

Federal Reserve Bank of New York
Staff Reports

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Staff Report No. 700
November 2014
Revised September 2015



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JEL classification: D14, E24, R21

Abstract

This paper documents marked changes in young Americans' residence choices over the past fifteen years, with recent cohorts delaying homeownership and lingering much longer in parents' households. To understand the sources and implications of this decline in independence, we estimate the contributions of local economic circumstances to the decision to live with parents or independently. Transition models, local aggregates, and state-cohort tuition patterns are used to address the likely presence of individual- and neighborhood-level unobserved heterogeneity. Employment and housing market estimates imply countervailing influences of local economic growth on co-residence. Increasing college costs, however, unambiguously favor co-residence with parents.

Key words: household information, mobility, student loans

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The role of first time homebuyers in the ongoing recovery of the U.S. housing market is the focus of enduring interest and speculation. The National Association of Realtors (NAR) points to a drop in first time homebuyers' share of existing home purchases from 40 to 30 percent as a headwind in the housing recovery, and cites student loans as the primary factor holding back first-time buyers. (NAR 2014). The Consumer Financial Protection Bureau has discussed the potential for student debt to slow household formation among the young, and to delay homeownership (CFPB 2013). Agarwal, Hu, and Huang (2013) describe a steep decline in homeownership among younger households, and, in a string of recent blog posts, we present time series evidence consistent with a retreat among young consumers in general, and student borrowers in particular, from housing and auto markets.¹

At the same time, evidence in his paper and elsewhere points to an ongoing increase in young Americans' rate of living at home with their parents rather than forming new households.² The dual trends of decreasing early homeownership and extended co-residence with parents may portend slow recoveries of both consumption and the housing market, as young people living "at home" delay major purchases and general entry into economic life.

This paper investigates the residence choices of young people in the Federal Reserve Bank of New York's (FRBNY) Consumer Credit Panel (CCP), and their relationship to evolving local house prices, local employment conditions, and the student debt reliance of local college students. We document persistent upward trends in aggregate rates of co-residence with parents and other elders among 25- and 30-year-olds, resulting in a 63 percent increase from 2000 to 2013 in the share of 25-year-olds living with parents and elders.³ We discuss a range of co-residence measurement concerns, demonstrate a similar upward trend using CPS data, and cite outside evidence suggesting a steep upward trend.⁴⁵

¹ See Brown and Caldwell (2013), Brown, Caldwell, and Sutherland (2014), and Brown *et al* (2015). Mezza, Sherlund, and Sommer (2014) report evidence that the student debt effect for the 2003 college cohort is one of *delaying* homeownership.

² Recent work on household formation, such as Dyrda, Kaplan, and Rios-Rull (2012), Duca (2013), and Matsudaira (forthcoming), has analyzed the link between an observed decline in household formation and changes in employment and poverty.

³ We show that the trend is not only persistent but also wide-spread, with substantial increases in 25 year olds' co-residence with parents in all 48 contiguous states.

⁴ See, for example, Mykyta and Macartney (2011).

⁵ We further study the relationship between homeownership, student debt, and economic conditions in a companion paper to this work (see Bleemer *et al*, 2015). The link between homeownership and student debt has been examined in the PSID and the NELS88 by Cooper and Wang (2014), in the SCF by Gicheva and Thompson (2014), and in the

What are the likely consequences of lingering at home for young people's economic lives? Relatedly, what consequences might these trends have for the ongoing U.S. economic recovery? In order to answer these questions, we must understand the origins of the decline in independent living among American youth. Along with Matsudaira, Duca, and Dyrda, Kaplan, and Rios-Rull, our first candidate explanation for youths' increasing reliance on parents might be labor market difficulties. Following Agarwal, Hu, and Huang, we might next suspect that youth residence choices respond to local house prices. Finally, we and others have studied the unprecedented U.S. student debt climb that coincides with the trend toward living with parents.⁶ Figure 1 depicts trends in the economic conditions faced by the 25-year-olds we study in the CCP.⁷ While the share of 25-year-olds living with parents or similar elders shows the steady, almost linear climb we have described so far, the aggregate time series for both the county-level unemployment and zip code-level house prices encountered by the youth primarily reflect the pronounced peaks and troughs of the business cycle. Only CCP student debt at age 25 tracks the steady, approximately linear upward profile from 2003-2013 of parental co-residence; like living with parents, student debt in aggregate time series shows little or no response to the business cycle. To what extent, then, do these trends indicate that the growth in living with parents is attributable to escalating student debt, and has little to do with jobs or the cost of housing?

The aggregate trends discussed above, while informative, mask evolving local relationships among housing cost, labor markets, and youth residence choices. The fine geographic data, vast sample size, and long panel of the CCP allow us to observe the residence choices of large numbers of 25-year-olds at fine geographic levels, and to compare them over many birth cohorts. All of this allows us to study youth residence choices under a rich variety of economic circumstances, generating a considerably more subtle understanding than one based solely on national trends. Our hope is that such an understanding of the origins of the decline in independent living yields insights regarding its likely persistence or development in the future.

1997 cohort of the NLSY by Houle and Berger (2014). Kurz and Li (2015) address the link between student debt and auto purchase.

⁶ See Brown et al. (2015a) and Dettling and Hsu (2014). Dettling and Hsu delve into the influence of overall and student debt levels and repayment troubles on recent cohorts' decision to live with parents, also using the CCP. Their analysis provides a rich picture of the dynamic debt experiences of young people who move home, and, subsequently, of those who are able to reclaim independence.

⁷ Local economic conditions are merged at the relevant geographic level to our CCP individual-level observations. The county-level unemployment measure is drawn from the Bureau of Labor Statistics' Local Area Unemployment Statistics. The house price index used is the zip code-level index from CoreLogic. Student debt and parental co-residence are measured using the CCP.

While labor and housing market origins may suggest a cyclicity in the rate of co-residence with parents, student debt origins, given longstanding U.S. student debt trends, may suggest an ongoing decline in youth independence.

In an approach that builds on Ermisch (1999), we model the fraction of young consumers who live with their parents, as well as the flows of young consumers into and out of parents' households over time, as a function of patterns in local unemployment, youth unemployment, house prices, wages, and student debt per recent graduate.⁸ We address endogeneity concerns regarding student debt by estimating in state and county aggregates, by instrumenting for aggregate student debt using state-cohort tuition measures, and, finally, by providing direct estimates of the relationship between state-cohort tuition levels and subsequent co-residence.

The estimated effects of local economic conditions are substantial but complex. Local economic growth, for example, has countervailing effects on the overall rate of youth co-residence with parents. Under our baseline model of the probability that an independent young person moves home, a one standard deviation increase in the growth in the CoreLogic county-level home price index observed over two years in the sample is estimated to increase the probability that an independent young resident of the county moves home to parents by 3.2 percent.⁹ On the other hand, a one percentage point increase in the county's employment to population ratio is estimated to increase the probability of a co-residing young person moving away from parents between ages 23 and 25 by 0.31 percentage points.¹⁰ Hence it appears that, while labor market opportunities enable youth independence, the inflation in local home prices associated with local economic growth drives young people home.

Further, estimates from these transition models provide evidence of a substantial and significant negative effect of the ongoing escalation of student debt on the independence of youth. The model of the probability that a 23 year old living independently will move home during the following two years predicts that a \$10,000 increase in state-cohort student debt per graduate leads to a 1.0 to 3.3 percentage point increase in the rate of moving home to parents. Similarly, the model of the transition out of parents' homes for dependent 23-year-olds predicts that a \$10,000 increase in state-cohort student debt reliance decreases the two year move-out rate

⁸ Ermisch poses the question in the context of survey data on British youth of the 1990s, who made co-residence choices under very different economic and social conditions, and for whom student debt was of little relevance.

⁹ This estimate is statistically significant at standard levels, and robust to an array of specifications.

¹⁰ This estimate is significant at the one percent level in all reported specifications.

by between 5.0 and 9.0 percentage points. The estimates remove any time-fixed or linearly time-varying state-level heterogeneity in, for example, social support of education or of youth. In addition, they control for a host of time-varying local conditions, including wages, both youth and overall unemployment, graduation rates, and house prices. They are confirmed by a state-level scatter plot describing the relationship between cohort-to-cohort growth in student debt reliance and cohort-to-cohort growth in living with parents. In sum, we find a higher rate of transition home to parents, and a lower rate of transition away from parents, for state-cohort groups that relied more heavily on student debt.

Finally, a decomposition of predicted variation demonstrates that the state-level co-residence model explains a substantial share of the growth in parental co-residence through high house prices during the housing boom, and a substantial share through low employment to population ratios during the Great Recession, leading to an approximately flat share of co-residence growth attributed to local wages, employment, and house prices from 2006-2013. Hence the countervailing effects of a strong local economy on parental co-residence are able to reconcile the pronounced business cycle patterns in employment and house price trends with the near-linear trend in co-residence, even where jobs and housing are both powerful determinants of co-residence. Meanwhile, the influence of student debt on co-residence patterns appears unambiguous: as student debt balances and prevalence trend ever upward, young consumers, on net, trend toward home.

I. Related literature

The existing literature emphasizes the relationship between employment conditions, or poverty, and intergenerational co-residence. Earlier work, including Goldscheider and DaVanzo (1985, 1989), Haurin et al. (1993), and Whittington and Peters (1996) establishes a longstanding pattern of greater youth co-residence with parents when economic circumstances are poor. More recently, Card and Lemieux (2000) demonstrate a noteworthy retreat home for Canadian youth in response to the prolonged Canadian recession of the 1990s. Dyrda, Kaplan, and Rios-Rull (2012) demonstrate a substantial influence of household formation responses to the business cycle on the Frisch elasticity of labor supply. Duca (2013) finds a close relationship between 1979-2013 time series on U.S. 18-64-year-olds' rate of co-residence with parents and U.S. poverty rates.

Two recent papers are particularly relevant to this study. Matsudaira (forthcoming) predates

the analysis here, and considers the influence of local economic conditions on co-residence with parents in the U.S. over both an earlier and a longer window. He uses cross-sectional Census and American Community Survey (ACS) data, available at varying intervals from 1960 to 2007, to examine the relationship between state-level employment and housing conditions and co-residence with parents over a 47 year period. Unlike our analysis, the paper is able to describe patterns in the relationship between state economic conditions over a very long period of time, which offers a better-informed picture of the potential role of social trends in living with parents. Further, it paints a rich picture of the (considerable) degree of demographic heterogeneity in co-residence patterns, a type of analysis which our administrative credit bureau data cannot support. Our study also offers some unique evidence, owing to its panel approach, fine geography, recent measures, and introduction of student debt. By comparison, Matsudaira's data are cross-sectional, which restricts his analysis to coarse geography, for reasons discussed below. His estimation window stops short of the largest downturn confronted by U.S. youth in recent memory, and, finally, Matsudaira omits student debt.¹¹

Student and other consumer debts, and their contribution to rising co-residence with parents, are the primary interest of Dettling and Hsu (2014). Their study and ours have developed concurrently and independently, using the same primary data source. The focus of the two papers, however, is quite different; one might see them as complementary. Dettling and Hsu are interested in the role of current individual debt levels and repayment, both in the decision to move home and in the youth's ability to recover from an economic shock and eventually regain independence. As such, their estimation provides new insights into the relationship between debt struggles—including, importantly, repayment struggles—and youth residence circumstances. These findings are of clear independent value when compared with the results reported in this paper (and vice versa, we believe). At the same time, current individual debt levels and delinquency or default status contain the accumulated history of employment, housing, and other shocks. As such, estimated effects of, for example, realized student loan delinquency on the move home or the move away do not isolate student loan effects from, for example, the effects of recent job market fluctuations. Therefore Dettling and Hsu's estimates do not answer the specific question we pose in this paper regarding the separate contributions of debt, jobs, and housing to

¹¹ This is sensible, one might argue, given that the prevalence and balances of student loans were substantially lower over much of his estimation window.

25-year-olds' delayed independence, despite providing many novel and policy-relevant insights on debt and co-residence.

II. Data

a. The FRBNY Consumer Credit Panel

The FRBNY Consumer Credit Panel (CCP) is a longitudinal dataset on consumer liabilities and repayment. It is built from quarterly consumer credit report data collected and provided by Equifax Inc. Data are collected quarterly since 1999Q1, and the panel is ongoing.¹² Sample members have Social Security numbers ending in one of five arbitrarily selected, randomly assigned pairs of digits. Therefore the sample comprises 5 percent of U.S. individuals with credit reports (and Social Security numbers). The CCP sample design automatically refreshes the panel by including all new reports with Social Security numbers ending in the above-mentioned digit pairs. Therefore the panel remains representative for any given quarter, and includes both representative attrition, as the deceased and emigrants leave the sample, and representative entry of new consumers, as young borrowers and immigrants enter the sample.¹³

While the sample is representative only of those individuals with Equifax credit reports, the coverage of credit reports (that is, the share of individuals with at least one type of loan or account) is fairly complete for American adults. Aggregates extrapolated from the data match those based on the American Community Survey, Flow of Funds Accounts of the United States, and SCF well.¹⁴ However, because we focus on young people's co-residence decisions, we restrict our dataset to 25- and 30-year-olds, which have lower coverage than later ages; coverage over 2003-2013, the era used in our Section IV-V estimates, ranges between 83.4 and 93.9% for 25-year-olds and between 91.0 and (approximately) 100% for 30-year-olds, increasing from 2003 to 2007 and decreasing from 2007 to 2013 (compared to estimates from the US Census).¹⁵ Nevertheless, we do have some information about individuals not covered in the CCP; we know how many live in each state (based on Census figures), and we know that, in nearly all cases, they do not have conventional consumer debt or credit (in which case they would be covered by

¹² Student debt data are only available in the CCP starting in 2003.

¹³ See Lee and van der Klaauw (2010) for details on the sample design.

¹⁴ See Lee and van der Klaauw (2010) and Brown et al. (2015b) for details.

¹⁵ We use the 2008 Census population projections as 'true' population data from 1999 to 2011 and the 2012 Census year-age population projections for 2012 and 2013. In each case, these are the most accurate available data on population size by age, year, and state.

Equifax). We use this information to analyze and bound our estimates below.¹⁶

We construct a cohort-level dataset from the CCP by extracting a panel of all individuals who turn 25 or 30 years old in each year between 2003 and 2013. Because the time-series aspect of our study drastically increases the number of observations, we only pull a random 1% sample of the covered U.S. population, instead of the full CCP 5%. There are 546,824 25-year-olds in the dataset, of whom we have 1.01 million observations.¹⁷

b. Other data sources

Table 1 summarizes the additional data that we use in our aggregate analysis of parental co-residence. All financial variables in the paper are measured in 2012 dollars. Columns (1)-(3) provide average stock values of each characteristic across all individuals and years in our sample, and compare the levels of individuals who co-reside with parents with those of individuals who live independently. Their averages indicate modestly lower employment and otherwise slightly better economic conditions in parent neighborhoods than in youth neighborhoods. Perhaps most importantly for our purposes, the two types of locations are very similar on average. Columns (4)-(6) provide average two-year changes in each characteristic across individuals and years in our sample for the same three subpopulations. Their most noteworthy difference is in the rate of growth of normalized house prices, with independent youth neighborhoods' prices rising by 8.4 percent while parent neighborhood prices rise by 5.0 percent over the two years.

