Who pays the price when housing bubbles burst?
Evidence from the American Community Survey

Cynthia Bansak
St. Lawrence University

Martha A. Starr
American University

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Abstract

There has been much debate in recent years about whether the Federal Reserve should have taken action against the housing-price bubble as it was forming. One argument in favor of using monetary policy to offset asset-price bubbles is that it may be impossible after the bubble bursts to ease policy hard enough or fast enough to offset a strong contraction. While the fall in housing prices since 2006 has clearly increased unemployment and depressed growth, much less is known about how the costs have been distributed across households of different means. This paper uses data from the Census Bureau's annual American Community Survey (ACS) to examine this question. We first lay out the mechanisms via which a housing-market bust would be expected to affect households, in terms of incomes, employment, assets, and ability to service debt. We then use the ACS data to analyze how the house-price bust has affected households with different characteristics, differentiating between communities in which home prices did and did not boom and bust. Our results suggest that costs of the bubble have tended to fall on households less able to endure periods of financial distress. This lends further support to the argument that monetary policy oriented to social welfare should tackle bubbles *ex ante* rather than *ex post*.

Please address correspondence to: Martha A. Starr, Dept. of Economics, American University, 4400 Mass. Ave. NW, Washington, DC 20016. Tel: 202-885-3747. Email: mstarr@american.edu. We are grateful to Karl Case and participants in an ASE session on "Socio-distributional effects of the financial crisis" at the 2010 ASSA meetings in Atlanta for their valuable comments on an earlier version of this paper.

Introduction

There has been much debate in recent years about whether the Federal Reserve should have taken action against the housing-price bubble as it was forming. As home prices rose, the Fed's position was that it was difficult to know whether a bubble was developing, and that monetary policy could always be eased if declining prices posed risks to continued expansion.[1] As much as it is now widely recognized that this was not a prudent position,[2] there remains little consensus as to whether monetary policy should incorporate any systematic concern with asset-price bubbles, above and beyond what is implied by its core concerns with inflation and unemployment. Thus, for example, pro-cyclical adjustments in capital requirements could be used to keep asset values from drifting out of line with their underlying values (Yellen 2009, Evans 2009).

An important issue in this respect concerns who pays the price when an asset-price bubble bursts. Conceivably it may be of little social benefit to offset a potential bubble which, if it later burst, would impose costs on a relatively narrow and well-off segment of the population. Thus, for example, the high-tech stock bubble of the late 1990s affected shareholders and employees of high-tech companies, who were largely highly skilled and well-educated. In contrast, the housing-price bubble that burst in 2006 and precipitated an aggregate downturn imposed costs on a wide swath of the households and businesses -– although we know little as yet about how these were distributed. Characterizing the distributional effects of housing-price booms and busts is important in view of recent theoretical work on business cycles, which suggests that allowing for heterogeneities may significantly alter estimated welfare effects of aggregate fluctuations.[3]

To date, there has been little systematic research on the distribution of benefits and costs of housing-price bubbles. In an early paper, Case and Cook (1988) found that rising home prices increased the consumption opportunities of existing homeowners while decreasing those of renters and prospective homebuyers; much research since then confirms this finding (e.g. Gyourko and Tracy 1999). Mayer (1993) found that prices of lower-end housing tend to increase more rapidly during housing booms than those of higher-end housing, but that the volatility of higher-end housing is greater. Quigley and Raphael (2001) identify high housing costs as a significant determinant of variations in homelessness across areas, suggesting that housing-price bubbles contribute to problems of access to housing for very low income people. Work by Baker and Rosnick (2008) using the Survey of Consumer Finances suggests

[1] See, e.g. Bernanke (2002), Rudebusch (2005), Lansing (2005), Kohn (2008), Mishkin (2008).
[2] In the words of San Francisco Federal Reserve President Janet Yellen (2009), it is now "patently obvious … that not dealing with certain kinds of bubbles before they get big can have grave consequences."
[3] Notably, see Krusell, Mukoyama, Sahin, and Smith (2009), and also Barlevy (2004) and Imrohoroglu (2008).

that the current drop in housing prices is particularly detrimental for households in the middle of the wealth distribution, given the importance of home equity in their portfolios. A shortcoming of existing research is that it tends to focus on housing-related issues without considering aggregate implications. Notably, rising house prices *per se* may be detrimental for low-to-moderate income households, but if they stimulate residential investment and/or boost consumer spending due to wealth effects, they may also improve prospects for income and employment. Thus, understanding how housing-price bubbles affect income and employment patterns, as well as housing-related outcomes, is beneficial for gauging how their costs and benefits are distributed across groups within the population.

This paper uses data from the Census Bureau's annual American Community Survey (ACS) to examine this question. Each year, the ACS collects social, demographic, housing and economic information from a nationally representative sample of 3 million U.S. households. Presently data are available for 2005-2008, enabling us to examine how the bursting of the housing price bubble after 2006 has affected households with varying characteristics. The next section of the paper lays out three mechanisms via which housing-market booms and busts affect the broader economy and different types of households within it: namely, wealth-effects on spending, swings in residential investment, and problems of financial distress. We then use data from the 2005-2008 waves of the ACS to analyze how the housing-price bust has affected households with different characteristics, differentiating between communities in which home prices did and did not boom and bust. Our results suggest that costs of the bubble have tended to fall on households less able to endure periods of financial distress. This lends further support to the argument that monetary policy oriented to social welfare should tackle bubbles *ex ante* rather than *ex post*.

Conceptual issues and existing research

Case and Quigley (2008) identify three mechanisms via which the unwinding of a housing boom would be expected to affect the broader economy. The first is the wealth effect on spending, whereby a decline in home prices reduces the net worth of homeowners, causing them to reduce their spending to reflect the lower value of their total wealth. Research by Case, Quigley and Shiller (2005), Carroll, Otsuka and Slacalek (2006), and Bostic, Gabriel and Painter (2009) suggests that, *ceteris paribus*, a $1 increase in housing wealth would boost spending by 4-8 cents, with the effect phasing in over the next 2 or 3 years. Estimates of the housing-wealth effect are stronger than those for stock-market wealth, which range between 2-5 cents per dollar, due to the greater prevalence of homeownership versus stockownership and a higher marginal propensity to consume among homeowners versus stockholders.[4] At the same time, higher home prices also boost the housing costs of renters, cutting into their ability

[4] It is also likely that the housing-wealth effect has strengthened over time due to greater opportunities to cash out gains in home equity via mortgage refinancing (Muellbauer 2008).

to spend on other goods.[5] Nonetheless, because 66% of households are owner-occupied and home-owning households account for 77% of total consumer spending, the housing-wealth effect is estimated to be positive and strong on balance.[6]

Via this mechanism, the bursting of the housing-price bubble would be expected to slow growth of consumer spending and exert a drag on output, incomes and employment over the next few years. To provide a sense of the magnitude of the effect, we can use Carroll, Otsuka and Slacalek's (2006) estimates of a same-quarter wealth effect of 2 cents per dollar that increases to 8 cents per dollar after two years and data on the declining value of housing wealth from the Federal Reserve's Flow of Funds (see Appendix Table 1). Based on the extent of the decline in housing wealth and its time profile, we estimate that it had reduced real consumption growth by 1/2 of a percentage point by 2006:Q4, 1-1/2 percentage points by 2007:Q4, and 2 percentage points by 2008:Q4.[7] How this would affect employment and incomes among people of differing characteristics is not clear from existing research. To the extent that the reduction in spending follows the usual pattern in cyclical downturns, it would be expected to disproportionally affect spending on durable goods, as well as spending on discretionary goods and services (e.g. recreational travel, restaurant meals, fashion clothing).[8] It would also be expected to lead to higher unemployment, with people having less education and/or who are black or Hispanic experiencing the largest increases in unemployment rates (Blank 1989, Hoynes 2000, Spriggs and Williams 2000). Geographically, adverse wealth-effects on spending may tend to be somewhat larger in areas that experienced house-price bubbles due to declining demand for locally-produced goods and services. On the other hand, the decline in housing prices would be expected to reduce upward pressures on rents in areas that had had bubbles, making housing more affordable for renters.

The second mechanism via which an unwinding housing boom would affect the broader economy is declining residential investment. Periods of unusual run-ups in prices tend to be associated with booms in residential investment, which in turn raise incomes and employment -- both because of the construction activity itself and because of relatively high multiplier effects associated with residential

[5] Earlier research by Sheiner (1995) and Englehart (1996) found some evidence that higher home prices could reduce spending by prospective homeowners, due to the need to save for a down-payment. This offset has likely become less important in the past decade, as down-payment requirements slipped.
[6] Authors' computations from the 2008 Consumer Expenditure Survey.
[7] Note that Carroll, Otsuka and Slacalek's estimates of the wealth effect are on the high side. Case and Quigley (2008) argue that there is an asymmetry in the housing-wealth effect, such that a given decline in housing wealth may reduce spending by less than a comparable increase boosts it.
[8] Using data from the Consumer Expenditure Survey, Bostic, Gabriel and Painter (2009) find that changes in housing wealth especially increase spending on non-durable goods. Note that, whereas their study aimed to characterize effects of wealth on consumption, ours is in its effects on production and employment; given the differential importance of imports across categories of goods, it is not clear that higher spending on nondurable goods necessarily means higher domestic production of them.

investment (Fair 2004, Case and Quigley 2008). Thus, Case and Quigley (2008) expected a marked decline in the pace of new home construction to represent the largest effect of the housing-price bust on the broader economy, and indeed data from the National Income and Product Accounts show that it was a major factor pulling down growth of real GDP growth in 2007 and 2008.[9]

Whether we should expect declining construction investment and employment to be worst in areas that had the most sizable housing-price bubbles is not clear from existing research. Several previous studies suggest that housing-price bubbles are most likely to build in areas where land is scarce, so that increased demand pushes up price rather than eliciting increased supply of new homes (Glaeser, Gyourko, and Saiz 2008). In this case, it is possible that adverse effects on employment and incomes may not be concentrated in areas that had the worst housing-price bubbles, as these may not have experienced particularly strong booms in investment (Goodman, and Thibodeau 2008). In terms of what types of people would be most affected by a construction slump, it is important to note that the construction industry employs people with varied levels of education, training, skill, and experience -- ranging from construction laborers (12-13% of the construction work force in 2005), to skilled craftsman like carpenters, electricians and masons (40%), to office and administrative support staff (14%), to construction managers (who earned $91,000 per year on average and made up 7.5% of the work force in 2005).[10] But to the extent that the least skilled workers and/or minorities are the first to be laid off when construction business turns down, declining residential investment may also have regressive effects on incomes and employment. We can also expect declining construction to adversely affect production and distribution of building materials and supplies, so that its effects may not be confined to markets that had had construction booms.

