A Brief Examination of Previous House Price Declines

June 2009

Preface

This Federal Housing Finance Agency (FHFA) research paper examines previous house price downturns across Census Divisions, states, and localities in the United States. The paper is part of FHFA's ongoing effort to enhance public understanding of the nation's housing finance system. The paper was prepared by Jesse Weiher of the Office of Policy Analysis and Research. Edward DeMarco, Patrick J. Lawler, Robert S. Seiler Jr., Austin Kelly, Andrew Leventis, Robert Collender, and Scott Laughery provided helpful comments.

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Introduction

Homeowners, business leaders, and government officials are keenly interested in knowing how long the current decline in house prices will last. The length and depth of house price declines and the strength of subsequent recoveries play important roles in business cycles. Although the Federal Housing Finance Agency (FHFA) does not forecast price movements, the agency's house price index (HPI) provides a great deal of information concerning historical price declines. This paper provides a brief examination of house price declines in the United States and focuses on select areas that have experienced sharp price declines. The depth and duration of declines have varied significantly across areas, and inflation-adjusted prices have generally taken several years to rebound to previous levels.

There are a number of issues associated with studying house price declines, not the least of which is choosing a definition for downturns and subsequent recoveries. One question, for example, is: how large must price declines be before they are labeled "downturns"? Also, it is not obvious whether downturns should be identified in nominal terms or in inflation-adjusted terms. Finally, should a "recovery" be defined as the period in which prices return to their prior peak, or should it be classified as the period required to return to some long-term "fundamentals-based" price? The fundamentals-based approach is appealing because it does not presume prior price peaks are attainable.[1] It is problematic because identifying the appropriate fundamentals and determining the true long-term values are not trivial tasks. Those issues have been the subject of considerable ongoing research and are beyond the scope of this paper.[2]

In the initial sections of the paper, house price declines and recoveries are analyzed using inflation-adjusted prices; home prices are gauged relative to the price trends for all other goods and services in the economy, which is measured using the Bureau of Labor Statistics' Consumer Price Index (CPI) for "all items less shelter."[3] Each geographic area is assigned at most one trough and one peak (prior to the trough).[4] Troughs are flagged as the points at which the percentage distance between the real HPI and the previous high is most negative.[5] Once the trough has been identified, the peak is defined as the

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[1] While it reasonable to assume that nominal prices can always return to prior peaks, the same may not be true for inflation-adjusted prices. Indeed, real home prices for many areas within the U.S. have not yet returned to values they approached in the 1980s.

[2] For a recent discussion, see Vladimir Klyuev, "What Goes Up Must Come Down? House Price Dynamics in the United States," International Monetary Fund Working Paper 08-187 (July 2008).

[3] The Bureau of Labor Statistics' price index series ID# CUUR0000SA0L2—U.S. city average CPI for all items less shelter—can be obtained at http://data.bls.gov/cgi-bin/srgate.

[4] For the United States and California—both areas of which are currently experiencing their worst downturns—a subsequent analysis was done on the second worst downturn, which occurred in the mid-1990s for both areas.

[5] FHFA's purchase-only index, which is estimated using sales price data but not appraisal values in refinance transactions, is used where available. The index is available beginning in the first quarter of 1991 for the United States, all Census Divisions, and all states. For periods prior to the first quarter of 1991, the all-transactions index, which includes data from sales and refinance transactions, is used. FHFA's purchase-only index is not used for Metropolitan Statistical Areas or Divisions (MSAs) due to data

previous high in the real HPI. The point of recovery is defined to be the date at which the real HPI has returned to the previous peak value. The last section of the paper provides a supplementary analysis of house price declines and recoveries using nominal dollars.

In reviewing the data, it should be recognized that the applicability of historical trends to the current U.S. house price downturn may be limited. The economic drivers of price increases during the boom period in the early 2000s differed from the drivers of prior market booms, and the magnitude of recent price increases has generally been larger. Also, the catalyst of the recent downturn is much different. As will be discussed briefly, most of the larger historical downturns were caused by sharp increases in unemployment rates and shocks to personal income. Although the U.S. economy has experienced such conditions in the last year, those factors were not among the precipitants of the latest downturn, which began in 2006, well before the financial crisis erupted in the third quarter of 2007 and the recession began in the fourth quarter of 2007.

Typical Characteristics of House Price Downturns

Table 1 presents summary information recounting the features of previous house price downturns for Census Divisions, states, and metropolitan statistical areas (MSAs). The duration of the decline period and the ensuing recovery period are reported, as are the relative rates of price change during the respective periods. Because real prices have not returned to prior highs in some areas, the table also reports the relative frequency in which no full recovery was evident.

Several observations can be made from Table 1. First, house price downturns have tended to be long. The median time required to return to prior peak prices was 10½ to 20 years. Second, it tends to take longer for prices to rise from the trough to their former peak than it takes prices to decline from peak to trough. While the difference is small for Census Divisions and states, FHFA's Metropolitan Statistical Area and Division (MSA) indexes suggest that the time from peak to trough tends to be about 3¾ years, whereas the median recovery period (from trough to prior peak) was 6⅔ years.

Worst House Price Downturns Since 1975

The previous section described some typical characteristics of house price downturns. This section seeks to examine the characteristics of the worst house price downturns.

Table 2 describes the worst house price downturns among all MSAs, among all states, and among all Census Divisions. A geographic area's downturn is ranked as being the worst among all areas if it is either:

1. the area with the most depreciation from peak to trough (deepest drop);