Annual county-level employment data are drawn from the Bureau of Labor Statistics' (BLS) Quarterly Census of Employment and Wages (QCEW) program. The unemployment data are reported on a quarterly basis, and they cover a total of 3,197 counties. In order to measure the employment-to-population ratio, we also draw annual county-level population data from the US Census's Population Estimates.¹⁸ We calculate the youth unemployment rate at the state level

¹⁶ Lee and van der Klaauw (2010) extrapolate similar populations of U.S. residents aged 18 and over, overall and by age groups, using the CCP and the ACS, suggesting that the vast majority of US individuals at younger ages have credit reports. Jacob and Schneider (2006) find that 10 percent of U.S. adults had no credit reports in 2006, and Brown et al. (2015b) estimate that 8.33 percent of the (representative) Survey of Consumer Finances (SCF) households in 2007 include no member with a credit report. They also find a proportion of household heads under age 35 of 21.7 percent in the 2007 SCF, 20.64 in the 2007Q3 CCP, and 20.70 from Census 2007 projections, suggesting good representation of younger households in the CCP.

¹⁷ Note that the panel data used in constructing some of the variables used in estimation contain roughly 10.1 million person-year observations.

¹⁸ Data are from the 1990s Postcensal Estimates and the Vintage 2009 and 2014 estimates.

using employment data from 18- to 30-year-old individuals in the CPS, aggregated from months to quarters.¹⁹ Average weekly county-level wage data for 3,197 counties are drawn from the BLS's QCEW program.

House price appreciation values are calculated at the county level using data from the CoreLogic home price index (HPI). The CoreLogic HPI uses repeat sales transactions to track changes in sale prices for homes over time, with the January 2000 baseline receiving a value of 100. We aggregate an annual index to avoid seasonal variation. The CoreLogic data cover 1,266 counties (covering 89% of the 25-year-olds observed in our sample) in all 50 states and the District of Columbia, but fail to cover some parts of rural America.²⁰ We then draw the median value of owner-occupied housing units by county in 2000 from the US Census, estimating county-level median house prices as the product of that and the CoreLogic series.

Using the CCP's loan-level student loan balance data, we calculate the average student debt burden per graduate as the gross third-quarter student debt held by 22-, or, alternatively, 24-year-olds in the state-year over the total number of college graduates from universities in that state-year.²¹ We calculate the total number of graduates using the Integrated Postsecondary Education Data System (IPEDS), summing over the number of graduates of four-year and two-year institutions who receive degrees within 150% of the normal completion time in that state-year. We calculate the average graduation rate as the ratio of the total number of graduates to the total number of 24-year-olds in the state, as estimated by the US Census. The mean graduation rate across states over our sample is 29.1%, and the mean 24-year-old state-level per-graduate student debt burden is \$20,100.

The analysis below also includes a set of college tuition measures. These are used to estimate the relationship between local college cost and co-residence outcomes, and as a predictor of local student debt reliance. We construct a series of state-cohort average sticker and

¹⁹ This aggregated sample of the CPS (over all months from 2003 to 2014) includes 3.2 million respondents between age 18 and 30—19,333 of whom are missing labor force status information—though due to the sampling methodology of the CPS, some people appear in the dataset twice (in two different quarters). Data are aggregated using individual weights.

²⁰ In our regression analysis below, we include an indicator variable for whether the individual lives in a county covered by the CoreLogic HPI series, though we do not report the corresponding estimated coefficients.

²¹ Though many undergraduates have not completed a degree by the end of their 22nd year, aggregate student debt obtained at a higher age may be contaminated by graduate student debt, which is not of interest in this paper. Thus 24-year-old student debt will overestimate undergraduate debt while 22-year-old debt will underestimate it. We use 24-year-old debt in our descriptive analysis, while we present regression analysis for debt measured at both ages.

net costs of public and private colleges by pulling cost data from IPEDS.²² We define sticker cost as the sum of tuition and fees (excluding room and board) at US colleges and universities, where net cost is sticker cost minus grant aid. Costs are averaged across postsecondary institutions by state, sector, and year, and weighted by undergraduate enrollment.

III. Aggregate trends in young consumers' residence choices

a. Co-residence with parents: measurement and trends

Each observation in the CCP includes the (anonymized) information in an individual's credit report at the end of that quarter (e.g. zip code, birth year, total balances of 10 types of consumer debt, etc.) as well as the information in the credit reports of all members of that individual's household, where households are defined by street address (down to an apartment number).²³ These data lead us to define co-residence (with parents) to be the circumstance in which a young person (here a 25- or 30-year-old) resides at the same street address as at least one (Equifax-covered) individual who is between 15 and 45 years older than her, without regard to household head status or the relationship between the household members.²⁴ Data from the Center for Disease Control and Prevention's (CDC) National Vital Statistics System show that, for the 1978 and 1988 birth cohorts (the early and late ends of our sample), almost all mothers and the vast majority of fathers were between the ages of 15 and 45 at the child's birth.²⁵ Moreover, we define individuals who live in households of more than 10 people (3.7% of 25-year-olds and 3.6% of 30-year-olds) as *not* co-residing, because most situations in which one would live in such a large household (prison, military, trailer park) are not such that the individual is in her parents' household.²⁶ Note that our definition might overestimate the aggregate rate of co-residence with parents due to a possible lag between a young person's

²² IPEDS covers all 7,255 postsecondary schools in the United States, 5,126 of which provide enrollment and tuition data, accounting for 97.8 percent of enrollment in the dataset.

²³ See Avery et al. (2003) for a detailed discussion of the contents, sources, and quality of credit report data.

²⁴ We exclude household members with empty credit files, as those individuals' addresses may no longer be accurately recorded by their creditors, or thereby by Equifax itself.

²⁵ The birth rate for women aged 45-49 in 1978 and 1988 was 0.2 live births per 1000 women. The birth rate for women aged 10-14 in 1978 (1988) was 1.2 (1.3) per 1000. The birth rate for men aged 45-49 in 1978 (1988) was larger, at 5.8 (7.1) per 1000. However, this remains quite small relative to the men's age 25-29 birth rate of 120.0 (111.1) per 1000.

²⁶ We also assume that individuals whose address is listed as a post office box do not co-reside (4% of 25-year-olds, and 5% of 30-year-olds).

switching their home address and updating their credit report address (as reported by financial institutions), which might bias the aggregate co-residence rate upwards.²⁷

In order to evaluate the success of our measure of parental co-residence, we use the 2003-2012 Current Population Surveys to estimate the fraction of individuals who would fall under our definition of “living with parents” who are actually co-residing with parents (or other older relatives).²⁸ We find that, in 2010, 92.6 (88.3) percent of 25-year-olds (30-year-olds) whom we designate as ‘living with their parents’ either certainly or most likely co-reside, suggesting that we slightly overestimate co-residence in our analysis below. First, 84.0 (74.4) percent live with their parents or similar elders: most commonly their parents themselves, but also their spouse’s or partner’s parents, or the parents of a sibling or in-law, their foster parents, their grandparents, or a parent’s unmarried partner. Another 8.6 (13.9) percent of 25-year-olds (30-year-olds) that meet our CCP definition of living with parents in 2010 *most likely* co-reside with elder relatives, but the CPS leaves their designation unclear; they may live with an older sibling, older relatives from outside of the nuclear family, or with a friend and the friend’s parents. The remaining 7.3 (11.2) percent of 25-year-olds (30-year-olds) in 2010 who meet our CCP criteria for co-residing with parents actually do not co-reside with parents or elder relatives. 1.8 percent of 25-year-olds who “live with their parents”, along with 4.2 percent of 30-year-olds, live with older spouses; other, smaller groups are observed to live at the same address as an older landlord, an older roommate, or an older roomer. Roughly one percent of cases are either miscodes or exceedingly complex scenarios.

Importantly, our CPS analysis shows that the rate at which we overestimate 25-year-old co-residence is unchanging over time. The fraction of 25-year-olds that we categorize as “living with their parents” who co-reside with a parent or elder relative was bounded between 91.6 and 92.6 percent from 2003 to 2012, and we find no evidence of either a linear or quadratic time trend at the 10% level of significance.²⁹ This provides evidence that our trend analysis below, in both the stocks and flows, is unbiased despite slightly overestimating the fraction of young people who live with their parents (or in similar living arrangements) at any fixed point in time.

²⁷ Transition model estimates of the probability that independent youth move home in Sections IV-V are less susceptible to lagged address updating concerns.

²⁸ Our total sample size is 207,928 25-year-olds and 210,711 30-year-olds across the ten years of our analysis. We use sample weights in order that our analysis is nationally representative.

²⁹ The corresponding bounds for 30-year-old co-residence are 84.5 and 88.8 percent, but again we find no evidence of a linear or quadratic relationship.

Figure 2 depicts the proportion of U.S. 25-and 30-year-olds living with “parents” in the CCP from 1999-2013.³⁰ For 30 year old CCP sample members, we observe an increase in the rate of co-residence with parents or similar elders from 18.7 percent in 1999 to 31.5 percent in 2013.³¹ Note that this pattern is free of life-cycle effects, as we measure co-residence with parents for the cross-section of CCP sample members who are 30 years old in each year. This substantial growth in living with parents is approximately monotonic over the period, and proceeds at a steady pace. Among 25-year-olds, the rate of growth is similar, though the levels, as expected, are higher. Co-residence with parents for 25-year-olds grows from 28.3 percent to 48.8 percent between 1999 and 2013. As with 30-year-olds, the trend for 25-year-olds is approximately monotonic and the growth in co-residence is steady. Overall, the rate of co-residence with parents observed in the CCP grows by 12.8 percentage points for 30-year-olds, and by 20.5 percentage points for 25-year-olds, from 1999 to 2013.

Figure 3 extends these results by examining the increased prevalence of parental co-residence at the state level.³² We find that parental co-residence among 25-year-olds increased in all 48 contiguous states in the decade between 2003 and 2013 (though it slightly decreased in Alaska), with a median increase of 13.8 percentage points. Heterogeneity in parental co-residence is quite large across states, with state-level co-residence rates for 25-year-olds ranging from 30 percent to over 50 percent in 2012-2013. States in the center of the country (Rocky Mountain and Great Plains states) experienced the least growth in parental co-residence, while states in the Northeast and West Coast experienced the sharpest increases, some by more than 20 percentage points between 2003 and 2013. Overall, a striking change appears to have occurred since 1999 in the living arrangements of young consumers.³³

³⁰ In the CCP, we observe individuals’ birth years, but not their birth months. The median individual born in a year turns 25 around July 1st 25 years later. In order to capture the average characteristics of 25-year-olds in a year, then, we use the observations of those born 25 years earlier from the first quarter of the following year, allowing for a six month lag in order to measure characteristics, on average, in the middle of the year in which the individual is 25, and a one-quarter lag from the median time at which those individuals would be 25.5 years old to account for delays in Equifax data updating, in which loans typically first appear in the data about one quarter later than the origination date.

³¹ From this point we adopt the phrase “living with parents” to describe youth living with parents or with one of the variety of responsible elders captured by our co-residence measure.

³² This analysis is enabled by the massive size of the CCP data set; our analysis includes at least 166 25 year olds in each year-state presented in Figure 3, with a median of 1,282 individuals per state-year.

³³ This trend could be determined in part by social or demographic phenomena, rather than economic pressures. However, while the number of Americans aged 45-64 increased by 24 percent from 2002 to 2012 (according to the U.S. Department of Health and Human Services’ Administration on Aging), the lifetime number of children per woman remained near two and, if anything, was very slightly increasing from 1970 to 2010 (Population Reference

There are several reasons why the co-residence rate measured using the CCP might differ from measures in other relevant sources. For example, a 2013 report from the Pew Research Center, based on their own analysis of the March Current Population Survey (CPS), reported that 32 percent of 18-31-year-olds in 2007, 34 percent in 2009, and 36 percent in 2012 live with parents. However, the Pew analysis defines an individual as living with a parent only if she lives with a parent or step-parent, not a parent-in-law or the partner of a parent, and only if she is not herself a head of household. Clearly, this narrows the definition of living with parents from the one used in our analysis. In addition, the direction and magnitude of the difference generated by studying a broader age band, including both college ages and respondents in their thirties, is unclear. Further, credit report coverage of younger U.S. individuals is extensive but not complete, as described above. To the extent that the segment of the youth population of the U.S. that is not represented in the trends in Figure 2 lives with parents, these trends will reflect underestimates of the true underlying rate of co-residence with parents among young Americans. To the extent that the small unrepresented share of youth does not live with parents, the Figure 2 trends will be overestimates of the true rate of co-residence.

In order to address this concern, Figure 4 depicts the co-residence trends for 25- and 30-year-olds when one assumes that all 25- and 30-year-olds represented in the Census but not in the CCP (that is, individuals with no active credit history) live with parents, and then when one assumes that they live away from parents. This creates an upper and a lower bound on estimates of the co-residence rates of U.S. youth based on the CCP.

The more plausible assumption may be that Census youth not represented in the CCP live away from parents. Reasons behind this include institutional populations, such as military and prison populations, who generally live away from home and, we infer, have limited credit report coverage. Such populations tend to be young, and hence their credit report coverage and residence status are particularly relevant for this study of youth residence.³⁴ Though prison and military populations may have actively updating credit files, they are presumably more likely to

Bureau 2012). It is unclear, then, the extent to which changing demographics on their own can be expected to generate large changes in the rate of coresidence with parents. Nevertheless, in the interest of accounting for possible social and demographic changes, we allow for a time trend as we model the stock of co-residence below.

³⁴ According to the U.S. Bureau of Justice Statistics, 0.94 percent of U.S. resident adults were incarcerated at the end of 2011. Presumably the incarcerated shares of 25- and 30-year-olds are greater. Similarly, as of 2010, 2.28 million U.S. adults were active duty or reserve members of the armed forces.³⁴ This represents 1.2 percent of adults 18-64 years of age. Again, shares of the population in the military are likely much larger at ages 25 and 30.

be among the small share of 25- and 30-year-olds without active credit files, and are of course substantially more likely than other young consumers to live away from parents.

The estimated trend in co-residence with parents in which we assume that all youth represented in the Census but not in the CCP live away from parents is represented in Figure 4 by the series with long dashes, lying in each case below the CCP-only trend. These lower trends show an increase in co-residence from 22.8 percent to 40.9 percent of 25-year-olds, and from 16.5 to 28.4 percent of 30-year-olds. Their slopes are quite similar to the CCP-only trends, while their levels are roughly four to six percentage points lower for the 25-year-olds and two percentage points lower for the 30-year-olds (for whom coverage in the CCP is fairly complete).

