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The Housing Bubble: Is It Back?

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In the last decade, there was an unprecedented run-up in house prices in most parts of the country. It was easy to recognize this run-up as a bubble since there was no remotely corresponding increase in rents, which for the most part just tracked inflation during this period. There was also no evidence of a shortage of housing supply. Housing starts were at near record highs from 2002 to 2005. In addition, the vacancy rate as reported by the Commerce Department was at near record highs through most of this period. With weak job and wage growth throughout most of this period, it was possible to recognize the run-up as a bubble even without knowing anything about the proliferation of bad loans in the mortgage market.

The run-up in real house prices in the bubble years was almost completely reversed in the subsequent crash. While the first-time homebuyers' tax credit temporarily stopped and reversed the decline, house prices continued to fall until the spring of 2012. Since then, the market has recovered much of the lost ground. While it is still 20.1 percent below the bubble peaks of 2006 in real terms, inflation-adjusted house prices are now 37.7 percent above their level in 1996, before the beginnings of the bubble.[1]

1 These numbers are from the Case-Shiller national house price index, deflated by the CPI-U.

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While these prices may seem somewhat high, there is little basis for concern that the national market has again entered a bubble. First, rents have somewhat outpaced the overall inflation rate over this period. The rental index in the consumer price index (CPI) has risen by 20.8 percentage points more than the overall index from 1996 to 2016. The increase in house sale prices has somewhat exceeded the rise in rents over the last two decades, but the gap is much less than the gap with the overall CPI.

The other point is that we are seeing a period of extraordinarily low real *and* nominal interest rates. The 30-year mortgage interest rate has been below 4.0 percent for most of the last three years. If we assume a future inflation rate in the 1.5 to 2.0 percent range, this implies a real mortgage interest rate of between 2.0 to 2.5 percent. By contrast, the mortgage rate in the pre-bubble years was mostly in the 6.0 to 8.0 percent range. With an inflation rate of 2.0 to 2.5 percent, this implies a real interest rate of between 3.5 to 5.0 percent. This drop in interest rates can easily explain the modest increase in the price-to-rent ratio over the last two decades.

While there is not much of a case for a bubble nationally, there are some local markets in which prices have been rising rapidly in recent years. This is especially true in the lower segments of the market. Prices for homes in the bottom third of the market, as measured in the Case-Shiller (CS) tiered price index, have risen by 49.4 percent in Los Angeles over the last three years. They have risen by 73.6 percent in Las Vegas and by 65.4 percent in San Francisco. Prices in these and other cities are still well below bubble peaks, but are also far above their pre-bubble levels and rising rapidly. This raises the possibility that they may again be entering into bubble territory.

This issue brief looks more closely at the markets in the Case-Shiller 20-city index where there have been rapid increases in the prices of houses in the bottom tier. It compares the rise in house prices to the rise in the fair market rent, as determined by the Department of Housing and Urban Development (HUD). The latter is used as a proxy for rents in the lower cost portion of the housing market. It also examines trends in vacancy rates and job creation to see if these are consistent with the change in prices shown in the CS index.

The rises in the bottom-priced tier of the housing market are of interest, not because the collapse of a bubble could threaten the economy and the financial system, as did the collapse of the bubble in 2006–2008, but rather because it raises the prospect of many moderate-income people taking large losses in the housing market if prices suddenly reverse. Many moderate-income people who were induced to buy into the bubble by the first-time buyers' tax credit would have suffered large losses if they were forced to sell their houses after the credit ended and the process of bubble deflation resumed.[2] It would be unfortunate if moderate-income families again were placed in a situation where they faced the prospect of large losses due to buying into the housing market at the wrong time.

Las Vegas

Las Vegas was one of the cities hit hardest by the collapse of the bubble. Its economy had boomed in the bubble years, as house prices more than doubled in real terms between 1996 and 2006. In the downturn the housing market gave up all of its bubble gains and more. In 2011, real house prices in the lower tier of the market were nearly 40 percent below their 1996 level. However, in the last few years, house prices have risen rapidly, with real house prices rising by more than 73 percent over the last three years, a 20 percent annual rate. This provides some ground for concern.

The pattern in rents is not clear. Real rents rose sharply in the years immediately following the crash, presumably the result of foreclosed homeowners looking for rental housing. However, from its peak in 2010 to 2015, the fair market rent (FMR) for a two bedroom apartment (this is used as the basis for comparison) has fallen by more than 16 percent. Using 1996 as a base year, this means that the ratio of sale price to rents has just crossed its original level, as shown in **Figure 1**.

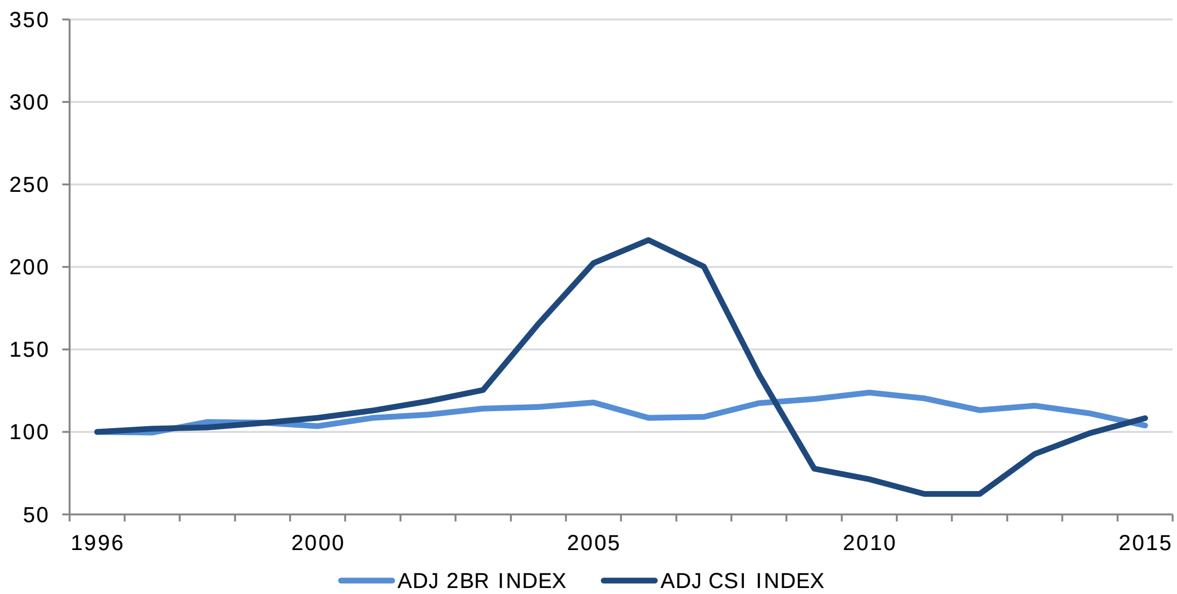
This does not suggest sales prices that are out of line with rents, although if prices were to continue to rise at a 20 percent annual rate for another year or two, the story would look much worse.