The third channel via which a decline in housing prices affects the broader economy is financial. Because home sales tend to boom during housing-price bubbles, people shift out of jobs in other sectors and occupations and into jobs in real estate and finance (Hsieh and Moretti 2003). As prices fall and sales drop off, incomes and employment in real estate and finance decline; given that jobs in these fields require relatively high levels of education and/or training, job loss here may affect people in the middle-to-upper part of the income distribution. Additionally, because returns to homeownership seem so high during bubbles, and costs of waiting to buy rise, households that might otherwise rent may instead buy via leverage, taking on debt payments that are high relative to their incomes. Especially for households who bought late in the boom, a subsequent price drop can leave them holding an asset worth less than the debt associated with it, with little free cash-flow to spare.

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[9] Whereas residential investment had been adding ½ a percentage point to growth of real GDP in 2003 and 2004, in 2007 and 2008 its contraction pulled GDP growth down by more than 1 percentage point. Figures from the Bureau of Economic Analysis, National Income and Product Accounts Table 1.5.2, as of December 15, 200.

[10] Data from the Bureau of Labor Statistics' Occupational Employment Statistics, 2005-2008.

This problem was much exacerbated by growth of subprime lending in the past 10-15 years, where the availability of low- or no-downpayment loans increased the likelihood of going 'underwater' when housing prices turned down, and mortgage payments on a non-negligible share of subprime loans were re-setting to higher levels just as housing prices peaked (Gramlich 2007). Thus, rather than being able to sell their homes to pay off their mortgages, homeowners instead suspended payments and/or defaulted on their loans. We know from financial data that defaults and foreclosures have increased significantly since 2007, especially in markets where subprime lending had grown most robustly; we also know that subprime lending tended to grow most rapidly in areas that had relatively large black and Hispanic populations (Mayer and Pence 2008). Still, the evidence is less than clear on what types of households have had to exit from financially unsustainable homeownership arrangements: because the financial data contain little information on household characteristics, we know only generally what sorts of borrowers have been caught in this sort of pinch.

Data

Data for this study come from the U.S. Census Bureau's American Community Survey, an annual cross-section survey which collects social, demographic, housing and economic information from a large sample of U.S. households. The survey is intended to measure changes between the decennial censuses and uses a questionnaire similar to its former 'long form'. As with the census, filling it out and returning it is required by law. About 250,000 households per month receive the questionnaire in the mail, yielding a sample size of about 3 million households per year (a 1 in 40 sample).[11] The ACS sample has been broadly representative geographically since 2005, with data presently available for the four waves between 2005 and 2008.[12] However, because relatively small areas have relatively small numbers of respondents, estimates of changes over time for such areas, especially for subsets of households within them, move a good deal due to sampling error. Thus, we confine our analysis to the 167 metropolitan statistical areas (MSAs) that had populations of 250,000 or more in the 2005-08 period. These contain about 220 million people, or about three-quarters of the U.S. population.[13]

To measure how the housing-market bust has affected households with different characteristics, we categorize metropolitan areas into those which experienced a boom and bust in housing prices, and those which did not. For this purpose, we use the quarterly all-transaction house-price indexes from the Federal Housing Finance Agency (FHFA), which are weighted, repeat-sales indexes computed for

[11] The ACS makes numerous efforts to contact respondents who do not initially reply, resulting in eventual response rates of 97-98%.
[12] In 2001-2004, the ACS sample included 800,000 households and was intended to represent areas with populations of 1 million or more. In 2005, the sample size was increased to 3 million households, with the intention of representing areas with populations of 65,000 or more.
[13] The analysis also excludes data for Puerto Rico.

single-family properties having a mortgage purchased by Freddie Mac or Fannie Mae. While the FHFA data have certain disadvantages relative to the S&P/Case-Shiller home-price indexes, the former are available for all of the MSAs in our analysis while the latter are not. To identify MSAs that experienced housing-price bubbles that burst, we use two definitions based on the extent of the increase in the FHFA price index between 1995:Q1 and the peak value shown in the data, and the extent of the decline in the price index (if any) between the peak and 2008:Q4. In the first 'broader' definition, an MSA is considered to have had a bubble if prices increased by at least 125% after 1995 and decreased from the peak by least 10% by 2008:Q4. In second 'narrow' definition, the price had to have risen by 150% or more after 1995, and decreased from the peak by 25% or more by 2008:Q4.[14]

As shown in Table 1, 36 of the 167 MSAs experienced a burst bubble under the broader definition, while 23 had a burst bubble of the narrow type.[15] MSAs meeting the narrow definition are all found in California, Florida, and Nevada; MSAs added in under the broader definition are also found in these states, as well as Arizona, Massachusetts, and the Washington, DC, metropolitan area (see Appendix Table 2 for the list). There is of course no assurance that our definitions capture the concept of a bubble as a period when market prices diverged significantly from prices implied by the underlying value of housing services (see e.g. Himmelberg, Mayer, and Sinai, 2005, for discussion). But given the amplitudes of the upswings and downswings in the data, we expect that our definition does a reasonably good job of identifying metropolitan areas where a bubble in this sense occurred.

In what follows, we compare changes in various measures of housing, incomes, employment, inequality and poverty across bubble and non-bubble markets. To understand how declining home prices have affected households with varying characteristics, we use education as a proxy for permanent income, differentiating between households where the householder had not completed a high school diploma, had completed a high school diploma but not a college degree, or had completed a college degree.[16] We also analyze differences across households by race/ethnicity, given their well-known correlations with economic outcomes and opportunities. In particular, we differentiate between households where the householder is white and does not self-identify as Hispanic; those where the householder self-

[14] Appendix Figure 1 shows the clear negative correlation between the extent of the run-up in home prices after 1995 and the extent of decline thereafter. Note that, for the 11 largest MSAs, the FHFA provides data for metropolitan divisions within the MSA rather than the MSA itself. In these cases, we computed price changes for the MSA as population-weighted averages of changes for the metropolitan divisions. Note that, in any event, all divisions within a given MSA had the same categorization in 9 of the 11 cases.

[15] See the Appendix for details.

[16] In the Census definition, the 'householder' is the person (or one of the persons) in whose name the housing unit is owned or rented. If a married couple owns the home jointly, either spouse may be the householder. People who undertook some college studies without completing a degree are included with high-school graduates.

identifies as Hispanic; and those who classify their race as black.[17] Note that these categories are not mutually exclusive as people of Hispanic origin may be of any race.

The present version of the paper presents a descriptive analysis of MSA-level data. Thus, for example, for given a given measure x_{it} related to a housing, income, or employment outcome, where i is the metropolitan area and t is the survey wave, we calculate changes in the mean and median values of x_{it} among 'bubble' and other metros, and test whether the difference between the two is significant.[18] To avoid losing information by focusing on scalar measures of changes over time, we also use box plots to show how distributions of given variables have changed over the 2005-2008 period in bubble versus other metros -- where the line in the middle of the box shows the median, the bottom and top of the box show the 25th and 75th percentiles of the distribution respectively, the ends of the whiskers show the 5th and 95th percentiles, and dots show extreme values beyond these points. An ongoing companion paper uses the household- and individual-level ACS data to examine effects of the housing-price bust in a multivariate framework.

Housing wealth and housing costs

Case and Quigley (2008: 164) argue that housing-market busts always begin with a decline in housing demand, and that is indeed what the ACS data show. As can be seen in Figure 1, growth in the number of housing units decelerated between 2006 and 2008 in both regular and bubble MSAs, with the decline especially pronounced in bubble MSAs. Whereas growth in the number of occupied units held roughly steady in regular MSAs, it fell significantly in bubble MSAs after 2006. This deceleration likely reflected a slower pace of household formation and postponed transitions into new or better homes, more than departures from unsustainable homeownership arrangements; thus, for example, the share of households living in the same house as they had one year earlier *rose* significantly after 2006 in bubble metros.[19] With demand for housing falling and supply continuing to rise, vacancy rates rose in both bubble metros and others, although by more in bubble metros than elsewhere.

While the ACS does not collect data on housing wealth specifically, it does collect data on its key components. As shown in **Figure 2**, in the typical (median) 'bubble' metro, the median home price fell

[17] The householder is considered to be Hispanic if he/she answers 'yes' to the question, "Is this person Spanish/Hispanic/Latino?" He/she is considered to be black if he/she checks the option "Black/African Am./Negro" in response to the question, "What is this person's race?" A person is considered to be non-Hispanic white if he/she checked "White" in response to the question, "What is this person's race?" and checked "No, not Spanish/Hispanic/Latino" in response to the question, "Is this person Spanish/Hispanic/Latino?" See Grieco and Cassidy (2001).

[18] Detailed tables showing hypothesis tests will be included as an appendix in a subsequent version of the paper. The discussion that follows emphasizes changes that are statistically significant.

[19] This result is consistent with research using two decades of data from the American Housing Survey by Ferreira, Gyourko, and Tracy (2008), who find that, on balance, negative equity tends to reduce household mobility rather than increase it.

from a peak of $329,000 in 2006 to $275,800 in 2008 -– a drop of 16%. (All dollar values for the ACS survey data are expressed in constant 2008 prices). In contrast, in the typical regular metro, the median home price slipped from its peak of $156,900 in 2007 to $154,900 in 2008 -– a 1.3% decline.[20] The ACS does not ask homeowners about their mortgage balances, but they are asked whether they have a mortgage outstanding. As the results show, homeowners in bubble MSAs are more leveraged than homeowners elsewhere, but in both cases these shares held fairly steady over this period. Thus, in bubble metros, the decline in home values is likely to have pulled down home equity significantly, without much change elsewhere.

