

LOW-INCOME HOMEOWNERSHIP

*Examining the
Unexamined Goal*

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Home Price Appreciation in Low- and Moderate-Income Markets

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At the turn of the millennium, fully two-thirds of American households were owner-occupants. In addition, through the middle of the year 2000, real home prices were rising in all but a handful of major metropolitan areas in the United States. In such a climate, the benefits of homeownership seem obvious. Owners whose property appreciates accumulate wealth, and most are protected from rising out-of-pocket housing costs by fixed or slowly adjusting mortgage rates. Renter households, in contrast, are hurt by rising real rents, and they see the dream of homeownership becoming ever more elusive.

But is homeownership the solution for all? Clearly, there are periods of time and locations where owning a home has been a liability. Examples of substantial decreases in home values have occurred in Texas, New England, California, Alaska, and Hawaii in recent years. Homeowners are also leveraged, and a home purchase is the biggest investment that most households ever make. A household that puts 10 percent down to purchase a home doubles its money if the home appreciates 10 percent. That same household sees its investment wiped out if home prices fall 10 percent.

Clearly, home price appreciation is only part of the return to an investment in an owner-occupied unit. The bulk of the return to owning accrues to the owner household in the form of valuable housing services. In addition, there are costs to be considered. The physical structure must be maintained, and even

with maintenance, systems become obsolete; property taxes must be paid; mortgage interest rates and origination fees vary with time and by borrower; heating bills and insurance costs can be substantial; and of course there may or may not be income tax advantages to owning. Nonetheless, whether home prices rise or fall over time will determine to a large extent whether the investment was a good one.

This chapter begins with a broad-brush look at state and metropolitan area housing markets over the past quarter-century. The available state and metropolitan area data reveal substantial differences in the pattern of price appreciation across time and space. While some areas have experienced dramatic boom and bust cycles, other areas have experienced relatively low variance or strong trend appreciation. The second part of the chapter looks in detail at zip code-level price changes over a period of seventeen years in three major metropolitan areas: Boston, Chicago, and Los Angeles. Although the experiences in three metropolitan areas cannot be generalized to the nation as a whole, we believe that much can be learned from studying patterns of price movement across neighborhoods within cities.

Methodology

The patterns of change in home value described here are estimated with repeat sales price indexes. Case-Shiller (CS) weighted repeat sales indexes were used where available (see Case and Shiller 1987, 1989). In addition, the Office of Federal Housing Enterprise Oversight (OFHEO) makes available state-level repeat value indexes produced using Fannie Mae and Freddie Mac data. OFHEO uses a similar index construction methodology (the WRS method of Case and Shiller, 1987), but its indexes are in part based on appraisals rather than exclusively on arm's-length transactions. CS indexes are estimated only with arm's-length transactions and use controls, to the extent possible, for changes in property characteristics. Nonetheless, to capture broad movements over long time periods, the indexes tend to track each other quite well.

Changes in aggregate OFHEO indexes are presented in table 8-1, along with changes in the consumer price index (CPI) for the same time periods. On average, house prices in the United States have risen 137.8 percent since 1980, while prices in general increased 105.9 percent. In addition, price increases have exceeded inflation in eight of the nine census regions. Over twenty years, the largest increases have been in New England, the Mid-Atlantic, and the Pacific regions. Only in the West South Central region have prices fallen in real terms since 1980.

Real rates of increase accelerated during the five-year period from 1996 to 2001. For the United States as a whole, prices are up 27.3 percent versus 12.4 percent for the CPI. During 2000, home price increases were 6.5 percent, while

Table 8-1. *Percentage Change in House Prices for the Period Ending March 31, 2000*

<i>Division</i>	<i>Division ranking</i>	<i>One-year change</i>	<i>Five-year change</i>	<i>Since 1980</i>
New England	1	10.2	33.4	242.8
West North Central	2	7.8	31.1	110.0
Pacific	3	7.1	28.5	166.8
Middle Atlantic	4	6.5	21.3	186.1
East North Central	5	6.3	30.8	139.1
Mountain	6	5.9	30.3	123.4
South Atlantic	7	5.7	25.1	129.4
West South Central	8	5.3	23.4	60.2
East South Central	9	3.9	26.2	117.2
United States ^a	...	6.5	27.3	137.8
CPI-U	...	3.2	12.4	105.9

Source: Office of Federal Housing Enterprise Oversight, House Price Index, First Quarter 2000; Bureau of Labor Statistics, All Urban Consumers.

a. U.S. figures based on weighted division average.

the CPI was up only 3.2 percent. During 2000 and the period 1996–2001, real prices increased in all nine census regions.

Zip Code–Level Indexes

To explore intracity variations in the pattern of appreciation over time, we used zip code–level indexes produced by Case Shiller Weiss Inc. CSW produces an index for an area only when the number of paired sales is sufficient to produce reasonable confidence intervals on the coefficient estimates. A total of 428 indexes were available from the three metropolitan areas chosen. The Boston data are made up of 235 zip code indexes with observations between the first quarter of 1983 and the second quarter of 1998. The Chicago data represent eighty-four zip codes with observations between the first quarter of 1987 and second quarter of 1998. The Los Angeles data contain information on 109 zip codes between the first quarter of 1983 and the second quarter of 1998.

It is important to reiterate that the three metropolitan areas being examined here do not represent a random sample of the U.S. housing market. In some ways they were chosen not to be representative, but rather because their housing markets have behaved very differently over time.

Table 8-2 presents the characteristics of the zip code samples for each of the three metropolitan areas. The figure breaks the zip codes into quintiles based on income and shows data for the highest and lowest deciles. The data are from the 1990 census.