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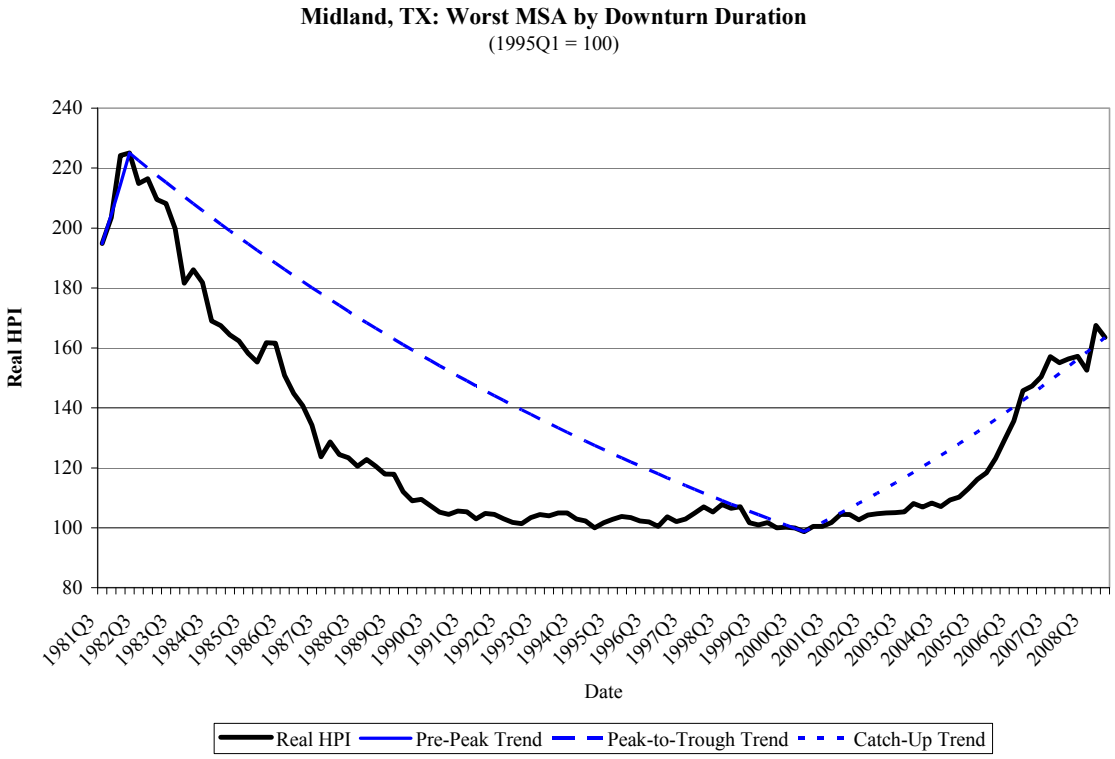
limitations. The all-transactions index for MSAs extends back as far as available data will allow for index estimation, but is available no earlier than the first quarter of 1975.

2. the area with the most negative annualized depreciation rate from peak to trough (steepest drop); or
3. the area that took the longest time to go from peak to trough and then to fully recover (longest duration).

Data for the United States as a whole are included for comparison. Notice that the Pacific Census Division is currently the worst Census Division in terms of annualized downturn depreciation. House prices have lost almost 17½ percent of their value per year for 2 years and are still on a downward trajectory.

Home prices in Midland, TX—the worst MSA by duration of house price decline—lost over 56 percent of their value from the second quarter of 1982 to the fourth quarter of 2000 and have yet to recover 8¼ years later. The real HPI for Midland, TX is displayed in Figure 1.

Figure 1



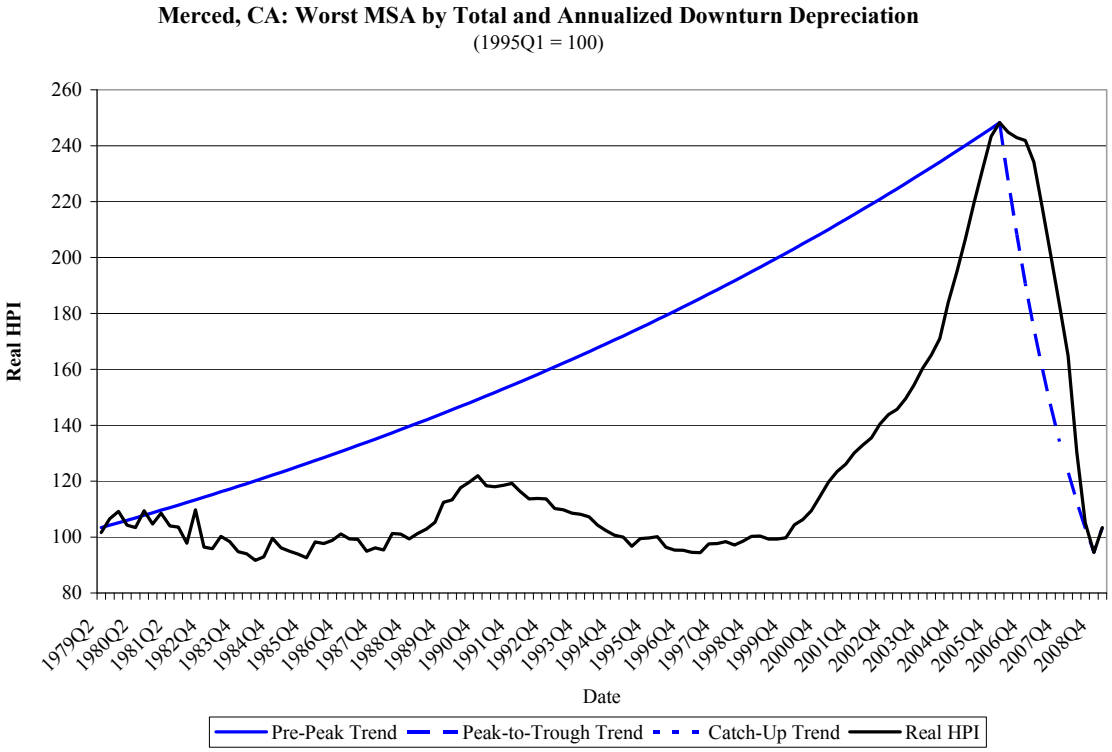
Source: Federal Housing Finance Agency

Figure 2 displays the real HPI for Merced, CA. Prices in Merced—the worst MSA in terms of both total and annualized downturn depreciation—lost almost 30 percent of their value per year for 2¾ years before rising in the first quarter of 2009.

Table 3 lists the worst 40 MSAs in terms of total downturn depreciation. Note that 17 of the MSAs with the worst house price downturns; located in California, Florida, and Nevada; are currently just beginning to recover from—or are still experiencing—those downturns.

In order to get a picture of which areas have historically had the worst downturns, Table 4 lists the 40 MSAs with the worst downturns occurring prior to 2006. All but one of those MSAs can be placed in four groups:

Figure 2



Source: Federal Housing Finance Agency

1. Cities in the Southwest and other energy-producing areas affected by the collapse of energy prices in the early to mid- 1980s,
2. Northeastern cities affected by that area's real estate collapse of the late 1980s,
3. Midwestern cities affected by the energy crisis of the late 1970s and the ensuing manufacturing downturn, and
4. California cities affected by that state's recession of the early 1990s.