The ACS data provide some evidence that house-price swings are somewhat wider at the lower end of the distribution of home prices. As can be seen in the bottom row of **Figure 2**, whereas the median home price in the typical bubble metro declined by 16% between 2006 and 2008, the home price at the 25th percentile fell by 19% while that at the 75th percentile came down by 14%. This is qualitatively similar to what is found in the 'tiered' S&P/Case-Shiller indexes, although their data show larger spreads between low- and high-tier homes.[21] Especially given that home equity represents a large share of the net worth of homeowners of more moderate means (see e.g. Bertaut and Starr-McCluer 2000, Starr 2009), the larger percentage decline in home prices at the lower end of the distribution implies a larger proportional decline in wealth for these homeowners compared to those owning higher-priced homes.

Concerning the idea that a housing-price bust hurts homeowners but helps renters, the ACS data as of 2008 do not show evidence of this. As shown in Figure 3, the share of renters having housing costs above 30% of their income held steady in both bubble and non-bubble markets, at around 50% in the former and 44% in the latter, in spite of rising vacancy rates in both places. This may be due in part to staggered adjustment of rental contracts and/or downwardly-rigid nominal rents, such that rental costs tend not to decline much despite rising vacancy rates (Genesove 2003). It may also reflect some tendency for renters to shift to better-quality rental properties when the housing market weakens: thus, for example, in bubble markets, the median number of rooms for renting households increased from 4.1 to 4.3 between 2005 and 2008.

On the other hand, the ACS data also show a sizable and significant increase in the share of homeowners paying more than 30% of their incomes in housing costs: while this share held steady

[20] Note that, unlike the FHFA data, home prices in the ACS are self-reported, include both single-family homes and other types of property, and are not repeat sales measures. Goodman and Ittner (1992) find that self-reported prices generally correspond reasonably well to commercial valuations of property. It is possible that accuracy is lower in periods when prices are changing unusually.

[21] For example, the median decline-from-peak for the 20 metropolitan areas covered in the S&P/Case-Shiller data was 37.4% for low-tier homes versus 19.4% for high-tier homes through the end of 2008.

around 27% in regular MSAs, it rose from 33% in 2006 to 40% in 2008 in those which had bubbles. This may reflect a greater prevalence of subprime and/or adjustable-rate mortgages in bubble metros.[22] Many subprime loans started with two or three years of very low payments, followed by a steep increase to a new level based on the prevailing market rate. Whereas the interest rate on a 30-year conventional mortgage had hovered around 5.75% from mid-2003 to August 2005, it moved up to 6.75% over the following year then fluctuated around a higher level.[23] While causes of this rise in the share of homeowners with relatively high housing costs can be investigated further, the ACS data certainly suggest that the financial vulnerability of homeowners in bubble markets had risen just as home prices were turning.

Employment and unemployment

As discussed above, widespread house-price busts would be expected to reduce employment growth in both bubble and other MSAs due to the wealth effect. Yet bubble metros face extra contractionary pressures due to declining residential investment, declining real estate and financial activity related to housing sales, and declining spending on locally produced goods and services. The ACS data largely confirm this expectation. As shown in Figure 4, in the typical bubble MSA, employment growth fell from 5% in 2005-06 to virtually zero in 2006-07, while it fell from about 4% to 1% elsewhere. Employment growth picked back up to 2.8% in 'other' MSAs in 2007-08, but rose only to 1.1% in bubble MSAs. The drag on job growth in bubble MSAs indeed came from loss of jobs in construction and finance, insurance, and real estate (FIRE). While construction employment had been growing vigorously in both bubble and other MSAs in 2005-06, in bubble MSAs, the level of employment dropped absolutely by 4.3% in 2006-2007 and fell again by 9.2% in 2007-08. In contrast, in other MSAs, construction employment stopped growing in 2006-08 but did not actually decline. The pattern of changes is identical for FIRE employment, although the magnitudes of declines in bubble MSAs were not as severe as in construction. In contrast, growth rates for employment in retail trade and retail services hardly differed between bubble and other metros, contrary to what would be expected if local aspects of the wealth effect contributed importantly to the slowdown.

Unemployment data show who was most affected by the declining labor market. As shown in Figure 5, the unemployment rate fell between 2005 and 2006 in bubble metros for virtually all groups shown -- then rose significantly in 2007 and again in 2008. In other metros, unemployment rates largely held

[22] Dell'Ariccia, Igan, and Laeven (2008) found that lending standards declined particularly in markets with larger home price increases. Mayer and Pence (2008) also find some evidence of this, but they also note that some markets with housing booms did not see large increases in subprime lending, such as the Northeast.

[23] Also around this time was the beginning of the run-up in energy prices, which may have affected housing costs of homeowners more than those of renters.

steady or continued to come down over the whole 2005-08 period.[24] Taken together with the data on employment changes, these results suggest that the decline in real economic activity that eventually became a recession originated in metropolitan areas where housing-price bubbles had burst.[25] Within bubble MSAs, we see a pattern often found in aggregate contractions: increases in unemployment rates were larger for workers who had not completed their high school diplomas than they were for those who had, and in turn increases were larger for those with high school diplomas than they were for college graduates. Similarly, increases were larger for black workers than for Hispanic workers, which were in turn larger than those for non-Hispanic whites. These results are consistent with much previous research finding that aggregate downturns have particularly detrimental effects on employment and incomes for less-educated workers and minorities (Blank 1989, Hoynes 2000, Spriggs and Williams 2000, Cherry and Rodgers 2000).

Homeownership

According to estimates from the Current Population Survey, the overall U.S. homeownership rate increased from 64% in 1994 to a historic high of 69% in 2004, then fell back to 67.8% by 2008; in metropolitan areas, the rate peaked at 67.4% in 2005-2006 then slipped to 66.4% by 2008.[26] As shown in **Table 2**, the ACS data for metros with populations of 250,000 or more show slightly different trends, with mean and median homeownership rates not peaking until 2007. The bursting of the housing-price bubble would lead us to expect homeownership to fall by more in bubble metros than elsewhere, as falling prices reduce prospective owners' incentives to shift from renting to owning and existing owners' incentives to move to better homes -- instead creating incentives to postpone such transitions until prices 'bottom out'. Additionally, bubble areas would be expected to have a higher incidence of departures from financially unsustainable homeownership arrangements. The ACS data show that indeed the 2007-08 decline in homeownership was larger in bubble metros than elsewhere. The average homeownership rate came down by 1.1 percentage points in bubble metros, but only 0.5 percentage points elsewhere. The median decline was 1.4 percentage points in bubble metros, versus 0.5 percentage points elsewhere. Still, this difference between the two types of metros is relatively modest, and the fact that homeownership also fell in 'regular' MSAs suggests that other factors independent of local housing-market conditions were shifting interest in it –- such as rising mortgage interest rates, tightening of lending standards, and/or dissipation of the popular narrative that homeownership is always and everywhere a wonderful investment (Shiller 2007).[27]

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[24] For comparison, data from the Bureau of Labor Statistics' monthly household survey show the civilian unemployment rate rising after March 2007.

[25] In December 2008, the National Bureau of Economic Research declared that had recession had started in December 2007.

[26] http://www.census.gov/hhes/www/housing/hvs/annual08/ann08ind.html

[27] Note that this is also consistent with several studies finding that in the years before the bubble burst, housing-market dynamics were increasingly governed by common aggregate factors, rather than

Perhaps surprisingly, declines in homeownership rates did not differ markedly across households with differing characteristics: for most types of households in bubble metros, the rate declined by about 1-1.5 percentage points, while it fell by around 0.5 percentage point for most types of households in other MSAs. However, more pronounced declines occurred for two specific groups. In bubble MSAs, homeownership rates fell more steeply for black and Hispanic households than others –- a finding which is consistent with other studies finding subprime lending to have been concentrated in areas that experienced bubbles and that had relatively large black and Hispanic populations (e.g. Mayer and Pence 2008).[28] In regular MSAs, there were significant and relatively large declines in mean and median homeownership among households where the householder had less than a high school education. While the explanation of this is at present unclear, it is consistent with other evidence in the ACS data of deteriorating circumstances for this group (see below).

Poverty and inequality

Table 3 and Figure 6 show results from the ACS on poverty. Whereas poverty rates were flat in regular MSAs, they rose in metros with bubbles. In terms of differences across households, the data do not show clear trends, possibly in line with previous research finding that poverty rates do not co-move as closely with aggregate economic conditions as one might expect (e.g. Hoover, Enders, and Freeman 2008). Focusing on changes in bubble MSAs, between 2007 and 2008 the poverty rate rose by about 1 percentage point for almost all groups, although it held steady for families where the householder was black. In other MSAs, the poverty rate for households where the householder had less than a high school education moved steadily and significantly upward from 2005 to 2008. While it is unclear what the cause of this is, along with rising unemployment and declining homeownership, it suggests some fundamental erosion in livelihoods for this group.

Table 3 also shows results for measures of income inequality available in the ACS: the shares of income going to the top 25% and the top 5% and the Gini coefficient. All three measures rose between 2006 and 2008 in regular MSAs, whereas they were flat in those with bubbles. Evidence of flattening is consistent with the Census Bureau's annual estimates of income inequality from the Current Population Survey, which show the income share of the top quintile and the Gini coefficient having plateaued in 2006.[29] In future work, we plan to examine whether trends like the decline in FIRE employment and incomes contributed to this.

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regional or local variables, suggesting an importance of credit-market changes or other national-level factors (see e.g. Fu 2007 and Del Negro and 2007).

[28] See Coleman, LaCour-Little, and Vandell (2008) on the difficulty of establishing directions of causalities between housing prices and subprime lending.

