

Returning to the Nest: Debt and Parental Co-residence among Young Adults

Lisa J. Dettling
Federal Reserve Board

Joanne W. Hsu
Federal Reserve Board

This version: January 2016*
[First Version: April 2014]

Abstract

In standard life-cycle models, borrowing enables young adults to smooth consumption, but for those who are indebted and face high borrowing costs, parental co-residence could serve as an alternative smoothing mechanism. This paper investigates if young adults use parental co-residence to smooth consumption by examining the relationship between debt characteristics which are typically associated with higher costs of obtaining credit and subsequent decisions to enter and exit parental co-residence. We find lower credit scores, greater debt balances and debt delinquency are associated with increased flows into parental co-residence, and differentially so for subprime borrowers, who all else equal face increased costs of additional credit. To address the possibility that unobserved factors drive both debt and co-residence, we analyze plausibly exogenous reductions in credit card limits initiated by banks during the Great Recession, which confirms a causal relationship between access to credit and co-residence decisions. Overall, we find that the changing debt portfolios of young adults – most notably characterized by rising student loan debt – can predict 32 percent of the observed increase in flows into co-residence, and 26 percent of the observed increase in time spent in co-residence between 2005 and 2013.

JEL Codes: D14 J11 D91

Keywords: consumer debt, household formation, credit constraints, boomerang generation

*Contact e-mails: lisa.j.dettling@frb.gov, joanne.w.hsu@frb.gov. We thank Jesse Bricker, Dora Gicheva, Alvaro Mezza, Ben Keys, Shanthi Ramnath, John Sabelhaus, Max Schmeiser, and Robert Willis for helpful comments and conversations. We also acknowledge the valuable research assistance of Sebastian Devlin-Foltz. Seminar participants at The Ohio State University, SOLE, the Department of Treasury, Carnegie Mellon University, RAND, the Bureau of Labor Statistics, the FDIC Research Symposium, Boulder Summer Conference, and the Federal Reserve Board offered helpful comments. The analysis and conclusions set forth are those of the authors and do not indicate concurrence with other members of the research staff or the Board of Governors.

1 Introduction

In standard life-cycle models, young adults typically prefer higher levels of consumption than their current income permits, since they are generally on the steep part of the age-earnings profile. Borrowing enables young adults to smooth consumption over time by shifting resources from higher-earning periods in the future. However, consumers with high debt-to-income ratios or poor credit records typically face higher costs of borrowing and limited access to additional credit. Parental co-residence, which can substantially reduce current period expenses by reducing or eliminating housing payments, could be another way to smooth consumption when a young adult has exhausted his ability or willingness to borrow.¹ If parental co-residence is used in this manner, then young adults who are more indebted and of higher credit risk will differentially opt into parental co-residence.

Conceptually, we aim to identify if young adults who are more indebted and face higher borrowing costs are more likely to exercise parental co-residence. To begin, we establish an empirical relationship between debt and parental co-residence by examining the impact of changing credit risk, debt levels and debt payment delinquency on subsequent entry into parental co-residence, focusing on comparisons between prime borrowers versus subprime borrowers, who all else equal, face higher costs of accessing credit. Our primary data source is a quarterly panel of data on young adults' credit histories, obtained from a large credit reporting bureau. Importantly, the data include the ages of all individuals residing at the young adult's address each quarter, which allow us to de-

¹Young adults in the 2013 Survey of Consumer Finances typically spend between 30 and 50 percent of their income on rent: those living with spouse or partner spend 30 percent, those living with roommates spend 48 percent, and those living alone spend 46 percent of their income on rent. The survey does not ask about rental payments made by young adults in parental co-residence. However, a Pew research study found that only 32 percent of young adults aged 18 to 31 in parental co-residence pay any rent to their parents (Parker, 2012). Moreover, anecdotal evidence also suggests young adults who do pay rent typically pay far less than market value; for example, a recent media article geared at parents of children in co-residence recommends parents charge below-market rent not exceeding 10 percent of the adult child's take-home pay (Hochwald, 2013)

termine whether an individual co-resides with a parent. Our main empirical strategy is to estimate a series of ordinary least squares (OLS) regressions which relate an individual's debt characteristics in quarter t to the decision to move into parental co-residence between t and $t+1$, controlling for age, quarter and county fixed effects; a rich set of demographic characteristics at the census block level; and county-quarter unemployment rates and median home prices.

Our results indicate that low and declining credit scores, higher loan balances, and payment delinquency are associated with statistically significant and economically meaningful increases in the likelihood an individual will move into parental co-residence in the following period. Consistent with the hypothesis that young adults facing higher borrowing costs will be more likely to enter parental co-residence, we find relatively larger effects of debt on subprime borrowers. We also estimate the effects of debt on durations spent in co-residence after moving in and find similar effects of credit risk.

To address the possibility that other factors lead to the accumulation of debt and co-residence, our next exercise aims to establish a causal relationship between credit access and co-residence. To do so, we estimate models that exploit plausibly exogenous variation in credit access induced by credit card limit reductions. These limit reductions were initiated broadly by banks in response to post-crisis credit card issuer regulations and in order to reduce portfolio exposure. We find that young adults who experience credit limit reductions are more likely to move in with a parent the following quarter. Overall, our results are consistent with parental co-residence as a smoothing mechanism for those who face higher costs of borrowing.

Between 2005 and 2014, the fraction of young adults aged 18 to 31 who live with their parents rose 15 percent.² Debt, and particularly student loans, among young adults has increased substantially over the past decade, and young adults are increasingly likely to have significant debt loads at younger ages, which can lead to potential negative marks on their credit records and jeopardize their ability to access additional affordable credit (even if some of those loans financed human

²Author's calculation from the Current Population Survey. The fraction of young adults living at home rose from 31.3 percent in first quarter of 2005 to 35.9 percent in first quarter of 2014.

capital investments that raise their permanent income). Our results indicate these recent changes in young adults' debt-holding can explain 32 percent of the observed increase in flows into co-residence and 26 percent of the observed increase in durations of co-residence between 2005 and 2013.

The main scholarly contribution of this paper is to empirically examine the relationship between credit risk and debt-holding among young adults and subsequent decisions to co-reside with their parents. We show that parental co-residence is used to smooth the marginal utility of consumption when young adults face high costs of borrowing and potentially binding credit constraints. This finding is consistent with recent research which indicates that credit constraints can lead to strong reductions in consumption during income or wealth shocks (Mian and Sufi, 2010), and that reductions in credit supply could lead to decreased borrowing even for those not facing currently binding constraints, consistent with precautionary motives (Gross and Souleles, 2002). We also contribute to the housing demand and economic demography literature and show that debt characteristics are important determinants of household formation, even after controlling for labor and housing market conditions. Lastly, the concept of the “boomerang” generation has received considerable policy and media attention, and we provide new empirical evidence using a large, high-frequency dataset on the extent of this phenomenon.³

2 Conceptual Framework and Relevant Literature

In the standard neo-classical life-cycle models of consumer behavior, borrowing and saving are critical mechanisms for maximizing utility across time periods (see, for example, Modigliani and Brumberg, 1954; Friedman, 1957; Carroll, 1997). Current period consumption decisions are based not only on current income, but also on expected income in future periods, or permanent income. In order to smooth marginal utility of consumption over time, a rational consumer borrows during periods of low income or high expenditures. Since young adults are generally on the steep section

³The “boomerang” generation refers to young adults who move back in with their parents after having lived on their own. See, for example, Parker (2012).

of the age-earnings profile, the life-cycle model predicts that young adults will tend to consume at higher levels than their current income permits. Borrowing enables young adults to smooth consumption by shifting resources from higher-earning periods in the future to the present.

At any given time, a young adult's budget constraint will equate current period income and loan disbursements to current period expenditures, which includes discretionary consumption, housing costs and loan payments. When current period income is too low to finance the desired level of consumption, a young adult may wish to increase borrowing. However, if a young adult faces prohibitively high interest rates, is credit constrained, or is otherwise unwilling to borrow more (perhaps due to precautionary motives), he must reduce either discretionary spending or housing costs. Parental co-residence could be a way to significantly lower housing costs, decreasing the need to sacrifice non-housing consumption. Thus, parental co-residence enables those who have exhausted their ability or willingness to borrow to smooth consumption across periods. Young adults could receive disutility from living with parents, which must be weighed against the disutility of reduced discretionary consumption associated with continuing to live independently.

All else equal, we predict that borrowers who face higher interest rates due to high credit risk (as assessed by lenders) or high levels of indebtedness to be relatively more likely to enter into parental co-residence. Access to credit is partially determined by credit reports and scores as well as debt payment-to-income ratios, which are used by lenders for underwriting many different types of loans. Credit reports are adversely affected by factors such as high levels of debt and debt payment delinquency. Lenders often offer smaller loans, higher interest rates, or shorter terms to borrowers with low credit scores and/or high debt payment-to-income ratios. Thus, individuals who are indebted are likely to face relatively high costs of borrowing, if lenders are willing to extend credit to them at all.

There is a growing body of literature examining young adults' living arrangements and how they are related to the economic environment in which young adults live. A number of papers have studied how state or local economic conditions –including unemployment rates, home prices, rental prices and/or wages– impact young adults' living arrangements and have generally found

that worse economic conditions discourage independent living (See for example, Yelowitz, 2007; Mykyta and Macartney, 2011; Kaplan, 2012; Lee and Painter, 2013; Paciorek, 2013; Matsudaira, 2016).⁴ However, several recent papers which focus on the Great Recession period find little or no relationship between economic conditions and living arrangements: Rogers and Winkler (2013) find a weak relationship between MSA-level house price and unemployment rates and headship rates, and Hoynes and Bitler (2015) find a small and statistically insignificant relationship between state-level unemployment rates and the propensity for young adults to live independently. Bleemer et al. (2014) find countervailing effects of local home prices and unemployment rate on co-residence, and interestingly, find that local aggregate student debt reliance unambiguously increases co-residence.⁵ Our paper differs from most previous research as we will focus specifically on individual-level transitions into and out of parental co-residence after a period of independent living. Moreover, our primary focus is on the role of debt characteristics of young adults, and specifically how their debt affects credit accessibility, rather than labor or housing markets, although we control for those variables.

Our paper is also related to a the literature on how credit constraints affect consumption decisions. There is considerable cross-sectional evidence that geographic areas that were more highly leveraged prior to the Great Recession subsequently experienced larger declines in consumption and larger declines in credit limits (for example, Mian and Sufi, 2010; Mian et al., 2013). Many households experiencing unemployment shocks are credit constrained, and those with binding constraints restrict consumption more than those who do not (Sullivan, 2008; Crossley and Low, 2014). Likewise, individuals who face unemployment shocks and hold more debt restrict their

⁴Kaplan (2012) also finds that parental co-residence acts as insurance against labor market risk.

⁵To our knowledge, Bleemer et al. (2014) is the only paper other than ours to empirically model any type of consumer debt as a potential determinant of co-residence choice. As a preview of one of our results, we also find that individual-level student loan balances increase transitions into, and length of stay in co-residence, although our results are based on individual-level analyses, while theirs are based on county- or state-level analyses. We view their work as complementary to ours, and evidence of robustness of the relationship between student loan debt and co-residence found in both papers.

consumption more than those who hold less debt (Baker, 2014). These findings all suggest that credit constraints influence consumption decisions. Consistent with this work, we show that young adults who hold more debt and face higher costs of borrowing drastically reduce their housing consumption expenditures, specifically by entering parental co-residence.

Our paper also contributes to a research on the effects of consumer debt on young adult decision-making. Chiteji (2007) provides an overview of debt holding among young adults and its relationship to various “markers of adulthood,” including home ownership, marriage, and parenthood. Using panel data, she does not find strong evidence that debt holding depresses attainment of these markers of adulthood. In contrast, Shand (2008) shows that debt balances are generally negatively correlated with contemporaneous home-ownership and marriage rates using cross-sectional data. Furthermore, student loan burdens have been shown to influence career choices (Field, 2009; Rothstein and Rouse, 2011). Our paper contributes to this literature by examining how experiences with debt influence choices in living arrangements.

3 Data and Summary Statistics

The main empirical approach used in this paper is to compare groups of young adults facing differential costs of credit based on debt characteristics in quarter t and relate that to living arrangements in quarter $t+1$. To do so, we require panel data on individuals’ debt and living arrangements. In this section, we describe the main data sources and how we construct the relevant independent and dependent variables.