The vacancy data are consistent with a reasonably tight housing market for the city. In the most recent data, the vacancy rate for ownership units was 2.3 percent, which is lower than the rate for most of the late 1990s. The rental vacancy rate was 7.3 percent in the most recent data, which is also on the low side for the late 1990s. In addition, the city has had an extraordinarily rapid pace of job creation in the last three years, adding jobs at an average annual rate of 3.2 percent, which is considerably faster than the national average of 1.8 percent.

2 Baker, Dean. 2012. "First Time Underwater: The Impact of the First-time Homebuyer Tax Credit." Washington, D.C.: Center for Economic and Policy Research. http://cepr.net/documents/publications/housing-2012-04.pdf.

FIGURE 1

Las Vegas FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

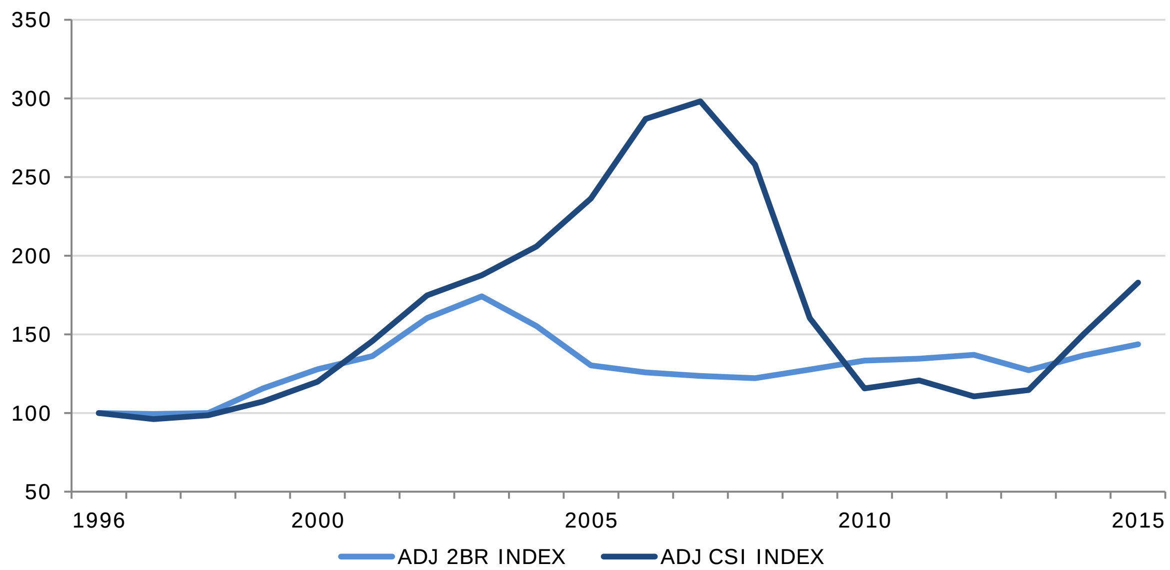
In short, there is little basis at present for concern about a bubble in the bottom tier of the housing market in Las Vegas. If prices continue to rise at their recent pace for another year or two, there will be serious risk of a bubble in this market.

San Francisco

In San Francisco, house prices at the bottom tier of the market tripled in real terms between 1996 and 2007. After the burst of the housing bubble, prices fell down to levels only slightly above those of 1996; in 2012 prices were only 10 percent above 1996 levels. Since 2012 though, prices have been rising rapidly again, at growth rates similar to those seen during the bubble. In the past three years housing prices have appreciated more than 65 percent in real terms.

Rent prices, as estimated by the FMR, were rising at a similar pace as housing prices in the early 2000s, but rents peaked in 2003 and then fell back, while house prices continued to rise until 2006. Rents began to rise again after 2008 but the real increase has been less than 20 percent. Since 2012 house prices have picked up again at a very fast pace, while rents are ticking up much more slowly. **Figure 2** illustrates the trends in sales price and rents, using 1996 as a base year.

FIGURE 2
San Francisco FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

It is important to keep in mind that San Francisco has also enjoyed a rapid pace of job creation, adding jobs at an annual rate of 3.6 percent in the past three years. Furthermore, vacancy rates for both owner- and tenant-occupied properties are at levels similar to those of the early 90s, which is consistent with a tight housing market. For the past three years the vacancy rate for owner-occupied houses averages less than one percent. So, the rapid increase in house prices in the lower portion of the market is not yet a cause for serious concern.

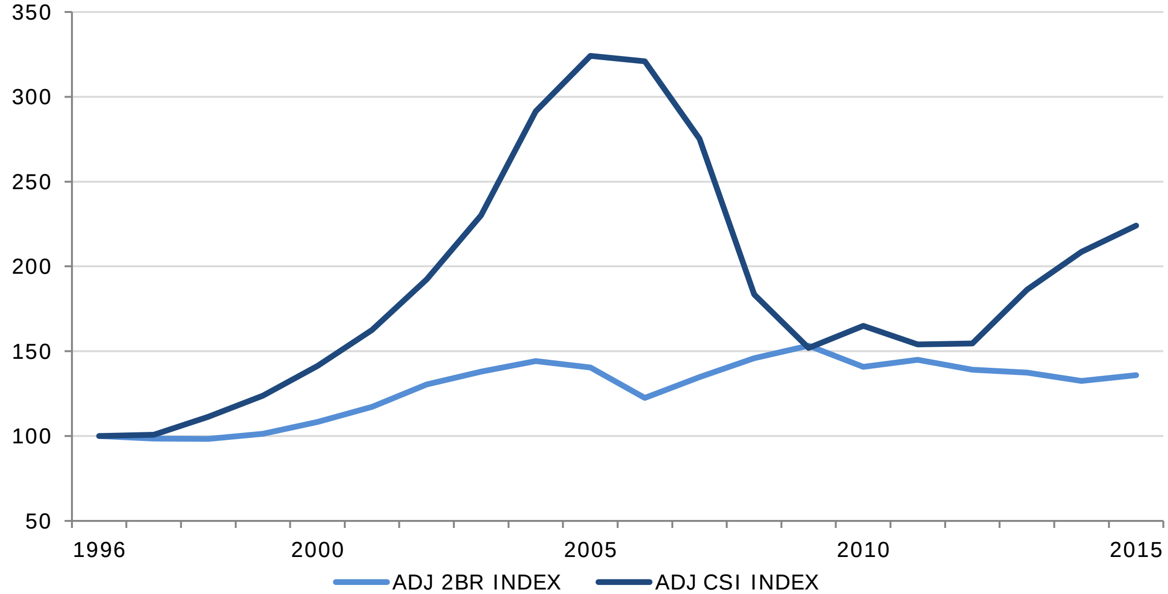
San Diego

In San Diego, prices for houses in the bottom tier of the CS index more than tripled in real terms from 1996 to 2006. Following the burst of the bubble, real house prices fell sharply until 2009 but still remained about 50 percent higher than in 1996. Real house prices began to increase again sharply in 2013 and are now up by almost 45 percent from 2012 levels.