As a final check of our co-residence results using the CCP, we turn to the 1999-2012 waves of the CPS and create co-residence measures designed to be similar to our CCP measures using the CPS. We construct U.S.-representative samples of 25- and 30-year-olds in the CPS, and then we create an indicator of co-residence with parents that equals one for any youth living in the same household with one or more individuals who are 15 to 45 years older.³⁵ The lower co-residence curves in Figure 4 panels (a) and (b) represent our co-residence calculations using these criteria in the CPS.

Co-residence rates measured in this manner in the CPS are similar to those based on the CCP and assuming Census youth not represented in the CCP live away from home, though the slope of the CPS co-residence curve is somewhat less steep; co-residence grows by 36 percent for 25-year-olds and 35 percent for 30-year-olds in the CPS, including a two-year decline in co-residence for 30-year-olds from 2011 and 2012 that is not observed in the CCP.³⁶

In sum, we observe a steady growth in co-residence with parents among U.S. youth. While the level of co-residence rates may be sensitive to measurement choices, the levels and

³⁵ As in the CCP, we assume that any individual in a household of 10 or more persons is living away from parents.

³⁶ There are several reasons to expect the CCP and CPS to produce different estimates. First, the CPS definition of household excludes self-sufficient contained apartments (like in-law units and some finished basements), leading some co-residential households to be artificially split. (By the same token, the addresses including any apartment number on which we rely in the CCP may, in some cases, include un-numbered, self-sufficient, contained apartments that house non-relatives of the primary household members, and we may miscount these as co-resident households.) Second, CPS data are measured using a survey, which allows for misreporting; out of embarrassment or wishful thinking, parents may sometimes fail to include co-residing children in their reported households. This may also lead parents to exclude dependents living in temporary or dormitory housing as household members, despite their effective co-residency. Finally, the CPS may underestimate the presence of ‘part-time’ residents who tend frequently to move in and out of their parents’ home, but whose permanent administrative address would likely remain unchanged. Hence, while the CPS and CCP measures may generate somewhat different levels and slopes in the inferred rate of co-residence with parents, we believe that each relies on an informative criterion for co-residence given the available information.

trends we obtain are similar enough across alternative methods and sources to suggest that our CCP measures are informative. All sources and methods discussed in this paper point to two empirical facts: co-residence with parents was common in 2003, and it is substantially more common today.

Given such evidence, one might ask what other living arrangements are in decline. In the appendix to this paper, we describe CCP trends in living alone, with one other adult (typically a married or cohabiting couple in the CPS), and with groups of other roommates. In short, from 1999 to 2013, we find that living with parents appears to be displacing living alone or with groups of roommates, while coupledness appears to be approximately stable. The appendix also reports detailed findings from the CCP on the concurrent trends in homeownership and co-residence with parents. We observe a steep decline in homeownership at age 25 from 2005 forward, and at age 30 from 2007 forward, with homeownership peaking at 44.4 (22.9) percent at 30 (25), before falling to a 2013 low of 31.9 (12.1) percent.³⁷ Surprisingly, while 30-year-olds in 2003 were roughly twice as likely to own a home as they were to live with parents, 30-year-olds in 2013 were approximately equally likely to own a home or live with parents.

b. Trends in student debt

The past decade has brought a widely recognized escalation of student debt. The FRBNY Household Debt and Credit Report, based on CCP data, shows nominal aggregate student debt rising from \$253 billion in 2003Q4 to \$1.080 trillion in 2013Q4, for a total nominal growth of 327 percent over 10 years.³⁸ The Office of Federal Student Aid (FSA), based on the National Student Loan Data System (NSLDS), reports an increase in nominal federal direct loan plus FFEL program and Perkins loan balances from \$516 billion in 2007 to \$1.040 trillion in the fourth quarter of 2013.^{39, 40} In sum, student borrowing changed substantially from 2003 to 2013.

³⁷ We infer homeownership from the presence of home-secured debt.

³⁸ Student debt data in the CCP is unreliable before 2003, so we disregard measures preceding that year.

³⁹ NSLDS federal loan balances reached \$1.051 trillion in early 2014, and the CCP aggregate balance, which includes the private student loan market, reached 1.19 trillion in 2015Q1.

⁴⁰ The private student loan market grew steadily during the boom of the mid-2000s, originations shrunk dramatically as a result of tightened underwriting standards in the wake of the Great Recession, and private student loan balances are only recently beginning to recover. MeasureOne reports a growth of total private student loan balances among the seven leading lenders currently in the market from \$44 billion in 2008Q3 to \$63 billion in 2013Q3 (MeasureOne, 2013). Some of this growth in private student loans among the seven leading lenders may reflect buying debt from other lenders.

All of the above, however, describes the student loan market as a whole, including parent and student borrowers of all ages. More relevant to the residence choices of young Americans may be the trends in student debt among recent graduates (and dropouts). Figure 5 depicts the proportion of CCP 25-year-olds participating in the student debt market, along with the mean student loan balance of 25-year-olds in each year. We observe an increase from 25 to 45 percent of 25-year-olds with positive student debt between 2003 and 2013. Mean student loan balances at 25 among those with positive student debt balances between the ages of 22 and 25 nearly doubled over the period, from \$10,649 in 2003 to \$20,932 in 2013.

IV. Empirical model

So far we have seen approximately unbroken upward trends in co-residence with parents among 25- and 30-year-olds over the years from 1999 to 2013, and a substantial change in aggregate homeownership at 30 around the Great Recession. All of this raises questions regarding the relationships among youth residence choices and the prevailing economic conditions under which these choices are made. Figure 1 shows that the trend in 25-year-old parental co-residence appears more similar to the trend in student debt than to unemployment rates or the house price index at the national level, but does not capture geographic variation in these relationships or allow us to weigh the relative contributions of each feature of the environment to a young person's residence choice. Moreover, Figure 3 shows that there is tremendous heterogeneity in parental co-residence for 25-year-olds across states, and we observe that there is even greater heterogeneity at finer geographic levels.

As a first pass at local analysis of these relationships, Figure 6 presents suggestive evidence of a relationship between student debt and parental co-residence in a simple state-level scatter plot that relates the 2008-2013 change in the rate of parental co-residence among 25-year-olds in a state to its 2008-2013 change in student debt per graduate.⁴¹ The regression line in this simple scatter plot reflects a positive 2.9 percentage point increase in co-residence with a \$10,000 increase in student debt per graduate.

a. Stock of young people living with parents

Next, the fine geographic data and long panel of the CCP allow us to exploit time variation in local economic conditions and student debt reliance to learn far more about the

⁴¹ The chart looks qualitatively similar when constructed from 2003-2013.

contributions of jobs, housing costs, and student debt at the local level to the decisive aggregate trend toward parents, and away from economic independence, that we observe for recent cohorts of young adults. This section presents three empirical models of parental co-residence. First, we describe a lagged stock model explaining the co-residence decisions of 23- and 25-year-olds as a function of local unemployment, youth unemployment, house prices, and student debt per recent graduate, a linear decomposition of which provides a simplified visualization of the conditions associated with parental co-residence. This approach provides an informative description of the times and places in which parental co-residence is and is not common, along with a visualization of the progress over time in the factors that are associated with parental co-residence. It allows us to consider the relative magnitudes of countervailing job and local price associations with co-residence, and the dynamics of this relationship over the business cycle.

We estimate a state-level model of the share of young residents who are living with parents as a function of local socioeconomic conditions. In anticipation of the flow model to come, we consider individuals at two ages, 23 and 25. Define Y_{cst} as the share of cohort c , state s , time t youth who co-reside with parents. We model the share of co-resident youth as a function of the conditions in the state one year earlier, as well as state fixed effects to control for unobserved differences in culture and policy.⁴² We thus estimate the simple fixed effects model:

$$Y_{cst+1} = X_{cst} \beta + Z_{cs} \gamma + \delta_s + \varepsilon_{cst}, \quad (1)$$

where X_{cst} represents a vector of cohort c , state s , period t characteristics, the levels of which may influence the residence choices of the youth of state s at $t+1$. This vector includes state-level QCEW wages and employment to population ratios, state-level youth unemployment based on our calculations in the CPS, and state-level CoreLogic home price indices, and may include a linear time trend representing an unobserved national cultural trend.⁴³ The vector Z_{cs} represents characteristics of cohort c and state s that do not vary over time, which include both state-level average student debt per graduate and the college graduation rate in state s when cohort c was

⁴² Hence the lagged regressors are observed when the estimation sample youth are 22 and 24.

⁴³ Note that, while one concern the estimation confronts is the possibility of a non-economic, social trend in the acceptability of intergenerational co-residence that may, in part, drive the growth in co-residence, the 2014 wave of the Federal Reserve Board of Governors' Survey of Household Economics and Decision-making (SHED) shows that the 64 percent of 2014 SHED families living in "doubled-up" households do so primarily for financial reasons. Only one in seven are doing so, at least in part, for the purpose of caregiving (Board of Governors 2015).

age 24. We include these aggregate state-cohort education measures as proxies for individual student debt reliance that are relatively free of the influence of confounding individual (observed and unobserved) characteristics.⁴⁴ The vector of state fixed effects is denoted δ_s . Idiosyncratic error ε_{cst} is clustered at the state level.

We choose to estimate the stock relationship between local economic conditions and co-residence choices at a high level of geographic aggregation, the state, for a variety of reasons. Most important to us is the fact that aggregate analysis minimizes any endogeneity that might arise from young people’s mobility. If there are systematic economic differences between the regions where young people live independently and the regions where their parents live, then the economic characteristics we measure in the young person’s observed location may be endogenously determined by her co-residence decision. Assume, for example, that housing prices are higher in parents’ neighborhoods than in children’s neighborhoods, in keeping with typical life-cycle patterns of consumption in the U.S. Then the problem with the location of measurement generates a spurious positive relationship between local house prices and living with parents. By aggregating to the state level, we average across smaller geographic areas (like zip codes and counties), abstracting away from most mobility concerns.⁴⁵

Aggregation also abstracts away from systematic differences in, for instance, the zip code-level joint distribution of family generosity and house prices by averaging over zip code-level variation. Finally, aggregation also increases the weight of residents in rural areas, treating New York residents with the same weight as those of Wyoming. Since these estimates are not weighted by population, the coefficients are interpreted as the aggregate relationship between

⁴⁴ More discussion of the sources of student loan endogeneity, and the means by which we attempt to circumvent this estimation challenge, follows in Section IVb, below. Gicheva and Thompson (2014) discuss the student debt endogeneity concern in a related context. Heterogeneity in family generosity tends to bias the student debt coefficient in a co-residence regression upward, as generous families both impose less student debt and tolerate more co-residence. Lochner, Stinebrickner, and Sulemanoglu (2013) demonstrate a strong positive relationship between family support and student debt repayment in recent data on Canada’s student loan system. On the other hand, individual-level student debt is closely tied to the student’s level of educational investment. Lochner and Monge-Naranjo (2012) model the relationship between the nature of the schooling investment and the credit extended to students, with implications for the individual-level association between student debt and post-college labor market success that are of obvious relevance here.

⁴⁵ Most moves to and from parent households occur within a state. According to Molloy et al. (2014), while 19.1 percent of CPS 20-24 year olds moved between counties over the course of a year, based on pooled data for 2000-2012, only 3.3 percent of the 20-24 year olds crossed state lines. Note further that the cross-state move rate declined over the period. Brown, Grigsby, van der Klaauw, Wen, and Zafar (2015) find that, among CCP individuals observed at age 18, only 12.82 percent had moved across state lines seven years later. Matsudaira (forthcoming) employs a similar state-level strategy, presumably owing to similar measurement concerns.

macroeconomic conditions and parental co-residence. Qualitatively similar findings in estimates at this high level of geographic aggregation and in individual-level estimates (available from the authors) provide some initial evidence that the relationships we estimate are not driven primarily by communal or local cultural characteristics, which may differ between urban and rural areas.

b. Flow home to parents from independent living

Nevertheless, one would certainly prefer to exploit the extensive variation in economic conditions that occurs below the state level in order to generate the most informative picture possible of youth residence choices. With a detailed panel on the repeated location choices of millions of early twentysomethings, in this study we are able to push the analysis to a finer geographic level.

To do so, we model the flows of children into and out of parents' households. We separate our baseline sample into youth who live independently in the initial period and youth who live with parents. This allows us to estimate the effect of more finely measured local economic conditions on co-residence transitions for samples in which the measure of local conditions is uniform: we estimate the effect of (changes in) local economic conditions in the parents' location on the rate at which dependent youth move out, and, separately, the effect of local economic conditions in the independent youth location on the rate at which independent youth move home. This approach also allows us to ask whether the effects of local economic conditions on whether a child moves away from home differ from the effects of those same conditions on whether a child moves back home.

Since we model two-year flows of parental co-residence between the ages of 23 and 25, we no longer lag the geographic characteristics by a year in identifying their effect on parental co-residence. Instead, in most instances, we estimate the dependence of the rate of moving home or away on the *change* in conditions over the two year estimation window in the youth's initial location. However, student debt per graduate and graduation rate in the youth's location at age 22 (or 24) are time-fixed characteristics, and, nevertheless, we expect that the stock of education debt may influence the decision to move. Hence we permit these characteristics to influence the transition probability through their level at t rather than through their (null) flow from t to $t + 1$.⁴⁶

Consider first the decision to move home to parents. This time we estimate parental co-

⁴⁶ An alternative specification of our model including level measurements of all covariates provides qualitatively similar estimates to those presented below.

residence decisions at the county level.⁴⁷ Maintaining the definitions above, we estimate a model of the share of independent youth in county l (for “location”) who move home between the ages of 23 and 25, Y_{t+1}^H , in a sample of CCP youth who lived independently at age 23, which we denote as time t .⁴⁸

$$Y_{t+1}^H = (X_{t+1}^H - X_t^H)\beta^H + Z_{cl}^H\gamma^H + \delta_{s(l)}^H + \varepsilon_t^H, \quad (2)$$

Here superscript H denotes factors influencing the probability of moving “home”. In the flow equations, our baseline X_t includes a linear national time trend, which is a constant when differenced. Further, we allow a vector of state-level fixed effects in the probability of moving home, $\delta_{s(l)}^H$, which may be interpreted as state-level time trends in co-residence. Importantly, in the flows home, location (county) l is defined as the child’s location away from home at time t , and all local characteristics at t and $t + 1$ are measured for location l .

