sales taxes, we use the rates corresponding with the relevant metropolitan area of comparison. In each industry, an estimate was made for the base of the sales tax using the Input-Output Accounts and IRS Corporation Source Book. The tax is applied only to final retail goods, so raw materials that are inputs in a manufacturing process are excluded for each industry.

With the exception of New Hampshire, Massachusetts has a competitive advantage over the other states in the analysis. Sales & Use tax payments for each representative firm

[25] There are some exceptions for various fuels and lodging costs, but they are not applicable here.

would be nearly 68% higher if it were located in New York. This cost of doing business is 40% higher for each firm if it located in New Jersey, North Carolina, or Rhode Island. In Texas, the S&U tax bills are 25% higher. The savings are substantial for each sector. The Medical Devices firm pays $191,000 to Massachusetts, about $130,000 less than it would in New York, and reaps more than $75,000 in savings over New Jersey, North Carolina, and Rhode Island. In New Hampshire, though, the firm would not pay the tax for any retail goods purchased within state.

Table 8: Sales Tax Rates

Data as of August 2006; Local Tax Rate included where applicable.

MA	NH	NJ	NY	NC	RI	TX
5.00%	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*

We recognize that it is possible for firms to pay a higher sales tax on their retail goods if they choose to purchase them in a state that has a higher tax rate. It is not possible, though, for them to pay a lower rate due to the "Use" portion of the tax. The "Use" tax means that local firms must pay at least the local tax rate for all items subject to the tax. For example, consider a firm in Texas that makes a purchase from a Massachusetts retailer and paid only 5% sales tax to the Massachusetts state government. The "Use" portion of a Sales & Use tax dictates that the Texas company must pay at least 6.25% on the good, so the firm is compelled to send the balance of the tax (6.25% in TX minus 5.00% in MA = 1.25%) to the Texas state government. If a Massachusetts firm purchased goods from a Texas retailer, they would simply pay 6.25% to Texas. Each state employs the Use tax in this way so the rates above represent the minimum sales tax that a firm in each state would pay.

Net Worth Taxes

Approximately half of the states in the U.S. impose a tax on some measure of the overall wealth of a firm. It can have several different names depending on the state including Personal Property Tax, Net Worth Tax, or Capital Stock tax.[26] We apply the rates to estimates of firm value derived from the Corporation Source Book data from the IRS. The rates are presented in Table 9.

Of the states considered here, Massachusetts and three others – North Carolina, Rhode Island, and Texas – impose such a tax. Rhode Island and Texas only charge the higher of either the Property/Net Worth Tax or the Corporate Income Tax. In our analysis, each representative firm would be charged the Corporate Income Tax, so the Capital Stock Tax rates do not enter into the calculations for those states. This leaves Massachusetts and North Carolina as the only states in the analysis to charge a capital stock tax, with Massachusetts charging a higher rate.

[26] Massachusetts corporations are given one of two designations: tangible property or intangible property. Tangible property corporations are taxed on the value of their property while intangible property corporations are taxed on their net worth.

Table 9: Net Worth/Personal Property Tax Rates

Data as of August 2006

MA	NH	NJ	NY	NC	RI	TX
0.26%	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*

Massachusetts' tax on capital stocks has a relatively larger impact on firms that have high net worth relative to their annual sales. Both the large Finance firm and the small Software firm, for example, are valued higher than 140% of their annual sales. Applying Massachusetts' tax rate to the Finance firm translates to $2.9 million in taxes in that state. That figure would be reduced to $1.7 million in North Carolina, and zero for all other states in consideration. The small Software firm pays $29,000 in capital stock taxes to Massachusetts. It would pay $17,000 to North Carolina and zero elsewhere.

Corporate Taxes

State corporate income taxes are policy variables that each state has control over. All U.S. corporations must pay the federal income tax, and most states levy their own tax as well.[27] Each of the states considered for this analysis imposes a corporate income tax, though their rates vary. New Hampshire's and New Jersey's tax systems feature progressive tax brackets for different levels of income, but each of our representative firms has high enough net income in those states to pay the maximum rate. The other four states impose a single rate for all income levels. We applied the local state tax to net income to calculate tax payments. In a few cases in this analysis, a higher cost state yields negative net income, so no corporate income tax is levied.

Of the states considered, Massachusetts levies the highest corporate income tax rate, at 9.5%. The nearby states of New Hampshire, New Jersey, and Rhode Island are also relatively high, as can be seen in Table 10, while New York's is lower. North Carolina and Texas tax corporate income at considerably lower rates.

Table 10: Corporate Income Tax Rates

Data as of August 2006

MA	NH	NJ	NY	NC	RI	TX
9.50%	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*

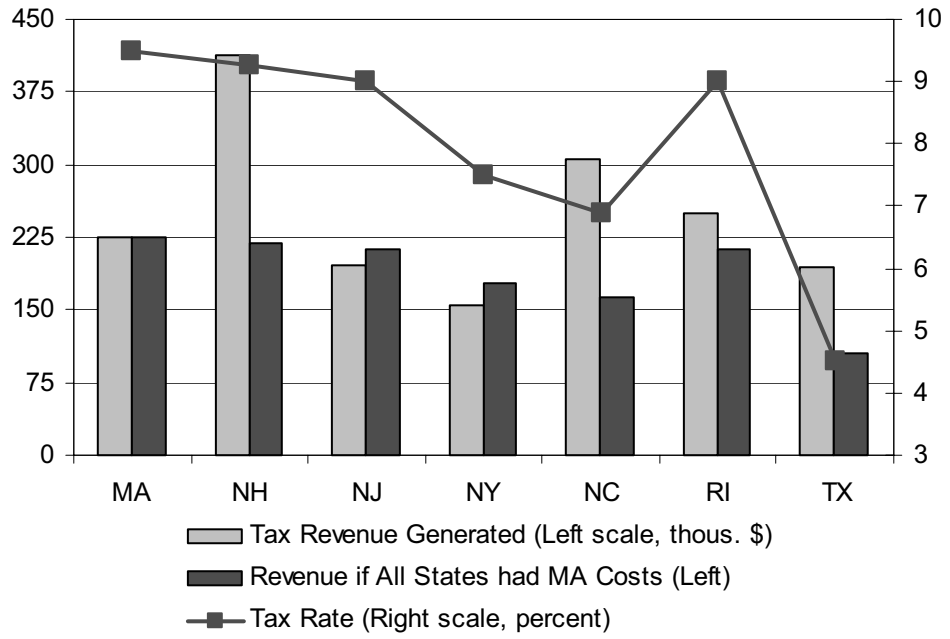
Estimated corporate tax payments vary across states for each of the representative firms. Some of the difference is derived from the variation in tax rates seen in Table 10, but the chief source of variation is the taxable base: pre-tax net income. Although Massachusetts has a higher corporate tax rate than each of the competing states, it does not have the highest tax revenue in any of the nine industries. This is because the firms in this study all have lower net incomes (and thus less taxable base) in Massachusetts, sufficient to offset the higher tax rate.

[27] Our analysis excludes a calculation of the Federal Income Tax and its effects on profits. In most of the sectors considered, the representative firm would fall into at least two different tax brackets of the federal schedule. Computing the tax would only obscure the state-specific results.

In order to illustrate the effects of differing costs between states, we show two tax revenues for each state in Figure 4. The "Tax Revenue Generated" is the state income-tax revenues generated from the Semiconductor firm in each state. The second bar (in black) shows the tax revenues that would be generated if the firm faced Masschusetts' costs in each state, and the only difference was the corporate income tax rate. As is evident in Figure 4, a great deal of the variation in state tax revenues comes from the difference in business costs. In New Hampshire, for example, the state would receive slightly less revenue from a Semiconductor firm with costs identical to Massachusetts because its tax rate is 9.25% whereas the rate in Massachusetts is 9.5%. But the lower business costs in New Hampshire lead to significantly higher taxable income for the representative firm there, and the resulting tax revenues are 85% higher than in Massachusetts. Furthermore, North Carolina taxes corporate income at a much lower rate (6.9%) but receives higher revenues from this firm due to the lower business costs.[28]

Figure 4: Despite Higher Tax Rates in MA, Higher Costs Mean Tax Revenues Are Lower

Costs Shown Pertain to Semiconductor Equipment Industry



[28] It should be clear that the lower tax rate in some states does not by itself generate higher tax revenues as in a Laffer Curve-style argument. The higher revenues in North Carolina are due to the higher taxable net income as a result of lower overall business costs. Put simply, cheaper costs in North Carolina lead to a more profitable firm and therefore a higher base for corporate taxes.

State Tax Apportionment and the Single Sales Factor

Although not modeled in this analysis, a state's system of income apportionment has the potential to affect a firm's decision of location. Under the Uniform Division of Income for Tax Purposes Act (UDITPA) started in the 1950s, each state used an apportionment formula that gave equal weights to property, employment, and sales when determining where firms should pay their taxes. In recent decades, states have begun to compete for firms by altering their apportionment formula. A state that gives lower weights to the property and employment weights in the formula effectively reduces corporate income taxes for local firms and gives higher incentives for new firms to locate there. One option is giving a zero weight to property and employment and hence a 100% weight to the location of the firm's sales. This is known as the "single sales factor".

Massachusetts uses the single sales factor for all manufacturing companies, defense contractors, and for financial firms that meet specific employment growth criteria. Proponents argue that it has slowed the loss of manufacturing jobs in the state. Of the representative firms considered in this analysis, all but the Software firm would be affected by the Massachusetts single sales factor apportionment. Some Software companies are considered manufacturing firms and would qualify, but not those in the NAICS code analyzed here. Among the competitor states, only Texas uses the single sales factor. Rhode Island continues to use the equally weighted formula from UDITPA, while the remainder of states use a 50% weight for sales and 25% weights for property and employment.

Profits/After-tax Net Income

The after-tax net income is derived from our estimates above and is the chief concern for each of the representative firms in their location decision. Within each sector, a firm's annual sales do not change as a result of location choice, and some of the total costs faced by a business are also assumed to be constant regardless of location choice. These costs include but are not limited to the cost of raw materials. These costs are subtracted from total sales for each representative firm in each location.

Next we subtract the sum of costs that vary by location choice to obtain Net Income. After deriving pre-tax net income, we applied the local corporate income tax rate and subtracted those tax payments to obtain after-tax net income for each representative firm in each state. Variations in after-tax net income, then, are entirely a result of the geography-dependent business costs discussed in detail above. This comparison of relative profitability between geographies would be used by each representative firm in their choice of location.

Because the calculation of after-tax net income incorporates all of the business costs discussed above, it is a good indicator of Massachusetts' overall competitiveness in each of the sectors examined. Results are covered in Section III.

Non-Varying and Unquantifiable Costs and Benefits

Costs

All business costs not covered in this study are assumed to be uniform across geographies ("Costs Not Varying by Location" in Tables 11-19 and Appendix Tables 1-9) for the representative firm. The most significant item not covered is the cost of raw materials. Although raw materials are a major cost for all firms, especially those engaged in manufacturing, we assume that these goods are purchased on an open, global market and thus do not vary by location. The only cost difference that may exist related to raw materials would be due to transportation. However, interviews with companies in the relevant industries revealed that these shipping costs do not significantly affect the firms' profitability so they are not considered here.

The report also excludes business costs that are miniscule or not quantifiable. Potable water is sometimes mentioned in cost studies, but our analysis found it too small to affect the bottom line for any of the industries here (a result confirmed by industry interviews).

Additionally, we omit issues related to nuisance factors – which come in many forms -- because it is difficult, if not impossible, to put a dollar amount on these items.

Several of our firm contacts noted the slow and cumbersome permitting process in Massachusetts that often has an uncertain timeline for resolution. Uncertainty creates problems for business planning, and it also is a concern with the state's tax policy. Beyond the issue of tax rates themselves, predictable and stable taxes are also important for businesses. Yearly proposals in the state to alter the tax code or close loopholes add instability to firms' attempts to project and manage their costs.

