The Big Shrink

Declining Establishment Size in Massachusetts

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by John Friar

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Pioneer's Mission

Pioneer Institute is an independent, non-partisan, privately funded research organization that seeks to improve the quality of life in Massachusetts through civic discourse and intellectually rigorous, data-driven public policy solutions based on free market principles, individual liberty and responsibility, and the ideal of effective, limited and accountable government.

Pioneer's Centers

This paper is a publication of the Center for Economic Opportunity, which seeks to keep Massachusetts competitive by promoting a healthy business climate, transparent regulation, small business creation in urban areas and sound environmental and development policy. Current initiatives promote market reforms to *increase the supply of affordable housing*, *reduce the cost of doing business*, and *revitalize urban areas*.

The Center for School Reform seeks to increase the education options available to parents and students, drive system-wide reform, and ensure accountability in public education. The Center's work builds on Pioneer's legacy as a recognized leader in the charter public school movement, and as a champion of greater academic rigor in Massachusetts' elementary and secondary schools. Current initiatives promote *choice and competition, school-based management, and enhanced academic performance in public schools.*

The Center for Better Government seeks limited, accountable government by promoting competitive delivery of public services, elimination of unnecessary regulation, and a focus on core government functions. Current initiatives promote *reform of how the state builds, manages, repairs and finances its transportation assets as well as public employee benefit reform.*

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John Friar

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Foreword

The Massachusetts economy has suffered – along with that of other states – through the effects of the latest recession. Facing many of the same pressures as the rest of the country, the Bay State's unemployment rate soared. While we have enjoyed modest gains in employment over the past year, hundreds of thousands of people are out of work, while the threat of a 'jobless recovery' looms for many workers.

Pioneer believes that we must take stock not only of what is immediately apparent in the economy, but also take a longer view. We are concerned that the state has essentially experienced no growth in its employment base in 20 years. We are further troubled by the fact that, unlike the rest of the country which created millions of jobs, Massachusetts has not climbed out of the deep jobs hole it found itself in after the 2001 dot-com bubble.

How have our economy and the profile of our businesses changed over time? Which industries are creating jobs? What kinds of businesses remain in Massachusetts? Which ones are likely to expand? What are the policy levers that we need to pull in order to reinvigorate the entrepreneurial class in the Bay State?

Since 2006, our work has centered on two big themes: The business climate needed to grow jobs and the trends in job and business creation in the Bay State. Our work began with the *Cost of Doing Business* (2006), a detailed exposition of business costs for nine key sectors in Massachusetts' economy on the topic of the business climate. Over three years, we explored specific reforms to key cost disadvantages regarding unemployment insurance, commercial rents, and health care, to point a direction forward to strengthening Massachusetts' competitive position.

Along the way, we have kept our eye on key sectors, in September of 2010, partnering with the Massachusetts High Technology Council, to release *Keeping Massachusetts Competitive*, which analyzed the concerns of leaders of innovation sector businesses.

In January of 2010, Pioneer Institute released our first white paper in our jobs series, entitled *Failure to Thrive*. The paper demonstrated that Massachusetts has failed to create jobs over the last eighteen years and is developing a problem with entrepreneurship. We followed that up with *Heading Down*, which showed the devastating impact that losing 5,000 headquarters has had on employment in Massachusetts, and *Playing the Lottery*, which detailed the surprisingly modest impact of firm relocation.

We are pleased to share with you *The Big Shrink*, research that reveals a troubling trend—Massachusetts is creating fewer businesses and those businesses that it is creating are dramatically shrinking in size.

The current economic development conversation is too focused on the government's narrow selection of favored 'sweet spot' industries to solve the jobs challenge our state faces. The current policy trajectory lacks adequate grounding in the broad dynamics of job creation to succeed. Findings like the precipitous drop in firm size require that we examine the basic assumptions of current policies and devise new and more effective ways to support our state's existing businesses and future entrepreneurs.

James Stergios
Executive Director

The Big Shrink

Declining Establishment Size in Massachusetts

Executive Summary

Massachusetts is among a handful of states nationwide that have seen no new net job growth since 1990. We are among the even fewer states that saw significant job loss between 2001 and 2007, *even before the massive recession*. In contrast, the rest of the country experienced significant job growth over the last two decades including between 2001 and 2007.

The Big Shrink adds to our understanding by examining the shrinking size of Massachusetts' firms and the causes of this economy-wide phenomenon in order to determine whether the trend has systemic impacts on our economy and, therefore, one hopes, on policy formation. The paper finds that reduction in firm size is widespread, holding true for all industries and most establishment types.

More specifically, the average firm size in all industries shrank from 1990 to 2007, except for manufacturing. Further, the average size of branch and standalone firms shrank dramatically. While the average firm size of headquarters increased, the number of headquarters in Massachusetts has shrunk on both relative and absolute bases, such that the increase in the size of Massachusetts-headquartered firms does not make up for other job losses.

These findings are important because even before the most recent recession, job creation from firm births in Massachusetts had not kept pace with job loss from firm deaths in the state. The state's poor record of job creation was caused, in part, by the dramatic shrinkage in firm sizes. Finally, with Massachusetts increasingly becoming a state comprised of smaller businesses, growing jobs will require that the state either dramatically increase its rate of business creation or it will have to reverse the firm size trends. A successful job creation strategy will likely require both.