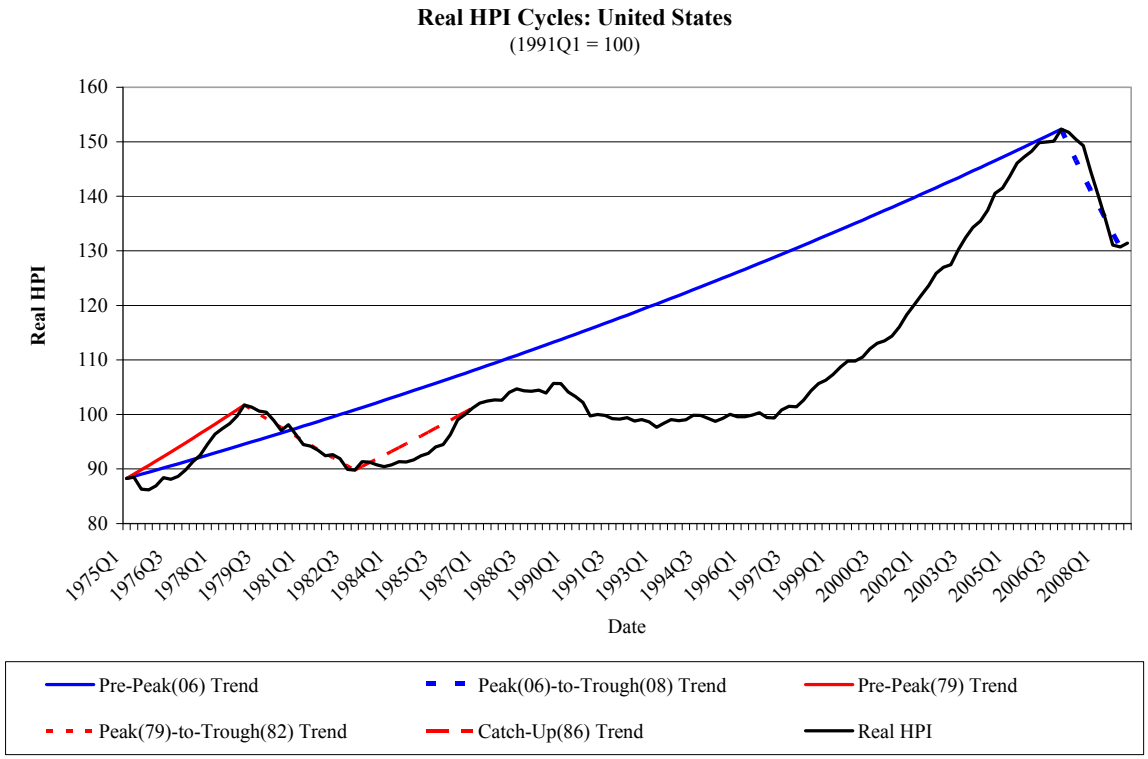
House Price Downturns in Specific Areas

Table 5 presents evidence concerning the magnitude and duration of the largest historical house price decline for the U.S. as a whole and some of the most severe localized market

declines mentioned in the previous section. In addition to the national level, data are provided for selected Census Divisions and states and for a few large cities.

That house price downturns have been quite long is immediately apparent from Table 5. The U.S. as a whole is currently experiencing its worst house price downturn for the period covered by this data series. Prior to the current national downturn, the previous downturn's peak-to-recovery period was 8¾ years. Figure 3 shows the evolution in real home prices for the country as a whole during the two worst house price downturns since 1975. The first downturn began in the first quarter of 1979 in conjunction with the second oil crisis of the 1970s and continued through the recession of the early 1980s, bottoming out in the fourth quarter of 1982. From the trough, it ultimately took four years for FHFA's national HPI to return to its previous highpoint. The second downturn—which is currently underway—began in the fourth quarter of 2006.

Figure 3



Source: Federal Housing Finance Agency

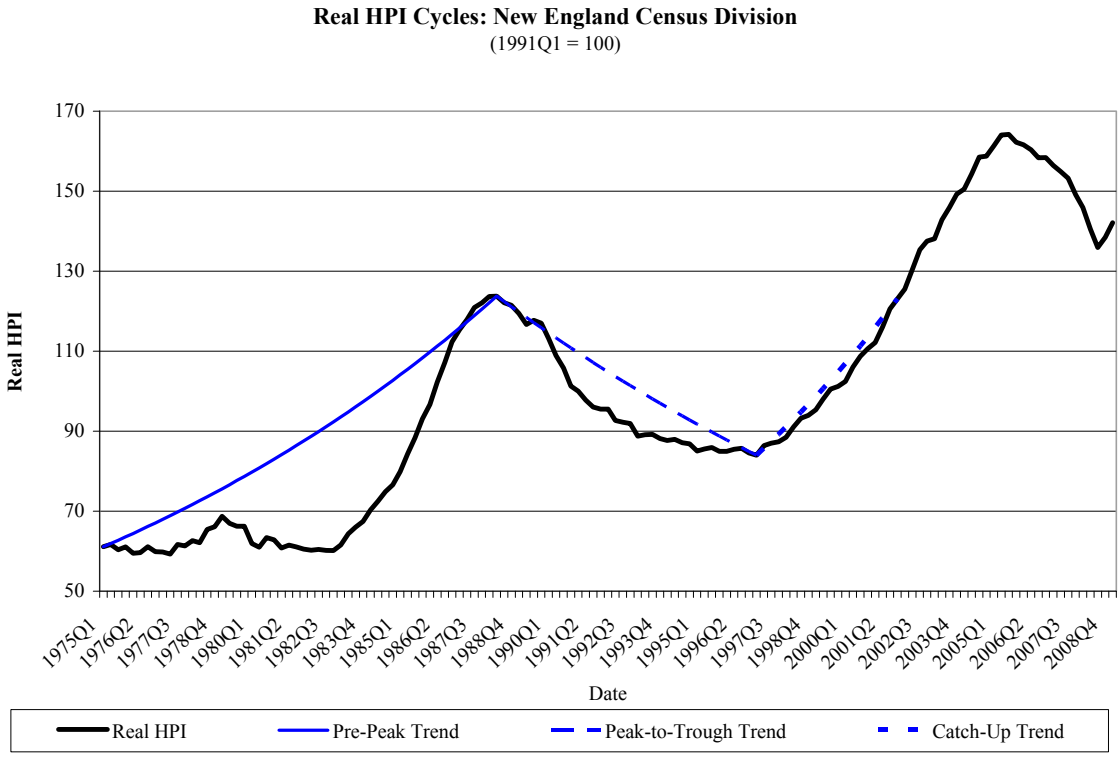
The following subsections briefly discuss some of the localized house price declines referenced in Table 5.

New England: 1988-2001

The New England economy began to weaken in 1988. In prior years, unemployment in the region had fallen to three percent and per capita income had climbed to 123 percent of the national average. However, a more competitive computer industry, the end of the Cold War (and the resulting decline in defense contracts), and elevated business costs eventually resulted in high unemployment and high commercial and residential vacancy rates.[6]

Figure 4 displays the real HPI for the New England Census Division. Real prices reached a sharp peak in the second quarter of 1988 and fell dramatically after that, ultimately losing over 32 percent of their value. Prices bottomed out in the first quarter of 1997, at which point a relatively speedy recovery ensued. Ultimately the New England housing cycle included an 8¾-year period of decline followed by a brief, 4¾-year recovery to its previous peak.

