The Real Estate Cycle and the Economy: Consequences of the Massachusetts Boom of 1984–87

Karl E. Case

Professor of Economics, Wellesley College, and Visiting Scholar, Federal Reserve Bank of Boston. *The author wishes to thank the members of the Harvard Seminar on Urban and Regional Economics and Lynn E. Browne for helpful comments and suggestions. An earlier version of this paper was presented at a session in honor of Benjamin Chinitz at the annual meetings of the Regional Science Association, November 1990.*

The economy of Massachusetts is in a deep recession. In March 1991, the unemployment rate hit 9.7 percent, the second highest in the United States and the worst since 1975.[1] Between the peak of the employment cycle at the end of 1988 and March 1991, the Commonwealth of Massachusetts lost 273,000 jobs, or 8.7 percent of the employment base. By that measure, this recession is much worse than either the 1981–82 recession or the 1975 recession. In the 1981–82 recession, peak to trough, the Commonwealth lost 51,000 jobs, or 1.9 percent of total nonagricultural employment; in 1975, total jobs lost numbered 109,000, or 4.8 percent of the total.

What makes this downturn all the more painful is that it comes on the heels of a period of unprecedented prosperity. In July of 1987, Massachusetts enjoyed an unemployment rate of 2.4 percent, lowest in the United States. In addition, between 1984 and 1988 personal income rose more rapidly in New England than in any other region of the country (Browne 1989).

What happened? How could a state go from having the lowest unemployment rate in the United States to having the second highest in the space of less than four years?

Clearly no single event caused these problems. Many factors have contributed. Part of the decline is due to a national recession that began in 1990. The national employment decline has been mild, however, with total nonagricultural employment down only 1.5 percent as of April 1991. Some of New England's decline can be traced to cuts in the federal defense budget (Henderson 1990). Certainly the high technology sector has been going through a period of retrenchment after playing an important role in the region's expansion in the early 1980s (Browne 1988; Flynn 1984).

Some claim that the current recession is a natural and inevitable downturn after a prolonged expansion and that the region, with its well-diversified economic base, ultimately will return to a reasonable

growth path (Rosengren 1990). Others claim that the "core" of the economy is structurally unsound, and that the state is likely to experience a prolonged period of stagnation and decline (Moscovitch 1990). The electronic media continue to point to the ongoing fiscal problems of the Commonwealth and to an eroding "business climate" caused in part by recent tax increases.

The thesis of this article is that the dramatic real estate cycle, which began with a housing price boom between 1984 and 1987, was an important element that not only contributed to but also very significantly amplified the economic fortunes and misfortunes of the Commonwealth and the region. The article begins by looking at conditions in the state's economy in 1984. In that year, the state and the region were approaching full employment along a steady but reasonable growth path with a cost structure favorable to continued expansion. Beginning in 1984, real estate prices exploded upwards. The article focuses on the price boom, which triggered a series of economic changes that had serious consequences for the economy.

The dramatic real estate cycle that began with a housing price boom between 1984 and 1987 significantly amplified the economic fortunes and misfortunes of the region.

First, consumer spending increased, leading to expansion in the trade and service sectors. Second, a building boom, fueled by favorable tax laws and a recently deregulated banking sector, sharply increased the supply of residential, commercial, and industrial space. These events created a substantial but temporary increase in the demand for labor. Labor force growth, already slowing as the economy was pressing the limits of higher participation rates (Browne 1988), slowed further as a result of high home prices. A serious labor shortage in 1987 and rising wages in the region were the result. In addition, commercial and office rents in the region nearly doubled between 1984 and 1988. It is well known that the region's banking problems are also deeply rooted in real estate, adding a capital shortage and a serious contraction in the financial sector to the region's list of woes.

By 1987, the basic structure of costs in the region was out of line with the rest of the country. The combination of higher wages, rents, and home prices, a labor shortage, and serious problems in the banking sector (that came later) certainly made the region less attractive for investment. When the "temporary" employment in construction, real estate, finance, trade, and services began to erode as the real estate boom came to an end, the erosion was occurring on the back of an economic base already in decline.

