

Failure to Thrive

Job Creation and Loss in Massachusetts: 1990 – 2007

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by John Friar and Megan Gay



PIONEER INSTITUTE
PUBLIC POLICY RESEARCH

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Megan Gay

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Foreword

The Massachusetts economy has suffered, along with other states, through the effects of the recession. Massachusetts has faced the same economic pressures as the rest of the country, shedding jobs in 2008 and 2009. Our unemployment rate has soared, with hundreds of thousands out of work. And the threat of a ‘jobless recovery’ looms for many workers.

Over the next eight months, Pioneer Institute will be releasing a series of policy briefs that will guide policymakers by examining how jobs have been created and lost in this state over the past twenty years. The series, authored by John Friar, Pioneer Senior Fellow and Executive Professor of Entrepreneurship and Innovation at Northeastern University, and Megan Gay, Research Assistant, will cover a number of topics related to job creation and destruction, including the role of headquarters, key growth and decline industries, and the role of firm relocation.

As Massachusetts business and entrepreneurs assume the risks that will enable the state to rebound from the recession, this series seeks to inform policymakers how they can best support those efforts. The prior 18 years have been anything but a period of stagnation. Much has changed, and some trends for the better, but the end result, job losses even as the rest of the nation’s employment base has grown significantly, cannot be seen as a positive outcome for Massachusetts.

We need to understand why this has happened. We need to question the basic presuppositions of policy and find more effective ways to support our existing businesses and future entrepreneurs.

James Stergios

Executive Summary

Failure to Thrive examines employment trends in Massachusetts from 1990 to 2007. In the United States as a whole, the number of employed individuals peaked in December, 2007. Since then, the country has shed 7.3 million jobs. In the past two years, Massachusetts has faced the same economic pressures as the rest of the country, shedding jobs in 2008 and 2009. However, Massachusetts is distinguished from the rest of the U.S. by the fact that it has been shedding jobs since the 2001 recession. Overall, job trends in Massachusetts from 2001 on show a significant and negative divergence from those in the rest of the country.

This brief examines how jobs have been created and lost in Massachusetts in the eighteen-year period (1990-2007) leading up to the current recession. It analyzes the three basic elements of job creation:

- new firm ‘birth’
- existing firm expansion
- relocation of firms from another state

It also analyzes the three basic elements of job loss:

- firm ‘death’
- firm contraction
- firm relocation to another state.

Failure to Thrive examines these six elements and discusses the impact of each on overall employment numbers in Massachusetts.

From 1990 to 2007, the U.S. experienced net job growth of 26.6%; Massachusetts showed net job loss of -0.3%, losing a total of 11,816 jobs over this period. From 1990 until 2003, Massachusetts job trends roughly followed US trends: losing jobs in 1990-1992 and 2001-2003 due to recessions and gaining jobs in intervening years. From 2003 through 2007, however, the U.S. gained jobs while Massachusetts lost jobs. In order to understand this divergence, we analyze not just

net changes in jobs, but also gross flows in job changes – a phenomenon we have labeled ‘flux’. In an average year, 670,000 jobs (17% of the jobs base) are created or destroyed in Massachusetts.

This flux occurs in good economic times and in bad, and for practically all industries. For comparison, we examined the level of flux for the State of California and found it to be around the same percentage of its job base.¹ In California, the net result was job growth, for Massachusetts the net result of these flows has been stagnation, with a slight job loss. As our data show, despite a minimal net effect, businesses are constantly expanding or contracting, forming or dying, and moving across borders.

As Figure 1 demonstrates, job creation drivers accounted for 49.94% of the flux, while job loss drivers accounted for 50.06%. The result is a slight loss in jobs. For Massachusetts, more jobs are lost due to companies stopping operations than gained from those starting up, especially since 2002, a fact which explains, in part, why Massachusetts has not added jobs since the 2001 recession.

In the first four years of the jobs recovery starting in 1992, start-up companies created 210,834 more jobs than were lost by firm deaths. During this time, existing companies continued to shed 41,732 more jobs than they added. In contrast, during the four years of national job recovery after the 2001 recession, Massachusetts lost 321,751 jobs

Figure 1: Drivers of Job Flux

	Percent	Jobs Created/Lost
Expansion	21.96%	+2,494,262
Birth	27.17%	+3,086,217
In Relocation	0.81%	+92,493
Contraction	19.08%	-2,166,497
Death	29.95%	-3,401,710
Out Relocation	1.03%	-116,581
TOTAL		(11,816)

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because firm deaths were greater than births. Existing firms actually added 95,469 during this same time.

The data clearly suggest that Massachusetts has developed an entrepreneurship problem, as start-up rates and firm sizes have slowed dramatically. Prior to 2002, the average start-up added 7.4 jobs; since then, the number has dropped by half to 3.7 jobs. This factor has contributed to a decline in average firm size from 16.69 employees to 9.96 employees.

The brief shows that:

- The job market in Massachusetts is dynamic, with an average of 670,000 jobs in flux (i.e., created or destroyed) every year.
 - The main drivers of job creation and loss have been firm deaths and births throughout this eighteen-year period. The next most significant employment drivers have been firm expansion and contraction, which, on average, have generated a net increase in jobs before and after 2002.
 - The net and gross result of firm relocation is small. Some jobs have been lost due to the fact that more companies have moved out of state than have moved in. However, firm relocation has had a negative effect on overall employment numbers since 2002.
 - Massachusetts is becoming a state of increasingly smaller firms. Since 1990, the state has seen a 67% increase in the total number of companies in the state, but the average size of firms has shrunk 40%, from 16.69 employees to 9.96 employees. The combined effect of these two factors is flat employment levels.
 - Start-up companies are getting smaller and the number of employees added by start-ups has not kept pace with the number of jobs lost due to company deaths
- Since 2002, the U.S. economy has created jobs while Massachusetts has lost jobs.

