Debt, Jobs, or Housing: What’s Keeping Millennials at Home?
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Abstract

Young Americans’ residence choices have changed markedly over the past fifteen years, with recent cohorts entering the housing market at lower rates and lingering much longer in parents’ households. In this paper we use rich panel data to document steep increases in the rate of living with parents or other substantially older household members, with youth increasingly forsaking living alone or with groups of roommates. Homeownership at age thirty, correspondingly, shows a steady deterioration following the recession. In order to understand the consequences of this declining independence for young people’s economic lives, and hence for the ongoing U.S. economic recovery, we must understand its origins. We exploit cross-cohort and geographic variation in housing market, labor market, and student debt reliance to estimate the relationship between local economic conditions and young Americans’ residence choices. We model flows into and out of co-residence with parents at the individual, county, and state level. Estimates suggest countervailing influences of local economic growth on co-residence: strengthening economic climates support moves away from home, but rising local house prices send independent youth back to parents. Finally, we find that student loans deter independence. All else equal, state-cohort groups who were more heavily reliant on student debt while in school are significantly and substantially more likely to move home to parents when living independently, and are significantly and substantially less likely to move away from parents when living at home.

Key words: student loans, household formation

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The role of first time homebuyers in the ongoing recovery of the U.S. housing market is the focus of growing interest and speculation. The National Association of Realtors (NAR) points to a drop in first time homebuyers’ share of existing home purchases to 30 percent from its long-standing level of roughly 40 percent as a headwind in the housing recovery. NAR President Steve Brown 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 25 to 34 year olds in the Federal Reserve Bank of New York’s (FRBNY) Consumer Credit Panel (CCP). In a series of recent FRBNY 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, available evidence points to an ongoing increase in young Americans’ rate of living at home with their parents rather than forming new households. Recent work on household formation has emphasized its relationship to employment and to poverty. 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. He infers that ongoing secular trends in poverty and inequality are producing a permanent shift in Americans’ living patterns. Matsudaira (forthcoming) uses (cross-sectional) decennial Census data from 1960 to 2000 to demonstrate an increased prevalence of youth living with parents in regions with weaker youth labor conditions over the era.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 CCP, and their relationship to evolving local house prices, local employment conditions, and the student debt

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

2 The relationship between unemployment and parental coresidence has also been studied abroad: Becker et al (2010) find that perceived job security is negatively correlated with parental coresidence in Italy, while Klasen and Woolard (2008) find that unemployment delays household formation among young people in South Africa.
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. 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. 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.\(^3\) Meanwhile, homeownership in the CCP declined from 2005 forward for 25 year olds, and from 2007 forward for 30 year olds, following steady or modestly increasing youth homeownership rates during the housing boom. While 30 year olds in 2003 were almost twice as likely to own a home (with some home-secured debt) as they were to live with their parents, owning and living with parents were equally likely for 30 year olds in 2013.\(^4\)

What are the likely consequences of lingering at home for young people’s economic life? 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. As 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.\(^5\) Figure 1 depicts trends in the economic conditions faced by the 25 year olds we study in the CCP.\(^6\) 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

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3 See, for example, Mykyta and Macartney (2011).
4 We further examine the relationship between homeownership, student debt, and economic conditions in the companion paper to this work (see Bleemer et al., 2015).
5 See Brown et al. (2015) 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.
6 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.
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 shows little or no response in aggregate time series 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 as many as fifteen 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 of the influence of employment, housing, and debt conditions on youth residence choices than that depicted in the national trends of Figure 1. 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, household income, and student debt per recent graduate.7

One major benefit to this approach is its ability to generate informative student loan variation. Identification of the effects of student loans on young people’s propensity to live with parents faces a number of fundamental challenges. Not least among them is the likelihood of parent-level heterogeneity in the willingness or ability to support one’s adult children.8 Parents who readily provide material support for their adult children will tend both to pay more for college, decreasing student loan reliance, and to welcome adult children home in difficult times. This may lead to spurious negative estimates of the effect of student debt on co-residence. Gicheva and Thompson (2014) and others have noted the lack of informative individual-level variation in student debt balances arising from the existing federal student aid program.9 Our approach allows us to study the relationship between student debt reliance and living with

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7 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 is particularly true following the establishment of the unsubsidized Stafford loan program; see Hirschbein (2014) for details.
parents at the state-cohort level, abstracting from family-level heterogeneity in factors like ability, affluence, and generosity.\(^{10}\)

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 zip-code-level house price index observed over two years in the sample is estimated to increase the probability that an independent young resident of the zip code moves home to parents by 2.3 to 4.9 percent, depending on whether one allows a secular linear trend in parental co-residence.\(^{11}\) On the other hand, a one percentage point increase in the youth unemployment rate is estimated to decrease the probability of a co-residing young person moving away from parents between ages 23 and 25 by 0.3 percentage points.\(^{12}\) While labor market opportunities evidently enable youth independence, then, the inflation in local 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 one to two 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 by between 2.5 and 3.5 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 income, both youth and overall unemployment, graduation rates, and house prices. They are confirmed by aggregate analysis of the flows at the county and state-level, and, further, 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

\(^{10}\) This approach necessitates extensive effort to control for economic conditions that may lead a population both to rely more heavily on debt and to “double up”; we control for such factors in a variety of ways below.

\(^{11}\) This estimate is highly statistically significant, and robust to a broad array of specifications.

\(^{12}\) Under some specifications this estimate is only marginally significant, with a t-statistic of roughly 1.9.
to parents, and a lower rate of transition away from parents, for state-cohort groups that relied more heavily on student debt.

The fact that the net effect of employment and housing market swings on co-residence with parents is mixed may explain some part of the failure of aggregate residence trends to track the recent pronounced boom, bust, and recovery as one might predict. If children fund moves away from home out of labor income, and yet children’s ability to support living away relies on cheap housing and consumer goods markets, then the net effect of local economic changes on co-residence with parents is ambiguous. We decompose the explained variation of co-residence, based on a model of the rate of parental co-residence at the regional level, into contributions from sources including unemployment, local income, house prices, and student debt. The model explains a substantial share of parental co-residence through high house prices during the housing boom, and a substantial share through high youth and overall unemployment during the Great Recession, leading to an approximately flat share of co-residence variation attributed to local income, employment, and house prices from 2003-2013. 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 costs are powerful determinants of co-residence. At the same time, 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.