Median income figures show the same pattern for all three cities. Boston had higher median income than either Los Angeles or Chicago, and income was

Table 8-2. *Characteristics of Census Tract Groups by Quintile/Decile: Income, Rent, and Housing Value*

<i>Decile or quintile</i>	<i>Median income (\$)</i>	<i>Median monthly rent (\$)</i>	<i>Median housing value (\$)</i>	<i>Annual rent housing value</i>	<i>Income housing value</i>
<i>Los Angeles</i>					
Top 10 percent	69,997.27	931.27	418,445.91	0.0280656	0.167279
Top 1/5	61,228.10	879.00	386,186.00	0.0291087	0.158546
2d 1/5	44,747.59	740.73	259,618.18	0.0364042	0.172359
3d 1/5	38,676.36	671.41	255,422.77	0.0347135	0.151421
4th 1/5	33,182.00	631.77	215,968.18	0.0363928	0.153643
Bottom 1/5	25,756.00	566.09	179,036.36	0.0402097	0.143863
Bottom 10 percent	23,502.64	546.46	185,127.27	0.0394882	0.126954
Total	40,529.84	696.14	258,081.72	0.0354232	0.157043
<i>Chicago</i>					
Top 10 percent	62,871.63	702.75	213,687.50	0.0691433	0.294222
Top 1/5	57,561.94	641.69	184,806.25	0.0570721	0.311472
2d 1/5	47,638.59	658.71	132,723.53	0.061004	0.358931
3d 1/5	43,098.18	600.24	123,270.59	0.0615719	0.349623
4th 1/5	36,970.00	532.88	99,558.82	0.0683252	0.371338
Bottom 1/5	27,972.59	455.35	92,235.29	0.0619974	0.303274
Bottom 10 percent	24,796.00	435.63	83,187.50	0.0662436	0.298074
Total	42,470.71	577.01	125,825.00	0.0620527	0.337538
<i>Boston</i>					
Top 10 percent	73,576.58	805.88	302,129.21	0.0327019	0.243527
Top 1/5	65,931.17	750.68	258,083.00	0.0361367	0.255465
2d 1/5	49,873.94	686.91	183,300.00	0.0462082	0.272089
3d 1/5	43,330.81	640.83	162,302.13	0.0478546	0.266976
4th 1/5	38,122.87	592.38	149,931.92	0.0478222	0.254268
Bottom 1/5	29,269.64	519.32	134,212.77	0.0470045	0.218084
Bottom 10 percent	26,142.38	485.92	129,166.67	0.0453193	0.202393
Total	45,305.69	638.03	177,566	0.0450053	0.255148

Source: Authors' tabulations using 1990 U.S. census public use data.

higher in every quintile. Chicago had a slightly more even distribution of income than either Boston or Los Angeles. The ratio of income in the wealthiest 10 percent of zip codes to income in the poorest 10 percent of zip codes was 3.0 in Los Angeles, 2.8 in Boston, and 2.5 in Chicago.

Los Angeles was the most expensive of the three housing markets, for both rental and owner-occupied units. Median monthly rent in Los Angeles was nearly \$700, while median rent in Boston was \$638 and in Chicago \$577. The ratio of rent in the highest decile to rent in the lowest decile was between 1.6 and 1.7 in all three cities. The median price of owner-occupied units in Los Angeles was more than twice the median value of owner-occupied units in Chicago and nearly 1.5 times the median value of owner-occupied units in Boston.

The two right-hand columns of tables 8-2 and 8-3 show interesting ratios for the three metropolitan areas in 1990. Column 4 shows the ratio of median monthly rent to owner-occupied house value for each quintile/decile. The ratio was substantially higher in Chicago in all subgroupings than in the other two cities and was lowest in Los Angeles. Not surprisingly, the ratio of income to house value, a crude measure of affordability, was more than twice as high in Chicago as in Los Angeles. In addition, the ratio of income-to-house value was the lowest in the poor areas of Los Angeles and the highest in the middle-income areas of Chicago.

Although its housing market was the most expensive among the three, Los Angeles had the highest percentage of households in poverty: 11.1 percent; the figure was 5.6 percent for Chicago and 5.5 percent for Boston. In all three cities there was a larger percentage of African Americans in the lower-income zip codes, with substantially more concentration apparent in the low-income zip codes of Chicago.

Finally, Los Angeles had a substantially larger percentage of recent immigrants. Although immigrants were scattered across all income quintiles, the largest proportion in all three cities was in the lowest income decile.

Appreciation in High- and Low-Income Areas

This section describes patterns of appreciation and depreciation in low- and high-income neighborhoods. The last section of the chapter presents some possible explanations for the observed patterns.

Tables 8-4 and 8-5 and figure 8-1 present the main results. Table 8-4 presents annualized increases in value for Boston's 235 zip codes between the beginning of 1983 and 1988. The Boston market experienced a dramatic boom between 1983 and 1988, with home prices rising at a nominal rate of 18 percent annually and at a real rate of 13.8 percent over the five-year period.

During the Boston boom, the low-income portion of the market experienced the highest rates of appreciation. The bottom decile increased at a nominal annual rate of over 20 percent, while the top decile increased at a rate of 17.4 percent. What was remarkable and telling about the price increases in Boston was how uniform and widespread the phenomenon was. Over the period, the average house in eastern Massachusetts appreciated nearly 140 percent, while housing in the poorest 10 percent of zip codes increased more than 165 percent. As a result, over \$100 billion was added to household net worth over the five-year period (see Case, 1991).

