[For Online Publication]

Online Appendix for
"Housing Booms and Busts, Labor Market Opportunities, and College Attendance" by Kerwin Kofi Charles, Erik Hurst, and Matthew J. Notowidigdo

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This Online Appendix contains two sections. Section 1 is a Data Appendix that describes each of the data sources for the paper. Section 2 summarizes and describes the Online Appendix tables and figures, which follow the description.

The replication archive is available at the following URL:
  http://faculty.wcas.northwestern.edu/noto/research/housing_booms_and_busts.html

Section 1: Data Appendix

CPI data

We adjust all nominal dollar values to real values using the CPI-U from the BLS:
http://www.bls.gov/cpi/tables.htm

CPS data

We use CPS data to create Figures 1 and 2 and Online Appendix Figure OA.5. In Figure 1, the CPS March data set is extracted from IPUMS-CPS (https://cps.ipums.org/cps/) for the years 1980-2014. The sample is restricted to individuals between ages 18 and 29 in the survey year with non-missing education. Using the CPS individual person weights (WTSUPP), the share of individuals each year

who report have ever attended college is computed separately for men and women. To calculate this "ever attended college" share, the EDUC variable is used for 1992-2014 (EDUC $\geq$ 80) and the HIGRADE variable is used for 1980-1991 (HIGRADE $\geq$ 190). The quadratic trend in Figure 1 is fit to the data using the 1980-1996 data and extrapolated to 2014 using fitted values from regression.

In Figure 2 and Online Appendix Figure OA.5, the CPS March data set is extracted for years 1994-2014 and is restricted to native-born men and women who were ages 25-54 during the survey year and had non-missing education. The sample is further restricted to men and women born between 1960 and 1990. The "Any College Attendance" variable is defined using the HIGRADE variable as in Figure 1, and the cohort effects are estimated using a weighted OLS regression (using individual person weights) of the any college attendance indicator on a quartic in age, birth year fixed effects, and normalized year effects (which set first and last year fixed effect to zero and impose that the remaining year fixed effects sum to zero). The estimated regression is then used to construct fitted values by birth cohort that predict "Any College Attendance" at age 25 by birth cohort. This analysis is run separately by gender (Figure 2) and also run pooling genders (OA.5).

Census/ACS data

The Census/ACS data are extracted from IPUMS, and we combine the 1990 and 2000 Census with the 2005-2007 ACS and the 2011-2013 ACS data sets. The samples are restricted to individuals living in their same state of birth ("same state") and not living in group quarters. For the labor market and education outcomes, we focus primarily on the average outcomes for a given gender-age group in each metropolitan area (using the METAREA code for all samples except the 2012 and 2013 ACS, where we use MET2013 which we match to the METAREA variable by hand to be able to pool the 2011-2013 ACS data sets together).

For education outcomes, "Any College" is defined using the detailed education codes (EDUC variable), and includes individuals who report "some college, but less than 1 year" (EDUC $\geq$ 65). The "At least Bachelor's degree" variable is defined using same variable (EDUC $\geq$ 110).

For labor market outcomes, employment rate is calculated using EMPSTAT variable, and average wages are computed from a subsample of individuals after making following restrictions: (1) the individual must be currently working at least 30 hours during a typical week at the time of the survey, (2) the individual's income in the year prior to the survey must have exceeded $5,000, and (3) the individual must have worked at least 48 weeks in the prior year. Given these restrictions, our measure of average wages is for full-time workers with relatively few non-employment spells. Our measure of wages for location is defined by dividing average annual earnings for the location earned during the last 12 months by annual hours worked in the location during the prior 12 months. To

estimate annual hours worked during the prior 12 months, we multiply usual hours worked per week by the number of weeks worked during the prior 12 months.

FHFA housing price data

There are 283 MSAs with available labor market and college attainment data in both the 2000 Census and the 2005-2007 and 2009-2011 pooled years of the American Community Survey. Of these 283 MSAs, 268 of them could be matched directly to a corresponding MSA within the FHFA house price data. Of these 268, a few of the MSAs in the Census data were mapped to the same broad MSA from the FHFA data. For example, both the "Cincinnati-Hamilton, OH/KY/IN" MSA and the "Hamilton-Middleton, OH" MSA within the Census data were matched to the "Cincinnati-Middleton, OH-KY-IN" MSA within the FHFA data. Likewise, both the "Manchester, NH" and "Nashua, NH" MSAs in the Census data where mapped to the "Manchester-Nashua, NH" MSA in the FHFA data.

There were 15 MSAs within the Census data that did not map directly to any MSA within the FHFA data. For these 15 MSAs, we mapped them to the nearest MSA from the FHFA data. For example, we mapped the "Sarasota, FL" MSA within the Census data to the "Tampa-St. Petersburg-Clearwater, FL" MSA within the FHFA data. Below, we list these 15 Census MSAs and then indicated the corresponding FHFA MSA that we mapped them to:

Census MSA	FHFA MSA
Benton Harbor, MI	Holland-Grand Haven, MI
Brockton, MA	Boston-Quincy, MA
Danbury, CT	New Haven-Milford, CT
Dutchess County, NY	Poughkeepsie-Newburg-Middletown, NY
Fitchburg-Leominster, MA	Manchester-Nashua, NH
Fort Pierce, FL	Port St. Lucie, FL
Galveston-Texas City, TX	Houston-Sugarland-Baytown, TX
Jamestown-Dunkirk, NY	Erie, PA
Monmouth-Ocean, NJ	Newark-Union, NJ-PA
Sarasota, FL	Tampa- St. Petersburg - Clearwater, FL
Sharon, PA	Youngstown-Warren-Boardman, OH-PA
Stanford, CT	New Haven-Milford, CT
Ventura-Oxnard-Simi Valley, CA	Los Angeles-Long Beach-Glendale, CA
Waterbury, CT	New Haven-Milford, CT
Yolo, CA	Sacramento-Arden-Arcade-Roseville, CA

Census Building Permits Survey data

We use annual county level data from the Census Building Permits Survey between the years of 1993 and 2006. For each county, we compute a measure of the total number of new private housing units authorized (via permits) for each year. Using the crosswalk, we match counties to MSAs.[1] When doing this, we then harmonize the resulting MSAs in the crosswalk with the Census/ACS MSAs. For each MSA, we average the total housing permits issued in each year between 2004 and 2006. We also compute the average annual permits issued between 1998 and 2000. To compute permit growth within each MSA, we take the growth rate in between these two annual averages to represent the 2000-2006 change.

IPEDS college enrollment data

We extract annual enrollment IPEDS data from 1990-2012, focusing on first-time, full-year enrollment for men and women. The underlying data are at level of institution, and we match each institution to an MSA by hand, using combination of zip code, county, and address. We then categorize institutions as two-year or four-year colleges and universities based on whether or not the institution offers any four-year degrees. Our categorization means that all institutions that offer four-year degrees are in the four-year category, and some of the institutions in this category may also offer two-year degrees.

The regression analysis of IPEDS data set uses a per capita adjustment, using the annual 18-25 population formed by linearly interpolating the Census/ACS data set described above to get annual population estimates for each year between 1990 and 2012. When analyzing enrollment by gender, we use gender-specific interpolated population estimate.

NLSY97 data

We received access to the restricted-use NLSY97 data through a Letter of Agreement between the Bureau of Labor Statistics and the University of Chicago. All of the restricted-use data were analyzed at the University of Chicago in a secure facility.

We include all individuals with non-missing education data. Individuals are ages 12-16 in 1997. All analysis is carried out using the sampling weights. The "Any College" definition is whether or not individual has completed at least one year of post-secondary education by specified year. The

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[1] We thank Amir Sufi for providing us with the Census Building Permit data at the county level.

"Bachelor's" definition is whether or not individual has completed at least four years of post-secondary education by specified year.

The employment rate variable is based on the share of individuals who report that they are currently employed at the interview date.

The NLSY metropolitan area codes are mapped to the Census/ACS metro codes by hand. This involves combining several of the Census/ACS metro codes, as described below. In these cases, we combine by population-weighting the covariates and housing demand variables across each of the Census/ACS metro areas to be combined.

NLSY Code	Description	Comments	
1123	Boston/Worcester/ Lawrence/Lowell/ Brockton, MA/NH	We have 112 Boston; 924 Worcester; 120 Brockton separately. Lawrence and Lowell are not in IPUMS USA codebook.	
1303	Burlington, VT	Not in our data but is in IPUMS USA data; therefore we recode to "no housing boom".	
1602	Chicago	Grouping of: 1600 Chicago, IL 2960 Gary, IN 3740 Kankakee, IL 3800 Kenosha, WI	Census/ACS codes: 160 Chicago, IL 374 Kankakee, IL 380 Kenosha, WI Gary, IN is not in IPUMS USA code.
1642	Cincinnati, OH/KY/IN	Grouping of: 1640 Cincinnati, OH-KY-IN 3200 Hamilton-Middletown, OH	Census/ACS codes: 164 Cincinnati-Hamilton, OH/KY/IN 320 Hamilton-Middleton, OH
1692	Cleveland/Lorain/Elyria, OH	Grouping of: 0080 Akron, OH 1680 Cleveland-Lorain-Elyria, OH	Census/ACS codes: 8 Akron, OH 168 Cleveland, OH
2082	Denver-Boulder-Greeley, CO	Grouping of: 1125 Boulder-Longmont, CO 2080 Denver, CO 3060 Greeley, CO	Census/ACS codes: 208 Denver-Boulder, CO 306 Greeley, CO
2162	Detroit-Ann Arbor-Flint, MI	Grouping of: 0440 Ann Arbor, MI 2160 Detroit, MI 2640 Flint, MI	Census/ACS codes: 44 Ann Arbor, MI 216 Detroit, MI 264 Flint, MI
2340	Enid, OK	Not in our data but is in IPUMS USA data; therefore can recode to "no housing boom".	
3000	Grand Rapids/ Muskegon/Holland, MI	We have: 300 Grand Rapids, MI In IPUMS USA, Muskegon has its own code: 532 Muskegon-Norton Shores-Muskegon Heights. Not in our data. Holland does not have its own IPUMS code.	
3362	Houston-Galveston-Brazoria, TX	Grouping of: 1145 Brazoria, TX 2920 Galveston-Texas City, TX 3360 Houston, TX	Census/ACS codes: 292 Galveston-Texas City, TX 336 Houston-Brazoria, TX
3720	Kalamazoo/Battle Creek, MI	In our data: 372 Kalamazoo-Portage, MI In IPUMS USA, Battle Creek, MI, has its own code: 78 Battle Creek, MI, which is not in our data.	
4472	Los Angeles-Riverside-Orange County, CA	Grouping of: 4480 Los Angeles-Long Beach, CA 5945 Orange County, CA 6780 Riverside-San Bernardino, CA	Census/ACS codes: 448 Los Angeles-Long Beach, CA 678 Riverside-San