3.1 Data

Our main data source is the Federal Reserve Bank of New York Consumer Credit Panel/Equifax (CCP/Equifax).⁶ The CCP/Equifax is an individual-level panel dataset of consumer credit reports, obtained from one of the three main credit bureaus in the United States. The data have been collected quarterly since 1999 and consist of a five percent random sample of U.S. consumers with

⁶Additional information about the dataset, including sampling and methodology, can be found in Lee and van der Klaauw (2010) at www.newyorkfed.org/microeconomics/ccp.html

credit histories (the “primary sample”), as well as all individuals residing at each primary sample member’s street address, including unit number if applicable (Lee and van der Klaauw, 2010). Once an individual enters the primary sample, he is followed on a quarterly basis until he exits the sample (usually due to death), and the sample is refreshed each quarter as new individuals enter the credit market.

The CCP/Equifax includes detailed information drawn from credit reports, such as the amounts borrowed on various accounts, credit limits, and whether the account is past due or in deferment, as well as the individual’s Equifax Risk Score, which is a type of credit score. For our analysis, we examine credit risk and consumer debt characteristics, both separately and interacted with each other, to capture a broad picture of an individual’s debt holding and cost of accessing additional credit. In some analyses, we separately examine different types of debt, focusing on four categories: student loans, automobile loans, credit cards, and first mortgages on homes. The data also include information on the census block of residence and age of the sample member each quarter. Table 1 summarizes these measures of debt-holding as well as all other variables used in our analyses.

As described in Section 3.2, we focus our analysis on the period from 2005 to 2014 to facilitate interpretation of our results over a period of nearly uniformly rising parental co-residence. We limit the sample to young adults aged 18 to 31 who are in the sample continuously for at least eight quarters, and for whom we are able to match all of the relevant explanatory variables of interest. Our final sample consists of 1,814,074 individuals for a total of 28,940,309 person-quarter observations. Because our sample size is very large, in both our regression tables and our discussion we will describe the precision of our estimates in terms of significance levels that are lower than those commonly used – 0.0001, 0.00005, and 0.00001 – and we will emphasize the economic significance of our estimates.⁷

⁷We selected these significance levels based on suggestions by Cameron and Trivedi (2005) to use $\sqrt{\ln N}$ as the critical value for a two-sided t -test, as well as by Good (1982) to scale estimated p-values by $\sqrt{(N/100)}$ to calculate the equivalent p-value for a sample size of 100. The sample size for the duration analysis is smaller, and we use significance levels of 0.0005, 0.00025, and

While our data have very rich debt information, they include limited demographic characteristics; only the individual's age and census block of residence are available.⁸ To overcome this limitation, we proxy for the demographic characteristics of the sample member by merging to the data information on the demographic and economic characteristics of the individual's census block of residence, tabulated from the 2000 Census. We use information on the race, ethnicity, and sex of the census block's inhabitants. We also include information on median income (by age group), educational attainment, and school enrollment for the census block-group of residence. Finally, we merge in information on trends in local economic conditions: the county-level quarterly unemployment rate and median home price. Unemployment rates were obtained from the Bureau of Labor Statistics (BLS) Local Area Unemployment (LAU) Statistics Series.⁹ County-quarter median home prices were calculated by scaling county-level median home prices, obtained from the 2000 Census, by the appropriate value from the quarterly Federal Housing Financing Agency (FHFA) home price index (HPI).¹⁰

The CCP/Equifax also includes information from the credit reports of all individuals with the same mailing address as the primary sample member each quarter. Thus, when an individual in the primary sample changes residences, we observe not only the new geographic location, but

0.00005.

⁸Federal law prohibits lenders from discriminating applications on the basis of race, ethnicity, sex, marital status, national origin, religion, or receipt of public assistance, and these demographic characteristics not included in the data.

⁹The BLS provides these unemployment rates at a monthly frequency, and we use rates reported for March, June, September, and December.

¹⁰The FHFA index is only available at the level of metropolitan statistical areas and for non-urban portions of states, thus we match to the county using MSA-county crosswalks, as described in Dettling and Kearney (2014). This measure describes the movement of real median house prices at the county-level over time. Ideally, we would also include a measure of rental prices, which might be a more salient price for this group. The correlation between county-quarter real median house prices and Zillow's county-month estimated median rent prices for March, June, September, and December is 0.81 for 2010:Q4 through 2014:Q2. To the best of our knowledge, however, there is no data source for rental prices at the local level over the entire time period we study. In the robustness checks, we also alternatively estimate the model using state rental vacancy rates as a proxy for rental prices.

also the presence and age of any other household members at the new address. This information is imperative for our analysis because the relative ages of household members allow us to infer whether or not an individual resides with a parent in each quarter he is in the sample. Using the Current Population Survey (CPS), where ages and familial relationships between household members are known, we identify all age pairs where there is at least a 90 percent probability that the relationship between household members is parent-child.¹¹ Any observations in the CCP/Equifax in which young adults share an address with an older adult in one of these age pairs are coded as “living with a parent.”¹²

Our primary outcome of interest is whether an individual transitioned from living independently to co-residing with a parent, which we identify from changes in the address listed on the credit report and the “living with parent” variable. To clarify, living “independently” is any arrangement other than parental co-residence, which includes (but is not limited to) living alone, with a spouse/partner, or with a roommate. We define a transition to have occurred when an individual spent at least two quarters not co-residing with a parent followed by at least two quarters co-residing with a parent. The two-quarter limitation ensures we are not just identifying brief transitions, such as those between semesters at college, and confirms that our results are not merely driven by seasonal variation in transitions.¹³ As summarized in table 1, the transition rate from independent living to parental co-residence is 1 percent, and the transition rate from parental co-

¹¹There are several important differences between the CCP/Equifax and CPS. First, the CPS groups individuals by “household,” a definition which is broad and includes various different arrangements of people who occupy a housing unit, but the CCP/Equifax is only able to identify groups of individuals living at the same address. Second, the CCP/Equifax is a nationally representative sample of the U.S. population with credit reports, while the CPS is a nationally representative sample of the U.S. population. For these reasons we must impose some additional restrictions to accurately compare the two data sources and correctly identify parent-child relationships in the CCP/Equifax, the details of which are included in the appendix.

¹²Nearly all age pairs where a young adult is between the ages of 18 and 31 and the other household member is between 25 to 35 years older, as well as a large fraction of age pairs where the other household member is 18 to 38 years older, are included.

¹³This restriction also alleviates data quality concerns in case young adults wait a few months before reporting address changes to financial institutions.

residence to independent living is 6 percent.

3.2 Trends in Debt and Parental Co-residence

Figure 1 displays quarterly trends in parental co-residence since 1989, calculated from the CPS. Note that there is considerable seasonal variation in co-residence, which tends to spike in the June CPS and fall in the December and March CPS due to school enrollment periods. As seen on the smoothed line, which abstracts from this seasonal variation, the fraction of young adults co-residing with a parent was fairly stable over most of this thirty-year period: usually between 31 and 32 percent. Around 2005, however, the fraction of young adults living with their parents began to grow steadily, reaching a historic high of approximately 36 percent in 2013. Using the CCP/Equifax, we can delve further into this increase in the stock of young adults residing with a parent and examine both flows into co-residence and, for young adults that move in, the median length of time spent in co-residence. We find that between 2005 and 2013, the fraction of young adults moving into co-residence each quarter rose 0.1 percentage points (8 percent), and the median duration of co-residence also rose 2 quarters (18 percent). This finding suggests both factors help explain changes in the stock, and our analysis will focus on the role of debt in explaining changes in both of these patterns.

Figure 2 displays trends in average loan balances of young adults for the period from 2005 to 2014, calculated from the credit report data. In order to describe broad patterns in the population, the statistics are calculated using all sample observations and are not conditional on having a particular loan type. Panel (a) plots mean loan balances separately for student loans, auto loans, credit cards, and mortgages. The most prominent trend is for student loans; average balances on student loans more than doubled, exceeding \$12,000 in 2014. Trends in other types of debt hint at the possibility that elevated student loan balances crowd out other types of borrowing: average balances on credit cards, auto loans, and mortgages all fell throughout the period. Panel (b) shows typical debt balances for a 22-year-old in our sample over time. Between 2005 and 2013, loan balances at age 22 grew, and increasingly became dominated by student loans. This trend

implies that recent cohorts of young adults are entering adulthood and attempting to interact with markets for credit cards, auto loans, and mortgages while holding much more debt, particularly in the form of student loans, than previous cohorts of young adults. And recent industry research indicates that the credit risk of student loan debtors has differentially increased since 2005 (FICO, 2013). Moreover, the Credit CARD Act (CARD Act) of 2009 restricted credit card availability for young adults under the age 21.¹⁴ One outcome of this legislation is it may be more difficult for young adults to establish credit histories. Indeed, Debbaut et al. (2014) find the CARD Act led to restrictions in credit card usage among youths under age 21, and that early entrants to credit card markets typically have higher credit scores later in life. These changes suggest that young adults have likely faced higher costs of borrowing and have become increasingly credit constrained over this period.

In this paper, we are interested in how young adults' access to credit evolves over time, and how it might affect their decisions to co-reside with a parent. To illustrate how a borrower's credit risk evolves with these transitions, figure 3 plots the time path of credit scores for individuals who made the transition from living on their own to living with a parent in panel (a) and, as a comparison, individuals who moved, but continued to live on their own in (b). Note that we expect the general moves in panel (b) to be a combination of individuals upgrading residences, those moving to enter different living arrangements, as well as those downgrading residences for the same cost-saving reasons one might move in with parents. Therefore, the analysis in panel (b) is not exactly a counterfactual to the transition into parental co-residence in panel (a), but the comparison can still be informative. In both panels of figure 3 the sample before/after a move is limited to individuals who move exactly once and are observed eight quarters before or after the move. Therefore, the sample used to calculate the means to the left of zero is not the same as the

¹⁴Title 3 of the Credit CARD Act restricts issuance of credit cards to individuals under the age of 21 unless the individual can provide written proof of a means of repaying the debt. It also prohibits recruiting of potential credit card users within 1000 feet of any college campus or at college events and prohibits sending pre-approved card solicitations to individuals under age 21. (CFPB, 2013).

sample used to calculate the means to the right of zero.¹⁵ Since individuals naturally age over the eight quarters during which they are observed up until or after a move, and age and year may have its own separate effects on credit scores, we plot age- and quarter-adjusted scores.¹⁶

As seen in figure 3 (a), in the quarters leading up to the move, mean credit scores fall, from 632 to 626. After the move, credit scores stabilize, and after one year since the transition into co-residence, credit scores begin to recover. For individuals who move but continue to live on their own (figure 3 (b)), mean credit scores rise before the move and continue to rise after the move. There appears to be a slight decline in credit scores in the quarters immediately surrounding the move, which might reflect additional expenses and credit inquiries associated with moving. The different patterns for the two types of moves provide *prima facie* evidence that individuals tend to transition into parental co-residence as credit risk – and hence, borrowing costs – rise, and that these effects do not generalize to all movers.

4 Empirical Relationship between Debt and Parental Co-residence

To begin our analyses, we first wish to establish how a broad range of debt characteristics associated with higher costs of borrowing relate to the decision to co-reside with a parent. Since we are interested in identifying whether debt has a predictive effect on co-residence choices, we focus on the relationship between debt in quarter t and the probability that an individual transitions from/to living on their own between t and $t+1$. We estimate a linear probability model according to the following specification:

$$y_{it,t+1} = \beta_1 debt_{it} + \beta_2 x_{it} + \beta_3 block\ chars_{bt} + \beta_4 county\ chars_{ct} + \epsilon_{it} \quad (1)$$

¹⁵We are unable to use the same sample because we face small cell sizes when limiting the sample to individuals who remain in the sample for 16 quarters, are observed for a full eight quarters before and after a move, and only move once.

¹⁶Age- and quarter- adjusted credit scores were calculated from the residuals of a regression relating credit scores to age and quarter fixed effects. They were calculated using the entire sample, not the limited sample used for the construction of this figure.