[29] U.S. Census Bureau, Current Population Survey, 1968 to 2009 Annual Social and Economic Supplements. http://www.census.gov/hhes/www/income/histinc/IE-1.pdf

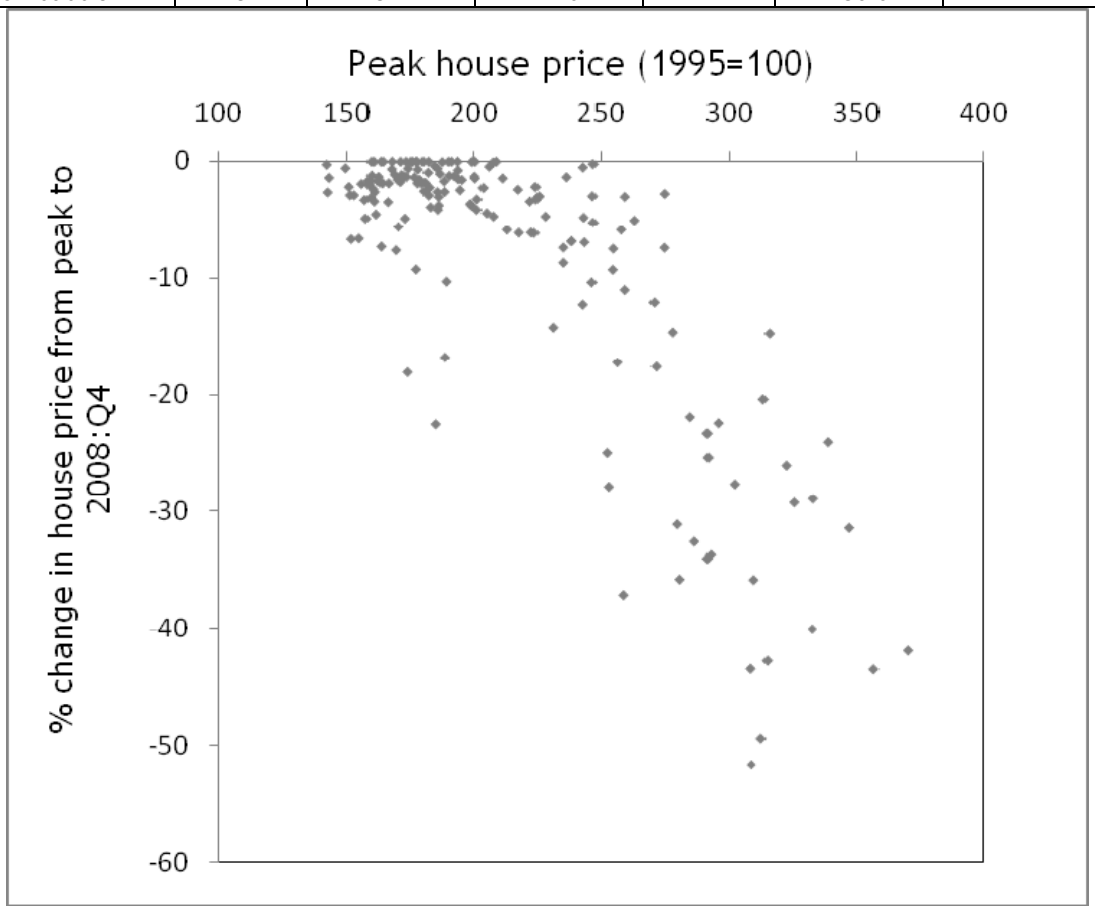
Summary and conclusions

To summarize, this study has six key findings with respect to the distributional effects of the housing-price slump up through 2008. First, in metropolitan areas where housing price bubbles burst, prices slumped somewhat more on the lower-end of the home-price distribution than at the upper-end. Second, declining housing prices have not lowered housing costs for renters in a broad-based way. Third, 2006-07 saw substantial declines in construction and FIRE employment in metropolitan areas where housing-price bubbles had burst -- consistent with Case and Quigley's prediction that the most powerful mechanism transmitting effects to the broader economy would be the income and employment channel. Fourth, increases in unemployment rates in metros where bubbles burst were most pronounced among households with less education and/or minorities, as is usual in aggregate downturns. Fifth, while homeownership rates have slipped everywhere, some of the largest decreases occurred for black and Hispanic households in metros where bubbles had burst. Finally, poverty rates increased in bubble metros between 2007 and 2008, while holding steady elsewhere; although trends across groups are not clear cut, the rate may have risen differentially for households of Hispanic origin.

Taken together, these findings suggest that declines in key elements of economic well-being have been concentrated among those without good resources for withstanding financial distress. An important implication from a monetary-policy perspective is that the risks of failing to check a housing-price bubble as it is forming are asymmetrically distributed: if the bubble subsequently bursts, adverse effects fall on a wide range of households, with the most costly and difficult ones (job loss, a spell in poverty, significant troubles with creditors, loss of a home, etc.) tending to fall on people whose economic lives and material living standards are anyway less secure. While it can be argued that several elements of the present housing-price bust are unusual and unlikely to be repeated (notably, the extraordinary relaxation of lending standards associated with subprime mortgages), other cases when booms and busts in home prices have been associated with aggregate fluctuations are not difficult to find, as when the 'credit crunch' that followed the 1980s real-estate booms on both coasts contributed to the 1990-91 recession (Bernanke and Loan 1991). The present paper underlines the importance of incorporating concerns with misalignments in asset prices into the *modus operandi* of monetary policy, whether by interest rates (Taylor 2007) or some other means (Brunnermeier, Crockett, Goodhart, Persaud, and Shin 2009; Farmer 2010).

Table 1. Categorization of MSAs

	Broader bubble definition			Narrow bubble definition		
Categorization of MSA	Number of MSAs	Median peak (1995=100)	Median % change from peak to 2008:Q4	Number of MSAs	Median peak (1995=100)	Median % change from peak to 2008:Q4
Bubble	36	292.2	-27.7	23	309.5	-33.7
Non-bubble	131	182.7	-2.0	144	186.0	-2.4



Source: FHFA all-transaction home price indexes.

Table 2. Homeownership rates

		Regular MSAs						Bubble MSAs					
		2005	2006	2007	2008	change from peak	p-val. of change	2005	2006	2007	2008	change from peak	p-val. of change
Overall	mean	68.1	68.4	68.6	68.0	-0.5*	0.00	65.7	66.1	65.8	65.0	-1.1*	0.002
	median	68.2	69.0	69.1	68.6	-0.5	0.64	65.8	66.3	67.1	65.7	-1.4*	0.018
By education of householder													
Less than HS diploma	mean	55.8	55.3	54.8	52.5	-3.2*	0.000	52.1	52.4	51.7	50.6	-1.7*	0.000
	median	55.9	55.8	54.7	53.2	-2.7*	0.010	49.7	50.5	49.3	50.3	-0.2	0.105
HS diploma	mean	65.9	66.0	65.9	65.6	-0.4*	0.012	63.9	64.2	63.9	63.0	-1.3*	0.000
	median	66.4	66.6	66.1	66.1	-0.5	0.161	63.4	63.6	64.1	62.0	-2.1	0.105
College degree	mean	78.1	78.8	79.4	78.7	-0.7*	0.012	77.6	77.1	76.9	76.1	-1.5*	0.000
	median	78.4	79.1	79.5	79.1	-0.4	0.815	79.1	78.2	78.5	77.6	-1.5*	0.018
By race/ ethnicity of householder													
Non-Hispanic white	mean	73.9	74.2	74.3	73.8	-0.5*	0.001	72.1	72.1	71.5	71.3	-0.8*	0.051
	median	74.5	74.6	74.6	74.0	-0.7	0.350	72.2	71.8	72.7	71.3	-1.4	0.376
Black	mean	41.6	43.0	43.3	42.8	-0.5	0.514	44.1	44.3	44.5	42.4	-2.2+	0.096
	median	43.0	43.4	44.1	43.4	-0.7	0.947	43.5	45.0	46.4	41.2	-5.2	0.210
Hispanic	mean	44.7	44.6	46.3	46.1	-0.2	0.766	51.0	52.4	53.1	51.7	-1.3*	0.042
	median	44.4	44.9	47.0	46.0	-1.0+	0.079	52.3	54.4	54.3	52.2	-2.2*	0.040

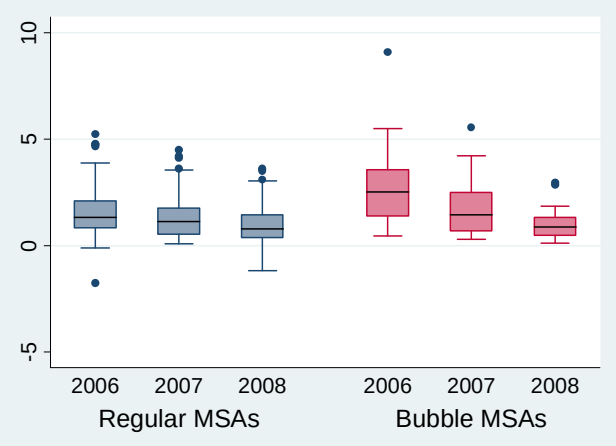
For mean, p-value comes from regressions. For median, continuity-corrected Pearson Chi-square test. [k-sample equality of medians test]

Table 3. Measures of poverty and inequality

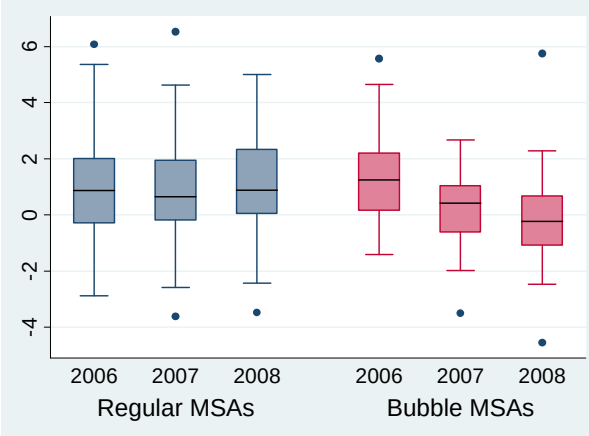
		Regular MSAs					Bubble MSAs						
		2006	2007	2008	2006-2008 change	p-val. of change	2006	2007	2008	2006-2008 change	p-val. of change	Diff. in 2006-08 change between bubble & regular MSAs	p-val. of diff.
Measures of poverty													
Share of population living below poverty line	Mean	13.3	13.1	13.2	-0.083	0.48	12.3	11.9	12.7	0.4+	0.069	0.5*	0.052
	Median	12.8	12.8	12.8	-0.036	1.000	11.4	11.1	12.4	1.0	0.239		
Share of HHs receiving cash assistance	Mean	9.5	9.2	9.9	0.403*	0.041	6.4	5.9	7.1	0.7*	0.001	0.3	0.272
	Median	8.6	8.7	9.6	0.993	0.138	5.7	5.5	6.5	0.8	0.239		
Measures of inequality													
% of income going to top 25% of HHs	Mean	48.2	48.4	48.5	0.3*	0.000	48.7	48.9	48.8	0.1	0.720	-0.2	0.376
	Median	48.2	48.5	48.4	0.2	0.711	48.7	48.7	48.4	-0.4	0.480		
% of income going to top 5% of HHs	Mean	20.6	20.9	21.1	0.4*	0.000	21.3	21.7	21.3	0.0	0.920	-0.4	0.223
	Median	20.6	20.8	21.0	0.4+	0.084	21.0	21.0	20.7	-0.4	0.814		
Gini coefficient	Mean	0.446	0.448	0.449	0.003*	0.000	0.448	0.450	0.450	0.001	0.578	-0.002	0.492
	Median	0.445	0.448	0.448	0.003	0.458	0.448	0.451	0.445	-0.003	0.814		