Massachusetts' infrastructure was another factor cited in our interviews. The old power and water systems in greater Boston can be costly and difficult to update. As a result some firms have taken to filling these responsibilities on their own. Additionally, traffic congestion – both in general and around Logan airport – can slow workers and deliveries, cutting into productivity.

Lastly, some respondents noted that other states are more aggressive in getting and maintaining their business than Massachusetts is. Our respondents are not exactly unbiased sources, but they commented that accessibility of local politicians was easier elsewhere.

We acknowledge that these all can be non-trivial business costs, but they are more appropriate handled by a qualitative report, not a quantitative one such as this.

Benefits

We also recognize that Massachusetts has many advantages that are not covered in the analysis, and these may be related to business costs. Taxes support local schools and arts/culture that have made the state attractive. High UI benefits have a social welfare value. Also, there may be a benefit for some types of firms (Software and Finance, for

example) to locating in larger business centers such as Boston.[29] To take these unquantifiable considerations into account one could consider the Representative Firm not just choosing the location with the highest net income, but instead asking if the more abstract benefits of locating in a more desirable location outweigh the cost of having lower profitability. It is certainly the case that if Massachusetts is able to reduce any of the above business costs relative to other states, then the likelihood of attracting and retaining firms is increased.

[29] It is also worth noting the importance of proximity may have diminished over the past decade with the advent of the Internet and other technological advances that facilitate long-distance business relationships.

III. Cost Comparisons Across Industries

While the Section II discussion compared cost-by-cost, this section takes a different cut at the same data by looking industry-by-industry. This quantifies just how competitive (or not) Massachusetts is in each of these nine key sectors.

Plastics Products Manufacturing

Plastics manufacturers (NAICS 3261[30]), as the name indicates, make plastics products. In Massachusetts, they are typically small companies, and as a result we have defined the representative firm as having 46 employees and $9.65 million in annual sales, with a location in the Worcester metro area. Some better known (though larger) examples[31] include Nypro, Georgia-Pacific, and TRW Fasteners.

Table 11: Plastics Product Manufacturing Costs

NAICS: 3261 Employees: 46 Annual Sales: $9,650,000 Sq. Footage: 20,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	2,208,000	2,083,000	2,667,000	3,233,000	1,776,000	2,388,000	1,758,000
Unemp. Ins.	35,000	10,000	51,000	18,000	26,000	35,000	14,000
Workers' Comp.	38,000	66,000	63,000	96,000	41,000	52,000	54,000
Employee Health Premiums	201,000	223,000	259,000	191,000	188,000	215,000	207,000
Other Costs							
Annual Rent	132,000	119,000	125,000	197,000	87,000	128,000	71,000
Electricity	164,000	215,000	183,000	141,000	95,000	186,000	132,000
Natural Gas	19,000	17,000	16,000	16,000	15,000	16,000	11,000
Sales & Use Taxes	193,000	0	270,000	323,000	270,000	270,000	241,000
Property/Net Worth Tax	8,000	0	0	0	5,000	0	0
Municipal Property Tax	17,000	15,000	20,000	43,000	17,000	37,000	56,000
Costs Varying by Location	3,015,000	2,748,000	3,654,000	4,258,000	2,520,000	3,327,000	2,544,000
Compared to MA		*-8.9%*	*21.2%*	*41.2%*	*-16.4%*	*10.3%*	*-15.6%*
Costs Not Varying by Location	6,105,000	6,105,000	6,105,000	6,105,000	6,105,000	6,105,000	6,105,000
Total Costs	9,120,000	8,853,000	9,759,000	10,363,000	8,625,000	9,432,000	8,649,000
Net Income (Sales minus Costs)	530,000	797,000	-109,000	-713,000	1,025,000	218,000	1,001,000
State Corporate Taxes	50,000	74,000	0	0	71,000	20,000	45,000
Profit After State Tax	480,000	723,000	-109,000	-713,000	954,000	198,000	956,000
As a % of Sales	*5.0%*	*7.5%*	*-1.1%*	*-7.4%*	*9.9%*	*2.1%*	*9.9%*
Compared to MA		*50.6%*			*98.8%*	*-58.8%*	*99.2%*

Using the cost measures outlined in section II, the representative firm's costs are shown in Table 11 as well as in the more detailed Appendix Table 1. Since our representative firm is located in the Worcester MSA, its wage/cost of living is lower than it would be in

[30] For a detailed description of each NAICS sector, see http://www.census.gov/epcd/naics02/naicod02.htm.
[31] Companies that are cited are merely used as examples for that industry, and their NAICS classification is based on the most current information available. A NAICS code is by assigned by the government based on the predominant business activity for that location, and that code may be distinct from other plant/office locations within the same company. The data and representative-firm descriptions in this report pertain only to the industry in aggregate and not to any specific firm.

Boston and thus more competitive, but it still trails Texas, North Carolina, and New Hampshire.

Healthcare premiums comprise a larger percentage of costs[32] for Plastics than the other eight sectors, and the Massachusetts firm does fairly well: costs are $58,000 lower than in New Jersey, and costs are lower than New Hampshire, Rhode Island, and Texas as well. Nonetheless, the state still trails New York and North Carolina, and the difference with the latter ultimately shaves more than 2% off the bottom line for the Bay State producer.

Overall, our estimates show that the representative plastics firm in Massachusetts has profit after state taxes of $480,000. This places it in the middle of the states – a similar establishment in New Hampshire has profit 51% higher, while in Texas and North Carolina it is nearly twice as high, thanks to significantly cheaper labor, electricity, and rent. Conversely, higher expenses, particularly in labor, workers' compensation, and taxes, in New York, New Jersey, and Rhode Island make those states less competitive than Massachusetts.

[32] The costs referred to here are actual costs that vary by location, the focus of this report.

Precision Metal Manufacturing

Precision Metal Manufacturing (NAICS 332) involves forging or stamping metal pieces or welding/assembling parts. Most plants are very small, and thus our representative firm has 21 employees with $4.3 million in sales and a Worcester MSA location. Some sample firms in the industry (though, again, larger than the sector average) include Watts Water, Smith & Wesson, Wyman Gordon, and LS Starrett.

Table 12: Precision Metal Manufacturing Costs

NAICS: 332 Employees: 21 Annual Sales: $4,325,000 Sq. Footage: 10,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	1,258,000	1,187,000	1,493,000	1,484,000	1,012,000	1,360,000	1,002,000
Unemp. Ins.	16,000	5,000	22,000	8,000	11,000	16,000	7,000
Workers' Comp.	21,000	38,000	36,000	44,000	23,000	41,000	31,000
Employee Health Premiums	92,000	102,000	118,000	87,000	86,000	98,000	95,000
Other Costs							
Annual Rent	66,000	60,000	55,000	91,000	43,000	64,000	36,000
Electricity	43,000	57,000	49,000	37,000	25,000	49,000	35,000
Natural Gas	17,000	15,000	14,000	14,000	13,000	15,000	10,000
Sales & Use Taxes	91,000	0	128,000	153,000	128,000	128,000	114,000
Property/Net Worth Tax	8,000	0	0	0	5,000	0	0
Municipal Property Tax	9,000	7,000	10,000	21,000	8,000	19,000	28,000
Costs Varying by Location	1,621,000	1,471,000	1,925,000	1,939,000	1,354,000	1,790,000	1,358,000
Compared to MA		*-9.3%*	*18.8%*	*19.6%*	*-16.5%*	*10.4%*	*-16.2%*
Costs Not Varying by Location	2,422,000	2,422,000	2,422,000	2,422,000	2,422,000	2,422,000	2,422,000
Total Costs	4,043,000	3,893,000	4,347,000	4,361,000	3,776,000	4,212,000	3,780,000
Net Income (Sales minus Costs)	282,000	432,000	-22,000	-36,000	549,000	113,000	545,000
State Corporate Taxes	27,000	40,000	0	0	38,000	10,000	25,000
Profit After State Tax	255,000	392,000	-22,000	-36,000	511,000	103,000	520,000
As a % of Sales	*5.9%*	*9.1%*	*-0.5%*	*-0.8%*	*11.8%*	*2.4%*	*12.0%*
Compared to MA		*53.7%*			*100.4%*	*-59.6%*	*103.9%*

As with the Plastics producer, the representative Metal firm benefits from lower payroll costs in the Worcester area, but still ends up with wage expenses 25% higher than in North Carolina or Texas. Another cost-of-living item—land—is relatively important to Metal manufacturers and is a place where Massachusetts struggles to compete. Even by locating in the Worcester MSA, the firm still pays the second-highest rental rates among the seven geographies. Industrial space there costs 20% more than central New Jersey and 50% more than Charlotte.

Overall, the Massachusetts Metal firm has total costs of more than $1.6 million. With lower wages, rents, UI costs, and energy expenditures, a comparable firm in North Carolina or Texas would have expenses more than 16% lower. A New Hampshire company would face higher electricity costs, but still save almost 10%.

Biotech Manufacturing

Biotech manufacturers (Pharmaceutical and Medicine, NAICS 3254) make or process medicinal drugs. Our representative firm has 81 employees, sales of nearly $77 million, and it located in the Boston MSA. Wyeth, Biogen, and Astra Zeneca are examples of larger players in the industry within the state.

Labor costs are relatively less important to the biotech manufacturer compared to other industries studied here, but nonetheless, wage costs still have a significant impact. In every other state, payrolls for the representative firm would be lower than in Massachusetts. In North Carolina and Texas the firm would face wage costs 30% and 32% lower respectively. In neighboring New Hampshire and Rhode Island, labor costs would be 14% and 8% cheaper, respectively.

Table 13: Biotech Manufacturing Costs

NAICS: 3254 Employees: 81 Annual Sales: $76,550,000 Sq. Footage: 50,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	8,114,000	6,953,000	8,047,000	8,113,000	5,654,000	7,439,000	5,478,000
Unemp. Ins.	62,000	17,000	87,000	32,000	44,000	62,000	26,000
Workers' Comp.	138,000	222,000	192,000	241,000	131,000	224,000	169,000
Employee Health Premiums	353,000	392,000	455,000	337,000	331,000	379,000	365,000
Other Costs							
Annual Rent	388,000	267,000	276,000	454,000	304,000	321,000	179,000
Electricity	383,000	503,000	428,000	330,000	221,000	433,000	308,000
Natural Gas	153,000	135,000	125,000	127,000	117,000	129,000	86,000
Sales & Use Taxes	1,148,000	0	1,607,000	1,923,000	1,607,000	1,607,000	1,435,000
Property/Net Worth Tax	171,000	0	0	0	98,000	0	0
Municipal Property Tax	88,000	30,000	51,000	125,000	45,000	110,000	165,000
Costs Varying by Location	10,998,000	8,519,000	11,268,000	11,682,000	8,552,000	10,704,000	8,211,000
Compared to MA		*-22.5%*	*2.5%*	*6.2%*	*-22.2%*	*-2.7%*	*-25.3%*
Costs Not Varying by Location	51,698,000	51,698,000	51,698,000	51,698,000	51,698,000	51,698,000	51,698,000
Total Costs	62,696,000	60,217,000	62,966,000	63,380,000	60,250,000	62,402,000	59,909,000
Net Income (Sales minus Costs)	13,854,000	16,333,000	13,584,000	13,170,000	16,300,000	14,148,000	16,641,000
State Corporate Taxes	1,316,000	1,511,000	1,223,000	988,000	1,125,000	1,273,000	749,000
Profit After State Tax	12,538,000	14,822,000	12,361,000	12,182,000	15,175,000	12,875,000	15,892,000
As a % of Sales	*16.4%*	*19.4%*	*16.1%*	*15.9%*	*19.8%*	*16.8%*	*20.8%*
Compared to MA		*18.2%*	*-1.4%*	*-2.8%*	*21.0%*	*2.7%*	*26.8%*

In contrast, the Sales & Use Tax is relatively more important in this sector, and in this area Massachusetts fares well. With the exception of New Hampshire, which has zero tax, the Bay State has lower S&U Taxes than every other state. As a result it is able to partially offset some—but nowhere near all—of its other areas of cost disadvantage.