For most of our analysis, $y_{it,t+1}$ is an indicator for whether an individual i transitioned from living on their own to living with a parent between period t and period $t+1$, which we refer to as $movein_{it,t+1}$. In our main specifications, we estimate pooled models without individual fixed effects in order to analyze the role of both across-person and within-person variation in debt characteristics. However, we also estimate some panel models with individual fixed effects in order to isolate the effects of within-person evolution of debt over time. In addition, we will investigate the length of time spent in co-residence.¹⁷

Our main independent variables of interest, $debt_{it}$ are designed to capture overall credit risk and indebtedness. Our main measure of credit risk is the credit score, which is a composite measure of an individual's creditworthiness and helps lenders to determine how much credit to extend a borrower and loan terms, including interest rates. Since we are interested not only in overall credit risk, but also in changing credit risk over time, our main specification focuses on both the level ($credit\ score_{it}$) and credit score growth rates in the periods leading up to quarter t , which we define as the percent change in the credit score between quarter $t-1$ (or quarter $t-4$) and t ($\% \Delta credit\ score_{it-1,t}$). In some models we focus only on the level term. Since lenders evaluate potential borrowers not only on credit risk, but also on debt-to-income ratios we also estimate models where the independent variable of interest is indebtedness, as captured by account balances by type of debt ($balance_{it}$), which we construct as the total balance in each of four main loan categories available in the data: student loans, credit cards, auto loans, and mortgages. And, since recent payment behavior is an important determinant of creditworthiness, we also examine payment delinquency ($past\ due_{it}$).

Since we predict that individuals who face higher costs of borrowing will differentially exer-

¹⁷More details on the estimation of the duration models used are provided in Section 6. Note that we do not estimate duration models for our primary move-in analysis due to difficulties in defining the beginning of a "spell of living independently." Only 27 percent of young adults in our main sample are observed living with their parents before moving out to live independently, which would be an appropriate start of a spell. We could, in theory, define the beginning of a spell for the remaining young adults as their first observation in the credit report data, but doing so requires the strong assumption that they began living independently just prior to that observation.

cise co-residence, in many specifications we also include an interaction term between debt and subprime status ($debt_{it} * subprime_{it}$), which describes the differential effect of debt for individuals with subprime credit score status ($subprime_{it}$). A borrower with a subprime credit score – defined here as a score below 660 – is considered to have higher future default risk than one with a prime-rated score, and subprime loans typically have higher interest rates or shorter terms than conventional loans. Thus, a subprime borrower holding equal levels of debt or facing an equal percent decline in his credit score will face higher borrowing costs than a prime borrower. In this context, the coefficient on the conditional main effect of debt ($debt_{it}$) describes the overall effect of debt on co-residence net of subprime status, all else constant. We include the conditional main effect in the model to capture the overall correlation between debt-holding and subsequent parental co-residence, so that the coefficient the interaction term $debt_{it} * subprime_{it}$ can be interpreted as the effect of debt on co-residence through the credit access channel.

We also include a vector of individual-level controls from the credit report data (x_{it}), which include the individuals credit score $credit\ score_{it}$ as well as age and county of residence fixed effects. We do not control for the level effect of $subprime_{it}$ because it is collinear with the credit score. The vector $blockchars_{bt}$ refers to block/block-group characteristics: median income matched to the individual’s age group (18 to 24 or 25 to 34), sex, race/ethnicity, education levels (high school dropout, high school degree, some college, college, post-graduate degree), and school enrollment (in both undergraduate and graduate school). The vector $countychars_{ct}$ refers to the county-quarter unemployment rate and median home price.

To assign a causal interpretation to β_1 we would need to assume that $debt_{it}$ is exogenous to the choice to move in/out of parental co-residence between t and $t+1$, which would require random assignment of debt and credit risk. Unfortunately, debtors and non-debtors are not chosen randomly, and there are two potential sources of endogeneity: reverse causality and correlated unobservable characteristics. If our empirical strategy were to relate contemporaneous debt to living arrangements, we would surely face the problem of reverse causality, since it would be impossible to separate the effect of debt on the choice to live with a parent from the effect of parental co-

residence on debt. Thus, it is imperative that we exploit the panel nature of our data and focus on the effects of debt in the periods prior to the one in which the individual moves in with a parent.¹⁸

That said, any observed correlation between debt-holding and co-residence is potentially subject to omitted variables. For example, a disabling health shock or spell of unemployment may cause an individual to accumulate debt and also lead to a transition into parental co-residence. In that case, the individual would exercise co-residence regardless of their ability to access credit. This is one reason we include specifications with the interaction term $debt_{it} * subprime_{it}$. In those specifications, interpretation of the credit access channel through the interaction term is arguably more straight forward. Credit scores are slow-moving processes, and the transition from prime to subprime rarely occurs instantaneously.¹⁹ Thus, short-term shocks which increase debt and co-residence through channels other than the inability to borrow at an affordable rate would likely affect prime and subprime borrowers equally.²⁰

¹⁸The reverse causation threat to assigning a causal interpretation to β_1 and β_2 is the possibility that individuals who have already decided to move in with parents in a future period systematically become more indebted in an earlier period. In this context, reverse causation requires behavior to change deterministically based on future events. For instance, to preview our results, we find that four-quarter declines in the credit score increase the probability of entering parental co-residence in the next period for subprime borrowers only. The reverse causality interpretation of this result requires that the young adult decided to move in with his parents, but not for some time; and because of that decision, he abused credit in such a way that his credit score declined and became subprime. Note that this story of reverse causation is distinct from that proposed by Kaplan (2012), which posits that having the insurance option of co-residence may lead to greater risk-taking. If risk-taking behavior is associated with debt accumulation, and the realization of downside risk leads a young adult to face higher costs of credit and then to exercise the co-residence option, this pattern would not imply reverse causation.

¹⁹Among young adults whose credit score declines in our data, the median one quarter credit score decline is 2 percent (approximately 13 points) and the median one year decline is 4 percent (approximately 25 points).

²⁰For the coefficient on the interaction term to reflect correlated unobservable characteristics, we would have to assume that unobservable spending shocks that jointly affect debt accumulation and co-residence (such as labor market shocks) disproportionately affect subprime borrowers. As a preview of our results, we find that credit score declines increase co-residence for subprime borrowers, but not prime borrowers. The confounding interpretation of this result is a story where increasing credit risk is caused by different unobservable shocks for different types of borrowers: for prime borrowers, credit score declines are driven by some mechanism that is not associated with co-residence, while for subprime borrowers credit score declines are driven by spending shocks that

That said, we acknowledge that any estimated individual-level relationship between debt and co-residence is potentially subject endogeneity concerns. Thus, in section 5 we turn our attention to establishing a causal relationship between credit access and co-residence by narrowing in on a unique natural experiment in which credit access was exogenously reduced on consumer credit cards. Before we do that, we first wish to establish that there is indeed a broad relationship between debt characteristics across a variety of loan types, access to credit and entry into parental co-residence.

Credit Risk and Co-residence

Our initial measure of an individual's ability to access affordable credit is an individual's credit score. Credit scores are composite measures of an individual's creditworthiness, and are determined by payment history, credit utilization, length of credit history, and types of credit used. Individuals with lower credit scores are typically offered loans with more expensive terms, and are less likely to be offered credit at all. Borrowers with subprime FICO scores (less than 660) face auto loan interest rates more than triple the interest rates for prime-rated borrowers, and mortgage interest rates approximately 50 percent greater.²¹

Table 2 displays the results of a series of linear probability models estimating the relationship between credit risk and $movein_{it,t+1}$. Column (1) displays the overall correlation between credit scores and transitions into co-residence, and indicates that individuals with higher credit scores are less likely to transition into parental co-residence. Credit scores, however, might be endogenous to future co-residence decisions if parental characteristics are correlated with credit scores. For example, parents may help their children open loan accounts early in life, which can boost the child's credit score and could be related to co-residence choices.²²

Next, column (2) displays the relationship between credit scores and transitions into co-residence

increase co-residence. Given the somewhat arbitrary nature of the subprime cutoff, which is used by lenders but virtually unobservable otherwise, we find this story unlikely, but not inconceivable.

²¹Source is www.myfico.com/LoanCenter/Mortgage-Refinance. Note that the FICO scores are similar to, but not identical, to the Equifax risk scores used in our analysis.

²²See Section 6.1 for an analysis of parental characteristics.

estimated using an individual fixed effects model. Since this model relies only on within-person variation in credit risk over time, any unobservable, constant characteristics of individuals – including their overall propensity to co-reside with parents regardless of credit risk – will be controlled for in this specifications. The coefficient on $credit\ score_{it}$ indicates that within-person credit score declines of 100 points predict a 2 percent increase in transitions into co-residence. Thus, we can see that the effects in column (1) are not merely driven by differential propensities to co-reside across different types of individuals, and reflect both across-person and within-person effects of credit risk on co-residence. While these results suggest the importance of credit risk in subsequent co-residence decisions, it is possible that these estimates reflect a correlation between poor financial circumstances and co-residence, and not necessarily credit access.

Next, in columns (3) and (4) we display the results of our main specification, which interacts within-person percentage changes in credit scores over one quarter ($\% \Delta credit\ score_{it-1,t}$) and one year ($\% \Delta credit\ score_{it-4,t}$), with an indicator for whether the individual is subprime ($subprime_{it}$). In this case, the interaction term identifies the credit affordability channel, since a borrower whose score falls and remain prime will be able to access more affordable credit than a borrower whose score falls and become subprime. The level term identifies the general effect of falling credit scores on co-residence through any other channels. Note that we also control for the level of credit score ($credit\ score_{it}$), which identifies the correlation between borrower type and co-residence choice.

The coefficient on $\% \Delta credit\ score_{it-1,t} * subprime_{it}$ in column (3) indicates that falling credit scores increase the probability of transitioning into co-residence for individuals whose score falls and become subprime. The coefficient on the main effect of $\% \Delta credit\ score_{it-1,t}$ indicates there is no measurable effect of one-quarter changes in credit scores for prime borrowers.²³ Borrowers whose scores fall from the 75th percentile to the subprime range in one quarter face an 78.5 percent increase in transitions into parental co-residence. Column (4) displays the results for the four-quarter percentage change in the credit score; the results are similar to those found using the one quarter change. This confirms the notion that high-risk borrowers facing increasing costs of

²³Restricting the analysis to individuals at least 22 years old yields similar results.

borrowing are induced into co-residence, and the observed correlations between credit risk and co-residence found in columns (1) and (2) indeed reflect increased costs of borrowing or other constraints, and not simply poor or declining financial circumstances alone.

Table 2 also displays the coefficients on the main economic controls in each model: county unemployment rates and home prices.²⁴ These estimates show that increases in the county-quarter median home price and unemployment rate both increase the probability an individual will move in with a parent. We interpret these results as indicative that individuals facing worse labor market conditions are more likely to enter into co-residence. The results for home prices are consistent with individuals residing in more expensive housing markets being priced out of living independently. Note that the coefficients on the unemployment rate and median home price are economically fairly small: column (1) indicates that a one percentage point rise in the unemployment rate increases the probability an individual will move in with a parent by 0.01 percentage points (1.6 percent at the mean), and a \$10,000 increase in the median home prices increases the probability an individual will move in with a parent by 0.008 percentage points (0.7 percent at the mean). One possible explanation for the relatively weak results is the presence of precautionary motives. If present, young adults may decide to “boomerang” without experiencing a labor market shock.

While the effect of local unemployment rates on co-residence are small, we acknowledge that local unemployment rates are by no means a perfect measure of individual unemployment risk. Indeed, recent research by Gyourko and Tracy (2013) indicates that local unemployment rates are a poor measure of individual employment risk and can lead to attenuation bias.²⁵ Thus, we do not interpret the coefficient on local unemployment rates as reflecting the true causal effect

²⁴Appendix table A.1 displays the coefficients on the other controls used in the model. Each of the demographic controls enter the model with the expected signs, with similar effects in regressions for each of the specifications. We interpret this result as indicative that the block-level measures indeed proxy for individual demographics.

²⁵To address this further, we additionally estimate the model with county-quarter fixed effects in the robustness checks to address the possibility of attenuation bias due to measurement error in the county-quarter unemployment rate or house price measures. Again, we find no change in the coefficient on $debt_{it}$.

of *individual* unemployment on co-residence. While this would be an interesting association to investigate, it is outside the scope of this paper to measure the effects of individual employment risk on co-residence.