The paper proceeds as follows. We describe the Federal Reserve Bank of New York’s Consumer Credit Panel and other data sources employed in this study in Section I. Section II investigates broad trends in residence choices, debt, and economic conditions from 1999-2013, in the CCP and elsewhere. In Section III, we lay out a simple empirical model of the stock of parental co-residence and flows into and out of the parents’ home. Section IV reports and interprets findings based on the model, including decomposition analysis of the stock model, and Section V offers concluding thoughts.

I. 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. Sample members have Social Security numbers ending in one of five arbitrarily selected pairs of digits (for example, 10, 30, 50, 70, or 90), which are assigned randomly within the set of Social Security number holders. 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, as well as representative entry of new consumers, as young borrowers and immigrants enter the sample.\textsuperscript{13}

In sum, the CCP permits unique insight into the question at hand as a result of the size, representativeness, frequency, and recentness of the dataset. Its sampling scheme allows extrapolation to national aggregates and spares us most concerns regarding attrition and representativeness over the course of a long panel.

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.\textsuperscript{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 ranges between 78 and 94\% for 25-year-olds and between 91 and 100\% for 30-year-olds, increasing from 1999 to 2007 and decreasing from 2007 to 2013 (compared to estimates from the US Census).\textsuperscript{15} However, 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 Equifax). We use this information to analyze and bound our estimates below.\textsuperscript{16}

\textsuperscript{13} See Lee and van der Klaauw (2010) for details on the sample design.
\textsuperscript{14} See Lee and van der Klaauw (2010) and Brown et al. (2013) for details.
\textsuperscript{15} We use the 2008 Census population projections as ‘true’ population data from 1999 to 2011 and the 2012 Census year-age population projects for 2012 and 2013. In each case, this is the most accurate available data on population size by age, year, and state.
\textsuperscript{16} Lee and van der Klaauw (2010) extrapolate similar populations of U.S. residents aged 18 and over using the CCP and the American Community Survey (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
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 1999 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 567,932 25-year-olds and 598,455 30-year-olds in the dataset, of whom we have 11.9 million and 17.1 million observations, respectively.

In order to calculate bounds on our co-residence estimates, for some applications (which will be clear below) we balance our panel by including null observations in all quarters in which Equifax provides no credit report for an individual (starting at age 18), as well as including null observations for individuals whom we do not observe as having a credit report at age 25 or 30 (imputing the number of such individuals at the state level from the U.S. Census). Our final, balanced dataset includes a total of 30.5 million observations.

b. Other data sources

Columns (1)-(4) of Table 1 summarize the additional data that we use in our aggregate analysis of parental co-residence. They 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 means indicate modestly higher unemployment 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. Their most noteworthy difference appears to be in their rates of house price growth, with youth neighborhoods growing at a pooled average rate of 6.8 percent of the base January 2000 price level over the two year windows that we study, while parent neighborhoods grow at a rate of only 2.0 percent of the January 2000 base.

Annual county-level unemployment data are drawn from the Bureau of Labor Statistics’ (BLS) Local Area Unemployment Statistics (LAUS) program. The unemployment data are reported on a monthly basis, and they cover a total of 3,145 counties. We calculate the youth unemployment rate at the state level using employment data from 18- to 30-year-old individuals

Brown et al. (2013) 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.
in the CPS, aggregated from months to quarters. The average youth unemployment rate across states over our sample is 9.7%, ranging from 1.8% in 2000 Connecticut to 22.1% in 2010 West Virginia.

House price appreciation values are calculated at the zip code level using data from the CoreLogic housing 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, and it is the most comprehensive monthly house price index available. We aggregate an annual index to avoid seasonal variation. The CoreLogic data cover a total of 6739 zip codes (representing 58% of the total U.S. population, and 63% of the 25- and 30-year-olds observed in our sample) in all 50 states and the District of Columbia.

Annual county-level income data for 3,142 counties are drawn from the Internal Revenue Service’s (IRS) Statistics of Income (SOI) program, which annually aggregates household-level adjusted gross income as reported on US tax forms. Average aggregate household income across our population is $53,200, and is higher within the co-residing population.

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 24-year-olds in that state-year over the total number of college graduates from universities in that state-year, reported, as all financial variables in this paper, in 2012 dollars. 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; the IPEDS data are available every year after 2002. 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 average graduation rate across states over our sample is 29.1%, and the average state-level per-graduate student debt burden is $20,100.

II. 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

17 CPS youth unemployment data is only available from 1999-2012.
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). These data lead us to define co-residence (with parents) to be the circumstance in which a young person (here either 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. Data from the Center for Disease Control and Prevention’s (CDC) National Vital Statistics System show that, for children born in 2012, 99.8% of mothers and 84.7% of documented fathers were within this age range (15-45). 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 their parents’ household. Note that our definition might overestimate the aggregate rate of co-residence with parents due to a possible lag between a young person’s switching their home address and updating their credit report address (as reported by financial institutions), which might bias the aggregate co-residence rate upwards.

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). 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

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18 See Avery et al. (2003) for a detailed discussion of the contents, sources, and quality of credit report data.
19 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.
20 Analysis of the extent to which this criterion includes non-parent relatives (grandparents, uncles, and aunts) and non-relatives using the CPS is available from the authors. We find that we may capture a fair number of co-resident grandmothers and aunts. Romantic cohabitation or marriage with partners 15 or more years older, however, is quite rare in the CPS. Hence the overwhelming majority of co-resident households captured by this criterion involve a young person living with an older relative, most often parents or step-parents.
21 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).
22 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.
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 coresidence 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. 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.

Figure 2 depicts the proportion of U.S. 25 and 30 year olds living with “parents” in the CCP from 1999-2013. As above, we define living with parents as sharing an address, including an apartment number if one exists, with at least one household member who is 15-45 years older. 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. 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

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23 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.

24 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.
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. 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.

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

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25 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.
26 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 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.
complete, as described above. To the extent that the 5 to 14 percent 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. 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. 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. Though prison and military populations may have actively updating credit files, they are presumably more likely to 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 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 with parents 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

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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, using the CPS individual weights. From there, 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. The purple 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 coresidence for 30 year olds from 2011 and 2012 that is not observed in the CCP.