Shrinking establishment size has two main causes. Large establishments in Massachusetts are disappearing; this is particularly true as regards to branches of over 100 people. Second, the new establishments "birthed" in the Bay State over the last two decades are predominantly small firms. The majority of these births are standalone firms; and most of the growth in standalone firms in our state is from single-person or non-employer service businesses. An analysis of the service industries demonstrates that this phenomenon held true for all types of service businesses with entities providing business services showing the most material reduction in firm size.

Shrinking firm size raises a central policy question: What is precluding Massachusetts establishments from growing and, in the process, hiring more people? Given that firm shrinkage is pervasive across industries, the answer may lie in the general business environment, not any one specific policy. That is, it is likely due to factors that make the costs of growing and hiring outweigh the benefits. These costs include labor, commercial rents, housing, taxes, unemployment insurance, and the legal and regulatory environments, to name just a few factors other studies have highlighted. Massachusetts often falls below average in studies that rank states based on the tax and regulatory environments.

Relative to the rest of the United States, Massachusetts' inability, long-term, to grow jobs suggests that our economic policies are not effective. Reigniting the Bay State's job engine will require a systematic approach to making the Commonwealth an attractive place to start and grow businesses. In doing so, the state will need to facilitate the "birth" of many more businesses or it will need to reverse the shrinking trend in the average size of establishments. Ideally, we will make a concerted effort to do both.

Introduction - Why Establishment Size Matters

In an earlier paper, *Failure to Thrive*, Massachusetts' primary barrier to entrepreneurship problem was identified: job creation from firm births has not kept pace with job loss from firm deaths. The result has been no new net job creation. In contrast, up until the recent recession the rest of the country experienced significant job growth. This problem was exacerbated by the dramatic shrinkage in firm size. Massachusetts has increasingly become a state comprised of smaller businesses, so the state needs higher rates of business creation to achieve net job creation.

Studies by the *Global Entrepreneurship Monitor* have shown a very close relationship between business formation and GDP growth – as much as one-third of GDP growth can be explained by the creation of new businesses. Studies by Ed Glaeser and other economists have argued that geographic areas with a large number of small businesses are more likely to have higher levels of entrepreneurship. So in theory, a state with a large number of small companies should have high levels of entrepreneurship, in turn leading to faster GDP growth.

In Massachusetts, however, that equation does not work – at least it has not worked yet. A study by Robert Fairlie and the Kauffman Foundation that analyzed the five largest business areas in Massachusetts found that, in 2007, Massachusetts had 52% more small companies (employer firms) than the national average. The study confirms Pioneer Institute's findings that Massachusetts has become a state composed of small businesses. The study also found that the business formation rate nationally was five times greater than that in Massachusetts, again confirming our finding that Massachusetts presents challenges to entrepreneurship. Perhaps the most troubling statistic, however, also reported in the study, was that GDP growth in Massachusetts from 2001 to 2006 was 33% less than the country as a whole.

Massachusetts, in summary, is steadily becoming an economy disproportionately comprised of small businesses but lacking the corresponding growth in the number of new employer firms. Since the two seem to have diverged in Massachusetts, this paper will analyze the trends in firm size to see if the problem is systemic or if it can be traced to a particular industry.

Methodology and Data

The data used in this brief are drawn from the National Establishment Time-Series Database (NETS Data), which has been used in a number of different studies to examine the effects of business relocation on employment change. These data follow all establishments in Massachusetts, including employer and non employer firms, both private and public, over time. With this comprehensive information, we can track total flows at the industry level, not just net results as other data sources do. Each establishment is permanently assigned a unique number that stays with it, whether it moves or is acquired, so we can track its changes over time.

A study by Neumark, Zhang and Wall assessed the reliability of the NETS data along a number of dimensions and found it to be reliable. According to the authors, the strengths of the NETS data set include the following: (1) it contains data on almost all establishments operating in the U.S. (both small and large) rather than on only a small sample; (2) it is a commercial data set and therefore lacks confidentiality restrictions; (3) it allows researchers to track establishments' physical relocations via annual changes in business address; (4) it gives researchers the ability to assess changes in employment at a given establishment over time; and (5) it provides researchers the ability to identify new business creation ("births") and the elimination of existing establishments ("deaths").

The sample includes 759,707 observations comprising all of the establishments or firms operating in Massachusetts from 1990 to 2007. It includes 18 years of annual data for all

Massachusetts firms regarding their business location, annual sales, number of employees, operational status, industry classification (4-digit SIC code), and type of establishment.

Trends in Firm Size

A. Top-Line Trends by Establishment Type

From 1990 until 2003, Massachusetts employment trends roughly tracked those of the nation as a whole: the state lost jobs to recessions between 1990-1992 and 2001-2003 and gained jobs during the intervening years. Between 2003 and 2007, however, the country gained jobs while Massachusetts lost them. The result for the country was net job growth of 26.6% from 1990 to 2007. Massachusetts, on the other hand, showed a net job loss of 0.3%, losing a total of 11,816 jobs during the 18-year period examined.

The stagnant job growth Massachusetts has experienced over the past two decades is due, in large part, to the simple fact that the average firm size in Massachusetts has decreased precipitously. In 1990, the average firm in Massachusetts employed 16 people. As of 2007, that figure had fallen to just 9.7, a staggering 39% reduction.

The implications of this reduction are clear. Just to maintain the same number of jobs, the state would have needed to experience firm growth of 64%. When considered from that perspective, it is somewhat surprising that Massachusetts experienced job loss of only 0.3%. The number of firms operating in the state was clearly growing between 1990 and 2007, but a significant portion of that growth occurred in the single/non-employer category.