I. The State's Economy in 1984

The state's economy was in very good shape in 1984. Data for that year are presented in Table 1. The unemployment rate was 6.3 percent, down from 12.3 percent a decade earlier and 9.6 percent in mid 1982. The state and the region recovered from the 1982 recession at about the same rate as the country as a whole. Nonagricultural employment in Massachusetts grew at 4.9 percent per year between 1982 and 1984 and at 4.7 percent per year in the United States. During the same period, the labor force grew at a 1.2 percent annual rate in the state, while it grew at 1.5 percent in the country as a whole.

The cost structure in the state in 1984 was favorable to business expansion. Average hourly earnings in manufacturing in Massachusetts were 7.4 percent below the national average, and energy prices were falling. The National Association of Realtors' (NAR) median price of existing single-family homes in the Boston metropolitan area (CMSA) was $82,600 in 1983, just 17.5 percent above the national median. In addition, the rental price of Class A downtown office space was $20 to $22 per square foot per year, just above the national average of $19.75.

[1] The figure dropped sharply to 8.3 percent in April, but the bulk of that change was due to a reduction in the labor force of over 30,000. The rate rebounded to 9.6 percent in May. Figures are from the *New England Economic Indicators* data file.

II. The Great Housing Price Boom

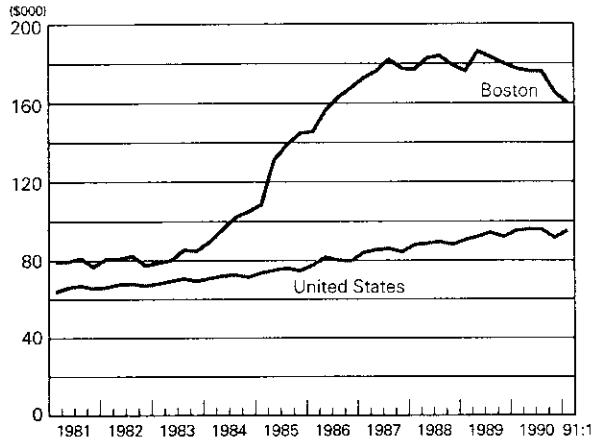
Beginning in early 1984, housing prices began to rise sharply. From $82,600 in 1983, the NAR median in the Boston CMSA jumped to $104,800 by the end of 1984, to $144,800 by the end of 1985, and to $182,200 by the third quarter of 1987, an overall increase of 121 percent. The national median rose from $70,300 to $86,800, an increase of only 23 percent. Figure 1 presents quarterly price data from 1981 to 1991 for existing homes sold in Boston and the United States.[2]

The nature of the boom is debated. Certainly demographics, lower interest rates, and generally favorable economic conditions in the region all played a role. Case (1986) and Case and Shiller (1989), however, argue that fundamentals alone do not explain the boom. Controlling for the combined effects of employment growth, population growth, interest rates, income, construction costs, and a number of other variables, the model in Case (1986) predicted a 15 percent increase in housing prices between 1983 and 1986. Instead, single-family home prices virtually doubled. The argument in Case and Shiller (1988, 1989 and 1990) is that home buyers and sellers were

Figure 1

Median Price of Existing Single-Family Homes

Boston CMSA and United States- 1981:1 to 1991:1



Source: National Association of Realtors.

Table 1

The Massachusetts and United States Economies in 1984

	Massachusetts	United States
Unemployment Rate[a]	6.3%	8.1%
Annual Percent Change in Nonagricultural Employment (1982–84)[b]	4.9%	4.7%
Annual Percent Change in Civilian Labor Force (1982–84)[b]	1.2%	1.5%
Average Hourly Earnings of Production Workers[c]	$8.50	$9.19
Median Home Price, 1983[d]	$82,600	$70,300
Annual Rent per Square Foot of Class A Office Space, 1984[e]	$20–$22	$19.75

[a]January 1984. U.S. Bureau of Labor Statistics.

[b]Based on change from the 4th quarter 1982 to the 4th quarter 1984, expressed at annual rates.

[c]U.S. Bureau of Labor Statistics, average for all of 1984.

[d]Median sales price of existing single-family homes in the Boston CMSA, National Association of Realtors, *Home Sales*, May 1985.

[e]Based on author's interviews with commercial real estate developers representing a substantial portion of the Boston market and data from The National Real Estate Index, Inc. and The Reis Reports, Inc.

significantly influenced by psychology. That is, reacting to rising prices and generally favorable economic conditions, home buyers paid inflated prices in anticipation of future price increases and capital gains. Whether the boom was speculative in nature or not remains controversial (see Norton 1989), but the cause of the boom is not an important element in the argument below.