As a result, we make the following recommendations:

- The focus for government efforts and incentives should be on endogenous growth – helping entrepreneurs to start businesses and helping existing companies to stay in business and to expand. An environment that improves the health of our ‘home-grown’ businesses will have a much greater impact than policies that are designed to get companies to relocate to Massachusetts.
- Firm relocation occupies too great a portion of the public sector’s economic development attention. Based on Massachusetts’ (and California’s) experience from 1990 to 2007, this energy is, at the very least, inefficiently directed and, more likely, a poor use of limited resources. As noted in our findings, the decline in the raw number and size of new businesses is troubling, as firm births is the leading creator of new jobs relative to other measures. A business climate that promotes and nurtures start-ups is an essential component in creating new jobs.

In addition, the fact that existing firm expansion is a close second in creating jobs suggests that it deserves proportionate attention from the public sector.

While the politics of firm relocation is perfectly understandable, the truth is that job and business creation are, except at the margins, the result of local risk takers. We should refocus our efforts to support them in increasing employment and prosperity in Massachusetts.

Introduction

Failure to Thrive examines employment trends in Massachusetts from 1990 to 2007. In the United States as a whole, the number of employed individuals peaked in December, 2007. Since then, the country has shed 7.3 million jobs. In the past two years, Massachusetts has faced the same economic pressures as the rest of the country, shedding jobs in 2008 and 2009. However, Massachusetts is distinguished from the rest of the U.S. by the fact that it has been shedding jobs since the 2001 recession. Overall, job trends in Massachusetts from 2001 on show a significant and negative divergence from those in the rest of the country.

This brief examines how jobs have been created and lost in Massachusetts in the eighteen-year period (1990-2007) leading up to the current recession. It analyzes the three basic elements of job creation:

- new firm ‘birth’
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- firm ‘death’
- firm contraction
- firm relocation to another state

This brief examines these six elements and discusses the impact of each on overall employment numbers in Massachusetts.

Methodology and Data

The data used in this brief are from the National Establishment Time-Series Database² (NETS Data), which has been used in a number of different studies examining the effects of business relocation on employment change.³ These data follow all establishments in Massachusetts, both private and public, over

time. With this information, we can track total flows at the industry level and 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 always track factors like number of employees, place of business, operational status, etc.

A study by Neumark, Zhang and Wall assessed the reliability of the NETS data on a number of dimensions and found it to be a reliable data source.⁴ According to the authors, the strengths of the NETS data include the following: (1) it contains data on almost all establishments operating in the U.S. (both small and large) rather than only a small sample; (2) it is a commercial data set and therefore lacks confidentiality restrictions; (3) it allows researchers to track physical establishment 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 elimination of existing establishments (“death”).⁵

Our sample includes 759,707 observations comprising all of the establishments or firms operating in Massachusetts from 1990 to 2007. It includes eighteen 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), type of establishment and business relocation details (if applicable).

Findings

On the surface, in the past eighteen years, almost nothing relative to the number of jobs appears to have changed in Massachusetts. There has been close to zero net job creation and, in large part, the same industries, in broad terms, are still the state’s leading employers. What these numbers belie, however, is the underlying level of flux that has occurred despite the stasis of the net numbers. In an average year, 670,000 jobs (17% of the jobs

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base) are created or destroyed, so the net number is actually the result of large flows underneath. This flux occurs in good economic times and in bad, and for all industries. Businesses are constantly expanding or contracting, yet the net result for the state has been almost no change in employment numbers. The number of jobs in the state has moved up or down, on average, 2.4% per year while the cumulative jobs change has been -0.3% (a loss of 11,816 jobs) over the entire seventeen year period.

The contrast between the high level of yearly flux and minimal overall change is striking. Thus, the major drivers of job change should be analyzed in their component parts, not just the net numbers. The strongest driver of job flux has been job loss due to firm death. The next strongest is job creation through firm birth, followed by firm expansion and contraction. The movement of jobs across state borders (in or out) has played only a minor role, accounting for less than 2% of the flux.

As Figure 2 below demonstrates, the most important driver of job change - positive or negative - was net firm births⁶ and deaths in twelve of the last seventeen years. In the other five years, net expansion or contraction of existing businesses played the stronger role. The movement of companies across state borders played a small role: In fifteen of seventeen years, this factor made up less than 5% of the impact.

Figure 3 below breaks down the changes in the Commonwealth's employment for all the single year intervals spanning 1990 to 2007. Appendix 1 contains the actual values and percentage of employment change from each of the three net effects identified above. In addition, the figure indicates the share of job creation due to In-Relocation and the share of job elimination due to Out-Relocation.

As Figure 3 shows, neither In-Relocation nor Out-Relocation plays a large role in job creation, job elimination or employment change in any of the single-year intervals between 1990 and

2007. With respect to job creation, In-Relocation is never responsible for more than 4.06% of annual job creation in 1990-2007. Similarly, Out-Relocation is never responsible for more than 4.10% of annual job elimination during the same time period. The bulk of job creation in Massachusetts comes from the creation of new firms (Births) and the expansion of existing firms. Likewise, most of job elimination is the product of the closure of existing firms (Deaths) and the contraction of existing firms.

Births & Deaths

Firm births and deaths create and destroy a significant number of jobs in Massachusetts. This brief considers "Firm Births" to be the creation of new establishments or firms in the state. The creation of these firms generates a positive change in the number of firms in the state and an increase in total employment. Firm Deaths refers to the elimination of existing establishments or firms, which generates a negative change in the number of firms and a decrease in total state employment.

Figure 4 breaks down the increase in the number of firms, employment growth and average number of jobs generated per new firm via Firm Births in Massachusetts using single-year intervals.

During 1990-2007, a total of 508,194 new establishments were created in the state. The "Birth" of these firms generated a total of 3,086,217 new jobs⁷ during the period. On average, there were 29,894 new firms established during each interval from 1990 to 2007. Firm creation resulted in an average of 181,542 new jobs generated on an annual basis. Each firm that was established in Massachusetts during the period created an average of 6.07 new jobs in the state. However, it is important to note the shift in jobs creation since 2002. Even though the average number of firms created has risen 24%, the average size of these startups has dropped 50%, resulting in 38% fewer jobs created through firm births.