		8735 Ventura, CA	Bernardino,CA 873 Ventura-Oxnard-Simi Valley, CA IPUMS USA does not have a code for Orange County, CA
4992	Miami-Fort Lauderdale, FL	Grouping of: 2680 Fort Lauderdale, FL 5000 Miami, FL	Census/ACS codes: 268 Fort Lauderdale-Hollywood-Pompano Beach, FL 500 Miami-Hialeah, FL
5082	Milwaukee-Racine, WI	Grouping of: 5080 Milwaukee-Waukesha, WI 6600 Racine, WI	Census/ACS codes: 508 Milwaukee, WI 660 Racine, WI
5483	New Haven/Bridgeport/ Stamford/Waterbury/Danbury, CT	Census/ACS codes: 548 New Haven-Meriden, CT 116 Bridgeport, CT 804 Stamford, CT 888 Waterbury, CT 193 Danbury, CT	
5602	New York-Northern New Jersey-Long Island, NY-NJ-PA	Grouping of: 0875 Bergen-Passaic, NJ 2281 Dutchess County, NY 3640 Jersey City, NJ 5015 Middlesex-Somerset-Hunterdon, NJ 5190 Monmouth-Ocean, NJ 5380 Nassau-Suffolk, NY 5600 New York, NY 5640 Newark, NJ 5660 Newburgh, NY-PA 8480 Trenton, NJ	Census/ACS codes: 228 Dutchess Co., NY 519 Monmouth-Ocean, NJ 560 New York-Northeastern NJ 566 Newburgh-Middletown, NY 848 Trenton, NJ
6162	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD	Grouping of: 0560 Atlantic-Cape May, NJ 6160 Philadelphia, PA-NJ 8760 Vineland-Millville-Bridgeton, NJ 9160 Wilmington-Newark, DE-MD	Census/ACS codes: 56 Atlantic City, NJ 616 Philadelphia, PA/NJ 876 Vineland-Milville-Bridgetown, NJ 916 Wilmington, DE/NJ/MD
6240	Pine Bluff, AR	Does not have an IPUMS USA code and is not in our data	
6442	Portland-Salem, OR-WA	Grouping of: 6440 Portland-Vancouver, OR-WA 7080 Salem, OR	Census/ACS codes: 644 Portland, OR-WA 708 Salem, OR
6660	Rapid City, SD	Not in our data but is in IPUMS USA data; therefore can recode to "no housing boom".	
7362	San Francisco-Oakland-San Jose, CA	Grouping of: 5775 Oakland, CA 7360 San Francisco, CA 7400 San Jose, CA 7485 Santa Cruz-Watsonville, CA 7500 Santa Rosa, CA 8720 Vallejo-Fairfield-Napa, CA	Census/ACS codes: 736 San Francisco-Oakland-Vallejo, CA 740 San Jose, CA 748 Santa Cruz, CA 750 Santa Rosa-Petaluma, CA
7602	Seattle-Tacoma-Bremerton, WA	Grouping of: 1150 Bremerton, WA 5910 Olympia, WA 7600 Seattle-Bellevue-Everett, WA 8200 Tacoma, WA	Census/ACS codes: 115 Bremerton, WA 591 Olympia, WA 760 Seattle-Everett, WA 820 Tacoma, WA
8360	Texarkana, TX/Texarkana, AR	Not in our data but is in IPUMS USA data; therefore can recode to "no housing boom".	
8872	Washington-Baltimore, DC-MD-VA-WV	Grouping of: 0720 Baltimore, MD 3180 Hagerstown, MD 8840 Washington, DC-MD-VA-WV	Census/ACS codes: 72 Baltimore, MD 318 Hagerstown, MD 884 Washington, DC/MD/VA

Section 2: Discussion of Online Appendix Tables and Figures

Online Appendix Tables OA.1 through OA.31

Online Appendix Table OA.1 provides summary statistics for the main sample of 275 MSAs used in the long difference analysis which uses both Census/ACS and IPEDS data.

Online Appendix Table OA.2 repots the list of the top 25 metropolitan areas by structural break instrument. Alongside magnitude of structural break, the table also reports housing demand change over 2000-2006 as well as the year-quarter of estimated structural break.

Online Appendix Table OA.3 reports the distribution of year-quarter of estimated structural breaks.

Online Appendix Table OA.4 reports the aggregate trends in tuition at two-year and four-year colleges and universities.

Online Appendix Table OA.5 reports robustness analysis of main results in Table 3 by adding polynomials of main control variables and two-way interactions of main control variables.

Online Appendix Table OA.6 reports robustness analysis of main results in Table 3 by considering alternative structural break instrumental variables. The first two columns report baseline results for comparison. In columns (3) and (4), the baseline instrument is set to 0 if the break is not statistically significant at the 10% level using the test statistic in Bai and Perron (1998). This statistical inference needs to be interpreted cautiously since the same data is used to estimate timing of break and conduct inference on existing of break (relative to null hypothesis of no structural break).

Columns (5) and (6) allow for additional structural breaks between 1995 and 2005, searching sequentially for up to 3 structural breaks in total (again following the test statistics and algorithm in Bai and Perron 1998). If there is no break that is statistically significant at the 10% level between 2000 and 2005, then the instrument is set to 0.

Lastly, in columns (7) and (8) we use the estimated structural breaks from Ferreira and Gyourko (2015), which estimates structural breaks on a subset of cities in our sample using detailed microdata on housing transactions. The inference on their structural breaks is arguably more reliable in this case because they use a "split sample" procedure which uses separate (random) sub-sample for estimation of break and testing significance of break.

Online Appendix Tables OA.7 through OA.9 assess role of migration in accounting for results in Table 3. Table OA.7 reports robustness analysis of main results in Table 3 based off of a restricted sub-sample limited to people who have lived in same residence for 10 or more years (and therefore

have not moved between 2000 and 2006). Online Appendix Table OA.8 reports robustness analysis of Table 3 that accounts for changes in composition following Lafortune, Rothstein, and Schanzenbach (2016). Online Appendix Table OA.9 looks directly at effect of boom on demographic characteristics (race, ethnicity, number of children, etc.).

Online Appendix Table OA.10 reports analysis of IPEDS data matched to Barron's rankings of colleges and universities.

Online Appendix Table OA.11 reports robustness analysis which includes both interaction of timing and magnitude of structural break (as in Table 5) along with "post-break" indicator.

Online Appendix Table OA.12 reports robustness analysis of Table 4 using alternative sample restrictions based on Barron's selectivity rankings.

Online Appendix Table OA.13 reports analysis of role of measurement error in accounting for OLS/2SLS differences based on an alternative instrumental variable (that is different ways of measuring local housing prices and local housing supply).

Online Appendix Table OA.14 reports estimates of the first stage equation relating the housing demand change proxy to the structural break instrument. The table also reports separate estimates relating the instrument to change in house prices and housing permits.

Online Appendix Table OA.15 reports alternative measures of change in average local wages. One alternative is a measure of change in real wages which adjusts for changes in rental prices. Another alternative is to residualize log average wage measure by age, race, gender, and marital status.

Online Appendix Table OA.16 reports robustness analysis of main NLSY97 results, focusing on continuous measure (rather than "housing boom MSA" indicator).

Online Appendix Table OA.17 reports analysis of the effect of housing booms on vacancy rate using data from Census/ACS.

Online Appendix Table OA.18 measures the supply-side response to housing boom by calculate average change in "net costs" as measured in IPEDS. These results show no evidence of a meaningful effect of housing booms on local cost of colleges and universities.

Online Appendix Table OA.19 reports estimates of 2000-2006 housing demand change on 2006-2012 and 2000-2012 changes in local labor market outcomes.

Online Appendix Table OA.20 extends Table 1 by interacting the housing demand proxy with the Saiz housing supply elasticity. This interaction term estimates whether the effect of housing boom varies with the local housing supply elasticity. The sample size is reduced because the Saiz housing supply elasticity is only available for 237 out of the 275 MSAs in the Census/ACS data.

Online Appendix Table OA.21 reports OLS estimates of equation (5) but instead of housing demand proxy on RHS, *dP* and *dQ* are included separately.

Online Appendix Table OA.22 and OA.23 report OLS estimates analogous to Table 1 and Table 3 but replacing preferred hosing demand proxy with the "housing boom MSA" indicator used in the NLSY97 analysis in Tables 6 and 9.

Online Appendix Tables OA.24 and OA.25 report results which assess robustness by considering alternative controls, specifications, and definitions of key housing demand proxy and associated instrumental variable.

Online Appendix Tables OA.26, OA.27, and OA.28 are OLS results that are analogous to Table 2, 3, and 4.

Online Appendix Table OA.29 and OA.30 report additional long-run (2000-2012 results) from Census/ACS. Table OA.29 reports OLS results analogous to Online Appendix Table OA.5, while Table OA.29 reports 2SLS results analogous to Online Appendix Table OA.30 but for alternative dependent variables (construction employment and FIRE employment, specifically).

Online Appendix Figures OA.1 through OA.8

See figure notes for details on each of the Online Appendix figures.

Descriptive Statistics of 2000-2006 Changes by Metropolitan Area

	N	Mean	Std. Dev.	Percentiles				
				10th	25th	50th	75th	90th
Change in House Prices, dP	275	0.396	0.359	0.041	0.108	0.294	0.680	0.937
Change in Housing Permits, dQ	275	0.118	0.222	-0.162	-0.048	0.108	0.267	0.342
Change in Housing Demand, $\widehat{\Delta H_k^D}$	275	0.546	0.549	-0.126	0.108	0.510	0.875	1.213
Structural Break Instrument, λ_k	275	0.036	0.062	-0.033	-0.018	0.031	0.072	0.118
Change in Non-College Employment Rate (18-25)	275	-0.031	0.041	-0.076	-0.053	-0.030	-0.004	0.019
Change in Non-College Average Wages (18-25)	275	-0.047	0.079	-0.121	-0.094	-0.054	-0.004	0.051
Change in Enrollment Per Capita (Two-Year Colleges)	210	-0.001	0.012	-0.015	-0.007	0.000	0.004	0.011
Change in Enrollment Per Capita (Four-Year Colleges and Universities)	210	0.005	0.007	-0.001	0.001	0.003	0.006	0.009
Mean Per Capita Enrollment, 2000 (Two-Year Colleges)	210	0.043	0.027	0.017	0.025	0.042	0.051	0.070
Mean Per Capita Enrollment, 2000 (Four-Year Colleges and Universities)	210	0.028	0.024	0.010	0.014	0.020	0.030	0.049

Notes: This table reports the summary statistics for the baseline sample of metropolitan areas (MSAs) across the time periods studied in the regressions that use the Census/ACS and IPEDS for 2000-2006 long differences analysis. The Housing Demand Change is constructed by multiplying the change in housing prices (from FHFA house price index) by the change in housing permits. This procedure creates a proxy for the change in housing demand in an MSA. All of the reported sample statistics are computed using the 2000 population of young adults age 18-33 in the MSA (from Census/ACS) as weights, since these weights are used in all of the regressions.

Online Appendix Table OA.2
List of Metropolitan Areas with Largest Structural Breaks

Rank	Metropolitan Area	Housing Demand Change, 2000-2006	[Housing Demand Instrument] Magnitude of Structural Break	Timing of Structural Break
1	Yuma, AZ	1.396	0.271	2004Q2
2	Phoenix, AZ	1.009	0.270	2004Q2
3	Boise City, ID	0.868	0.238	2005Q1
4	Fort Walton Beach, FL	1.193	0.229	2003Q3
5	Visalia - Tulare - Porterville, CA	1.681	0.214	2003Q3
6	Lakeland - Winterhaven, FL	1.743	0.212	2004Q3
7	Naples, FL	1.055	0.212	2004Q2
8	Las Vegas, NV	1.154	0.194	2003Q2
9	Fort Myers - Cape Coral, FL	2.128	0.190	2004Q2
10	Bakersfield, CA	2.075	0.189	2003Q2
11	Orlando, FL	1.103	0.188	2004Q2
12	Pensacola, FL	0.821	0.187	2004Q1
13	Reno, NV	0.930	0.183	2003Q2
14	Ocala, FL	1.748	0.177	2004Q2
15	Tucson, AZ	0.909	0.176	2004Q2
16	Flagstaff, AZ - UT	1.131	0.173	2004Q1
17	Melbourne - Titusville - Cocoa - Palm Bay,	1.644	0.171	2003Q3
18	Odessa, TX	0.887	0.166	2005Q1
19	Daytona Beach, FL	1.670	0.157	2004Q1
20	Jacksonville, NC	0.954	0.154	2005Q1
21	Salt Lake City - Ogden, UT	0.456	0.152	2005Q1
22	Biloxi - Gulfport, MS	0.461	0.152	2005Q1
23	Honolulu, HI	1.515	0.143	2003Q3
24	Norfolk - VA Beach - - Newport News, VA	0.915	0.140	2003Q3
25	San Jose, CA	0.220	0.137	2004Q1

Notes: This table reports the top 25 MSAs in the main sample by the magnitude of structural break instrumental variable. See main text or more details on construction of the structural break variable. The units of the structural break variable represent the discontinuous change in (annualized) house price growth rates at the location of the break. The average estimated magnitude of structural break is 0.036 and the average estimated housing demand change is 0.546.