Effects on Demand for Locally Produced Goods and Services

The first consequence of the boom was that homeowners in Massachusetts were better off.

[2] These data are a simple plot of the quarterly NAR median, taken from National Association of Realtors, *Home Sales*, monthly. As part of a current (1991) research project being done at the Federal Reserve Bank of Boston, a total of 25,378 properties that sold more than once between 1980 and 1990 were extracted from a data file containing nearly 400,000 home sales in the Boston CMSA obtained from the *Banker & Tradesman*. These data were used to construct a Weighted Repeat Sales Index (WRS) for Boston as discussed in Case and Shiller (1989). The results show a nominal increase of 155 percent between the end of 1983 and the middle of 1987.

Households fortunate enough to own their units during the boom found themselves with significant accumulations of new equity. It is likely that the additional home equity changed household saving and spending patterns. Some borrowed against their home equity, while others simply saved less, or spent some of their previous savings.

While it is difficult to accurately measure the response, a number of sources of evidence suggest that it was significant. Tabulations from the Survey of Consumer Finances for the period 1983–86 show that for all households in the Northeast (including renters), household assets increased by an average of $57,328. Virtually all of that expansion can be accounted for by the growth in home equity; during the same period, household liquid assets did not increase at all, and household debt increased by an average of $10,267.[3] This suggests a very low savings rate.

Data on home equity loans written by Massachusetts banks and thrifts are available only since 1987. In 1987, total home equity loans held as assets by Massachusetts commercial banks and thrifts were $1.8 billion.[4] By 1989, the figure was over $5 billion.

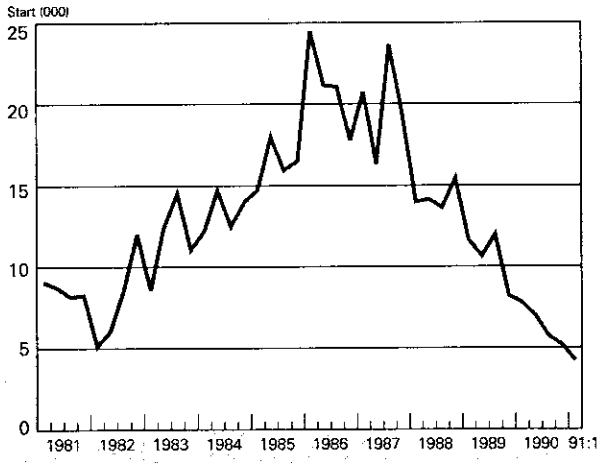
Theory does not unambiguously predict that increases in home equity will reduce saving and increase spending. A simple life cycle model predicts that an increase in fungible assets would lead to an increase in consumption about 4 or 5 percent as large. That is, the asset would be spread over the owner's lifetime consumption. Over a long period, that would increase real consumption by about the real rate of interest.

But housing assets are not the same as other assets. First, if housing prices rise, homeowners are affected on both the sources and the uses sides of the income equation. Any increase in equity is matched exactly by an increase in the cost of housing. A buyer who bought before the boom sees her equity increase, but she lives in the same house with the same out-of-pocket monthly expenses as before. If transactions costs were zero, a homeowner might adjust her portfolio, but transactions costs are high. In addition, a price increase makes non-homeowners worse off and could lead to an increase in saving.[5]

To estimate the potential size of the spending effect, consider that the average homeowner living in the Boston area in 1983 found herself with $102,700 in new equity by mid 1987.[6] In 1984 Massachusetts had approximately 2.16 million occupied housing units, and 58 percent of them were owner-occupied. Of these, 718,600 were located in the eastern five counties (the Boston CMSA), leaving 531,400 in the rest of the state.[7] If Boston homeowners accumulated $102,700 each, while homeowners in the rest of the state accumulated half as much, the total comes to $101 billion.

Figure 2

Housing Starts: Boston
1981:1 to 1991:1



Source: F.W.Dodge.

In addition, the value of raw land, rental property, and commercial property appreciated at comparable rates. While the ownership of land and rental property is probably local, commercial and industrial property is just as likely to be held by corporations and out-of-state owners. A conservative estimate of

[3] Federal Reserve tabulations.