Given the many sources of endogeneity of individual student loan debt and debt growth levels to youth residence outcomes, we estimate the dependence of co-residence with parents on student debt by proxying for student debt with the mean student debt cost of a degree in the youth’s state-cohort, as described above. We estimate both flow models including state fixed effects, and hence the coefficient on state-cohort student debt is essentially identified by changes across cohorts within a state in the mean debt price of a degree, or the mean tuition cost. Such differences are relatively free of confounding family characteristics like generosity and debt aversion, and instead are influenced by changes (within state) from cohort to cohort in factors including tuition at state colleges and the generosity of federal, state, and institution-level aid.⁴⁹

We include one final approach to addressing the possibility of endogeneity of state-cohort student debt per graduate to early adulthood transitions home. A primary predictor of the amount

⁴⁷ Note that expression (2), below, does not push the data to the individual level. All of the regressors we consider are measured in local aggregates. While these local aggregates will have substantial predictive power for locally aggregated cross-sectional co-residence measures and co-residence transitions, without relevant individual-level exogenous covariates, which for this problem are limited in general and especially limited in the CCP, we have little hope of identifying *which* residents of a local area will move. We find that the magnitude and significance of labor market, housing, and student debt coefficients estimated based on the analogous individual-level co-residence transition models are very similar to those of the coefficients estimated using aggregate expression (2). The shortcoming of the individual-level analysis is evident in its modest R-squared values, as we identify the local moving rate rather reliably, but have little information with which to predict exactly who moves.

⁴⁸ The elapsed time from t to $t + 1$ is two years.

⁴⁹ Note that we control for changing state economic conditions that might otherwise appear in the mean state-cohort student debt price of a degree through youth unemployment, total unemployment, wages, and house prices.

of student debt a cohort of graduates will carry in a given state is the level of tuition at private and public universities in that state when the cohort was of college age. We employ IPEDS state-level data on average sticker prices at public and private institutions in the state from the year in which the cohort turned 22. These measures enter our estimation in two ways. In a first specification, we proxy for the state-cohort student debt price of a degree in expression (2) using the state-cohort's age 22 public and private university mean sticker price. This allows us to relate past tuition in a state directly to subsequent transitions into and out of parents' homes. In a second, we estimate the following instrumental variables model.

$$Y_{lt+1}^H = (X_{lt+1}^H - X_{lt}^H)\beta^H + g_{cl}\gamma_1^H + \hat{s}_{cl}\gamma_2^H + \delta_{s(l)}^H + \varepsilon_{lt}^H, \quad (3)$$

where \hat{s}_{cl} represents the mean student debt price of a degree for cohort c in location l that is predicted using estimates from the expression

$$s_{cl} = (X_{lt+1}^H - X_{lt}^H)\beta^l + g_{cl}\gamma_1^l + T_{cl}\gamma_2^l + \delta_{s(l)}^l + v_{lt}^l.$$

Here the vector of state-cohort characteristics, Z_{cl}^H , is broken into its graduation rate and student debt components, and the student debt component is predicted in a first stage using state public and private university sticker prices, T_{cl} , measured when the cohort was 22.⁵⁰ Hence the contribution of state-cohort student debt reliance to the probability of moving home from age 23 to 25 is identified using the student debt variation induced by tuition changes, rather than that induced by the aggregated choices of that cohort's parents to pay or not to pay for college.

Finally, one may fear that tuition levels reflect the economic conditions of the state when the cohort was in school. In addition, Barr and Turner (2015) demonstrate meaningful dependence of the higher education investment choice on labor market conditions and policy while youth are of (more and less) traditional college ages. In a further effort to address these concerns, we include age 18 economic conditions of the location, along with age 22 (or 24) conditions as described above, in both the first and second stages. This is intended to account for the possible impact of entering school under weak economic conditions on both college tuition and later residence choices. Thus the identifying assumption behind our instrumental variables approach is that,

⁵⁰ We estimate a stronger first stage when we rely on college sticker prices, as opposed to net prices that account for grant aid received by the cohort. Further, net tuition may vary in response to need-based aid, which may, in turn, reflect cohort-to-cohort variation in economic conditions that is not exogenous to later co-residence choices, even when conditioning on student debt.

conditional on age 18 local economic conditions, state fixed effects, and each of the remaining, previously discussed regressors, (cohort-to-cohort movements in) the state’s private and public college tuition and fees are uncorrelated with cohort members’ decision to move home to parents between ages 23 and 25, except via student debt per graduate.⁵¹

c. Flow away from parents to independent living

We estimate a similar model for the share of county youth living with parents who move out between periods t and $t + 1$. The expression for the state fixed effects model estimated, using county-level aggregates is

$$Y_{t+1}^A = (X_{t+1}^A - X_t^A)\beta^A + Z_{cl}^A\gamma^A + \delta_{s(l)}^A + \varepsilon_t^A, \quad (4)$$

where all arguments are defined analogously to those in expression (2). In this case, all location characteristics are measured for location l , the parent’s location in period t . Superscript A denotes factors influencing the probability of moving “away”.⁵²

As above, we supplement these results with estimates that reflect the direct relationship between the public and private college tuition level faced by the state-cohort and the rate of moving away from parents, and also with estimates from an empirical model in which we instrument student debt per graduate using private and public college sticker prices in a manner analogous to specification (3).

Standard endogeneity concerns deriving from observable and unobservable individual and local characteristics that are fixed over the two year window are accounted for by the transition approach we take to estimation. Obvious examples include child ability, parent generosity, and persistent regional characteristics. Some remaining endogeneity concerns arise from the association between youth mobility and local house price and employment aggregates. By and large, they work against the main results described below. They are discussed in the appendix.

V. Results

a. Stock of young people living with parents

⁵¹ Those unsatisfied with this identifying assumption may focus on the directly estimated effects of state-cohort tuition on the rate of moving away, or of moving home, once one controls extensively for current and historic local conditions.

⁵² Owing to the unobservability of locations not chosen, what we will not be able to explore is the dependence of the youth’s decision to move home on the characteristics of the parent’s location, and the dependence of the youth’s decision to move out on the characteristics of the youth’s preferred independent location.

Table 2 reports the coefficient estimates for the stock parental co-residence model in expression (1) for 23- and 25-year-olds. Our baseline specification is shown in column (4), which includes each of the covariates listed in section IV*a* as well as state dummies to control for unobserved permanent cross-state differences in culture and policy. We find, as expected, that geographic areas with a lower overall employment to population ratio, a higher youth unemployment rate, a higher house price index, higher wages, and higher student debt per college graduate tend to have higher rates of parental co-residence, with each effect individually statistically significant at the 5% or 1% level.⁵³ Columns (1) to (4), along with other estimates available from the authors, demonstrate the robustness of our baseline estimates to various specification changes.⁵⁴

One challenge to the interpretation of the relationship between student debt per graduate and the rate of parental co-residence presented above is the possible existence of a (national or state-specific) secular unobserved trend in parental co-residence, perhaps related to a cultural change regarding young people's living with their parents. If there exists such a secular cultural trend, then the correlation between parental co-residence and student debt per graduate may be incidental. We test this conservative hypothesis by including a national linear time trend in our stock specification, shown in column (5) of Table 2. Including a time trend attenuates all of the estimated coefficients, including the coefficient on student debt per graduate, but the student debt estimate remains positive and statistically significant at the 10% level. The only other baseline specification coefficient that retains significance with the addition of the time trend is the youth unemployment coefficient; its magnitude, substantially diminished by the addition of a time trend, nevertheless implies that a one percentage point increase in state youth unemployment is associated with a 0.14 percentage point increase in the rate of co-residence with parents. The time trend coefficient itself is powerful, indicating a 1.3 percentage point annual growth rate in the rate of co-residence with parents. This model, however, is extremely conservative. Given the

⁵³ While the house price level may seem a more natural choice in this cross-sectional specification, we observe a similar but stronger relationship between co-residence with parents and the home price index. Since column (4) will be the basis of our decomposition, we chose the housing measure with greater explanatory power. Qualitatively similar results obtain using either house price measure. Estimates that rely on the county house price level are available from the authors.

⁵⁴ Indeed, we find a positive relationship between graduation rate and parental co-residence, suggesting that, separate from the effect of student debt, regions with a high proportion of young college graduates are also likely to have a high level of parental co-residence among 23 and 25-year-olds. Higher co-residence with parents in locations with higher graduation rates may reflect, among other things, delayed entry to the marriage market for college graduates.

near-linear growth in student debt, another interpretation of the time trend is as a noisy measure of the effect of student debt on parental co-residence.

In column (6) of Table 2, we examine the robustness of our baseline results to measuring student debt at age 24. We find that the relationship between age 22 student debt and parental co-residence is similar to but modestly stronger than that between age 24 student debt and parental co-residence, suggesting that the age at which we measure debt is not driving our results.⁵⁵

Finally, we are able to address the concern that student debt per graduate, even when aggregated to the state level, reflects the choices of parents who may be more or less generous to their adult children, and who themselves are budget-constrained donors. Certainly there exists important underlying heterogeneity in parents' level of financial generosity toward their adult children, and parental generosity may be associated with both fewer student loans and more co-residence with parents. It is likely that much of this underlying heterogeneity in parental generosity is averaged away as we aggregate to the state level. However, to the extent that entire states of parents are, on average, more or less generous than the U.S. population as a whole, we can expect surviving state-level heterogeneity in parents' generosity to bias the coefficient on student debt in the parental co-residence estimates downward. Alternatively, parent donors face meaningful budget constraints. Those who have offered extensive financial support for college may be less able to offer room and board to their children after college, and vice versa. This effect can be expected to bias the student debt coefficient upward.

In order to remove the choices of parent donors from the model, we estimate one final cross-sectional co-residence specification in which we replace the student debt measure with the state-level college sticker prices we have derived from the IPEDS data. In column (7) of Table 2, the estimated coefficients on mean private and public college sticker prices imply that a \$1000 increase in private (public) college tuition and fees is associated with a 1.2 (0.3) percentage point increase in the rate at which the relevant cohort lives with parents at ages 23 and 25. Note that these coefficients are significant and are even more substantial than the student debt coefficients.

One might worry that both tuition and student debt reflect in part the economic conditions of the state when the youth entered school, which could influence the return to the parents' home in ways unrelated to the cost of college. Estimates available from the authors repeat the Table 2

⁵⁵ Estimates of other Table 2 specifications replacing age 22 student debt with age 24 student debt, available from the authors, produce qualitatively similar results. Measuring student debt at age 22 may underestimate total undergraduate debt, but it avoids overestimation resulting from the addition of graduate student debt at higher ages.

column (4) and (7) specifications, controlling for the state's QCEW employment to population ratio and average weekly wage, CPS youth unemployment rate, and CoreLogic home price index when the youth was 18 years old. The resulting coefficients are slightly smaller and, unsurprisingly, still significant.

In order to understand the magnitude of the relationship between each economic characteristic and the increased rate of parental co-residence since 2003, we perform a simple linear decomposition of the state-level aggregated regression. Figure 7 shows the additive proportion of the (explained) variation in parental co-residence that the stock model attributes to each covariate (or, in the case of unemployment, set of covariates). Proportions of the explained variation attributed to each regressor are quite noisy for 2004 and 2005, which, presumably, arises from the small differences between the 2003 and 2004-5 parental co-residence rates. From 2006 forward, the explained variation proportions are informative.

One valuable insight generated by the decomposition is that the share of explained variation in living with parents that the model attributes to the combination of house prices, wages, and unemployment is approximately constant over the (post-2005) estimation period. Increasing rates of co-residence are explained by high house prices in the housing boom and low employment in the Great Recession. Therefore, despite pronounced business cycle swings in house prices and unemployment, the empirical model generates both substantial responsiveness of co-residence with parents to employment and house prices *and* a co-residence trend that *appears* wholly unresponsive to the business cycle. Student debt, for its part, claims the largest share of the increase, accounting for 35% or more of the increase in the likelihood of a young person's living with parents throughout the estimation period.

b. Flow home to parents from independent living

Table 3 reports the coefficient estimates for the moving home model in expression (2), as well as the instrumented student debt model in expression (3).⁵⁶ Our preferred specification appears in column (4).⁵⁷ Here we find that an increase in local house prices has a positive and highly significant effect on the probability that the young adult moves home. In fact, we estimate that a one standard deviation increase in the house price change over the two years leads to a 3.2

⁵⁶ For the relevant scales of measurement, as well as average values of the flow variables, see Table 1.

⁵⁷ We choose the specification in column (4) as our baseline because it includes the full set of controls for changes in local conditions, as well as state fixed effects, and does not yet rely on tuition predictors. Comparison to the specifications including tuition measures as student debt instruments, or in their own right, follow.

percent increase in the probability of a youth moving home. Further, looking across the Table 3 specifications, we see that the house price coefficient is particularly robust to the inclusion of other regressors, such as local wages, student debt reliance, and graduation rate. It is only strengthened by using tuition to predict student debt, or by replacing student debt with state tuition in the moving out model.⁵⁸

The estimated effect of local employment markets on the likelihood of a youth moving in with parents between the ages of 23 and 25 operates as one might expect. A one percentage point increase in the county-level employment to population ratio is associated with a 0.1 percentage point decline in the rate of moving home over the period, and this estimate is significant at the five percent level. At the same time, the direction and magnitude of the coefficient on state-level youth unemployment is surprising. A one percentage point increase in youth unemployment is associated with a 0.16 percentage point *decrease* in the rate of moving home to parents, so that a simultaneous one percentage point decrease in the county-level employment share and a one percentage point increase in state-level youth unemployment have nearly offsetting effects. On further investigation, we find that the surprising state-level youth unemployment coefficient represents not a difference in overall and youth employment conditions, but a difference in the effects of county- and state-level employment conditions. Accounting for total state-level unemployment leaves the estimated youth unemployment effect small and insignificant. On net, the effects of local job market characteristics, including county- and state-level employment features and county-level wages, on the flow home to parents are estimated to be quite small.

However, the estimates in column (4) demonstrate a significantly higher rate of moving home in states with a higher debt cost of a college degree in the youth's graduating cohort. An increase of \$10,000 in the debt cost of a degree is associated with a 6.1 percent increase in the probability of an independent young resident moving home over the course of two years. This estimate represents the lowest point estimate of the student debt effect on co-residence reported in Table 3, and is lower than the typical point estimate generated by most variants of the flow home model that we have investigated. The estimated effect is robust to controlling (or not controlling) for the share of college graduates among the youth's cohort in the state. These

⁵⁸ The reverse causality generated mechanically by the shifting populations, discussed in the appendix, in this case works against our finding a positive effect of house price increases on moving home, implying that the specification (3) house price coefficient point estimate represents a lower bound estimate of the true effect. Further, the extent of this reverse causality problem may be large given that house prices are measured at the county level, and many young people may cross counties to return to parents.

estimates provide further, and perhaps more credible, evidence of a positive effect of growing student debt burdens on young people's propensity to live with parents.

Finally, the point estimates generated by the specifications in which we instrument the state-cohort student debt price of a degree using public and private tuition and fees are of considerably greater magnitude than those produced by the un-instrumented versions, and are more precisely estimated, suggesting that the relationship we estimate between student debt and the rate of moving home is not driven primarily by unmeasured heterogeneity in states' patterns of support for youth.⁵⁹ For example, in column (5), in which we instrument student debt with tuition, the student debt coefficient rises to 0.332, and is significant at the one percent level. This point estimate implies that a \$10,000 increase in the mean student debt price of a degree leads to a 3.32 percentage point, or 19.5 percent, rise in the probability of moving home between age 23 and 25.