Over the next four years, however, Massachusetts and New England as a whole experienced a severe recession. Homeowners who bought near the peak in late 1988 experienced substantial declines in value. While nominal values fell at a rate of 3.8 percent on average, real declines approached 8 percent annually. In nominal terms, the total decline was about 16 percent on average, while in real

Table 8-3. *Characteristics of Census Tract Groups by Quintile/Decile: Race, Poverty, Size and Age of Household, Foreign-Born Owners, Tenure, Owner-Occupied Units*

<i>Decile or quintile</i>	<i>Percent African American</i>	<i>Percent in poverty</i>	<i>Percent one-person household</i>	<i>Percent over age 65</i>	<i>Percent foreign-born who entered after 1982</i>	<i>Percent who lived in same house in 1985</i>	<i>Percent owner-occupied housing units</i>
<i>Los Angeles</i>							
Top 10 percent	7.3	3.8	18.9	14.7	24.2	51.5	78.4
Top 1/5	7.9	4.3	20.9	15.2	27.5	52.6	73.6
2d 1/5	5.2	6.7	22.3	16.8	32.1	53.2	65.8
3d 1/5	9.4	9.1	26.4	15.7	34.3	49.9	56.1
4th 1/5	7.3	13.3	23.0	13.1	38.2	46.5	45.9
Bottom 1/5	21.3	21.6	23.1	10.6	42.9	43.4	32.6
Bottom 10 percent	15.6	24.5	22.9	11.2	43.6	43.4	29.1
Total	10.2	11.1	23.2	14.3	35.1	49.1	54.6
<i>Chicago</i>							
Top 10 percent	1.5	1.9	16.7	13.2	24.4	53.1	84.7
Top 1/5	1.4	2.1	17.7	12.9	22.8	53.4	82.0
2d 1/5	2.3	2.4	20.8	11.2	27.8	49.8	74.7
3d 1/5	5.4	3.7	21.7	15.1	24.4	56.3	75.0
4th 1/5	11.1	4.5	25.2	19.9	19.1	60.7	72.0
Bottom 1/5	27.7	15.1	29.5	17.6	28.3	53.6	46.4
Bottom 10 percent	37.7	19.5	29.1	14.5	31.1	51.6	37.1
Total	9.7	5.6	23.0	15.4	24.5	54.7	69.9
<i>Boston</i>							
Top 10 percent	1.1	2.1	14.9	14.4	21.0	66.3	86.0
Top 1/5	1.0	2.3	15.5	13.9	20.2	66.2	84.4
2d 1/5	0.8	3.1	16.9	13.1	14.0	61.9	80.2
3d 1/5	1.1	4.1	20.8	15.3	18.2	61.3	72.4
4th 1/5	3.2	5.7	22.4	17.3	18.8	61.4	68.8
Bottom 1/5	4.8	12.4	27.7	17.8	27.8	54.5	46.1
Bottom 10 percent	6.1	15.5	28.3	18.3	27.3	54.7	40.9
Total	2.2	5.5	20.7	15.5	19.8	61.1	70.4

Source: Authors' tabulations using 1990 U.S. census public use data.

Table 8-4. *Annualized Increases in Value (Nominal and Real) in Boston, 1983-98*

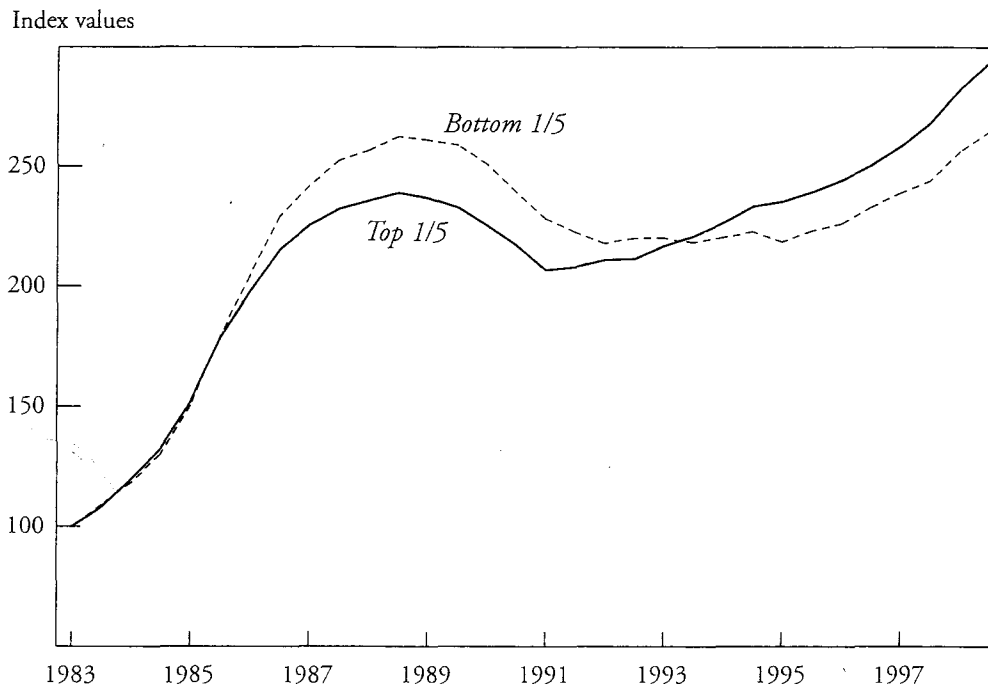
Decile or quintile	Number of zip codes	Annual percentage change in aggregate Case-Shiller index between periods (CPI-adjusted in parentheses)			
		1983:1-1988:2	1988:2-1992:2	1992:2-1998:2	1983:1-1998:2
Top 10 percent	24	17.4 (13.3)	-2.7 (-6.7)	5.9 (3.4)	7.5 (4.0)
Top 1/5	47	17.2 (13.1)	-3.0 (-7.0)	5.6 (3.0)	7.2 (3.7)
2d 1/5	47	17.0 (12.9)	-3.8 (-7.8)	4.5 (1.9)	6.4 (3.0)
3d 1/5	47	17.5 (13.4)	-3.8 (-7.8)	4.4 (1.9)	6.6 (3.1)
4th 1/5	47	18.5 (14.4)	-3.8 (-7.7)	4.0 (1.5)	6.8 (3.3)
Bottom 1/5	47	19.4 (15.2)	-4.3 (-8.3)	3.1 (0.6)	6.5 (3.0)
Bottom 10 percent	24	20.4 (16.2)	-4.3 (-8.2)	2.0 (-0.5)	6.4 (3.0)
Total	235	17.9 (13.8)	-3.8 (-7.7)	4.3 (1.8)	6.7 (3.2)