Figure 2: Drivers of Job Flux

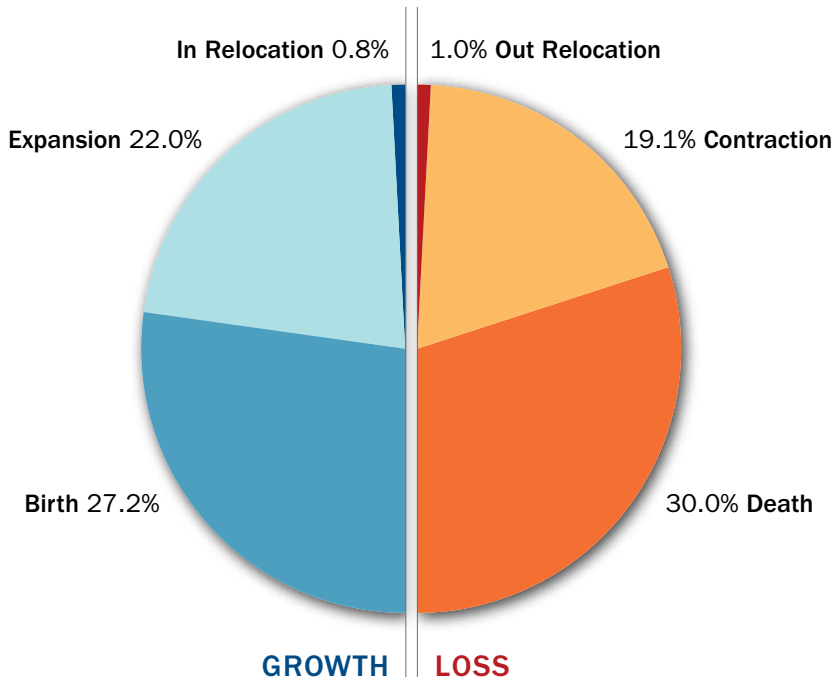
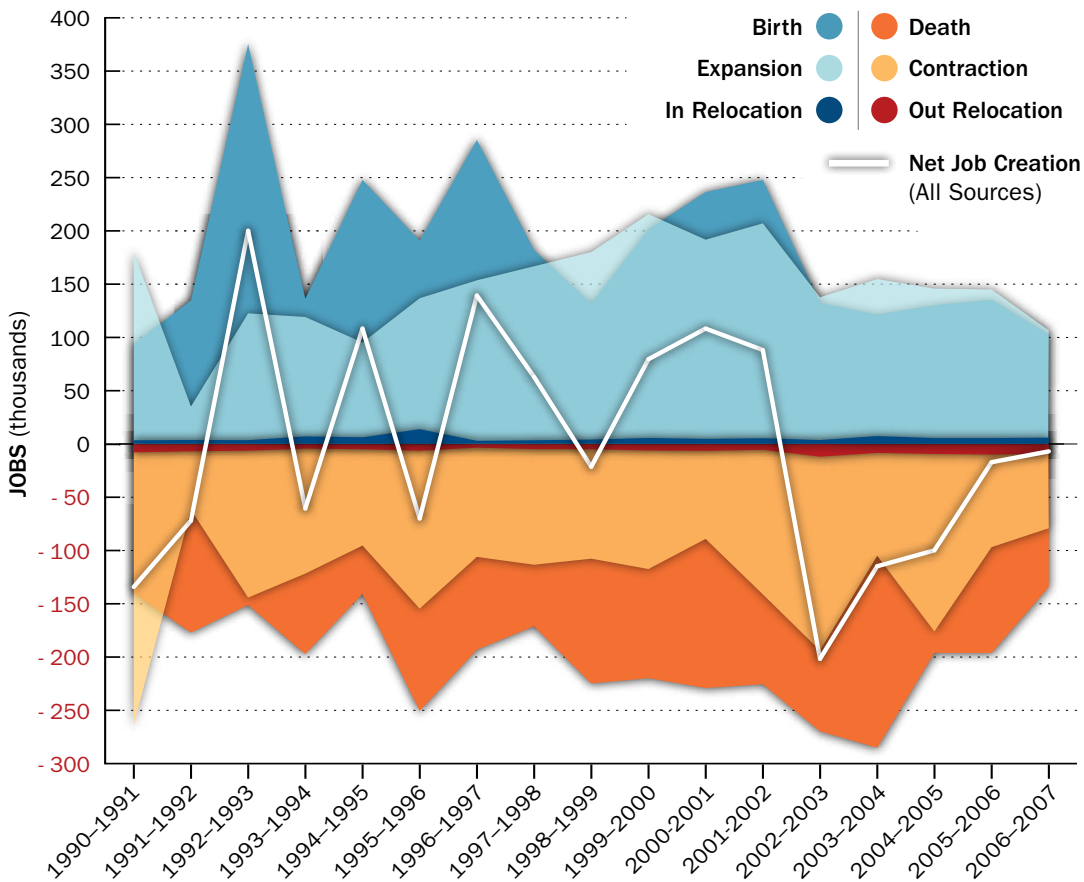


Figure 3: Fundamental Components of Job Growth and Loss



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The deaths of existing firms offset much of this growth. Figure 5 provides a breakdown of the decrease in the number of firms, employment loss⁸ and average number of jobs lost per firm closure.

During 1990-2007, a total of 350,509 existing establishments in Massachusetts were shut down. The “Death” of these firms eliminated a total of 3,401,710 existing jobs from the state during the period. On average, 20,618 existing firms closed in Massachusetts each year from 1990 to 2007. These firm closures resulted in an average loss of 200,101 jobs in the state on a yearly basis. Each firm that closed during the period eliminated an average of 9.71 existing jobs in the state. After 2002, the average size of the dying firms dropped 12%, but the number of firm deaths increased on average 25.6%. As a result, the number of job losses has increased by 10.5%.

Figures 6 and 7 summarize the net impact of firm births and firm deaths.

In more than two-thirds of the single-year intervals from 1990 to 2007, Massachusetts realized a net loss in employment via the combined effects of firm creation and firm elimination.

The net impact of these two effects on employment in Massachusetts ranged from a loss of 163,729 jobs (2003-2004) to a gain of 224,319 (1992-1993). Overall, in the 1990-2007 time period, the state lost a total of 315,493 jobs via firm creation and elimination with an average loss of 18,558 jobs per year. The net impact of these two effects on employment has been consistently negative since 2002, with an average loss of 91,824 jobs per year from 2002 to 2007. This is due to the combined effect of a 38% reduction in average jobs created in conjunction with the 10.5% increase in jobs lost.