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 trends we obtain are similar enough across alternative methods and sources to suggest that our CCP measures are informative, and the marked upward trend in co-residence with parents is robust to all sources and methods discussed in this paper.

b. Trends in other living arrangements

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28 As on the CCP, we assume that any individual in a household of 10 or more persons is living away from parents.
29 There are several reasons to expect the CPS to produce different estimates of the frequency of parental co-residence among our target populations. First, the CPS definition of household excludes self-sufficient contained apartments (like in-law units and some finished basements) from its target households, 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 to frequently 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. Further, the primary insights generated by the CPS and CCP measures are the same: co-residence with parents was common in 2003, and it is substantially more common today.
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 measures 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 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 later group is reasonably rare from at least the age of 30 onward. 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) 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 5 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.

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30 Calculations available from the authors.
holder, and with two or more adults of similar age. 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. 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 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.

c. Trends in homeownership

Figure 6 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. 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. The

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31 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.
32 Note that homeownership in Figure 6 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.
33 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. Whether or not we credit couples’ mortgages to each other, we find that homeownership at age 30 declines markedly after 2007.
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 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.\textsuperscript{34}

We find that homeownership among 30 year olds grew modestly from 43.2 in 2003 to 44.4 percent in 2006-7.\textsuperscript{35} 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, and peak homeownership at 30, traditionally the median age of first home purchase in the U.S.,

\textsuperscript{34} 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.

\textsuperscript{35} 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.
was reached a full two years later.\textsuperscript{36} 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.

d. 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 figures through 2013Q4, 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.\textsuperscript{37} 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.\textsuperscript{38} 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).\textsuperscript{39} In sum, student borrowing changed substantially from 2003 to 2013.

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 7 depicts the proportion of CCP 25 year olds participating in the student debt market, along with the mean

\textsuperscript{36} See Lautz (2011) for recent median ages at first purchase.
\textsuperscript{37} Student debt data in the CCP is unreliable before 2003, so we disregard measures preceding that year.
\textsuperscript{38} NSLDS federal loan balances reached $1.051 trillion in early 2014, and the CCP aggregate balance, which includes the private student loan market, reached 1.11 trillion in 2014Q1.
\textsuperscript{39} Some of this growth in private student loans among the seven leading lenders may reflect buying debt from other lenders.
student loan balance of 25 year olds in each year, among those 25 year olds who have student debt.\textsuperscript{40} We observe an increase from 25 to 45 percent of 25 year olds with positive student debt between 2003 and 2013, an 80 percent growth in 25 year olds’ rate of participation in student debt markets over the decade. 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. As speculated by the NAR, the CFPB, and various arms of government, we might expect the burden of increasing educational debt to delay standard lifecycle economic milestones, such as living independently and the purchase of first homes.

\section*{III. Empirical model}

So far we have seen approximately unbroken upward trends in co-residence with parents among 25 and 30 years 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 8 presents suggestive evidence of a relationship between student debt and parental coresidence 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.\textsuperscript{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. However, 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 contributions of jobs, housing costs, and student debt at the

\textsuperscript{40} Mean student loan debt is reported in 2012 dollars.
\textsuperscript{41} The chart looks qualitatively similar when constructed from 2003-2013.
local level to the decisive aggregate trend toward parents, and away from economic independence, that we observe for recent cohorts of young adults.

\textit{a. Stock of young people living with parents}

Motivated by this potential in the CCP, and by the questions raised by the relationships among the national trends, in this section we present an empirical model 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 model of the likelihood that, at a given time, a child is living with his or her 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 \( Y_{it} \) as an indicator for whether individual \( i \) living in location \( l \) at time \( t \) co-resides with her parents. We model the likelihood that an individual lives with her parents as a function of the conditions in her locality one year earlier, including fixed effects by state to control for unobserved differences in culture and policy. We thus estimate the following linear probability model:

\[
\Pr(Y_{c(i)t+1} = 1 | X_{c(i)t}, Z_{c(i)t}, l, t) = X_{c(i)t} \beta + Z_{c(i)t} \gamma + \delta_{c(i)} + \epsilon_{c(i)t},
\]

where \( X_{c(i)t} \) represents a vector of cohort \( c(i) \), location \( l \), period \( t \) characteristics, the levels of which may influence the residence choice of individual \( i \) at \( t+1 \). This vector includes county-level unemployment, state-level youth unemployment (based on our calculations in the CPS), and zip code-level CoreLogic house price index, and may include either a linear time trend

\footnote{Hence the lagged regressors are observed when the estimation sample youth are 22 and 24.}
representing an unobserved national cultural trend or state-level linear time trends representing state-dependent cultural trends.\textsuperscript{43} The vector $Z_{ci(l)}$ represents characteristics of individual $i$'s cohort, $c(i)$, and location $l$ that do not vary by $t$, which include both state-level average student debt per graduate and the college graduation rate in state $s(l)$ when cohort $c(i)$ was 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. The vector of state fixed effects is denoted $\delta_{s(l)}$. Idiosyncratic error $\iota_{ic(i)lt}$ is clustered at the state level.

We also estimate aggregate versions of our stock linear probability model:

$$Y_{clt+1}^a = X_{clt} \beta^a + Z_{clt} \gamma^a + \delta_{s(l)} + \iota_{clt}$$

where $Y_{clt+1}^a$ represents the share of youth belonging to cohort $c$ in location $l$ in period $t + 1$ who co-reside with parents, and vectors $X_{clt}$ and $Z_{clt}$ are defined as above, with the sole distinction that more local characteristics are now aggregated to either the state or the county level.