Within the three categories of establishment type - headquarters, branches, and standalone firms - that have been tracked as part of the *Failure to Thrive* series, the data vary dramatically. Among headquarters the average firm size increased from 66 employees per firm to 72 employees, whereas among branches the average firm size fell significantly from 56 to 34 employees.

Neither of these trends, however, even including the significant drop in the average size of branches operating in the state, has had as much impact on overall average firm size as the decrease in the average size of standalone firms, even though the decrease was not as dramatic as the drop in the average size of branches. This is due to the fact that standalone firms constitute the largest percentage of the overall number of firms in the state.

Both of these trends - the growth in single/non-employer firms in Massachusetts and the decrease in the average size of standalone firms - correlate. Single/non-employer firms make up a considerably larger portion of the standalone firm category. And both trends also converge when the decrease in firm size across industry type is examined. It is within the services industry that the largest decrease is consistently observed, reflecting the large number of standalone and single/non-employer firms that operate in this industry.

Figure 1 breaks down Massachusetts' firms by establishment type, then average firm size and standard deviation. Though it indicates firm growth among headquarters as noted, it shows an overall decrease in firm size for the period 1990-2007. It also indicates that as the mean number of employees was decreasing, the standard deviation was falling sharply. Not only were firms in Massachusetts shrinking, but the range in the distribution of firm sizes was narrowing. This narrowing of the standard deviation means that large companies in Massachusetts are becoming rare. For example, in 1990 a branch with 312 employees would have been within the normal range; by 2007, a branch of that size was an anomaly.

Figure 1 also demonstrates that headquarters have, in the last two decades, increased in size - by just over 10%. However, this slight increase has had a negligible impact on overall firm size because the number of headquarters in the Commonwealth, as a percentage of all Massachusetts' firms, has decreased by half - from 10.81% of all MA firms in 1990 to 5.13% of firms in 2007. Additionally, both branches and standalone firms, much more numerous in the state than headquarters, have decreased in size.

Branches experienced the largest absolute and relative (39.89%) decrease in firm size over the given time period. However, branches represented a small percentage of overall firms in 1990 (8.33%) and have remained a relatively small percentage in the years since. Standalone firms have experienced a slightly smaller decrease in firm size (34.65%) over the given time period. However, standalone firms represent the majority of all firms in Massachusetts and have thus contributed the most to the overall decrease in the average size of firms in the state.

B. Shifts in Distribution of Firm Size by Establishment Type

Figures 2, 3, and 4 show how the distributions of specific firm sizes have changed over the 17 year period. From 1990 to 2007 the average firm size of branches declined, the average firm size of headquarters increased, and the average size of standalone firms declined. For branches, the percentage of establishments with more than 100 employees decreased sharply, while for headquarters there was an increase in the percentage of establishments with more than 100 employees. For standalones, the percentage of firms with greater than 3 employees also decreased sharply. Each bar on the chart shows the percentage of firms in each size level during the period.

Figure 2 demonstrates that the average firm size for headquarters has increased between 1990 and 2007 (although the number of headquarters decreased dramatically). The most dramatic change has occurred at the extremes: the percentage of headquarters with 100 or more employees has gone up, while those with 10 or fewer has gone down. The distribution chart has shifted to the right to reflect the larger average size of headquarters.

Similar to the case for headquarters, Figure 3 shows that the distribution of branches has shifted the most at the extremes between 1990 and 2007. Unlike headquarters, the distribution for branches has shifted to the left, reflecting smaller firm sizes. There is a higher percentage of firms in the lowest firm size 'buckets' and a lower percentage of firms in the highest 'buckets', especially the firms that employ more than a 100 employees.