Figure 1. Housing market characteristics

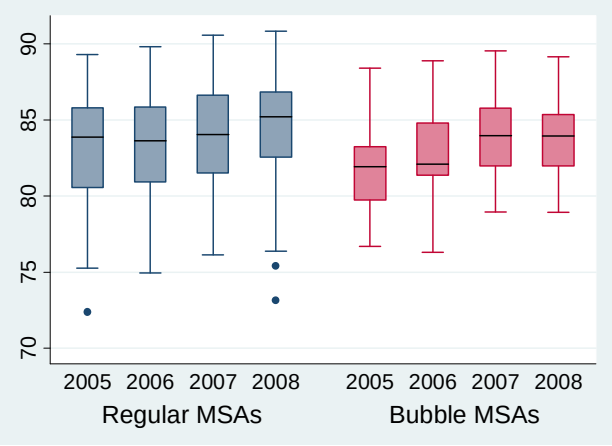
% change in total # of housing units*



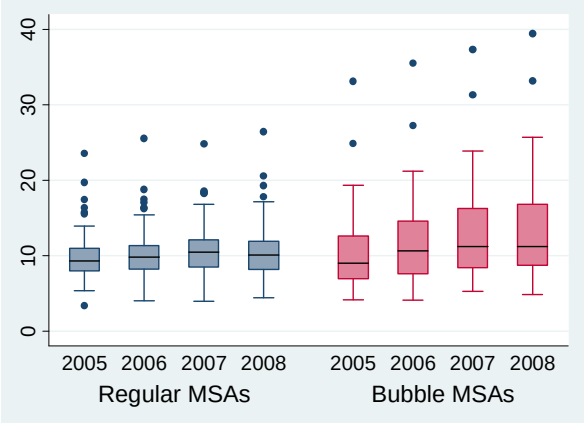
% change in # of occupied housing units*



Share of households living in the same place as last year



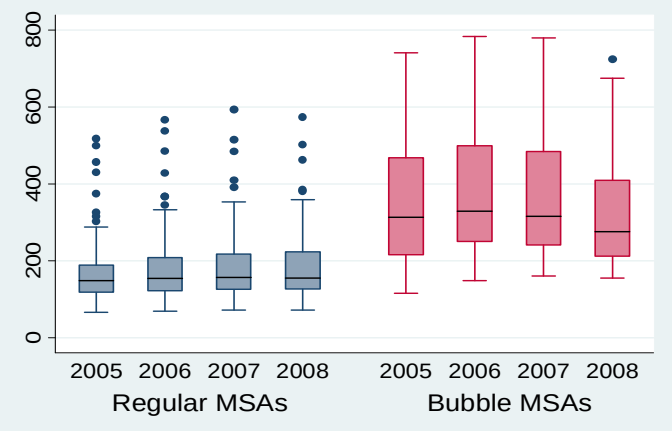
Vacancy rate



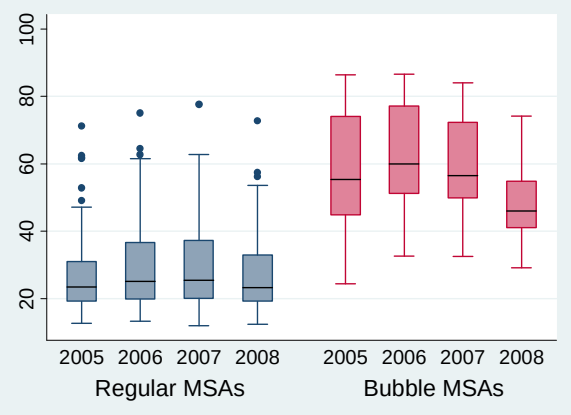
* Excludes New Orleans.

Figure 2. Distribution of home prices

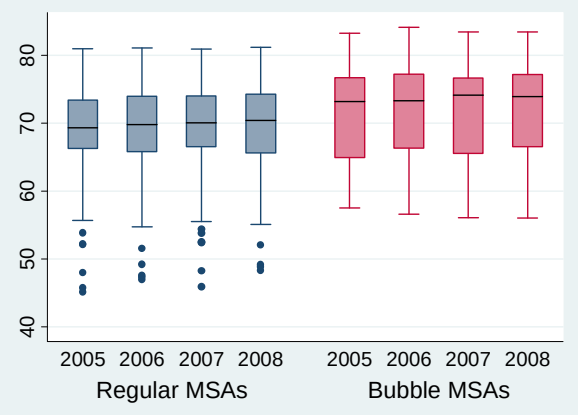
Median home price ('000 of 2008 US$)



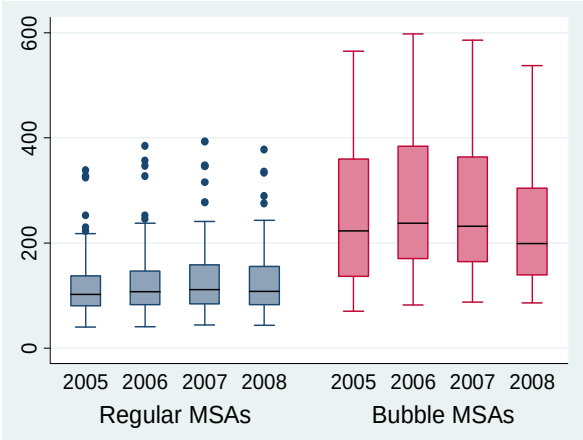
Share of homeowners whose home is worth four times their annual income or more



Share of homeowners with mortgage debt outstanding



Home price @ 25th percentile ('000 of 2008 US$)



Home price @ 75th percentile ('000 of 2008 US$)

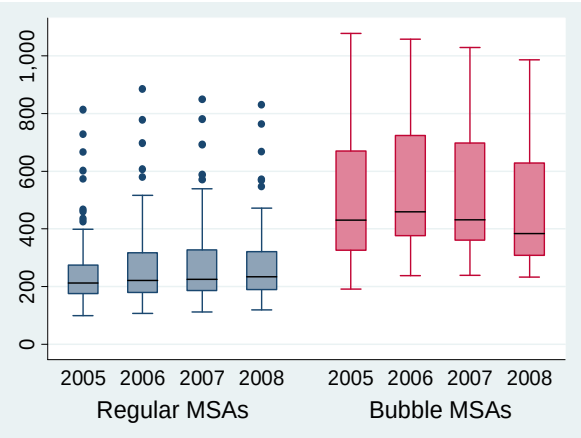
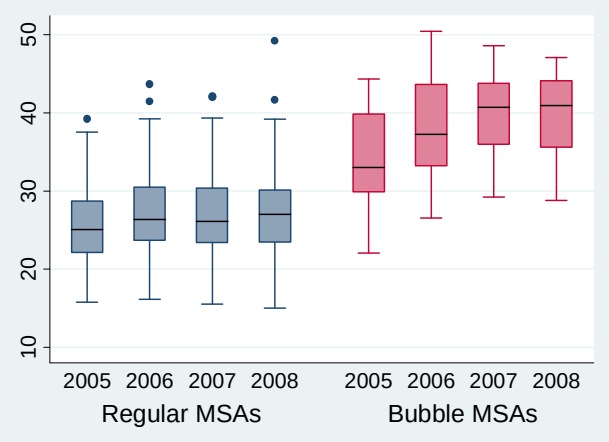
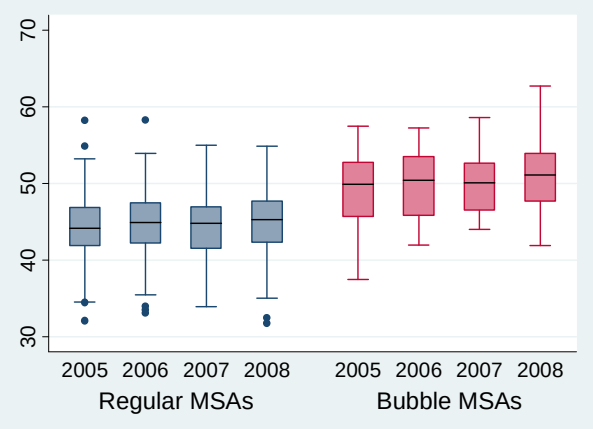


Figure 3. Housing finances

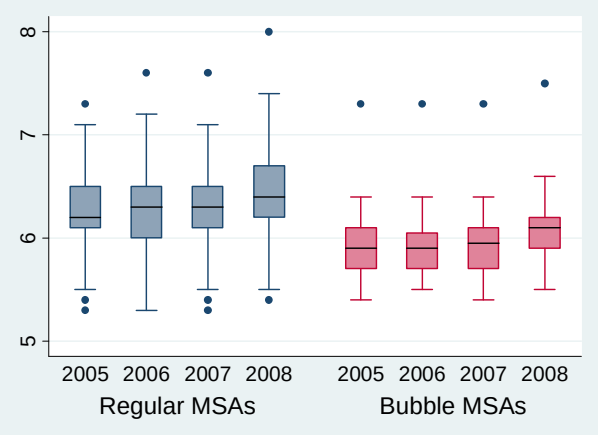
Share of homeowners w/ housing costs exceeding 30% of their income