Source: Authors' tabulations using Case, Shiller, and Weiss data.

Table 8-5. *Annualized Increases in Value (Nominal and Real) in Chicago, 1983-98*

Decile or quintile	Number of zip codes	Annual percentage change in aggregate Case-Shiller index between periods (CPI-adjusted in parentheses)		
		1987:1-1992:1	1992:1-1998:2	1987:1-1998:2
Top 10 percent	8	5.8 (1.5)	3.8 (1.3)	4.8 (1.4)
Top 1/5	16	5.9 (1.5)	3.6 (1.1)	4.7 (1.3)
2d 1/5	17	5.9 (1.6)	3.5 (1.0)	4.7 (1.3)
3d 1/5	17	6.8 (2.5)	3.9 (1.4)	5.3 (1.9)
4th 1/5	17	8.0 (3.5)	4.4 (1.9)	6.1 (2.7)
Bottom 1/5	17	9.8 (5.3)	6.1 (3.5)	7.8 (4.4)
Bottom 10 percent	8	10.6 (6.1)	6.7 (4.1)	8.5 (5.1)
Total	84	7.3 (2.9)	4.3 (1.8)	5.7 (2.3)

Source: Authors' tabulations using Case, Shiller, and Weiss data.

Figure 8-1. *Boston: CSW Index (nominal values, 1983: 1 = 100)*

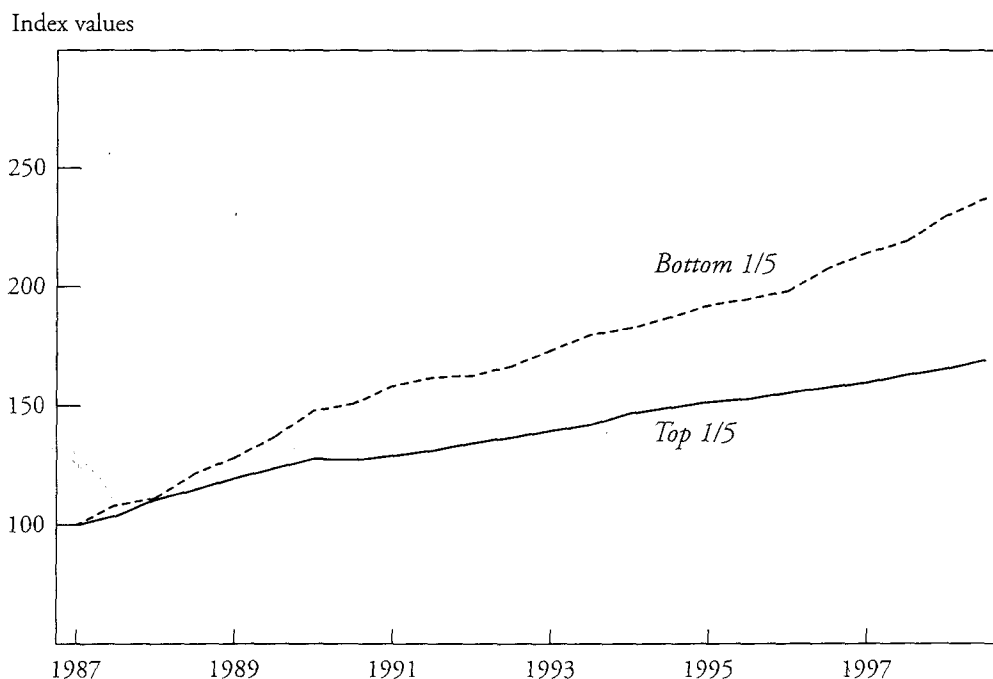
terms it was closer to one-third. The biggest declines occurred in the lowest-income zip codes. Real declines exceeded 8 percent in the bottom quintile but were only 6.7 percent in the highest decile.

Finally, prices turned around early in 1992 and rose steadily through the end of the observation period in 1998. During this period, the high end of the market substantially outperformed the low end. Nominal price increases in the highest-income group of zip codes were three times greater than price increases in the lowest-income group of zip codes. In fact, in the bottom decile, real prices actually declined at a rate of 0.5 percent annually over the six-year period.