4.1 Loan Balances by Type of Debt and Co-residence

Lenders evaluate potential borrowers not only on credit risk, but also on debt-to-income ratios, and two borrowers with similar credit scores but different debt-to-income ratios can vary in their ability to access additional credit. Typically, lenders prefer debt-to-income ratios below 40 percent, but consumers with prime scores may be able to qualify with higher ratios. It is important to note that we do not observe individual income, only age-specific median income in the census block-group of residence. Thus, we cannot construct a measure of an individual's debt-to-income ratio. Instead, we focus simply on loan balances, controlling for local-area income. Again, our main focus is on the interaction between loan balances and subprime status, and the interaction term can be interpreted as the differential effect of holding debt for those facing higher borrowing costs. It is not clear *ex ante* what the sign on the level effect of $balance_{it}$ will be, since a larger balance could reflect a high debt-to-income ratio or higher spending due to greater wealth or income (even conditional on local income).

We separately examine balances on student loans, credit cards, auto loans, and mortgages, since we expect co-residence behavior to potentially vary by type of debt. Individuals holding student loans have very little room to reduce required monthly payments simply by reducing consumption in the current period, while individuals with credit card or auto debt can change consumption patterns or sell a car to reduce payments.²⁶ We expect the effect of mortgage balances to also be different, since a mortgage signals homeownership, and parental co-residence would not necessarily reduce expenses for homeowners in the same way that renters can immediately save on housing expenses by moving in with parents.

²⁶Payments on some student loans can be reduced through deferment or forbearance; we discuss this in Section 4.2.

Table 3 displays the results. As seen in the coefficients on the interaction term $balance_{it} * subprime_{it}$, larger loan balances are associated with increased probabilities of moving in for high-risk consumers on all four types of loans, above and beyond the effect of credit risk and balance size alone. This supports the notion that credit affordability can predict future co-residence choice.

Focusing on student loans, we see that the coefficient on the level term, $balance_{it}$ is also positive, indicating that both prime and subprime borrowers are more likely to move into co-residence if they hold more student loan debt: a \$10,000 increase in student loan balances increases flows into co-residence 6.5 percent. Subprime student loan borrowers, however, are 76 percent more likely to move in than prime borrowers with the same size loan. For credit cards, balance size has a small positive effect for prime borrowers and no measurable effect for subprime borrowers. The magnitude of the overall effect is about half the size of that for student loans. For auto loans, we only see precisely measured effects for subprime borrowers. The magnitude of the effects for auto loans are the largest of the four loan types: for subprime borrowers, a \$10,000 increase in auto loan balances increases flows into co-residence by 11.8 percent. However, mean balances on student loans are much larger, on average, than balances on auto loans or credit cards, so the aggregate effects of student loan debt are larger. A one standard deviation increase in total loan balance increases co-residence 12.8 percent for student loans, 11.0 percent for auto balances, and 6.4 percent for credit cards. For mortgages, we do see a small positive coefficient on $balance_{it} * subprime_{it}$, but the overall effect of a larger mortgage balance for both prime and subprime borrowers is negative.

4.2 Delinquency and Co-residence

An individual who misses payments on a loan is categorized in the data as past due or delinquent on that account. After borrowers miss payments, lenders often charge late fees, and, in the case of credit cards, can increase interest rates as well. Thus, delinquency signals an immediate increase in the costs of borrowing. That said, it is possible that delinquency lags other indicators of financial difficulties, and may be a “last resort” option.

Table 4 displays the results of estimating equation (1) using ordinary least squares for the

dependent variable $movein_{it,t+1}$ and the independent variables $pastduemild_{it}$ for mild delinquency (30 to 89 days) and $pastduesevere_{it}$ for severe delinquency (90 or more days).²⁷ Table 4 column (1) displays the results of this analysis for delinquency on any type of loan, where each coefficient is interpreted as relative to being current on all accounts.²⁸ The results indicate that while mild delinquency increases transitions into co-residence, severe delinquency has a small and statistically insignificant effect. Because our dependent variable is a flow into co-residence, an individual who moves in with a parent after becoming mildly delinquent is no longer in the sample the following quarter, when he might have become severely delinquent. Therefore, we interpret the strong effects of mild delinquency and weak effects of severe delinquency as indicative that individuals who begin to face higher borrowing costs, and are willing and able to move in with a parent, choose to do so *prior* to entering severe delinquency. Continuing to live alone in severe delinquency may reveal that parental co-residence is an extremely undesirable or unavailable option for that individual. This finding suggests parental co-residence is indeed used to smooth consumption, often preemptively, as opposed to being an option of “last resort.”

Column (2) replicates column (1), using the individual fixed effects model. In this case, the analysis narrows in on within-person changes in delinquency status. The results show that the act of becoming delinquent, and hence, raising the cost of accessing additional credit, increases the probability of transitioning into co-residence the following period. The smaller, but positive coefficient on $pastduesevere_{it}$ indicates that both levels of delinquency increase flows into co-residence. This finding confirms our hypotheses from the pooled analysis that some individuals will never move into co-residence.

Column (3)-(6) of table 4 display the pooled results separately for delinquency on each type of account. Because an individual who is not past due can be either current, or simply not have the particular type of account, we additionally include an indicator for having a particular type of

²⁷Results from combining the two independent variables into a single delinquency variable for any degree of delinquency are similar.

²⁸An individual is considered current on all accounts if he is not past due on any account, which includes individuals who have no active accounts on the credit report.

account and being current on payments, which we label $current_{it}$. We also account for regulations on repayment unique to student loans: individuals experiencing financial difficulties may apply for a deferment of payments on their federal student loans, which is an alternative to delinquency that is not available for the other types of loans and represents a state where an individual is neither fully current nor late on payments.²⁹ We do not classify individuals who are in deferment due to school enrollment as in deferment since those individuals did not exercise deferment as an alternative to missed payments.³⁰

In all cases except mortgages, the coefficient on $current_{it}$ indicates that being current on payments increases flows into co-residence relative to not having the type of loan. These results suggest that those with debt are generally more likely to move into co-residence, even if they are making payments on time. We find that mild delinquency exerts larger effects on transitions into co-residence than does severe delinquency, consistent with the results found in column (1). Among the different loan types, delinquency on credit cards exerts the largest effect on transitions, consistent with the fact that missed payments immediately trigger late fees, and, for most issuers, an escalated penalty interest rate. Relative to being current on all credit cards, mild delinquency on any card increases transitions by 36 percent. For student loans, those with deferments are the most likely to move into parental co-residence. Finally, the estimates in column (6) indicate that being

²⁹For more information on federal student loan deferment, see studentaid.ed.gov/repay-loans/deferment-forgiveness. Deferment is possible for some private loans, which comprise a minority of all student loans, but policies are lender-specific. Note that not all servicers report deferment status to credit bureaus, and borrowers who do not qualify for deferment may also pursue forbearance, which cannot be identified in our data. We hesitate to interpret deferment as a measure of individual unemployment for several reasons. First, deferments are granted for reasons other than unemployment. Second, deferments are not automatically granted, and not all unemployed individuals may seek them. Deferments for unemployment last six months, after which a borrower can re-apply, for a maximum deferment of three years. Thus, an unemployment spell may end before, or extend beyond, the deferment period. We interpret deferment as simply an alternative to delinquency exercised by individuals who might otherwise become past due without that option.

³⁰While our data include some information about student loan deferment, they do not include the reason for the deferment. Our proposed solution for focusing on individuals who are in deferment for reasons other than school enrollment is to focus on deferments that occur to individuals over age 22. The results are not sensitive to using cutoffs at age 21 or 23.

mildly delinquent on mortgages reduces the probability of moving in with a parent.

5 Establishing Causality Between Access to Credit and Parental Co-residence: Evidence from Credit Limit Reductions

In order to establish a causal relationship between access to credit and parental co-residence, our next set of analyses exploit plausibly exogenous credit card limit reductions experienced by a broad array of borrowers during the Great Recession. In this section, we describe the background, our empirical strategy and the results of those exercises.

5.1 Background and Empirical Strategy

In the wake of the Great Recession, bankcard companies sought to mitigate their portfolio exposure by reducing credit lines on consumer accounts (Vantagescore, 2011; FICO, 2009). At the same time, a series of reforms were introduced to protect consumers from what was viewed as deceptive and abusive practices in the credit card industry. In May 2007, the Federal Reserve Board proposed new disclosure rules for credit cards, which were adopted in December 2008 and became effective in 2010. In January 2009, the Credit CARD Act was brought to the House floor, and it was signed into law in May 2009, with the majority of its provisions becoming effective in February 2010 (Jambulapati and Stavins, 2014). In anticipation of the new rules, credit card companies reduced credit lines on consumer cards for a broad swath of consumers. Figure 4 displays trends in credit card limit reductions by quarter, with each major policy announcement highlighted, indicating a strong increase in credit limit reductions following each announcement and prior to implementation of the CARD Act.

These credit limit cuts were common and applied to high-risk and low-risk borrowers alike. One paper finds that in the first quarter of 2009, 58 percent of consumers with the lowest category of credit scores received a limit reduction, as did 56 percent of those with the highest scores (Vantagescore, 2011). We also compared other economic and demographic characteristics of those who received limit reductions and those that did not, and found little evidence that credit limit cuts

are correlated with any of the economic or demographic characteristics included in our models.³¹ This suggests reductions in credit limits were exogenous to borrower behavior.

Gross and Souleles (2002) found that increases in credit card limits led to more borrowing not only for those who had been liquidity constrained, but also those who started with lower rates of credit utilization. The responsiveness of borrowers who faced only the possibility of binding constraints in the future is consistent with precautionary motives, and suggests that credit limit cuts could yield substantial changes in expenditures, even when liquidity constraints do not appear to be currently binding. . Thus, we consider these credit card limits cuts to be a natural experiment of the effect of reductions in credit supply.

To estimate the effects of credit card limit reductions on entry into co-residence, we estimate a modified version of equation (1):

$$y_{it,t+1} = \beta_1 \text{limit fall}_{it-1,t} + \beta_2 \text{activity}_{t-4,t} + \beta_3 x_{it} + \beta_4 \text{block chars}_{bt} + \beta_5 \text{county chars}_{ct} + \varepsilon_{it} \quad (2)$$

where $\text{limit fall}_{it-1,t}$ is an indicator for having a credit limit reduction between $t-1$ and t . In addition to the control variables discussed in Section 4, we also include several additional controls in some specifications, which we label $\text{activity}_{t-4,t}$. First, we cannot determine from the data whether the reductions in credit lines were initiated by lenders or borrowers, thus, it is possible that our results could be driven by user-requested reductions in credit limits or account closures, which can be initiated either by the borrower or the lender (Jambulapati and Stavins, 2014). Although it is rare for a consumer to initiate a credit card limit reduction, credit card account closures could drive overall limit reductions, thus, in some specifications $\text{activity}_{t-4,t}$ includes a control for whether a consumer had any account closures between $t-4$ and t . Of course, some of these may be lender-initiated, and some line reductions are user-initiated, so we consider this only a rough

³¹ Appendix table A.2 displays mean comparisons for individuals who did and did not experience limit reductions.

proxy for user-initiated credit line reductions. Second, while prior research suggests these credit limit cuts during the 2007-2010 period were random conditional on observables (FICO, 2009), in the past credit limit cuts were typically the result of borrower behavior. Thus, as a check on our strategy, in some specifications $activity_{t-4,t}$ includes controls for changes in credit risk and credit card payment behavior between $t-4$ and t . This exercise allows us to explicitly control for behavioral differences across individuals which may have led to the credit limit reductions, so that our results are net of any borrower behavior-induced reductions in credit.

5.2 Results

Table 5 presents the results of regressions relating indicators for total credit limits that fell between quarters $t-1$ and t to $movein_{it,t+1}$.³² The sample only includes young adults that have credit card data for at least some part of the analysis period. Column (1) reports results for the full analysis period between 2005 and 2013 with the usual age, quarter and county fixed effects, census block demographics, and local economic conditions. Because credit limit reductions were implemented most broadly by banks between the Federal Reserve Board's announcement of proposed regulations in the second quarter of 2007 and the implementation of the majority of the provisions of CARD Act in the first quarter of 2010, we restrict the analysis to that time period in column (2) to mitigate concerns that limit reductions outside this period could be more heavily influenced by borrower behavior, which modestly reduces the coefficient estimate on $fallinglimit_{t-1,t}$.

In columns (3)-(5) we add in the additional controls for account closures and borrower trigger behavior ($activity_{it-1,t}$). Column (3) includes the indicator for closing at least one account between quarter $t-1$ and t . The results are virtually unchanged and there is no observed relationship between account closures and move in rates the following period. Column (4) includes the controls for common triggers of credit line reductions, including changes in the risk score between periods $t-4$ and $t-1$ and an indicator for whether the individual missed any credit card payments between $t-4$ and $t-1$. Column (4) indicates that the coefficient on $fallinglimit_{t-1,t}$ is virtually unchanged,

³²Limit reductions over four quarters lead to similar results.

suggesting limit reduction in this time period were indeed uncorrelated with common credit line reduction triggers. In column (5), we combine the specifications in columns (3) and (4) by including controls for account closures and borrower behavior leading up to period $t-1$. Finally, in column (6) we repeat the analysis for the full 2005-2013 sample with all of the controls.