Figure 1. Average Employees per Firm 1990 & 2007

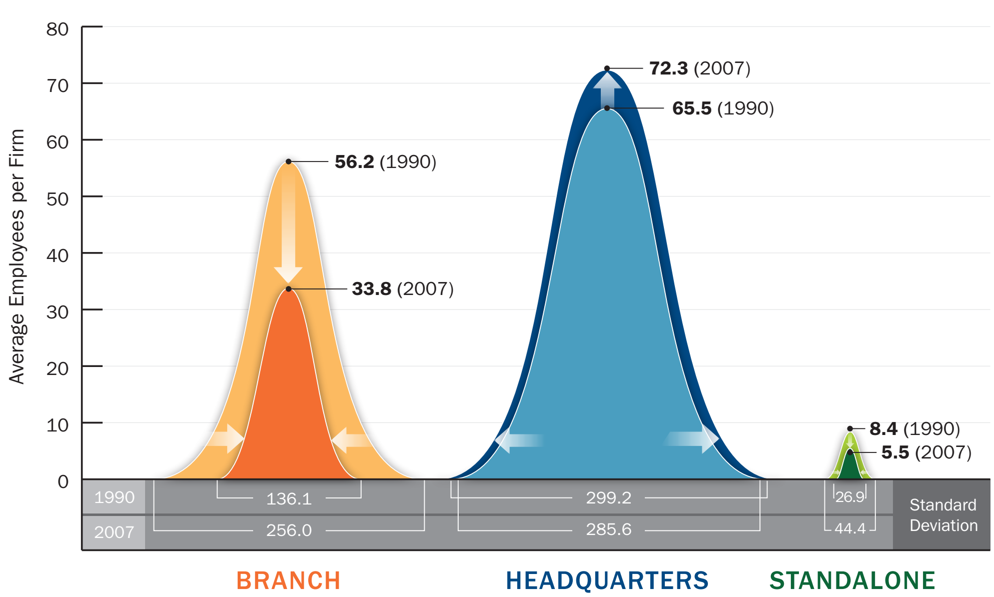


Figure 2

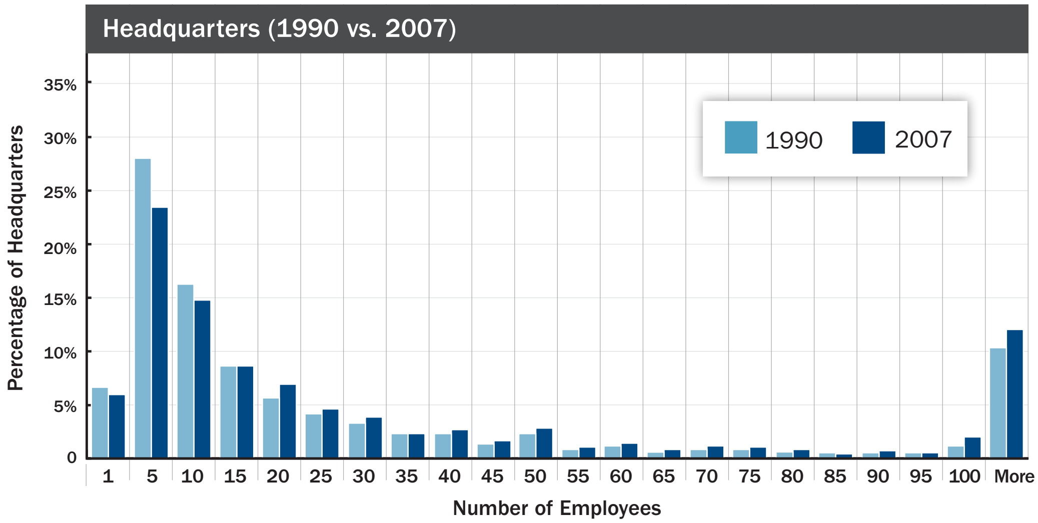


Figure 4 shows the most drastic change in the distribution of firms in terms of their employee size. There is a drastic shift to firms employing 2 or fewer employees in 2007 as more than 60% of all standalone firms now fall into this category, compared to just below 40% in 1990. Furthermore, we see a much more drastic falloff in the larger firm size buckets than before, as there are significantly fewer firms that fall into each of the larger firm size groupings in 2007 than in 1990.

There is a large increase in density in single/non-employer firms among standalones - roughly 50%. Here are combined two of the trends that have already been mentioned - that of the growth of single/non-employer firms, which, in turn, helps to account for the decrease in the average size of standalone firms.

Breakdown of Standalone Firm Contraction

A. Growth of Single/Non-Employer Firms

Figure 5 shows the breakdown of standalone firms and the cause of the observed decrease in firm size from 1990 to 2007. The main driver of firm size contraction is the growth of single/non-employer firms, coupled with stagnation in the number of large firms (which are firms employing at least 100 people). Over that time period the number of single/non-employer firms increased by 174%, whereas, though it peaked in 2002, the number

Figure 3

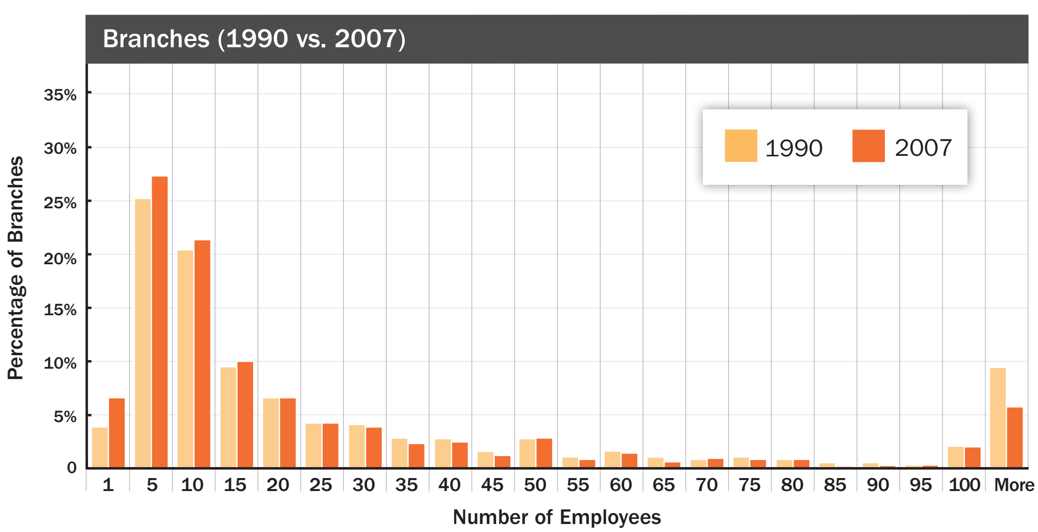
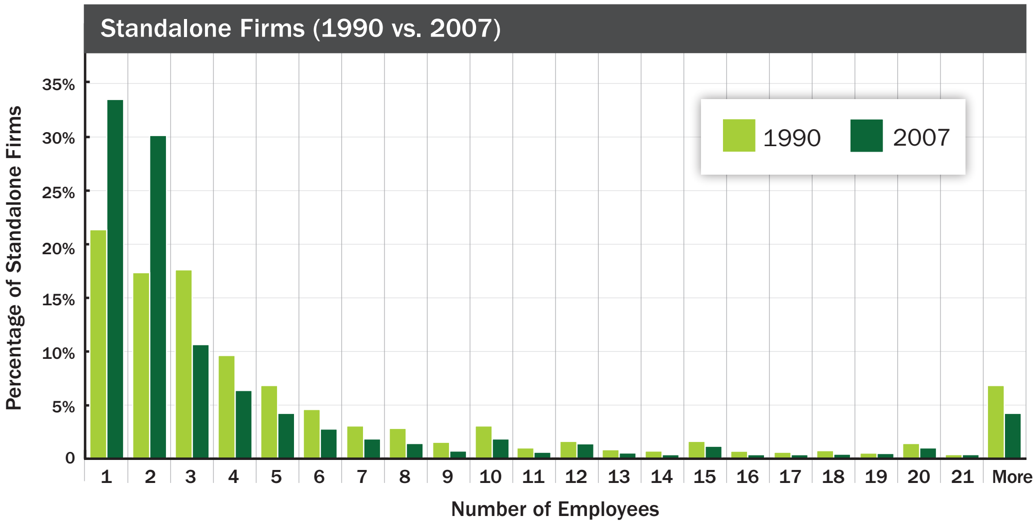