Figure 4



Source: Federal Housing Finance Agency

[6] Information used in this paragraph is taken from Federal Deposit Insurance Corporation, *History of the Eighties*, Vol. 1 (1997), Ch. 10, "Banking Problems in the Northeast," 339-340—which can be accessed at http://www.fdic.gov/bank/historical/history/

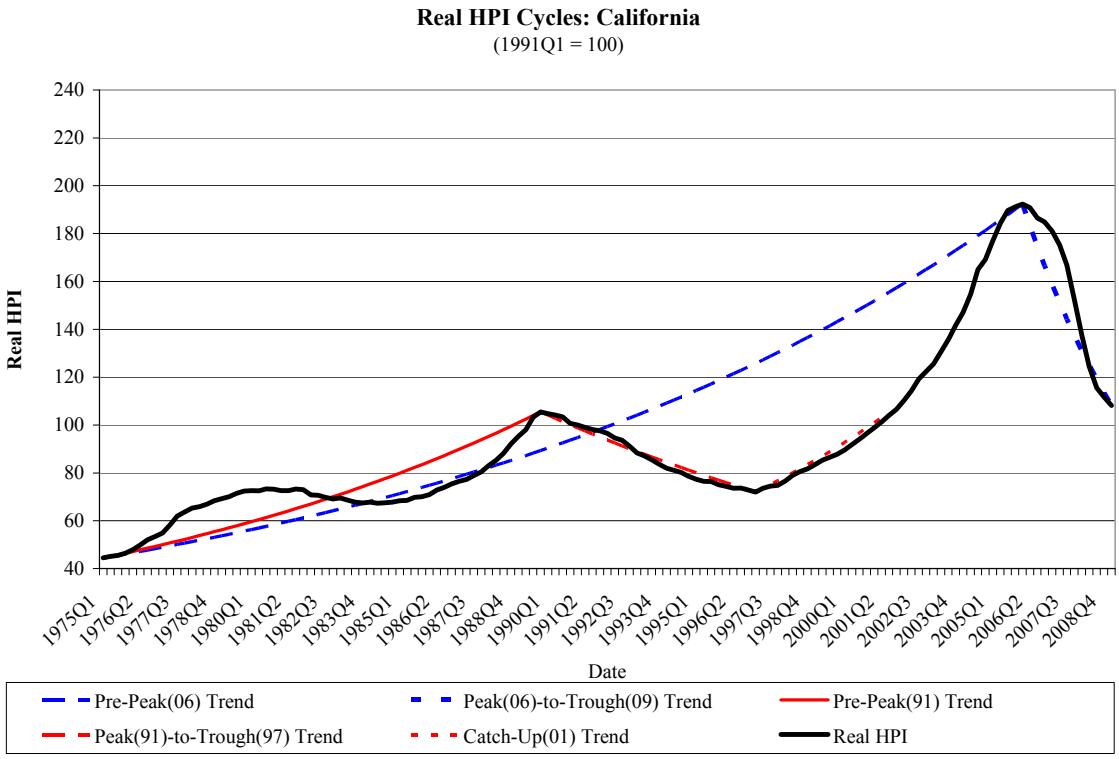
California: 1989-2001 and 2006 to Present

The California economy expanded rapidly in the 1980s. Gross state product grew at an annual rate of 5.1 percent from 1983 to 1989, well above the national growth rate of 3.6 percent. The state's economic growth was accompanied by substantial population growth, which led to a construction boom and large increases in real estate prices.

By 1989, the California economy had begun to deteriorate and entered into a recession. A substantial decline in national defense spending seriously hurt California's booming defense industry. In addition, the national recession of 1990-1991 reduced the demand for goods and services produced in California. Unemployment increased, and the California real estate market subsequently collapsed.[7]

Figure 5 shows the real HPI for California leading up to the house price downturn that began in the fourth quarter of 1989, through the price trough in the first quarter of 1997, into the ensuing recovery, and ending in the current downturn. As in New England, California's downturn in the early 1990s had a relatively speedy recovery (4¾ years) to its previous peak.

Figure 5



Source: Federal Housing Finance Agency

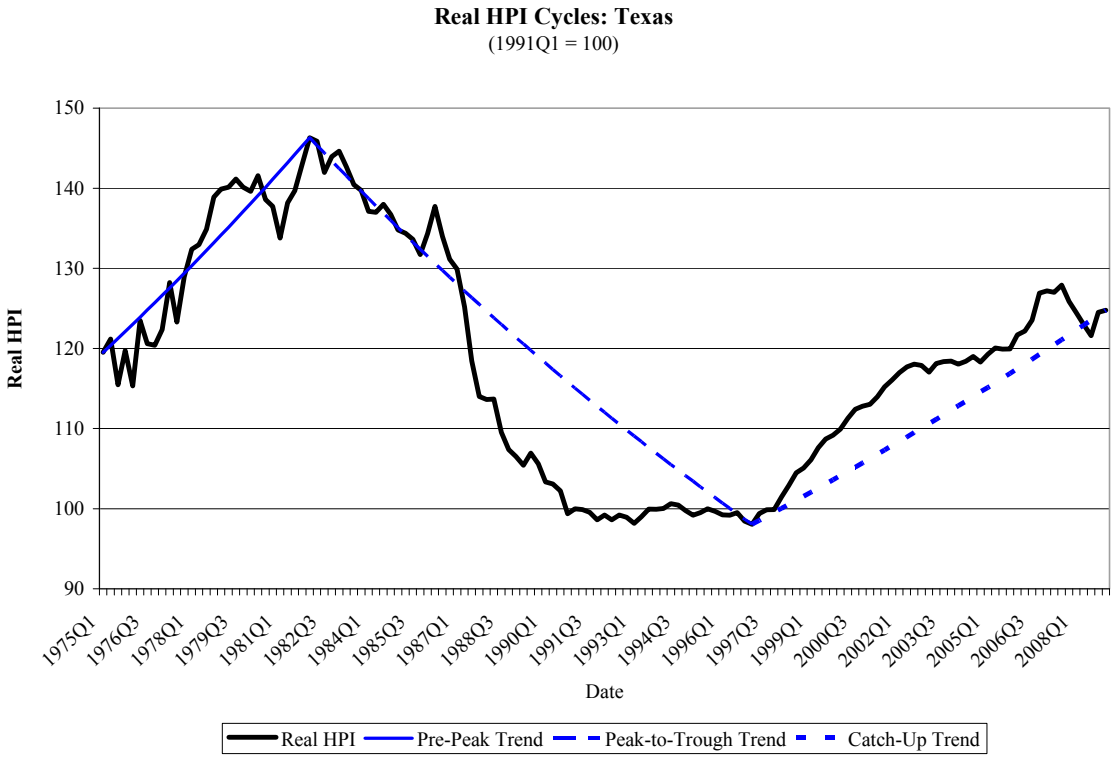
[7] *Ibid,* at 306-307.

In the early 2000s California experienced a particularly large house price boom fueled by a marked increase in the availability of mortgage credit. Real house prices in California peaked in the first quarter of 2006. The ensuing subprime mortgage crisis hit California particularly hard. As of the first quarter of 2009, real house prices have fallen almost 44 percent—far more than the 32 percent drop from 1989 to 1997.