Figure 8-1 shows the pattern for the entire period for the top and bottom quintiles. Over the entire boom-bust-recovery cycle, the high-end market did somewhat better than the low-end market, but the differences were relatively minor. The highest quintile appreciated in real terms at a rate of 3.7 percent annually; the lowest quintile appreciated in real terms at a rate of 3.0 percent annually.

As shown in Table 8-5, the pattern was completely different in Chicago. Real rates of appreciation were steady with only modest signs of cyclicity. Between 1987 and 1992, housing appreciated at an average annual rate of 7.3 percent in nominal terms, or 2.9 percent in real terms. As in Boston, the top end of the distribution lagged the bottom, with the bottom decile appreciating nominally at nearly twice the rate of the top decile.

The same pattern continued, although at a somewhat slower rate, between 1992 and 1998. Nominal increases averaged 6.7 percent annually in the lowest-

Figure 8-2. *Chicago: CSW Index (nominal values, 1987: 1 = 100)*

income decile while nominal increases averaged just 3.8 percent in the highest-income decile.

Figure 8-2 shows indexes for the top and bottom quintiles over the eleven-year period. Overall, between 1987 and 1998, the poorest neighborhoods did substantially better than the more wealthy neighborhoods. Real appreciation averaged 5.1 percent annually in the bottom decile and 4.4 percent annually in the bottom quintile while averaging only 1.4 percent annually in the top decile and 1.3 percent in the top quintile.

Table 8-6 presents the results of tabulations for Los Angeles. Los Angeles experienced a substantial boom between 1983 and 1990, with annual appreciation rates averaging over 10 percent in nominal terms and nearly 6 percent in real terms. The pattern was remarkably uniform with no statistically significant difference between increases in any of the quintiles. Home prices in virtually all of the 109 zip codes appreciated at approximately the same rate. Between 1990 and 1993, real home prices declined by more than a third in Los Angeles, with the largest drop occurring at the high end of the distribution. In nominal terms, the top 10 percent of zip codes fell at an annual rate of 9.1 percent, while the bottom 10 percent of zip codes fell at an annual rate of 7.5 percent.

Between 1993 and 1998 in Los Angeles, home prices in all but the top quintile stagnated in real terms. In the top quintile and the top decile, nominal appreciation was just over 4 percent, while real appreciation was about 1 percent annually. The bottom quintile and the bottom decile experienced virtually no nominal appreciation, with real values falling at a rate of about 2.5 percent.

Table 8-6. *Annualized Increases in Value (Nominal and Real) in Los Angeles, 1983-98*

Decile or quintile	Number of zip codes	Annual percentage change in aggregate Case-Shiller index between periods (CPI-adjusted in parentheses)			
		1983:1-1990:2	1990:2-1993:2	1993:2-1998:2	1983:1-1998:2
Top 10 percent	11	10.6 (6.3)	-9.1 (-11.8)	4.0 (1.6)	4.4 (1.0)
Top 1/5	21	10.4 (6.1)	-8.5 (-11.2)	3.4 (0.9)	4.2 (0.8)
2d 1/5	22	9.9 (5.6)	-7.3 (-10.0)	1.5 (-0.9)	3.6 (0.3)
3d 1/5	22	10.3 (6.0)	-8.2 (-10.9)	1.8 (-0.6)	3.7 (0.4)
4th 1/5	22	10.4 (6.0)	-8.0 (-10.7)	1.5 (-0.9)	3.7 (0.4)
Bottom 1/5	22	10.3 (6.0)	-7.1 (-9.9)	-0.4 (-2.7)	3.2 (-0.1)
Bottom 10 percent	11	10.7 (6.4)	-7.5 (-10.2)	-0.1 (-2.5)	3.4 (0.1)
Total	109	10.2 (5.9)	-7.8 (-10.5)	1.6 (-0.8)	3.7 (0.3)

Source: Authors' tabulations using Case, Shiller, and Weiss data.

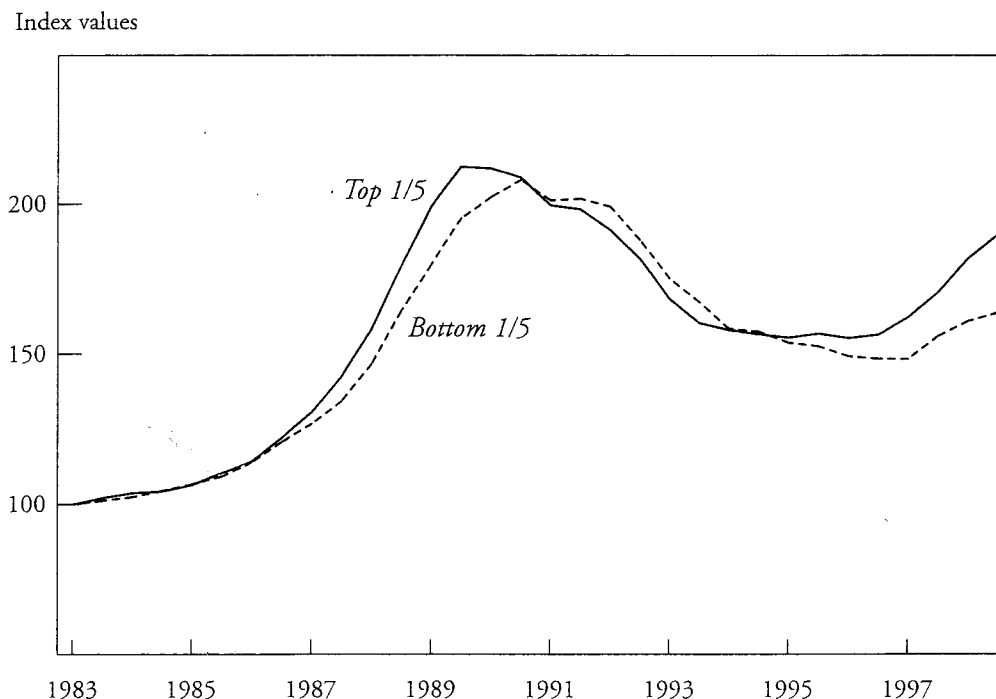
Figure 8-3 shows the pattern in Los Angeles for the top quintile and bottom quintile over the fifteen years. During the first seven years of the cycle, top and bottom quintiles experienced similar booms; during the bust, the low end fell the least; over the last five years of the observation period, the high end did somewhat better than the low end.