Online Appendix Table OA.3
Distribution of Estimated Structural Breaks

Timing of Structural Break	Number of Metropolitan Areas	Percent
2001 Q1	13	4.6%
2001 Q2	6	2.1%
2001 Q3	14	4.9%
2001 Q4	16	5.7%
2002 Q1	1	0.4%
2002 Q2	5	1.8%
2002 Q3	25	8.8%
2002 Q4	7	2.5%
2003 Q1	9	3.2%
2003 Q2	29	10.2%
2003 Q3	21	7.4%
2003 Q4	5	1.8%
2004 Q1	47	16.6%
2004 Q2	14	4.9%
2004 Q3	5	1.8%
2004 Q4	3	1.1%
2005 Q1	55	19.4%

Notes: This table reports the distribution of quarter of estimated structural break for the 275 cities in main sample. See notes to Appendix Table 1 for more details on construction of the structural break variable. The units of the structural break variable represent the discontinuous change in (annualized) house price growth rates at the location of the break. The housing price data covers 2000 Q1 through 2005 Q4, but structural breaks are limited to 2001 Q1 through 2005 Q1, excluding fraction of start and end of time series following Andrews (1993).

Online Appendix Table OA.4
Tuition, Fees, Room and Board over Time

Year	All instutitions Average tuition, fees, and room and board (1)	Percent increase (2)	Four-year colleges Average tuition, fees, and room and board (3)	Percent increase (4)	Two-year colleges Average tuition, fees, and room and board (5)	Percent increase (6)
All Public, Private, and Nonprofit institutions						
1993	$12,745		$14,939		$7,149	
2000	$14,520	13.9%	$17,341	16.1%	$7,335	2.6%
2007	$18,014	24.1%	$21,490	23.9%	$8,447	15.2%
Public institutions only						
1993	$9,151		$10,229		$6,421	
2000	$10,180	11.2%	$11,613	13.5%	$6,494	1.1%
2007	$12,845	26.2%	$14,904	28.3%	$7,742	19.2%
Private and Nonprofit institutions only						
1993	$24,901		$25,557		$16,723	
2000	$28,682	15.2%	$29,330	14.8%	$20,005	19.6%
2007	$33,038	15.2%	$33,548	14.4%	$24,068	20.3%

Notes: This table reports estimates of average annual tuition and fees and and room and board for four-year and two-year colleges and universities. All dollar values are 2013-2014, adjusted using CPI-U. The source is the National Center for Education Statistics, URL: http://nces.ed.gov/fastfacts/display.asp?id=76.

Housing Booms and Educational Attainment: 2SLS Estimates, Census/ACS Data
[Table 3 Robustness to Polynomials/Interactions of Baseline Controls]

Dependent Variable is 2000-2006 Change in Share With College Education

College Education Definition:	Any College			Bachelors Degree or Higher		
	(1)	(2)	(3)	(4)	(5)	(6)
2SLS Estimates for All Adults Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.020	-0.017	-0.017	0.003	0.002	0.002
	(0.006)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)
2SLS Estimates for Men Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.017	-0.016	-0.015	-0.002	-0.003	-0.003
	(0.007)	(0.007)	(0.008)	(0.003)	(0.003)	(0.003)
2SLS Estimates for Women Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.022	-0.019	-0.020	0.008	0.006	0.006
	(0.008)	(0.008)	(0.007)	(0.006)	(0.005)	(0.004)
Control variables included in regression model:						
Baseline controls (see Table 1 notes)	y	y	y	y	y	y
Quadratic polynomial in each baseline control		y	y		y	y
Two-way interactions between each control variable			y			y
First stage F-statistic	35.16	35.16	35.16	35.16	35.16	35.16
N	275	275	275	275	275	275
Include baseline controls	y	y	y	y	y	y

Notes: This table reports 2SLS estimates for alternative demographic groups. All samples are restricted to ages listed in panel heading, have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Housing Booms and Educational Attainment: 2SLS Estimates, Census/ACS Data
[Table 3 Robustness to Alternative Structural Break Variables]

Dependent Variable is 2000-2006 Change in Share With College Education

Structural break instrumental variable:	Baseline structural break instrument		Set structural break in columns (1) and (2) to 0 if not statistically significant at 10% level		Allow for multiple structural breaks between 1995 and 2005		Ferreira-Gyourko (FG) sample and FG structural break instrument	
College Education Definition:	Any College	Bachelors Degree or Higher	Any College	Bachelors Degree or Higher	Any College	Bachelors Degree or Higher	Any College	Bachelors Degree or Higher
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2SLS Estimates for All Adults Age 18-25								
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.020	0.003	-0.020	0.003	-0.021	0.002	-0.022	0.006
	(0.006)	(0.003)	(0.006)	(0.003)	(0.007)	(0.004)	(0.016)	(0.007)
2SLS Estimates for Men Age 18-25								
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.017	-0.002	-0.018	-0.002	-0.019	0.001	-0.015	0.004
	(0.007)	(0.003)	(0.007)	(0.003)	(0.009)	(0.004)	(0.016)	(0.006)
2SLS Estimates for Women Age 18-25								
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.022	0.008	-0.022	0.007	-0.024	0.002	-0.029	0.008
	(0.008)	(0.006)	(0.008)	(0.005)	(0.010)	(0.005)	(0.022)	(0.011)
First stage F-statistic	35.16	35.16	36.13	36.13	17.93	17.93	23.32	23.32
N	275	275	275	275	275	275	71	71
Include baseline controls	y	y	y	y	y	y	y	y

Notes: This table reports 2SLS estimates for alternative gender and age groups. All samples are restricted to ages listed in panel heading have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state. In columns (3) and (4), structural breaks are set to 0 for 26 out of the 275 MSAs if the estimated structural break is not significant at the 10% level. In columns (5) and (6), 79 of the 275 MSAs have structural break of 0, either because there is no estimated breka between 2000 and 2005 or because the estimated brea is not statistically significant. In columns (7) and (8), 23 of the 71 MSAs have structural break of 0 because there is no estimated break between 2000 and 2005. See Online Appendix for more details on alterantive structural break estimation.

Housing Booms and Educational Attainment: 2SLS Estimates, Census/ACS Data
[Table 3 Robustness to Same Residence for 10 or More Years]

Dependent Variable is 2000-2006 Change in Share With College Education

Sample Restrictions:	State of residence is same as state of birth [Baseline sample]		Same residence for 10 or more years	
College Education Definition:	Any College	Bachelors Degree or Higher	Any College	Bachelors Degree or Higher
	(1)	(2)	(3)	(4)
2SLS Estimates for All Adults Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.020	0.003	-0.020	0.004
	(0.006)	(0.003)	(0.010)	(0.007)
2SLS Estimates for Men Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.017	-0.002	-0.024	0.000
	(0.007)	(0.003)	(0.014)	(0.008)
2SLS Estimates for Women Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.022	0.008	-0.020	0.008
	(0.008)	(0.006)	(0.012)	(0.009)
First stage F-statistic	35.16	35.16	35.16	35.16
N	275	275	275	275
Include baseline controls	y	y	y	y

Notes: This table reports 2SLS estimates for alternative demographic groups. All samples are restricted to ages listed in panel heading have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Housing Booms and Educational Attainment: 2SLS Estimates, Census/ACS Data
[Table 3 Robustness to Accounting for Compositional Changes]

Dependent Variable is 2000-2006 Change in Share With College Education

College Education Definition:	Any College	Bachelors Degree or Higher
	(1)	(2)
2SLS Estimates for All Adults Age 18-25		
Baseline results	-0.020	0.003
	(0.006)	(0.003)
Accounting for composition effects		
Predicted change in educational attainment	0.010	0.007
	(0.005)	(0.004)
Residual change in educational attainment	-0.030	-0.004
(net of composition effects)	(0.008)	(0.003)
2SLS Estimates for Men Age 18-25		
Baseline results	-0.017	-0.002
	(0.007)	(0.003)
Accounting for composition effects		
Predicted change in educational attainment	0.009	0.006
	(0.006)	(0.004)
Residual change in educational attainment	-0.026	-0.008
(net of composition effects)	(0.009)	(0.005)
2SLS Estimates for Women Age 18-25		
Baseline results	-0.022	0.008
	(0.008)	(0.006)
Accounting for composition effects		
Predicted change in educational attainment	0.011	0.007
	(0.006)	(0.004)
Residual change in educational attainment	-0.033	0.000
(net of composition effects)	(0.010)	(0.004)
First stage F-statistic	35.16	35.16
N	275	275
Include baseline controls	y	y

Notes: This table reports 2SLS estimates for alternative demographic groups. All samples are restricted to ages listed in panel heading, have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. The "accounting for composition effects" results are based on decomposing the main results into composition effects and "residual" effects net of composition effects. The demographic characteristics used in this exercise are Hispanic status, race, marital status, age, and number of children. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.9

Housing Booms, Migration, and Demographics: 2SLS Estimates, Census/ACS Data

	Share Migrant from Different MSA	Share Hispanic	Share White	Share Black	Share Ever Married	Mean Number of Children	Mean Age
Dependent Variable is 2000-2006 Change in Demographic Characteristic							
Demographic Characteristic:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2SLS Estimates for All Adults Age 18-25							
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.070	-0.005	0.010	-0.005	-0.001	-0.007	0.089
	(0.016)	(0.007)	(0.010)	(0.005)	(0.011)	(0.012)	(0.065)
2SLS Estimates for Men Age 18-25							
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.067	-0.007	0.006	-0.005	0.001	-0.006	0.086
	(0.017)	(0.008)	(0.011)	(0.006)	(0.013)	(0.013)	(0.073)
2SLS Estimates for Women Age 18-25							
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.071	-0.003	0.014	-0.005	-0.001	-0.009	0.089
	(0.016)	(0.006)	(0.011)	(0.006)	(0.010)	(0.019)	(0.063)
First stage F-statistic	35.16	35.16	35.16	35.16	35.16	35.16	35.16
N	275	275	275	275	275	275	275
Include baseline controls	y	y	y	y	y	y	y

Notes: This table reports 2SLS estimates for sample of 18-25 year old men and women in the main sample of MSAs. All samples are restricted to ages listed in panel heading, have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.10
Share of "in state" students by Barron's selectivity tier

Selectivity tier	Share of students who are "in state" students
Most Competitive	30.8%
Highly Competitive	66.7%
Very Competitive	70.6%
Competitive	78.0%
Less Competitive	82.7%
Other	90.8%

Notes: This table reports average share of students who are "in state" students by averaging across colleges and universities in each "selectivity tier" as defined by Barron's 2009 rankings of colleges and universities. The averages are calculated by weighting by total enrollment to compute weighted averages each year, and then averaged across years (all even years, 1992-2014). To create this table, the IPEDS data set is merged to the Barron's rankings, with all institutions that are not matched to Barron's (or in Barron's "Special" category) placed in the "Other" category. All Barron's institutions appear in the IPEDS data.