[4] Board of Governors of the Federal Reserve System, Call Report data.

[5] The impact of home equity on saving behavior was investigated empirically by Skinner (1989) using the Panel Study of Income Dynamics. Skinner's results are mixed. In one set of equations he finds that a 23 percent increase in market value of housing predicts a 1.4 percent increase in consumption. In a second set of equations, he finds no effect. Sheiner (1990) finds little evidence that renters' behavior is significantly affected by housing price increases.

[6] Only the median price is published by the National Association of Realtors for the Boston area. Based on national data, the mean price rose 2.6 percent faster than the median. Thus, an estimate of the average increase is $100,100 × 1.026, or $102,700.

[7] U.S. Bureau of the Census, *State and City Data Book*, 1987.

the increase in value of the locally held portion is $60 billion.

If wealth holders spent just 2 percent of the added value per year, that would have resulted in an annual increase in consumption of $3.25 billion. Total state income in 1987 was $100 billion and employment was just about 3 million. A consumption effect of that size could account for nearly 100,000 added jobs. The labor market will be discussed in more detail below.

The Building Boom and Home Sales

When real estate prices rise sharply, a building boom is likely to follow, and one did in Massachusetts. The most dramatic swing occurred between 1985 and 1987. Housing starts in the five eastern counties of Massachusetts are shown in Figure 2. The high interest rates of 1981 caused a drop during the recession of 1982 to about 5,000 per year. By 1984, starts had risen to a sustainable 12,000 to 14,000. But a sharp upturn began in 1985, peaking in the first quarter of 1986 and again in the third quarter of 1987 at an annual rate of nearly 24,000 starts. In Massachusetts in December of 1986, permits were issued for 4,100 new housing units *in a single month.*

Sales of existing homes, shown in Figure 3, followed a very similar pattern. After a reasonable recovery from the recession of 1982, sales of existing homes (including condominiums and cooperatives) hit 66,000 in Massachusetts in 1984. By the end of 1985, the figure hit 90,000, and it peaked at over 100,000 in 1987.

The building boom was fueled by a recently deregulated and fiercely competitive banking sector. In 1984, total real estate loans held as assets by Massachusetts banks and thrifts totaled $13.7 billion, or 38.4 percent of loan assets. By 1988 the figure had grown to $59.9 billion, or 60 percent of total loan assets. Between 1984 and 1988, 72 percent of all bank lending in Massachusetts was for real estate. While real estate lending increased nationwide during the decade, the increase was twice as large in New England. The sharp increase after 1984 is clearly visible in Figure 4.

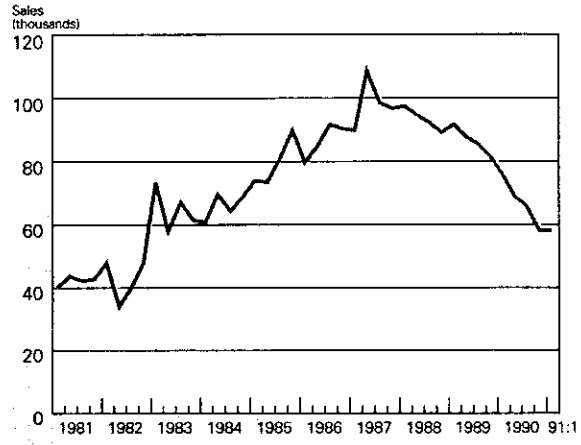
Effects on the Demand for Labor

All of this had a significant impact on the demand for labor in the state. The most dramatic effect was in the construction sector, where employment in Massachusetts rose from 90,900 at the beginning of

Figure 3

Sales of Existing Homes[a]

Boston-1981:1 to 1991:1



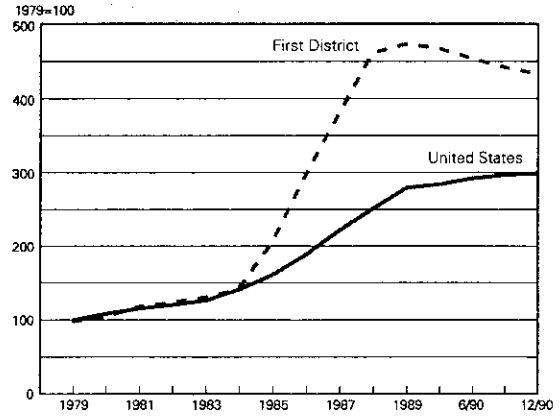
[a] Single-family, condo, and co-op.