Figure 4: Firm Birth

Interval	Number of New Firm Births	Number of Jobs Generated by Firm Births	Average Number of Jobs Created by Firm Birth
1990-1991	14,721	93,906	6.38
1991-1992	21,935	134,749	6.14
1992-1993	39,658	375,412	9.47
1993-1994	18,060	136,363	7.55
1994-1995	39,287	247,839	6.31
1995-1996	23,249	190,849	8.21
1996-1997	40,679	285,294	7.01
1997-1998	27,256	181,934	6.68
1998-1999	19,991	131,713	6.59
1999-2000	18,961	201,500	10.63
2000-2001	30,074	236,408	7.86
2001-2002	41,193	247,812	6.02
2002-2003	34,567	132,379	3.83
2003-2004	23,278	121,424	5.22
2004-2005	40,886	130,281	3.19
2005-2006	43,891	135,373	3.08
2006-2007	30,508	102,981	3.38
TOTAL	508,194 firms	3,086,217 jobs	6.07 jobs

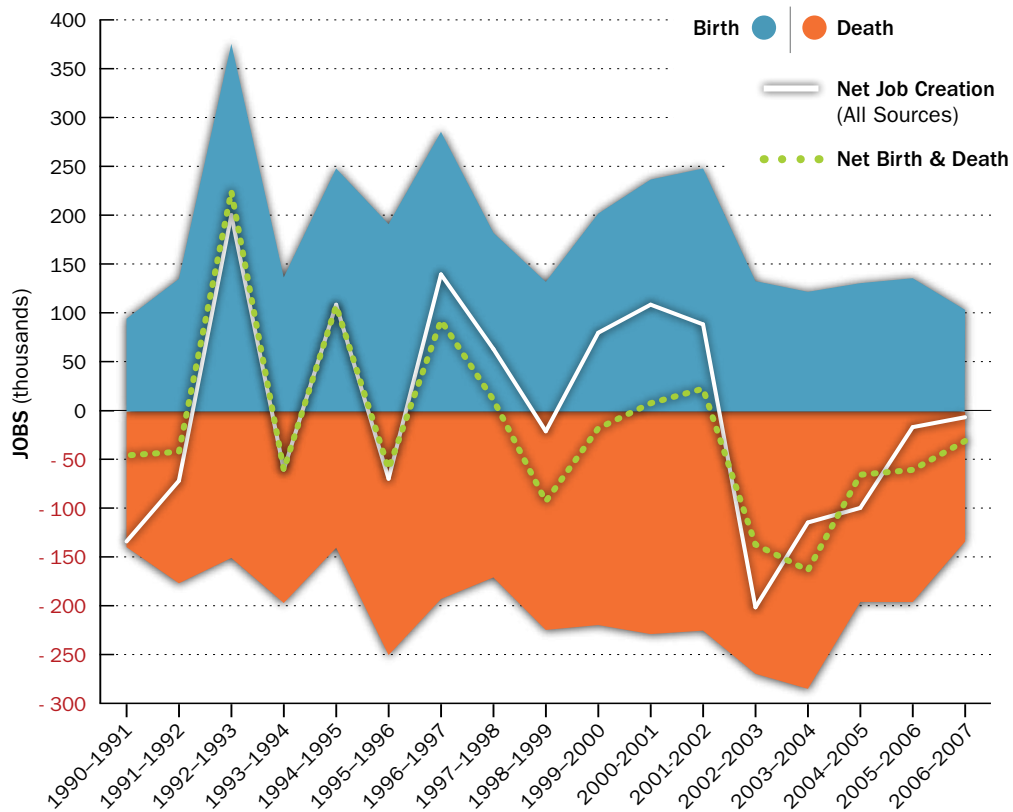
Figure 5: Firm Death

Interval	Number of Existing Firm Deaths	Number of Jobs Lost Due to Firm Deaths	Average Number of Jobs Lost by Firm Death
1990-1991	11,099	139,974	12.61
1991-1992	13,340	177,063	13.27
1992-1993	13,616	151,093	11.10
1993-1994	13,742	197,226	14.35
1994-1995	17,605	140,724	7.99
1995-1996	23,924	250,586	10.47
1996-1997	25,026	193,136	7.72
1997-1998	19,034	171,113	8.99
1998-1999	26,118	224,811	8.61
1999-2000	24,810	219,817	8.86
2000-2001	19,906	229,068	11.51
2001-2002	21,872	225,543	10.31
2002-2003	20,569	269,746	13.11
2003-2004	22,134	285,153	12.88
2004-2005	24,928	196,137	7.87
2005-2006	29,461	196,242	6.66
2006-2007	23,325	134,278	5.76
TOTAL	350,509 firms	3,401,710 jobs	9.71 jobs

Figure 6: Net Impact of Firm Birth and Death

Interval	Number of Jobs Generated by Firm Births	Number of Jobs Lost by Firm Deaths	Net Change in Employment via Firm Births and Deaths
1990-1991	93,906	139,974	(46,068)
1991-1992	134,749	177,063	(42,314)
1992-1993	375,412	151,093	224,319
1993-1994	136,363	197,226	(60,863)
1994-1995	247,839	140,724	107,115
1995-1996	190,849	250,586	(59,737)
1996-1997	285,294	193,136	92,158
1997-1998	181,934	171,113	10,821
1998-1999	131,713	224,811	(93,098)
1999-2000	201,500	219,817	(18,317)
2000-2001	236,408	229,068	7,340
2001-2002	247,812	225,543	22,269
2002-2003	132,379	269,746	(137,367)
2003-2004	121,424	285,153	(163,729)
2004-2005	130,281	196,137	(65,856)
2005-2006	135,373	196,242	(60,869)
2006-2007	102,981	134,278	(31,297)
TOTAL	3,086,217 jobs	3,401,710 jobs	(315,493) jobs

Figure 7: Firm Birth and Death Plus Net Job Creation From All Sources



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Expansion & Contractions

This brief also analyzes existing firm expansion and contraction. Firm Expansion involves the addition of at least one employee to existing establishments or firms. The expansion of these firms generates an increase in total state employment. Firm Contraction involves the elimination of employees from existing establishments or firms. The contraction of these firms generates a decrease in total employment.