Figure 4



of "large" standalone firms in Massachusetts had, by 2007, returned to 1990 levels.

The 174 percent increase in single/non-employer standalone firms combined with the stagnation in large standalones results in a decrease in standalone firm size from 8.4 to 5.5.

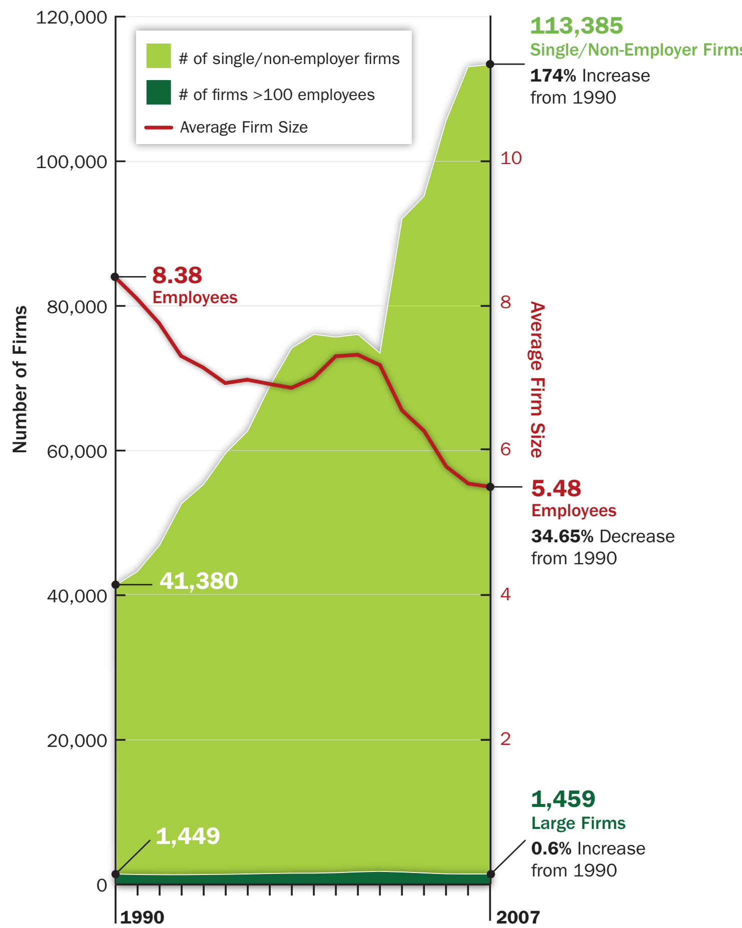
B. Breakdown of Firm Size Contraction by Industry (Standalone Firms Only)

Digging further into standalone firm contraction, the contraction in this category is examined for consistency across industry, or, conversely, concentration within certain industries.

Figure 6 shows the breakdown of firm size contraction by industry. Here we use the four digit SIC code to classify different firms into various industries. The industry with the largest decrease in firm size over this period is public administration - 71.63%. However, it is worth noting that due to the small number of public administration firms, the overall impact of the decrease in firm size in this industry is almost negligible on overall rates of decrease in average firm size.

In addition to public administration firms, most other industries also experienced significant decreases in firm size over the given period, showing decreases as large as 30-40%. The only industry that did not experience negative growth

Figure 5. Number of Large and Single/Non-Employer Firms and Firm Size Reduction – Standalone Firms Only (1990–2007)



was manufacturing, in which firm size actually increased slightly.

C. Breakdown of the Contribution to Firm Size Contraction by Industry

Figure 7 shows the industry-specific contributions to firm size contraction. Even though the previous figures show percentage decrease in firm size for each industry, they do not take into account the actual size of each industry and thus do not fully explain their contributions to overall firm size contraction.

In Figure 6, the Public Administration industry experienced the largest overall decrease in firm size over the given time period, but the industry is relatively small in both employment and number of firms and thus did not contribute significantly to overall firm size contraction. The majority of the contraction in the average firm size in Massachusetts is in fact due to firm size contraction in the service sector, which represents the state's largest industry by far. Based on this finding, the following analysis digs deeper into specific sub-industries of the service industry to determine more specific drivers of smaller firm size.