To summarize, while substantial differences in the patterns of home price appreciation and depreciation can be observed over time and across the three metropolitan areas, by and large lower-income neighborhoods have done reasonably well in comparison with higher-income areas of the same cities.

Equity Accumulation from Homeownership

Tables 8-7, 8-8, and 8-9 present the results of an exercise designed to estimate the potential wealth accumulation of ownership during different time periods in the three metropolitan areas. First, median home value was estimated for each zip code grouping from the American Housing Survey. The American Housing Survey (AHS) contains cross-tabulations of income and house value that were smoothed into continuous cumulative distributions by fitting spline functions to the data. The most recent releases of AHS data were for 1993 in Boston and

Figure 8-3. Los Angeles: CSW Index (nominal values, 1983: 1 = 100)



1995 in Los Angeles and Chicago. Figures for 1993 and 1995 were then inflated/deflated with CSW zip code indexes back to 1987 and forward to 1998.

Table 8-7 shows equity buildup for the median home buyer in each of the zip code groupings, assuming a home buyer purchased in 1987 with an 80 percent mortgage. For example, the median value of houses in the top decile in Boston was estimated to be \$390,642 in 1987. A household purchasing that house in 1987 would begin with equity of \$78,128. By 1991 that equity would have fallen by nearly 40 percent to \$48,889. By 1995, however, the household equity would have risen to over \$100,000, and by 1998 to nearly \$200,000.

At the other end of the income distribution, the median value of houses in the bottom decile in Boston was estimated to be \$59,426 in 1987. A household that purchased that house in 1987 would have begun with equity of \$11,885. By 1991 that equity would have eroded to \$9,630, and by 1995 it would stand at just \$7,322. Finally, by 1998, the investment would have increased to \$13,323, producing a nominal leveraged rate of return of just 1 percent. Recall that in 1987 Boston was approaching a cyclical peak in home prices.

In Chicago, rates of appreciation have been more steady, and lower-income neighborhoods have consistently outperformed higher-income neighborhoods. In Chicago, a home buyer in the top decile in 1987 would have begun with equity of \$49,817, which would have grown to \$120,342 by 1991, to \$179,000 by 1995, and to \$215,000 by 1998. Equity would have grown at 14.2 percent

Table 8-7. Increase in Equity: Hypothetical Home Purchase, 1987-98

Dollars

Distribution of households	Median house value, 1987	Equity in house, 1987 (20 percent down payment)	Equity in house, 1991	Equity in house, 1995	Equity in house, 1998
<i>Boston</i>					
Top 10 percent	390,642	78,128	48,889	130,734	194,752
Top 1/5	299,822	59,964	35,119	93,145	136,131
2d 1/5	212,006	42,401	21,807	51,226	71,415
3d 1/5	171,824	34,365	18,930	40,491	55,863
4th 1/5	130,908	26,182	17,238	27,293	41,957
Bottom 1/5	82,511	16,502	11,781	12,281	21,393
Bottom 10 percent	59,426	11,885	9,630	7,322	13,323
<i>Chicago</i>					
Top 10 percent	249,083	49,817	120,342	178,974	215,374
Top 1/5	184,068	36,814	90,209	131,815	157,154
2d 1/5	119,312	23,862	59,813	85,898	101,377
3d 1/5	84,473	16,895	46,293	68,162	81,613
4th 1/5	57,692	11,538	36,532	53,513	66,200
Bottom 1/5	31,332	6,266	24,540	35,176	46,948
Bottom 10 percent	20,800	4,160	17,978	25,582	34,915
<i>Los Angeles</i>					
Top 10 percent	372,103	74,421	286,407	151,541	238,306
Top 1/5	333,757	66,751	243,212	130,403	197,791
2d 1/5	207,409	41,482	148,260	79,763	101,843
3d 1/5	163,956	32,791	122,132	61,692	81,194
4th 1/5	132,152	26,430	98,237	52,292	67,598
Bottom 1/5	85,640	17,128	67,554	35,380	40,261
Bottom 10 percent	60,987	12,197	49,241	26,410	30,260

Source: Authors' tabulations using Case, Shiller, and Weiss data.