Figure 8 provides a breakdown of firm expansion, the percentage of existing firms that increased employment in the given time period, and employment growth in the state via existing firm expansion using single year intervals.⁹

Between 1990 and 2007, a total of 208,701 establishments expanded in Massachusetts, creating 2,494,262 jobs.

Figure 9 provides a breakdown of firm contraction, the percentage of existing firms that decreased employment in the given time period and employment loss via existing firm contraction using single year intervals.

Between 1990 and 2007, a total of 199,873 establishments decreased the number of their employees. The contraction of these firms eliminated a total of 2,166,497 jobs in Massachusetts during the period.

In any year, roughly 3-5% of companies expanded, and added, on average, twelve jobs each. In most years, 2-4% of companies contracted, with higher percentages in recessions, cutting eleven jobs on average. Thus, over a seventeen year period, expansion and contraction contributed significantly to job flux.

As Figures 10 and 11 demonstrate, between 1990 and 2007, a total of 208,701 establishments increased the number of their employees and the expansion of these firms generated a total of 2,494,262 new jobs. During the same period, 199,873 establishments decreased their employee base, eliminating 2,166,497 jobs. Considering only

Figure 8: Firm Expansion

Interval	Number of Firms that Increased Employment	Number of Jobs Generated by Firm Expansion	Average Number of Jobs Created by Firm Expansion
1990-1991	12,309 (5.31%)	180,059	14.63
1991-1992	3,081 (1.31%)	35,170	11.42
1992-1993	8,295 (3.40%)	122,615	14.78
1993-1994	10,565 (3.91%)	119,211	11.28
1994-1995	8,904 (3.25%)	95,226	10.69
1995-1996	13,369 (4.52%)	136,790	10.23
1996-1997	14,214 (4.82%)	153,641	10.81
1997-1998	13,987 (4.50%)	166,804	11.93
1998-1999	16,019 (4.82%)	180,130	11.24
1999-2000	16,190 (5.02%)	215,756	13.33
2000-2001	11,522 (5.18%)	191,756	16.64
2001-2002	15,815 (3.76%)	207,085	13.09
2002-2003	11,547 (4.99%)	137,725	11.93
2003-2004	11,948 (3.44%)	154,835	12.96
2004-2005	12,988 (3.70%)	145,854	11.23
2005-2006	14,712 (4.02%)	145,002	9.86
2006-2007	13,236 (3.48%)	106,603	8.05
TOTAL	208,701 firms	2,494,262 jobs	11.95 jobs

Figure 9: Firm Contraction

Interval	Number of Firms that Decreased Employment	Number of Jobs Lost by Firm Contraction	Average Number of Jobs Lost by Firm Contraction
1990-1991	15,113 (6.52%)	263,735	17.45
1991-1992	3,807 (1.62%)	61,772	16.23
1992-1993	9,811 (4.02%)	144,162	14.69
1993-1994	9,729 (3.60%)	121,683	12.51
1994-1995	7,284 (2.66%)	95,351	13.09
1995-1996	12,100 (4.09%)	154,522	12.77
1996-1997	13,393 (4.54%)	105,980	7.91
1997-1998	11,963 (3.85%)	113,366	9.48
1998-1999	11,216 (3.52%)	107,670	9.60
1999-2000	10,754 (3.44%)	117,384	10.92
2000-2001	6,818 (2.22%)	89,114	13.07
2001-2002	11,002 (3.47%)	141,134	12.83
2002-2003	31,786 (9.46%)	193,799	6.10
2003-2004	11,347 (3.24%)	104,922	9.25
2004-2005	14,217 (4.05%)	175,966	12.38
2005-2006	11,919 (3.25%)	96,860	8.13
2006-2007	7,614 (2.00%)	79,077	10.39
TOTAL	199,873 firms	2,166,497 jobs	10.84 jobs

Figure 10: Net Impact of Firm Expansion and Contraction

Interval	Number of Jobs Generated by Firm Expansion	Number of Jobs Lost by Firm Contraction	Net Change in Employment via Firm Expansion and Contraction
1990-1991	180,059	263,735	(83,676)
1991-1992	35,170	61,772	(26,602)
1992-1993	122,615	144,162	(21,547)
1993-1994	119,211	121,683	(2,472)
1994-1995	95,226	95,351	(125)
1995-1996	136,790	154,522	(17,732)
1996-1997	153,641	105,980	47,661
1997-1998	166,804	113,366	53,438
1998-1999	180,130	107,670	72,460
1999-2000	215,756	117,384	98,372
2000-2001	191,756	89,114	102,642
2001-2002	207,085	141,134	65,951
2002-2003	137,725	193,799	(56,074)
2003-2004	154,835	104,922	49,913
2004-2005	145,854	175,966	(30,112)
2005-2006	145,002	96,860	48,142
2006-2007	106,603	79,077	27,526
TOTAL	2,494,262 jobs	2,166,497 jobs	327,765 jobs

expansion and contraction, Massachusetts employment increased by 327,765 jobs.

In slightly fewer than half of the single year intervals spanning 1990 to 2007, Massachusetts realized a net loss in employment (number of jobs) via the combined effects of firm expansion and contraction. Most of the single year intervals in which the state realized a net loss in employment occurred prior to 1996 (except for 2002-2003 and 2004-2005). In the other half of the single year intervals, Massachusetts realized a net gain in employment in the state via the combined effects of firm expansion and contraction. All of the single year intervals in which the state realized a net gain in employment occurred after 1997. The net impact of these two effects on employment, using single year intervals, ranged from a loss of 83,676 jobs (1990-1991) to a gain of 102,642 (2000-2001).