Whether we restrict the time period of analysis (column 2), add additional controls for borrower behavior (columns 3 and 4), or both (column 5), the coefficients on $falling\ limit_{t-1,t}$ are virtually unchanged. Evaluated at the mean of the dependent variables, in all six of the specifications we see that young adults who experience credit limit reductions are about 4 percent more likely to move in with a parent the following quarter.

Overall, these results suggest that the observed reductions in credit supply were at least perceived as binding for some young adults, who then used co-residence as an alternative consumption smoothing mechanism. Because these changes in credit supply were essentially randomly applied, we interpret these results as indicating that the relationship between credit access and co-residence decisions indeed causal, at least for consumer credit cards.³³

6 Additional Results and Robustness Checks

In this section we describe the results of specifications using several additional independent and dependent variables: estimates from duration models for the outcome length of stay in co-residence after moving in, and interactions between debt and parental characteristics. We also describe various robustness checks on the data construction and empirical specification. Durations of Co-residence

Our next exercise is to examine when a young adult decides to move out of co-residence after having opted to move in. It is not clear *ex ante* that the decision to move out would necessarily be symmetric to the decision to move in. In fact, it seems highly likely the decision to move out will be more nuanced and idiosyncratic than the decision to move in: limited access to credit may force

³³In additional results (not shown here) we also include in the model credit card balances, dollar value of credit limits, and utilization ratios, which do not alter the main results.

an individual to move in with a parent, but increasing access does not necessarily force, or even create a sense of urgency for an individual to move out. Since parental co-residence is rarely an absorbing state for young adults, we focus our analysis on the duration of time spent in co-residence, as opposed to simply whether or not an individual will move out. To study this question, we analyze duration models which allow for time-varying covariates and rates of exiting co-residence. We define a spell in co-residence (called *duration coreside_{it}*) to begin when a young adult moves from living alone to living with parents, at which time he is then at risk for moving out, and the spell ends when the young adult moves out of parental co-residence.³⁴ We estimate accelerated failure time survival regressions, which allow us to analyze how time-varying covariates influence the duration of parental co-residence. Because we are interested in the evolution of credit risk and indebtedness, and because individuals can substitute across debt types over time, we include balance and delinquency on all loan types, as well as credit scores, in a single specification. Note that we omit mortgages from this analysis, since very few young adults living at home have mortgages. We also do not include the interaction terms with subprime status since this model focuses on within-person changes in indebtedness and credit risk over time. The model does include all of the controls included in equation (1): age, county, and quarter fixed effects; block-level demographics; and county-level economic conditions.

Table 6 displays results, reported as time ratios, where each column heading indicates the distributional assumption used for the log of the error term.³⁵ The results are largely consistent across specifications, and in what follows we describe the preferred specification, the gamma model,

³⁴We exclude from this analysis individuals who we do not observe having living independently in a prior period. For these individuals, the beginning of their spell cannot be analogously defined because we do not know how long the individual has been in parental co-residence, or if they have even left parental co-residence for the first time. We include only the first spell for any young adults with multiple spells.

³⁵Time ratios are exponentiated coefficients. A time ratio of 1.1, for example, means that a marginal increase in the covariate is associated with a 10 percent increase in the duration of co-residence, while a time ratio of 0.9 indicates a 10 percent reduction of the duration. The median duration of co-residence, accounting for the right censoring in the data, is 12 quarters.

which is reported in column (4).³⁶ The results indicate that lower credit scores increase the amount of time a young adult spend in co-residence. A 100 point decline in credit scores increases the duration at home by 9 percent. Moreover, relative to being current on loans, individuals who are severely delinquent also stay in co-residence longer. In fact, for student loans, becoming severely delinquent increases the duration in co-residence 7.5 percent. This indicates that individuals who continue to face high or growing costs of borrowing stay in co-residence longer than individuals who face low/falling costs.

On the other hand, debt alone (both being current on accounts and having a larger balance) decreases durations in co-residence. A \$10,000 increase in loan balances decreases the duration of co-residence 1.5 percent for student loans and 4.9 percent for auto loans. Credit card balances also slightly reduce the time spent at home, though the effects are not precisely measured. Similarly, for each loan type, being current on payments reduces the duration with parents by 10 to 18 percent, relative to not having that loan type. This indicates that young adults who have debt and can manage their debt payments move out sooner than young adults who have no loans.

Interestingly, the point estimates on the measures of local economic conditions indicate that neither unemployment rates nor house prices have statistically significant or economically meaningful effects on the duration of co-residence. Therefore, after moving into co-residence, short term changes in the local economy exert no effect on young adults' decisions of when to move out. One possible explanation is that after periods of increasing financial hardship, young adults do not look for jobs or to buy homes in the areas near their parents.

6.1 Heterogeneity by Socioeconomic Background

Next, we consider whether young adults of different socioeconomic backgrounds – as measured by parental income, education, and distance from a parent's home – respond differently to access

³⁶The gamma distribution yields lower Akaike information criterion and Bayesian information criterion values than alternative distributions, which are also displayed in descending AIC/BIC order in table 6. These, as well as estimates of Cox proportional hazards models and competing risks regressions (where aging out is the competing risk), and OLS estimates using estimated spells all yield similar results.

to credit. *Ex ante*, it is not clear which groups might display a greater response. On the one hand, higher income parents may be able to provide their children with greater access to informal credit. If so, young adults from higher-income families may rely less on borrowing from formal credit markets, and therefore do not need to exercise co-residence as an alternative method of smoothing consumption. On the other hand, higher-income parents may reside in larger homes and have the means to absorb a young adult if he should wish to move back. Living further away from a parent may make the co-residence option more costly, but the ability to have moved further away at a young age in the first place may simply proxy for own or parental income.

To capture parental characteristics, we must limit the sample to individuals who we observe to have co-resided with a parent before moving out on their own, at which time they become at risk for returning home. For this subset of individuals, we capture the characteristics of the census block of residence at the time the individual lived with a parent and use those characteristics to proxy for the parent's income and level of education. For income, we use the median income among 45 to 64 year-olds, and for education, we use the fraction of individuals with a college or graduate degree. We also collect the parent's county of residence during the period of past co-residence. For these analyses, we restrict our focus to credit score changes.

Table 7 reports interactions between parental characteristics and young adults' credit score growth. Column (1) presents estimates of credit score growth and the credit score itself on this limited sample for comparison.³⁷ Columns (2) and (3) include interactions with parent income and education. As shown by the level terms, higher parental income and education both increase the probability that a young adult will move in. We interpret this as indicative that parents with higher incomes and levels of education are more likely to have the space and resources to house an adult child. The interaction terms are all imprecisely estimated, indicating that declining credit scores do not measurably influence co-residence decisions differentially by parental income and education. Column (4) interacts credit score growth and delinquency with the distance between the

³⁷The analysis is similar to Table 2 column (3), but omitting the interaction with subprime, so the results can be compared to interactions with parental characteristics.

parents' county of residence and the young adults' county of residence.³⁸ This exercise indicates that individuals who live further from home are more likely to move in overall, but there is no differential effect of debt. We interpret this result as evidence that living farther away from a parent is an alternative proxy for parental income, which appears to dominate any additional costs of moving home from further away.

6.2 Robustness Checks

We have implemented a number of robustness checks on the model specification and construction of the data. For brevity, we present results using the independent variable credit score growth only. First, we investigate the role of possible interaction effects of debt characteristics with local economic conditions. The intuition behind this exercise is to uncover whether debt is disproportionately more problematic in weaker labor markets and/or more expensive housing markets. In columns (1) and (2) of table 8, we report results from regressions that include the interaction of our debt measures with county-quarter unemployment rates and home prices. Note that these two conditions are measured at the location where the young adult lives on his own. In each case, the effect of $debt_{it}$ and $countychars_{ct}$ are unchanged, and the coefficient on the interaction term is small and statistically insignificant, which suggests that $debt_{it}$ exerts similar effects on $movein_{it,t+1}$ in different local economic environments.

Next, we examine altering our measures of economic conditions. Thus far, we have used the unemployment rate at the county-quarter level. It is possible, however, that this measure does not adequately capture the labor market circumstances for young adults, who may face different employment prospects than older adults. Age-specific unemployment rates are available at the state-year level for ages 16 to 19, 20 to 24, and 25 to 34, so we add those rates to our analysis in table 8, column (3).³⁹ The inclusion of the youth unemployment rates does not change the effect

³⁸We use great circle distances (“as the crow flies”) between county centroids, downloaded from the Center for Transportation Analysis in the Oak Ridge National Laboratory, at cta.ornl.gov/transnet/SkimTree.htm.

³⁹For our analysis sample, the correlation between the county-quarter unemployment rates and the age-specific state-year unemployment rates is 0.61.

of $debt_{it}$, and the effect of the county-quarter unemployment rate also remains positive in both specifications. Contrary to expectations, the state-annual youth unemployment rate has a *negative* coefficient, although the effects are economically fairly small: a 10 percentage point increase in youth unemployment rate in the state of residence – a very large change in the unemployment rate – decreases the probability of moving in by only 0.16 percentage points (1.5 percent at the mean). We interpret this finding as a sign that state-year level unemployment rates provide overly aggregated information about young adults’ labor market prospects.

Next, we estimate a more flexible version of our model using county-by-quarter fixed effects. The purpose of this analysis is to ensure our estimates of the effect of $debt_{it}$ on flows into co-residence aren’t biased by an omitted characteristic of the local environment. These estimates also ensure that attenuation bias due to measurement error in the local labor or housing market variables do not bias our estimates of the effect of $debt_{it}$. Results are displayed in table 8, column (4). Note that because local economic characteristics only vary at the county-quarter level, they are perfectly correlated with the county-quarter fixed effects and are therefore omitted from this analysis. When compared with the original results found in table 4, there is virtually no change in the coefficients on $debt_{it}$.

Next, we consider an alternate behavioral explanation for the increase in co-residence over this period: Perhaps it has simply become more acceptable for young adults to co-reside with parents. We use the fraction of young adults in each county-quarter co-residing with a parent (called $coresidence_{ct}$) as a measure of social acceptability and include this as an additional control variable in the model. Results are displayed in column (5) of table 8. The coefficient on $coresidence_{ct}$ is negative, which indicates that young adults are less likely to move in with a parent when more of their peers have already done so. Moreover, the coefficients on $debt_{it}$ are unchanged. This finding is contrary to what we would have expected if increasing acceptability of co-residence drove the increase in co-residence.

Finally, we include in column (6) of table 8 an alternative measure of the local housing mar-

ket: rental vacancy rates, which can be used to proxy for rental prices.⁴⁰ The coefficient on $rental\ vacancy\ rate_{st}$ is negative, indicating that higher vacancy rates, or lower rental prices, reduce the probability of moving in with a parent, although the estimates are not statistically significant. The coefficients on $debt_{it}$ are also unchanged.

7 Interpreting the Magnitude of the Estimated Effects

Figure 1 indicates that between 2005 and 2014, there was a sizable rise in co-residence, and figure 2 indicates rising debt among young adults over the time period studied. Our next exercise is to consider how these changes in debt-holding, coupled with our estimated effects of debt, relate to aggregate changes in parental co-residence. To do so, we implement a simple back of the envelope calculations to calculate the effect of changes in the average portfolio of debt and debt characteristics held by young adults on transitions into co-residence and durations of co-residence in the period studied.

We compute annual averages of all of our debt variables for the population of young adults living independently, and use coefficients from a regression which relates all debt variables to $movein_{it,t+1}$ and $duration\ coreside_{it}$ to predict changes in the move-in rate and durations in co-residence induced by movements in debt characteristics, holding all other covariates constant at the sample mean.⁴¹ Figure 5 displays these trends, where the solid line displays trends in flows into co-residence and the dashed line displays trends in predicted median durations due to debt. The overall patterns indicate that debt characteristics predict increases in flows into and median durations of co-residence.