Since these estimates are not weighted by population, the coefficients are interpreted as the aggregate relationship between macroeconomic conditions and parental co-residence, estimated using only county- and state-level variation in co-residence rates. Aggregate analysis avoids endogeneity resulting from young person mobility. If there are systematic economic differences between regions where young people live independently and the regions where their parents live, then the economic characteristics, even though they are lagged by one year, may be endogenously determined by an individual's parental co-residence decision. By aggregating to the county and state level, we average across smaller geographic areas (like zip codes),

\textsuperscript{43} Total unemployment for the U.S. showed a modest decline during the economic boom of the mid-2000s, followed by a steep increase from 5.0 percent in 2008 to 10.0 percent in late 2009, and a subsequent recovery. The recent recovery in unemployment has been gradual but substantial: total unemployment among the adult population participating in the workforce, seasonally adjusted, fell from 10.0 percent in late 2009 to 5.6 percent in the December 2014 BLS Employment Situation release. Unemployment among youth aged 18-30, based on our own calculations in the CPS, followed a similar modest decline in the boom and then increased even more sharply, from 6.8 percent in late 2006 to a maximum of 14.8 percent in early 2010. Its recent recovery involves a decline from 14.8 percent at its 2010 maximum to 11.3 percent in the end of 2012. The monthly CoreLogic house price index, here represented by the green line, increased from a normalized value of 100 in January 2000 to a peak of 200 in 2006, fell to a 2011 trough of 134, and since then has moved through an unsteady recovery to reach 165 by late 2013.
abstracting away from most mobility concerns.\textsuperscript{44} 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 (and, in state aggregation, county-level) variation; persistence of estimated relationships across the individual and locally aggregated specifications, then, would provide some evidence that the baseline estimates are not solely driven by communal or local cultural variation, which may in some instances be misleading. Finally, aggregation also increases the weight of residents in rural areas, treating (in the state-level case) New York residents with the same weight as those of Wyoming; similar coefficients would suggest that the national pattern is not merely driven by high-density locales.

\textit{b. Flow home to parents from independent living}

Next, in order to refine our understanding of the relationships among economic conditions and Millennials’ lingering in parents’ households, we estimate the dependence of the choice to move away from parents, and the choice to move home, on a variety of individual and local characteristics. A model of the overall stock of young people living with parents in a region poses several challenges to interpretation. First, persistent heterogeneity in the fundamental socioeconomic characteristics of U.S. localities is likely to drive the resulting estimates. Countervailing effects of persistent levels of child and parent need may lead to unpredictable, and difficult to interpret, estimated relationships. Less affluent regions, for example, may be characterized by children more in need of parental support, but also parents less able to offer support.

Second, the location of residence of the child in a stock regression of co-residence on individual and local characteristics poses a fundamental problem. When a child lives with a parent, local characteristics are measured in the parent’s neighborhood, and not in the child’s best alternative location. When a child lives independently, the reverse is true. 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. It is worth noting here that the comparison of mean neighborhood characteristics for youth living with parents and youth living independently in

\textsuperscript{44} Most moves to and from parent households occur within a state.
Table 1 suggests very modest mean differences between the two locations; house price means, for example, are 148.6 in the parent and 141.2 in the youth neighborhoods. Nevertheless, unobserved differences between parent and youth neighborhoods may also play a role.

Therefore we turn to models of the flows of children into and out of parents’ households. There are two major differences between these flow models and a straightforward differencing of equation 1 above. First, we separately model the flow into and the flow out of parental co-residence, as the effect of local economic conditions on whether a child moves away from home may be very different from the effect of those same conditions on whether a child moves home. Second, 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 decision to move 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 24 are time-fixed characteristics, and, nevertheless, we expect that the stock of education debt may influence the decision to move.⁴⁵ Hence we permit these characteristics to influence the transition probability through their level at \( t \) rather than through their (null) flow from \( t \) to \( t + 1 \).

Consider first the decision to move home to parents. We begin with a sample of children who, at time \( t \), live away from parents, and, therefore, are at risk of moving home. Maintaining the definitions above, we estimate the model of moving home in a sample of CCP youth for whom \( Y_{it} = 0 \). The outcome of interest is \( Y_{it+1} \), an indicator for whether a member of this group moves home between periods \( t \) and \( t + 1 \). The estimates below pertain to the probability of a change in residence over a period of two years.

We estimate the linear probability model

\[
\Pr(Y_{it+1} = 1 | Y_{it} = 0, X_{it}^H, X_{it+1}^H, Z_{i(j),1}^H, i, I) = (X_{it+1}^H - X_{it}^H)\beta^H + Z_{i(j),1}^H\gamma^H + \delta_{i(I)}^H + \epsilon_{it}^H,
\]

where superscript \( H \) denotes factors influencing the probability of moving “home”. In the flow equations, our baseline \( X_{it} \) includes a national time trend, which is constant when differenced.

⁴⁵ Note that age-24 student debt at the cohort level is measured in the middle of the two-year flow, which may be a source of endogeneity; however, our estimates are qualitatively similar when the model is estimated using student debt from age 23 or 22.
Further, we also provide flow estimates including a vector of state-level fixed effects in the probability of moving home (away), which result from $X_{ult}$ including state-level time trends. Importantly, in the flows home, location $l$ 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 $l$. This avoids the problem of measuring location characteristics of the parent for children living at home and location characteristics of the child’s preferred independent location for those moving away.

c. Flow away from parents to independent living

We estimate a similar model for the probability that a youth living independently moves back in with parents between periods $t$ and $t+1$. The (obvious) changes made in this case are the following: we estimate using a sample in which all youth initially live with parents, i.e., $Y_{it} = 1$, and therefore each sample youth faces a risk of moving out. The expression for the linear probability model estimated in the sample of youth co-residing with parents, then, is

$$
Pr(Y_{it+1} = 0 | Y_{it} = 1, X^A_{it}, X^A_{it+1}, Z^A_{c(i)}, i, l) = (X^A_{it+1} - X^A_{it}) \beta^A + Z^A_{c(i)} \gamma^A + \delta^A_{s(l)} + \epsilon^A_{it},
$$

where all arguments are defined analogously to those in expression (3). 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”.

Note that we will be able to estimate the dependence of the probability of moving in with parents on economic conditions in the youth’s chosen independent location, and the dependence of the probability of moving away from parents on conditions in the parent’s location. 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.

As above, we also estimate county- and state-level aggregate versions of both flow models, which average over local variation and increase the weight of rural sample-members. These estimates appear in Appendix 1.

d. Remaining endogeneity concerns in the flow models
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 identified by changes across cohorts within a state in the mean debt price of a degree. 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 grant and loan aid.46

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 movers are more likely to be unemployed than the population of young people overall, this mechanical source of endogeneity could bias coefficients on the unemployment measures downward. 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

46 Note that we control for state economic conditions that might otherwise appear in the mean state-cohort student debt price of a degree through youth unemployment, total unemployment, income, and house prices.
coefficient on house prices in the moving-home regression downward. 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 locations, this is not a
concern. However, house prices in the estimation are measured at the zip code level, and so it is
reasonably likely that youth moving back home will cross zip code lines and exert spurious
downward pressure on house price effects in the moving-home regression.