Texas: 1982 - Present

Although the oil crises of the 1970s put a drag on the national economy, they had a positive impact on economic conditions and house prices in Texas. During the period, nonresidential construction activity in Texas more than quadrupled, while office vacancy rates fell from 15 percent to 7.6 percent in Dallas and from 7.8 percent to 5.7 percent in Houston.

Figure 6



Source: Federal Housing Finance Agency

By 1982, however, oil prices had begun to fall and, with each $1 drop in the price of crude resulting in an estimated loss of 25,000 jobs in Texas, declining oil prices had significant adverse effects on that state's economy. When coupled with a weakening national economy, the oil price declines led to significant declines in employment. The layoffs began in the oilfields, but were followed by job losses in related fields (geologists

and engineers) and next in service companies (motels, restaurants, and retail stores). By September 1986, 743,000 Texans were unemployed.[8]

Figure 6 shows the real value of FHFA's HPI for Texas since 1975. Prices peaked in the first quarter of 1982 and then declined steadily. Prices bottomed out in the first quarter of 1997 after losing 33 percent of their value. Texas' real estate prices have yet to fully recover and now are roughly 15 percent below their prior peak.

Michigan and Detroit: 1979 - 1996

Michigan and Detroit are mirror images of Texas with respect to house price downturns. What drove Texas' expansion in the 1970s and early 1980s caused the collapse of Detroit's economy, and what caused the collapse of the Texas economy caused Detroit's rebirth. As a result of the challenges facing the American auto industry after the oil crises of the 1970s and the subsequent emergence of fuel efficient, foreign-made automobiles, Detroit experienced significant unemployment, and the local housing market collapsed.

Figure 7 shows trends in real home prices in Detroit during the price collapse and subsequent recovery. Real prices peaked in the third quarter of 1979 and fell precipitously until the fourth quarter of 1984, when the oil bust spurred demand for gas-hungry, American-made automobiles. Although the housing market grew relatively slowly during its recovery (3.55 percent), Detroit's real HPI returned to its 1979 peak in 1996 (17¼ years later).

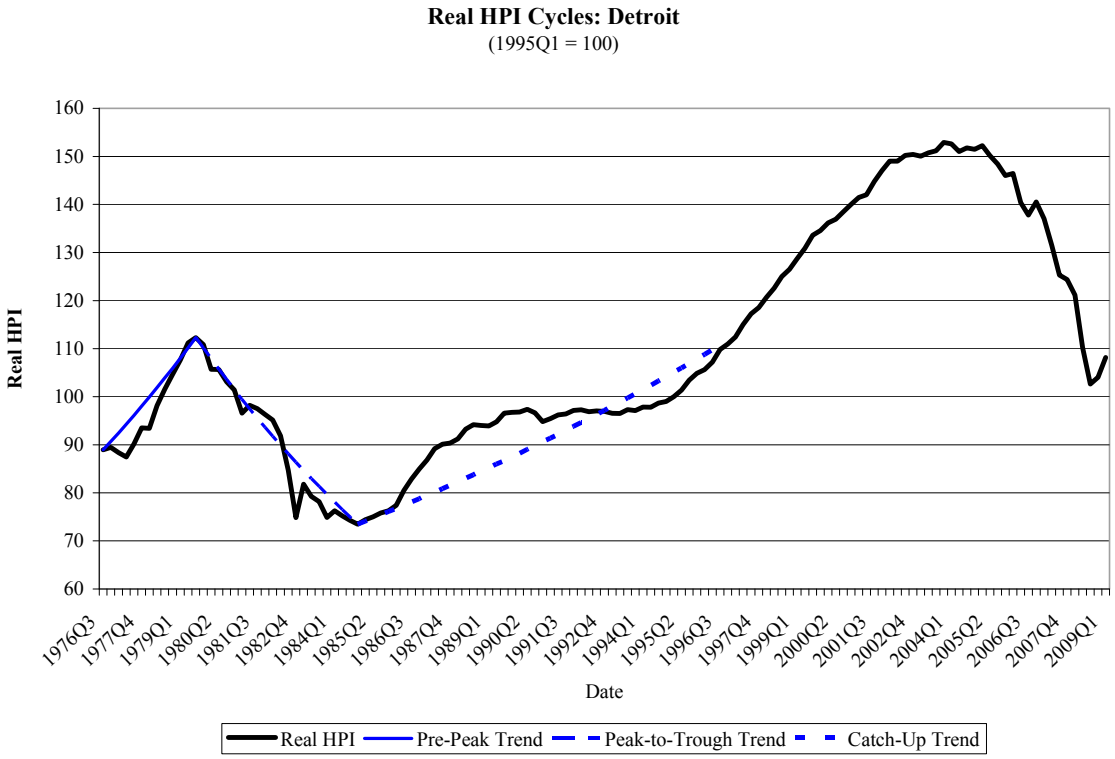
Downturns in Nominal House Prices

Because homeowners are typically concerned about the return on their investment in a house and may be assumed not to suffer from money illusion, the previous sections of this paper focused on declines in real home prices. However, mortgage loan contracts are written in nominal dollars, and a loan's probability of default is largely a function of the nominal value of the home. Consequently, it will be of interest to consider how the previous analysis changes when considering nominal house price downturns.

Table 6 provides summary statistics for nominal house price downturns at various levels of aggregation. Note that the median duration of both the downturn and recovery have shortened significantly compared to real house price downturns due to the upward drift in nominal house prices. As with real house price downturns, it is uncommon for annual appreciation rates to be greater in a recovery than are depreciation rates in a downturn (only 34 percent of all cities experienced greater rates of appreciation than depreciation).

[8] *Ibid*, at 380-395.