Share of renters w/housing costs exceeding 30% of their incomes



Median # of rooms, homeowners



Median # of rooms, renters

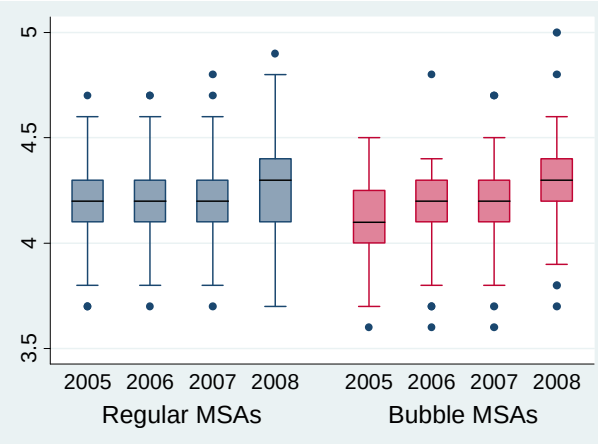
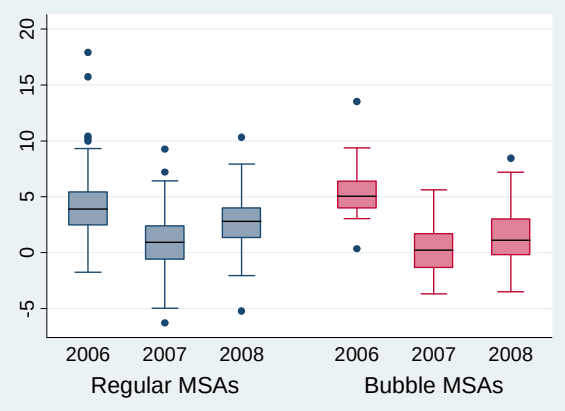
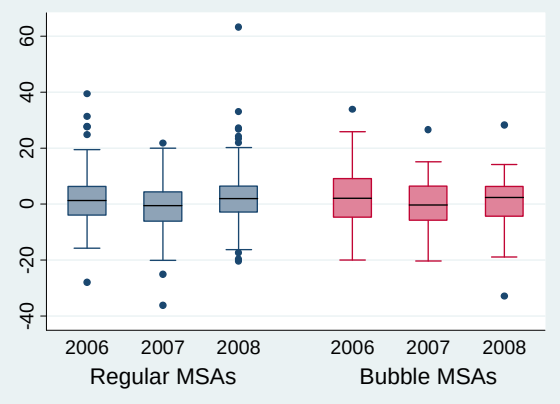


Figure 4. Year-over-year percent change in employment

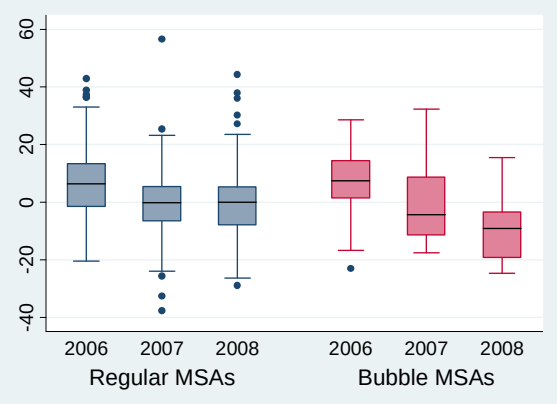
Total civilian employment



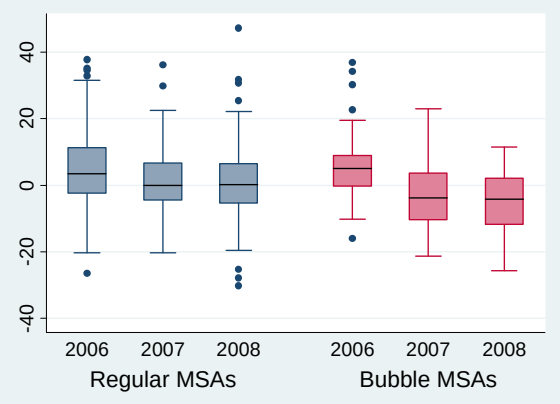
Manufacturing



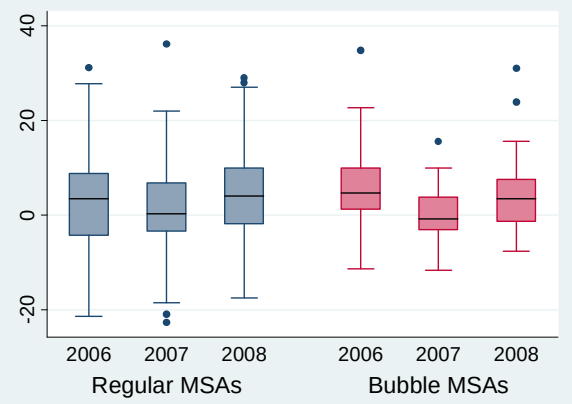
Construction



Finance, insurance & real estate



Retail trade



Services

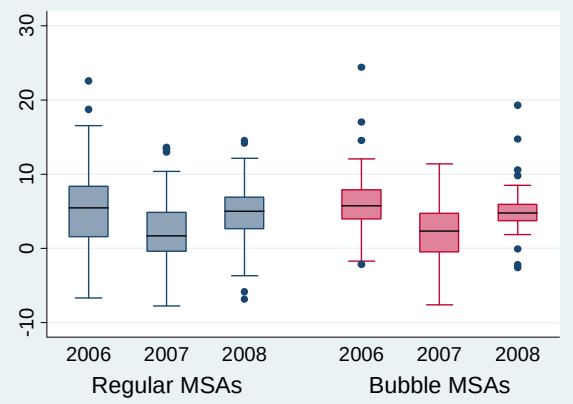
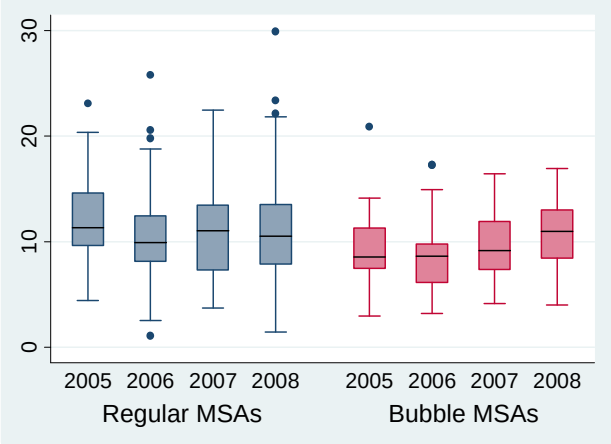


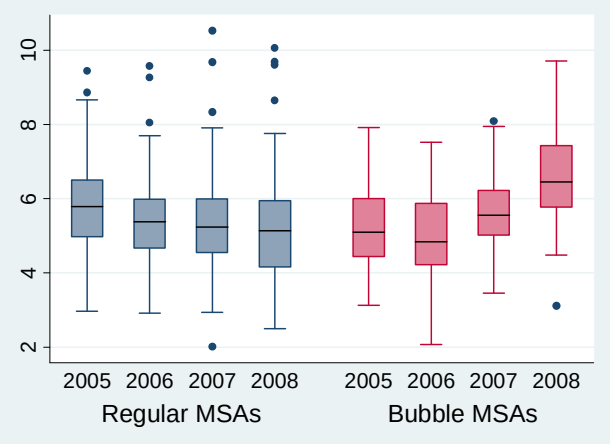
Figure 5. Unemployment by education and by race/ethncity