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. Remaining major concerns regarding the endogeneity of
changes in local characteristics to youths’ transitions home and away seem most likely to arise
from third factors determining both changes in local characteristics from \( t \) to \( t+1 \) and youths’
interest in living with parents. An immediate example is changing local economic conditions.
Their effect is likely to be picked up by some combination of total employment, income, and
house price measures. Given this, we interpret total employment, income, and house price
coefficients as though they contain both direct effects of employment, income, and house prices,
and indirect effects of local economic conditions.

IV. Results

a. Stock of young people living with parents

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 (5),
which includes each of the covariates listed above 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 higher overall unemployment rate, a higher youth unemployment rate, a
higher house price index, 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% level.
Columns (1) to (4) show that the coefficient magnitudes are not substantially mutually
dependent; in particular, a comparison between columns (4) and (5) shows that the estimated
magnitude of the relationship between student debt per graduate and parental co-residence is not
mediated by the college graduation rate, suggesting its robustness to separately controlling for
educational attainment. 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.⁴⁷

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 (which has increased steadily, though at a slightly decreasing rate, every year on average across states) may be incidental. We test this conservative hypothesis by including a national linear time trend in our stock specification, shown in column (6) of Table 2, and including state-specific linear time trends in column (7). 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 1% level, and both the youth unemployment rate and the house price index also maintain their positive and statistically significant coefficients at the 10% level. An alternative specification including state-specific time trends, allowing for independent secular linear trends in each state, yields very similar results, though the relationship between youth unemployment and parental co-residence attenuates out of statistical significance.

However, given that student debt is measured at the state level (implying that, at the individual level, it is measured with extreme imprecision), this model is extremely conservative; another interpretation of the time trend is as a noisy measure of the effect of student debt on parental co-residence, implying that the attenuation of the student debt coefficient is (at least in part) spurious.

We present two additional adjustments to our baseline specifications in columns (8) and (9) of Table 2. First, we restrict our sample to the years 2003-2013, before which our student debt and graduation rate data are unavailable.⁴⁸ We find that none of the coefficients differ substantially from our baseline estimates, suggesting that the 1999-2002 data, though helpful by

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⁴⁷ 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.
⁴⁸ When estimating with the full panel, we include an indicator for pre-2003 observations, indicating missing student debt and graduation data, while setting the values of the missing variables themselves to zero.
reducing the standard errors in fitting the relationship between our economic indicators and parental co-residence, do not drive our results. Finally, we consider the possibility that individuals’ average student debt at age 24 reflects not only debt accumulated as an undergraduate, but also two other factors which might have different ramifications for parental co-residence: (1) the amount of debt paid off since undergraduate graduation, which might reflect the economic conditions of the young people or their families, and (2) debt related to graduate school. These additional factors may work against each other: individuals with less paid-off debt may be experiencing worse present economic conditions, making parental co-residence more likely, while individuals with more graduate school debt may be more likely to live in student housing or face stronger economic conditions, implying a lower likelihood of parental co-residence. In order to assess the impact of these additional determinants of age 24 student debt, column (9) presents an adjusted version of our baseline model replacing average state-level student debt for debt-holding 24 year olds with that of debt-holding 22 year olds, an age at which the rate of student debt repayment and graduate school debt obtainment is very low (though also an age at which many college-goers have not completed their undergraduate education). We find that the relationship between age 22 student debt and parental co-residence is almost identical to that between age 24 student debt and parental co-residence, suggesting that these additional determinants of student debt are not driving our results of interest.

As described at length in Section III, one available means of addressing concerns over the effect on the stock estimates of any differences between child and parent locations is to employ economic condition measures drawn at a coarser geographic level. While this weakens the informative variation available to identify the model, it lessens the problem of measuring dependent youth in the parent’s location and independent youth in the child’s location. Given that inter-county and interstate moves are comparatively rare, we re-estimate the model measuring all geographic characteristics at the county and state levels. Table 3 shows that our results largely persist even when our model is aggregated to the state and county levels. Indeed, even at the state level we find a large significant relationship between student debt and parental co-residence, though the inclusion of state-level time trends attenuates this effect to 0 (further suggesting that the time trends partially measure a second noisy relationship between debt and co-residence, as described above). As expected, the fraction of state-level variation explained by our aggregate model is very high; while our baseline model explains only 3.8 percent of
individual-level variation, it explains 85.9 percent of variation in parental co-residence at the state level. Note, however, that cross-state mobility poses an intransigent problem for our stock analysis.

In order to understand the magnitude of the relationship between each economic characteristic and the increased rate of parental co-residence since 2000, we perform a simple linear decomposition of the state-level aggregated regression. Figure 9 shows the additive proportion of the (explained) variation in parental co-residence that the stock model attributes to each covariate; it suggests that house prices accounted for roughly 25% of the increase during the mid-2000s, while youth unemployment accounted for as much as 20% of the increase during the Great Recession. However, student debt per graduate claims the largest share of the increase, accounting for about 35% of the increase in the likelihood of a young person’s living with parents. Figure 10 shows a decomposition of the more conservative estimate, including a national linear time trend, and suggests that, conditional on a secular cultural trend unrelated to student debt, student debt only explains about 10% of the increase in parental co-residence since 2004, with another 10% being explained by youth unemployment during the Great Recession. By 2012, more than half of state-level co-residence variation is explained by the linear time trend, though the time trend coefficient likely captures in part a second noisily-measured effect of student debt.

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, income, and unemployment is approximately constant over the estimation period. High rates of co-residence are explained by high house prices in the housing boom and high unemployment 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.

b. Flow home to parents from independent living

Table 4 reports the coefficient estimates for the moving home model in expression (3).49

Our preferred specification appears in column (4) of Table 4. Here we find that an increase

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49 For the relevant scales of measurement, as well as average values of the flow variables, see Table 1.
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 3.7 percent increase in the probability of a youth moving home over two years. Further, looking across the Table 4 specifications, we see that the house price coefficient is particularly robust to the inclusion (or exclusion) of other regressors, such as local income, student debt reliance, and graduation rate, though it is attenuated by the inclusion of state dummies (which corresponds to the inclusion of state-specific time trends in the stock equation).