Overall, the representative biotech firm earns $12.5 million in profits (16.4% of sales). But in Texas, profits are nearly $3.4 million higher ($15.9 million, 20.8% of sales), and in North Carolina, they are $2.7 million greater ($15.2 million, 19.8% of sales). New Hampshire and Rhode Island also fare better than the Bay State.

Financial Services - Securities

Financial Services - Securities (NAICS 5231 & 5239) includes investment banking, securities dealers/traders/underwriters, securities/stock/commodity brokerages, venture capitalists, mutual fund managers, and planning/investment advisors. It is a field for which the Boston area has become known and the region is one of the hubs for this activity. The industry includes a host of very small (<10 employee) firms, and several major players in the nation. Because our interest was in the large corporations that have been responsible for building this local hub, we focus on that subsegment of the industry. As a result our representative firm size is 2,000, and annual sales are $787 million.

Table 14: Financial Services Costs

NAICS: 5231 & 5239 Employees: 2000 Annual Sales: $786,600,000 Sq. Footage: 300,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	331,942,000	284,474,000	323,896,000	412,016,000	226,347,000	304,363,000	238,024,000
Unemp. Ins.	1,534,000	432,000	2,141,000	782,000	1,082,000	1,536,000	630,000
Workers' Comp.	5,643,000	9,075,000	7,709,000	12,237,000	5,251,000	9,161,000	7,331,000
Employee Health Premiums	9,868,000	10,705,000	9,379,000	9,940,000	8,973,000	9,356,000	9,301,000
Other Costs							
Annual Rent	11,997,000	3,359,000	8,700,000	11,022,000	6,765,000	4,500,000	5,415,000
Electricity	6,293,000	5,953,000	5,442,000	6,463,000	3,444,000	5,740,000	4,337,000
Natural Gas	315,000	315,000	291,000	296,000	288,000	325,000	239,000
Sales & Use Taxes	14,159,000	0	19,822,000	23,716,000	19,822,000	19,822,000	17,698,000
Property/Net Worth Tax	2,906,000	0	0	0	1,677,000	0	0
Municipal Property Tax	4,952,000	1,530,000	3,255,000	6,454,000	1,895,000	6,352,000	4,715,000
Costs Varying by Location	389,609,000	315,843,000	380,635,000	482,926,000	275,544,000	361,155,000	287,690,000
Compared to MA		*-18.9%*	*-2.3%*	*24.0%*	*-29.3%*	*-7.3%*	*-26.2%*
Costs Not Varying by Location	303,387,000	303,387,000	303,387,000	303,387,000	303,387,000	303,387,000	303,387,000
Total Costs	692,996,000	619,230,000	684,022,000	786,313,000	578,931,000	664,542,000	591,077,000
Net Income (Sales minus Costs)	93,604,000	167,370,000	102,578,000	287,000	207,669,000	122,058,000	195,523,000
State Corporate Taxes	8,892,000	15,482,000	9,232,000	22,000	14,329,000	10,985,000	8,799,000
Profit After State Tax	84,712,000	151,888,000	93,346,000	265,000	193,340,000	111,073,000	186,724,000
As a % of Sales	*10.8%*	*19.3%*	*11.9%*	*0.0%*	*24.6%*	*14.1%*	*23.7%*
Compared to MA		*79.3%*	*10.2%*	*-99.7%*	*128.2%*	*31.1%*	*120.4%*

For most financial firms, the company's most important resource is the human capital of its workforce. As a result, payroll costs are paramount. Our representative firm pays out more wages in Massachusetts than anywhere else except New York. In North Carolina and Texas, such a firm could save about $100 million in labor expenses.

Office space is another major cost for the Securities firm, and here the Boston area fares the worst. With the highest square-footage prices, Massachusetts property expenses are $8.6 million greater than in New Hampshire and nearly $7.5 million higher than in Rhode Island.

Altogether, profits as a percentage of sales for the representative firm in Massachusetts are 10.8%. Meanwhile, in North Carolina and Texas, that figure would more than double for the representative firm (24.6% and 23.7%, respectively). The Bay State fares better than only New York, whose even greater labor costs wipe almost all its profits away.

Aerospace & Defense

Aerospace Product and Parts Manufacturers (NAICS 3364) produce aircraft, aerospace engines, missiles, and space vehicles. Massachusetts firms in this sector include GE Aircraft, Middleton Aerospace, and Hansen Engineering. The representative firm in this sector has 363 employees and annual sales of $112 million.

Table 15: Aerospace & Defense Costs

NAICS: 3364 Employees: 363 Annual Sales: $111,900,000 Sq. Footage: 200,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	29,762,000	24,018,000	30,475,000	29,761,000	20,295,000	27,290,000	20,295,000
Unemp. Ins.	278,000	78,000	389,000	142,000	196,000	279,000	114,000
Workers' Comp.	506,000	766,000	725,000	884,000	471,000	821,000	625,000
Employee Health Premiums	1,583,000	1,756,000	2,041,000	1,511,000	1,482,000	1,699,000	1,634,000
Other Costs							
Annual Rent	1,960,000	1,100,000	1,150,000	1,817,000	866,000	1,284,000	709,000
Electricity	559,000	735,000	626,000	482,000	324,000	633,000	450,000
Natural Gas	112,000	99,000	91,000	93,000	86,000	94,000	63,000
Sales & Use Taxes	2,126,000	0	2,976,000	3,561,000	2,976,000	2,976,000	2,657,000
Property/Net Worth Tax	114,000	0	0	0	66,000	0	0
Municipal Property Tax	445,000	177,000	295,000	633,000	250,000	555,000	863,000
Costs Varying by Location	37,445,000	28,729,000	38,768,000	38,884,000	27,012,000	35,631,000	27,410,000
Compared to MA		*-23.3%*	*3.5%*	*3.8%*	*-27.9%*	*-4.8%*	*-26.8%*
Costs Not Varying by Location	70,763,000	70,763,000	70,763,000	70,763,000	70,763,000	70,763,000	70,763,000
Total Costs	108,208,000	99,492,000	109,531,000	109,647,000	97,775,000	106,394,000	98,173,000
Net Income (Sales minus Costs)	3,692,000	12,408,000	2,369,000	2,253,000	14,125,000	5,506,000	13,727,000
State Corporate Taxes	351,000	1,148,000	213,000	169,000	975,000	496,000	618,000
Profit After State Tax	3,341,000	11,260,000	2,156,000	2,084,000	13,150,000	5,010,000	13,109,000
As a % of Sales	*3.0%*	*10.1%*	*1.9%*	*1.9%*	*11.8%*	*4.5%*	*11.7%*
Compared to MA		*237.0%*	*-35.5%*	*-37.6%*	*293.6%*	*50.0%*	*292.4%*

Because it is such a large firm, the Aerospace firm requires a large amount of space, so Annual Rent becomes a significant factor. Massachusetts is at a disadvantage to all competing states in this particular business cost. In nearby Rhode Island, the firm could save $676,000 in rental costs and $860,000 in New Hampshire. Having rental costs identical to those states would increase the firm's profit by 18% and 23%, respectively. The firm sees even larger savings in North Carolina and Texas, where industrial space is significantly less expensive.

Thanks to rent and payroll differences, the firm is less profitable in Massachusetts than four competitor states and only slightly more profitable than it would be in New Jersey or New York. While profits are 3% of sales in the Commonwealth, they would be about 1.9% of sales in those two states, and vastly higher in Texas (11.7%) or North Carolina (11.8%).

Software

Software Publishers (NAICS 5112) produce and distribute computer software. This includes designing, providing documentation, installing, and providing support services for software purchasers. Massachusetts firms meeting this description include Applix, Pegasystems, Novell, Parametric Technology Corporation, and Macromedia.

Table 16: Software Costs

NAICS: 5112 Employees: 21 Annual Sales: $7,650,000 Sq. Footage: 5,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	2,355,000	1,849,000	2,367,000	2,869,000	1,611,000	2,120,000	1,658,000
Unemp. Ins.	16,000	5,000	22,000	8,000	11,000	16,000	7,000
Workers' Comp.	40,000	59,000	56,000	85,000	37,000	64,000	51,000
Employee Health Premiums	104,000	112,000	98,000	104,000	94,000	98,000	98,000
Other Costs							
Annual Rent	127,000	62,000	123,000	132,000	92,000	75,000	90,000
Electricity	15,000	14,000	13,000	16,000	8,000	14,000	11,000
Natural Gas	0	0	0	0	0	0	0
Sales & Use Taxes	214,000	0	300,000	359,000	300,000	300,000	268,000
Property/Net Worth Tax	29,000	0	0	0	17,000	0	0
Municipal Property Tax	38,000	23,000	32,000	68,000	18,000	67,000	50,000
Costs Varying by Location	2,938,000	2,124,000	3,011,000	3,641,000	2,188,000	2,754,000	2,233,000
Compared to MA		*-27.7%*	*2.5%*	*23.9%*	*-25.5%*	*-6.3%*	*-24.0%*
Costs Not Varying by Location	2,678,000	2,678,000	2,678,000	2,678,000	2,678,000	2,678,000	2,678,000
Total Costs	5,616,000	4,802,000	5,689,000	6,319,000	4,866,000	5,432,000	4,911,000
Net Income (Sales minus Costs)	2,034,000	2,848,000	1,961,000	1,331,000	2,784,000	2,218,000	2,739,000
State Corporate Taxes	193,000	263,000	176,000	100,000	192,000	200,000	123,000
Profit After State Tax	1,841,000	2,585,000	1,785,000	1,231,000	2,592,000	2,018,000	2,616,000
As a % of Sales	*24.1%*	*33.8%*	*23.3%*	*16.1%*	*33.9%*	*26.4%*	*34.2%*
Compared to MA		*40.4%*	*-3.0%*	*-33.1%*	*40.8%*	*9.6%*	*42.1%*

The representative firm in the Software sector has 21 employees and annual sales of $7.7 million. When located in Massachusetts it achieves profit after state taxes of $1.8 million, 24.1% of its annual sales. New York and New Jersey have lower profit margins, at 16.1% and 23.3%. If located in Rhode Island, the firm would realize profits of $2.0 million, an increase of about 10% over Massachusetts. In New Hampshire, North Carolina, and Texas, the firm's profits would be more than 40% higher.

The profitability of the Software firm is noticeably affected by the Sales & Use tax and the Net Worth tax. Because it is not a manufacturing firm, it does not purchase raw materials that are exempt from this tax. Since Massachusetts generally has a lower sales tax rate, it has a competitive advantage over other states except for New Hampshire. On the other hand, the Software firm pays a relatively large Net Worth Tax because the value of the firm is high compared with its total annual sales. The only other state where it would pay the tax is in North Carolina, and it would be lower there.

Information Technology/Semiconductor Equipment Manufacturing

Semiconductor and Related Device Manufacturing and Other Electronic Component Manufacturing (NAICS 334413 & 334419) contains firms that produce integrated circuits, memory chips, microprocessors, diodes, solar cells, transistors, and other optoelectronic devices used in computers and other electrical equipment. Massachusetts firms in these sectors include MKS Astex Products Group, M/A-Com, Varian Semiconductor Equipment, Analog Devices, Texas Instruments Sensors, and Lockheed Martin Sippican.

The representative Semiconductor Equipment firm has 86 employees and annual sales of $31.5 million. It is more profitable in Massachusetts than it would be in New Jersey and New York; all other states fare better. While profits in Massachusetts are slightly more than $2.1 million, they are nearly double that in New Hampshire, North Carolina, and Texas, and almost 20% higher in Rhode Island.