While house prices were rising rapidly, rents fell slightly in real terms. Real rents did increase sharply in the immediate wake of the collapse of the housing bubble, but have been flat or slightly down since 2009. **Figure 3** illustrates the rental and housing prices index over the last two decades.

FIGURE 3

San Diego FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

Real house prices rose by more 20 percent from 2012 to 2013. Since then prices have been rising at a still rapid 12 percent annual rate.

However, San Diego does have declining vacancy rates for both owner- and tenant-occupied properties indicating that the market is actually tight. The pace of job creation for San Diego over the past three years is also outpacing the national average with an increase of 2.6 percent compared to 1.8 percent nationally. Nonetheless, the sharp divergence between real sale prices and rents should be cause for concern. If this continues, buyers in the lower tier of the housing market will be taking a serious risk.

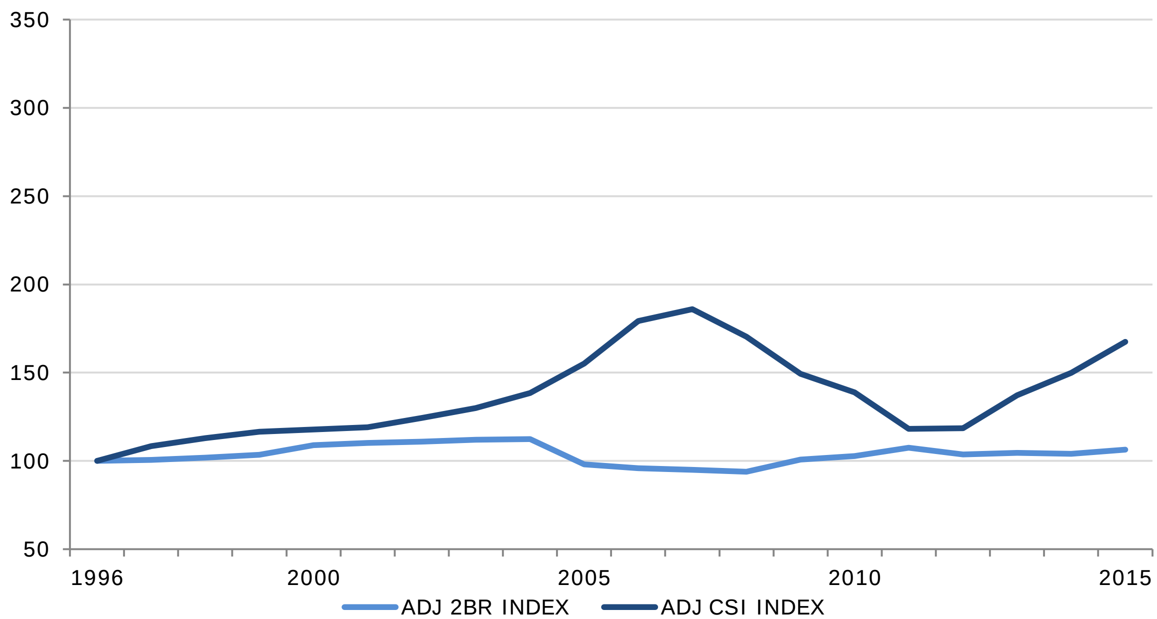
Portland

The housing bubble was somewhat more constrained in Portland than in the other major west coast cities. Housing prices in the bottom tier increased by 85 percent in real terms between 1996 and 2007, then fell by 36 percent between 2006 and 2011. However, prices started picking up again at a pace comparable to the one during the housing bubble. In the last three years, the CS index has seen an increase of over 40 percent in real terms.

Rents trended downwards in Portland throughout the housing bubble. Following the burst of the housing bubble, prices increased by about 13 percent in real terms and have stayed fairly constant in real terms since 2012. **Figure 4** shows the housing prices, along with rental prices index to their 1996 values.

FIGURE 4

Portland FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

The similarity between the current increase in housing prices with the housing bubble is striking. However, unlike in that time period, rents are not currently declining in real terms.

The vacancy rate for owner-occupied houses was only 1 percent last year, compared to rates of close to 2 percent in the bubble years. For rental properties, the vacancy rate peaked during the housing bubble, when it reached a whopping 12.8 percent in 2004. Currently only 3.4 percent of rental properties are vacant. These numbers indicate a tight housing market. Portland has also been adding jobs at a rapid pace in the last three years, its job numbers averaging a growth rate of 2.7 percent, which is also much higher than the national average.

Tampa

Tampa's house prices more than doubled in real terms between 1996 and 2006 then fell back dramatically to below the 1996 level. In 2012, prices in the bottom tier of the Tampa housing market were 10 percent lower in real terms than in 1996. However, there has been a sharp increase in house prices since 2012. In the past three and a half years, the CS index has risen by almost 55 percent in real terms. While prices are still only barely higher than 10 years ago, this trend of rapid growth is worrisome.

Rental prices in Tampa, as in other cities, increased immediately following the burst of the bubble, but have remained fairly constant after this initial rise.

FIGURE 5

Tampa FMR, CSI Index 1996=100

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

Figure 5 illustrates the housing and rental prices indexed to their 1996 values. If prices continue to grow at this rapid rate, while rents stagnate, it would provide serious grounds for concern.