Housing Booms and College Enrollment: DD Estimates Exploiting Timing and Magnitude of Housing Boom, IPEDS Data
[Table 5 Robustness Including Post-Boom Indicator]

Dependent Variable is Enrollment Per Capita, Annual Data 1990-2006

Enrollment outcome:	2-year colleges		4-year colleges and universities	
	(1)	(2)	(3)	(4)
Panel A: OLS Estimates for All Adults				
Interaction between magnitude and timing of structural break, $\lambda_k \times (\text{Post } t_k^*)$	-0.040	-0.054	0.023	0.023
	(0.015)	(0.020)	(0.016)	(0.017)
Indicator for post structural break, $(\text{Post } t_k^*)$		0.005		-0.001
		(0.003)		(0.001)
Mean of dependent variable	0.049	0.049	0.069	0.069
Panel B: OLS Estimates for Men Only				
Interaction between magnitude and timing of structural break, $\lambda_k \times (\text{Post } t_k^*)$	-0.034	-0.047	0.014	0.014
	(0.014)	(0.019)	(0.008)	(0.009)
Indicator for post structural break, $(\text{Post } t_k^*)$		0.005		-0.001
		(0.003)		(0.001)
Mean of dependent variable	0.045	0.045	0.061	0.061
Panel C: OLS Estimates for Women Only				
Interaction between magnitude and timing of structural break, $\lambda_k \times (\text{Post } t_k^*)$	-0.046	-0.063	0.029	0.030
	(0.017)	(0.022)	(0.021)	(0.023)
Indicator for post structural break, $(\text{Post } t_k^*)$		0.006		-0.001
		(0.004)		(0.001)
Mean of dependent variable	0.053	0.053	0.076	0.076
N	3670	3670	3153	3153
Number of Metropolitan Areas	210	210	210	210
Metropolitan Area FEs and Year FEs	y	y	y	y

Notes: The unit of observation is the metropolitan area-by-year and come from the IPEDS data set. The enrollment data are matched to metropolitan areas by county, using 2000 metropolitan area definitions. Two-year colleges are defined to be any college that does not offer a four-year degree. Some 4-year colleges may offer two-year degrees but they will be included in columns (2). This table reports OLS estimates for alternative demographic groups. All regressions include MSA and year fixed effects. The baseline controls from previous tables are not included because they are not identified when metropolitan area fixed effects are included. The right-hand side variable is interaction of structural break variable and indicator for whether the year is after the estimated year of structural break. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.12
Housing Booms and College Enrollment: 2SLS Estimates, IPEDS Data
[Table 4 Robustness to Alternative IPEDS Sample Restriction Using Barron's Selectivity Tiers]

	Dependent Variable is the Change in Average Annual Enrollment Per Capita Between 2000 and 2006					
IPEDS Sample Restriction:	Drop Top Three Selectivity Tiers [Baseline Sample]		Drop Top Selectivity Tier ("Most Competitive")		No Restrictions	
Enrollment outcome:	2-year colleges	4-year colleges and universities	2-year colleges	4-year colleges and universities	2-year colleges	4-year colleges and universities
	(1)	(2)	3	(4)	(5)	(6)
2SLS Estimates for Men and Women						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.010	0.000	-0.011	0.001	-0.011	0.001
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)
Average level at start of period	0.050	0.064	0.050	0.064	0.050	0.064
2SLS Estimates for Men Only						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.010	-0.002	-0.011	-0.001	-0.011	-0.002
	(0.004)	(0.002)	(0.005)	(0.002)	(0.005)	(0.003)
Average level at start of period	0.047	0.058	0.047	0.058	0.047	0.058
2SLS Estimates for Women Only						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.011	0.003	-0.011	0.004	-0.011	0.004
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.007)
Average level at start of period	0.053	0.071	0.053	0.071	0.053	0.071
First Stage F-statistic	33.80	33.80	34.25	34.25	34.24	34.24
N (Number of Metropolitan Areas)	210	210	223	223	224	224
Include baseline controls	y	y	y	y	y	y

Notes: This table reports robustness analysis of results in Table 4, creating alternative samples of colleges and universities based on Barron's selectivity "tiers". See notes to Table 4 and Online Appendix Table OA.10 for more details.

Housing Booms and Labor Market Opportunities for Adults Without Any College Education
[Assessing Role of Measurement Error in OLS/2SLS Differences]

Dependent Variable is 2000-2006 Change in:	Employment Rate (1)	Average Wages (2)	Emp. Rate * Average Wage (3)	Share Employed in Construction (4)	Share Employed in FIRE (5)
All Adults Age 18-25					
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.029	0.082	0.110	0.016	0.002
	(0.009)	(0.015)	(0.026)	(0.002)	(0.002)
Share of OLS/2SLS Difference Due to Measurement Error	2.1%	34.7%	11.2%	25.1%	10.4%
Men Age 18-25					
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.021	0.084	0.099	0.025	0.001
	(0.009)	(0.017)	(0.028)	(0.004)	(0.002)
Share of OLS/2SLS Difference Due to Measurement Error	-23.4%	43.1%	-7.8%	24.4%	29.4%
Women Age 18-25					
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.039	0.091	0.131	0.005	0.001
	(0.010)	(0.019)	(0.028)	(0.002)	(0.004)
Share of OLS/2SLS Difference Due to Measurement Error	86.1%	45.6%	68.5%	23.6%	1.8%
First stage F-statistic	146.70	146.70	146.70	146.70	146.70
N	275	275	275	275	275
Include baseline controls	y	y	y	y	y

Notes: This table reports 2SLS estimates using alternative instrumental variable designed to address measurement error. The instrument is formed by using alternative measures of *dP* (from Census hosuing values instead of FHFA house price index) and *dQ* (using Census housing units rather than Building Permits Survey). Under assumption that these alternative measures have orthogonal measurement errors, these 2SLS estimates assess role of measurement error. All samples are from Census/ACS data, have been restricted to ages 18-25, have been restricted to individuals who live in same state where they were born, and excludes individuals in group quarters. Additionally, all individuals have no college education, which includes high school dropouts and high school graduates with no reported college attendance. The baseline controls included in all columns are the following: log of MSA population in 2000, share of employed adults with a college degree, the share of adults who are foreign born, and the share of women in the labor force. The average 18-25 employment rate in 2000 is 0.61 for adults, 0.64 for men, and 0.57 for women. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.14

First Stage for Housing Demand Change Using

Magnitude of Structural Break in House Prices as an Instrumental Variable

Dependent Variable is 2000-2006 Change in:	Housing Demand, $\widehat{\Delta H_k^D}$	House Prices, dP	Housing Permits, dQ
	(1)	(2)	(3)
Magnitude of Structural Break in House Prices [Housing Boom Instrument]	3.996	3.292	0.704
	(0.674)	(0.484)	(0.382)
First-stage F-statistic	35.16	35.16	35.16
R^2	0.65	0.72	0.34
N	275	275	275
Include baseline controls	y	y	y

Notes: This table reports OLS estimates of the first stage underlying the 2SLS regressions reported in Tables 1-4, 7, and 8. The baseline control variables are described in Table 1. The Magnitude of Structural Break in House Prices corresponds to the estimated MSA-specific magnitude of structural break in house price as estimated using quarterly house price data (from FHFA) between Q1, 2000 and Q4, 2005, where the structural break is constrained to be between Q1, 2001 and Q1, 2005 (inclusive). The structural break procedure is carried out separately for each MSA by regressing log house prices on a linear time trend and a structural break term, where the timing of the structural break is selected to maximize the R^2 of the time-series regression. Standard errors are shown in parentheses and are clustered by state.

Housing Booms and Average Wages
[Adjusting Average Wages for Change in Rental Prices and/or Composition]

Dependent Variable is 2000-2006 Change in:	Average Wages	Average Rental Prices	Real Wages [Adjusted for Change in Average Rental Prices]	Average Wages Adjusted for Composition
	(1)	(2)	(3)	(4)
	Panel A: OLS Estimates			
All Adults Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.079	0.074	0.050	0.065
	(0.011)	(0.009)	(0.013)	(0.012)
R^2	0.17	0.44	0.07	0.07
Men Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.080	0.074	0.044	0.066
	(0.011)	(0.009)	(0.011)	(0.014)
R^2	0.14	0.44	0.10	0.12
Women Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.085	0.074	0.044	0.064
	(0.014)	(0.009)	(0.011)	(0.009)
R^2	0.09	0.44	0.12	0.14
	Panel B: 2SLS Estimates			
All Adults Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.109	0.056	0.093	0.104
	(0.024)	(0.024)	(0.034)	(0.025)
Men Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.105	0.056	0.091	0.109
	(0.027)	(0.024)	(0.026)	(0.021)
Women Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.111	0.056	0.087	0.113
	(0.030)	(0.024)	(0.029)	(0.026)
First stage F-statistic	35.16	35.16	35.16	35.16
N	275	275	275	275
Include baseline controls	y	y	y	y

Notes: This table reports OLS and 2SLS estimates for alternative demographic groups. All samples are restricted to ages 18-25 and have been restricted to individuals who live in same state where they were born and excludes individuals in group quarters. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Housing Booms, Employment, and Educational Attainment: Additional Evidence from Individual-Level Panel Data
[Alternative Definitions of "Housing Boom MSA"]

Sample	Men and Women		Men Only		Women Only	
	Has Attended Any College, Year 2006	Has Bachelors Degree, Year 2006	Has Attended Any College, Year 2006	Has Bachelors Degree, Year 2006	Has Attended Any College, Year 2006	Has Bachelors Degree, Year 2006
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: OLS Reduced Form Estimates						
Living in Housing Boom MSA in 1997	-0.050	-0.008	-0.051	-0.021	-0.048	0.005
[Housing Boom indicator based on Structural Break Instrument]	(0.022)	(0.023)	(0.026)	(0.035)	(0.030)	(0.021)
Structural break instrument for 1997 MSA of residence	-0.150	-0.049	-0.116	-0.061	-0.196	-0.035
[Continuous instrument rather than indicator]	(0.062)	(0.050)	(0.065)	(0.084)	(0.077)	(0.080)
N	5362	5362	2697	2697	2665	2665
Include Baseline Controls (Metropolitan Area)	y	y	y	y	y	y
Include Additional Individual-Level Controls	y	y	y	y	y	y

Notes: The unit of observation is individual, and the assignment of housing demand change (between 2000 and 2006) is based on where the individual was living in 1997 (at start of the sample). This table reports OLS estimates for alternative demographic groups, and each panel reports results for a different dependent variable. The baseline controls are the same as the controls in Table 1, and the additional individual-level controls are the following: age, demographic indicators for black, hispanic, mixed race, non-black; separate indicators for father's and mother's education (missing, high school dropout, high school graduate, some college, and Bachelors or greater), AFQT score (if available, 0 otherwise), indicator for missing AFQT score, log household income in 1996 (if available, 0 otherwise), indicator for missing household income. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.17
Housing Booms and Vacancies

	Rental Vacancy Rate	Homeowner Vacancy Rate	Housing Vacancy Rate
	(1)	(2)	(3)

Dependent Variable is the Change Between 2000 and 2006

	(1)	(2)	(3)
OLS Estimates			
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.021	-0.006	-0.012
	(0.004)	(0.002)	(0.002)
R^2	0.340	0.190	0.320
2SLS Estimates			
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.039	-0.013	-0.023
	(0.006)	(0.004)	(0.004)
First Stage F-statistic	35.16	35.16	35.16
N (Number of Metropolitan Areas)	275	275	275

Notes: The unit of observation is the metropolitan area, and the data are 2000-2006 long differences. The vacancy rates are measured from household survey data from Census/ACS. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.18
Housing Booms and Supply-Side Responses