Table 17: Semiconductor Equipment Costs

NAICS: 334413 & 334419 Employees: 86 Annual Sales: $31,475,000 Sq. Footage: 35,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	6,577,000	5,165,000	6,495,000	6,456,000	4,499,000	5,920,000	4,630,000
Unemp. Ins.	66,000	19,000	92,000	34,000	47,000	66,000	27,000
Workers' Comp.	112,000	165,000	155,000	192,000	104,000	178,000	143,000
Employee Health Premiums	375,000	416,000	484,000	358,000	351,000	403,000	387,000
Other Costs							
Annual Rent	289,000	208,000	193,000	318,000	213,000	225,000	138,000
Electricity	111,000	146,000	124,000	96,000	64,000	126,000	89,000
Natural Gas	28,000	24,000	23,000	23,000	21,000	23,000	16,000
Sales & Use Taxes	598,000	0	837,000	1,002,000	837,000	837,000	747,000
Property/Net Worth Tax	75,000	0	0	0	43,000	0	0
Municipal Property Tax	48,000	32,000	44,000	93,000	34,000	82,000	120,000
Costs Varying by Location	8,279,000	6,175,000	8,447,000	8,572,000	6,213,000	7,860,000	6,297,000
Compared to MA		*-25.4%*	*2.0%*	*3.5%*	*-25.0%*	*-5.1%*	*-23.9%*
Costs Not Varying by Location	20,836,000	20,836,000	20,836,000	20,836,000	20,836,000	20,836,000	20,836,000
Total Costs	29,115,000	27,011,000	29,283,000	29,408,000	27,049,000	28,696,000	27,133,000
Net Income (Sales minus Costs)	2,360,000	4,464,000	2,192,000	2,067,000	4,426,000	2,779,000	4,342,000
State Corporate Taxes	224,000	413,000	197,000	155,000	305,000	250,000	195,000
Profit After State Tax	2,136,000	4,051,000	1,995,000	1,912,000	4,121,000	2,529,000	4,147,000
As a % of Sales	*6.8%*	*12.9%*	*6.3%*	*6.1%*	*13.1%*	*8.0%*	*13.2%*
Compared to MA		*89.7%*	*-6.6%*	*-10.5%*	*92.9%*	*18.4%*	*94.1%*

Massachusetts has a competitive advantage in WC costs in each state with the exception of North Carolina. If per employee costs in Massachusetts were identical to those in New York, profits would be 3.4% lower than in the Bay State. The Semiconductor firm has a highly valued capital stock relative to its annual sales, so its profits are more affected by the Property/Net Worth Tax than other firms. North Carolina is the only other state with a property tax that is applied, but it taxes at a lower rate. If Massachusetts net worth tax were the same as North Carolina, its profits would be 1.4% higher. The other five states do not charge the tax. If Massachusetts did not tax the Semiconductor firm's property, its profit would be 3.2% higher.

Medical Devices

Medical Equipment Supplies Manufacturing (NAICS 3391) contains firms engaged in the production of laboratory furniture and apparatus, surgical and other medical instruments, ophthalmic goods such as contact lenses and eyeglasses, and dental equipment. Massachusetts firms designated to this sector include Boston Scientific and Neurometrix.

The representative firm used in this study is assumed to have 40 employees and annual sales of $9.1 million. Massachusetts business costs are more competitive than New York in trying to attract or retain this firm, and less competitive than the other five states. Profits in Massachusetts for the Medical Devices firm would be slightly higher than $1.0 million, about 11% of sales. In contrast, this margin would be vastly higher in Texas (78%), North Carolina (83%), and New Hampshire (66%). In Rhode Island the firm would realize profits 12% higher than in Massachusetts.

Table 18: Medical Devices Costs

NAICS: 3391 Employees: 40 Annual Sales: $9,100,000 Sq. Footage: 20,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	2,505,000	2,004,000	2,444,000	3,109,000	1,708,000	2,297,000	1,796,000
Unemp. Ins.	31,000	9,000	43,000	16,000	22,000	31,000	13,000
Workers' Comp.	43,000	64,000	58,000	92,000	40,000	69,000	55,000
Employee Health Premiums	174,000	194,000	225,000	166,000	163,000	187,000	180,000
Other Costs							
Annual Rent	155,000	119,000	134,000	197,000	87,000	128,000	79,000
Electricity	56,000	73,000	62,000	48,000	32,000	63,000	45,000
Natural Gas	83,000	74,000	68,000	69,000	64,000	70,000	47,000
Sales & Use Taxes	191,000	0	268,000	320,000	268,000	268,000	239,000
Property/Net Worth Tax	14,000	0	0	0	8,000	0	0
Municipal Property Tax	35,000	17,000	19,000	50,000	20,000	44,000	64,000
Costs Varying by Location	3,287,000	2,554,000	3,321,000	4,067,000	2,412,000	3,157,000	2,518,000
Compared to MA		*-22.3%*	*1.0%*	*23.7%*	*-26.6%*	*-4.0%*	*-23.4%*
Costs Not Varying by Location	4,693,000	4,693,000	4,693,000	4,693,000	4,693,000	4,693,000	4,693,000
Total Costs	7,980,000	7,247,000	8,014,000	8,760,000	7,105,000	7,850,000	7,211,000
Net Income (Sales minus Costs)	1,120,000	1,853,000	1,086,000	340,000	1,995,000	1,250,000	1,889,000
State Corporate Taxes	106,000	171,000	98,000	26,000	138,000	113,000	85,000
Profit After State Tax	1,014,000	1,682,000	988,000	314,000	1,857,000	1,137,000	1,804,000
As a % of Sales	*11.1%*	*18.5%*	*10.9%*	*3.5%*	*20.4%*	*12.5%*	*19.8%*
Compared to MA		*65.9%*	*-2.6%*	*-69.0%*	*83.1%*	*12.1%*	*77.9%*

This small firm is affected by the rents in the Massachusetts area. Its annual rent in the Boston MSA is $155,000, which is higher than each of the competing locations except for New York. The firm's annual rent in New Hampshire would be about 23% lower, and in Rhode Island, the annual cost would decrease by more than 17%. The firm would save approximately $70,000 in North Carolina or Texas.

Search & Navigation Instruments Manufacturing

Search & Navigation Instruments Manufacturing (NAICS 334511) firms produce goods for use in search, detection, and navigation systems and instruments, including products such as navigational tools, along with radar and sonar equipment. Products from this sector are used for both civilian and military purposes. Local firms designated in this sector include Raytheon, Textron, and Ametek Aerospace.

Table 19: Search & Navigation Instruments Costs

NAICS: 334511 Employees: 1000 Annual Sales: $233,525,000 Sq. Footage: 250,000

Labor Costs	**MA**	**NH**	**NJ**	**NY**	**NC**	**RI**	**TX**
Ann. Payroll	91,541,000	71,884,000	92,008,000	89,852,000	62,616,000	82,390,000	64,432,000
Unemp. Ins.	767,000	216,000	1,071,000	391,000	541,000	768,000	315,000
Workers' Comp.	1,556,000	2,293,000	2,190,000	2,669,000	1,453,000	2,480,000	1,985,000
Employee Health Premiums	4,361,000	4,838,000	5,623,000	4,161,000	4,082,000	4,681,000	4,502,000
Other Costs							
Annual Rent	2,068,000	1,488,000	1,560,000	2,272,000	1,520,000	1,605,000	984,000
Electricity	1,401,000	1,842,000	1,569,000	1,207,000	811,000	1,586,000	1,128,000
Natural Gas	234,000	206,000	190,000	193,000	179,000	196,000	131,000
Sales & Use Taxes	5,371,000	0	7,519,000	8,996,000	7,519,000	7,519,000	6,714,000
Property/Net Worth Tax	358,000	0	0	0	206,000	0	0
Municipal Property Tax	343,000	229,000	311,000	667,000	242,000	585,000	858,000
Costs Varying by Location	108,000,000	82,996,000	112,041,000	110,408,000	79,169,000	101,810,000	81,049,000
Compared to MA		*-23.2%*	*3.7%*	*2.2%*	*-26.7%*	*-5.7%*	*-25.0%*
Costs Not Varying by Location	111,981,000	111,981,000	111,981,000	111,981,000	111,981,000	111,981,000	111,981,000
Total Costs	219,981,000	194,977,000	224,022,000	222,389,000	191,150,000	213,791,000	193,030,000
Net Income (Sales minus Costs)	13,544,000	38,548,000	9,503,000	11,136,000	42,375,000	19,734,000	40,495,000
State Corporate Taxes	1,287,000	3,566,000	855,000	835,000	2,924,000	1,776,000	1,822,000
Profit After State Tax	12,257,000	34,982,000	8,648,000	10,301,000	39,451,000	17,958,000	38,673,000
As a % of Sales	*5.2%*	*15.0%*	*3.7%*	*4.4%*	*16.9%*	*7.7%*	*16.6%*
Compared to MA		*185.4%*	*-29.4%*	*-16.0%*	*221.9%*	*46.5%*	*215.5%*

As with the Financial Services firm, we focus on larger players in this industry; as a result, this sector's representative firm has 1,000 employees and sales of $234 million. Our calculations show that in Massachusetts it would achieve after-tax profits of $12.3 million, equivalent to 5.2% of total output. That is better than the firm can expect in New York or New Jersey, where profits would be 16% and 29% lower, respectively. The other four states, however, have a competitive advantage over the Bay State. In nearby Rhode Island, after-profits would be $18 million (7.7% of output). New Hampshire's lower business costs result in profit of $35 million, nearly triple the figure in Massachusetts.

The representative firm in this sector would pay lower wages in each of the competing states with the exception of New Jersey. The higher unemployment insurance (UI) costs in Massachusetts make the state less competitive than New Hampshire, New York, North Carolina, and Texas for this cost item. If Massachusetts had the same per employee UI costs as New Hampshire, profits would be 4.1% higher. The firm's profitability would also increase if UI costs were akin to those in New York (2.8%), North Carolina (1.7%), or Texas (3.3%). The lower electricity costs in North Carolina and Texas also offer opportunities for the firm to increase its bottom line. If electricity costs were identical to North Carolina's, the Instruments firm in Massachusetts would see after-tax net income increase by 4.4%; with Texas's electricity prices, it would increase 2.0%.

IV. Analysis & Implications

Summary of Results

Geography & Industry

Compiling the results from sections II and III, we see that Massachusetts is a higher cost environment compared to Texas, North Carolina, and New Hampshire in each of the nine sectors. Furthermore, these cost savings are not trivial – on average, they are 20% lower in these states than in Massachusetts. As a result, profits (after-tax net income) are double, sometimes triple, in those states versus in Massachusetts. Similarly, the Commonwealth is more expensive in most cases compared with Rhode Island, although the competition is closer than in the previously mentioned states. The Ocean State is a cheaper alternative (by 3-7%) in all industries except for Plastics and Precision Metal Manufacturing.

There are a few bright spots. Massachusetts does fare better than two competitors, the states of New York and New Jersey. In all nine sectors, the Bay State is the less expensive choice than New York, saving the representative firms 16% on average. Similarly, in eight of nine industries (Financial Services is the exception), Massachusetts is less expensive than the Garden State, with costs averaging about 6% lower.

Among the nine industries, the Finance sector in the Commonwealth fares the worst – every competitor state except New York offers higher potential profits. In New Hampshire, profits would be 80% higher; in North Carolina and Texas, they would be more than double.

Cost Type

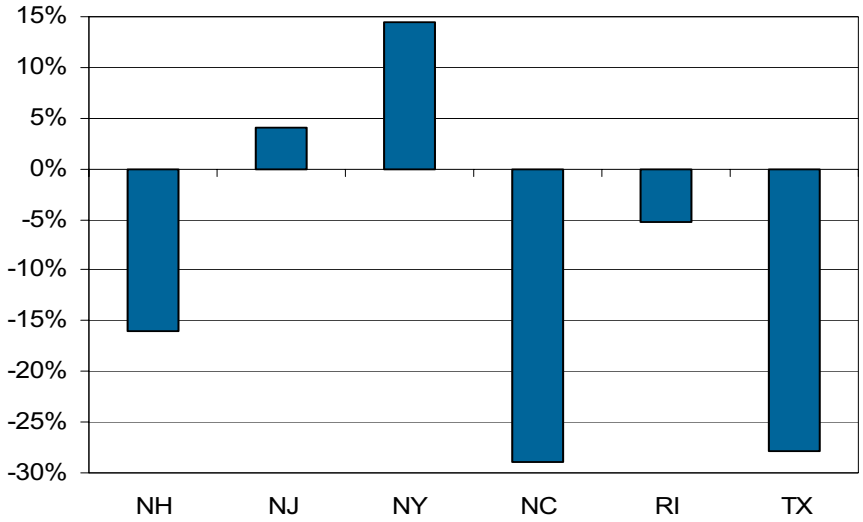
The main cost factor making Massachusetts uncompetitive in these examples is wages, which are driven by the cost of living. As we discussed in Section II, payrolls are typically the largest firm expense that varies by location; thus, the Bay State's higher wage scale translates into a significant cost disadvantage. For the nine industries represented here, payroll costs are nearly 30% lower in North Carolina and Texas (figure 5). In the Biotech Manufacturing industry, for example, that gap translates to a savings of more than $2.4 million in both of those states.