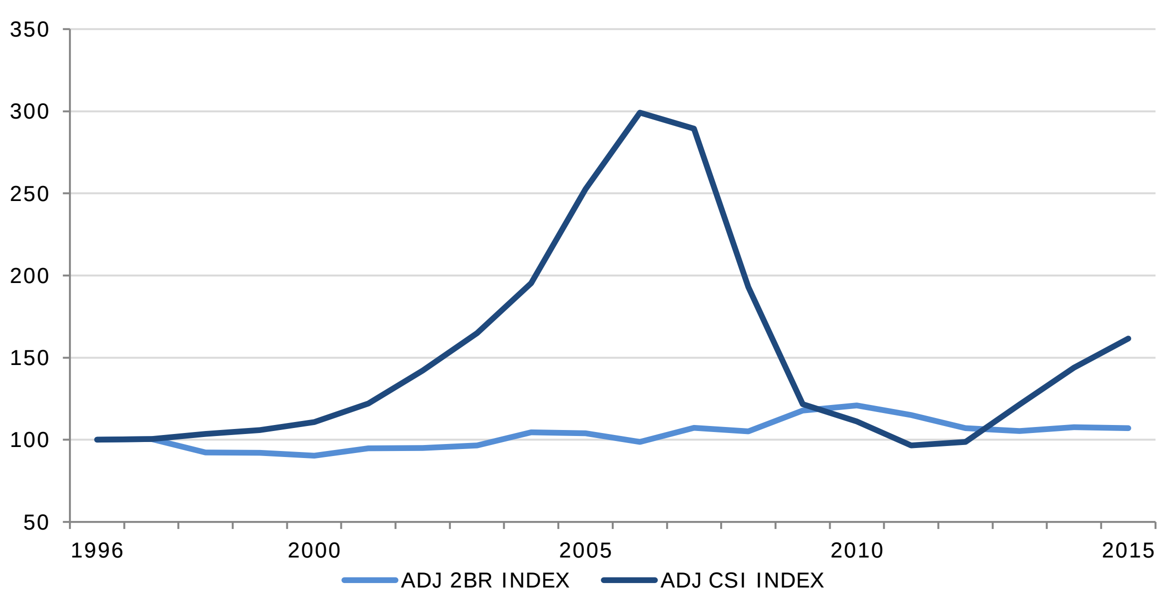
Vacancy rates for rental properties have been fairly high in the 2000s, peaking at above 15 percent in 2008. However, since then they have been declining and reached a level of 6.6 percent in 2015. Vacancy rates for owner-occupied properties have been at about 2.0 percent in the last three years these are both lower than the vacancy rates of the late 1990s. These rates indicate the housing market is relatively tight which could justify the rise in house sale prices. The healthy job growth of Tampa also supports this view, with the city averaging a higher job growth than the national level, 2.7 percent in the past three years.

Miami

In Miami, house prices tripled in real terms in the bottom tier of the market between 1996 and 2006, only to fall back to 1996 values in 2011. Since 2012 prices are again rapidly increasing, with a 63 percent change in real terms in the past three years. While at the peak of the bubble, between 2004 and 2005, prices grew by almost 30 percent a year; now they are growing by almost 20 percent a year.

Rental prices were decreasing in real terms until the end of the housing bubble. While rents rose between 2007 and 2010, they started to decline after that. From their peak in 2010, they have fallen by 11 percent. Using 1996 as a base year, **Figure 6** illustrates the FMR for a two bedroom apartment and the CS index for the bottom tier of the market, adjusted for inflation.

FIGURE 6
Miami FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

The increase in rent overlaps with the sharp decrease in housing prices. While rents decreased after

2010, house prices picked up at a fast pace. Again, this is a trend that if continued would be worrisome.

However, Miami has also seen a much faster job growth than the national average, at almost 3.0 percent annually over the last three years. This, combined with low vacancy rates for both owner- and tenant-occupied houses, suggests there is no need for concern yet.

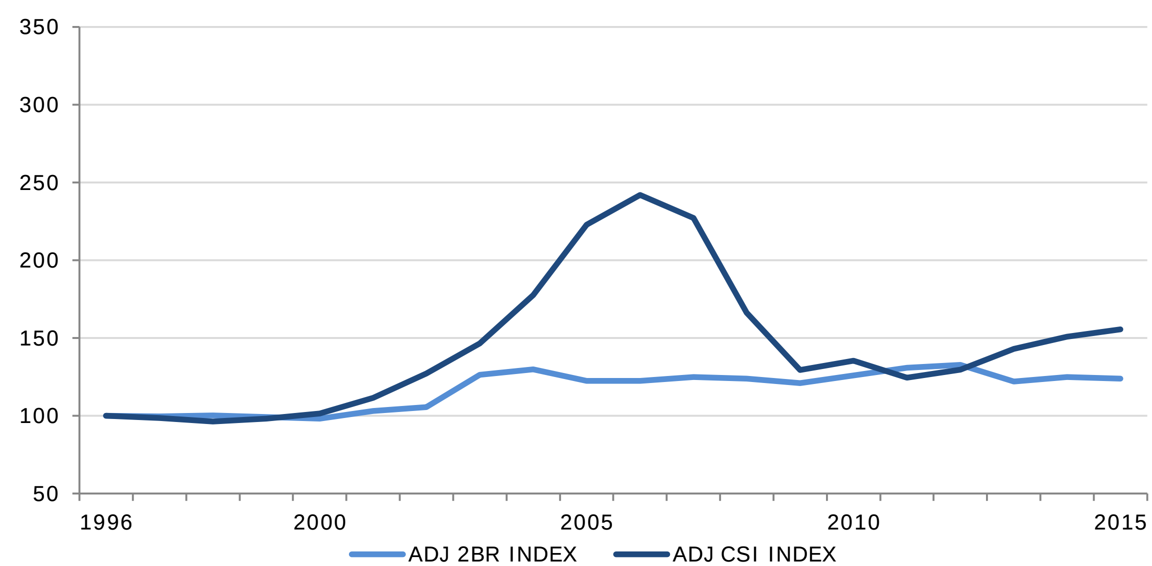
Washington, D.C.

Between 1996 and 2006 prices in the bottom tier of Washington's housing market increased by 142 percent in real terms. After the bubble burst, prices fell by about 46 percent, remaining higher than their 1996 levels. In the last three years, prices have started to increase again but at a much slower pace than during the housing bubble. Between 2012 and 2015, prices have risen about 20 percent in real terms.

Similar to other cities, rents have seen a small increase in the immediate aftermath of the bursting of the housing bubble. In real terms, rents increased by 8 percent between 2006 and 2012 but have since decreased by 6 percent.

FIGURE 7

Washington DC FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

Figure 7 illustrated the increase in rental prices along with the increase in house prices using 1996 as a base year. As can be seen the current increase in housing prices is not nearly as steep as in the early 2000s.

An interesting observation about Washington is that in terms of job growth it lags the national average. In the past three years, job growth in Washington averaged only 1.2 percent, compared to the national average of 1.8 percent. Thus a growing economy does not justify the increase in house prices in this case. However, vacancy rates are at historic lows, which is a good sign for the overall tightness of the housing market. For homeowners, the vacancy rate dropped to 0.9 percent in 2015, and for rental properties to 5.7 percent.