Figure 7



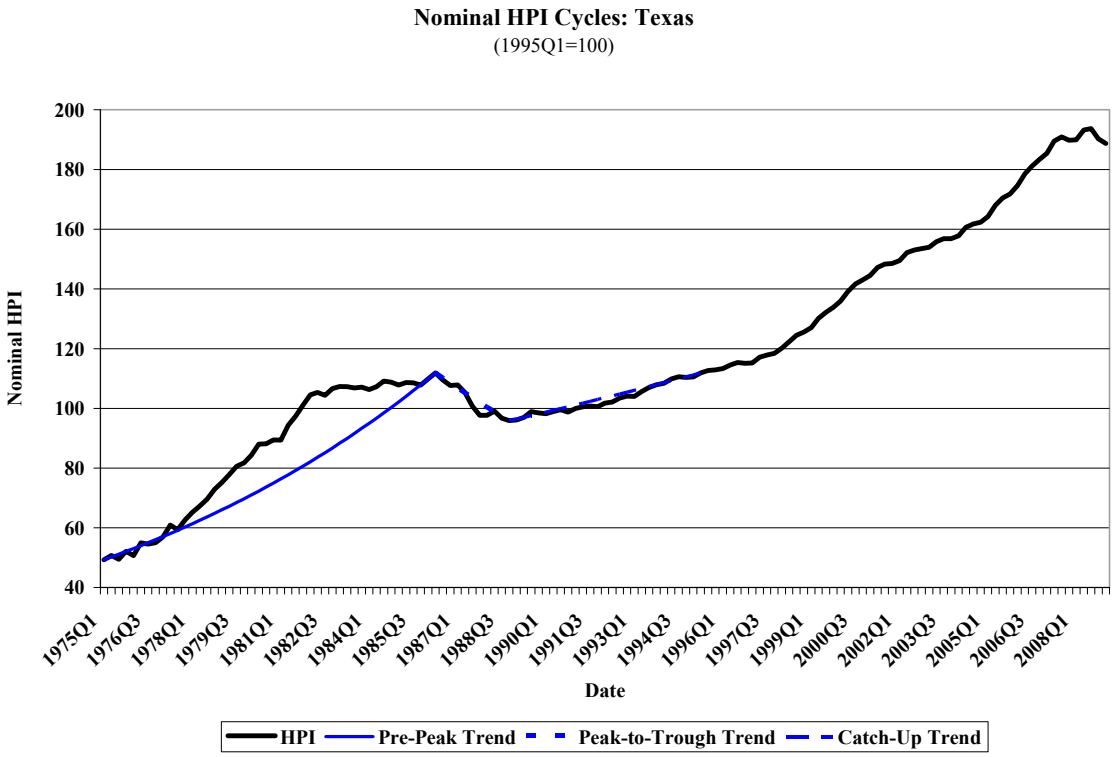
Source: Federal Housing Finance Agency

Table 7 presents information for nominal, rather than real, house price downturns in the Census Divisions, states, and localities discussed previously. Again, note the reduced duration for downturns and recoveries. Note also that the West South Central Division, Texas, and Houston all show a recovery in nominal prices, whereas they have yet to recover in real terms.

Figure 8 displays the trends in nominal HPI during the Texas house price downturn. High general price inflation in the 1980's masked the drop in real home prices, so the nominal house price downturn was correspondingly short. The nominal HPI returned to its previous high in the second quarter of 1995, almost two years before real home prices had stopped declining. However, the duration of Texas' recovery was still longer than the duration of its house price decline.

In general, examining house price downturns in terms of nominal rather than real prices greatly shortens the duration of measured downturns and subsequent recoveries. However, the time it takes for an area to recover still tends to be longer than the time it takes for the same area to move from peak to trough. Correspondingly, annual depreciation rates in the downturn tend to be of larger magnitude that annual appreciation rates in recovery.

Figure 8



Source: Federal Housing Finance Agency

Table 1

Summary Statistics for Real House Price Downturns in Various Geographic Areas (by Type of Area)							
Areas Examined	**Median Percentage Price Decline from Peak to Trough**	**Median Downturn Duration (in yrs)**	**Median Recovery Duration (in yrs)**	**Median Downturn to Recovery Duration (in yrs)**	**Percent of Areas with Faster Recovery Annual Appreciation than Downturn Annual Depreciation**	**Percent of Areas Still in Recovery or Whose Downturn is Ongoing**	**Percent of Areas Whose Downturn Began in the Past 4 Years**
Census Divisions	-23.47%	8.75	9.37	19.00	50%	33%	22%
States	-30.53%	7.00	9.12	20.75	32%	33%	12%
Cities	-22.23%	3.75	5.37	10.75	41%	40%	28%

Note: Each area has no more than one peak and trough identified over the 1975:1 to 2009:1 period
Downturn Duration is defined as the time period in which house prices go from peak to trough.
Recovery Duration is defined as the time period in which house prices go from trough back to the previous peak
Downturn to Recovery Duration is defined as the time period in which house prices go from peak to trough and back to the previous peak

Source: Federal Housing Finance Agency

Table 2

Worst Geographic Areas in Terms of Total Downturn Depreciation, Annual Downturn Depreciation, and Downturn Duration										
	Peak Qtr	**Trough Qtr**	**Catch-Up Qtr**	**Total Downturn Deprec.**	**Annualized Downturn Deprec.**	**Downturn Duration (in years)**	**Recovery Duration (in years)**	**Rank Total Downturn Deprec.**	**Rank Annualized Downturn Deprec.**	**Rank Downturn Duration**
MSAs										
Merced, CA	2006Q1	2008Q4		-61.95%	-29.63%	2.75	Still in Recovery	1	1	195
Midland, TX	1982Q2	2000Q4		-56.15%	-4.36%	18.50	Still in Recovery	2	194	1
States										
NV	2006Q1	Ongoing		-47.35%	19.25%	3.00+	Bust Ongoing	1	1	33*
TX	1982Q1	1997Q1		-33.00%	-2.63%	15.00	Still in Recovery	10	34	1
Census Divisions										
West South Central	1982Q2	1991Q4		-32.75%	-4.09%	9.50	Still in Recovery	1	6	3
Pacific	2007Q1	Ongoing		-31.77%	-17.40%	2.00+	Bust Ongoing	3	1	9
West North Central	1979Q2	1990Q4	2001Q2	-23.17%	-2.27%	11.50	10.50	6	9	1
United States	2006Q4	2008Q4		-14.17%	-7.36%	2.00	Still in Recovery			

* 3-way tie at 33, 34, and 35

Source: Federal Housing Finance Agency

Table 3

Top 40 MSAs by Total Downturn Depreciation						
MSA	**Peak Qtr**	**Trough Qtr**	**Catch-Up Qtr**	**Downturn Duration**	**Recovery Duration**	**Downturn Depreciation**
Merced, CA	2006Q1	2008Q4		2.75		-61.95%
Midland, TX	1982Q2	2000Q4		18.50		-56.15%
Stockton, CA	2006Q1	2008Q4		2.75		-54.20%
Modesto, CA	2006Q1	2008Q4		2.75		-52.58%
Lafayette, LA	1982Q3	1988Q4		6.25		-52.50%
Peoria, IL	1979Q4	1985Q4		6.00		-48.91%
Salinas, CA	2006Q1	2008Q3		2.50		-47.50%
Davenport-Moline-Rock Island, IA-IL	1978Q4	1989Q2		10.50		-47.18%
Cape Coral-Fort Myers, FL	2006Q1	2008Q4		2.75		-47.02%
Vallejo-Fairfield, CA	2006Q1	2008Q3		2.50		-45.53%
Kennewick-Pasco-Richland, WA	1979Q3	1988Q4		9.25		-44.54%
Yuba City, CA	2005Q4	2008Q4		3.00		-44.11%
Punta Gorda, FL	2006Q1	2008Q4		2.75		-43.58%
Naples-Marco Island, FL	2006Q4	2008Q4		2.00		-43.38%
Port St. Lucie, FL	2006Q1	2009Q1		3.00		-43.14%
Riverside-San Bernardino-Ontario, CA	2006Q4	2008Q4		2.00		-42.99%
Oklahoma City, OK	1980Q1	1990Q4		10.75		-42.60%
El Centro, CA	2007Q1	2008Q4		1.75		-42.29%
San Antonio, TX	1981Q4	1990Q4		9.00		-41.36%
Las Vegas-Paradise, NV	2006Q4	2009Q1		2.25		-41.33%
Houston-Sugar Land-Baytown, TX	1979Q2	1997Q1		17.75		-40.75%
Hartford-West Hartford-East Hartford, CT	1988Q2	1997Q2		9.00		-40.71%
New Haven-Milford, CT	1988Q2	1997Q2	2005Q2	9.00	8.00	-40.58%
Austin-Round Rock, TX	1986Q2	1990Q4	2006Q3	4.50	15.75	-39.93%
Bakersfield, CA	2006Q4	2008Q4		2.00		-39.40%