Moreover, as in the section *Va* cross-sectional estimates, we re-estimate controlling for age 18 local economic conditions. The instrumented estimates with age 18 economic controls yield a (highly significant) student debt coefficient of 0.276, similar to those estimated with and without the instrument in the baseline model. Finally, estimates that omit student debt altogether, and instead measure the cost of college using state-cohort tuition, produce coefficients of very similar magnitude to the above student debt coefficients, though their precision is weaker.

c. Flow away from parents to independent living

Table 4 reports the coefficient estimates for the model of the rate at which dependent youth move away from home. Where the larger and more significant effects on the move home are exerted by house prices and student debt in Table 3, here we find that county-level employment and student debt exert the greatest influence on the decision to seek independence.

Looking again at the preferred specification reported in column (4), we see that a one percentage point increase in the county-level employment to population share leads to a 0.31 percentage point increase in the rate of moving away from parents. A one percentage point

⁵⁹ Details regarding the estimated first stage of expression (3) are available from the authors. The first stage coefficient on state mean private college sticker prices is 0.997, with a t-statistic of 2.49. The coefficient on state mean public college sticker price is 0.337, with a t-statistic of 3.49. Though these measures of college costs produce our strongest first stage without introducing grant factors related to state poverty rates, similar estimates obtain when we instrument for student debt using various alternative college cost measures, including combinations of public and private net costs and a weighted average sticker price that accounts for the share of the state's students attending private, as opposed to public, universities. The first stage F statistic is 84.39. As may be obvious, the first stage passes Stock and Yogo (2005) weak identification tests. Further, a Sargan-Hansen test fails to reject the null of valid overidentifying restrictions at standard levels.

increase in state-level youth unemployment, however, has small, insignificant, and mixed effects on the rate of moving out in Table 4. As in the move-in estimates, further analysis indicates that the difference between the two employment coefficients is attributable not to the difference in the ages of the relevant populations but to the difference in the geographic content of the measures. Counties experiencing greater employment growth have youth who move out at higher rates; it appears that employment enables independence.⁶⁰

Student loans are, once again, estimated to encourage co-residence with parents. The Table 4, column (4), student loan coefficient is large, negative, and highly significant. It indicates that a \$10,000 increase in average student debt per graduate in the relevant state-cohort decreases the rate at which youth living with parents move out over the two years by 14.8 percent (5.0 percentage points).⁶¹ As before, the aggregated state-cohort student debt reliance is purged of features of the individual student's situation or her parents' level of supportiveness. Given the state fixed effects in this framework, the effect of state-cohort student debt on transitions away from the parents' home is identified using variation between cohorts in a given state in student debt reliance, and hence accounts for state-specific levels and linear trends in the influence of the degree of support for youth and education on the two year transitions.

As in the transition models of moving home, here we estimate a specification that instruments for the state-cohort student debt price of a degree using state-cohort tuition prices. As in the case of moving home, we find the estimated effect of student debt on the probability of moving away from parents to be quite robust to (and substantially strengthened by) instrumental variables specification, as well as to the inclusion of age 18 local economic conditions and state fixed effects, with the latter estimates available from the authors. The column (5) student loan point estimate is 1.8 times the magnitude of the estimate from our baseline specification in column (4), and retains significance at the one percent level.⁶² Finally, move-out specifications similar to those in Table 4, but omitting student debt measures in favor of our more direct college cost measures, produce very large and highly significant negative tuition coefficients for both

⁶⁰ This effect may operate through higher parental income, greater job opportunities for youth, or some combination.

⁶¹ Again, the student loan estimate is not sensitive to the inclusion of the state-cohort graduation rate, which has a precisely estimated and substantial negative relationship with moving away from home.

⁶² Note that the finding that the instrumented state-cohort student debt effect on moving out is larger than the effect in the un-instrumented model suggests that the baseline estimates' student debt effect is indeed biased toward zero, potentially as regions that are more supportive of youth both require less debt funding of education and tolerate more co-residence with parents.

private and public institutions.⁶³ Using a wide range of approaches, we find that locations characterized by higher costs of college subsequently experience meaningful delays in the rate at which the affected cohorts attain economic independence.

Finally, once we control for the education measures, we find a negative, sizable, and reasonably precisely estimated effect of county house prices on the rate at which youth move away from parents. The baseline regression's home price index coefficient in column (4) indicates that a one standard deviation increase in house price growth over the two years is associated with a 1.7 percent slowdown in the rate at which the county's youth achieve independence. Taken together, the estimated suite of effects of local economic conditions, including employment, house prices, and wages, on the propensity to move out appears to reflect the net result of ambivalent effects of strengthening local economic conditions on youths' capacity for independence. While strengthening county-level job market conditions may improve the ability of youth to secure employment and fund independent households, and of parents to bankroll moves away from home, strengthening local conditions may also give rise to increasing local home prices, which encourage continued co-residence.

VI. Discussion and Conclusions

This paper investigates young people's parental co-residence rates in the CCP, and the relationship among co-residence decisions and local house prices, local employment conditions, and the student debt reliance of local college students. Evidence from the CCP shows that co-residence with parents has been persistently increasing for 25- and 30-year-olds since 1999, while the number of 25- and 30-year-olds living alone or with more than one roommate has declined. This trend is corroborated by similar analysis in the CPS. Simultaneously, homeownership has decreased for both age groups. Both the fraction of individuals who have student debt and those individuals' average balances have steadily increased over the same period. Further, what appear to be ongoing secular rises in co-residence and student debt, in combination with pronounced cyclical patterns in unemployment and house prices, call into question the role of employment and housing costs in intergenerational co-residence choices.

Panel estimates relying on geographic variation in economic conditions at the county and state level reveal countervailing effects of local economic growth on young Americans'

⁶³ A \$1000 rise in private (public) sticker price tuition is estimated to lead to a 0.9 to 1.6 (0.3 to 0.4) percentage point drop in the rate of moving out. These estimates are also available from the authors.

propensity to live independently. While a one percentage point rise in a county's employment to population ratio is estimated to increase 23 year-olds' two-year rate of moving away from parents by 0.31 percentage points, a one standard deviation increase in house price gains over the two year period increases the probability that an independent youth moves home by 3.2 percent. Decomposition of the estimated correlates of co-residence in a stock model show shifting roles of house prices and unemployment over the business cycle, and yet a constant net effect of local economic conditions in explaining co-residence. In this manner, our estimated model is able to reconcile an apparently acyclical trend in intergenerational co-residence with large estimated effects of both employment and house prices on co-residence. On net, then, it appears to be not the overall strength of the local economy, but the relative circumstances of local labor and housing markets that shape the trend in co-residence with parents.

Finally, we find that a high state-level student loan balance per college graduate among a young person's cohort both significantly increases the rate at which independent young people transition to living with their parents and significantly slows the rate at which dependent youth transition away from their parents. States experiencing higher growth in student debt reliance from cohort to cohort also show greater increases in rates of parental co-residence. Transition model estimates indicate that a \$10,000 increase in average student debt among a youth's state cohort leads to a 1.0 to 3.3 percentage point increase in the rate of moving home to parents, and to a 5.0 to 9.0 percentage point *decrease* in the rate of moving out of parents' households, over two years. Given the ongoing escalation of U.S. student loan reliance, this suggests that a substantial portion of the persistent increase in co-residence with parents among recent youth cohorts can be explained by increasing student debt balances.

Cross-sectional and transition estimates of parental co-residence patterns that rely on local aggregates may be useful in addressing the specific estimation challenges described by this paper, including the link between the measurement of local conditions and the outcome of interest, and heterogeneity in individual youth ability and family generosity. However, they imply that all statements made based on the estimates reported in this paper describe local average levels and changes in the student debt, or tuition, cost of a degree. Higher education investments, and their returns, may be quite heterogenous, as described by Avery and Turner (2012). While these results describe the association between the average cost of higher education in a location and the rate of remaining or returning home, they may, for example, reflect a mix of

strong homeward pressure in response to low-return educational investments and no effect or pressure toward independence in response to high-return investments.

Section III describes substantial recent changes in both young Americans' rate of transition from parents' homes to independence and their rate of entry into the housing market. The estimates presented here explore the dependence of the co-residence decision on local economic conditions. Finally, in a companion paper to be posted soon, we use related methods to study the dependence of early homeownership on these same local economic factors.

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Appendix

a. Trends in other living arrangements

Given general agreement that young Americans are staying home with parents at an increasing rate, what alternative living arrangements are they forsaking? Popular speculation suggests declining rates of first marriage among young people in the wake of the recession. After the release of the 2009 American Community Survey, Mather and Lavery (2010) noted a recession-era decline in the share of young people who had ever been married. Shortly after, Wolfers (2010) countered that this data artifact represented not a meaningful decline in stable relationships, but an ongoing increase in the age at first marriage in the U.S., coupled with an increase in cohabitation during the recession, which may have been motivated by a desire to cut living expenses. The relevant question for the current study, then, may be whether young Americans are choosing extended adolescence at home with parents in place of independent adulthood and marriage.

Our CCP data do not allow us to measure the rates at which CCP sample members are marrying before and after the recession. They do not even allow us to measure cohabiting relationships, whether or not they involve marriage. What we can do, however, is look at trends in the rate at which young Americans co-reside with one other adult of a similar age. The benefit of this approach is that it includes marriage along with both opposite sex and same sex cohabitation, yielding a broader picture of trends in co-residing relationships over the period. The obvious drawback, however, is that it includes roommate pairs whose relationships are platonic. Our analysis of CPS household characteristics suggests that this latter group is

reasonably rare from at least the age of 30 onward.⁶⁴ Interpretation of trends in living with a single adult roommate of comparable age should, however, bear this inclusion in mind.

We categorize individuals who are not co-residing with parents into three types. An individual is defined as living alone if she is the only (Equifax-covered adult) resident at her street address. We then divide the remaining individuals into those who live with only one other person and those who live with more than one other person, excluding households with more than 10 people and individuals whose report lists a post office box address.

Figure A1 panels (a) and (b) show CCP trends from 1999 to 2013 in the rates at which 25- and 30-year-olds, respectively, appear alone, with parents, with one adult of similar age to the file holder, and with two or more adults of similar age.⁶⁵ The latter category we interpret as roommates.

We find a consistent pattern across the two age groups, though, of course, the level and growth of co-residence with parents is greater for 25 than for 30-year-olds. At each age, the growth we observe in co-residence with parents appears to come at the cost of fewer young people living alone, and fewer young people living with young roommates. The rate of living alone, for example, falls from just above 26 percent for each age group in 1999 to 15 percent for 25-year-olds and 17 percent for 30-year-olds, in 2013. The rates of living with roommates at the two ages follow a similarly steady decline, excepting 2013.

Cohabiting with one adult of similar age, however, follows a hump-shaped pattern for each group. For 25-year-olds, the rate of such cohabiting relationships begins in 1999 at 16.6 percent, hovers for some years near 20 percent, and then gradually drops to 16.4 percent between 2008 and 2013, for a total loss over the period of 0.2 percentage points. Similarly, the rate for 30-

⁶⁴ Calculations available from the authors.

⁶⁵ By similar age, we mean 14 or fewer years older, or any amount younger, than the file holder. This cutoff is chosen to create mutually exclusive and exhaustive living arrangement categories.

year-olds began at 24.1 percent in 1999, rose to a 2006 peak of 32.1, and dropped slightly between 2006 and 2013 to 28.7, for an overall growth in cohabiting relationships among 30-year-olds over the period of 4.6 percentage points. In sum, the observed growth in co-residence with parents is balanced by steep declines in living alone and living with groups of roommates for 25- and 30-year-olds. Interestingly, we find no clear evidence of a decline in cohabiting relationships in favor of living at home with parents in these data.

b. Trends in homeownership

Figure A2 relates the timing of the homeownership decline to that of the increase in the rate of living with parents for each age group. We infer homeownership based on the presence of home-secured debt, whether mortgage or home equity-based loans, on the sample member's credit report.⁶⁶ Further, as some couples may include only one member's name on the mortgage, we record an individual with no home-secured debt on her or his own credit report, but who is living with one adult of similar age who holds home-secured debt, as a homeowner.⁶⁷ The presence of home-secured debt on the credit report is a particularly reliable proxy for homeownership at young ages, and its absence a reliable proxy for non-homeownership, as very few 30-year-old homeowners in the U.S. own their homes outright. In the figure, we trace the proportions of 25- and 30-year-olds who have owned homes over the past 4 years, inferred based on the preceding four years of linked data in the panel. The object of interest is whether the

⁶⁶ Note that homeownership in Figure A1 reflects all youth in the CCP as well as the small portion of youth represented in the Census but not in the CCP. We assume that 25 and 30 year olds not covered by the CCP (and who thus do not have Equifax credit reports) are not homeowners, as (we infer) they almost certainly cannot have mortgages. The qualitative findings all persist in the CCP-only sample.

⁶⁷ Evidence from our sample indicates a sharp change in the rate at which young couples include both members in a mortgage following the Great Recession. This is discussed in a companion paper on student debt and homeownership (Bleemer *et al.*, 2015). Whether or not we credit couples' mortgages to each other, we find that homeownership at age 30 declines markedly after 2007.

individual currently owns or has ever owned a home, and four years of history is a reasonably good proxy for ever owning at these very young ages.⁶⁸

We find that homeownership among 30-year-olds grew modestly from 43.2 percent in 2003 to 44.4 percent in 2006-7.⁶⁹ After its peak at 44.4 percent, it dropped off dramatically following the housing market crisis, to 42.6 in 2008 and 31.9 percent by 2013. Hence we observe more than a 10 percentage point drop in the share of 30-year-olds who have owned their own homes over the course of five years. This hump-shape in homeownership corresponds to the cohabitation pattern discussed earlier, though the decline in homeownership for 30-year-olds in recent years has been much larger than that of cohabitation.

Homeownership rates among 25-year-olds are, as expected, substantially lower. Perhaps more surprising is the timing of their growth and decline relative to the housing market boom and bust. Speculation regarding the source of the boom and bust, and its relationship to sub-prime lending and easy credit for buyers with limited funds for down payments, suggests a housing market that grew to reach younger and younger consumers. The CCP time trends on early homeownership appear to tell a different story. Homeownership among 25-year-olds grew from 22.7 percent in 2003 to a peak of 22.9 percent in 2005. This increase appears reasonably modest, in the face of softening sub-prime lending standards and historically low down payments. From its peak in 2005, homeownership among 25-year-olds fell to 22.5 percent in 2006 and continued to decline until it reached 12.1 percent in 2013. Thus the drop in homeownership among 25-year-olds led the downturn in the housing market by roughly a year,

⁶⁸ Similar results obtain where we track the rate of current homeownership and the rate of ever owning over the full course of the panel. The potential difficulty with the latter measure is that the look-back window available in the CCP lengthens as the panel progresses, creating time dependence in the quality of the measure of homeownership.