An additional area of competitive weakness for Massachusetts is its office and industrial rental prices. Owing to the high cost of land in the state, which is also influencing cost of living, rents are among the highest for the states considered here. In fact, only New Jersey has higher prices, and only in some industries. Overall, rents are typically 6-14% lower elsewhere, fueling significant savings. At one extreme is the Finance/Securities sector which would have rental costs nearly $9 million higher in Massachusetts compared to New Hampshire, and $7.5 million higher than in Rhode Island.

Unemployment insurance does not carry as much weight as the previous two cost types, but it is another area where the state trails its competitors. Among the seven states considered here, Massachusetts has the highest UI tax rate, and therefore firms' UI costs are usually among the highest – only New Jersey is more expensive.

Figure 5: Wages/Living Costs Are Much Lower in Most Other States

Average Percent Difference Compared to MA



Conversely, Massachusetts currently has a competitive advantage in Workers' compensation (WC) costs. This is a relatively recent phenomenon and is likely attributable to the reforms undertaken in the early 1990s. Improvement in its relative position, though, is no reason for complacency. The lower costs here partially offset some of the higher costs elsewhere, but WC is often smaller than the other costs considered. In order to stay competitive the Commonwealth should maintain or extend its competitive advantage here while trying to address other areas where it is disadvantaged.

Implications

Two of the most significant expenses in this analysis – wages/cost of living and commercial rents – have one thing in common: they both are heavily influenced by the cost of land. As we noted in Figure 1, high home prices (a well-documented feature of the MA economy) are a major determinant of the high cost of living in the area. High land prices carry over to the commercial market, pushing rents up there as well.

One of the traditional views of Massachusetts high housing costs has been that they are a result of limited buildable land, constraining supply even as demand rises, forcing prices up. However, as Glaeser et al (2006) note, local regulations have actually played a key role in curtailing building and decreasing housing density, thereby limiting supply.[33] To the extent that some of these rules and regulations can be relaxed, home prices could fall and likely improve Massachusetts cost competitiveness with other states.

Another problem with a high cost of living is that it can drive workers away because of the lack of affordability. Massachusetts is one of just three states to lose population in 2005, and is the only place to lose residents in each of the past two years. According to

[33] Glaeser, Schuetz, and Ward. (2006). "Regulation and the Rise of Housing Prices in Greater Boston," Rappaport Institute for Greater Boston and Pioneer Institute.

Census estimates, the state's population has declined by 19,000 over the past two years, as net out-migration has accelerated. This is significant because the movers tend to be younger workers, who are most constrained by the high living costs, but who are also the future of the local economy. If these out-migrants are also highly-educated/skilled, then this is particularly a problem. While no state wants to lose talented workers, it is especially imperative for the Commonwealth, since one of its main strengths has been its knowledge-based economy.

Based on our interviews with industry representatives around the state, there were two main reasons that firms tended to locate in Massachusetts.[34] The first was inertia. Many companies were formed in this area decades ago and thus view it as their home base. Also, as these firms have grown, their investment – in workers, infrastructure, etc – has grown as well, tying them to this area. These companies' formation and growth speaks well for the Massachusetts economy—at least in the past—but no one is going to advocate inertia as an economic policy. Although the interviewees identified their company's history as a reason for staying, some stated that inertia is only so strong and can be overcome by a non-competitive business atmosphere. Furthermore, it is essential for Massachusetts to maintain a competitive business environment in order to attract new businesses to set down local roots.

The second main reason cited was the high quality of the Bay State's workforce. Massachusetts' pool of educated workers is a top draw for companies. Some firms have even been undergoing a skill upgrade among their employees – hiring more skilled/highly-educated workers in MA, and moving less-skilled jobs to other locations. This works as long as Massachusetts maintains its advantage in this area, but other states are trying to become more competitive here. Perhaps most importantly, the highly productive labor pool is a main underpinning of the state economy – there was a clear indication from our interviews that if Massachusetts' advantage in highly skilled labor were diminished, the state would lose perhaps its biggest benefit.

Table 20: Unemployment Insurance Benefits and Rankings – 2006Q1

	MA	NH	NJ	NY	NC	RI	TX
Avg. Weekly Benefit	*$359*	*$253*	*$337*	*$277*	*$260*	*$338*	*$263*
State Rank	*1*	*29*	*4*	*19*	*27*	*3*	*23*
As % of Avg. Wage	*38.4*	*32.7*	*36.6*	*28.1*	*38.1*	*47.5*	*35.2*
State Rank	*22*	*39*	*30*	*47*	*24*	*2*	*34*

An additional area where the state has struggled to compete is unemployment insurance. There are at least two reasons why Massachusetts has a costly UI system. The first concerns the level of benefits paid out. Because the UI tax rates charged to any firm are determined by the firm and state account balances, UI costs are in large part dependent on the amount of benefits paid to workers claiming the insurance. The higher the benefit, the

[34] Obviously comments from local industries cannot be assumed to be perfectly accurate. First, respondents can misreport for various reasons. Also we recognize that these contacts are not unbiased sources. Nevertheless certain trends emerged in these conversations that we believe are representative.

faster the accounts are depleted, resulting in higher rates. Table 20 shows benefit data for the past 12 months through the first quarter of 2006. The average weekly payout to Massachusetts claimants was the highest in the country. Rhode Island and New Jersey also ranked in the top five. Just because the state has the highest benefit amount, however, does not mean that that level is "too high". As a percentage of the average state wage, Massachusetts actually ranked toward the middle of the distribution at 22nd. Obviously any move to change benefit levels would be controversial.

A second issue concerns loopholes in the system created by the availability of high UI benefits. Higher benefits create not only increased incentive to remain unemployed, but also the incentive to "game" the system. Generally, if the upper limit on tax rates is low relative to the benefits paid out, it is possible for firms (typically seasonal ones) to systematically pay the highest tax rate into the system, but then draw even higher benefits. This results in a system where other firms in the state pay higher rates to subsidize those gaming the system.[35]

The high cost of energy in Massachusetts relative to other states is another area of concern, especially as prices have risen throughout the nation and become a larger budget item. Several industry contacts listed energy high on the list of considerations when contemplating expansion in Massachusetts or other states. A contact in the Financial Services sector indicated that the profitability of its data centers is highly affected by electricity prices, and although Massachusetts is not out of step with the region, it is certainly higher compared with the rest of the nation. A major Search & Navigation Instruments manufacturer listed energy third on its list of area-specific costs following only labor costs and healthcare. Energy costs at its Massachusetts facilities are second only to comparable facilities in California. A plastics manufacturer indicated that energy is the primary reason for the industry's weak competitive position compared to the rest of the country.

Conclusion

Massachusetts has made strides in controlling some cost factors -- most notably workers' compensation -- but there is significant work to be done. Our analysis shows that the state is consistently among the least competitive in the nine key industries studied here. While improvements in health premiums, energy costs, and taxes would help, those are all secondary to the major factor: land prices, which affect business costs, standard of living, and affordability. The latter is perhaps the most important, as it is imperative that Massachusetts maintain its main competitive advantage -- a skilled labor force. Without a pool of highly educated workers, the state may have difficulties in business retention.

[35] John O'Leary. (2006). "Mixed Benefits," *CommonWealth: Political Ideas & Civic Life in Massachusetts*. 11 (4): 85-92.

APPENDIX

Methodology: Constructing the Representative Firm

The design of the study is to construct a representative firm for each chosen sector and compare selected business costs across the various geographies. In order to construct such a representative firm, Global Insight primarily used three data sources: the Benchmark Input-Output Accounts published by the Bureau of Economic Analysis (BEA), the 2003 Corporation Source Book of Statistics and Income published by the Internal Revenue Service (IRS), and the Quarterly Census of Employment and Wages published by the Bureau of Labor Statistics (BLS).

Data Sources

The BEA's Benchmark Input-Output Accounts are produced every five years with the most recent detailed tables available for 1997. They are based on the economic census performed during the reference year, and contain detailed information about the production processes and input requirements for approximately 500 industries. We used the information to construct detailed cost structures for the representative firm in each of our chosen industries. Specifically, we determined for each firm the required inputs of labor, raw materials, and energy as shares of their total output.

The IRS's Corporation Source Book of Statistics and Income contains detailed financial information from the tax filings of corporations. Aggregated data is available by 3-digit NAICS sector, and data for each sector is broken down into asset brackets as well. The most recent published data is for the 2003 tax year. From the data we obtained estimates of various financial aspects of the average U.S. firm in each sector, and used the estimates for our representative firms. Specifically, we determined for each firm their before-tax net income as a share of annual sales, value of the firm as a share of annual sales, and estimated sales tax payments as a share of annual sales.

The BLS's Quarterly Census of Employment and Wages (QCEW) provides detailed data on the average pay in detailed NAICS sectors by state. We retrieved the average pay for Massachusetts firms in the relevant sectors for 2005, the most recent annual data available.

Estimating Costs

Using the three data sources above, we were able to construct a representative firm in each industry using Massachusetts as the base case. We first used the QCEW data to determine the total pay for each representative firm by simply multiplying the number of employees by the average wage. For example, the plastics sector under examination had an average of 46 employees with pay of $47,997 a year. The annual payroll for the base case in Massachusetts, then, would be the product of the two, approximately $2.2 million.

Next we estimated annual sales for each representative firm. We used the labor compensation share of total output from the Input-Output Accounts, and the annual payroll calculated above. In the plastics sector, labor compensation accounts for 22.9% of

annual sales (total output). With a payroll of $2.2 million, the annual sales total for the representative firm, then, is approximately $9.6 million. We hold sales constant across geographies in order to isolate cost differences

The next task was to calculate two other labor costs: unemployment insurance tax payments and workers' compensation premiums. For unemployment insurance we used the rate that the firm would be charged if it had a zero account balance with the state. For workers' compensation we used the average rate charged in the state as reported in the 2004 Oregon Workers' Compensation Premium Rate Ranking Summary.

To estimate total payments for Health Insurance premiums we used data from the 2004 Medical Expenditure Panel Survey (MEPS) conducted by the U.S. Department of Health and Human Services. The survey includes average premiums by state and for different industry groupings both for single-person health coverage and family coverage. We assumed that eighty percent of employees enroll in the plan. We also calculated a weighted average of single-coverage and family-coverage premiums for use in the study. MEPS data indicates that nationwide approximately 45% of subscribers elect the single coverage plan. We used a 45% weight for single coverage premiums and a 55% weight for the premium on family coverage.

To calculate electricity and natural gas costs for each representative firm we used their respective input requirements obtained from the Input-Output Accounts. We applied those shares to the Annual Sales figure to estimate the total bills for each.

Average rent figures are taken from CB Richard Ellis's local market reports for the second quarter of 2006. We assumed square footage requirements based on industry averages and estimated needs for the respective activity.

For property tax rates we use Effective Tax Rates (ETRs) as estimated by the Minnesota Taxpayers Association in their 50-State Property Tax Comparison Study published in April 2006. The ETRs are applied to estimates of property values based on square footage and the rental rate of the base firm in Massachusetts.

To estimate Sales & Use tax payments we used data on deductions taken for taxes paid contained in the IRS Corporation Source Book of Statistics and Income. A portion of the total taxes paid are assumed to be for Sales & Use taxes. We calculated S&U tax payments as a share of reported business receipts and applied that figure to our Annual Sales figure.