Source: National Association of Realtors.

Figure 4

Real Estate Lending by Commercial and Savings Banks

First District versus United States 1979 to 1990



Note: The sharp increase in First District real estate lending from 1984 to 1987 is due in part to an increase in the number of FDIC-insured institutions.

Source: Call Report data for FDIC-insured institutions.

1984 to 142,800 at the end of 1987, an increase of 57.1 percent.

Next in terms of relative increase was the finance, insurance, and real estate industry (FIRE). FIRE employment rose 27.1 percent during the same period, from 175,700 to 223,000. Nationally during the same period, FIRE employment increased by only 18.4 percent.

It is impossible to say precisely what percentage of this increase in FIRE employment was due to the real estate boom, but it is clear that much of it was. Outstanding real estate loans on the books of banks and thrifts expanded by $46.2 billion during the period; as mentioned above, this was 72 percent of all new lending. Certainly a good deal of the added employment in the financial sector was due to the real estate boom.

And, naturally, real estate employment expanded significantly as well. Consider just real estate agents. Aggregate commissions on sales of existing single-family homes and condominiums came to approximately $387 million in 1984; in 1987 the figure was $1.23 billion.[8] If the average agent makes $45,000, the difference is enough to support nearly 19,000 new real estate agents.

Spending on locally produced goods and services affected the labor market through the trade and service sectors. Overall, trade and services combined account for more than one-half of the jobs in the state and in the region. Trade employment in Massachusetts grew by 88,000 (13.7 percent) between 1984 and 1987 while service employment grew by 144,000 (19.6 percent).

Adding the four sectors together (construction, FIRE, trade, and services) the total number of new jobs created between January 1984 and December 1987 was 331,000. While it is impossible to pinpoint exactly how many of these jobs would have been created had the real estate boom not happened, it seems clear that the boom had a significant impact on the demand for labor between 1984 and 1987.

Effects on the Supply of Labor

While the housing price boom had a significant and positive effect on the demand for labor in the state and the region, it also contributed to a slowdown in the growth of the labor force. Between 1982 and 1984, the labor force in Massachusetts was growing at about 1.2 percent per year, while in the nation it was growing at 1.5 percent per year. However, between 1984 and 1987, while the national labor force growth rate increased to 1.8 percent, it dropped to 0.5 percent in Massachusetts.

Browne (1989) shows that much of the expansion of the New England labor force in the early 1980s resulted from increased participation rather than inmigration. Increased participation can increase labor supply only up to a limit, and those limits were being approached in the mid 1980s. Nonetheless, all regions have a steady flow of inmigrants and outmigrants, and evidence strongly suggests that housing prices had an effect on this flow in New England.

The boom had a significant impact on the demand for labor between 1984 and 1987.

Numerous accounts of the effects of high housing prices on local labor supply have appeared recently in the press.[9] Some interesting anecdotal evidence is presented in a *Harvard Business Review* article by Drier, Schwartz and Greiner (1988). Drier and his colleagues interviewed a number of executives at Massachusetts corporations to determine whether high home prices presented a serious problem with recruiting. Drier presents a convincing argument that housing prices were an important deterrent, although the evidence is not systematic.

A new paper by Gabriel (1991) uses Internal Revenue Service data on place-to-place migration flows, published information on the nine Census regions, and household data from the Current Population Survey to estimate a logistic model of regional migration. Gabriel concludes (pp. 19–21):

> Estimates of the model suggest that quality-adjusted house price differentials are important determinants of household moves and operate to offset some of the added incentive to migrate to regions characterized by tight labor markets. . . . For both sample periods, relative housing prices and mortgage servicing costs deter migration from lower cost to higher cost regions.

---

[8] According to the National Association of Realtors (*Home Sales*, various issues), 66,000 existing single-family units were sold in 1984 at an average price of $97,750. In 1987, there were 100,500 sales at an average price of $203,781. New home sales are not included, but would increase the number.

[9] See, for example, "Jobless Aren't Migrating to Boom Areas," *Wall Street Journal* (February 21, 1989).