D. Changes in the Service Industry

i. Total Employment for Service Industries

Figure 8 shows several dimensions of the service industry over the 1990 to 2007 time period. First, total employment by service firms in Massachusetts between 1990 and 2007 is examined. During that time, total employment increased in all service industries except Membership Organizations. The fastest growing service industries over the time period were Miscellaneous Services, Amusement and Recreation, Social Services, and Business Services. But the largest service industries are Business Services, Health Services, Educational Services, and Engineering Services, and fluctuation in their firm sizes has the largest impact on the average firm size of all services and, thus, on the average firm size in Massachusetts

ii. Breakdown of average firm size in the Service Industries

Average firm size among the different services is examined next. As Figure 8 demonstrates, despite the growth in overall employment, average firm size decreased across every service category. To understand why, the growth of single nonemployer firms within the service industries is examined.

As Figure 8 shows, there was significant growth in single/non-employer standalone firms in the service industries. In particular, there was a marked increase in the percentage of single/nonemployer firms in business services. All of the individual service industries experienced significant decreases in average firm size during the time period from 1990 to 2007. On average, firm size in the service sector decreased by 36% over the given time period, but average firm size decreased at even faster rates in business services. This correlates almost exactly with the dramatic increase in single/non-employer firms in that industry.

Analysis Conclusions

This paper sought to identify the key drivers of declining firm size in Massachusetts and whether it was widespread across industries. From the preceding analyses, the phenomenon appears widespread throughout all industries and most establishment types and is therefore a systemic condition.

Key findings include:

- The average size of firms in all industries shrank from 1990 to 2007, except for manufacturing.
    - But, as an industry, manufacturing comprises too small a percentage of the state's economy to offset the impact of declines in other areas.
- The average size of branches and standalone firms shrank dramatically, while the size of headquarters increased.
    - But the number of headquarters in

Figure 6a: Firm Size by Industry - Standalone Firms Only (1990-2007)