The Capital Stock/Net Worth of each representative firm is estimated using reported data in the IRS Corporation Source Book of Statistics and Income. We applied our estimate of the net worth of the firm to the appropriate tax rate in Massachusetts.

To calculate before tax net income we used the annual sales figure calculated above and the before tax net income share of sales figure obtained from the IRS Source Book. For example, the plastics sector averaged net income of 5.5% of total annual sales; applying that to their estimated total sales yields before tax net income of approximately $530,000.

We used the current Massachusetts Corporate Income Tax rate and before-tax net income to estimate corporate taxes paid, assuming all sales are apportioned to Massachusetts. The net income less corporate taxes (after-tax profit) is simply the difference of those two items.

Adjusting Costs in Other States

To adjust labor costs for the representative firm in other states, we inflate or deflate their average wages according to the respective metropolitan area's cost of living as measured by the ACCRA Cost-of-Living Index from the first quarter of 2006. Several areas were not reported in 2006Q1 but were reported in earlier reports. We used relative indexes from the earlier report to construct proxy indexes for 2006Q1.

To calculate unemployment insurance taxes and workers' compensation premiums in comparison states we used the same method as for the base case firm in Massachusetts. We applied the relevant tax rates and applicable wages for each state to the number of employees and their wages. Health insurance premiums for each comparison state were taken from the MEPS data used for the base case firm.

To estimate the electricity and natural gas bills for the firm in the comparison states we used annual data on relative energy prices for 2005 from Global Insight's proprietary databases. The relative prices were calculating using reported data from the Energy Information Administration in the Department of Energy. We used the relative prices to inflate or deflate the energy bill relative to the base Massachusetts firm.

Annual rents for the comparison states were calculated using the same data sources as for the base Massachusetts firm described above. The relevant rent was applied to the same square footage used in the base case.

For each comparison state the sales and use taxes were adjusted using tax rates for each state. The same method was used to estimate Capital Stock/Net Worth taxes.

In the construction of the base case representative firm in Massachusetts we calculated before tax net income using data from the IRS Corporation Source Book. Using this estimate, our calculation for annual sales, and our calculations for the intermediate costs that vary by geography we were able to calculate the only missing item: costs that do not vary by geography. The costs not varying by geography were assumed to be constant across all states. To calculate before tax net income for each competing state, then, we simply subtracted all costs from the annual sales figure.

Choosing the Representative Geography

The BLS' QCEW series includes detailed sectoral data at the county level. Using that we were able to determine where industries were located within each state – the metropolitan areas or divisions (or even a county when an MSA designation was not possible or appropriate) that had the largest concentration of activity were classified as the representative metro.

Because many costs do not vary at the sub-state level, the representative metro only entered into the analysis via the cost-of-living feature of wages, land rents, and—in a few circumstances—local taxes. Also, to the extent that wage levels affect other factors (UI benefits, workers' compensation), the metro indirectly affects costs there as well.

The representative geographies used for each sector and state are shown below. The metro area/division definitions, which are established by the federal government, can be found at: http://www.census.gov/population/www/estimates/metroarea.html.

	MA	NH	NY	NJ	NC	TX
PLASTICS	Worcester	Manchester	New York Div	New York MSA (NJ Part)	Charlotte	Houston
PRECISION METAL	Worcester	Manchester	Nassau-Suffolk Div	Newark Div	Charlotte	Houston
BIOTECH MFG	Boston MSA	Rockingham Div	Nassau-Suffolk Div	Edison Div	Raleigh	Houston
FINANCIAL	Boston-Quincy Div	Rockingham Div	New York Div	Hudson County	Charlotte	Dallas Div
AEROSPACE/ DEFENSE	Boston MSA	Merrimack County	Nassau-Suffolk Div	New York MSA (NJ Part)	Charlotte	Ft Worth Div
SOFTWARE	Cambridge Div	Manchester	New York Div	New York MSA (NJ Part)	Raleigh	Dallas Div
SEMICONDUCTOR	Cambridge Div	Manchester	Nassau-Suffolk Div	Newark Div	Raleigh	Dallas Div
MEDICAL DEVICES	Boston MSA	Manchester	New York Div	Bergen County	Charlotte	Dallas Div
SEARCH/ NAVIGATION	Cambridge Div	Manchester	Nassau-Suffolk Div	New York Div (NJ Part)	Raleigh	Dallas Div

Note: Providence is the representative geography for all Rhode Island industries.

Appendix Table 1: Plastics Product Manufacturing

NAICS Code: 3261
Employment: 46
Average MA Wages : $47,997
Annual Sales : $9,650,000
Square Footage: 20,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$9,650,000	$9,650,000	$9,650,000	$9,650,000	$9,650,000	$9,650,000	$9,650,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*113.3*	*106.9*	*136.8*	*165.8*	*91.1*	*122.5*	*90.2*
Avg. Ann Pay	*$47,997*	*$45,293*	*$57,972*	*$70,274*	*$38,606*	*$51,912*	*$38,224*
Total Ann Pay	$2,208,000	$2,083,000	$2,667,000	$3,233,000	$1,776,000	$2,388,000	$1,758,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$25,800*	*$8,500*	*$17,300*	*$16,000*	*$9,000*
Total U/I Costs	$35,000	$10,000	$51,000	$18,000	$26,000	$35,000	$14,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$47,997*	*$45,293*	*$57,972*	*$70,274*	*$38,606*	*$51,912*	*$38,224*
Total Worker's Comp Costs	$38,000	$66,000	$63,000	$96,000	$41,000	$52,000	$54,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$201,000	$223,000	$259,000	$191,000	$188,000	$215,000	$207,000
Annual Rent							
Per Square Foot	*$6.60*	*$5.95*	*$6.24*	*$9.83*	*$4.33*	*$6.42*	*$3.57*
Total Cost	$132,000	$119,000	$125,000	$197,000	$87,000	$128,000	$71,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$164,000	$215,000	$183,000	$141,000	$95,000	$186,000	$132,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$19,000	$17,000	$16,000	$16,000	$15,000	$16,000	$11,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$193,000	$0	$270,000	$323,000	$270,000	$270,000	$241,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$8,000	$0	$0	$0	$5,000	$0	$0
Municipal Property Tax							
Tax Rate	*0.953%*	*0.797%*	*1.082%*	*2.321%*	*0.917%*	*2.036%*	*3.066%*
Municipal Property Taxes Paid	$17,000	$15,000	$20,000	$43,000	$17,000	$37,000	$56,000
Costs							
Costs Varying By Location	$3,015,000	$2,748,000	$3,654,000	$4,258,000	$2,520,000	$3,327,000	$2,544,000
Compared to MA		*-8.9%*	*21.2%*	*41.2%*	*-16.4%*	*10.3%*	*-15.6%*
Costs Not Varying By Location	$6,105,000	$6,105,000	$6,105,000	$6,105,000	$6,105,000	$6,105,000	$6,105,000
Total Costs	$9,120,000	$8,853,000	$9,759,000	$10,363,000	$8,625,000	$9,432,000	$8,649,000
Net Income (Sales minus Costs)	$530,000	$797,000	-$109,000	-$713,000	$1,025,000	$218,000	$1,001,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$50,000	$74,000	$0	$0	$71,000	$20,000	$45,000
Profit After State Tax	$480,000	$723,000	-$109,000	-$713,000	$954,000	$198,000	$956,000
As a % of Sales	*5.0%*	*7.5%*	*-1.1%*	*-7.4%*	*9.9%*	*2.1%*	*9.9%*
Compared to MA		*50.6%*			*98.8%*	*-58.8%*	*99.2%*

Appendix Table 2: Precision Metal Manufacturing

NAICS Code: 332
Employment: 21
Average MA Wages : $59,897
Annual Sales : $4,325,000
Square Footage: 10,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$4,325,000	$4,325,000	$4,325,000	$4,325,000	$4,325,000	$4,325,000	$4,325,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*113.3*	*106.9*	*134.4*	*133.6*	*91.1*	*122.5*	*90.2*
Avg. Ann Pay	*$59,897*	*$56,522*	*$71,076*	*$70,650*	*$48,177*	*$64,783*	*$47,701*
Total Ann Pay	$1,258,000	$1,187,000	$1,493,000	$1,484,000	$1,012,000	$1,360,000	$1,002,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$16,000	$5,000	$22,000	$8,000	$11,000	$16,000	$7,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$59,897*	*$56,522*	*$71,076*	*$70,650*	*$48,177*	*$64,783*	*$47,701*
Total Worker's Comp Costs	$21,000	$38,000	$36,000	$44,000	$23,000	$41,000	$31,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$92,000	$102,000	$118,000	$87,000	$86,000	$98,000	$95,000
Annual Rent							
Per Square Foot	*$6.60*	*$5.95*	*$5.51*	*$9.09*	*$4.33*	*$6.42*	*$3.57*
Total Cost	$66,000	$60,000	$55,000	$91,000	$43,000	$64,000	$36,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$43,000	$57,000	$49,000	$37,000	$25,000	$49,000	$35,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$17,000	$15,000	$14,000	$14,000	$13,000	$15,000	$10,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$91,000	$0	$128,000	$153,000	$128,000	$128,000	$114,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$8,000	$0	$0	$0	$5,000	$0	$0
Municipal Property Tax							
Tax Rate	*0.953%*	*0.797%*	*1.086%*	*2.321%*	*0.917%*	*2.036%*	*3.066%*
Municipal Property Taxes Paid	$9,000	$7,000	$10,000	$21,000	$8,000	$19,000	$28,000
Costs							
Costs Varying By Location	$1,621,000	$1,471,000	$1,925,000	$1,939,000	$1,354,000	$1,790,000	$1,358,000
Compared to MA		*-9.3%*	*18.8%*	*19.6%*	*-16.5%*	*10.4%*	*-16.2%*
Costs Not Varying By Location	$2,422,000	$2,422,000	$2,422,000	$2,422,000	$2,422,000	$2,422,000	$2,422,000
Total Costs	$4,043,000	$3,893,000	$4,347,000	$4,361,000	$3,776,000	$4,212,000	$3,780,000
Net Income (Sales minus Costs)	$282,000	$432,000	-$22,000	-$36,000	$549,000	$113,000	$545,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$27,000	$40,000	$0	$0	$38,000	$10,000	$25,000
Profit After State Tax	$255,000	$392,000	-$22,000	-$36,000	$511,000	$103,000	$520,000
As a % of Sales	*5.9%*	*9.1%*	*-0.5%*	*-0.8%*	*11.8%*	*2.4%*	*12.0%*
Compared to MA		*53.7%*			*100.4%*	*-59.6%*	*103.9%*