Figure 11: Firm Expansion and Contraction Plus Net Job Creation From All Sources

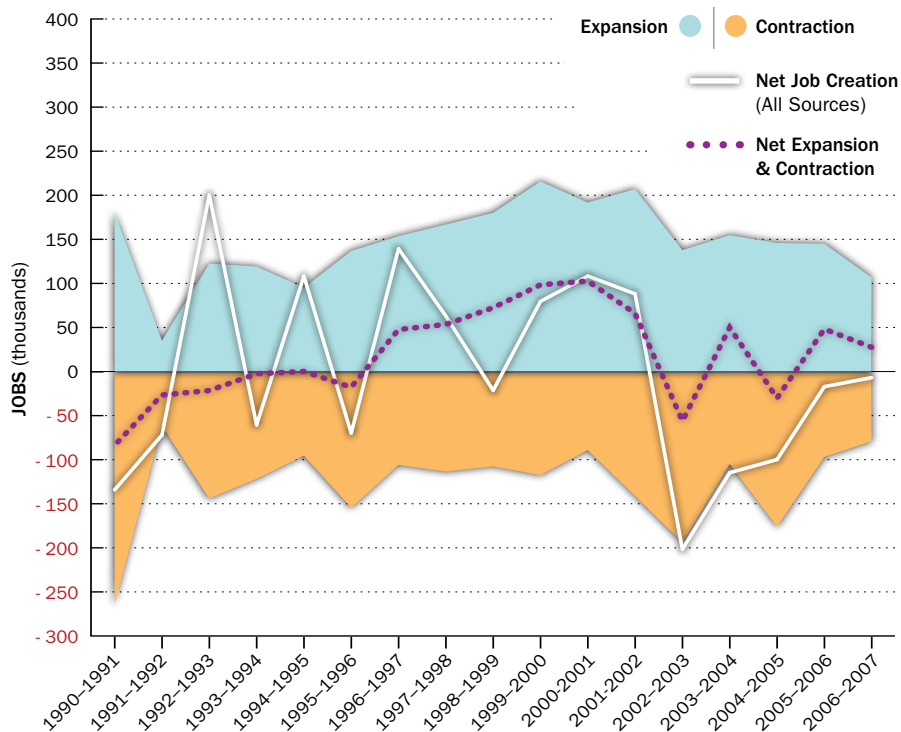


Figure 12: Net Impact of Firm Relocation

In Relocation & Out Relocation

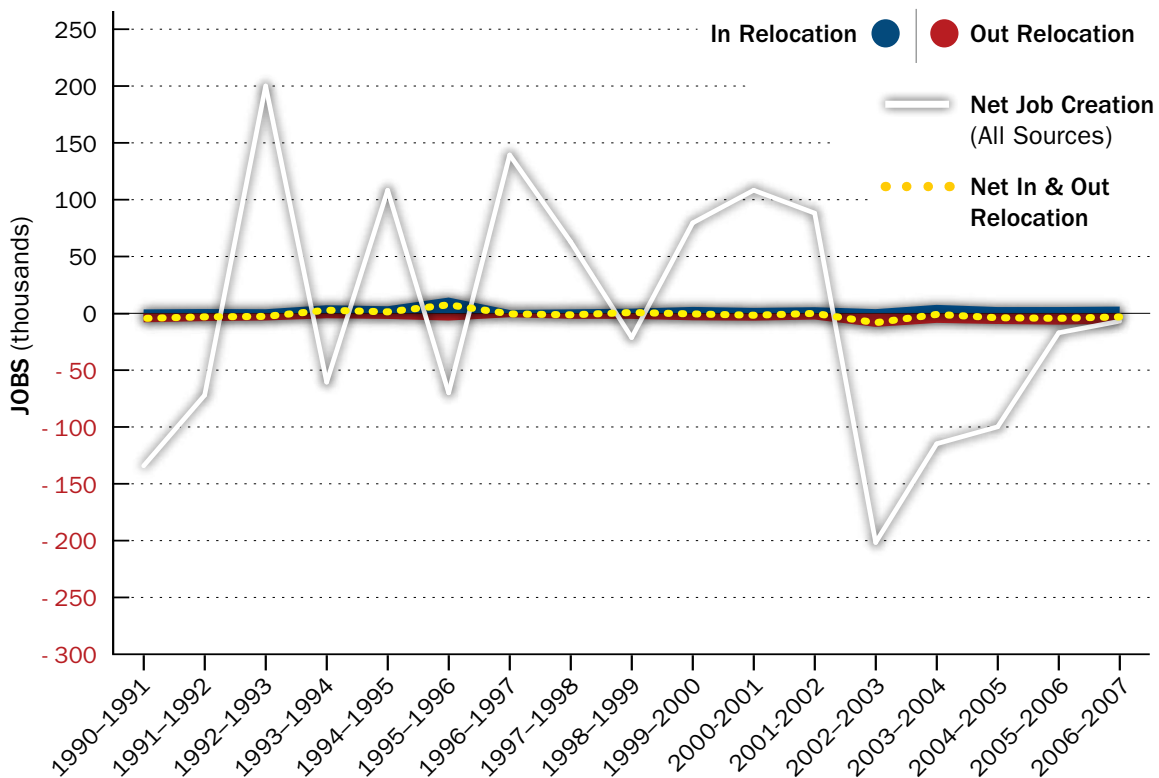
With respect to relocation data for Massachusetts, there is some effect on overall employment numbers, but it is minor relative to other drivers.¹⁰ Figures 12 and 13 examine the net change in the state due to firm relocation.

In almost every single-year interval from 1990 to 2007 (except 1993-1996), Massachusetts realized a net loss in employment (number of jobs) in the state via the combined effects of In-Relocation and Out-Relocation.

Comparing year-to-year findings, the net change in employment in Massachusetts ranged from a gain of 7,503 jobs (1995-1996) to a loss of 8,241 (2002-2003). Overall, during the eighteen-year study period, the state lost a total of 24,088 jobs via relocation, with an average loss of 1,417 jobs per single year interval. The net loss in employment via relocation in Massachusetts has drastically increased since 2002, with an average loss of 4,129 jobs per interval from 2002 to 2007.