The current analysis attempted to isolate the effect of high home prices on labor force growth empirically, using monthly time series data from 1980:1 to 1990:8 (128 observations). Three specifications were tried, and the results of all three are presented in Table 2.

The models all assume that labor force participation is driven by three economic variables: wages, local housing prices, and the likelihood of finding a job. Wages are measured by average hourly earnings; housing prices are measured by a repeat sales index constructed for Boston; the likelihood of finding a job is proxied by the unemployment rate. In equation 1, the coefficient on the unemployment rate is negative but insignificant, and the coefficient on house prices is negative and significant. The coefficient on average hourly earnings is positive and alone explains 85 percent of the variation.

In order to wash out the demographic trend component from labor force growth, the monthly

Table 2
Analysis of Labor Force Growth: 1980–90

Variable	Description	Source	
LABFRC	Massachusetts labor force (thousands)	*New England Economic Indicators* data file; U.S. Bureau of Labor Statistics (BLS)	
HOUSE	WRS index of single-family home prices, constructed from *Banker & Tradesman* transactions file	Case and Shiller (1990)	
AHEMASS	Average hourly earnings of production workers in Mass.	*Indicators* file; BLS	
URMASS	Unemployment rate—Mass.	*Indicators* file; BLS	
AHEUS	Average hourly earnings of production workers—U.S.	*Indicators* file; BLS	
URUS	Unemployment rate—U.S.	*Indicators* file; BLS	
Equation 1: Dependent Variable — LABFRC			
	Independent Variables	*Coefficient*	*T-Statistic*
	Constant	2409.6	81.3
	URMASS	−.0869	−0.04
	AHEMASS	78.6	14.2
	HOUSE	−.0321	−2.7
	Adjusted R^2: .917		
Equation 2: Dependent Variable — LABFRC			
	Independent Variables	*Coefficient*	*T-Statistic*
	Constant	2886.9	533.3
	TIME	2.43	33.3
	Adjusted R^2: .917		
Equation 3: Dependent Variable — Residual From Equation 2			
	Independent Variables	*Coefficient*	*T-Statistic*
	Constant	−130.5	4.3
	URMASS	−0.863	−0.3
	AHEMASS	25.9	4.6
	HOUSE	−0.048	−4.1
	Adjusted R^2: .149		
Equation 4: Dependent Variable — Residual From Equation 2			
	Independent Variables	*Coefficient*	*T-Statistic*
	Constant	−190.1	2.4
	URMASS/URUS	−35.94	−1.7
	AHEMASS/AHEUS	309.4	2.7
	HOUSE/AHEMASS	−0.372	−3.2
	Adjusted R^2: .061		

series was regressed on TIME in a first stage, equation 2. Then, in equations 3 and 4, the residual from the time trend regression was regressed on two sets of explanatory variables. In equation 3, the same variables used in equation 1 were included. The result is similar. Unemployment has the correct sign, but is insignificant. Average hourly earnings remains positive and significant, and house price remains negative and significant.

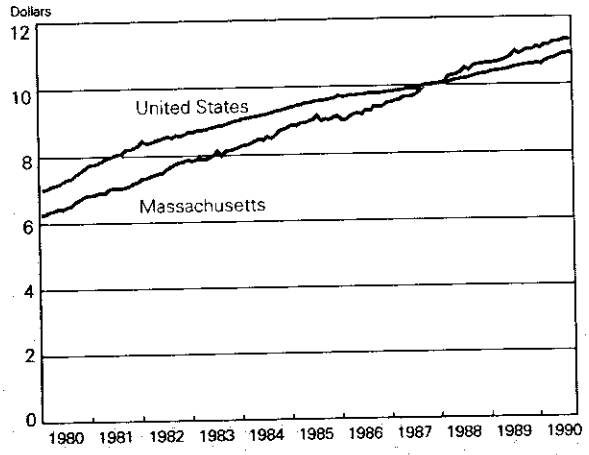
In the final specification (equation 4), unemployment in Massachusetts is measured relative to U.S. unemployment, earnings are measured as a percentage of the U.S. average, and house prices are measured relative to earnings. The results are consistent with the notion that unemployment and high home prices discourage entry into the labor force, while higher wages encourage entry.