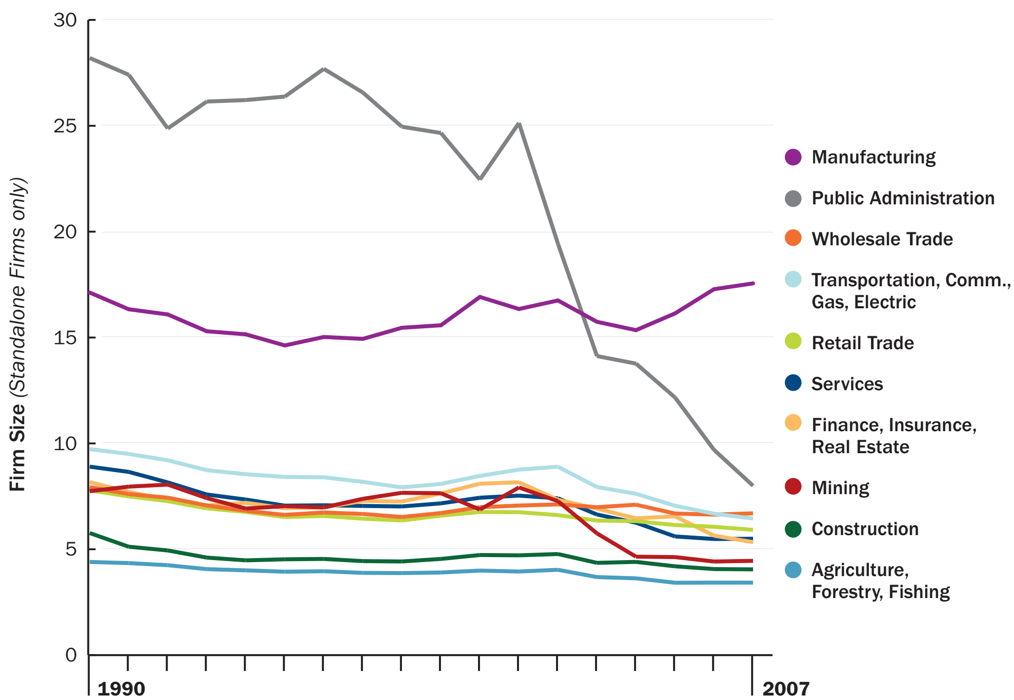


Figure 6b: Percent Change in Firm Size by Industry from 1990 to 2007

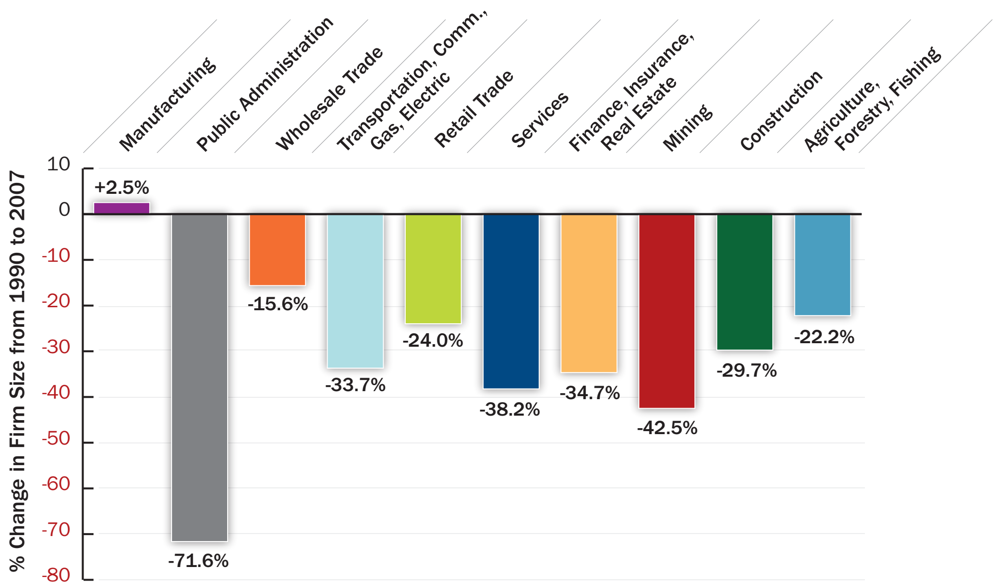
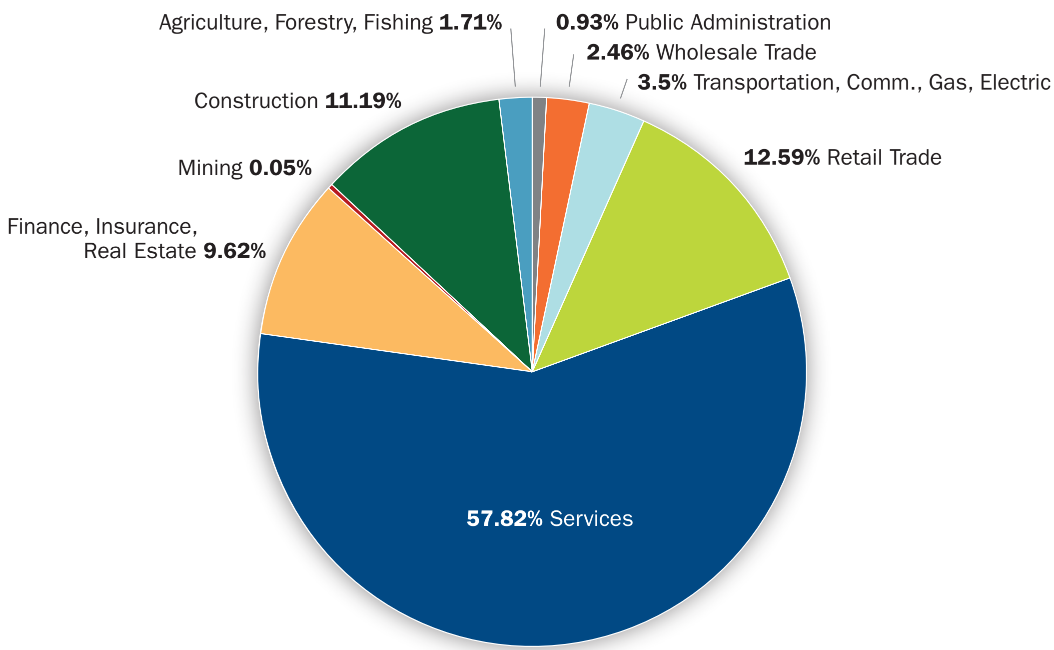


Figure 7: Industry Contribution to Firm Size Contraction



Massachusetts has shrunk on both relative and absolute levels, so as not to be a factor.

There have been two main causes for the widespread phenomenon of shrinking establishment size. The first is that large establishments in Massachusetts are disappearing; this is particularly true with branches of over 100 people. The other reason is that the new establishments that have been birthed in Massachusetts in the last two decades have been predominantly small firms. The majority of births have come from standalone firms and most of the growth in standalone firms in Massachusetts is from single-person service businesses. In a further analysis of the service industries, we found that the phenomenon was true for all types of service businesses but particularly marked in business services, which constitutes the largest sub-sector of the service industry

Policy Implications

Massachusetts is experiencing growth in the number of establishments operating in the state, but the growth in the number of employer firms is lagging behind the rest of the country. Instead, most of the growth has been in non-employer firms. The employer firms that do hire more people, (e.g. headquarters) have reduced their presence in the state. Other employer firms, standalone firms and branches, are shrinking in size rather than growing. For example, there was practically no increase from 1990 to 2007 in the number of standalone firms with more than 100 employees.

These data raises this troubling question: what is precluding Massachusetts establishments from growing and, in the process, hiring more people? Given the pervasive nature of the problem, the answer may lie in the general business environment: the costs of growing and hiring apparently outweigh the benefits. These costs include labor, offices, housing, taxes, regulations, unemployment insurance, and the legal environment, to name just a few. Massachusetts often falls below average in studies that rank states based on how favorable the economic climate is to do business.