⁶⁹ Our homeownership time series commences in 2003 because we define homeownership as having held home-secured debt at any time in the past four years; the CCP's origin in 1999 prohibits comparable homeownership measurements in earlier years.

and peak homeownership at 30, traditionally the median age of first home purchase in the U.S., was reached a full two years later.⁷⁰ Clearly the youngest homeowners had a different relationship to the housing boom and bust than traditional first time buyers.

Declines in homeownership coincide with increases in living with parents for both age groups. At 25, homeownership drops steadily from 2005 through 2013, and the rate of living with parents shows a steady increase throughout the 2003 to 2013 window. At 30, living with parents increases throughout, but appears to accelerate after 2006. Shortly after, in 2007, homeownership reaches its peak and then declines steeply until 2013, at which point 30-year-olds in the CCP are equally likely to be living with a parent or to own a home.

c. Remaining endogeneity concerns in the flow models

One possible concern regarding reverse causality arises from the individual youth's influence on labor and housing markets in the location she leaves, should she decide to move. A youth who moves away from one location to another, if unemployed, can be expected to decrease the total and youth unemployment rates in the original location. If employed, she increases the unemployment measures in the origin. Assuming those who move home are more likely to be unemployed than the population of young people overall, this mechanical source of endogeneity could bias coefficients on the employment measures toward a positive relationship between employment and moving home.⁷¹ Hence this possible mechanical endogeneity could weaken the estimated employment effect on moving home. Assuming those who move out are more likely to be employed than the general population, the potential mechanical bias works toward a finding of a negative association between employment and moving out, once again

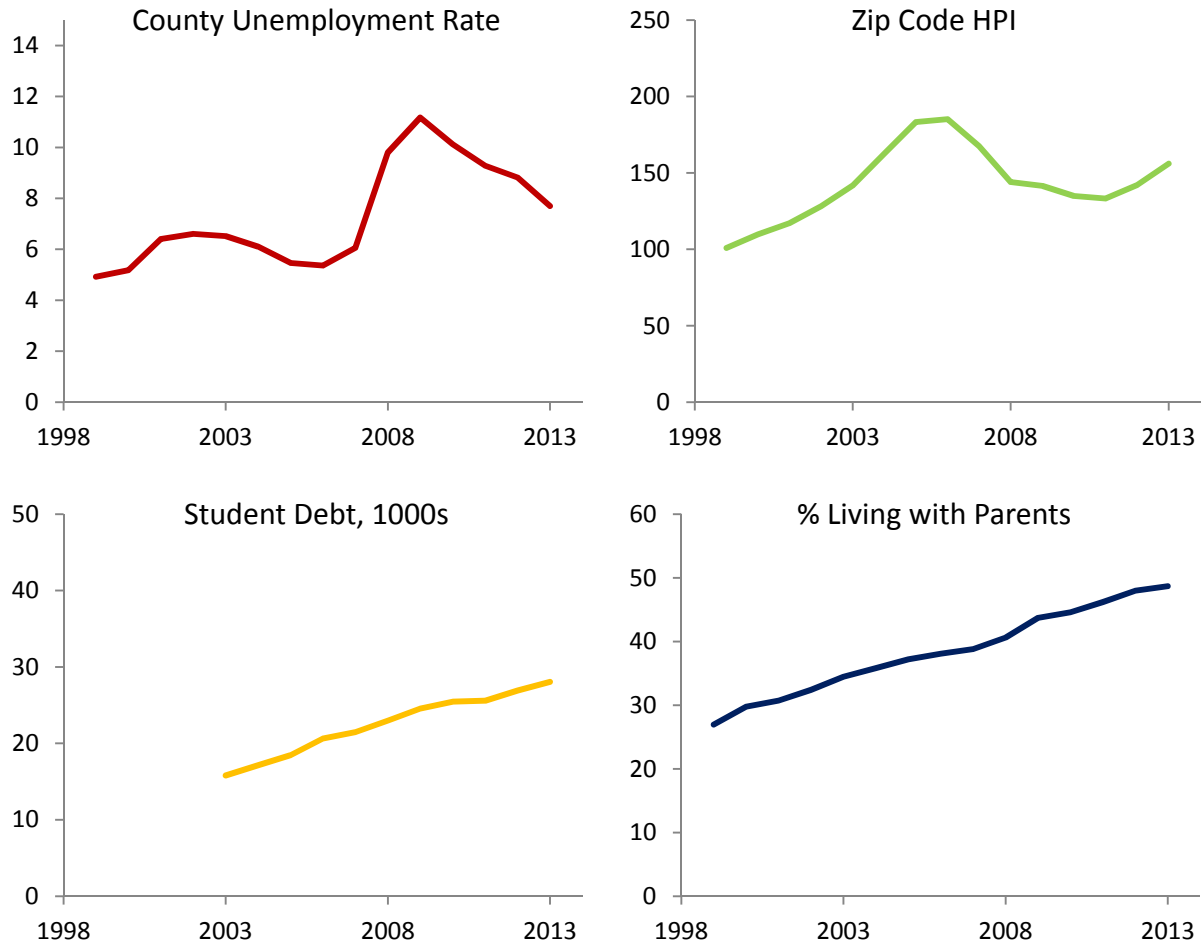
⁷⁰ See Lautz (2011) for recent median ages at first purchase.

⁷¹ Note, however, that Hunt (2004) describes substantial heterogeneity in the skill level and employment circumstance of return migrants, with high skilled return migrants arising from life-cycle migration plans, as in Dustmann 2003.

dampening our estimated employment effect. Of course, to the extent that the unemployment measure responds with a lag rather than contemporaneously, the estimates will not be biased. This seems to be a likely possibility. Further, this source of reverse causality of youth residence choices is not a concern if moves to and from parents' households all occur within the relevant location. For example, to the extent that all moves home or away occur within the same county, no unemployment coefficient will be affected.

Assuming youth in our model influence the housing market as well, a similar type of reverse causality could affect the coefficients on house prices. Assuming that a child living in a parent's basement does not lead the parent to demand more housing, the departure of a youth who lives at home has no effect on house prices. Hence we are less concerned about the effect of reverse causality on the house price coefficient in the moving out regression. An independent youth who returns to her parent's home, on the other hand, leaves the origin housing market and therefore decreases total housing demand in the origin. As each youth in the moving home regression exerts this influence, this source of mechanical reverse causality could bias the estimated coefficient on house prices in the moving-home regression downward, toward finding a negative effect of house prices on the rate of moving home. As in the case of unemployment, to the extent that the resulting effects on house prices appear with a lag, or that moves between parent and independent youth locations fail to cross counties, however, this is not a concern. Much like the the case of unemployment, this source of mechanical bias works against finding the significant positive effect of house prices on the rate of moving home that we report. Nevertheless, we bear in mind the possibility of downward pressure on the house price coefficient in the moving home regression.

Figure 1: Economic Circumstances of CCP 25-Year-Olds



Source: NY Fed Consumer Credit Panel / Equifax, Bureau of Labor Statistics, CoreLogic

Figure 2: Coresidence with parents among 25 and 30 year olds in the CCP, 1999-2013

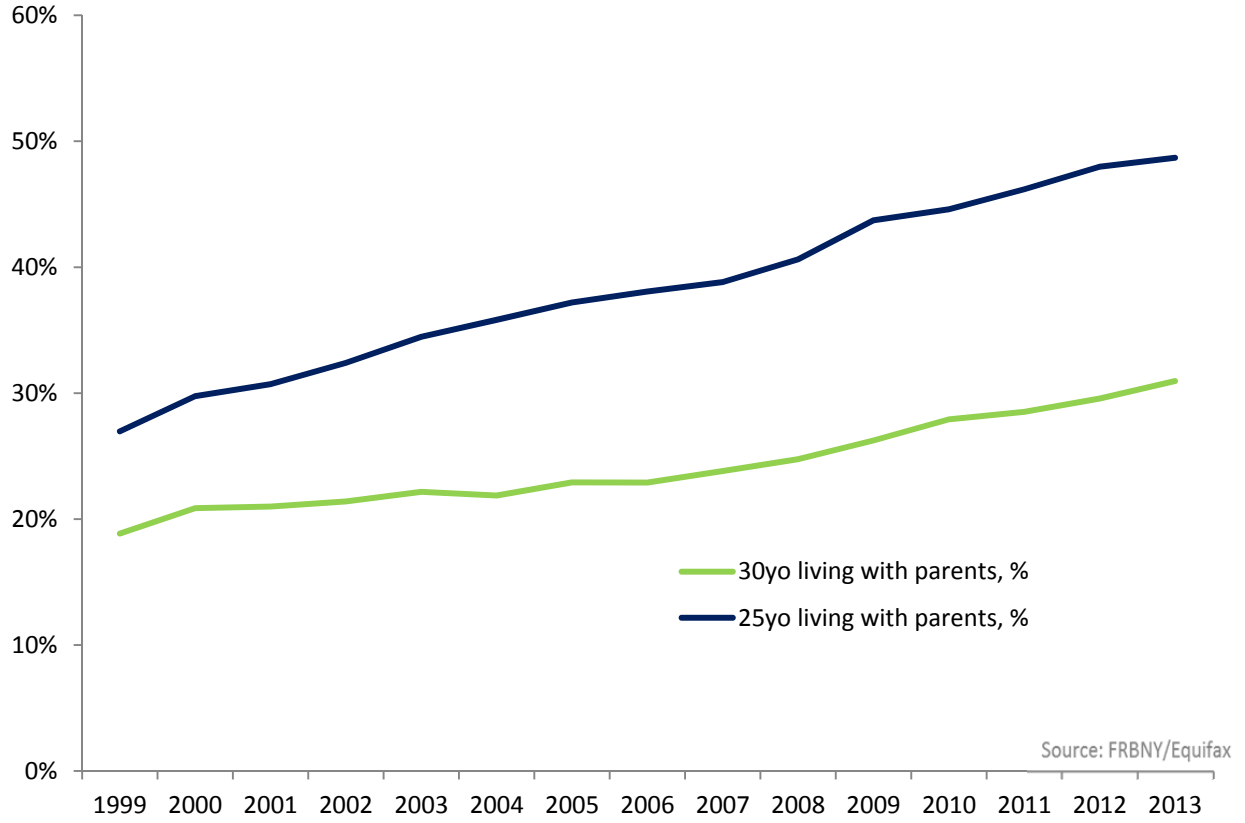


Figure 3a: Percentage of 25-year-olds living with parents in 2002-2003

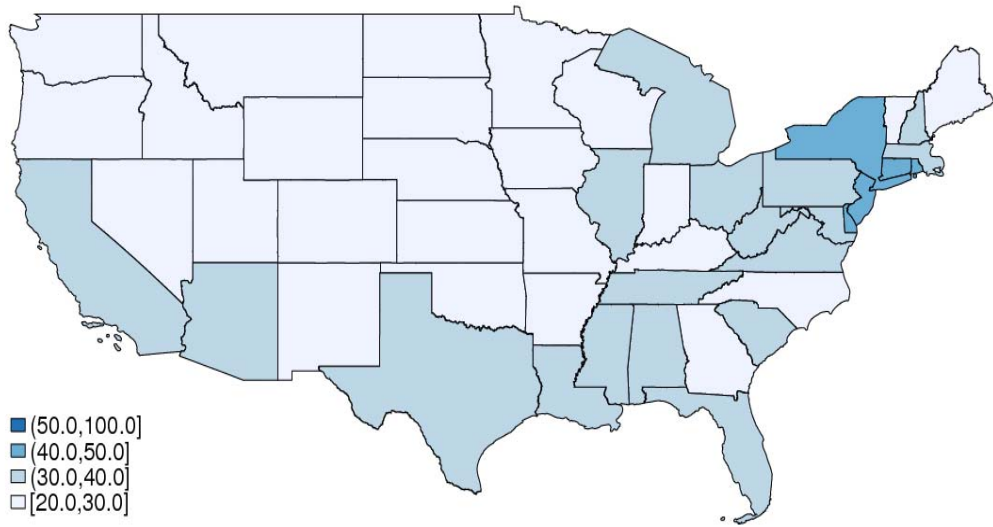
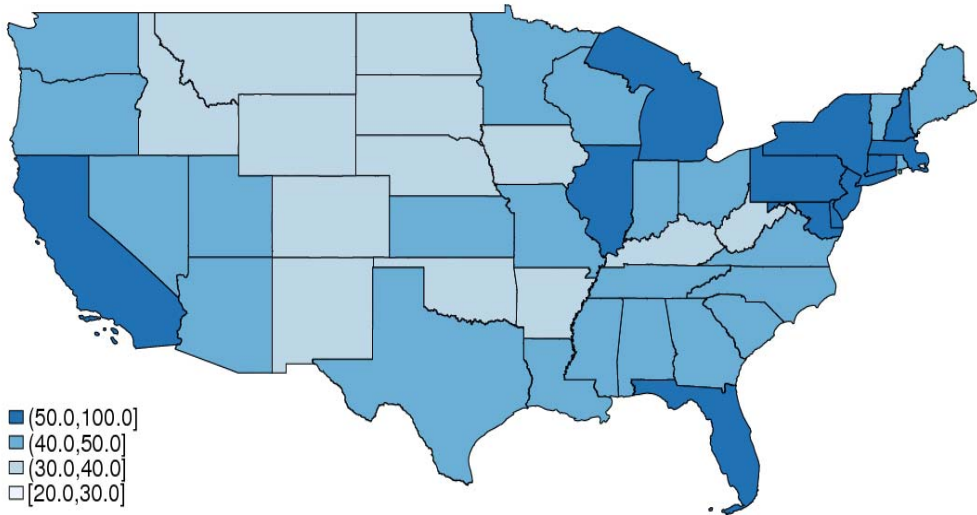


Figure 3b: Percentage of 25-year-olds living with parents in 2012-2013



Source: FRBNY/Equifax

Figure 4a: Measurement of living with parents at 25, CCP with and without Census correction