Appendix Table 3: Biotech Manufacturing

NAICS Code:	3254
Employment:	81
Average MA Wages :	$100,167
Annual Sales :	$76,550,000
Square Footage:	50,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$76,550,000	$76,550,000	$76,550,000	$76,550,000	$76,550,000	$76,550,000	$76,550,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*133.6*	*114.5*	*132.5*	*133.6*	*93.1*	*122.5*	*90.2*
Avg. Ann Pay	*$100,167*	*$85,843*	*$99,342*	*$100,163*	*$69,802*	*$91,845*	*$67,628*
Total Ann Pay	$8,114,000	$6,953,000	$8,047,000	$8,113,000	$5,654,000	$7,439,000	$5,478,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$62,000	$17,000	$87,000	$32,000	$44,000	$62,000	$26,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$100,167*	*$85,843*	*$99,342*	*$100,163*	*$69,802*	*$91,845*	*$67,628*
Total Worker's Comp Costs	$138,000	$222,000	$192,000	$241,000	$131,000	$224,000	$169,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$353,000	$392,000	$455,000	$337,000	$331,000	$379,000	$365,000
Annual Rent							
Per Square Foot	*$7.76*	*$5.35*	*$5.52*	*$9.09*	*$6.08*	*$6.42*	*$3.57*
Total Cost	$388,000	$267,000	$276,000	$454,000	$304,000	$321,000	$179,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$383,000	$503,000	$428,000	$330,000	$221,000	$433,000	$308,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$153,000	$135,000	$125,000	$127,000	$117,000	$129,000	$86,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$1,148,000	$0	$1,607,000	$1,923,000	$1,607,000	$1,607,000	$1,435,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$171,000	$0	$0	$0	$98,000	$0	$0
Municipal Property Tax							
Tax Rate	*1.634%*	*0.550%*	*0.946%*	*2.321%*	*0.841%*	*2.036%*	*3.066%*
Municipal Property Taxes Paid	$88,000	$30,000	$51,000	$125,000	$45,000	$110,000	$165,000
Costs							
Costs Varying By Location	$10,998,000	$8,519,000	$11,268,000	$11,682,000	$8,552,000	$10,704,000	$8,211,000
Compared to MA		*-22.5%*	*2.5%*	*6.2%*	*-22.2%*	*-2.7%*	*-25.3%*
Costs Not Varying By Location	$51,698,000	$51,698,000	$51,698,000	$51,698,000	$51,698,000	$51,698,000	$51,698,000
Total Costs	$62,696,000	$60,217,000	$62,966,000	$63,380,000	$60,250,000	$62,402,000	$59,909,000
Net Income (Sales minus Costs)	$13,854,000	$16,333,000	$13,584,000	$13,170,000	$16,300,000	$14,148,000	$16,641,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$1,316,000	$1,511,000	$1,223,000	$988,000	$1,125,000	$1,273,000	$749,000
Profit After State Tax	$12,538,000	$14,822,000	$12,361,000	$12,182,000	$15,175,000	$12,875,000	$15,892,000
As a % of Sales	*16.4%*	*19.4%*	*16.1%*	*15.9%*	*19.8%*	*16.8%*	*20.8%*
Compared to MA		*18.2%*	*-1.4%*	*-2.8%*	*21.0%*	*2.7%*	*26.8%*

Appendix Table 4: Financial Services - Securities

NAICS Code: 5231 & 5239
Employment: 2000
Average MA Wages : $165,971
Annual Sales : $786,600,000
Square Footage: 300,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$786,600,000	$786,600,000	$786,600,000	$786,600,000	$786,600,000	$786,600,000	$786,600,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*133.6*	*114.5*	*130.4*	*165.8*	*91.1*	*122.5*	*95.8*
Avg. Ann Pay	*$165,971*	*$142,237*	*$161,948*	*$206,008*	*$113,173*	*$152,181*	*$119,012*
Total Ann Pay	$331,942,000	$284,474,000	$323,896,000	$412,016,000	$226,347,000	$304,363,000	$238,024,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$1,534,000	$432,000	$2,141,000	$782,000	$1,082,000	$1,536,000	$630,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$165,971*	*$142,237*	*$161,948*	*$206,008*	*$113,173*	*$152,181*	*$119,012*
Total Worker's Comp Costs	$5,643,000	$9,075,000	$7,709,000	$12,237,000	$5,251,000	$9,161,000	$7,331,000
Employee Health Premiums							
Weighted Average Premium	*$7,710*	*$8,363*	*$7,328*	*$7,766*	*$7,010*	*$7,309*	*$7,266*
Total Cost for 80% of employees enrolled	$9,868,000	$10,705,000	$9,379,000	$9,940,000	$8,973,000	$9,356,000	$9,301,000
Annual Rent							
Per Square Foot	*$39.99*	*$11.20*	*$29.00*	*$36.74*	*$22.55*	*$15.00*	*$18.05*
Total Cost	$11,997,000	$3,359,000	$8,700,000	$11,022,000	$6,765,000	$4,500,000	$5,415,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.48*	*1.40*	*1.28*	*1.52*	*0.81*	*1.35*	*1.02*
Electricity Expenditures	$6,293,000	$5,953,000	$5,442,000	$6,463,000	$3,444,000	$5,740,000	$4,337,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.20*	*1.20*	*1.11*	*1.13*	*1.10*	*1.24*	*0.91*
Nat. Gas Expenditures	$315,000	$315,000	$291,000	$296,000	$288,000	$325,000	$239,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$14,159,000	$0	$19,822,000	$23,716,000	$19,822,000	$19,822,000	$17,698,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$2,906,000	$0	$0	$0	$1,677,000	$0	$0
Municipal Property Tax							
Tax Rate	*2.968%*	*0.917%*	*1.951%*	*3.868%*	*1.136%*	*3.807%*	*2.826%*
Municipal Property Taxes Paid	$4,952,000	$1,530,000	$3,255,000	$6,454,000	$1,895,000	$6,352,000	$4,715,000
Costs							
Costs Varying By Location	$389,609,000	$315,843,000	$380,635,000	$482,926,000	$275,544,000	$361,155,000	$287,690,000
Compared to MA		*-18.9%*	*-2.3%*	*24.0%*	*-29.3%*	*-7.3%*	*-26.2%*
Costs Not Varying By Location	$303,387,000	$303,387,000	$303,387,000	$303,387,000	$303,387,000	$303,387,000	$303,387,000
Total Costs	$692,996,000	$619,230,000	$684,022,000	$786,313,000	$578,931,000	$664,542,000	$591,077,000
Net Income (Sales minus Costs)	$93,604,000	$167,370,000	$102,578,000	$287,000	$207,669,000	$122,058,000	$195,523,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$8,892,000	$15,482,000	$9,232,000	$22,000	$14,329,000	$10,985,000	$8,799,000
Profit After State Tax	$84,712,000	$151,888,000	$93,346,000	$265,000	$193,340,000	$111,073,000	$186,724,000
As a % of Sales	*10.8%*	*19.3%*	*11.9%*	*0.0%*	*24.6%*	*14.1%*	*23.7%*
Compared to MA		*79.3%*	*10.2%*	*-99.7%*	*128.2%*	*31.1%*	*120.4%*

Appendix Table 5: Aerospace/Defense

NAICS Code: 3364
Employment: 363
Average MA Wages : $81,990
Annual Sales : $111,900,000
Square Footage: 200,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$111,900,000	$111,900,000	$111,900,000	$111,900,000	$111,900,000	$111,900,000	$111,900,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*133.6*	*107.8*	*136.8*	*133.6*	*91.1*	*122.5*	*91.1*
Avg. Ann Pay	*$81,990*	*$66,166*	*$83,954*	*$81,987*	*$55,908*	*$75,178*	*$55,908*
Total Ann Pay	$29,762,000	$24,018,000	$30,475,000	$29,761,000	$20,295,000	$27,290,000	$20,295,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$278,000	$78,000	$389,000	$142,000	$196,000	$279,000	$114,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$81,990*	*$66,166*	*$83,954*	*$81,987*	*$55,908*	*$75,178*	*$55,908*
Total Worker's Comp Costs	$506,000	$766,000	$725,000	$884,000	$471,000	$821,000	$625,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$1,583,000	$1,756,000	$2,041,000	$1,511,000	$1,482,000	$1,699,000	$1,634,000
Annual Rent							
Per Square Foot	*$9.80*	*$5.50*	*$5.75*	*$9.09*	*$4.33*	*$6.42*	*$3.54*
Total Cost	$1,960,000	$1,100,000	$1,150,000	$1,817,000	$866,000	$1,284,000	$709,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$559,000	$735,000	$626,000	$482,000	$324,000	$633,000	$450,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$112,000	$99,000	$91,000	$93,000	$86,000	$94,000	$63,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$2,126,000	$0	$2,976,000	$3,561,000	$2,976,000	$2,976,000	$2,657,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$114,000	$0	$0	$0	$66,000	$0	$0
Municipal Property Tax							
Tax Rate	*1.634%*	*0.648%*	*1.082%*	*2.321%*	*0.917%*	*2.036%*	*3.166%*
Municipal Property Taxes Paid	$445,000	$177,000	$295,000	$633,000	$250,000	$555,000	$863,000
Costs							
Costs Varying By Location	$37,445,000	$28,729,000	$38,768,000	$38,884,000	$27,012,000	$35,631,000	$27,410,000
Compared to MA		*-23.3%*	*3.5%*	*3.8%*	*-27.9%*	*-4.8%*	*-26.8%*
Costs Not Varying By Location	$70,763,000	$70,763,000	$70,763,000	$70,763,000	$70,763,000	$70,763,000	$70,763,000
Total Costs	$108,208,000	$99,492,000	$109,531,000	$109,647,000	$97,775,000	$106,394,000	$98,173,000
Net Income (Sales minus Costs)	$3,692,000	$12,408,000	$2,369,000	$2,253,000	$14,125,000	$5,506,000	$13,727,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$351,000	$1,148,000	$213,000	$169,000	$975,000	$496,000	$618,000
Profit After State Tax	$3,341,000	$11,260,000	$2,156,000	$2,084,000	$13,150,000	$5,010,000	$13,109,000
As a % of Sales	*3.0%*	*10.1%*	*1.9%*	*1.9%*	*11.8%*	*4.5%*	*11.7%*
Compared to MA		*237.0%*	*-35.5%*	*-37.6%*	*293.6%*	*50.0%*	*292.4%*

Appendix Table 6: Software

NAICS Code: 5112
Employment: 21
Average MA Wages : $112,148
Annual Sales : $7,650,000
Square Footage: 5,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$7,650,000	$7,650,000	$7,650,000	$7,650,000	$7,650,000	$7,650,000	$7,650,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*136.1*	*106.9*	*136.8*	*165.8*	*93.1*	*122.5*	*95.8*
Avg. Ann Pay	*$112,148*	*$88,066*	*$112,720*	*$136,638*	*$76,712*	*$100,937*	*$78,937*
Total Ann Pay	$2,355,000	$1,849,000	$2,367,000	$2,869,000	$1,611,000	$2,120,000	$1,658,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$16,000	$5,000	$22,000	$8,000	$11,000	$16,000	$7,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$112,148*	*$88,066*	*$112,720*	*$136,638*	*$76,712*	*$100,937*	*$78,937*
Total Worker's Comp Costs	$40,000	$59,000	$56,000	$85,000	$37,000	$64,000	$51,000
Employee Health Premiums							
Weighted Average Premium	*$7,710*	*$8,363*	*$7,328*	*$7,766*	*$7,010*	*$7,309*	*$7,266*
Total Cost for 80% of employees enrolled	$104,000	$112,000	$98,000	$104,000	$94,000	$98,000	$98,000
Annual Rent							
Per Square Foot	*$25.42*	*$12.40*	*$24.63*	*$26.30*	*$18.39*	*$15.00*	*$17.90*
Total Cost	$127,000	$62,000	$123,000	$132,000	$92,000	$75,000	$90,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.48*	*1.40*	*1.28*	*1.52*	*0.81*	*1.35*	*1.02*
Electricity Expenditures	$15,000	$14,000	$13,000	$16,000	$8,000	$14,000	$11,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.20*	*1.20*	*1.11*	*1.13*	*1.10*	*1.24*	*0.91*
Nat. Gas Expenditures	$0	$0	$0	$0	$0	$0	$0
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$214,000	$0	$300,000	$359,000	$300,000	$300,000	$268,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$29,000	$0	$0	$0	$17,000	$0	$0
Municipal Property Tax							
Tax Rate	*2.167%*	*1.329%*	*1.803%*	*3.868%*	*1.041%*	*3.807%*	*2.826%*
Municipal Property Taxes Paid	$38,000	$23,000	$32,000	$68,000	$18,000	$67,000	$50,000
Costs							
Costs Varying By Location	$2,938,000	$2,124,000	$3,011,000	$3,641,000	$2,188,000	$2,754,000	$2,233,000
Compared to MA		*-27.7%*	*2.5%*	*23.9%*	*-25.5%*	*-6.3%*	*-24.0%*
Costs Not Varying By Location	$2,678,000	$2,678,000	$2,678,000	$2,678,000	$2,678,000	$2,678,000	$2,678,000
Total Costs	$75,000	$0	$0	$0	$43,000	$0	$0
Net Income (Sales minus Costs)	$2,034,000	$2,848,000	$1,961,000	$1,331,000	$2,784,000	$2,218,000	$2,739,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$193,000	$263,000	$176,000	$100,000	$192,000	$200,000	$123,000
Profit After State Tax	$1,841,000	$2,585,000	$1,785,000	$1,231,000	$2,592,000	$2,018,000	$2,616,000
As a % of Sales	*24.1%*	*33.8%*	*23.3%*	*16.1%*	*33.9%*	*26.4%*	*34.2%*
Compared to MA		*40.4%*	*-3.0%*	*-33.1%*	*40.8%*	*9.6%*	*42.1%*