While this analysis is preliminary and suggestive, it does add some weight to the argument that the slower growth in the New England labor force after 1984 was at least in part due to high home prices.

Figure 5

Average Hourly Earnings in Manufacturing

United States and Massachusetts



Source: U.S. Bureau of Economic Analysis; *New England Economic Indicators* data file.

Effects on Wages

The above analysis argues that the housing price boom from 1984 to 1987 caused an increase in the demand for labor and probably contributed to a decrease in the rate of growth of the labor supply. These factors together produced two effects that damaged the competitive position of the region: they drove the unemployment rate to all-time low levels and created a severe labor shortage, and they drove wages up sharply.

Figure 5 shows average hourly earnings for production workers in manufacturing in Massachusetts and in the United States since 1980. Massachusetts wages were 7.5 percent below the nation as a whole until 1984, when wages in the state began to rise. The difference steadily narrowed until the two were about the same in November of 1987. Since that time, Massachusetts wages have continued to rise, to the point where they were 4 percent above the national figure at the end of 1990.

Effects on the Supply of Credit

Finally, the real estate cycle has clearly had a significant impact on the supply of credit and the condition of the region's financial institutions. While hard numbers are difficult to obtain, the condition of the region's financial institutions has deteriorated dramatically as a result of bad real estate loans. An extreme example is the case of Bank of New England, which was taken over by the Federal Deposit Insurance Corporation in 1990. The bank lost well in excess of $2 billion, and 90 percent of its losses were in real estate. Literally hundreds of banks and S&Ls are currently under the watchful eye of federal regulators. As a result of bad capital positions and harsh regulatory standards, the volume of credit available for growing companies has been sharply cut.

It must be pointed out that the "credit crunch" is very difficult to document. Some claim that tougher credit standards are simply the natural result of the downturn, and that tougher standards are clearly justified on the basis of the slower economy. What is undeniable, however, is that the real estate cycle, whatever its cause, has inflicted serious damage on the region's financial institutions, and very few have been spared.

III. The State's Economy in 1987

Table 3 shows the position of the state's economy in 1987. Compared to the initial position described in

Table 1, conditions had changed significantly. First of all, a labor shortage is clearly evident. The unemployment rate in the state stood at 2.4 percent. The labor shortage had produced wages above the national average by 1987. Housing prices in 1987 were more than twice the national average. Finally, Class A downtown office rents by 1987 stood at $37 to $40 per square foot per year, nearly double the U.S. average. All four of these factors have been found to have a negative effect on regional growth rates.[10]

The Give-Back: 1987 to 1991

By late 1987, the real estate market began to turn. Single-family home prices stopped rising around the middle of that year (Figure 1). By late in the same year, home sales and housing starts peaked and started a protracted decline. Between 1987 and 1991, home sales dropped from a peak of over 105,000 to an annual rate of 58,600 in the first quarter of 1991 (Figure 3). During the same period, housing starts fell to an annual rate of 4,220, the lowest level in the past quarter century (Figure 2). Finally, between 1987 and 1991, office rents dropped sharply, to the point that they are about where they were in 1984. Class A office space in downtown Boston was available at $22 to $24 per foot in 1991.

By the spring of 1991, the resulting declines in employment were dramatic. Construction employment dropped by 48 percent from its peak of 147,200 in early 1988 to 76,800, a loss of over 70,000 jobs. This left construction employment more than 15 percent below its 1984 levels. Total jobs lost by 1991 in other nonmanufacturing sectors include 92,400 in wholesale and retail trade, 34,700 in the service sector, and 14,000 in finance insurance and real estate. Thus, of the 331,000 jobs added between 1984 and 1987 in these three sectors plus the construction sector, over 211,000 were lost between 1987 and 1991. How much of this decline is directly linked to events in the real estate market is impossible to say, but the real estate decline certainly played a role.