The reverse causality generated mechanically by the shifting populations in this case works against our finding a positive effect of house prices on moving home, implying that this point estimate is 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 zip code level, and many young people may cross zip codes to return to parents. On the other hand, the reverse causality problem works toward finding a spurious negative effect of total unemployment on moving in with parents, as unemployed youth leaving the county at higher rates exert negative pressure on the unemployment coefficient; this may explain our lack of evidence suggesting a relationship between unemployment and the flow of young people into parental co-residence.

The estimates in column (4) demonstrate a significantly higher rate of moving home in states with 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 an 8.2 percent increase in the probability of an independent young resident moving home over the course of two years (though the effect is attenuated by the inclusion of state fixed effects, again in part because these fixed effects likely embody a second noisy measure of student debt). This effect is robust to controlling for the share of college graduates among the youth’s cohort in the state, which, unsurprisingly, is associated with a lower propensity to move home. These estimates provide further, and perhaps

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50 Our effect is substantially larger than that estimated by Dettling and Hsu (2014), who study the effect of individual-level student debt on parental co-residence. Two factors may contribute to the difference in estimates. First, Dettling and Hsu’s population is individuals age 18 to 30, which will lead their independent youth sample to be older than ours (since the likelihood of living with ones’ parents substantially decreases in age) and thus perhaps less sensitive to student debt. Second, their use of individual-level debt suggests that their result might be attenuated by the contribution of an unmeasured third factor: parental coresidence might result from high family generosity, which would also lead to low student debt levels, depressing the estimated effect of debt on coresidence.

51 The estimated decline in the probability of moving home with the state-cohort graduation rate is insignificant at standard levels of confidence. This estimate may appear to be at odds with the stock estimates, which show a higher rate of parental co-residence at ages 23-25 in state-cohorts with higher graduation rates. However, what the
more credible, evidence of a positive effect of growing student debt burdens on young people’s propensity to live with parents.

The aggregated student debt measure employed here is an improvement over measures involving the level or change in individual student debt, which clearly carries with it a host of other information regarding the student’s life stage and her parent’s degree of supportiveness. The aggregated measure responds to state by cohort variation in tuition, the generosity of financial aid, and the availability of student loans, providing extensive sources of variation in the reliance on student debt to support higher education. Indeed, columns (1) through (4) of Appendix Table A1 show that the relationship persists through county and state aggregation, with the latter suggesting very similar effect magnitudes. Further, specifications including state fixed effects in the transition probability account for time-fixed variation in the propensities of states to support youth and education, and so the student loan coefficients are identified from changes over time, within states, in cohorts’ student debt reliance.

In sum, the estimates of independent youths’ flow home to parents indicate significant and not insubstantial homeward pressure exerted by both increasing house prices and a greater reliance on student loans among members of the youth’s graduating cohort.

c. Flow away from parents to independent living

Table 5 reports the coefficient estimates for the model of the decision to 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 4, here we find that youth unemployment 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 state-level youth unemployment leads to a 0.3 percentage point decline in the rate of moving away from parents over two years. During times of high youth unemployment, all else equal, young people are estimated to respond with a substantial decline in the probability of leaving home. The intuition behind this relationship is straightforward, as independent living is costly, and typically demands a stable income source. Moreover, the problem of mechanical endogeneity arising from location choices is particularly weak in this combined stock and flow (home and away) estimates indicate is that, all else equal, state-cohorts with higher graduation rates both linger longer at home and exhibit less churning in their location. This is not necessarily a surprising relationship between co-residence and education.
case, as youth unemployment is measured at the state level, so that in order to influence the unemployment calculation the youth would have to cross state borders.

Student loans are, once again, estimated to encourage co-residence with parents. The Table 5, 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 youth’s state-cohort decreases the probability of moving out of her parent’s home over the two years by 9.6 percent (3.5 percentage points). The student loan estimate is not sensitive to the inclusion of the state-cohort graduation rate, which has a precisely estimated near-zero relationship with moving out of home. 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, and is confirmed by the county- and state-level aggregated models displayed in columns (5) through (8) of Appendix Table A1. Column (5) of Table 5 also shows that this result is highly robust to (though somewhat attenuated by) the inclusion of state fixed effects, with which the effect of state-cohort student debt is identified using variation between cohorts in a given state in student debt reliance accounting for state-specific levels and linear trends in the degree of support for youth and education.

Again, total unemployment and house prices can be taken as indicators of broader economic conditions, this time in the parent’s location. Here we find very modest estimates of the effect of local economic conditions on youths’ propensity to leave home, with modest and insignificant coefficients on changes in county total unemployment, county median income, and zip code house prices over the period. This may be the net result of ambivalent effects of strengthening local economic conditions on youths’ capacity for independence. While strengthening economic 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 prices, particularly housing prices, which encourage continued co-residence.

In sum, estimates from the model of the flow away from parents paint a picture of stagnation in response to weakening labor market opportunities and growing student debt burdens. They provide evidence that the escalating student debt we’ve observed over the 2003-2013 period may be leading to extended co-residence with parents for the most recent youth cohorts, and that the challenging youth job markets of the recent recession further obstructed young workers’ path to independence.
V. Discussion and Conclusions

This paper investigates young people’s parental co-residence rates in the CCP, and the relationships 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 non-parent has declined (defining parents as people 15-45 years older than the youth). 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 zip code-, county-, and state-level reveal mixed effects of local economic growth on young Americans’ propensity to live independently. While a one percentage point drop in state youth unemployment is estimated to increase the two-year rate of moving away from parents by 0.3 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 3.7 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 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 youth labor markets 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 1.7 percentage point increase in the likelihood of moving home to parents, and to a 3.5 percentage point decrease in the likelihood of moving out of one’s parents’ household, over two years. Given that student debt has been increasing since 1999, 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.