Next, we estimate the share of observed changes in co-residence patterns that be explained by changes in debt over the period studied. We estimate expected changes in co-residence patterns based on our estimates of the marginal effects of debt characteristics on co-residence. This exercise

⁴⁰Rental vacancy rates by state and quarter were obtained from U.S. Census Bureau and can be downloaded at www.census.gov/housing/hvs/data/rates.html.

⁴¹Estimates for the duration model were calculated using coefficients estimated from the gamma survival regression and the sample of young adults that we observe entering co-residence.

indicates that changes in debt-holding and credit risk among young adults between 2005 and 2013 predict a 2.4 percent rise in flows into co-residence and a 4.6 percent increase in median durations in co-residence. During this period, flows into co-residence rose 7.6 percent and median durations increased 2 quarters. This implies that changes in the debt-holding can predict 32 percent of the rise in flows into co-residence over this period, and 26 percent of the increase in median durations in co-residence.⁴²

It is worth noting that while our empirical results speak to debt-holding and credit access generally, the overall increase in debt-holding of young adults over this time period is primarily from trends in student loan borrowing, and that change drives much of our back of the envelope calculation of aggregate effects.⁴³ Within our conceptual framework, student loans may be particularly likely to lead to future borrowing problems, even if the loans financed increased human capital. For many consumer debt products, current debt payments can be reduced by limiting consumption: an auto or home could be sold or downsized, for example, and credit card balances can be reduced by limiting expenditures. Student loans, however, are unique because they reflect sunk costs associated with human capital investments, and outside of loan deferment, current payments cannot be reduced below the minimum. Student loans are also generally offered without the underwriting used for other consumer debt products, and are widely available to young borrowers, before their

⁴²As a comparison, economic conditions predict a 14.4 percent decline in flows into co-residence between 2005 and 2013, and only predict an increase in the 2009-2010 period. Economic conditions predict a 13 percent increase in durations in co-residence, but those estimates were not statistically significant in our preferred specification so we hesitant to interpret those changes as meaningful in this exercise.

⁴³A contemporaneous working paper by Bleemer et al. (2014) provides a much more detailed and explicit calculation of the aggregate effects of student loan debt on the population of youths at home. Their analyses examine the effect of state-level student loan burdens on the fraction of youths at home at 25 and 30, as well as flows into and out of co-residence. They also instrument for aggregate student loan debt per student using state-cohort tuition measures. They find that a \$10,000 increase in state-cohort student debt per student increases flows into co-residence by 6.1 percent. Our point estimates indicate that a \$10,000 increase in individual student loan balances increases flows into co-residence by 6.5 percent. While our back of the envelope calculation of the aggregate effects of debt includes all types of debt, as well as credit risk and payment delinquency, we find it reassuring that our estimates are similar for student loans.

future ability to repay is apparent. Thus, even a minimum payment could be burdensome if current returns to the human capital investments are lower than expected. Moreover, recent industry research indicates that the credit risk of student loan debtors has differentially increased since 2005 (FICO, 2013). Thus, the recent unprecedented rise in parental co-residence, and our estimates of the relatively large explanatory power of debt on these patterns, seems sensible given recent trends in student loan borrowing.

8 Conclusion

This paper investigates the impact of a broad range of debt characteristics on young adults' decisions to co-reside with a parent. Using a quarterly panel data of young adults' credit histories, we find that increased credit risk and indebtedness associated with higher costs of borrowing increase flows into parental co-residence. We also find that plausibly exogenous cuts to credit limits both additionally increase flows into co-residence, suggesting the relationship between credit access and co-residence is causal. Together, the results provide evidence that parental co-residence can be used as a consumption smoothing mechanism for young adults who are indebted and face relatively high borrowing costs. We find that changes in aggregate patterns in young adults' debt-holding between 2005 and 2013 – most notably characterized by increases in student debt – can explain 30 percent of the increase in flows into co-residence and 26 percent of the increase in median time spent in co-residence.

Our paper speaks to the ways that individuals smooth the marginal utility of consumption over the life-cycle. We find that young adult borrowers who are indebted and face high costs of borrowing are more likely to opt to co-reside with a parent. We also find that after moving in, delinquency and lower credit scores increase the duration of parental co-residence. Our results suggest parental co-residence is used to smooth consumption for those who are unable or unwilling to continue borrowing.

References

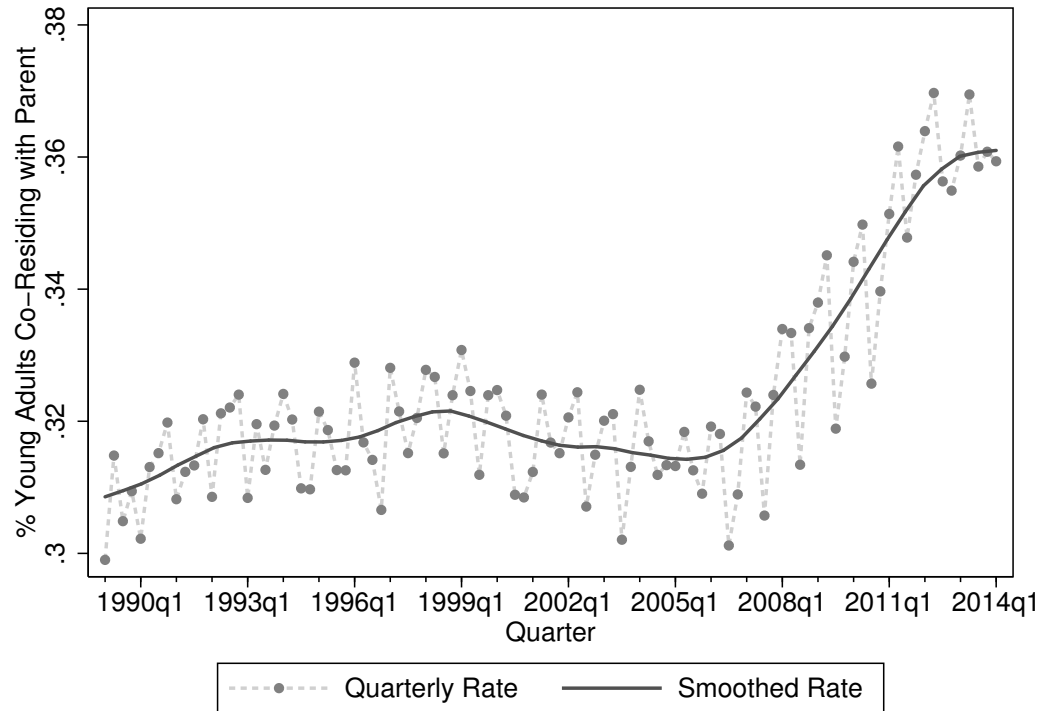
- Baker, S. R. (2014). Debt and the consumption response to household income shocks. *Mimeo*.
- Bleemer, Z., M. Brown, D. Lee, and W. van der Klaauw (2014). Debt, jobs, or housing: What's keeping millennials at home? Staff Reports 700, Federal Reserve Bank of New York.
- Cameron, A. C. and P. K. Trivedi (2005, May). *Microeconometrics: Methods and Applications*. New York: Cambridge University Press.
- Carroll, C. D. (1997, February). Buffer-stock saving and the life cycle/permanent income hypothesis. *The Quarterly Journal of Economics* 112(1), 1–55.
- CFPB (2013). *CARD Act Report: A Review of the Impact of the CARD Act on the Consumer Credit Card Market*.
- Chiteji, N. S. (2007). To have and to hold: An analysis of young adult debt. In S. Danziger and C. Rouse (Eds.), *The Price of Independence: The Economics of Early Adulthood*. Russell Sage Foundation.
- Crossley, T. F. and H. W. Low (2014, December). Job loss, credit constraints, and consumption growth. *Review of Economics and Statistics* 96(5), 876–884.
- Debbaut, P., A. Ghent, and M. Kudlyak (2014). Are young borrowers bad borrower? evidence from the credit card act of 2009. *FRB Richmond Working Paper 13-09*.
- Dettling, L. J. and M. S. Kearney (2014, February). House prices and birth rates: The impact of the real estate market on the decision to have a baby. *Journal of Public Economics* 110, 82–100.
- FICO (2009, August). How are credit line decreases impacting consumer credit risk? Insights White Paper Series No. 22, Fair Isaac Corporation.
- FICO (2013, January). Is growing student loan debt impacting credit risk? Insights White Paper Series No. 65, Fair Isaac Corporation.
- Field, E. (2009). Educational debt burden and career choice: Evidence from a financial aid experiment at nyu law school. *American Economic Journal: Applied Economics* 1(1), 1–21.
- Friedman, M. (1957). *A Theory of the Consumption Function*. Princeton: Princeton University Press for NBER.
- Good, I. (1982). Standardized tail-area probabilities. *Journal of Statistical Computation and Simulation* 16(1), 65–66.
- Gross, D. B. and N. S. Souleles (2002, February). Do liquidity constraints and interest rates matter for consumer behavior? evidence from credit card data. *The Quarterly Journal of Economics* 117(1), 149–185.
- Gyourko, J. and J. Tracy (2013). Unemployment and unobserved credit risk in the FHA single family mortgage insurance fund. Working Paper No. 18880, National Bureau of Economic Research.

- Hochwald, L. (2013). Tough love: Should boomerang kids pay rent to their parents. *Forbes October 17, 2013*.
- Hoynes, H. and M. Bitler (2015). Living arrangements, doubling up, and the great recession. *American Economic Review 105(5)*, 166–170.
- Hynes, R. M. (2008). Broke but not bankrupt: Consumer debt collection in state courts. *Florida Law Review 60(1)*.
- Jambulapati, V. and J. Stavins (2014, September). Credit CARD act of 2009: What did banks do? *Journal of Banking & Finance 46*, 21–30.
- Kaplan, G. (2012, June). Moving back home: Insurance against labor market risk. *Journal of Political Economy 120(3)*, 446–512.
- Lee, D. and W. van der Klaauw (2010, November). An introduction to the FRBNY consumer credit panel. Staff Report 479, Federal Reserve Bank of New York.
- Lee, K. O. and G. Painter (2013). What happens to household formation in a recession? *Journal of Urban Economics 76*, 93–109.
- Matsudaira (2016). Economic conditions and the living arrangements of young adults. *Journal of Population Economics 29*.
- Mian, A., K. Rao, and A. Sufi (2013, November). Household balance sheets, consumption, and the economic slump. *The Quarterly Journal of Economics 128(4)*, 1687–1726.
- Mian, A. and A. Sufi (2010, August). Household leverage and the recession of 2007–09. *IMF Economic Review 58(1)*, 74–117.
- Modigliani, F. and R. Brumberg (1954). Utility analysis and the consumption function: An interpretation of cross-section data. In K. K. Kurihara (Ed.), *Post-Keynesian Economics*, pp. 388–436. New Brunswick: Rutgers University Press.
- Mykyta, L. and S. Macartney (2011). The effects of recession on household composition: 'doubling up' and economic well-being. *US Census Bureau SEHSD 2011-4*.
- Paciorek, A. (2013). The long and short of household formation. Finance and Economics Discussion Series 2013-26, Board of Governors of the Federal Reserve System.
- Parker, K. (2012). The boomerang generation. *PEW Research Center Social and Demographic Trends Project*.
- Rogers, W. H. and A. E. Winkler (2013). The relationship between the housing and labor market crises and doubling up: An MSA-level analysis, 2005-2011. *Monthly Labor Review August 2013*.
- Rothstein, J. and C. Rouse (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics 95(1)*, 149–163.

- Shand, J. M. (2008). *The Impact of Early-Life Debt on Household Formation: An Empirical Investigation of Homeownership, Marriage and Fertility*. Ph. D. thesis, Ohio State University.
- Sullivan, J. X. (2008, March). Borrowing during unemployment unsecured debt as a safety net. *Journal of Human Resources* 43(2), 383–412.
- Vantagescore (2011, April). Bankcard changes: Consumer impact. Vantagescore research studies.
- Yelowitz, A. (2007). Young adults leaving the nest: The role of the cost of living. In S. Danziger and C. Rouse (Eds.), *The Price of Independence: The Economics of Early Adulthood*. Russell Sage Foundation.