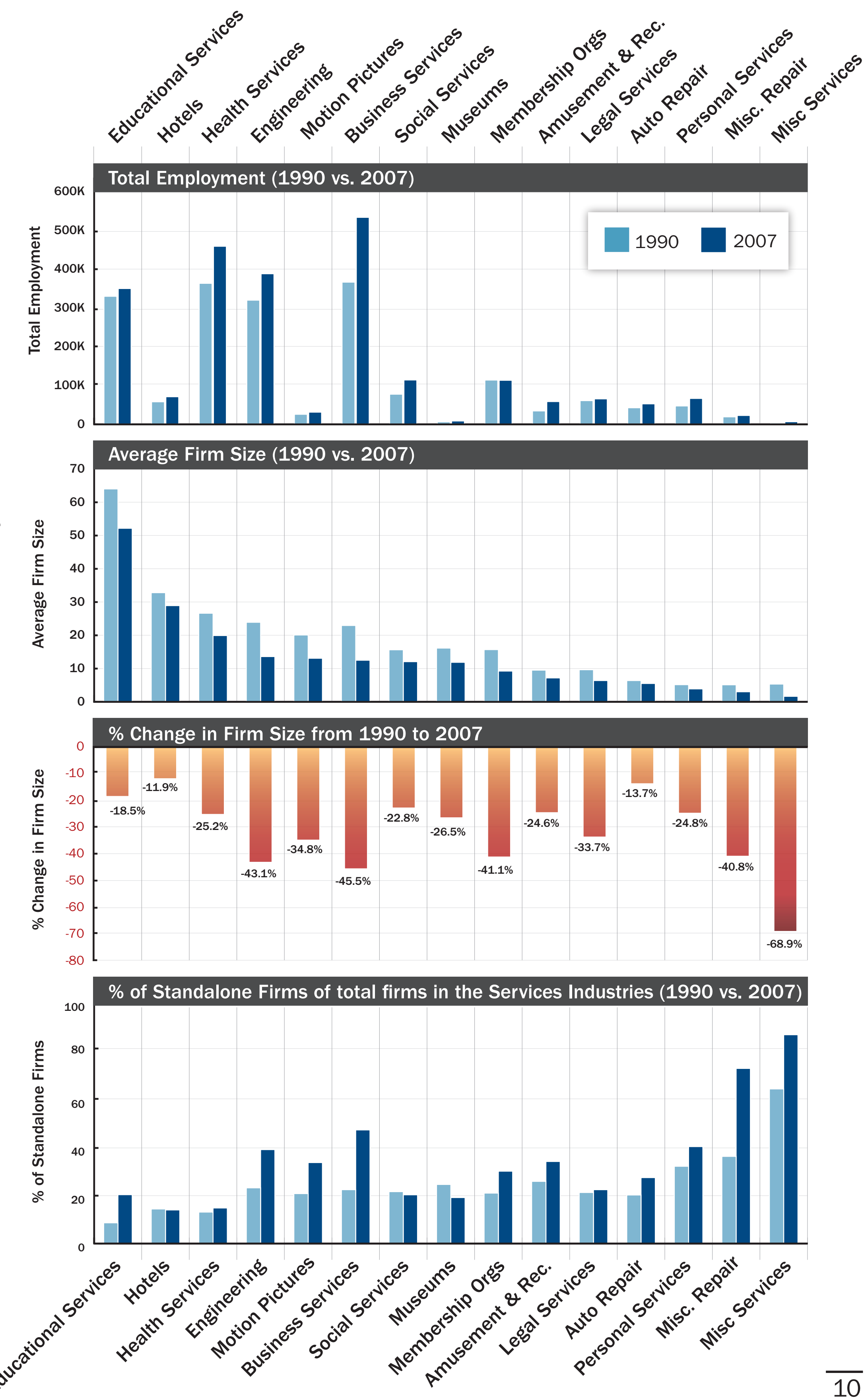
Figure 8. Breakdown of Services Industry

Figure 8a.
Total Employment for Service Industries (1990 vs. 2007)

Figure 8b.
Breakdown of Average Firm Size in the Service Industries (1990 vs. 2007)

Figure 8c.
Percentage Change in Firm Size from 1990–2007

Figure 8d.
Percent of Standalone Firms of Total Firms in the Service Industries (1990 vs. 2007)



For job creation to occur, a systematic approach, therefore, to make Massachusetts a more attractive place to start and grow businesses must become a priority. Massachusetts needs to get a lot more businesses started, or we need to reverse the shrinking trend in the average size of establishments (or in other words, businesses currently operating need to grow). Hopefully, the Commonwealth can achieve both.

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About Pioneer:

Pioneer Institute is an independent, non-partisan, privately funded research organization that seeks to change the intellectual climate in the Commonwealth by supporting scholarship that challenges the "conventional wisdom" on Massachusetts public policy issues.

Related Pioneer Publications

Keeping Massachusetts Competitive: The Business Climate in Context, Policy Brief, September 2010; http://www.pioneerinstitute.org/pdf/100916_keeping_ma_competitive.pdf

Playing the Lottery: The Impact of Interstate Relocation on Massachusetts Jobs, White Paper, June 2010; http://www.pioneerinstitute.org/pdf/100616_playing_the_lottery.pdf

Heading Down: The Loss of Massachusetts Headquarters, White Paper, March 2010; http://www.pioneerinstitute.org/pdf/100305_heading_down.pdf

Failure to Thrive: Job Creation and Loss in Massachusetts 1990-2007, White Paper, January 2010; http://www.pioneerinstitute.org/pdf/100129_failure_to_thrive.pdf

New Business Creation and the Urban Economy, Policy Brief, January 2008; http://www.pioneerinstitute.org/pdf/080228_friar.pdf

Unemployment Insurance in Massachusetts: Burdening Businesses and Hurting Job Creation, Policy Brief, January 2008; http://www.pioneerinstitute.org/pdf/08_ui_oleary_poftak.pdf

Measuring Up: The Cost of Doing Business in Massachusetts, White Paper, October 2006; http://www.pioneerinstitute.org/pdf/06_costofdoingbusiness.pdf

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