Top 40 MSAs by Total Downturn Depreciation (Continued)						
MSA	**Peak Qtr**	**Trough Qtr**	**Catch-Up Qtr**	**Downturn Duration**	**Recovery Duration**	**Downturn Depreciation**
New Orleans-Metairie-Kenner, LA	1979Q2	1991Q1	2005Q4	11.75	14.75	-39.33%
Manchester-Nashua, NH	1988Q2	1995Q1	2002Q4	6.75	7.75	-39.23%
Kingston, NY	1988Q2	1996Q4	2003Q3	8.50	6.75	-39.12%
Baton Rouge, LA	1979Q2	1990Q4		11.50		-38.97%
Sacramento-Arden-Arcade-Roseville, CA	2005Q4	2008Q3		2.75		-38.22%
Rockingham County-Strafford County, NH (MSAD)	1987Q4	1994Q4	2002Q2	7.00	7.50	-38.00%
Binghamton, NY	1988Q1	1997Q1		9.00		-37.66%
Beaumont-Port Arthur, TX	1979Q1	1990Q4		11.75		-37.55%
Madera-Chowchilla, CA	2006Q4	2008Q4		2.00		-37.55%
Salem, OR	1979Q1	1987Q4	1997Q2	8.75	9.50	-37.27%
Tulsa, OK	1980Q3	1990Q4		10.25		-37.09%
Santa Barbara-Santa Maria-Goleta, CA	2005Q4	2008Q3		2.75		-36.82%
Los Angeles-Long Beach-Glendale, CA (MSAD)	1989Q4	1997Q2	2003Q2	7.50	6.00	-36.66%
Barnstable Town, MA	1988Q1	1994Q4	2001Q2	6.75	6.50	-36.48%
Topeka, KS	1978Q4	1993Q1		14.25		-36.40%

Red MSAs (concentrated in California, Florida and Nevada) are affected by the current downturn

Source: Federal Housing Finance Agency.

Table 4

Top 40 MSAs by Total Downturn Depreciation (Current Downturns Excluded from Analysis)						
MSA	**Peak Qtr**	**Trough Qtr**	**Catch-Up Qtr**	**Downturn Duration**	**Recovery Duration**	**Downturn Depreciation**
Midland, TX	1982Q2	2000Q4		18.50		-56.15%
Lafayette, LA	1982Q3	1988Q4		6.25		-52.50%
Peoria, IL	1979Q4	1985Q4		6.00		-48.91%
Davenport-Moline-Rock Island, IA-IL	1978Q4	1989Q2		10.50		-47.18%
Kennewick-Pasco-Richland, WA	1979Q3	1988Q4		9.25		-44.54%
Oklahoma City, OK	1980Q1	1990Q4		10.75		-42.60%
San Antonio, TX	1981Q4	1990Q4		9.00		-41.36%
Houston-Sugar Land-Baytown, TX	1979Q2	1997Q1		17.75		-40.75%
Hartford-West Hartford-East Hartford, CT	1988Q2	1997Q2		9.00		-40.71%
New Haven-Milford, CT	1988Q2	1997Q2	2005Q2	9.00	8.00	-40.58%
Austin-Round Rock, TX	1986Q2	1990Q4	2006Q3	4.50	15.75	-39.93%
New Orleans-Metairie-Kenner, LA	1979Q2	1991Q1	2005Q4	11.75	14.75	-39.33%
Manchester-Nashua, NH	1988Q2	1995Q1	2002Q4	6.75	7.75	-39.23%
Kingston, NY	1988Q2	1996Q4	2003Q3	8.50	6.75	-39.12%
Baton Rouge, LA	1979Q2	1990Q4		11.50		-38.97%
Rockingham County-Strafford County, NH (MSAD)	1987Q4	1994Q4	2002Q2	7.00	7.50	-38.00%
Binghamton, NY	1988Q1	1997Q1		9.00		-37.66%
Beaumont-Port Arthur, TX	1979Q1	1990Q4		11.75		-37.55%
Salem, OR	1979Q1	1987Q4	1997Q2	8.75	9.50	-37.27%
Tulsa, OK	1980Q3	1990Q4		10.25		-37.09%
Los Angeles-Long Beach-Glendale, CA (MSAD)	1989Q4	1997Q2	2003Q2	7.50	6.00	-36.66%
Barnstable Town, MA	1988Q1	1994Q4	2001Q2	6.75	6.50	-36.48%
Topeka, KS	1978Q4	1993Q1		14.25		-36.40%
Norwich-New London, CT	1988Q4	1996Q3	2004Q2	7.75	7.75	-36.22%

Top 40 MSAs by Total Downturn Depreciation (Current Downturns Excluded from Analysis - Continued)						
MSA	Peak Qtr	Trough Qtr	Catch-Up Qtr	Downturn Duration	Recovery Duration	Downturn Depreciation
Corpus Christi, TX	1982Q1	1990Q4		8.75		-36.17%
Oxnard-Thousand Oaks-Ventura, CA	1989Q3	1997Q1	2002Q3	7.50	5.50	-35.32%
Detroit-Livonia-Dearborn, MI (MSAD)	1979Q3	1984Q4	1996Q4	5.25	12.00	-34.58%
Bridgeport-Stamford-Norwalk, CT	1987Q3	1996Q4	2003Q3	9.25	6.75	-34.41%
Evansville, IN-KY	1980Q3	1991Q3		11.00		-34.35%
Shreveport-Bossier City, LA	1984Q2	1991Q3		7.25		-33.98%
Poughkeepsie-Newburgh-Middletown, NY	1988Q1	1997Q3	2003Q1	9.50	5.50	-33.93%
Ogden-Clearfield, UT	1979Q1	1990Q4	1997Q2	11.75	6.50	-33.89%
Riverside-San Bernardino-Ontario, CA	1990Q1	1997Q2	2002Q4	7.25	5.50	-33.85%
Dallas-Plano-Irving, TX (MSAD)	1986Q2	1995Q1		8.75		-33.77%
Santa Ana-Anaheim-Irvine, CA (MSAD)	1989Q4	1997Q1	2002Q1	7.25	5.00	-33.61%
Toledo, OH	1979Q1	1985Q4		6.75		-33.61%
Ann Arbor, MI	1978Q4	1985Q1	1997Q3	6.25	12.50	-33.23%
Wichita, KS	1979Q2	1992Q4		13.50		-33.05%
Worcester, MA	1988Q2	1995Q1	2002Q1	6.75	7.00	-32.92%
Springfield, MA	1988Q4	1996Q3	2004Q2	7.75	7.75	-32.51%