9 Tables and Figures

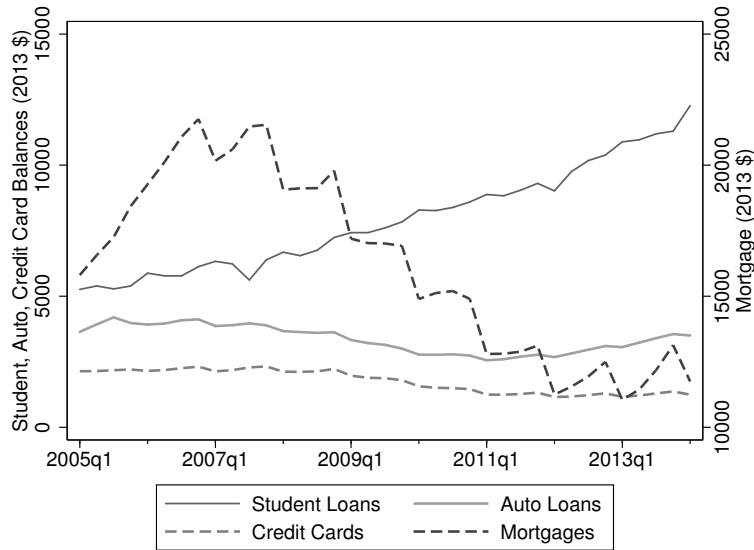
Figure 1: Fraction of Young Adults Aged 18 to 31 Residing with a Parent 1990-2014



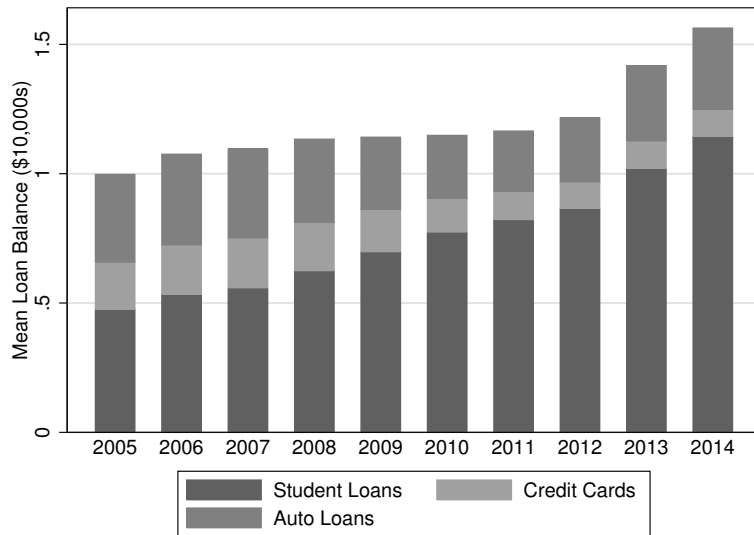
Notes: The dotted line displays trends in the fraction of young adults co-residing with a parent, calculated quarterly. The solid line represents a local polynomial fitted to the quarterly data. Rates of co-residence are calculated from the March, June, September, and December Current Population Survey (CPS) 1990-2014. An individual is living with a parent if the relationship with the household head is child, stepchild, or foster child.

Figure 2: Trends in Loan Balances

(a) Mean Balances



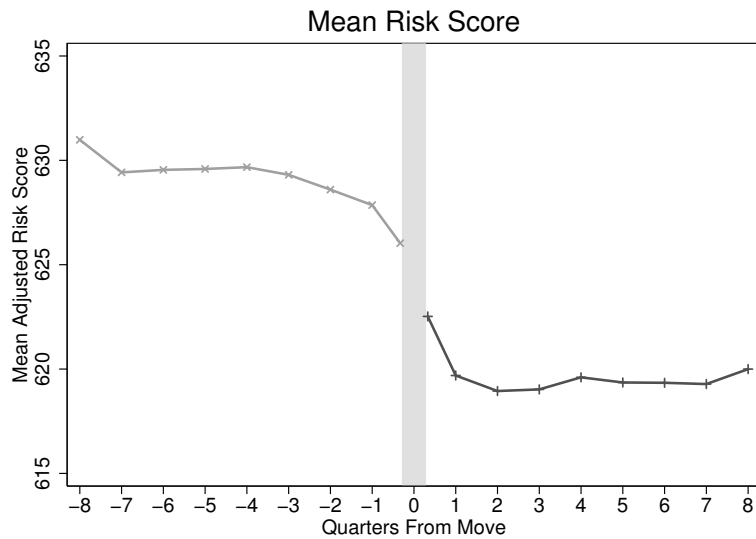
(b) Mean Balances at Age 22



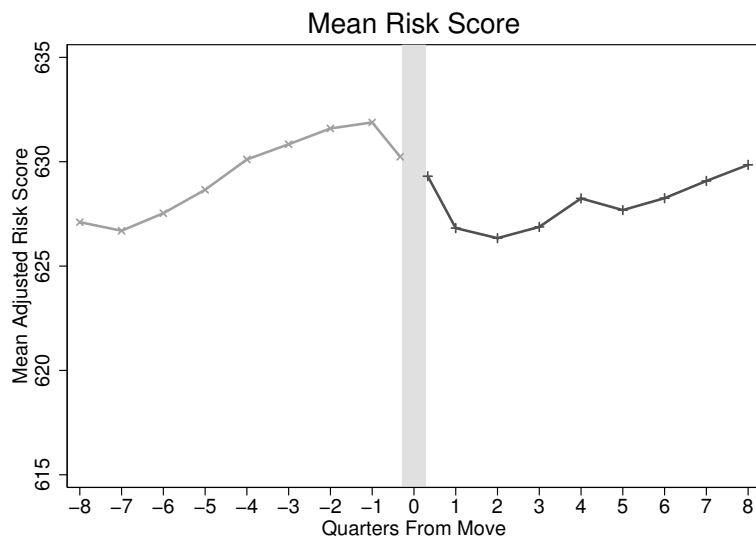
Notes: Displayed are trends in unconditional mean balances of student loans, auto loans, credit cards, and mortgages. Balances are reported in 2013 dollars. In panel (a), the scaling on the right axis is different than left axis, since mortgage debt tends to be several orders of magnitude larger than student loan, credit card, and auto debt. Panel (b) displays balances for 22-year-olds only. Data source: FRBNY Consumer Credit Panel/Equifax.

Figure 3: Evolution of Credit Scores Before and After Co-residing with Parent

(a) Young Adults Who Move Into Parental Co-residence

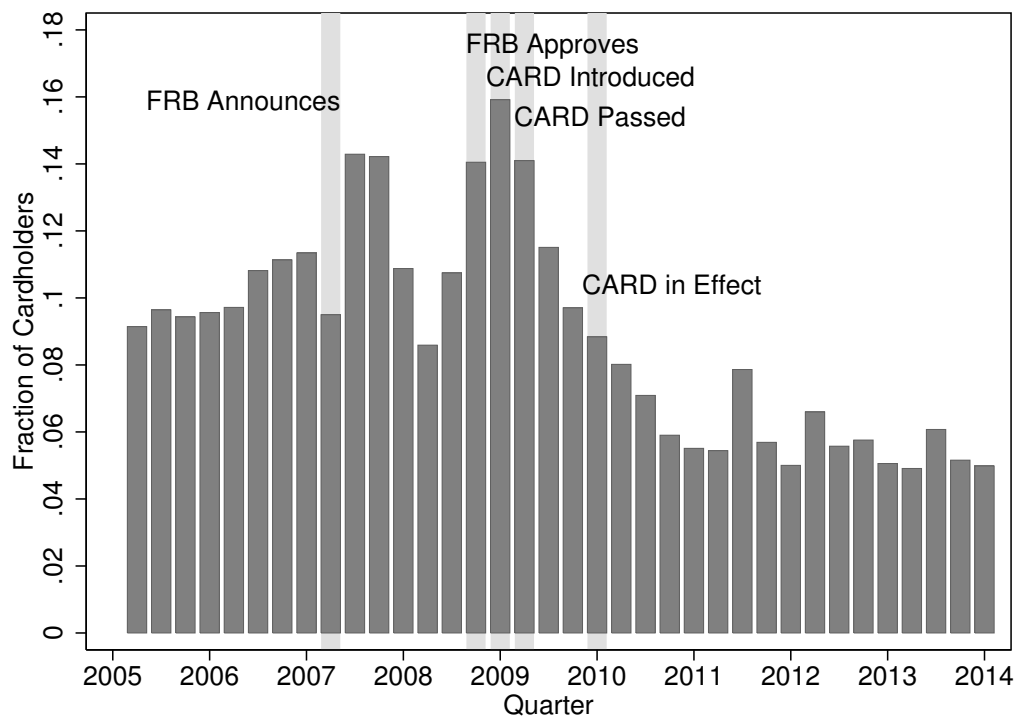


(b) Young Adults Who Move and Remain Independent



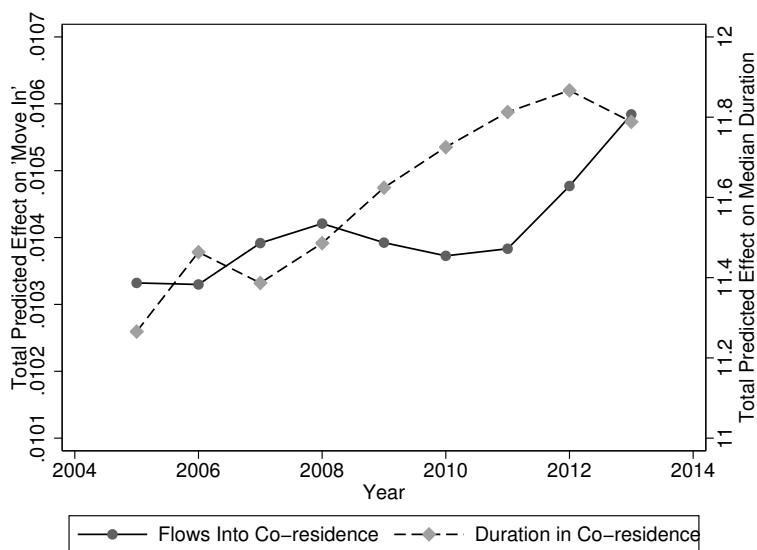
Notes: Displayed are age and quarter adjusted mean residual credit scores for sample members who were observed to have moved residences once during the sample period, calculated for each quarter before and after a move. Panel (a) includes only moves into parental co-residence, and (b) includes only moves into other independent living arrangements. The pre-move sample is limited to individuals who were present eight quarters prior to their observed move, and the post-move sample is limited to individuals who were present in the sample eight quarters after their observed move. Data source: FRBNY Consumer Credit Panel/Equifax.

Figure 4: Fraction of Young Adults with Credit Cards Experiencing Reductions in Credit Limits



Notes: The dark bars display trends in the fraction of young adults with credit cards that experienced reductions in credit limits, calculated quarterly. Each of the light bars highlight the timing of major policy announcements related to the CARD Act. Main data source: FRBNY Consumer Credit Panel/Equifax.

Figure 5: Aggregate Effects of Debt Characteristics on Co-residence Trends 2005-2013



Notes: Displayed are the trends in predicted probabilities of moving in (solid line) and predicted median durations in co-residence (dashed line) from changes in the aggregate debt mix (debt balances, delinquency and credit scores), estimated using the specification described in the text. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text.