Dependent Variable is the Log Difference Between 2000 and 2006		
Dependent variable:	Average Net Cost, Net of Grants	
Sample definition:	2-year colleges	4-year colleges and universities
	(1)	(2)
OLS Estimates		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.041	0.007
	(0.095)	(0.007)
R^2	0.072	0.105
2SLS Estimates		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.055	0.191
	(0.263)	(0.205)
First Stage F-statistic	24.57	24.57
N (Number of Metropolitan Areas)	185	185

Notes: The unit of observation is the metropolitan area, and the data are 2000-2006 long differences using IPEDS data. The measure of average net cost is the average revenue per (full-time equivalent) student. This accounts for changes in tuition as well as changes in federal, state, and local grants. The IPEDS data are matched to metropolitan areas by county, using 2000 metropolitan area definitions. Two-year colleges are defined to be any college that does not offer a four-year degree. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.19
Housing Booms, Housing Busts, and Labor Market Opportunities, Census/ACS Data

Dependent variable:	Employment Rate		Average Wage		Employment Rate * Average Wage	
Change defined between following periods:	2006 and 2012	2000 and 2012	2006 and 2012	2000 and 2012	2006 and 2012	2000 and 2012
	(1)	(2)	(3)	(4)	(5)	(6)
2SLS Estimates for All Adults Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.081	-0.029	-0.046	0.069	-0.203	-0.024
	(0.018)	(0.022)	(0.034)	(0.044)	(0.048)	(0.063)
2SLS Estimates for Men Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.092	-0.033	-0.043	0.068	-0.235	-0.033
	(0.018)	(0.024)	(0.047)	(0.052)	(0.049)	(0.072)
2SLS Estimates for Women Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.066	-0.023	-0.034	0.083	-0.159	-0.007
	(0.026)	(0.025)	(0.048)	(0.041)	(0.068)	(0.063)
First stage F-statistic	35.16	35.16	35.16	35.16	35.16	35.16
N	275	275	275	275	275	275
Include baseline controls	y	y	y	y	y	y

Notes: This table reports 2SLS estimates for alternative demographic groups. All samples are restricted to ages 18-25 and have been restricted to individuals who live in same state where they were born. Additionally, all individuals have no college education, which includes high school dropouts and high school graduate with no reported college attendance. The Census/ACS sample and baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.20

Housing Booms and Labor Market Opportunities for Adults Without Any College Education:

[Table 1 Robustness to Interactions With Local Housing Supply Elasticity]

Dependent Variable is 2000-2006 Change in:	Employment Rate	Average Wages	Employment Rate * Average Wage	Share Employed in Construction	Employed in FIRE
	(1)	(2)	(3)	(4)	(5)
			Panel A: OLS Estimates		
All Adults 18-25, Interaction Term is Continuous Housing Supply Elasticity					
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	0.303	0.051	0.105	0.016	0.001
	(0.009)	(0.014)	(0.023)	(0.004)	(0.003)
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	-0.001	0.006	0.002	-0.001	-0.001
× Local Housing Supply Elasticity	(0.004)	(0.010)	(0.013)	(0.003)	(0.001)
R^2	0.35	0.23	0.37	0.17	0.16
All Adults 18-25, Interaction Term is Indicator for Above-Mean Housing Supply Elasticity					
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	0.030	0.047	0.099	0.015	-0.000
	(0.007)	(0.018)	(0.023)	(0.003)	(0.002)
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	0.003	0.038	0.027	-0.001	-0.001
× Above-Mean Housing Supply Elasticity	(0.009)	(0.015)	(0.025)	(0.004)	(0.002)
R^2	0.35	0.23	0.38	0.17	0.16
			Panel B: 2SLS Estimates		
All Adults 18-25, Interaction Term is Continuous Housing Supply Elasticity					
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	0.096	0.070	0.163	0.017	0.006
	(0.022)	(0.037)	(0.062)	(0.006)	(0.006)
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	-0.021	-0.021	-0.060	0.000	-0.004
× Local Housing Supply Elasticity	(0.014)	(0.022)	(0.029)	(0.006)	(0.003)
First stage F-statistic	5.72	5.72	5.72	5.72	5.72
All Adults 18-25, Interaction Term is Indicator for Above-Mean Housing Supply Elasticity					
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	0.096	0.077	0.198	0.013	0.013
	(0.026)	(0.039)	(0.066)	(0.009)	(0.008)
Housing Demand Change 2000-2006, $\Delta\widehat{H}_k^D$	-0.021	-0.020	-0.066	0.007	-0.011
× Above-Mean Housing Supply Elasticity	(0.022)	(0.021)	(0.058)	(0.010)	(0.006)
First stage F-statistic	6.94	6.94	6.94	6.94	6.94
N	237	237	237	237	237
Include baseline controls	y	y	y	y	y

Notes: This table reports OLS and 2SLS estimates. All samples are from Census/ACS data, have been restricted to ages 18-25, and have been restricted to individuals who live in same state where they were born. Additionally, all individuals have no college education, which includes high school dropouts and high school graduates with no reported college attendance. The Local Housing Supply Elasticity comes from the Saiz (2010), which are only available for 237 out of the 275 MSAs used in the main results. The baseline controls included in all columns are the following: log of MSA population in 2000, share of employed adults with a college degree, the share of adults who are foreign born, and the share of women in labor force. The average 18-25 employment rate in 2000 is 0.61 for adults, 0.64 for men, and 0.57 for women. Standard errors are shown in parentheses and are clustered by state.

Housing Booms and Labor Market Outcomes for Adults
Without Any College Education
[Decomposing OLS Estimates in Table 1 Into Price and Quantity Effects]

Dependent Variable is 2000-2006 Change in:	Employment Rate	Average Wages	Employment Rate * Average Wage	Share Employed in Construction	Share Employed in FIRE
	(1)	(2)	(3)	(4)	(5)
OLS Estimates for All Adults Age 18-25					
Housing Price Change 2000-2006, ΔP_k	0.026	0.065	0.099	0.020	0.006
	(0.011)	(0.024)	(0.017)	(0.004)	(0.002)
Housing Permits Change 2000-2006, ΔQ_k	0.014	0.016	-0.004	0.010	-0.003
	(0.011)	(0.014)	(0.015)	(0.005)	(0.002)
p-value of test: $\Delta P_k = \Delta Q_k$	0.407	0.071	0.000	0.528	0.013
R^2	0.37	0.28	0.28	0.18	0.21
OLS Estimates for Men Age 18-25					
Housing Price Change 2000-2006, ΔP_k	0.018	0.073	0.073	0.033	0.003
	(0.012)	(0.023)	(0.023)	(0.007)	(0.002)
Housing Permits Change 2000-2006, ΔQ_k	0.023	0.017	0.017	0.016	-0.003
	(0.013)	(0.017)	(0.017)	(0.009)	(0.002)
p-value of test: $\Delta P_k = \Delta Q_k$	0.778	0.062	0.062	0.011	0.084
R^2	0.25	0.18	0.18	0.17	0.06
OLS Estimates for Women Age 18-25					
Housing Price Change 2000-2006, ΔP_k	0.038	0.066	0.066	0.005	0.009
	(0.010)	(0.028)	(0.028)	(0.001)	(0.003)
Housing Permits Change 2000-2006, ΔQ_k	0.003	-0.001	-0.001	0.005	-0.003
	(0.010)	(0.019)	(0.019)	(0.002)	(0.004)
p-value of test: $\Delta P_k = \Delta Q_k$	0.020	0.085	0.085	0.953	0.025
R^2	0.28	0.14	0.14	0.12	0.17
N	275	275	275	275	275
Include baseline controls	y	y	y	y	y

Notes: All samples are restricted to ages 18-25 and have been restricted to individuals who live in same state where they were born. Additionally, all individuals have no college education, which includes high school dropouts and high school graduates with no reported college attendance. The baseline controls included in all columns are the following: log(MSA population in 2000), share of employed with a college degree, the share of adults who are foreign born, and the share of women in labor force. The average 18-25 employment rate in 2000 is 0.61 for adults, 0.64 for men, and 0.57 for women. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.22

Housing Booms and Labor Market Opportunities for Adults Without Any College Education

[Replacing Housing Demand Change With Housing Boom MSA Indicator Variable in Table 1]

Dependent Variable is 2000-2006 Change in:	Employment Rate (1)	Average Wages (2)	Emp. Rate * Average Wage (3)	Share Employed in Construction (4)	Share Employed in FIRE (5)
			Panel A: OLS Estimates		
All Adults Age 18-25					
Housing Boom MSA Indicator	0.031	0.079	0.115	0.016	0.002
[Top Tercile of Structral Break Instrument]	(0.008)	(0.011)	(0.023)	(0.003)	(0.001)
Share of Total Employment Change				51.6%	5.0%
R^2	0.31	0.17	0.33	0.13	0.12
Men Age 18-25					
Housing Boom MSA Indicator	0.030	0.080	0.119	0.026	0.001
[Top Tercile of Structral Break Instrument]	(0.008)	(0.011)	(0.023)	(0.004)	(0.001)
Share of Total Employment Change				86.6%	1.8%
R^2	0.20	0.14	0.25	0.13	0.03
Women Age 18-25					
Housing Boom MSA Indicator	0.032	0.085	0.115	0.005	0.002
[Top Tercile of Structral Break Instrument]	(0.009)	(0.014)	(0.023)	(0.001)	(0.002)
Share of Total Employment Change				16.8%	6.5%
R^2	0.22	0.09	0.23	0.10	0.10
N	275	275	275	275	275
Include baseline controls	y	y	y	y	y

Notes: This table reports OLS estimates. All samples are from Census/ACS data, have been restricted to ages 18-25, have been restricted to individuals who live in same state where they were born, and excludes individuals in group quarters. Additionally, all individuals have no college education, which includes high school dropouts and high school graduates with no reported college attendance. The baseline controls included in all columns are the following: log of MSA population in 2000, share of employed adults with a college degree, the share of adults who are foreign born, and the share of women in the labor force. The average 18-25 employment rate in 2000 is 0.61 for adults, 0.64 for men, and 0.57 for women. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.23

Housing Booms and Educational Attainment: 2SLS Estimates, Census/ACS Data

[Replacing Housing Demand Change With Housing Boom MSA Indicator in Table 3]

Dependent Variable is 2000-2006 Change in Share With College Education

College Education Definition:	Any College	Bachelors Degree or Higher
	(1)	(2)
2SLS Estimates for All Adults Age 18-25		
Housing Boom MSA Indicator	-0.016	0.003
[Top Tercile of Structral Break Instrument]	(0.005)	(0.003)
Average for Adults Age 18-25 in 2000		
Average in 2000	0.469	0.100
Average in 2006	0.619	0.285
2SLS Estimates for Men Age 18-25		
Housing Boom MSA Indicator	-0.015	-0.001
[Top Tercile of Structral Break Instrument]	(0.006)	(0.003)
Average for Men Age 18-25 in 2000		
Average in 2000	0.426	0.083
Average in 2006	0.572	0.250
2SLS Estimates for Women Age 18-25		
Housing Boom MSA Indicator	-0.017	0.006
[Top Tercile of Structral Break Instrument]	(0.005)	(0.004)
Average for Women Age 18-25 in 2000		
Average in 2000	0.511	0.118
Average in 2006	0.664	0.319
2SLS Estimates for All Adults Age 26-33		
Housing Boom MSA Indicator	0.006	0.003
[Top Tercile of Structral Break Instrument]	(0.009)	(0.007)
Average for Adults Age 26-33 in 2000		
Average in 2000	0.609	0.269
Average in 2006	0.626	0.301
First stage F-statistic	72.54	72.54
N	275	275
Include baseline controls	y	y

Notes: This table reports 2SLS estimates for alternative gender and age groups. All samples are restricted to ages listed in panel heading have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Robustness of Main 2SLS Estimates to Alternative Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable is Change for All Men and Women Between 2000 and 2006								
Panel A: Employment Rate [Census/ACS data]								
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.051	0.054	0.050	0.046	0.052	0.051	0.045	0.044
	(0.018)	(0.010)	(0.011)	(0.019)	(0.019)	(0.018)	(0.020)	(0.016)
First-stage F-statistic	35.16	28.65	73.61	25.18	36.98	41.00	28.74	53.08
N	275	275	275	275	275	275	275	275
Panel B: Average Annual Enrollment Per Capita for Two-Year Colleges [IPEDS data]								
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.011	-0.010	-0.007	-0.015	-0.011	-0.011	-0.015	-0.009
	(0.005)	(0.003)	(0.004)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
First-stage F-statistic	33.80	27.95	71.44	24.83	37.14	43.70	30.91	69.46
N	210	210	210	210	210	210	210	210
Include baseline controls	y		y	y	y	y	y	y
Include census region fixed effects (9 divisions)			y					y
Include employment share in manufacturing in 2000				y			y	y
Include employment share in routine employment in 2000					y		y	y
Include unemployment rate in 2000						y	y	y

Notes: See Table 1 for notes on baseline controls. The remaining columns report alternative specifications as described in the rows at the bottom of the table. Standard errors are shown in parentheses and are clustered by state.