Table 3
The Massachusetts and United States Economies in 1987

	Massachusetts	United States
Unemployment Rate[a]	2.4%	6.1%
Annual Percent Change in Nonagricultural Employment (1984–87)[b]	2.2%	2.6%
Annual Percent Change in Civilian Labor Force (1984–87)[b]	.5%	1.8%
Average Hourly Earnings of Production Workers[c]	$10.04	$10.00
Median Home Price, 1987[d]	$177,200	$85,600
Annual Rent per Square Foot of Class A Office Space, 1987[e]	$37–$40	$22.23

[a]July 1987. U.S. Bureau of Labor Statistics.
[b]Based on change from the 4th quarter 1984 to the 4th quarter 1987, expressed at annual rates.
[c]U.S. Bureau of Labor Statistics, average for November 1987, the first month that the Mass. figure rose above the national figure. The wage rate in Massachusetts was 4 percent higher than the national wage rate at the end of 1990.
[d]Median sales price of existing single-family homes in the Boston CMSA for the year 1987, National Association of Realtors, *Home Sales*, October 1988.
[e]See Table 1.

IV. Conclusion

Clearly, the real estate cycle is not the only story behind the current deep recession in Massachusetts and New England. Declines in defense spending, retrenchment in the high technology sector, and a national recession have all contributed. Manufacturing employment in the state began to decline back in 1984, long before the real estate boom had any discernible impact. Nonetheless, there is strong evidence that the real estate cycle amplified the business cycle significantly, both on the way up and on the way down. Not only is the region giving back jobs that were added directly because of the real estate boom, the boom did serious damage to the cost structure of the region, making it less attractive to both existing firms and potential new entrants to the region.

In many ways Massachusetts in 1991 is back to where it was in 1984. But in 1984, the unemployment rate was dropping and the economy was on an upswing. Today, the unemployment rate appears to have leveled off just shy of 10 percent, and the road to recovery looks very long. Much of the reason for this change in fortunes lay hidden in what we thought was evidence of great success: the great real estate boom of 1984–87.

[10] The output of the DRI Regional Forecasting Service shows that housing prices, wage rates, and labor availability are all very significant determinants of regional and state employment growth rates.

References

Browne, Lynn E. 1988. "Defense Spending and High Technology Development: National and State Issues." Federal Reserve Bank of Boston, *New England Economic Review*, September/October, pp. 3–22.

———. 1989. "Shifting Regional Fortunes: The Wheel Turns." Federal Reserve Bank of Boston, *New England Economic Review*, May/June, pp. 27–40.

Case, Karl E. 1986. "The Market for Single Family Homes in the Boston Area." Federal Reserve Bank of Boston, *New England Economic Review*, May/June, pp. 38–48.

Case, Karl E., and Robert Shiller. 1988. "The Behavior of Home Buyers in Boom and Post-Boom Markets." Federal Reserve Bank of Boston, *New England Economic Review*, November/December, pp. 29–46.

———. 1989. "The Efficiency of the Market for Single-Family Homes." *The American Economic Review*, vol. 79, no. 1, March, pp. 125–37.

———. 1990. "Forecasting Prices and Excess Returns in the Housing Market." *Journal of the American Real Estate and Urban Economics Association*, vol. 18, no. 4.

Drier, Peter, David C. Schwartz, and Ann Greiner. 1988. "What Every Business Can Do About Housing." *Harvard Business Review*, September/October, pp. 52–61.

Flynn, Patricia M. 1984. "Lowell: A High Technology Success Story." Federal Reserve Bank of Boston, *New England Economic Review*, September/October, pp. 39–49.

Gabriel, Stuart, with Janice Shack-Marquez and William Wascher. 1991. "Regional House Price Dispersion and Interregional Migration." Department of Finance and Business Economics, School of Business Administration, University of Southern California, no. 90–14.

Henderson, Yolanda K. 1990. "Defense Cutbacks and the New England Economy." Federal Reserve Bank of Boston, *New England Economic Review*, July/August, pp. 3–24.

Moscovitch, Edward. 1990. "The Downturn in the New England Economy: What Lies Behind It?" Federal Reserve Bank of Boston, *New England Economic Review*, July/August, pp. 53–65.

Norton, R.D. 1989. "Housing Price Booms and Regional Cycles." *Survey of Regional Literature*, no. 9, March, pp. 2–12.

Rosengren, Eric. 1990. "How Diversified Is New England?" Federal Reserve Bank of Boston, *New England Economic Review*, November/December, pp. 3–16.

Sheiner, Louise. 1990. "Housing Prices and the Saving Behavior of Renters." Doctoral dissertation, Harvard University.

Skinner, Jonathan. 1989. "Housing Wealth and Aggregate Saving." NBER Working Paper No. 2842, February.