By education

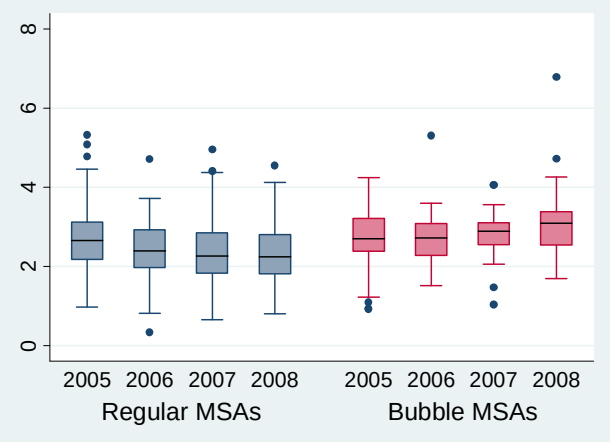
Below high school



HS diploma

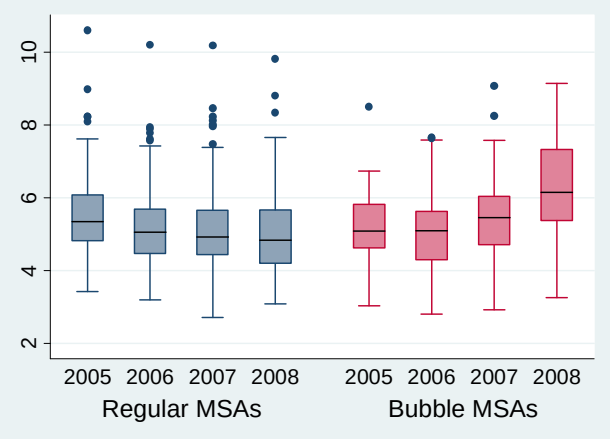


College degree

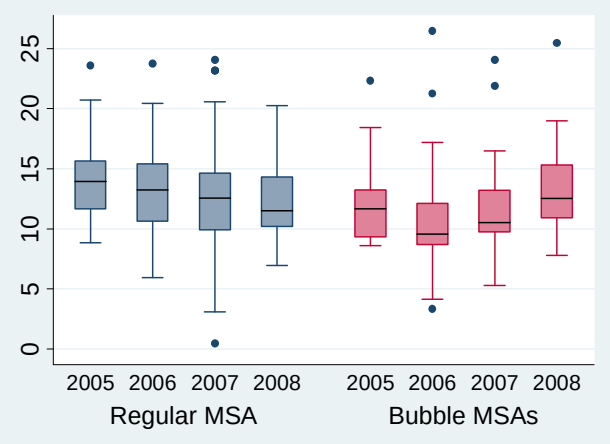


By race/ethnicity

White Non-Hispanic



Black



Hispanic

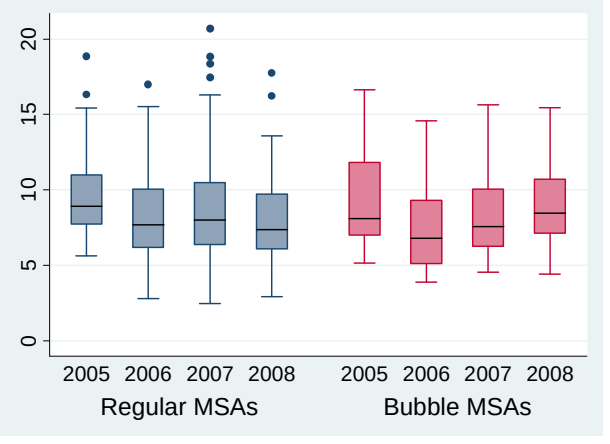
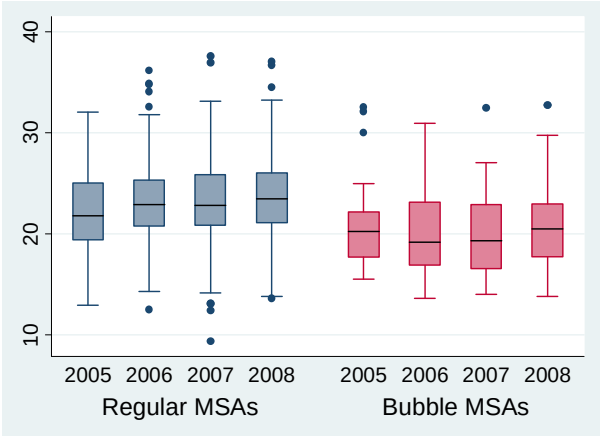
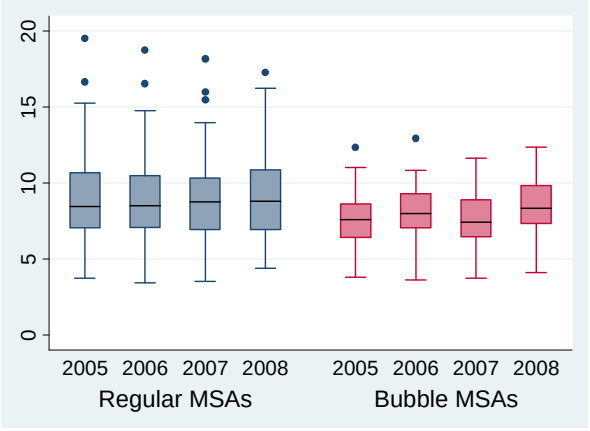
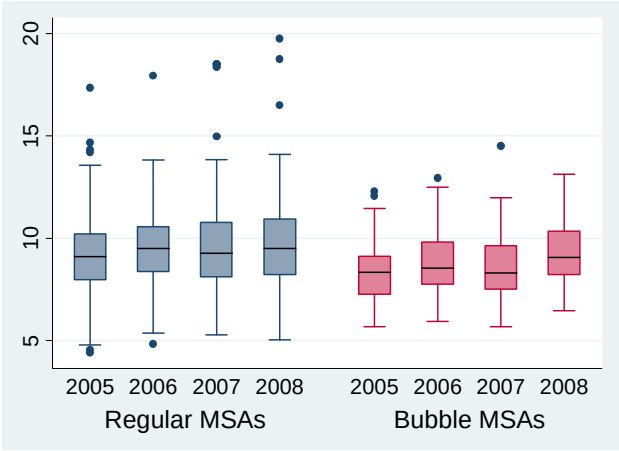
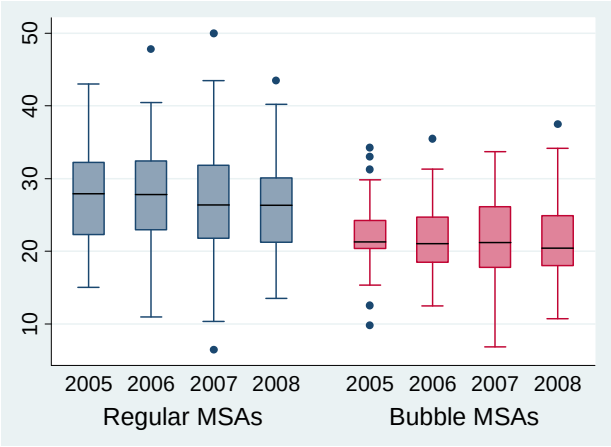
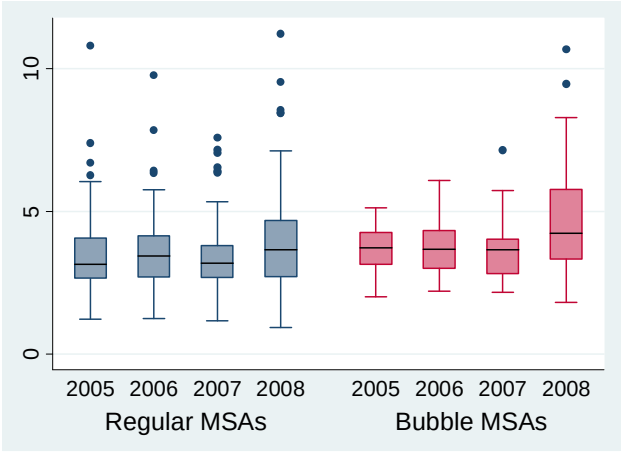
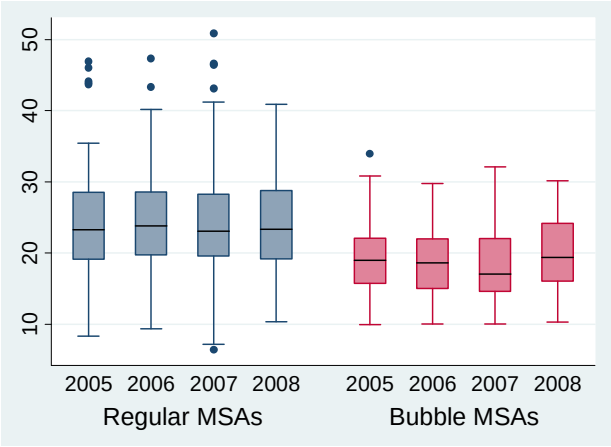


Figure 6. Poverty rates by education and race/ethnicity

By education	By race/ethnicity
Below high school	White Non-Hispanic
	
HS diploma	Black
	
College degree	Hispanic
	

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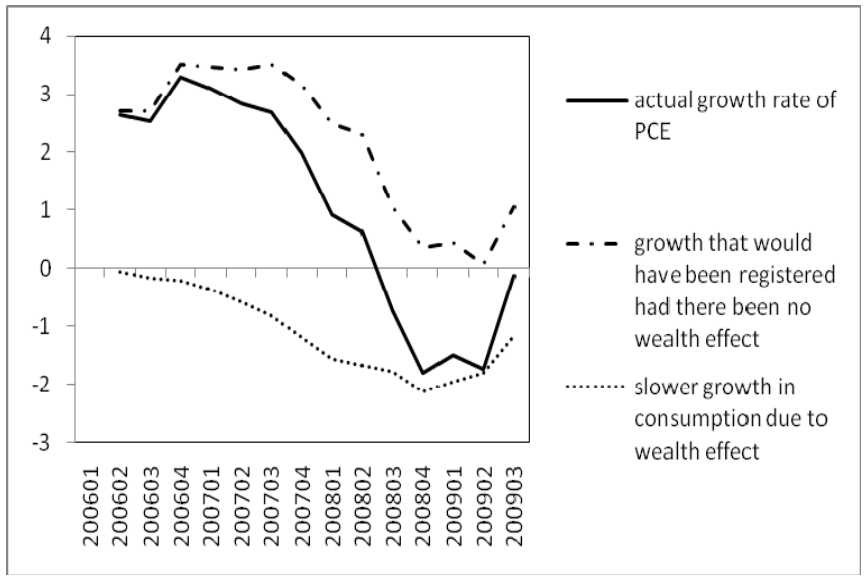
Appendix Table 1. Estimates of the housing-wealth effect										
	Billions of current U.S. dollars									
	Flow of funds estimate of home equity	Change in home equity	Estimated wealth effect on spending from current and lagged wealth changes	PCE deflator (1995=100)	Wealth effect in chained 2005 US$	Real PCE (billions of chained 2005 U$)	Real PCE, adding in what was lost to the wealth effect (5)+(6)	Actual growth rate of PCE	Growth that would have been registered had there been no wealth effect	Slower growth in consumption due to wealth effect (9)-(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
200601	13463.5									
200602	13190.8	-272.8	-5.5	101.8	-5.4	9035.0	9040.4	2.6	2.7	-0.1
200603	12983.6	-207.2	-15.1	102.6	-14.7	9090.7	9105.4	2.5	2.7	-0.2
200604	13117.2	133.6	-19.3	103.3	-18.6	9181.6	9200.2	3.3	3.5	-0.2
200701	12472.0	-645.2	-34.3	103.3	-33.2	9265.1	9298.3	3.1	3.5	-0.4
200702	11946.1	-525.9	-61.2	104.3	-58.7	9291.5	9350.2	2.8	3.4	-0.6
200703	11231.2	-714.9	-94.5	105.1	-90.0	9335.6	9425.6	2.7	3.5	-0.8
200704	10492.8	-738.4	-135.8	105.7	-128.5	9363.6	9492.1	2.0	3.2	-1.2
200801	9384.6	-1108.2	-192.1	107.0	-179.5	9349.6	9529.1	0.9	2.5	-1.6
200802	8520.3	-864.3	-232.8	108.0	-215.6	9351.0	9566.6	0.6	2.3	-1.7
200803	7656.0	-864.2	-280.7	109.0	-257.5	9267.7	9525.2	-0.7	1.1	-1.8
200804	6607.4	-1048.6	-363.2	110.3	-329.4	9195.3	9524.7	-1.8	0.3	-2.1
200901	5256.8	-1350.6	-394.8	108.9	-362.7	9209.2	9571.9	-1.5	0.4	-2.0
200902	5795.4	538.6	-416.7	108.4	-384.2	9189.0	9573.2	-1.7	0.1	-1.8
200903	6213.3	417.9	-401.3	108.8	-368.8	9256.0	9624.8	-0.1	1.0	-1.2
Assumed effects by quarter are Q1: .02, Q2: .04, Q3: .05, Q4: .06, Q5: .07, Q6: .075. Q7: .078, Q8: .08										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actual growth rate of PCE
growth that would have been registered had there been no wealth effect
slower growth in consumption due to wealth effect