Robustness of Main 2SLS Estimates to Alternative Specifications of Demand Change and Instrument

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable is Change for All Men and Women Between 2000 and 2006							
Panel A: Employment Rate [Census/ACS data]							
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.051	0.051	0.050	0.052	0.038	0.059	0.058
	(0.018)	(0.017)	(0.017)	(0.017)	(0.010)	(0.021)	(0.020)
First-stage F-statistic	35.16	39.75	38.03	37.43	211.76	46.18	57.70
N	275	275	275	275	275	275	275
Panel B: Average Annual Enrollment Per Capita for Two-Year Colleges [IPEDS data]							
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.011	-0.011	-0.013	-0.010	-0.009	-0.013	-0.013
	(0.005)	(0.005)	(0.005)	(0.005)	(0.002)	(0.005)	(0.006)
First-stage F-statistic	33.80	39.62	37.51	38.01	184.87	45.29	57.19
N	210	210	210	210	210	210	210
Include baseline controls	y	y	y	y	y	y	y
Use baseline structural break instrument	y					y	y
Set instrument to 0 if break not significant at p = 0.05		y					
Set instrument to 0 if break not significant at p = 0.01			y				
Estimate structural break using AR(1) model				y			
Use price-to-rent ratio as instrument					y		
Use change in prices as proxy for housing demand change						y	
Use Saiz supply elasticity to estimate housing demand change							y

Notes: See Table 1 for notes on baseline controls. The remaining columns report alternative specifications as described in the rows at the bottom of the table. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.26
Housing Booms and the Lifetime Returns to Education
[OLS Estimates of Table 2]

Dependent Variable is 2000-2006 Change in Difference Between Any College and No College

Variable:	Employment Rate	Average Wage	Employment Rate * Average Wage
	(1)	(2)	(3)
2SLS Estimates for Adults Age 26-55			
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.022	-0.003	-0.060
	(0.003)	(0.004)	(0.009)
2SLS Estimates for Men Age 26-55			
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.020	-0.006	-0.058
	(0.003)	(0.007)	(0.012)
2SLS Estimates for Women Age 26-55			
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.023	0.002	-0.055
	(0.005)	(0.005)	(0.015)
N	275	275	275
Include baseline controls	y	y	y

Notes: This table reports OLS estimates for alternative gender and education groups. All samples are restricted to ages 26-55 and have been restricted to individuals who live in same state where they were born and excludes individuals in group quarters. All individuals with no college education represents high school dropouts and high school graduates with no reported college attendance; all individuals with "any college" reported attending college for at least part of one year (which includes college graduates and college dropouts). The dependent variables are the difference in the change in labor market outcomes for those with "any college" relative to the same labor market change for those with "no college". A negative coefficient means the labor market outcomes of those with "no college" improved relative to those with "any college" during the housing boom. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.27
Housing Booms and Educational Attainment: Census/ACS Data
[OLS Estimates of Table 3]

Dependent Variable is 2000-2006 Change in Share With College Education

College Education Definition:	Any College	Bachelors Degree or Higher
	(1)	(2)
2SLS Estimates for All Adults Age 18-25		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.011	0.002
	(0.004)	(0.002)
Average for Adults Age 18-25 in 2000		
Average in 2000	0.469	0.100
Average in 2006	0.619	0.285
2SLS Estimates for Men Age 18-25		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.007	-0.000
	(0.006)	(0.002)
Average for Men Age 18-25 in 2000		
Average in 2000	0.426	0.083
Average in 2006	0.572	0.250
2SLS Estimates for Women Age 18-25		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.015	0.004
	(0.004)	(0.003)
Average for Women Age 18-25 in 2000		
Average in 2000	0.511	0.118
Average in 2006	0.664	0.319
2SLS Estimates for All Adults Age 26-33		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	0.004	0.006
	(0.007)	(0.006)
Average for Adults Age 26-33 in 2000		
Average in 2000	0.609	0.269
Average in 2006	0.626	0.301
N	275	275
Include baseline controls	y	y

Notes: This table reports OLS estimates for alternative gender and age groups. All samples are restricted to ages listed in panel heading have been restricted to individuals who live in same state where they were born, and excluded those in group quarters. All individuals with "any college" reported attending college for at least a portion of one year. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.28
Housing Booms and College Enrollment: IPEDS Data
[OLS Estimates of Table 4]

Dependent Variable is the Change in Average Annual Enrollment Per Capita

Change defined betwee following years:	2000 and 2006	
Enrollment outcome:	2-year colleges	4-year colleges and universities
	(1)	(2)
2SLS Estimates for Men and Women		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.005	-0.001
	(0.002)	(0.002)
Average level at start of period	0.050	0.064
2SLS Estimates for Men Only		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.004	-0.001
	(0.002)	(0.001)
Average level at start of period	0.047	0.058
2SLS Estimates for Women Only		
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.006	-0.001
	(0.002)	(0.002)
Average level at start of period	0.053	0.071
N (Number of Metropolitan Areas)	224	224
Include baseline controls	y	y

Notes: The unit of observation is the metropolitan area, and the data come from the IPEDS data set. The dependent variable are long differences across years reported in column headings. Each endpoint is average annual enrollment during the preceding five years. The enrollment data are matched to metropolitan areas by county, using 2000 metropolitan area definitions. Two-year colleges are defined to be any college that does not offer a four-year degree. Some 4-year colleges may offer two-year degrees but they will be included in columns (2) and (4). This table reports OLS estimates for alternative demographic groups. The baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Table OA.29
Housing Booms, Housing Busts, and Labor Market Opportunities, Census/ACS Data
[OLS Estimates of Table Online Appendix Table OA.5]

Dependent variable:	Employment Rate		Average Wage		Employment Rate * Average Wage	
Change defined between following periods:	2006 and 2012	2000 and 2012	2006 and 2012	2000 and 2012	2006 and 2012	2000 and 2012
	(1)	(2)	(3)	(4)	(5)	(6)
2SLS Estimates for All Adults Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.040	-0.010	-0.027	0.052	-0.104	0.011
	(0.009)	(0.015)	(0.017)	(0.025)	(0.026)	(0.044)
2SLS Estimates for Men Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.049	-0.019	-0.026	0.055	-0.125	-0.006
	(0.011)	(0.016)	(0.025)	(0.031)	(0.034)	(0.049)
2SLS Estimates for Women Age 18-25						
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.028	0.005	-0.027	0.058	-0.075	0.040
	(0.010)	(0.014)	(0.021)	(0.021)	(0.025)	(0.038)
N	275	275	275	275	275	275
Include baseline controls	y	y	y	y	y	y

Notes: This table reports OLS estimates for alternative demographic groups. All samples are restricted to ages 18-25 and have been restricted to individuals who live in same state where they were born. Additionally, all individuals have no college education, which includes high school dropouts and high school graduate with no reported college attendance. The Census/ACS sample and baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Housing Booms, Housing Busts, and Labor Market Opportunities
[Extending Online Appendix Table OA.5 to Additional Outcomes]

Dependent variable:	Construction Employment		FIRE Employment	
Change defined between following periods:	2006 and 2012	2000 and 2012	2006 and 2012	2000 and 2012
	(1)	(2)	(3)	(4)
2SLS Estimates for All Adults Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.025	-0.003	-0.013	0.000
	(0.005)	(0.006)	(0.003)	(0.003)
2SLS Estimates for Men Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.040	-0.006	-0.003	0.001
	(0.018)	(0.011)	(0.003)	(0.002)
2SLS Estimates for Women Age 18-25				
Housing Demand Change 2000-2006, $\widehat{\Delta H_k^D}$	-0.005	0.001	-0.018	-0.001
	(0.002)	(0.002)	(0.005)	(0.005)
First stage F-statistic	38.86	38.86	38.86	38.86
N	275	275	275	275
Include baseline controls	y	y	y	y

Notes: This table reports 2SLS estimates for alternative demographic groups. All samples are restricted to ages 18-25 and have been restricted to individuals who live in same state where they were born. Additionally, all individuals have no college education, which includes high school dropouts and high school graduate with no reported college attendance. The Census/ACS sample and baseline controls are described in Table 1. Standard errors are shown in parentheses and are clustered by state.

Online Appendix Figure OA.1: College Attendance Decisions Following a Housing Boom

Attendance Decisions Following *Large* Increase in Y_t^0 From Housing Boom
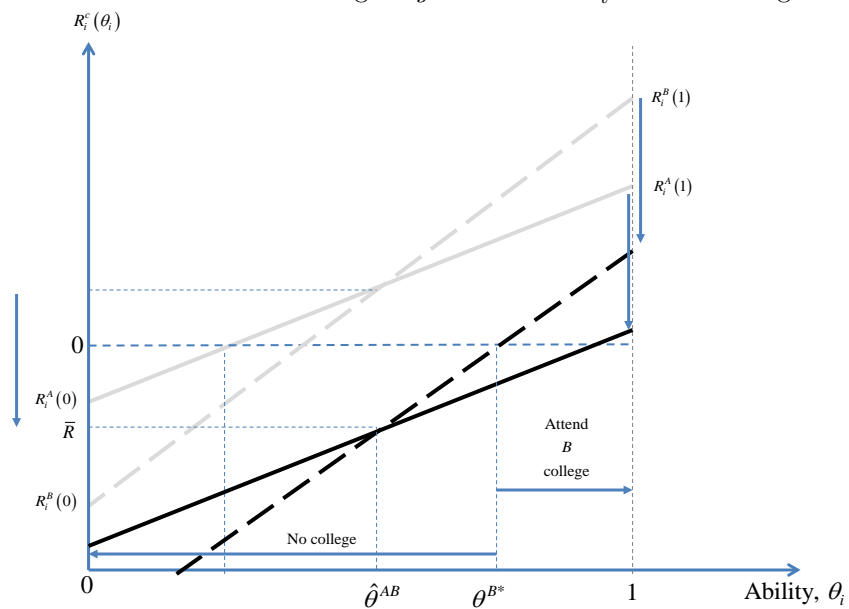
Notes: This figure shows college attendance decisions for individuals as a function of underlying ability, extending Figure 6 by showing the consequences of a housing boom. Only in extreme case of a very large housing boom will the share of individuals attending H college be affected.