Table 8-8. *Increase in Equity: Hypothetical Home Purchase, 1991-98*

Dollars

<i>Distribution of households</i>	<i>Median house value, 1991</i>	<i>Equity in house, 1991 (20 percent down payment)</i>	<i>Equity in house, 1995</i>	<i>Equity in house, 1998</i>
<i>Boston</i>				
Top 10 percent	361,402	72,280	130,734	218,144
Top 1/5	274,977	54,995	93,145	156,007
2d 1/5	191,411	38,282	51,226	87,890
3d 1/5	156,390	31,278	40,491	68,210
4th 1/5	121,964	24,393	27,293	49,112
Bottom 1/5	77,789	15,558	12,281	25,171
Bottom 10 percent	57,170	11,434	7,322	15,128
<i>Chicago</i>				
Top 10 percent	319,608	63,922	122,553	169,858
Top 1/5	237,464	47,493	89,099	121,263
2d 1/5	155,262	31,052	57,137	77,478
3d 1/5	113,872	22,774	44,643	61,739
4th 1/5	82,685	16,537	33,518	47,468
Bottom 1/5	49,605	9,921	20,557	34,652
Bottom 10 percent	34,618	6,924	14,528	25,626
<i>Los Angeles</i>				
Top 10 percent	584,089	116,818	-18,048	68,717
Top 1/5	510,218	102,044	-10,765	56,622
2d 1/5	314,187	62,837	-5,659	16,421
3d 1/5	253,297	50,659	-9,781	9,721
4th 1/5	203,958	40,792	-5,153	10,153
Bottom 1/5	136,066	27,213	-4,961	-79
Bottom 10 percent	98,030	19,606	-3,224	626

Source: Authors' tabulations using Case, Shiller, and Weiss data.

annually. But the leveraged appreciation in equity is even greater at the low end. A home buyer in the bottom decile in 1987 would have seen equity grow from \$4,160 in 1987 to \$18,000 in 1991, to \$25,600 in 1995, and to nearly \$35,000 by 1998. Equity growth in the lowest decile averaged over 20 percent annually.

During the same period a 1987 Los Angeles home buyer with an 80 percent mortgage would have experienced quite a ride. In the top decile between 1987 and 1991, equity would have increased from \$74,421 to \$286,407; in the bottom decile equity would have increased from \$12,197 to \$49,241, a fourfold increase. For the same home buyers, the gains from the boom were roughly cut in half by the bust in Los Angeles. Equity in the highest decile eroded from \$286,407 in 1991 to just \$151,541 by 1995; equity in the lowest decile eroded from \$49,241 in 1991 to \$26,410 in 1995. Gains in equity over the last three years of the observation period in Los Angeles were largely concentrated in the upper-income brackets.

Source: Authors' tabulations using Case, Shiller, and Weiss data.

Bottom 1/5 85,640
 Bottom 10 percent 60,987
 17,128
 12,197
 67,554
 49,241
 35,380
 26,410
 40,261
 30,260

Table 8-9. *Increase in Equity: Hypothetical Home Purchase, 1995-98*

Dollars

<i>Distribution of households</i>	<i>Median house value, 1995</i>	<i>Equity in house 1995 (20 percent down payment)</i>	<i>Equity in house, 1998</i>
<i>Boston</i>			
Top 10 percent	419,855	83,971	171,381
Top 1/5	313,127	62,625	125,487
2d 1/5	204,355	40,871	77,536
3d 1/5	165,603	33,121	60,840
4th 1/5	124,864	24,973	46,792
Bottom 1/5	74,513	14,903	27,792
Bottom 10 percent	53,059	10,612	18,417
<i>Chicago</i>			
Top 10 percent	378,240	75,648	112,048
Top 1/5	279,070	55,814	81,153
2d 1/5	181,347	36,269	51,749
3d 1/5	135,740	27,148	40,599
4th 1/5	99,667	19,933	32,620
Bottom 1/5	60,241	12,048	23,821
Bottom 10 percent	42,222	8,444	17,777
<i>Los Angeles</i>			
Top 10 percent	449,223	89,845	176,610
Top 1/5	397,409	79,482	146,869
2d 1/5	245,690	49,138	71,218
3d 1/5	192,857	38,571	58,073
4th 1/5	158,014	31,603	46,909
Bottom 1/5	103,892	20,778	25,660
Bottom 10 percent	75,200	15,040	18,890

Source: Authors' tabulations using Case, Shiller, and Weiss data.

Table 8-8 shows the experience of hypothetical home buyers who purchased in 1991. High-end home buyers in Boston would have seen their equity grow by more than 80 percent between 1991 and 1995, while those who purchased in the lower-income zip code groups would have lost more than a third of theirs.

Households who purchased houses in Los Angeles in 1991 had negative equity by 1995 in both higher-income and lower-income neighborhoods. A home buyer in the top 10 percent of neighborhoods by income would have had to put down over \$100,000; by 1995 that buyer would have -\$18,048 in equity. Similarly, a household buying in the lower-income zip code grouping in Los Angeles in 1991 would have seen equity decline from \$19,606 to -\$3,224 by 1995.

In Chicago, the same period of time, 1991 to 1995, was very good for building equity through homeownership at both ends of the income distribution.

Equity more than doubled for home buyers in lower-income zip codes and nearly doubled for home buyers in the higher-income zip codes.

The same figure shows the equity buildup or loss of equity for 1991 home buyers by 1998. Once again, low-income home buyers in Chicago and high-income home buyers in Boston built substantial equity over the seven-year period; low-income home buyers in Boston built modest equity over the seven-year period; and home buyers in Los Angeles, particularly in lower-income zip code groupings, saw equity substantially eroded.

Finally, the same exercise is shown in table 8-9 for home buyers who purchased property in 1995. Since house prices have been rising in real terms in all three cities, homeownership was an unambiguously good strategy for accumulating wealth. For home buyers in lower-income neighborhoods, the buildup was the greatest in Chicago, where equity more than doubled over the three years, and least in Los Angeles, where equity increased by 25.6 percent.

There is no question that in some areas and during some periods of time leveraged investment in homeownership is a good strategy for building equity for low-income households. It is also true, however, that leveraged investment in homeownership can lead to serious losses.