Section II 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 conditions in terms of housing, youth employment, and the student debt price of education. 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.
References


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

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

[Map showing percentage distribution for 2002-2003]

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

[Map showing percentage distribution for 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 5a: Residence arrangements of 25 year olds in the CCP, 1999-2013

Figure 5b: Residence arrangements of 30 year olds in the CCP, 1999-2013
Figure 6: Homeownership and living with parents among 25 and 30 year olds in the CCP, 1999-2013

Source: FRBNY/Equifax
Figure 7: Student debt prevalence and mean among 25 year olds

- Proportion of 25 year olds with student loans, left axis
- Mean student loan debt among borrowers at 25, right axis

Source: FRBNY/Equifax
Figure 8: Changes in Student Debt and Parental Co-Residence, 2008 to 2013

Percentage Increase in 25-Year-Old Parental Co-Residence

Increase in Average Student Debt per Graduate

Source: FRBNY/Equifax
Figure 9: Decomposition of Stock Regressions, Baseline Model

Figure 10: Decomposition of Stock Regressions, Time Trend Model
<table>
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<th>% Missing</th>
<th>Stock Values</th>
<th>Flow Values</th>
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<td></td>
<td>All</td>
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<td>TUR</td>
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<td>6.9</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>(3.0)</td>
</tr>
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<td>Youth TUR</td>
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<td>9.4</td>
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<td></td>
<td>(3.2)</td>
<td>(3.1)</td>
</tr>
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<td>House Price Index</td>
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<td>141.2</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>(43.5)</td>
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<tr>
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<td>52.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(15.4)</td>
<td>(14.9)</td>
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<td>SL Per Grad ('000s)</td>
<td>19.7</td>
<td>20.1</td>
<td>19.3</td>
</tr>
<tr>
<td>Grad. Rate</td>
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<td>29.2</td>
</tr>
<tr>
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Stock values are the regional averages across our 23- and 25-year-old sample.
Flow values are the average two-year changes, between age 23 and 25, across our sample.
Note: Student debt and graduation rates are only reported after 2002. HPI is only reported for urban areas.
Table 2: Individual-Level Stock Regression of 25-Year-Old Parental Co-Residence

<table>
<thead>
<tr>
<th>Regression Model: Baseline</th>
<th>Time Trends</th>
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<th>Age 22 SL</th>
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<td>(3)</td>
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<td>0.759***</td>
<td>0.718***</td>
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<tr>
<td></td>
<td>(0.119)</td>
<td>(0.155)</td>
<td>(0.145)</td>
</tr>
<tr>
<td>Youth Unemployment</td>
<td>0.965***</td>
<td>0.924***</td>
<td>0.399***</td>
</tr>
<tr>
<td></td>
<td>(0.113)</td>
<td>(0.105)</td>
<td>(0.075)</td>
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<tr>
<td>HPI</td>
<td>0.087***</td>
<td>0.084***</td>
<td>0.079***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Income ('000s)</td>
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<td>0.092***</td>
<td>0.090***</td>
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<td>(0.029)</td>
<td>(0.026)</td>
<td>(0.025)</td>
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<tr>
<td>SL Per Grad ('000s)</td>
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<td>0.112***</td>
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<tr>
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<td>(0.047)</td>
<td>(0.046)</td>
<td>(0.032)</td>
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<tr>
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<td>(0.060)</td>
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<td>SL Per Grad, Age 22</td>
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<td>(0.350)</td>
<td>(0.351)</td>
<td>(0.353)</td>
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<td>2.000***</td>
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<tr>
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<td>(0.219)</td>
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<tr>
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<td>(1.180)</td>
<td>(1.180)</td>
<td>(1.939)</td>
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</tr>
<tr>
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<td>.034</td>
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</table>

OLS estimates of a regression of the dependent variable on various controls.

Standard errors in parentheses. *, **, *** denote significance at the 10, 5, and 1 % levels, respectively.

Note: Student debt and graduation rates are only reported after 2002. HPI is only reported for urban areas.
### Table 3: Aggregate Stock Regression of 25-Year-Old Parental Co-Residence

<table>
<thead>
<tr>
<th>Regression Model:</th>
<th>County Aggregate</th>
<th>State Aggregate</th>
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<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Time Trends</td>
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<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.354**</td>
<td>0.104</td>
</tr>
<tr>
<td></td>
<td>(0.133)</td>
<td>(0.113)</td>
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<tr>
<td>Youth Unemployment</td>
<td>0.218***</td>
<td>0.012</td>
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<td></td>
<td>(0.079)</td>
<td>(0.072)</td>
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<tr>
<td>HPI</td>
<td>0.023***</td>
<td>0.019***</td>
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<tr>
<td></td>
<td>(0.006)</td>
<td>(0.007)</td>
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<td>Income ('000s)</td>
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<td></td>
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<td>(0.030)</td>
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<td>SL Per Grad ('000s)</td>
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<td>(0.038)</td>
<td>(0.042)</td>
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<td>Grad. Rate</td>
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<td></td>
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OLS estimates of a regression of the dependent variable on various controls.
Standard errors in parentheses. *,**,*** denote significance at the 10, 5, and 1 % levels, respectively.
Note: Student debt and graduation rates are only reported after 2002. HPI is only reported for urban areas.
Table 4: Individual-Level Flow Regression of Parental Co-Residence: Moving In

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<thead>
<tr>
<th>Regression Model:</th>
<th>Baseline</th>
<th>Time Trends</th>
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<tbody>
<tr>
<td></td>
<td>(1)</td>
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<tr>
<td>( \Delta \text{ Unemployment} )</td>
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<td>-0.100</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.070)</td>
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<tr>
<td>( \Delta \text{ Youth Unemployment} )</td>
<td>0.113*</td>
<td>0.100*</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>( \Delta \text{ HPI} )</td>
<td>0.021***</td>
<td>0.022***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
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<tr>
<td>( \Delta \text{ Income ('000s)} )</td>
<td>-0.041**</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>( \text{SL Per Grad ('000s)} )</td>
<td>0.194***</td>
<td>0.172***</td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>( \text{Grad. Rate} )</td>
<td>-0.080*</td>
<td>-0.043</td>
</tr>
<tr>
<td></td>
<td>(0.043)</td>
<td>(0.028)</td>
</tr>
<tr>
<td>Constant</td>
<td>22.653***</td>
<td>22.717***</td>
</tr>
<tr>
<td></td>
<td>(0.746)</td>
<td>(0.744)</td>
</tr>
<tr>
<td>State FEs</td>
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<td>No</td>
</tr>
<tr>
<td>R^2</td>
<td>0.0036</td>
<td>0.0038</td>
</tr>
<tr>
<td>Observations</td>
<td>315345</td>
<td>315345</td>
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</table>

OLS estimates of a regression of the dependent variable on various controls.
Standard errors in parentheses. *,**,*** denote significance at the 10, 5, and 1 % levels, respectively.