Minneapolis

In Minneapolis, real house prices doubled in the period from 1996 to 2006. After the housing bubble burst, all the gains from the bubble were lost. In 2011, house prices were at 90 percent of their real 1996 values. After reaching their low in 2011, prices have started to increase again, appreciating by almost 40 percent in real terms.

Rental prices in Minneapolis have seen their largest increase between 2000 and 2004, when they went up by 27 percent in real terms. After 2004, rental prices dropped back close to their 1996 levels in 2008. After the bubble burst, there have been some increases in rental prices again. In the past three years the FMR estimate for a two bedroom apartment has increased by 7 percent.

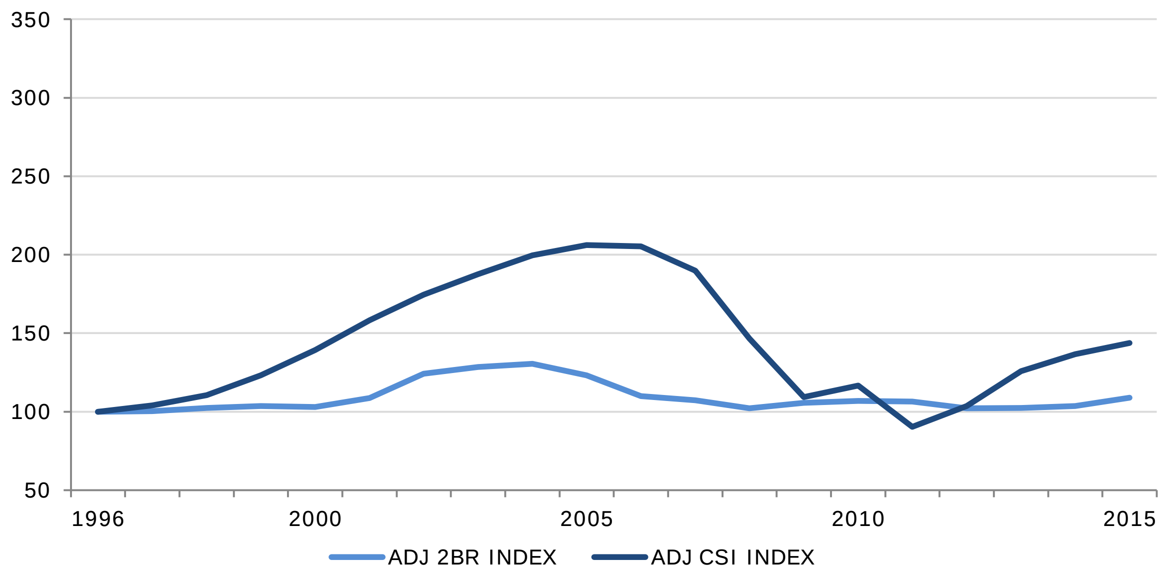
Figure 8 shows the real increase in house prices, along with the real increase in rents, indexed to their 1996 values.

While prices are still much lower than the peak of the bubble, if the rapid price increases of recent years continue they could soon reach similar levels.

The situation with vacancy rates is mixed. The vacancy rate for owner-occupied houses is back down to its late 1990s level of under 1.0 percent. For rental properties, the 4.9 percent vacancy rate is somewhat higher than its late 1990s level.

FIGURE 8

Minneapolis FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

In Minneapolis, housing prices have increased much faster than the national average in the past three years, yet job growth has been the same with the national average, at about 1.8 percent. If housing prices continue to grow at a faster rate than jobs and rental prices, it could be cause for serious concern.

Los Angeles

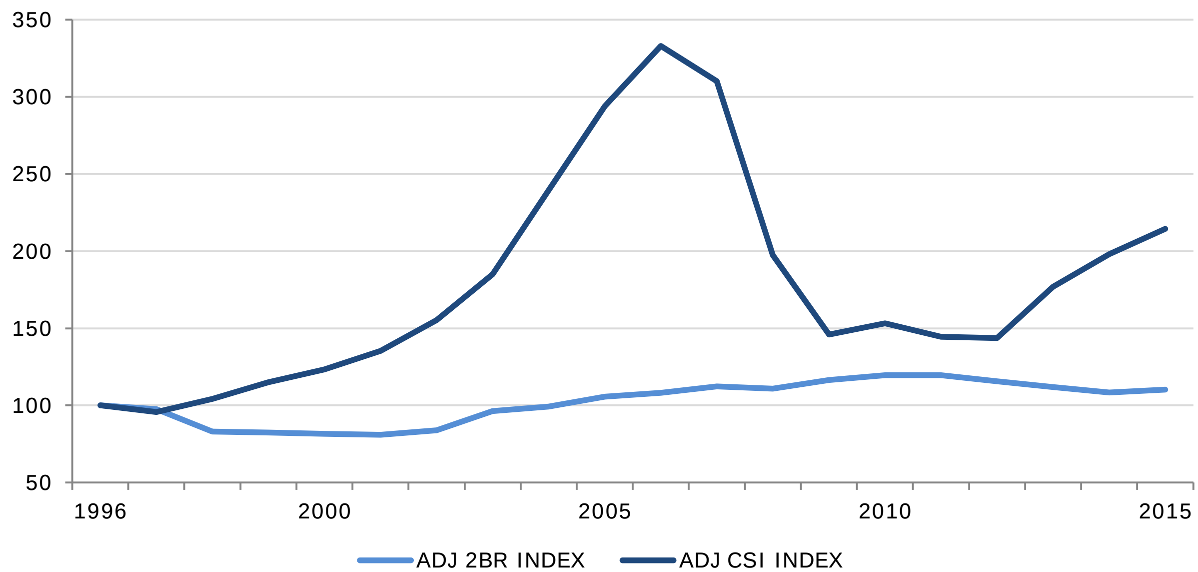
Los Angeles was one of the cities with the highest run-ups in house prices during the housing bubble, with real prices more than tripling from 1996 to 2006. In the downturn, most of these gains were lost, however price levels in 2016 are about 40 percent higher in real terms than in 1996.

Rents fell in real terms in the early 2000s, and started slowly moving up after 2002. The sharpest increase in the fair market rent for a two bedroom apartment took place between 2008 and 2010, when rents went up by 8 percent in real terms. After staying constant in 2011, prices on rents fell by almost 8 percent in real terms in the past three years.

Figure 9 illustrates the increase in the CS index for the bottom tier of the housing market, along with the increase in the FMR for a two bedroom apartment, indexed to their 1996 values. The current increase in house prices is similar in pattern to the housing bubble.