The Causes of Changes in House Prices

An extensive literature exists on the causes of changes in house prices. A few studies compare the performance of low- and high-end markets. Case and Shiller (1994) focus attention on the pattern of price appreciation and depreciation in Los Angeles and Boston between 1982 and 1985. They conclude that prices of property at the low end of the distribution in Boston did better than prices at the high end in part because the economic growth of the 1980s reached farther down into the income distribution than it did in California. Unemployment fell much more sharply in Boston than it did in Los Angeles in the mid-1980s. As a result, first-time home buyers entered the market, driving up ownership rates among lower-income households in Boston substantially faster than was true in Los Angeles. In addition, housing prices on average in Los Angeles were 70 percent above the U.S. median at the beginning of the boom, while housing prices in Boston were only 17 percent above the U.S. median. Thus economic expansion led initially to a substantial increase in affordability at the low end of the distribution in Boston, but the gap remained large at the low end in Los Angeles.

Although the overall decline in the early 1990s in Los Angeles was deeper and longer than the corresponding decline in Boston, the low end of the distribution in Los Angeles declined less than the high end, and the opposite was true in Boston. Case and Shiller conclude that the explanation lies in the relative expansion of low-income demand in Los Angeles due to immigration and the

relative expansion of low-income supply in Boston due to massive conversions of rental property to condominium units, many in low-income areas.

Other studies that compare price movements in upper and lower price tiers include Poterba (1991) and Mayer (1993). Using data from 1970–86 for four cities (Atlanta, Chicago, Dallas, and Oakland), Poterba shows that properties in the upper tier appreciated faster than properties in the lower tier. He attributes the pattern to high marginal tax rates and expectations of rising inflation.

Mayer, using the same data, argues that Poterba's focus is too narrow and looks at several alternative explanations for the observed patterns. Finding that prices in the upper tier in the four cities are more volatile than prices in the lower tier, he focuses on changes in user cost and other cyclical factors.

Smith and Tesarek (1991) show that the patterns of decline in Houston during the 1985 through 1987 bust were similar to the declines in California in the early 1990s. In Houston, "high-quality" houses lost nearly 30 percent of their value. Houses in the middle-quality tier lost 24 percent of their value, and houses in the lower tier lost only 18 percent of their value. Smith and Tesarek suggest several reasons for the pattern in Houston. First, the upper end of the market experienced the greatest appreciation during the boom. Second, building was concentrated on the upper end of the quality range, glutting the market. Third, sharp reductions in "entrepreneurial and professional income" led to steeper declines in demand in the top markets.

A major concern in looking at appreciation in low-income neighborhoods is that increases may be driven by large changes in value in neighborhoods that are gentrifying. First it should be noted that, to the extent possible, CS repeat sales indexes are quality controlled. That is, when a significant portion of the stock in a neighborhood is upgraded, either the upgraded properties are excluded from the sample or the index will not compute because of high standard errors on the coefficients.

In order to determine whether gentrification is a problem in our sample of zip codes, we did two things. First, we looked specifically at the most rapidly appreciating individual zip codes in the bottom quintile of the bottom decile of each of the three cities. Second, we looked at the variance in home price changes across our quintiles and deciles. If home price changes in the bottom decile were driven by only a few neighborhoods, the variance would be high.

Because there are no current time series data on demographics or income at the zip code level for our cities, we had to rely on "local knowledge" and press reports to identify gentrifying neighborhoods. Although we found examples of neighborhoods in which the housing stock had been upgraded and where significant displacement was likely to have occurred in our lower-income zip code clusters (Roslindale in Boston, Pasadena in Los Angeles, and Logan Square in Chicago), appreciation and depreciation of property values took

place at roughly the same rates across the bulk of zip codes in our lowest-income quintile.

Exploratory Regressions

Although a structural model of price adjustment across neighborhoods is beyond the scope of this chapter, we conducted three preliminary and exploratory regressions to see if there is any systematic variation in the pattern of price appreciation across the zip code groupings and cities. The dependent variable is the annualized rate of appreciation in home value over the entire sample period, and the unit of observation is the zip code. (The tables presenting the full results of these regressions are available from the authors.)

Not surprisingly, the regressions seem to reflect some of the patterns observed in the discussion above. For example, neighborhoods with higher median home prices and lower levels of poverty in Boston did better over the entire period, *ceteris paribus*, while neighborhoods with concentrations of poverty in Chicago seem to have done somewhat better, *ceteris paribus*. No variables were statistically significant in the Los Angeles regression. Clearly, no consistent pattern emerged for the three cities.

Conclusion

The results of the tabulations presented here reveal a complex pattern of house price changes from which generalization is difficult. Several things can be concluded, however. First, whether homeownership is a good or bad investment clearly depends on the time of purchase, conditions in the regional economy, and the dynamics of supply and demand at the local level. Second, since home purchase is almost always leveraged, particularly among low-income households, effects of price changes on equity accumulation over particular periods of time can be dramatic.

Among low-income households, homeownership has been an excellent vehicle for asset accumulation since 1987 in Chicago. The same can be said for low-income home buyers who purchased in the early 1980s in Boston and for home buyers who purchased in 1995 in any of the three cities. However, significant periods of decline have led to substantial losses for low-income households in Boston and to periods of substantial negative equity for low-income households in Los Angeles.

Clearly, from these data one cannot conclude that homeownership for low-income households is in general a good or bad strategy for accumulating wealth. As we argued above, home appreciation is but one component of the overall return to an investment in housing. But appreciation is an important component, and the results presented here are at least somewhat encouraging.

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