Table 5: Individual-Level Flow Regression of Parental Co-Residence: Moving Out

<table>
<thead>
<tr>
<th>Regression Model:</th>
<th>Baseline</th>
<th>Time Trends</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>( \Delta \text{ Unemployment} )</td>
<td>-0.109</td>
<td>-0.203</td>
</tr>
<tr>
<td></td>
<td>(0.207)</td>
<td>(0.211)</td>
</tr>
<tr>
<td>( \Delta \text{ Youth Unemployment} )</td>
<td>0.064</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(0.190)</td>
<td>(0.187)</td>
</tr>
<tr>
<td>( \Delta \text{ HPI} )</td>
<td>0.052***</td>
<td>0.061***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>( \Delta \text{ Income ('000s)} )</td>
<td>-0.448***</td>
<td>-0.121***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.035)</td>
</tr>
<tr>
<td>( \text{SL Per Grad ('000s)} )</td>
<td>-0.353***</td>
<td>-0.347***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.028)</td>
</tr>
<tr>
<td>( \text{Grad. Rate} )</td>
<td>0.025</td>
<td>-0.166*</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
<td>(0.086)</td>
</tr>
<tr>
<td>Constant</td>
<td>36.885***</td>
<td>37.730***</td>
</tr>
<tr>
<td></td>
<td>(1.088)</td>
<td>(1.056)</td>
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<tr>
<td>State FEs</td>
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<td>No</td>
</tr>
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<td>R^2</td>
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<td>0.0083</td>
</tr>
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<td>Observations</td>
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</tr>
</tbody>
</table>

OLS estimates of a regression of the dependent variable on various controls.
Standard errors in parentheses. *,**,*** denote significance at the 10, 5, and 1 % levels, respectively.
Table A1: Aggregate Flow Regressions of Parental Co-Residence

<table>
<thead>
<tr>
<th>Regression Model:</th>
<th>Moving In</th>
<th></th>
<th></th>
<th>Moving Out</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>County Aggregate</td>
<td>State Aggregate</td>
<td>County Aggregate</td>
<td>State Aggregate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>Time Trends</td>
<td>Baseline</td>
<td>Time Trends</td>
<td>Baseline</td>
<td>Time Trends</td>
<td>Baseline</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>( \Delta ) Unemployment</td>
<td>0.049</td>
<td>0.024</td>
<td>0.102</td>
<td>-0.044</td>
<td>-0.090</td>
<td>-0.125</td>
<td>-0.419*</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
<td>(0.081)</td>
<td>(0.071)</td>
<td>(0.062)</td>
<td>(0.212)</td>
<td>(0.207)</td>
<td>(0.214)</td>
</tr>
<tr>
<td>( \Delta ) Youth Unemployment</td>
<td>-0.007</td>
<td>-0.029</td>
<td>0.102**</td>
<td>0.035</td>
<td>-0.241</td>
<td>-0.181</td>
<td>-0.102</td>
</tr>
<tr>
<td></td>
<td>(0.065)</td>
<td>(0.061)</td>
<td>(0.044)</td>
<td>(0.049)</td>
<td>(0.152)</td>
<td>(0.149)</td>
<td>(0.168)</td>
</tr>
<tr>
<td>( \Delta ) HPI</td>
<td>0.021**</td>
<td>0.014*</td>
<td>0.045***</td>
<td>0.018***</td>
<td>-0.011</td>
<td>-0.009</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.006)</td>
<td>(0.010)</td>
<td>(0.009)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>( \Delta ) Income ('000s)</td>
<td>-0.109**</td>
<td>-0.075*</td>
<td>-0.23</td>
<td>0.024</td>
<td>0.189**</td>
<td>0.148*</td>
<td>0.102</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td>(0.040)</td>
<td>(0.106)</td>
<td>(0.071)</td>
<td>(0.092)</td>
<td>(0.082)</td>
<td>(0.171)</td>
</tr>
<tr>
<td>SL Per Grad ('000s)</td>
<td>0.089**</td>
<td>0.087**</td>
<td>0.148**</td>
<td>0.063**</td>
<td>-0.160***</td>
<td>-0.232***</td>
<td>-0.251***</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td>(0.033)</td>
<td>(0.057)</td>
<td>(0.024)</td>
<td>(0.057)</td>
<td>(0.047)</td>
<td>(0.055)</td>
</tr>
<tr>
<td>Grad. Rate</td>
<td>-0.031</td>
<td>-0.009</td>
<td>-0.020</td>
<td>0.001</td>
<td>0.011</td>
<td>-0.193**</td>
<td>-0.010</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.031)</td>
<td>(0.036)</td>
<td>(0.033)</td>
<td>(0.051)</td>
<td>(0.075)</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Constant</td>
<td>18.632***</td>
<td>19.291***</td>
<td>16.347***</td>
<td>17.499***</td>
<td>41.272***</td>
<td>48.021***</td>
<td>43.286***</td>
</tr>
<tr>
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<td>(1.096)</td>
<td>(0.981)</td>
<td>(1.199)</td>
<td>(1.134)</td>
<td>(1.938)</td>
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<td>(2.109)</td>
</tr>
<tr>
<td>State FEs</td>
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<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R²</td>
<td>.011</td>
<td>.019</td>
<td>.187</td>
<td>.637</td>
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<td>.053</td>
<td>.486</td>
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<td>714</td>
<td>714</td>
<td>26858</td>
<td>26858</td>
<td>714</td>
</tr>
</tbody>
</table>

OLS estimates of a regression of the dependent variable on various controls. Standard errors in parentheses. ***,*** denote significance at the 10, 5, and 1 % levels, respectively. Note: Student debt and graduation rates are only reported after 2002. HPI is only reported for urban areas.