FIGURE 9

Los Angeles, FMR, CSI, Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

Prices at the bottom tier of the housing market are increasing quickly despite the somewhat anemic job growth that trails the national average, with an average annual growth of 1.6 percent in the past three years. However, extremely low vacancy rates indicate a very tight housing market, for both owner- and tenant-occupied properties. Historically, vacancy rates for owner-occupied homes have always been low for Los Angeles, remaining below 2.0 percent even in the immediate aftermath of the housing bubble burst. This vacancy rate had been decreasing since 2010 but has remained constant at 0.8 percent for 2014 and 2015. While other factors might contribute to the desirability for Los Angeles property, a continuing increase in house prices accompanied by falling rent prices and weak job growth is a worrisome sign.

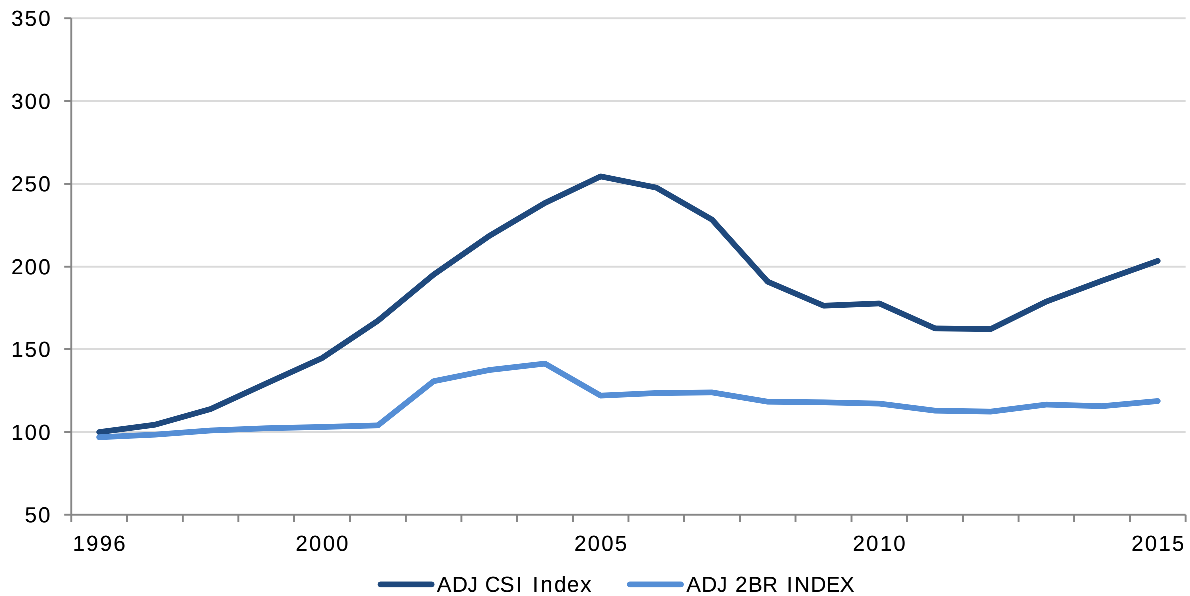
Boston

In Boston, the value of houses at the bottom tier of the market appreciated by 154 percent during the housing bubble. However, unlike in most other cities, after the bubble burst a large share of those gains remained. In real terms, in 2012 prices were more than 60 percent above their 1996 levels. Since 2012 prices have been growing at fast rates, appreciating by more than 25 percent in real terms. Currently, prices are more than double their 1996 values.

The FMR for two bedroom apartments increased rapidly between 2001 and 2004, rising by almost 36 percent. After 2004 however, the prices of rents mostly decreased until 2012. In the past three years there has been some appreciation in prices, growing by almost 6.0 percent in real terms. **Figure 10** shows the CS index for the bottom tier of the housing market, along with the FMR for a two bedroom apartment, indexed to their 1996 values.

FIGURE 10

Boston FMR, CSI Index 1996=100



Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

House prices in Boston have remained significantly higher than their 1996 levels even after the collapse of the bubble. Rent prices increased in the early 2000s more sharply but have fallen since. Currently they are about 22 percent higher in real terms than in 1996.

In Boston, the vacancy rate on owner-occupied homes peaked at 2 percent in 2006. This number has decreased to a low of 0.80 in 2014. However, in 2015 the vacancy rate edged back up. It is now above its late 1990s levels, although low in comparison to other markets. The rental vacancy rate has fallen sharply the last two years and is now comparable to its late 1990s level. The recent rise in house prices is not explained by strong job growth. At 1.8 percent annually over the last three years, Boston's job growth has been just even with the national average.

Conclusion

A close look at the housing markets in metropolitan areas reveals that in some cities the increase in prices in the bottom tier of the housing market is outpacing national averages. Meanwhile, rental prices in those areas have seen modest increases. These trends are somewhat reminiscent of the housing bubble that peaked in 2006. Prior to 2006, home values appreciated rapidly, while rental prices remained constant, or even decreased in real terms. However, even in these markets where prices are quickly rising, their levels are still significantly below their 2006 peaks.

For some of the cities presented, other factors, such as very strong job growth, could justify the increase in property values. From the metropolitan areas presented in this brief, six out of 10 have added jobs at rates close to twice the national average. From this group of cities, only Washington D.C., Los Angeles, Minneapolis, and Boston are not outpacing the national job growth rate. Still, the values of homes in the bottom tier of the market in these cities are appreciating faster than the national average. Nationally, the CS index has appreciated in real terms at an average of 18 percent since 2012. In the bottom tier, Washington grew by 20 percent; Los Angeles by almost 50 percent; Minneapolis by almost 40 percent; and Boston by over 25 percent.

Despite the rapid appreciation of house values in these ten cities, the housing market remains tight. Vacancy rates on both owner- and tenant-occupied properties are either at or below the late 1990s level. For all the metropolitan areas, vacancy rates increased in the aftermath of the housing bubbles but have since fallen and remained low. The low vacancy rates are an important indicator that there is no reason for immediate concern regarding the housing markets in the cities presented.

While stating that the bottom tier of the housing market is in a bubble would be an exaggeration, there are some signs present that it could soon be entering one. Currently other factors, such as historically low interest rates and a growing job market, could explain why homes are appreciating in value. It is important to continue to watch the trends on house values, rental prices and vacancy rates in the coming years. If prices on houses continue to grow much faster than other indicators, these housing markets will be experiencing bubbles.

The collapse of some localized bubbles will not pose the same threat to the economy as the collapse of a nationwide bubble did in the last decade, but it can mean serious hardship for families who had the misfortune to buy in or near the peak. The dream of homeownership ended up being a disaster for millions of moderate income families when the bubble collapsed. This is not a scenario that we should see repeated.