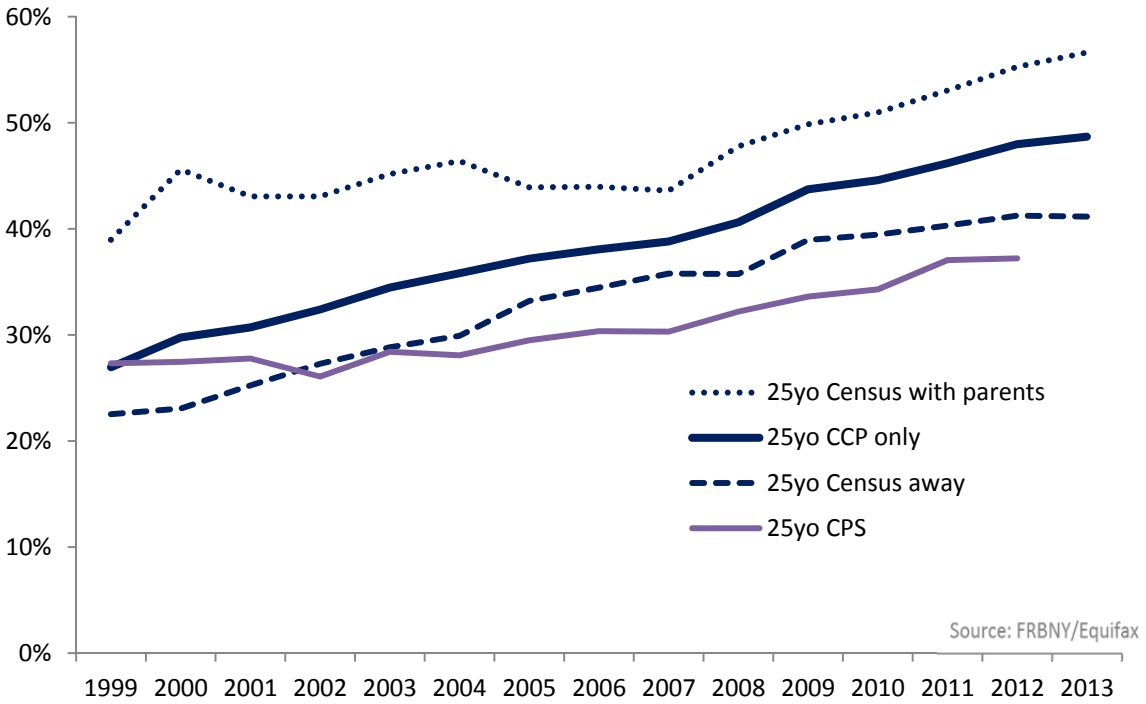


Figure 4b: Measurement of living with parents at 30, CCP with and without Census correction

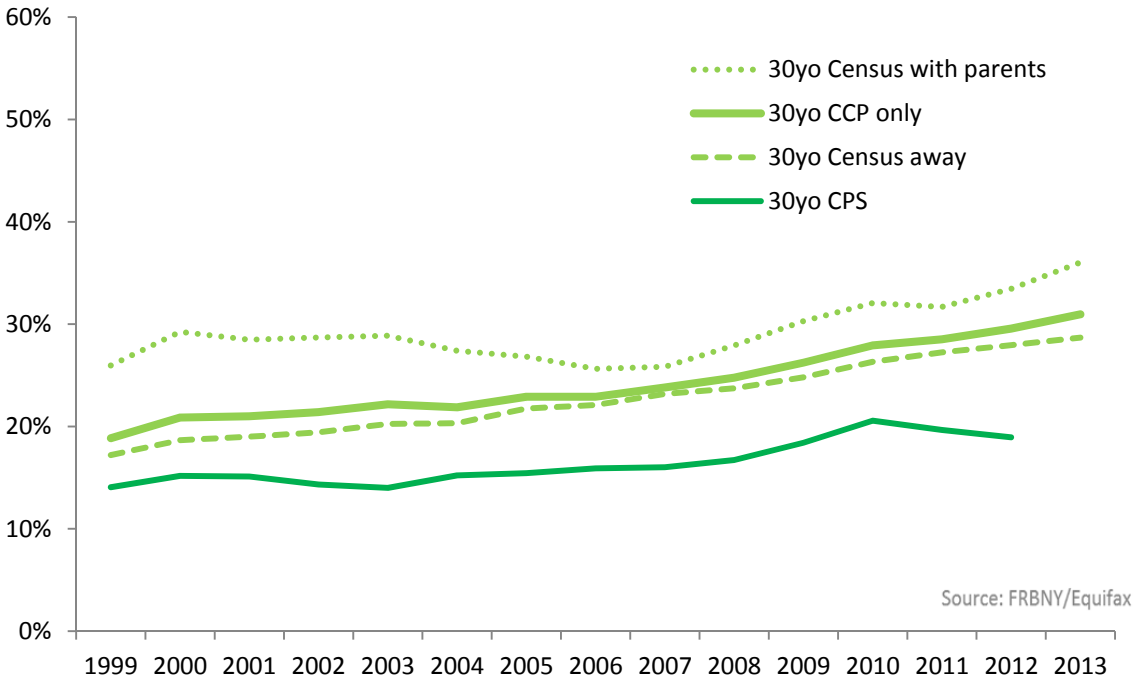
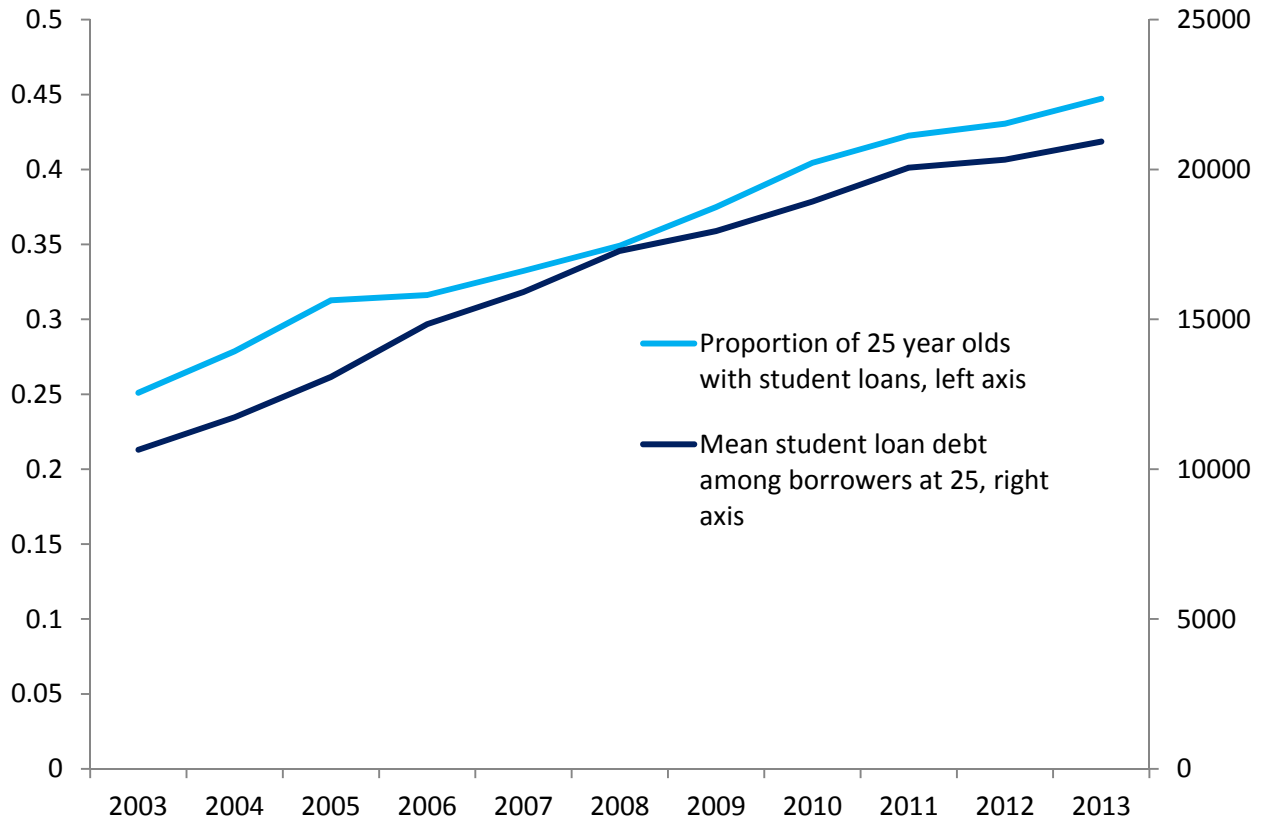