Interval	Number of Jobs Generated via In-Relocation	Number of Jobs Lost via Out-Relocation	Net Change in Employment via Relocation
1990-1991	3,451	7,902	(4,451)
1991-1992	3,754	6,857	(3,103)
1992-1993	3,597	6,308	(2,711)
1993-1994	7,107	4,343	2,764
1994-1995	6,229	4,930	1,299
1995-1996	13,861	6,358	7,503
1996-1997	2,978	3,450	(472)
1997-1998	3,506	4,816	(1,310)
1998-1999	4,129	4,862	(733)
1999-2000	5,630	6,130	(500)
2000-2001	4,774	6,438	(1,664)
2001-2002	5,395	5,459	(64)
2002-2003	3,684	11,925	(8,241)
2003-2004	7,428	8,385	(957)
2004-2005	5,509	9,390	(3,881)
2005-2006	5,525	9,918	(4,393)
2006-2007	5,936	9,110	(3,174)
TOTAL	92,493 jobs	116,581 jobs	(24,088) jobs

Figure 13: Firm Relocation Plus Net Job Creation From All Sources



Conclusion

The data in this paper clearly depict the Massachusetts employment situation with respect to job generation and diminution in the eighteen years from 1990-2007, and they explain why Massachusetts has diverged unfavorably from national trends since 2002.

Throughout this eighteen-year period, the main drivers of job creation and loss have been firm deaths and births. In the years prior to 2002, the birth of new firms generated 143,625 more jobs than were eliminated by firm deaths. Since 2002, however, with respect to firm deaths alone, the state has experienced a net loss in the number of jobs. Firm deaths have eliminated 459,118 more jobs than were created by firm births.

The next most significant employment drivers have been firm expansion and contraction, which, on average, have generated a net increase in jobs before and after 2002. Before 2002, however, these drivers netted, on average, 24,031 new jobs annually during a period which included two recessions. Since 2002, however, Massachusetts has seen an average of only 7,879 net new jobs each year due to firm expansions which offset firm contractions.

Even the effect with the least impact, firm relocation, has had a negative effect on overall employment numbers since 2002. Before 2002, a net average of 287 jobs left with firms that moved out of the state every year; since 2002 exiting firms have caused 4,129 lost jobs a year.

Massachusetts is becoming a state of increasingly smaller firms. Since 1990, the state has seen a 67% increase in the total number of companies in the state, but the average size of firms has shrunk 40%, from 16.69 employees to 9.96 employees. The combined effect of these two factors is flat employment levels. Later analyses will show that Massachusetts has also become a state of stand-alone businesses, with headquarters and branch offices becoming a small percentage of all establishments in the state. Further analyses

are needed to determine why the state is seeing the creation of more smaller companies while larger, multiple-site companies are disappearing.

As a result, we make the following recommendations:

- The focus for government efforts and incentives should be on endogenous growth – helping entrepreneurs to start businesses and helping existing companies to stay in business and to expand. An environment that improves the health of our ‘home-grown’ businesses will have a much greater impact than policies that are designed to get companies to relocate to Massachusetts.
- Firm relocation occupies too great a portion of the public sector’s economic development attention. Based on Massachusetts’ (and California’s) experience from 1990 to 2007, this energy is, at the very least, inefficiently directed and, more likely, a poor use of limited resources. As noted in our findings, the decline in the raw number and size of new businesses is troubling, as firm births is the leading creator of new jobs relative to other measures. A business climate that promotes and nurtures start-ups is an essential component in creating new jobs.

In addition, the fact that existing firm expansion is a close second in creating jobs suggests that it deserves proportionate attention from the public sector.

While the politics of firm relocation is perfectly understandable, the truth is that job and business creation are, except at the margins, the result of local risk takers. We should refocus our efforts to support them in increasing employment and prosperity in Massachusetts.

Endnotes

1. Neumark, D., Zhang, J., and Wall, B., "Are Businesses Fleeing the State? Interstate Business Relocation and Employment Change in California," *California Economic Policy*, Vol. 1 (4), (October 2005).

2. The NETS Data is time-series data assembled by Walls & Associates and Dun and Bradstreet. Dun and Bradstreet gathers annual information from all establishments or firms operating in the United States. In its data collection process, Dun and Bradstreet assigns a unique identification number, referred to as a DUNS number, to each establishment as a means of tracking the establishment. Walls & Associates uses the DUNS number to link the Dun and Bradstreet cross-sections into a longitudinal file for each establishment.

3. Neumark, D., Zhang, J., and Wall, B., "Are Businesses Fleeing the State? Interstate Business Relocation and Employment Change in California," *California Economic Policy*, Vol. 1 (4), (October 2005). Chapple, K., Hinkley, S. and Makarewicz, C., "Business as Usual in California Suburbs? Exploring the Dynamics of Firm Relocation, 1990-2005." UC Berkeley working paper (2008). Kolko, J., and Neumark, D., "Are California's Companies Shifting Their Employment to Other States?" Public Policy Institute of California, San Francisco, (February 15, 2007).

4. Neumark, D., Zhang, J., and Wall, B., "Employment Dynamics and Business relocation: New Evidence from the National Establishment Time Series," NBER Working Paper No. W11647, (November 2005). The authors concluded that use of the unique DUNS number and annual business address information ensured that the NETS data on firm relocation was highly accurate. They also compared NETS data to a variety of other data sources for employment levels and changes, and found it to be as good as or superior to all others available.

5. Neumark, Zhang, and Wall, (October 2005).

6. The importance of entrepreneurship is most likely underplayed in these numbers. A start-up firm is credited with creating new jobs only in its first year of operation. In its second year and beyond, it is categorized as an existing company.

7. The number of new jobs generated by a firm birth equals the number of employees in the year after a firm was established (the first year employee information is available/recorded for the new firm in the NETS Data). For example, in a firm that was created in 1990 (birth year = 1990), the number of jobs generated by the firm creation is the number of employees at that firm in 1991. It is important to note that NETS data does not reflect the number of employees at a firm in the year it was first created. By using single-year intervals to analyze firm birth and death data, we are able to overcome this data limitation.

8. The number of job losses associated with a firm closure equals the number of employees in the year the firm was shut down (the last year the firm was in operation in the NETS data). For example, in a firm that was shut down in 1990 (death year = 1990), the number of jobs eliminated by the firm closure is the number of employees at the firm in 1990.