Online Appendix Figure OA.2: Randomization tests exploiting timing and magnitude of local housing boom

| Two-year colleges | Four-year universities |
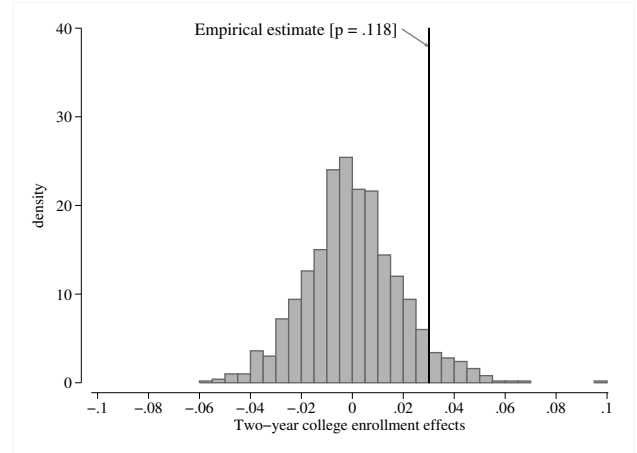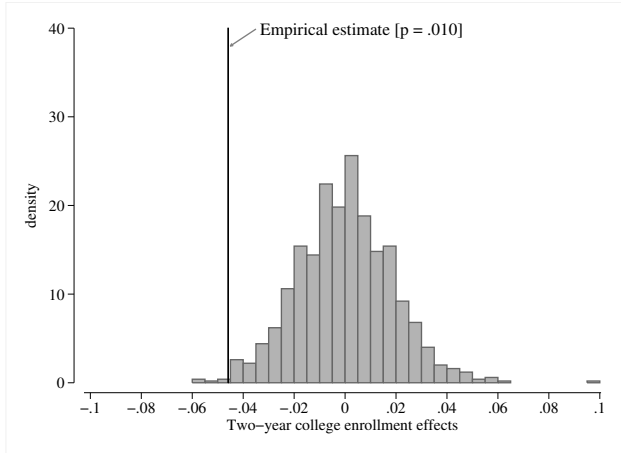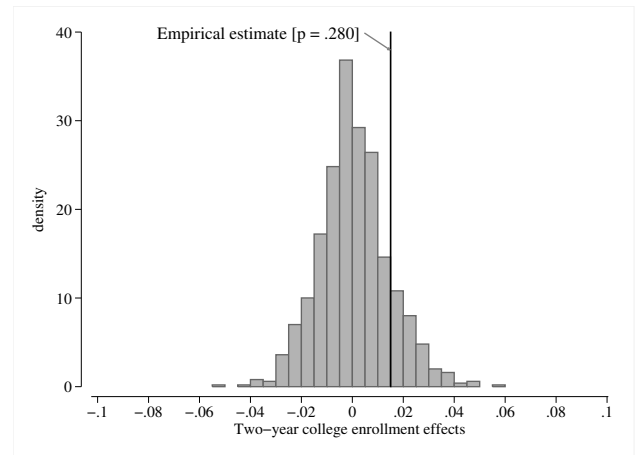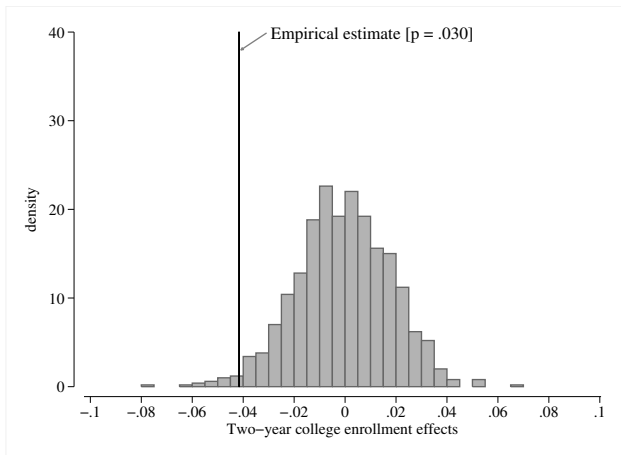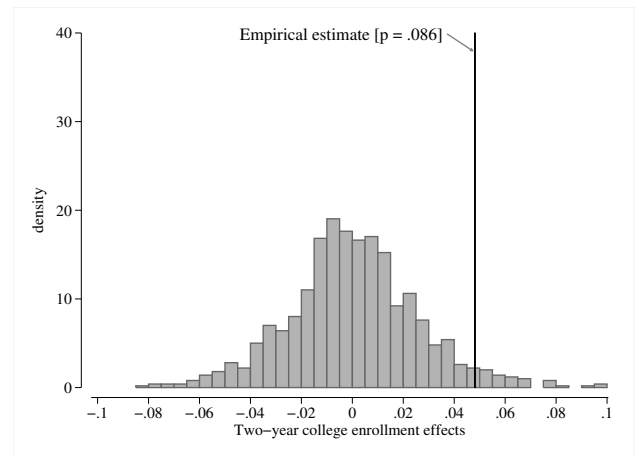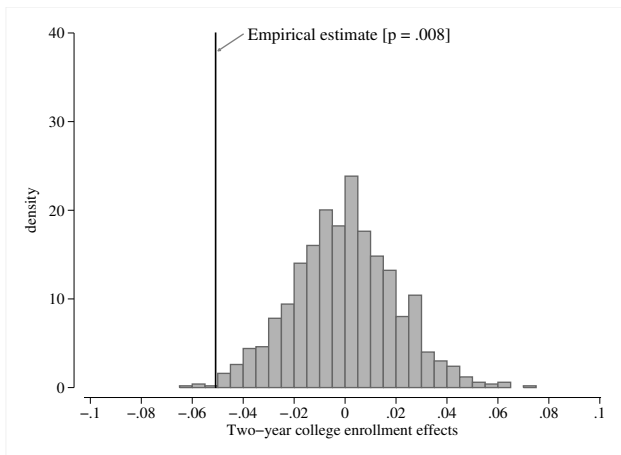
Notes: This figure shows histograms of distribution of estimated effects of housing boom on two-year and four-year college enrollment per capita for 1,000 permutation samples which permute the magnitude and year of structural break in local house prices across each city. The vertical lines indicate the corresponding estimates from the true data shown in Table 5.

Online Appendix Figure OA.3: Event Study Analaysis of Employment and Income
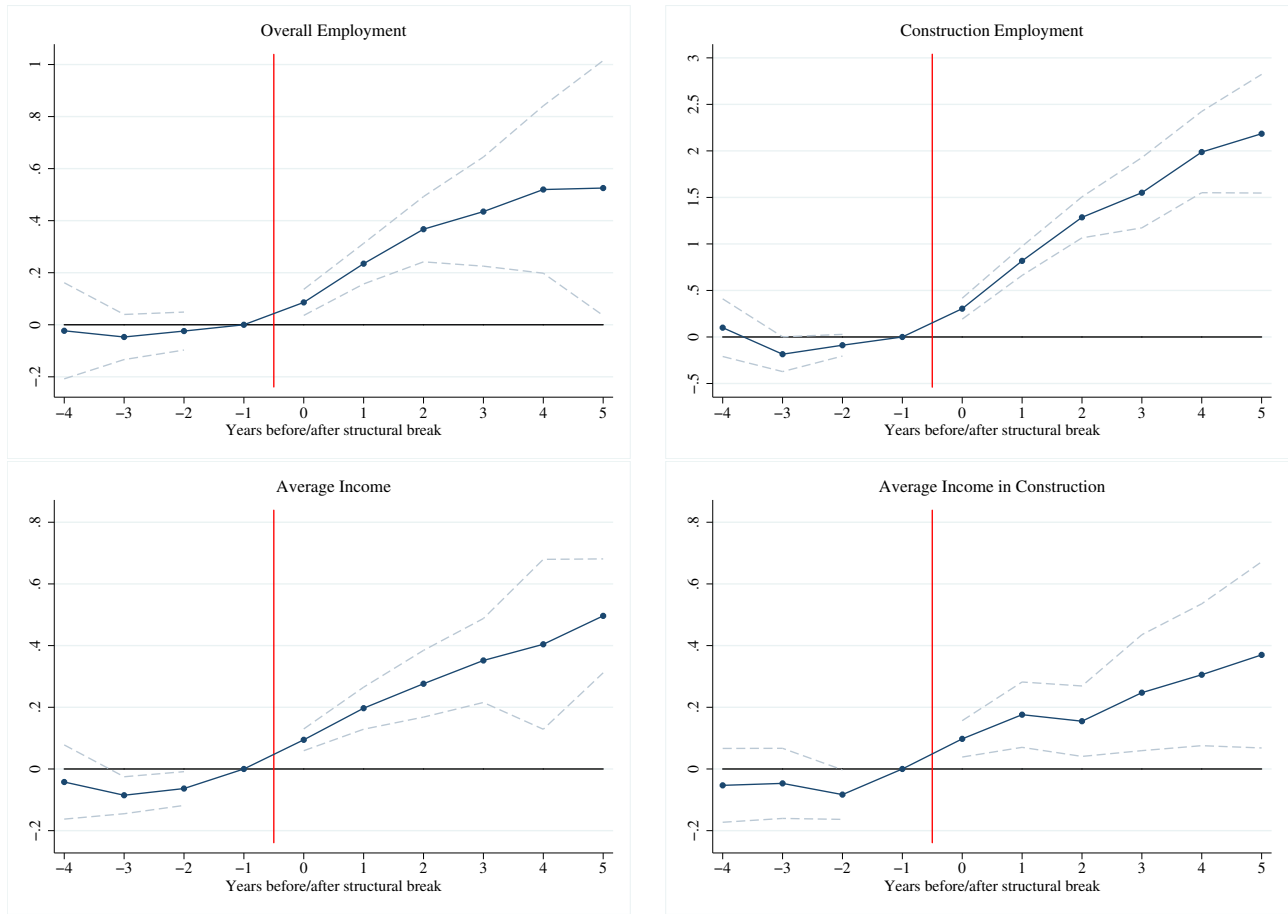
Notes: This figure reports esetimates of event study regressions, which include indicator variables for each year before and after year of estimated structural break, which the indicator scaled by the magnitude of the structural break. The event study regression specification includes year fixed effects and metropolitan area fixed effects and is weighted by the overall population in 1990. The structural break is allowed to be anywhere between 1995Q1 and 2005Q1. The employment and average income data come from the County Business Patterns (CBP) data, and the annual county-level data is matched to metropolitan areas using 2000 MSA definitions. The sample period in each metropolitan area is restricted to 6 years before and after estimated structural break (if available). Standard errors are clustered by state.

Online Appendix Figure OA.4: Correlation Between Changes in Housing Permits and Home Prices, 2000-2006

Notes: This figure shows correlation between changes in home price index and housing permit index. The regression line is weighted regression using 18-55 adult population as weights, and the sample is the baseline sample of 275 MSAs used in main regression tables.