Figure 5: Student debt prevalence and mean among 25 year olds



Source: FRBNY/Equifax

Figure 6: Changes in Student Debt and Parental Co-Residence, 2008 to 2013

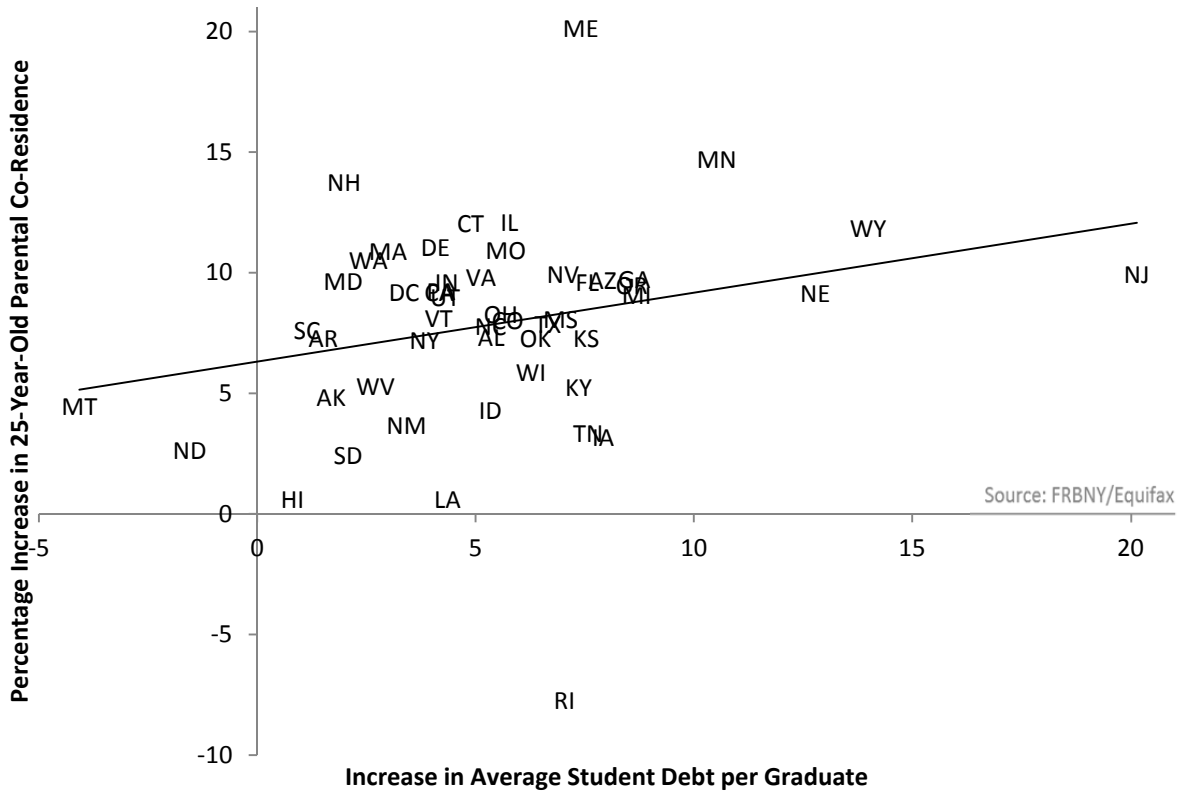


Figure 7: Decomposition of Baseline Stock Regression

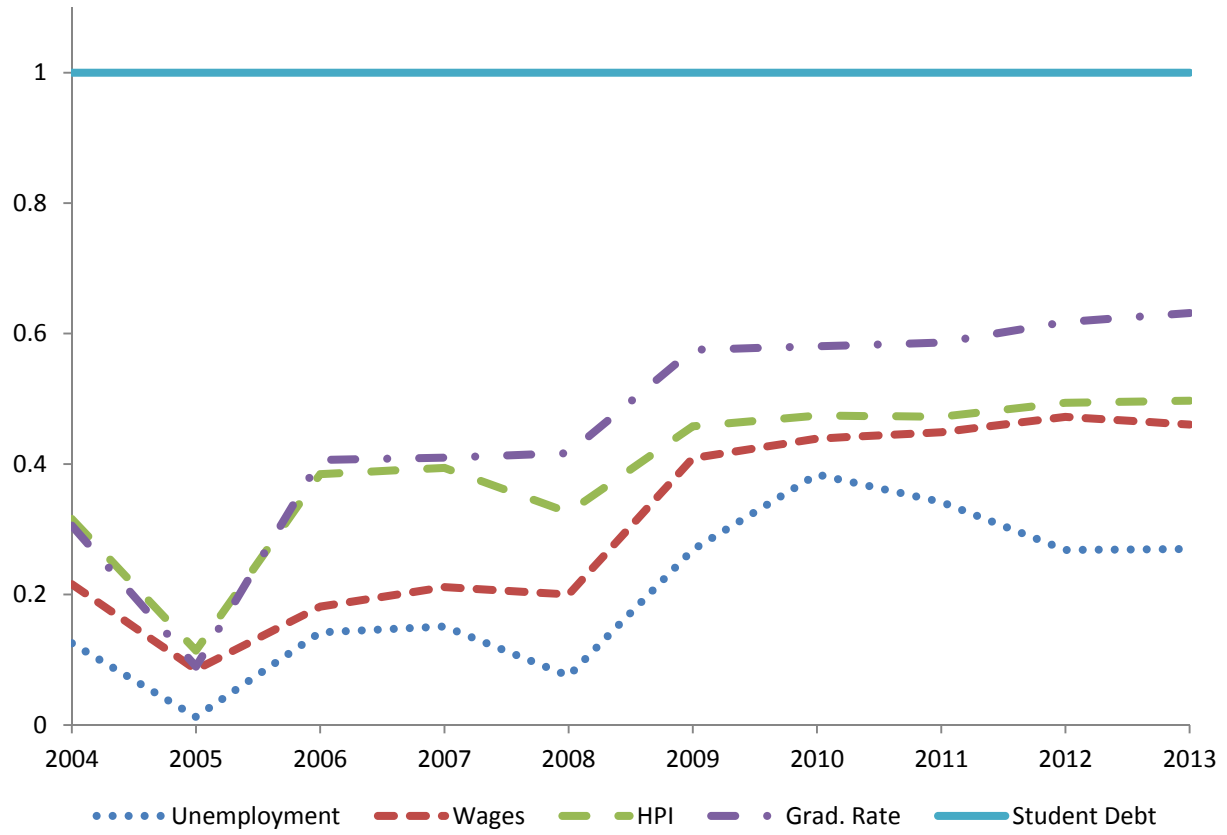


Figure A1a: Residence arrangements of 25 year olds in the CCP, 1999-2013

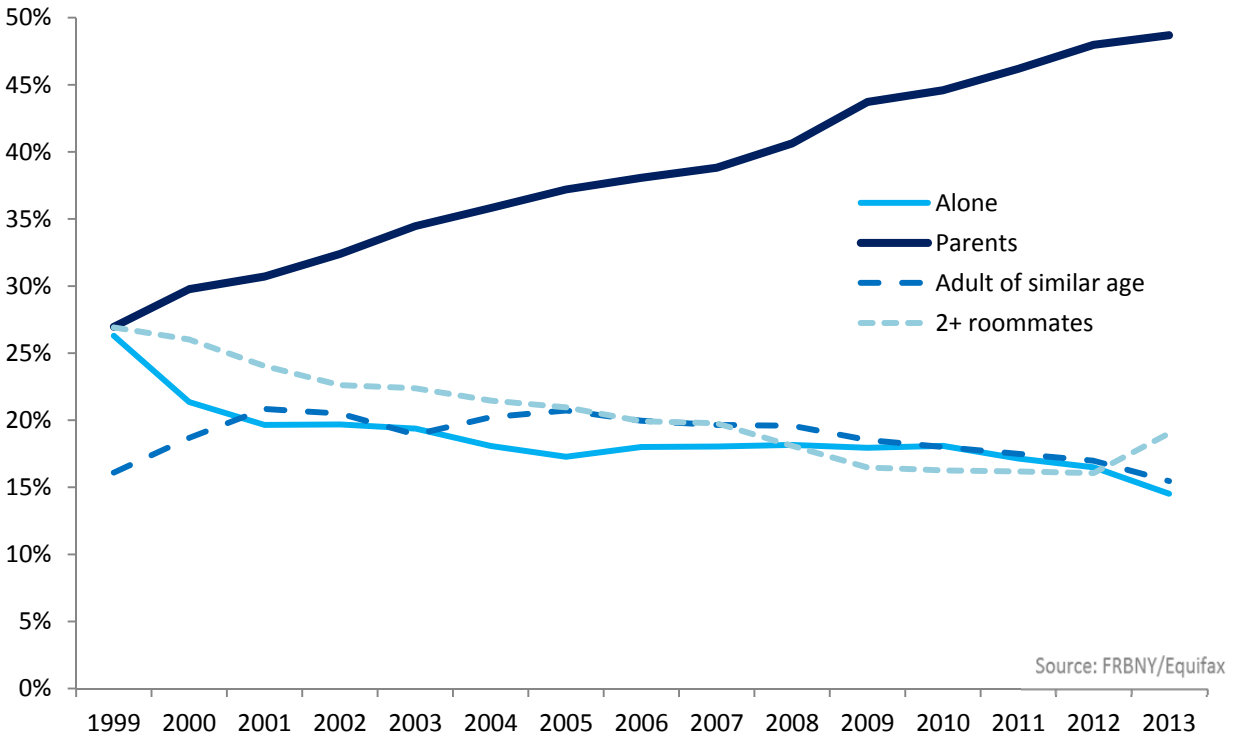


Figure A1b: Residence arrangements of 30 year olds in the CCP, 1999-2013

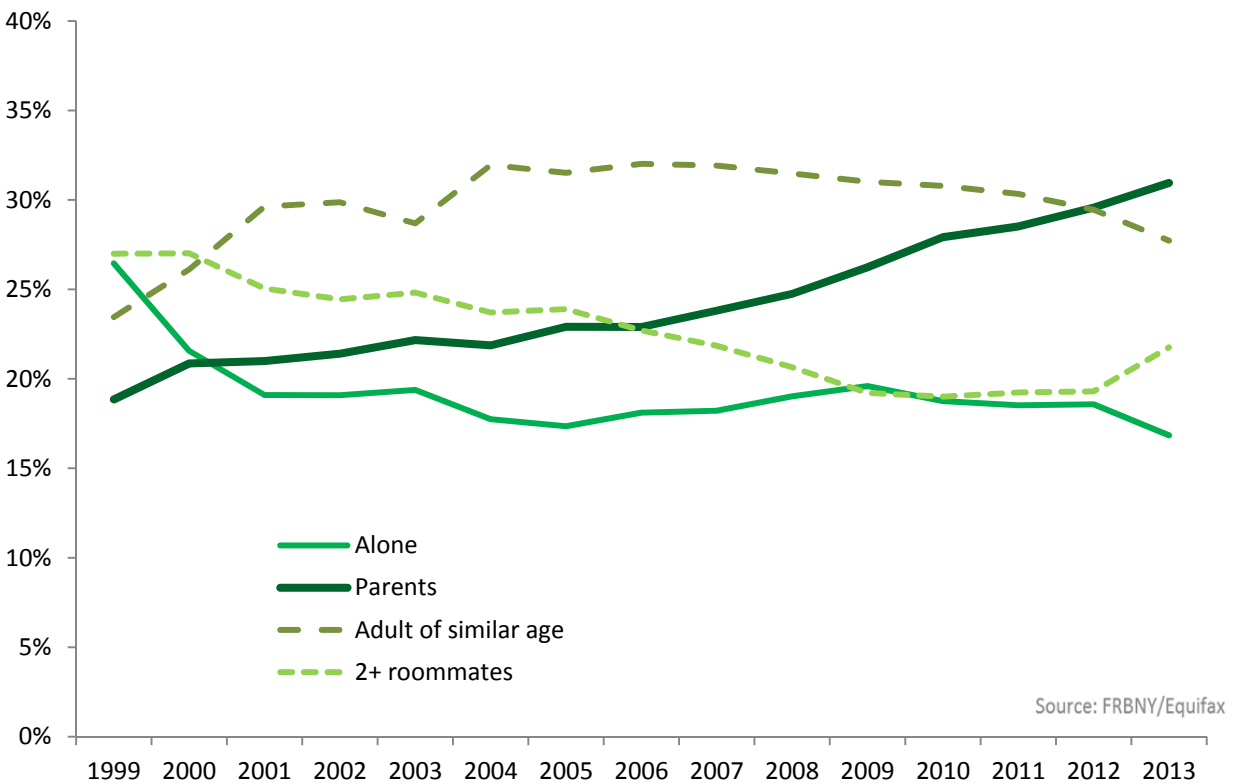


Figure A2: Homeownership and living with parents among 25 and 30 year olds in the CCP, 1999-2013

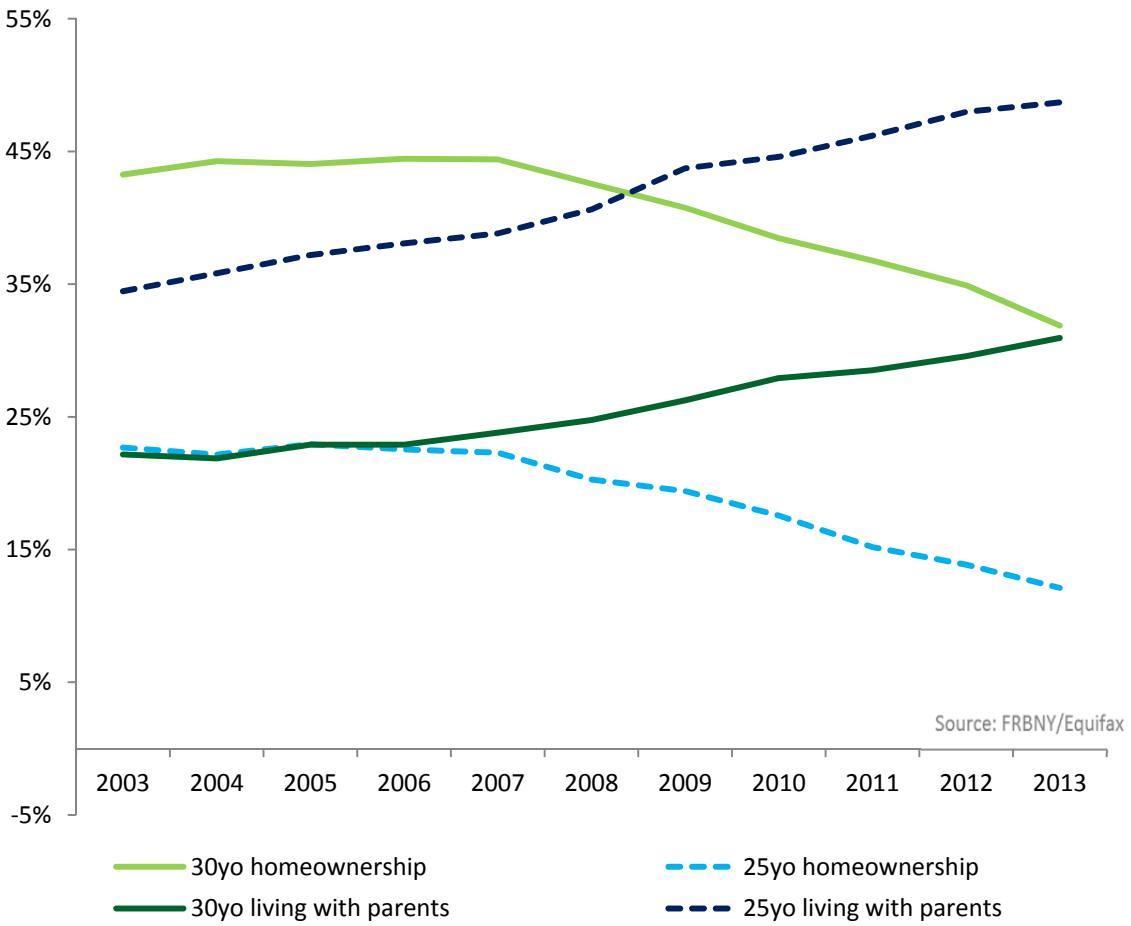


Table 1: Descriptive statistics, pooled locations and parent v. independent youth locations

	(1)	(2)	(3)	(4)	(5)	(6)
	Stock Values			Flow Values		
	All	No Parents	Parents	All	No Parents	Parents
Employment to Population, county	55.7 (18.4)	56.3 (19.2)	54.8*** (17.0)	-0.860 (2.6)	-0.896 (2.7)	-0.810*** (2.5)
State-level youth unemployment	9.8 (3.2)	9.5 (3.1)	10.1*** (3.3)	0.627 (3.3)	0.659 (3.2)	0.584*** (3.3)
Average Weekly Wage, \$100s	8.7 (2.6)	8.6 (2.7)	8.9*** (2.5)	0.112 (0.6)	0.117 (0.6)	0.106*** (0.5)
House Price Index, 100 in 2000	138.7 (40.5)	135.5 (39.4)	143.1*** (41.6)	6.940 (29.0)	8.405 (28.2)	5.011*** (29.9)
County Mean House Price, \$10,000s	2.4 (2.1)	2.3 (2.2)	2.5*** (2.0)			
Student debt per graduate, \$1000s	16.0 (7.2)	15.3 (6.9)	16.9*** (7.6)			
Graduation rate, state-cohort	29.1 (10.7)	29.1 (10.6)	29.1** (10.7)			
Public Sticker Cost, \$1000s	6.4 (2.4)	6.3 (2.3)	6.6*** (2.4)			
Private Sticker Cost, \$1000s	20.1 (5.7)	19.5 (5.6)	20.8*** (5.7)			
	<i>N</i> = 1,092,992	647,313	445,679	546,824	315,348	231,476

Table 2: Fixed effects model of the share of 23 and 25 year-olds in the state who are living with parents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline				Time Trend	Age 24 SL	Tuition
Employment to Population, county	-1.027*** (0.184)	-1.120*** (0.131)	-0.781*** (0.100)	-0.679*** (0.100)	0.043 (0.114)	-0.673*** (0.109)	-0.328** (0.145)
State-level youth unemployment	0.530*** (0.137)	0.388*** (0.106)	0.337*** (0.087)	0.258*** (0.074)	0.144** (0.062)	0.265*** (0.077)	0.218*** (0.074)
House Price Index, 100 in 2000	0.086*** (0.009)	0.041*** (0.009)	0.023*** (0.008)	0.022** (0.009)	0.003 (0.008)	0.027*** (0.010)	0.020** (0.010)
Average Weekly Wage, \$100s		6.840*** (0.748)	5.511*** (0.638)	4.509*** (0.583)	-0.747 (0.713)	4.204*** (0.609)	1.619** (0.732)
Student debt per graduate, \$1000s			0.332*** (0.050)	0.314*** (0.046)	0.085** (0.034)		
Graduation rate, state-cohort				0.382*** (0.087)	0.064 (0.073)	0.377*** (0.088)	0.162* (0.090)
Time trend					1.283*** (0.126)		
Student debt, age 24						0.232*** (0.033)	
Mean private college sticker price, \$1000s							1.211*** (0.201)
Mean public college sticker price, \$1000s							0.260** (0.110)
State and Age FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.803	0.833	0.852	0.860	0.885	0.857	0.874
N =	1020	1020	1020	1020	1020	1020	1020
Mean of dependent variable	41	41	41	41	41	41	41

Notes: *, **, and *** indicate significance at the ten, five, and one percent level, respectively. The sample covers 2003-2013.

Table 3: County-level flow regression of parental co-residence, Moving in

	(1)	(2)	(3)	(4)	(5)
		Baseline			IV
Employment to Population, county	-0.115** (0.052)	-0.108** (0.050)	-0.101** (0.049)	-0.100** (0.050)	-0.089* (0.050)
State-level youth unemployment	-0.162*** (0.048)	-0.166*** (0.047)	-0.158*** (0.048)	-0.157*** (0.047)	-0.147*** (0.051)
House Price Index, 100 in 2000	0.011* (0.006)	0.012* (0.007)	0.018** (0.007)	0.019** (0.007)	0.029*** (0.010)
Average Weekly Wage, \$100s		-0.268 (0.353)	-0.366 (0.360)	-0.362 (0.359)	-0.535 (0.358)
Student debt per graduate, \$1000s			0.118*** (0.043)	0.104** (0.044)	0.332*** (0.074)
Graduation rate, state-cohort				0.053 (0.070)	-0.065 (0.082)
State FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.018	0.018	0.019	0.019	0.005
N =	22,905	22,905	22,905	22,905	22,905
Mean of dependent variable	17	17	17	17	17

Notes: *, **, and *** indicate significance at the ten, five, and one percent level, respectively.
The sample covers 2003-2013.

Table 4: County-level flow regression of parental co-residence, Moving out

	(1)	(2)	(3)	(4)	(5)
		Baseline			IV
Employment to Population, county	0.342*** (0.100)	0.361*** (0.102)	0.311*** (0.104)	0.305*** (0.100)	0.283*** (0.101)
State-level youth unemployment	0.062 (0.094)	0.058 (0.095)	-0.018 (0.088)	-0.036 (0.083)	-0.066 (0.082)
House Price Index, 100 in 2000	0.030* (0.016)	0.030* (0.016)	-0.013 (0.012)	-0.022* (0.011)	-0.040*** (0.011)
Average Weekly Wage, \$100s		-0.413 (0.612)	0.202 (0.620)	0.160 (0.605)	0.452 (0.617)
Student debt per graduate, \$1000s			-0.748*** (0.089)	-0.499*** (0.094)	-0.897*** (0.116)
Graduation rate, state-cohort				-0.949*** (0.138)	-0.745*** (0.133)
State FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.015	0.015	0.022	0.027	0.012
N =	20,034	20,034	20,034	20,034	20,034
Mean of dependent variable	38	38	38	38	38

Notes: *, **, and *** indicate significance at the ten, five, and one percent level, respectively. The sample covers 2003-2013.