Appendix Table 2. Categorization of MSAs by bubble definitions		
	Peak index value (1995=100)	% decline from peak thru 2008:Q4
Metros classified as having bubbles under both narrow and broad definitions		
Bakersfield, CA	280.4	-35.8
Cape Coral-Fort Myers, FL	308.3	-43.5
Deltona-Daytona Beach-Ormond Beach, FL	291.7	-25.3
Fresno, CA	286.2	-32.6
Las Vegas-Paradise, NV	258.5	-37.1
Los Angeles-Long Beach-Santa Ana, CA	338.4	-24.0
Miami-Fort Lauderdale-Pompano Beach, FL	332.9	-28.9
Modesto, CA	312.3	-49.4
Naples-Marco Island, FL	370.1	-41.9
Oxnard-Thousand Oaks-Ventura, CA	325.4	-29.2
Palm Bay-Melbourne-Titusville, FL	279.5	-31.1
Port St. Lucie, FL	292.7	-33.7
Riverside-San Bernardino-Ontario, CA	332.7	-40.1
Sacramento--Arden-Arcade--Roseville, CA	291.3	-34.1
Salinas, CA	356.6	-43.5
San Diego-Carlsbad-San Marcos, CA	322.4	-26.0
San Francisco-Oakland-Fremont, CA	313.2	-20.4
Santa Barbara-Santa Maria-Goleta, CA	346.9	-31.4
Santa Rosa-Petaluma, CA	302.1	-27.6
Bradenton-Sarasota-Venice, FL	309.5	-35.9
Stockton, CA	308.7	-51.7
Vallejo-Fairfield, CA	314.8	-42.8
Visalia-Porterville, CA	252.6	-27.8
Metros classified as having bubbles under the broad definition only		
Jacksonville, FL	270.5	-12.0
Lakeland-Winter Haven, FL	256.1	-17.2
Ocala, FL	271.3	-17.6
Orlando-Kissimmee, FL	284.5	-21.9
Pensacola-Ferry Pass-Brent, FL	230.8	-14.2
Phoenix-Mesa-Scottsdale, AZ	295.6	-22.4
Providence-New Bedford-Fall River, RI-MA	259.0	-11.0
Reno-Sparks, NV	252.0	-24.9
San Jose-Sunnyvale-Santa Clara, CA	315.7	-14.7
Tampa-St. Petersburg-Clearwater, FL	291.3	-23.3
Tucson, AZ	242.6	-12.2
Washington-Arlington-Alexandria, DC-VA-MD-WV	277.7	-14.6
Worcester, MA	246.1	-10.3
Metros without bubbles		
Charleston-North Charleston-Summerville, SC	274.5	-2.7
Atlantic City-Hammonton, NJ	274.3	-7.4
Seattle-Tacoma-Bellevue, WA Metro Area	262.8	-5.0
Virginia Beach-Norfolk-Newport News, VA-NC	259.0	-3.0
Baltimore-Towson, MD	257.6	-5.8
Manchester-Nashua, NH	254.4	-7.5
Poughkeepsie-Newburgh-Middletown, NY	254.2	-9.3
Portland-Vancouver-Beaverton, OR-WA	246.6	-5.2
Asheville, NC	246.6	-0.2
Portland-South Portland-Biddeford, ME	246.4	-2.9
Bridgeport-Stamford-Norwalk, CT	243.3	-6.9
Wilmington, NC	242.9	-4.8
Duluth, MN-WI	242.6	-0.5
Boston-Cambridge-Quincy, MA-NH	238.0	-6.8
New York Metro Area	238.0	-6.8

Savannah, GA	236.1	-1.3
Minneapolis-St. Paul-Bloomington, MN-WI	234.8	-8.7
Trenton-Ewing, NJ	234.8	-7.4
Norwich-New London, CT	227.8	-4.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area	225.3	-2.9
Eugene-Springfield, OR	224.1	-3.2
Richmond, VA	224.0	-2.1
New Haven-Milford, CT	223.5	-6.1
Tallahassee, FL	222.3	-6.1
Salt Lake City, UT	221.9	-3.4
Boise City-Nampa, ID	217.5	-6.1
Salem, OR	217.1	-2.4
Springfield, MA	212.7	-5.8
New Orleans-Metairie-Kenner, LA	211.1	-1.4
Boulder, CO /1	208.5	0.0
Provo-Orem, UT	207.4	-4.7
Austin-Round Rock, TX	207.2	-0.1
Anchorage, AK	205.7	-0.4
Allentown-Bethlehem-Easton, PA-NJ	204.7	-4.4
Albany-Schenectady-Troy, NY	203.5	-2.2
Hartford-West Hartford-East Hartford, CT	201.1	-3.2
Chicago-Naperville-Joliet, IL-IN-WI	201.0	-4.1
Kingsport-Bristol-Bristol, TN-VA	200.4	0.0
Denver-Aurora, CO /1	200.3	-1.4
Spokane, WA	200.2	-1.3
Roanoke, VA	199.2	0.0
Mobile, AL	199.1	-3.7
Honolulu, HI	198.4	-3.6
Ogden-Clearfield, UT	195.2	-1.5
Milwaukee-Waukesha-West Allis, WI	194.4	-2.4
York-Hanover, PA	193.8	-1.5
Baton Rouge, LA	193.6	-0.7
Nashville-Davidson--Murfreesboro--Franklin, TN	193.4	0.0
St. Louis, MO-IL	192.2	-1.2
Houston-Sugar Land-Baytown, TX	191.0	0.0
Madison, WI	190.2	-1.2
Scranton--Wilkes-Barre, PA	189.8	0.0
Jackson, MS	189.0	-10.3
Ann Arbor, MI	188.4	-16.8
Colorado Springs, CO	188.2	-2.6
Columbus, GA-AL	188.1	-1.7
Knoxville, TN	187.4	0.0
Lancaster, PA	186.4	-1.0
Reading, PA	186.0	-3.7
Chattanooga, TN-GA	185.9	-3.0
Atlanta-Sandy Springs-Marietta, GA	185.6	-4.1
Fort Collins-Loveland, CO	185.4	-0.6
Albuquerque, NM	185.4	-2.6
Detroit-Warren-Livonia, MI	184.7	-22.5
Charlotte-Gastonia-Concord, NC-SC	184.3	-0.4
Fayetteville-Springdale-Rogers, AR-MO	182.7	-3.9
Augusta-Richmond County, GA-SC	182.3	-2.2
Kansas City, MO-KS	182.0	-2.9
Harrisburg-Carlisle, PA	181.9	0.0
Birmingham-Hoover, AL	181.7	-0.9
Oklahoma City, OK	180.7	-1.8
El Paso, TX	180.5	-2.5
Durham, NC	179.9	0.0
San Antonio, TX	179.3	-1.8
Lexington-Fayette, KY	178.7	-1.5
Davenport-Moline-Rock Island, IA-IL	178.0	-0.7
Shreveport-Bossier City, LA	177.9	-1.8

Columbia, SC	177.7	0.0
Beaumont-Port Arthur, TX	177.4	0.0
Lansing-East Lansing, MI	177.3	-9.3
Hickory-Lenoir-Morganton, NC	176.7	-1.3
Corpus Christi, TX	175.9	0.0
Huntsville, AL	175.2	0.0
Louisville/Jefferson County, KY-IN	174.1	-0.6
Flint, MI	173.9	-18.1
Huntington-Ashland, WV-KY-OH	173.5	-1.3
Raleigh-Cary, NC	173.4	0.0
Utica-Rome, NY	172.9	-4.9
Tulsa, OK	172.4	-1.2
Peoria, IL	171.5	-1.1
Des Moines-West Des Moines, IA	171.2	-1.5
Little Rock-North Little Rock-Conway, AR	171.1	0.0
Green Bay, WI	171.0	-1.7
Kalamazoo-Portage, MI	170.3	-5.6
Omaha-Council Bluffs, NE-IA	170.0	-1.5
Grand Rapids-Wyoming, MI	169.3	-7.6
Fort Smith, AR-OK	168.8	-1.1
Dallas-Fort Worth-Arlington, TX	167.8	0.0
Pittsburgh, PA	167.7	-0.6
Syracuse, NY	166.5	-1.8
Evansville, IN-KY	166.2	-3.4
Killeen-Temple-Fort Hood, TX	164.2	0.0
South Bend-Mishawaka, IN-MI	164.0	-1.8
Toledo, OH	163.5	-7.3
Montgomery, AL	163.4	0.0
Greenville-Mauldin-Easley, SC	163.0	-1.8
Lincoln, NE	162.4	-1.3
Charleston, WV	162.0	-1.6
Spartanburg, SC	161.3	-4.5
Cincinnati-Middletown, OH-KY-IN	160.8	-2.6
Memphis, TN-MS-AR	160.6	-3.4
Wichita, KS	160.5	0.0
Springfield, MO	160.2	-2.3
Winston-Salem, NC	159.7	-1.2
Lubbock, TX Metro Area	159.6	0.0
Brownsville-Harlingen, TX	159.4	-3.0
Columbus, OH	159.2	-1.6
Rockford, IL	158.7	-2.0
Greensboro-High Point, NC	158.5	-1.6
Canton-Massillon, OH	157.4	-4.8
Youngstown-Warren-Boardman, OH-PA	157.0	-3.2
Fayetteville, NC	155.9	-1.9
Akron, OH	154.9	-6.6
McAllen-Edinburg-Mission, TX	152.9	-2.8
Cleveland-Elyria-Mentor, OH	151.8	-6.7
Erie, PA	151.3	-2.8
Indianapolis-Carmel, IN	150.8	-2.1
Buffalo-Niagara Falls, NY	149.5	-0.5
Fort Wayne, IN	143.0	-1.4
Dayton, OH	142.4	-2.6
Rochester, NY	142.0	-0.2