Online Appendix Figure OA.5: Variation in Trends in Home Prices and Housing Permits Across Metropolitan Areas
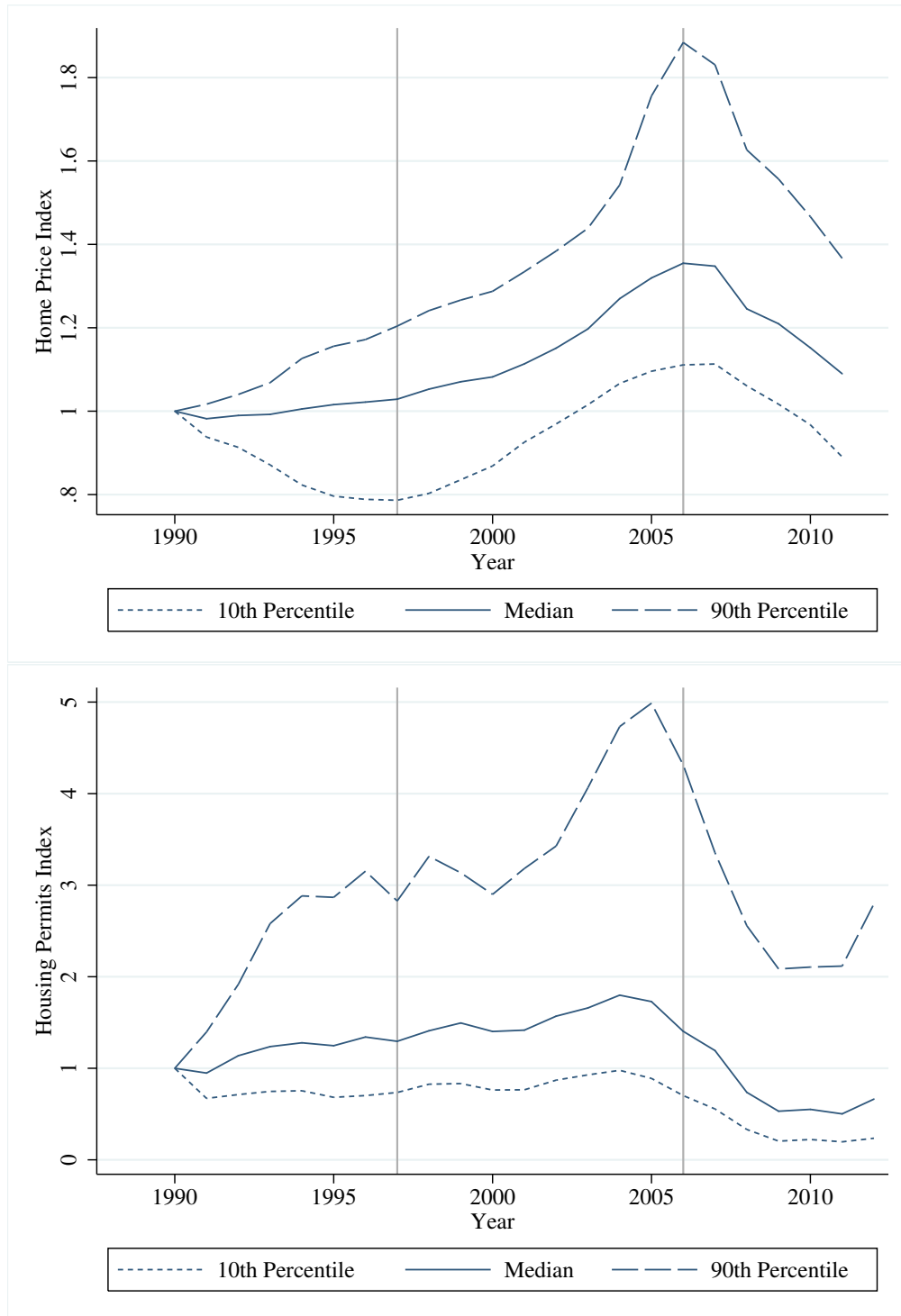
Notes: This figure reports trends in home prices and housing permits at the 10th percentile, median, and 90th percentile. The home price data come from FHFA, and the housing permits data come from the Census. Each metropolitan area series has been normalized by the year 1990 value before computing the percentiles each year.

Online Appendix Figure OA.6: Trends in Educational Attainment for Men and Women, Age 18-29, 1980-2013
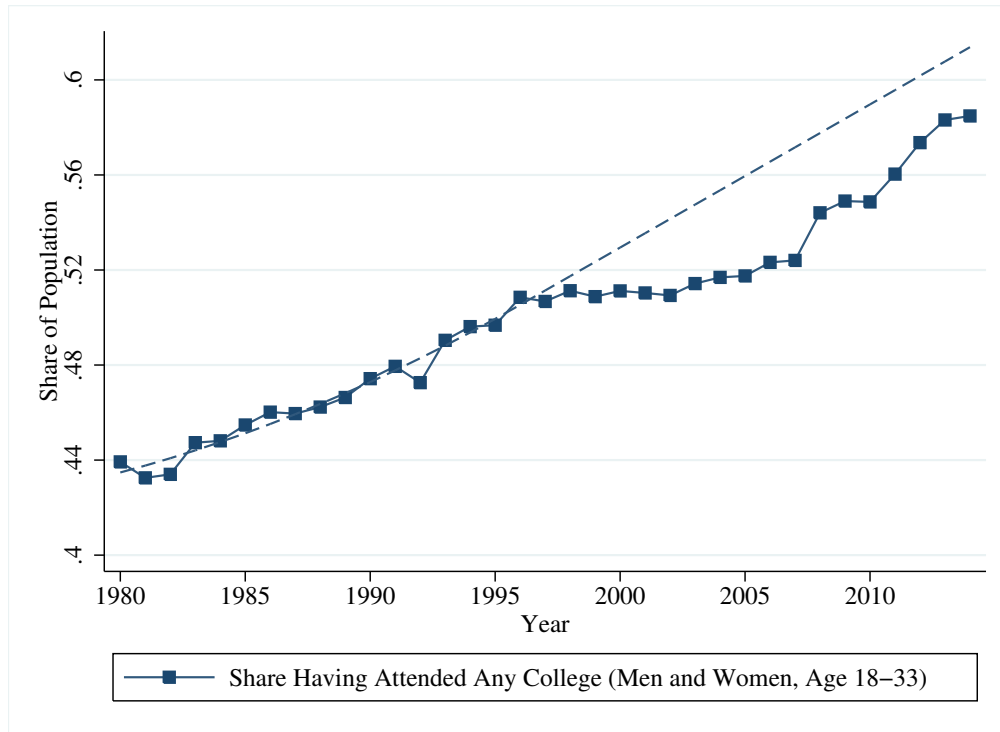

Notes: This figure reports trends in the combined share of men and women (age 18-29) who have attended at least one year of college. This series is constructed from the Current Population Survey. The dashed line is the predicted college attendance rates based on a quadratic fit for 1980-1996 period.

Online Appendix Figure OA.7: Trends in Cohort Effects in Educational Attainment for Individuals Born Between 1960 and 1990
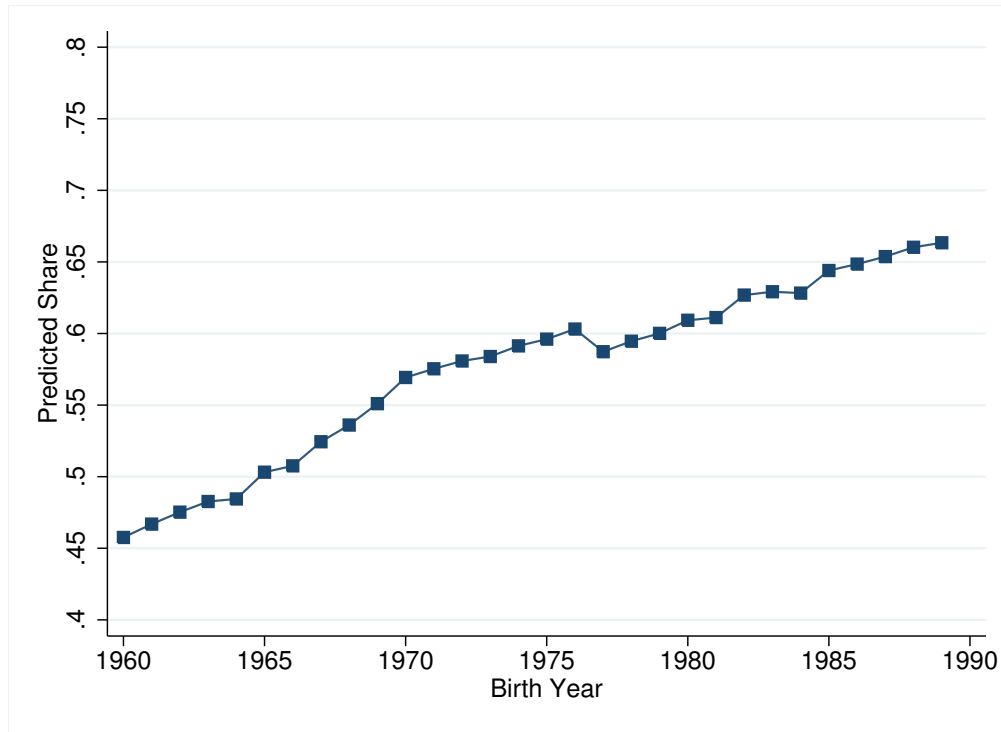
Notes: This figure reports estimated birth year (birth cohort) fixed effects in education for all men and women born between 1960 and 1990 (inclusive). The sample is all individuals between the ages of 25 and 54 in survey year pooling CPS data sets between 1994 and 2014. The birth year fixed effects are recovered from an estimated model that regresses indicator for whether individual has attended any college on a fourth-degree polynomial in age, birth year fixed effects, and year fixed effects (excluding the first and last year). The figures reported fitted values at age 25 using CPS survey weights. The sample is restricted to native-born men and women.

Online Appendix Figure OA.8: House Price Growth, 2006-2012 versus 2000-2006
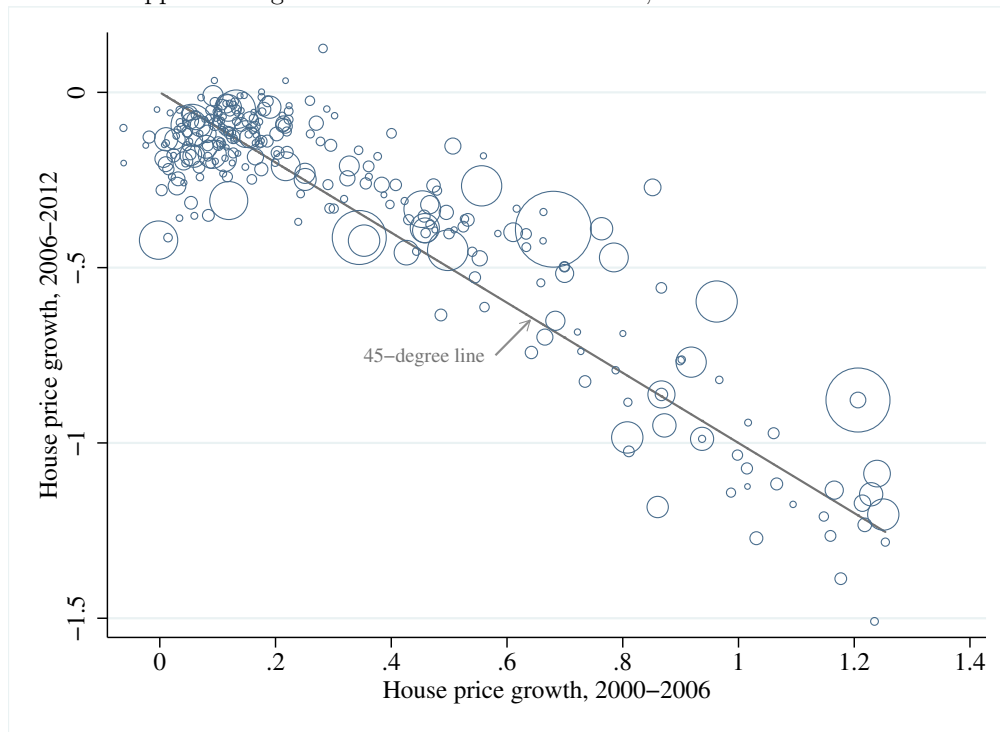
Notes: This figure shows the correlation between the change in house prices in 2000-2006 and the change in house prices in 2006-2012 for the 275 MSAs in our baseline sample. The dotted line is a 45-degree line (i.e., slope of -1).