Red MSAs, concentrated mostly in the Southwest, were affected by the energy bust of the early-to-mid 80's
Violet MSAs were affected by the New England commercial real estate bust of the late 80's and early 90's
Green MSAs, concentrated in the industrial Midwest, were affected by the decline in manufacturing in the late 70's and early 80's
Blue MSAs, located in California, were affected by the California recession of the early 90's

Source: Federal Housing Finance Agency

Table 5

Some Examples of Real House Price Downturns and Subsequent Recoveries (by Area)								
Area	**Peak to Recovery Period**	**Downturn Duration (in yrs)**	**Recovery Duration (in yrs)**	**Peak to Recovery Duration (in yrs)**	**%Δ Real HPI Peak-Trough**	**Annualized %Δ Real HPI Peak-Trough**	**Annualized %Δ Real HPI Recovery**	**Annualized %Δ Real HPI Pre-Downturn Period**
United States	2006Q4 to 2009Q1	2	0.25	2.25	-14.17%	-7.36%	2.11%	1.73%
Pacific Division	2007Q1 to 2009Q1	2		2	-31.77%	-17.40%		4.18%
California	2006Q1 to 2009Q1	3		3	-43.76%	-17.46%		4.84%
San Francisco	1989Q4 to 1999Q3	6.5	3.25	9.75	-26.74%	-4.67%	9.76%	7.46%
West South Central Division	1982Q2 to 2009Q1	9.5	17.25	26.75	-32.75%	-4.09%	1.51%	2.64%
Texas	1982Q1 to 2009Q1	15	12	27	-33.00%	-2.63%	2.03%	2.93%
Houston	1979Q2 to 2009Q1	17.75	12	29.75	-40.75%	-2.91%	3.05%	3.93%
New England Division	1988Q2 to 2001Q4	8.75	4.75	13.5	-32.13%	-4.33%	8.38%	5.47%
Massachusetts	1988Q2 to 2000Q4	6.75	5.75	12.5	-29.73%	-5.09%	6.22%	6.00%
Boston	1988Q2 to 2000Q4	6.75	5.75	12.5	-30.38%	-5.22%	6.50%	9.16%
East North Central	1979Q2 to 1998Q1	3.5	15.25	18.75	-24.65%	-7.77%	1.82%	3.21%
Michigan	1979Q3 to 1996Q2	3.25	13.5	16.75	-31.28%	-10.90%	2.76%	4.04%
Detroit	1979Q3 to 1996Q4	5.25	12	17.25	-34.58%	-7.76%	3.55%	8.09%

Yellow Highlighted Rows represent areas that have not yet recovered from their respective downturn

Green Highlighted Rows represent areas that are still on a downward trajectory

Numbers in Red Text indicate that the particular area's recovery occurs at a slower pace than it's respective downturn

Note: Each area has no more than one peak and trough identified over the 1975:1 to 2009:1 period

Source: Federal Housing Finance Agency

Table 6

Summary Statistics for Nominal House Price Downturns in Various Geographic Areas (by Size of Area)							
Areas Examined	**Median Percentage Price Decline from Peak to Trough**	**Median Downturn Duration (in yrs)**	**Median Recovery Duration (in yrs)**	**Median Duration Downturn to Recovery (in yrs)**	**Percent of Areas with Faster Recovery Annual Appreciation than Downturn Annual Depreciation**	**Percent of Areas Still in Recovery or Whose Downturn is Ongoing**	**Percent of Areas Whose Downturn Began in the Past 4 Years**
Census Divisions	13.82%	1.75	2.75	5.25	0%	78%	78%
States	14.32%	1.50	1.13	2.38	34%	40%	41%
Cities	10.50%	1.00	1.00	2.25	34%	29%	30%

Note: Each area has no more than one peak and trough identified over the 1975:1 to 2009:1 period
Downturn Duration is defined as the time period in which house prices go from peak to trough.
Recovery Duration is defined as the time period in which house prices go from trough back to the previous peak
Downturn to Recovery Duration is defined as the time period in which house prices go from peak to trough and back to the previous peak

Source: Federal Housing Finance Agency

Table 7

Some Examples of Nominal House Price Downturns and Subsequent Recoveries (by Area)								
Area	**Peak to Recovery Period**	**Downturn Duration (in yrs)**	**Recovery Duration (in yrs)**	**Peak to Recovery Duration (in yrs)**	**%Δ HPI Peak-Trough**	**Annualized %Δ HPI Peak-Trough**	**Annualized %Δ HPI Recovery**	**Annualized %Δ HPI Pre-Bust Period**
United States	2007Q2 to 2009Q1	1.75		1.75	-11.48%	-6.73%		5.80%
Pacific Division	2007Q2 to 2009Q1	1.75		1.75	-29.78%	-18.30%		8.32%
California	2006Q2 to 2009Q1	2.75		2.75	-41.35%	-17.63%		9.10%
San Francisco	2006Q3 to 2009Q1	2.5		2.5	-12.68%	-5.28%		9.46%
West South Central Division	1986Q2 to 1994Q1	2.5	5.25	7.75	-13.82%	-5.77%	2.75%	7.29%
Texas	1986Q2 to 1995Q2	2.5	6.5	9	-14.33%	-6.00%	2.40%	7.55%
Houston	1983Q2 to 1997Q4	4.5	10	14.5	-24.87%	-6.16%	2.87%	8.99%
New England Division	1989Q4 to 1998Q2	3.25	5.25	8.5	-13.84%	-4.48%	2.72%	10.44%
Massachusetts	1989Q4 to 1997Q3	3.25	4.5	7.75	-13.48%	-4.36%	3.26%	10.90%
Boston	1988Q4 to 1997Q2	3.5	5	8.5	-11.99%	-3.58%	2.49%	14.69%
East North Central Division	2006Q2 to 2009Q1	2.5	0.25	2.75	-9.95%	-4.11%	3.31%	5.11%
Michigan	2005Q3 to 2009Q1	3.25	0.25	3.5	-23.54%	-7.93%	10.75%	5.55%
Detroit	2005Q3 to 2009Q1	3.25	0.25	3.5	-24.68%	-8.35%	12.12%	5.88%

Yellow Highlighted Rows represent areas that have not yet recovered from their respective downturn

Green Highlighted Rows represent areas that are still in a downward trajectory

Numbers in Red Text indicate that the particular area's recovery occurs at a slower pace than it's respective downturn

Note: Each area has no more than one peak and trough identified over the 1975:1 to 2009:1 period

Source: Federal Housing Finance Agency