Appendix

TABLE A1

Las Vegas					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	131.00	$933.57	1.7	7.4	9.13
1997	133.44	$930.35	2.5	6.3	6.98
1998	134.51	$990.24	2.3	9.4	5.06
1999	138.18	$985.91	2.7	10.7	7.56
2000	142.13	$966.24	2.4	13.2	5.37
2001	148.09	$1,013.11	2.0	11.9	4.14
2002	155.46	$1,031.60	2.3	10.9	0.55
2003	164.17	$1,065.29	2.2	11.4	3.99
2004	216.85	$1,074.04	3.2	10.4	6.86
2005	265.10	$1,100.74	3.8	9.0	7.24
2006	283.28	$1,012.26	2.8	9.6	5.22
2007	262.19	$1,018.52	4.9	10.9	1.17
2008	176.60	$1,096.45	6.1	14.9	-1.69
2009	101.91	$1,119.15	5.0	14.3	-9.36
2010	93.54	$1,155.43	5.1	13.8	-2.82
2011	81.74	$1,124.29	4.1	12.1	0.57
2012	81.69	$1,057.11	3.4	12.8	2.09
2013	113.51	$1,082.54	3.0	14.1	2.93
2014	130.09	$1,039.23	2.9	10.1	4.06
2015	141.83	$969.00	2.3	7.3	3.74
Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.					

TABLE A2

San Francisco					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	104.54	$1,435.09	0.5	3.1	2.83
1997	100.39	$1,425.06	0.5	1.7	3.57
1998	103.10	$1,435.19	0.4	2.5	3.11
1999	112.23	$1,660.26	0.1	3.3	2.86
2000	125.26	$1,833.37	0.0	3.1	3.50
2001	152.34	$1,952.61	0.2	3.4	-0.85
2002	182.77	$2,301.66	1.1	5.2	-3.78
2003	196.08	$2,498.98	1.2	7.8	-2.23
2004	215.11	$2,227.13	1.0	6.9	-0.46
2005	247.05	$1,867.74	1.6	8.0	0.90
2006	300.05	$1,805.84	2.4	6.9	1.73
2007	311.73	$1,772.98	1.3	6.2	1.33
2008	269.52	$1,752.56	2.1	5.4	-0.09
2009	167.57	$1,831.73	1.8	6.7	-5.29
2010	120.87	$1,913.04	1.8	6.0	-1.46
2011	126.27	$1,931.42	1.8	6.8	1.74
2012	115.60	$1,966.59	1.0	3.2	3.74
2013	119.73	$1,826.28	1.1	3.9	3.41
2014	156.80	$1,958.32	0.4	3.2	3.32
2015	191.17	$2,062.00	0.7	3.6	3.79
Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.					

TABLE A3

San Diego					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	107.45	$1,022.69	1.4	6.0	2.72
1997	108.28	$1,007.14	1.4	5.1	4.71
1998	119.62	$1,004.78	2.4	5.1	4.88
1999	133.09	$1,037.13	1.5	4.2	4.02
2000	151.87	$1,108.01	0.7	4.0	3.45
2001	174.65	$1,199.14	0.7	4.5	2.07
2002	206.77	$1,333.30	2.0	7.5	1.05
2003	247.35	$1,410.51	1.3	6.0	0.96
2004	313.23	$1,474.30	1.5	6.5	1.74
2005	348.26	$1,435.69	2.1	6.3	1.82
2006	344.91	$1,252.10	2.8	7.3	1.60
2007	295.72	$1,377.46	3.0	7.1	0.65
2008	197.21	$1,491.66	2.7	7.2	-0.59
2009	163.31	$1,566.58	2.1	8.8	-4.98
2010	177.32	$1,439.13	2.9	7.8	-0.67
2011	165.57	$1,481.49	1.9	6.9	0.81
2012	166.20	$1,422.55	1.4	7.1	2.60
2013	200.20	$1,406.09	1.2	5.5	2.58
2014	224.15	$1,355.61	1.3	4.8	2.19
2015	240.75	$1,390.00	1.0	3.4	2.96

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A4

Portland					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	120.79	$886.74	0.7	5.2	4.60
1997	130.95	$891.95	1.9	5.2	4.26
1998	136.49	$902.99	1.9	7.7	1.77
1999	140.72	$917.62	2.5	7.4	1.26
2000	142.25	$966.24	3.1	6.4	2.25
2001	143.93	$976.98	3.6	7.1	-0.75
2002	150.22	$984.17	2.0	9.6	-2.32
2003	157.02	$993.15	2.2	10.8	-1.03
2004	167.26	$997.50	1.9	12.8	2.08
2005	187.50	$870.15	1.6	9.7	3.11
2006	216.62	$850.02	1.7	7.1	3.25
2007	224.54	$842.48	2.3	4.8	1.97
2008	205.73	$833.35	1.9	5.5	-0.02
2009	180.52	$893.77	4.8	4.3	-5.75
2010	167.77	$911.96	3.2	4.2	-0.43
2011	142.72	$953.59	2.0	3.4	1.97
2012	143.20	$919.81	1.9	5.0	2.16
2013	165.74	$927.89	1.2	3.1	2.39
2014	180.99	$923.09	1.3	3.6	3.02
2015	202.25	$944.00	1.0	3.4	3.29

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A5

Tampa					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	125.57	$823.29	2.6	7.4	2.55
1997	125.23	$822.54	2.1	6.2	4.67
1998	131.03	$827.38	2.6	7.1	4.03
1999	138.40	$830.84	2.5	9.2	3.06
2000	144.08	$867.14	1.6	9.5	4.07
2001	149.10	$923.44	2.0	12.0	-0.98
2002	163.90	$939.37	1.9	11.4	-0.67
2003	189.61	$959.66	1.8	9.9	0.03
2004	217.95	$979.94	1.7	10.3	3.52
2005	274.28	$976.95	1.8	9.4	3.30
2006	321.02	$922.91	3.5	7.8	2.04
2007	295.59	$933.93	5.1	12.8	-0.13
2008	218.26	$972.05	3.0	15.4	-3.44
2009	154.78	$1,045.13	4.1	12.4	-5.95
2010	139.00	$1,042.39	4.0	12.6	-1.05
2011	114.60	$1,009.44	3.8	11.7	1.57
2012	112.88	$955.94	2.0	13.0	2.27
2013	132.36	$930.95	2.1	9.2	2.41
2014	150.72	$952.13	2.4	8.4	2.71
2015	174.43	$959.00	2.4	6.6	3.40