Appendix Table 7: Information Technology - Semiconductor Equipment Manufacturing

NAICS Code: 334413 & 334419
Employment: 86
Average MA Wages : $76,482
Annual Sales : $31,475,000
Square Footage: 35,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$31,475,000	$31,475,000	$31,475,000	$31,475,000	$31,475,000	$31,475,000	$31,475,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*136.1*	*106.9*	*134.4*	*133.6*	*93.1*	*122.5*	*95.8*
Avg. Ann Pay	*$76,482*	*$60,059*	*$75,523*	*$75,071*	*$52,316*	*$68,836*	*$53,833*
Total Ann Pay	$6,577,000	$5,165,000	$6,495,000	$6,456,000	$4,499,000	$5,920,000	$4,630,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$66,000	$19,000	$92,000	$34,000	$47,000	$66,000	$27,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$76,482*	*$60,059*	*$75,523*	*$75,071*	*$52,316*	*$68,836*	*$53,833*
Total Worker's Comp Costs	$112,000	$165,000	$155,000	$192,000	$104,000	$178,000	$143,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$375,000	$416,000	$484,000	$358,000	$351,000	$403,000	$387,000
Annual Rent							
Per Square Foot	*$8.27*	*$5.95*	*$5.51*	*$9.09*	*$6.08*	*$6.42*	*$3.94*
Total Cost	$289,000	$208,000	$193,000	$318,000	$213,000	$225,000	$138,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$111,000	$146,000	$124,000	$96,000	$64,000	$126,000	$89,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$28,000	$24,000	$23,000	$23,000	$21,000	$23,000	$16,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$598,000	$0	$837,000	$1,002,000	$837,000	$837,000	$747,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$75,000	$0	$0	$0	$43,000	$0	$0
Municipal Property Tax							
Tax Rate	*1.193%*	*0.797%*	*1.086%*	*2.321%*	*0.841%*	*2.036%*	*2.985%*
Municipal Property Taxes Paid	$48,000	$32,000	$44,000	$93,000	$34,000	$82,000	$120,000
Costs							
Costs Varying By Location	$8,279,000	$6,175,000	$8,447,000	$8,572,000	$6,213,000	$7,860,000	$6,297,000
Compared to MA		*-25.4%*	*2.0%*	*3.5%*	*-25.0%*	*-5.1%*	*-23.9%*
Costs Not Varying By Location	$20,836,000	$20,836,000	$20,836,000	$20,836,000	$20,836,000	$20,836,000	$20,836,000
Total Costs	$29,115,000	$27,011,000	$29,283,000	$29,408,000	$27,049,000	$28,696,000	$27,133,000
Net Income (Sales minus Costs)	$2,360,000	$4,464,000	$2,192,000	$2,067,000	$4,426,000	$2,779,000	$4,342,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$224,000	$413,000	$197,000	$155,000	$305,000	$250,000	$195,000
Profit After State Tax	$2,136,000	$4,051,000	$1,995,000	$1,912,000	$4,121,000	$2,529,000	$4,147,000
As a % of Sales	*6.8%*	*12.9%*	*6.3%*	*6.1%*	*13.1%*	*8.0%*	*13.2%*
Compared to MA		*89.7%*	*-6.6%*	*-10.5%*	*92.9%*	*18.4%*	*94.1%*

Appendix Table 8: Medical Devices

NAICS Code:	3391
Employment:	40
Average MA Wages :	$62,619
Annual Sales :	$9,100,000
Square Footage:	20,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$9,100,000	$9,100,000	$9,100,000	$9,100,000	$9,100,000	$9,100,000	$9,100,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*133.6*	*106.9*	*130.4*	*165.8*	*91.1*	*122.5*	*95.8*
Avg. Ann Pay	*$62,619*	*$50,095*	*$61,101*	*$77,725*	*$42,699*	*$57,416*	*$44,902*
Total Ann Pay	$2,505,000	$2,004,000	$2,444,000	$3,109,000	$1,708,000	$2,297,000	$1,796,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$31,000	$9,000	$43,000	$16,000	$22,000	$31,000	$13,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$62,619*	*$50,095*	*$61,101*	*$77,725*	*$42,699*	*$57,416*	*$44,902*
Total Worker's Comp Costs	$43,000	$64,000	$58,000	$92,000	$40,000	$69,000	$55,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$174,000	$194,000	$225,000	$166,000	$163,000	$187,000	$180,000
Annual Rent							
Per Square Foot	*$7.76*	*$5.95*	*$6.72*	*$9.83*	*$4.33*	*$6.42*	*$3.94*
Total Cost	$155,000	$119,000	$134,000	$197,000	$87,000	$128,000	$79,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$56,000	$73,000	$62,000	$48,000	$32,000	$63,000	$45,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$83,000	$74,000	$68,000	$69,000	$64,000	$70,000	$47,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$191,000	$0	$268,000	$320,000	$268,000	$268,000	$239,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$14,000	$0	$0	$0	$8,000	$0	$0
Municipal Property Tax							
Tax Rate	*1.634%*	*0.797%*	*0.890%*	*2.321%*	*0.917%*	*2.036%*	*2.985%*
Municipal Property Taxes Paid	$35,000	$17,000	$19,000	$50,000	$20,000	$44,000	$64,000
Costs							
Costs Varying By Location	$3,287,000	$2,554,000	$3,321,000	$4,067,000	$2,412,000	$3,157,000	$2,518,000
Compared to MA		*-22.3%*	*1.0%*	*23.7%*	*-26.6%*	*-4.0%*	*-23.4%*
Costs Not Varying By Location	$4,693,000	$4,693,000	$4,693,000	$4,693,000	$4,693,000	$4,693,000	$4,693,000
Total Costs	$7,980,000	$7,247,000	$8,014,000	$8,760,000	$7,105,000	$7,850,000	$7,211,000
Net Income (Sales minus Costs)	$1,120,000	$1,853,000	$1,086,000	$340,000	$1,995,000	$1,250,000	$1,889,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$106,000	$171,000	$98,000	$26,000	$138,000	$113,000	$85,000
Profit After State Tax	$1,014,000	$1,682,000	$988,000	$314,000	$1,857,000	$1,137,000	$1,804,000
As a % of Sales	*11.1%*	*18.5%*	*10.9%*	*3.5%*	*20.4%*	*12.5%*	*19.8%*
Compared to MA		*65.9%*	*-2.6%*	*-69.0%*	*83.1%*	*12.1%*	*77.9%*

Appendix Table 9: Search & Navigation Instruments Manufacturing

NAICS Code: 334511
Employment: 1000
Average MA Wages : $91,541
Annual Sales : $233,525,000
Square Footage: 250,000

	MA	NH	NJ	NY	NC	RI	TX
Annual Sales	$233,525,000	$233,525,000	$233,525,000	$233,525,000	$233,525,000	$233,525,000	$233,525,000
Annual Payroll							
Relative Cost of Living (U.S. = 100)	*136.1*	*106.9*	*136.8*	*133.6*	*93.1*	*122.5*	*95.8*
Avg. Ann Pay	*$91,541*	*$71,884*	*$92,008*	*$89,852*	*$62,616*	*$82,390*	*$64,432*
Total Ann Pay	$91,541,000	$71,884,000	$92,008,000	$89,852,000	$62,616,000	$82,390,000	$64,432,000
Unemployment Insurance							
Rate for zero balance firm - 2006	*5.48%*	*2.70%*	*4.30%*	*4.60%*	*3.24%*	*4.80%*	*3.50%*
Wage Base - 2006	*$14,000*	*$8,000*	*$24,900*	*$8,500*	*$16,700*	*$16,000*	*$9,000*
Total U/I Costs	$767,000	$216,000	$1,071,000	$391,000	$541,000	$768,000	$315,000
Workers' Compensation							
State Index Rate	*1.70%*	*3.19%*	*2.38%*	*2.97%*	*2.32%*	*3.01%*	*3.08%*
Wage Base	*$91,541*	*$71,884*	*$92,008*	*$89,852*	*$62,616*	*$82,390*	*$64,432*
Total Worker's Comp Costs	$1,556,000	$2,293,000	$2,190,000	$2,669,000	$1,453,000	$2,480,000	$1,985,000
Employee Health Premiums							
Weighted Average Premium	*$6,814*	*$7,559*	*$8,785*	*$6,502*	*$6,378*	*$7,314*	*$7,034*
Total Cost for 80% of employees enrolled	$4,361,000	$4,838,000	$5,623,000	$4,161,000	$4,082,000	$4,681,000	$4,502,000
Annual Rent							
Per Square Foot	*$8.27*	*$5.95*	*$6.24*	*$9.09*	*$6.08*	*$6.42*	*$3.94*
Total Cost	$2,068,000	$1,488,000	$1,560,000	$2,272,000	$1,520,000	$1,605,000	$984,000
Energy Costs							
Relative Electricity Price - (U.S. = 1.00)	*1.59*	*2.09*	*1.78*	*1.37*	*0.92*	*1.80*	*1.28*
Electricity Expenditures	$1,401,000	$1,842,000	$1,569,000	$1,207,000	$811,000	$1,586,000	$1,128,000
Relative Natural Gas Price - (U.S. = 1.00)	*1.62*	*1.43*	*1.32*	*1.34*	*1.24*	*1.36*	*0.91*
Nat. Gas Expenditures	$234,000	$206,000	$190,000	$193,000	$179,000	$196,000	$131,000
Sales & Use Taxes							
Tax Rate	*5.00%*	*0.00%*	*7.00%*	*8.38%*	*7.00%*	*7.00%*	*6.25%*
Sales & Use Taxes Paid	$5,371,000	$0	$7,519,000	$8,996,000	$7,519,000	$7,519,000	$6,714,000
Property/Net Worth Tax							
Tax Rate	*0.26%*	*0.00%*	*0.00%*	*0.00%*	*0.15%*	*0.03%*	*0.25%*
Property/Net Worth Tax Taxes Paid	$358,000	$0	$0	$0	$206,000	$0	$0
Municipal Property Tax							
Tax Rate	*1.193%*	*0.797%*	*1.082%*	*2.321%*	*0.841%*	*2.036%*	*2.985%*
Municipal Property Taxes Paid	$343,000	$229,000	$311,000	$667,000	$242,000	$585,000	$858,000
Costs							
Costs Varying By Location	$108,000,000	$82,996,000	$112,041,000	$110,408,000	$79,169,000	$101,810,000	$81,049,000
Compared to MA		*-23.2%*	*3.7%*	*2.2%*	*-26.7%*	*-5.7%*	*-25.0%*
Costs Not Varying By Location	$111,981,000	$111,981,000	$111,981,000	$111,981,000	$111,981,000	$111,981,000	$111,981,000
Total Costs	$219,981,000	$194,977,000	$224,022,000	$222,389,000	$191,150,000	$213,791,000	$193,030,000
Net Income (Sales minus Costs)	$13,544,000	$38,548,000	$9,503,000	$11,136,000	$42,375,000	$19,734,000	$40,495,000
State Corporate Income Tax							
State Corporate Tax Rate	*9.50%*	*9.25%*	*9.00%*	*7.50%*	*6.90%*	*9.00%*	*4.50%*
State Corporate Taxes	$1,287,000	$3,566,000	$855,000	$835,000	$2,924,000	$1,776,000	$1,822,000
Profit After State Tax	$12,257,000	$34,982,000	$8,648,000	$10,301,000	$39,451,000	$17,958,000	$38,673,000
As a % of Sales	*5.2%*	*15.0%*	*3.7%*	*4.4%*	*16.9%*	*7.7%*	*16.6%*
Compared to MA		*185.4%*	*-29.4%*	*-16.0%*	*221.9%*	*46.5%*	*215.5%*

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