9. A study by Neumark, Shang and Wall, "Employment Dynamics and Business Relocation: New Evidence from the National Establishment Time Series," (November 2005) argues that due to rounding of employment numbers in the NETS data, single year intervals may be too short to accurately measure firm expansion and contraction. Thus, the numbers measured at the single year intervals cited here are most likely more conservative (under-estimates) than the actual expansion and contraction of Massachusetts firms over these single year intervals.

10. Some companies, in fact, move in and out of the state several times. During the study period, 426 companies, accounting for 7.2% of all moves, moved multiple back and forth times. In these cases, there is relocation activity but little net change.

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Appendix 1: Yearly Values for All Components of Job Flux

	1990-1991	1991-1992	1992-1993	1993-1994
Employment Change				
Starting Employment	3,870,637	3,736,442	3,664,423	3,864,484
Ending Employment	3,736,442	3,664,423	3,864,484	3,803,913
Change	(134,195)	(72,019)	200,061	(60,571)
Job Creation				
Expansion	180,059	35,170	122,615	119,211
Birth	93,906	134,749	375,412	136,363
In-Relocation	3,451 (1.24%)	3,754 (2.16%)	3,597 (0.72%)	7,107 (2.71%)
Job Elimination				
Contraction	263,735	61,772	144,162	121,683
Death	139,974	177,063	151,093	197,226
Out-Relocation	7,902 (1.92%)	6,857 (2.79%)	6,308 (2.09%)	4,343 (1.34%)
Employment Change Decomposition				
Employment Change =	(134,195)	(72,019)	200,061	(60,571)
(Expansion – Contraction)	(83,676) (62.35%)	(26,602) (36.94%)	(21,547) (8.67%)	(2,472) (3.74%)
+(Birth – Death)	(46,068) (34.33%)	(42,314) (58.75%)	224,319 (90.24%)	(60,863) (92.08%)
+(In-Relocation – Out-Relocation)	(4,451) (3.32%)	(3,103) (4.31%)	(2,711) (1.09%)	2,764 (4.18%)

	1994-1995	1995-1996	1996-1997	1997-1998
Employment Change				
Starting Employment	3,803,913	3,912,202	3,842,236	3,981,583
Ending Employment	3,912,202	3,842,236	3,981,583	4,044,532
Change	108,289	(69,966)	139,347	62,949
Job Creation				
Expansion	95,226	136,790	153,641	166,804
Birth	247,839	190,849	285,294	181,934
In-Relocation	6,229 (1.78%)	13,861 (4.06%)	2,978 (0.67%)	3,506 (1.00%)
Job Elimination				
Contraction	95,351	154,522	105,980	113,366
Death	140,724	250,586	193,136	171,113
Out-Relocation	4,930 (2.05%)	6,358 (1.55%)	3,450 (1.14%)	4,816 (1.66%)
Employment Change Decomposition				
Employment Change =	108,289	(69,966)	139,347	62,949
(Expansion – Contraction)	(125) (0.11%)	(17,732) (20.87%)	47,661 (33.97%)	53,438 (81.50%)
+(Birth – Death)	107,115 (98.69%)	(59,737) (70.30%)	92,158 (65.69%)	10,821 (16.50%)
+(In-Relocation – Out-Relocation)	1,299 (1.20%)	7,503 (8.83%)	(472) (0.34%)	(1,310) (2.00%)

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	1998-1999	1999-2000	2000-2001	2001-2002
Employment Change				
Starting Employment	4,044,532	4,023,161	4,102,716	4,211,034
Ending Employment	4,023,161	4,102,716	4,211,034	4,299,190
Change	(21,371)	79,555	108,318	88,156
Job Creation				
Expansion	180,130	215,756	191,756	207,085
Birth	131,713	201,500	236,408	247,812
In-Relocation	4,129 (1.31%)	5,630 (1.33%)	4,774 (1.10%)	5,395 (1.17%)
Job Elimination				
Contraction	107,670	117,384	89,114	141,134
Death	224,811	219,817	229,068	225,543
Out-Relocation	4,862 (1.44%)	6,130 (1.79%)	6,438 (1.98%)	5,459 (1.47%)
Employment Change Decomposition				
Employment Change =	(21,371)	79,555	108,318	88,156
(Expansion – Contraction)	72,460 (43.57%)	98,372 (83.94%)	102,642 (91.94%)	65,951 (74.70%)
+(Birth – Death)	(93,098) (55.99%)	(18,317) (15.63%)	7,340 (6.57%)	22,269 (25.23%)
+(In-Relocation – Out-Relocation)	(733) (0.44%)	(500) (0.43%)	(1,664) (1.49%)	(64) (0.07%)

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Employment Change					
Starting Employment	4,299,190	4,097,508	3,982,735	3,882,886	3,865,766
Ending Employment	4,097,508	3,982,735	3,882,886	3,865,766	3,858,821
Change	(201,682)	(114,773)	(99,849)	(17,120)	(6,945)
Job Creation					
Expansion	137,725	154,835	145,854	145,002	106,603
Birth	132,379	121,424	130,281	135,373	102,981
In-Relocation	3,684 (1.35%)	7,428 (2.62%)	5,509 (1.96%)	5,525 (1.93%)	5,936 (2.75%)
Job Elimination					
Contraction	193,799	104,922	175,966	96,860	79,077
Death	269,746	285,153	196,137	196,242	134,278
Out-Relocation	11,925 (2.51%)	8,385 (2.10%)	9,390 (2.46%)	9,918 (3.27%)	9,110 (4.10%)
Employment Change Decomposition					
Employment Change =	(201,682)	(114,773)	(99,849)	(17,120)	(6,945)
(Expansion – Contraction)	(56,074) (27.80%)	49,913 (23.26%)	(30,112) (30.16%)	48,142 (42.45%)	27,526 (44.40%)
+(Birth – Death)	(137,367) (68.11%)	(163,729) (76.30%)	(65,856) (65.96%)	(60,869) (53.68%)	(31,297) (50.48%)
+(In-Relocation – Out-Relocation)	(8,241) (4.09%)	(957) (0.44%)	(3,881) (3.88%)	(4,393) (3.87%)	(3,174) (5.12%)