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A6

Miami					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	128.55	$1,084.63	2.3	8.3	3.03
1997	129.18	$1,088.36	2.3	10.0	4.11
1998	133.01	$1,000.42	2.3	9.8	2.70
1999	136.06	$998.72	2.3	8.5	2.43
2000	142.31	$980.00	2.3	8.8	3.38
2001	156.90	$1,027.83	2.3	8.3	1.80
2002	182.76	$1,028.96	1.6	7.9	0.01
2003	211.96	$1,047.25	1.9	8.8	0.19
2004	251.19	$1,134.27	1.1	12.9	2.51
2005	324.64	$1,127.44	2.3	7.3	3.72
2006	384.62	$1,071.04	3.4	7.3	2.44
2007	372.07	$1,163.70	4.4	10.4	0.95
2008	248.16	$1,139.38	3.8	12.1	-2.61
2009	156.45	$1,277.13	3.2	13.2	-6.20
2010	142.94	$1,310.87	3.5	10.1	-0.81
2011	123.96	$1,247.57	1.8	11.8	1.77
2012	126.94	$1,161.37	0.9	8.2	2.36
2013	156.08	$1,141.55	1.7	6.7	2.73
2014	184.90	$1,167.38	1.8	7.0	3.35
2015	207.64	$1,162.00	1.4	6.4	3.24

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A7

Washington, D.C.					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	141.64	$1,176.78	2.5	8.8	1.95
1997	139.68	$1,172.53	2.0	8.1	2.65
1998	136.45	$1,180.72	2.1	8.3	3.09
1999	139.18	$1,166.59	2.2	6.6	3.76
2000	143.83	$1,156.18	1.5	7.0	4.56
2001	158.02	$1,213.86	1.4	6.9	1.51
2002	180.21	$1,242.40	1.5	8.4	0.33
2003	207.59	$1,486.51	2.5	9.6	2.04
2004	251.62	$1,528.25	1.7	10.2	2.55
2005	315.59	$1,440.55	1.3	7.1	2.21
2006	342.68	$1,440.21	2.1	8.4	1.71
2007	321.69	$1,470.05	2.4	10.4	0.79
2008	235.45	$1,457.53	2.7	10.0	0.43
2009	183.40	$1,422.96	2.3	10.0	-1.67
2010	191.81	$1,482.61	2.1	8.8	0.37
2011	176.33	$1,539.45	1.8	7.9	1.44
2012	183.60	$1,561.92	1.3	6.4	1.31
2013	202.44	$1,436.61	1.3	7.2	0.92
2014	213.52	$1,470.74	1.4	6.7	0.60
2015	220.28	$1,458.00	0.9	5.7	1.91

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A8

Minneapolis					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	106.58	$913.93	1.8	3.9	2.37
1997	110.82	$917.06	0.6	3.9	2.24
1998	117.70	$936.44	0.3	3.9	2.68
1999	131.31	$947.50	0.6	4.2	2.57
2000	148.37	$941.46	0.2	3.9	2.70
2001	168.66	$993.04	0.5	5.1	0.07
2002	185.91	$1,135.68	0.7	6.2	-1.61
2003	199.91	$1,174.78	1.3	8.1	0.10
2004	212.72	$1,193.24	1.1	9.3	0.86
2005	219.71	$1,126.23	1.7	10.6	1.62
2006	218.81	$1,005.21	2.6	8.4	1.28
2007	202.38	$980.80	3.2	6.9	0.43
2008	156.35	$933.52	2.8	7.2	-0.40
2009	116.43	$964.48	2.2	8.5	-4.43
2010	124.26	$977.17	1.4	7.4	-0.47
2011	96.22	$973.61	1.8	6.7	2.38
2012	110.30	$933.23	1.2	5.3	1.75
2013	134.19	$936.03	0.9	5.4	2.03
2014	145.50	$947.12	1.4	4.4	1.78
2015	153.23	$996.00	0.8	4.9	1.92

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A9

Los Angeles					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	117.67	$1,291.58	2.5	8.7	1.57
1997	112.67	$1,261.14	2.0	8.0	2.57
1998	122.68	$1,071.67	1.9	6.9	2.98
1999	135.45	$1,065.58	1.8	5.1	1.82
2000	145.09	$1,054.33	1.6	4.7	2.04
2001	159.23	$1,046.57	1.2	3.4	0.63
2002	182.72	$1,084.30	0.8	3.8	-0.86
2003	217.77	$1,245.63	0.8	3.2	-0.05
2004	281.76	$1,281.07	0.9	3.8	1.00
2005	345.98	$1,364.09	0.9	4.4	1.42
2006	392.02	$1,397.88	1.2	4.0	1.89
2007	365.03	$1,450.62	1.6	4.7	0.61
2008	232.31	$1,431.11	1.5	5.3	-1.24
2009	171.85	$1,503.61	1.3	6.4	-5.91
2010	180.22	$1,543.48	1.8	6.7	-1.40
2011	170.00	$1,543.66	1.8	5.3	0.73
2012	168.97	$1,493.78	1.3	4.9	2.37
2013	208.08	$1,445.77	1.2	4.2	2.11
2014	233.06	$1,399.66	0.8	4.6	1.99
2015	252.44	$1,424.00	0.8	3.3	0.02

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.

TABLE A10

Boston					
Year	CSI Low Tier (2015 prices)	FMR 2BR (2015 dollars)	Homeowner Vacancy Rate	Rental Vacancy Rate	Annual Job Growth
1996	102.14	$1,220.58	0.8	5.9	2.08
1997	106.67	$1,238.99	0.6	4.0	2.40
1998	116.39	$1,270.88	0.3	4.1	2.26
1999	132.18	$1,288.94	1.0	3.1	1.66
2000	147.81	$1,296.57	0.6	2.7	2.56
2001	170.82	$1,310.22	0.7	2.9	0.11
2002	199.20	$1,646.87	0.3	4.3	-2.68
2003	223.27	$1,729.97	0.6	5.9	-2.16
2004	243.52	$1,780.45	0.5	6.0	-0.13
2005	259.89	$1,536.42	1.2	5.1	0.82
2006	252.97	$1,556.60	2.0	5.3	1.21
2007	233.36	$1,561.50	1.9	5.0	1.48
2008	195.03	$1,489.45	1.5	5.9	0.57
2009	180.09	$1,485.93	1.5	6.0	-3.15
2010	181.56	$1,475.00	1.2	6.2	0.49
2011	166.18	$1,421.43	1.4	5.5	1.26
2012	165.79	$1,413.26	1.3	5.9	1.75
2013	182.79	$1,469.17	1.1	6.8	1.78
2014	195.58	$1,455.73	0.8	4.9	1.85
2015	207.85	$1,494.00	1.1	3.3	1.87

Source and notes: CPS/HVS, CPI, Case-Schiller National Price Index, HUD.