Table 1: Summary Statistics

	Mean	SD	Mean	Mean	SD
Credit Report Characteristics					
Living with Parent	0.360	0.480	Age	25.6	3.50
Move In _{<i>t,t+1</i>} (<i>N</i> =28940309)	0.010	0.101	Credit Score	6.358	0.968
			Subprime	0.571	0.495
			Credit Score Growth _{<i>t-1,t</i>}	0.003	0.060
			Credit Score Growth _{<i>t-4,t</i>}	0.010	0.099
Move Out _{<i>t,t+1</i>}	0.058	0.233	Current on All Accounts	0.869	0.337
Median Duration in Co-Residence (<i>N</i> =2024708)	12	Quarters	Past Due 30-89 Days on Any Account	0.046	0.210
			Past Due 90+ Days on Any Account	0.075	0.263
<i>Student Loans</i>			<i>Credit Cards</i>		
Balance (\$10,000s)	0.782	1.964	Balance (\$10,000s)	0.177	0.477
Have Account	0.381	0.486	Have Account	0.534	0.499
Current	0.325	0.469	Current	0.496	0.500
Past Due 30-89 Days	0.009	0.093	Past Due 30-89 Days	0.019	0.135
Past Due 90+Days	0.037	0.189	Past Due 90+Days	0.019	0.137
Deferment (Over Age 22)	0.115	0.319	Limit Cut _{<i>t-1,t</i>}	0.091	0.288
<i>Auto Loans</i>			<i>Mortgages</i>		
Balance (\$10,000s)	0.337	0.864	Balance (\$10,000s)	1.634	5.598
Have Account	0.302	0.459	Have Account	0.135	0.341
Current	0.287	0.453	Current	0.127	0.333
Past Due 30-89 Days	0.012	0.107	Past Due 30-89 Days	0.005	0.071
Past Due 90+Days	0.003	0.058	Past Due 90+Days	0.003	0.056
Aggregate Variables					
% White	0.688	0.322	% Less than HS	0.191	0.145
% Black	0.118	0.231	% High School	0.279	0.109
% Hispanic	0.126	0.215	% Some College	0.281	0.088
% Other, Non-Hispanic	0.067	0.113	% College	0.161	0.106
% Male	0.490	0.068	% Post-Secondary	0.089	0.086
% Enrolled Undergrad	0.056	0.075			
% Enrolled Graduate	0.014	0.023	County Unemployment Rate	7.092	2.804
Median Income (\$10,000s)	3.641	2.463	County Median Home Price	17.101	11.213

Notes: Displayed are means and standard deviations of the independent and dependent variables used in the analysis for the sample of young adults aged 18-31 who are living alone in quarter t and included in the main estimation sample, with the exception of “Move Out _{$t,t+1$} ” (the sample living at home in quarter t), “Living with Parent” (all young adults in our sample), and “Limit cut” (sample with credit card data). Sources are the FRBNY Consumer Credit Panel/Equifax (top panel) and Census, FHFA and BLS (bottom panel).

Table 2: Effect of Credit Scores on Moving into Parental Co-residence

	(1)	(2)	(3)	(4)
<i>Dependent Variable: Movein_{it,t+1}</i>				
Credit Score _{it}	-0.000341*** (0.000021)	-0.000172** (0.000041)	-0.000288*** (0.000021)	-0.000171*** (0.000023)
%ΔCredit Score _{it-1,t}			0.000718 (0.001070)	
%ΔCredit Score _{it-1,t} *Subprime _{it}			-0.008445*** (0.001123)	
%ΔCredit Score _{it-4,t}				-0.002032 (0.000673)
%ΔCredit Score _{it-4,t} *Subprime _{it}				-0.005069*** (0.000698)
Unemployment Rate _{ct}	0.000120*** (0.000020)	0.000088*** (0.000020)	0.000120*** (0.000020)	0.000120*** (0.000022)
Median Home Price _{ct}	0.000078*** (0.000008)	-0.000078*** (0.000006)	0.000077*** (0.000008)	0.000086*** (0.000009)
Individual FE	No	Yes	No	No
Observations	28940309	28940309	28940309	24703093
Individuals	1814074	1814074	1814074	1792944

Notes: Sample is young adults aged 18 to 31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; as well ascensus block demographic characteristics. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Table 3: Effect of Balances on Moving into Parental Co-residence

	(1)	(2)	(3)	(4)
	Student Loans	Credit Cards	Auto	Mortgage
<i>Dependent Variable: Movein_{it,t+1}</i>				
Balance _{it} *Subprime _{it}	0.000279*** (0.000024)	0.000963 (0.000317)	0.001175*** (0.000098)	0.000105*** (0.000006)
Balance _{it}	0.000369*** (0.000015)	0.000381*** (0.000047)	0.000096 (0.000029)	-0.000195*** (0.000004)
Credit Score _{it}	-0.000258*** (0.000021)	-0.000269*** (0.000032)	-0.000187*** (0.000024)	-0.000036 (0.000022)
Observations	28940309	28940309	28940309	28940309
Individuals	1814074	1814074	1814074	1814074

Notes: Sample is young adults aged 18 to 31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects, census block demographic characteristics; and county-quarter unemployment rates and home prices. Balances are expressed in \$10,000s. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Table 4: Effect of Delinquency Status on Moving into Parental Co-residence

<i>Dependent Variable: Move</i> $in_{i,t+1}$	(1)	(2)	(3)	(4)	(5)	(6)
	Any Loans	Any Loans	Student Loans	Credit Cards	Auto	Mortgage
PastDueMild $_t$	0.003125*** (0.000100)	0.001744*** (0.000096)	0.000772 (0.000207)	0.006032*** (0.000167)	0.004561*** (0.000188)	-0.001774*** (0.000185)
PastDueSevere $_t$	0.000064 (0.000079)	0.000921*** (0.000101)	-0.001511*** (0.000096)	0.003077*** (0.000151)	-0.000044 (0.000280)	0.000147 (0.000268)
Defer $_t$			0.003539*** (0.000067)			
Current $_t$			0.002030*** (0.000057)	0.002329*** (0.000041)	0.002191*** (0.000044)	-0.004782*** (0.000046)
Credit Score $_t$	-0.000145*** (0.000024)	0.000205* (0.000052)	-0.000503*** (0.000022)	-0.000312*** (0.000022)	-0.000354*** (0.000021)	0.000249*** (0.000023)
Individual FE	No	Yes	No	No	No	No
Observations	28940309	28940309	28940309	28940309	28940309	28940309
Individuals	1814074	1814074	1814074	1814074	1814074	1814074

Notes: Sample is young adults aged 18 to 31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; census block demographic characteristics; and county-quarter unemployment rates and median home prices. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Table 5: Effect of Credit Card Limits on Moving into Parental Co-residence

<i>Dependent Variable: Movein_{it,t+1}</i>	(1)	(2)	(3)	(4)	(5)	(6)
Falling limit _{t-1,t}	0.00053*** (0.00009)	0.00051*** (0.00014)	0.00052*** (0.00014)	0.00046** (0.00014)	0.00047** (0.00014)	0.00047*** (0.00010)
Card(s) Closed _{t-1,t}			-0.00010 (0.00022)		-0.00012 (0.00021)	0.00010 (0.00014)
Card(s) Past Due _{it-4,t-1}				-0.00075*** (0.000210)	-0.00075*** (0.00021)	-0.00080*** (0.00014)
%Δ Credit Score _{it-4,t-1}				-0.00116 (0.00065)	-0.00116 (0.00065)	0.00006 (0.00045)
Risk Score _t	-0.00180*** (0.00003)	-0.00161*** (0.00005)	-0.00162*** (0.00005)	-0.00179*** (0.00006)	-0.00179*** (0.00006)	-0.00198*** (0.00004)
2007Q2-2010Q1	No	Yes	Yes	Yes	Yes	No
Observations	14760041	5662605	5662605	5337116	5337116	12695762
Individuals	1240970	849186	849186	807603	807603	1175174

Notes: Sample is young adults aged 18 to 31 living alone in quarter t and non-missing credit card data. The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; census block demographic characteristics; and county-quarter unemployment rates and median home prices. Balances are expressed in \$10,000s. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Table 6: Effect of Debt on Duration Spent in Co-Residence: Survival Analysis

	(1)	(2)	(3)	(4)
	Exponential	Weibull	Log Normal	Gamma
Credit Score _{it}	0.917*** (0.004)	0.923*** (0.003)	0.909*** (0.004)	0.910*** (0.004)
Student Loan Balance _{it}	0.985*** (0.001)	0.986*** (0.001)	0.984*** (0.002)	0.985*** (0.002)
Current _{it}	0.855*** (0.007)	0.863*** (0.006)	0.878*** (0.007)	0.899*** (0.007)
Past Due Mild _{it}	0.996 (0.028)	0.998 (0.026)	1.016 (0.029)	1.026 (0.029)
Past Due Severe _{it}	1.069* (0.018)	1.072*** (0.017)	1.075** (0.018)	1.075** (0.018)
Deferment _{it}	0.896*** (0.008)	0.903*** (0.008)	0.906*** (0.009)	0.918*** (0.010)
Auto Loan Balance _{it}	0.979*** (0.002)	0.980*** (0.002)	0.955*** (0.004)	0.951*** (0.005)
Current _{it}	0.826*** (0.005)	0.835*** (0.005)	0.836*** (0.007)	0.847*** (0.007)
Past Due Mild _{it}	0.759*** (0.017)	0.772*** (0.016)	0.774*** (0.019)	0.788*** (0.019)
Past Due Severe _{it}	0.924 (0.043)	0.932 (0.040)	0.887 (0.041)	0.866 (0.040)
Credit Card Balance _{it}	0.993 (0.007)	0.996 (0.006)	0.977 (0.007)	0.969** (0.007)
Current _{it}	0.841*** (0.006)	0.845*** (0.005)	0.820*** (0.006)	0.820*** (0.006)
Past Due Mild _{it}	0.727*** (0.014)	0.733*** (0.013)	0.684*** (0.013)	0.679*** (0.013)
Past Due Severe _{it}	0.845*** (0.018)	0.843*** (0.017)	0.790*** (0.016)	0.778*** (0.015)
Unemployment Rate _{ct}	0.999 (0.003)	0.999 (0.003)	1.001 (0.003)	1.001 (0.003)
Median Home Price _{ct}	0.997 (0.001)	0.997 (0.001)	0.997 (0.001)	0.997 (0.001)
Observations	2024708	2024708	2024708	2024708
Individuals	244901	244901	244901	244901

Notes: Results reported are time ratios estimated for parametric accelerated failure time survival models. Columns are labeled with the distributional assumptions for the log of the error term. Sample is young adults aged 18 to 31 living with a parent in quarter t , who were observed to have lived alone and then transitioned into co-residence at some point in the past. The dependent variable is the duration of co-residence; the spell ends when a young adult transitions from living with a parent in quarters t and $t - 1$, to living with independently in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; and census block demographic characteristics. Balances are expressed in \$10,000s. Standard errors are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text.

* $p < .0005$, ** $p < .00025$, *** $p < .00005$.

Table 7: Effect of Credit Score Growth on Moving into Parental Co-residence, by Parental Characteristics

	(1)	(2)	(3)	(4)
<i>Dependent Variable: Move</i> _{<i>it,t+1</i>}				
%Δ Credit Score _{<i>it-1,t</i>}	-0.007244*** (0.001033)	-0.006563 (0.002537)	-0.008733*** (0.001465)	-0.007686*** (0.001090)
%Δ Credit Score _{<i>it-1,t</i>} *Income		-0.000017 (0.000442)		
Parent Income		0.000574*** (0.000025)		
%Δ Credit Score _{<i>it-1,t</i>} * College			0.021566 (0.014334)	
Parent College			0.005547*** (0.000777)	
%Δ Credit Score _{<i>it-1,t</i>} * Distance				0.000335 (0.000260)
Parent Distance				0.000131*** (0.000014)
Credit Score _{<i>it</i>}	-0.000989*** (0.000060)	-0.001213*** (0.000060)	-0.001053*** (0.000060)	-0.001008*** (0.000060)
Observations	6300399	6300399	6300399	6300399
Individuals	502869	502869	502869	502869

Notes: Sample is young adults aged 18 to 31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; census block demographic characteristics; and county-quarter unemployment rates and median home prices. Balances are expressed in \$10,000s. Parent-young adult distances expressed in 100s of miles. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Table 8: Robustness Checks

<i>Dependent Variable: Movein_{it,t+1}</i>	(1)	(2)	(3)	(4)	(5)	(6)
%Δ Credit Score _{it-1,t}	-0.007478*** (0.000898)	-0.005823*** (0.000605)	-0.006928*** (0.000339)	-0.006863*** (0.000340)	-0.006929*** (0.000339)	-0.006932*** (0.000339)
%Δ Credit Score _{it-1,t} * Rate _{ct}	0.000078 (0.000117)					
Unemployment Rate _{ct}	0.000120*** (0.000020)	0.000120*** (0.000020)	0.000209*** (0.000022)		0.000130*** (0.000020)	0.000130*** (0.000020)
%Δ Credit Score _{it-1,t} * Home Price _{ct}	-0.000066 (0.000031)					
Median Home Price _{ct}	0.000078*** (0.000008)	0.000078*** (0.000008)	0.000066*** (0.000008)		0.000075*** (0.000008)	0.000074*** (0.000008)
Credit Score _{it}	-0.000270*** (0.000021)	-0.000270*** (0.000021)	-0.000268*** (0.000021)	-0.000267*** (0.000021)	-0.000270*** (0.000021)	-0.000270*** (0.000021)
Youth Unemployment Rate _{st}			-0.000163*** (0.000018)			
Co-residence Rate _{ct}					-0.010300*** (0.001025)	
Rental Vacancy Rate _{st}						-0.000046 (0.000012)
County-Quarter FE	No	No	No	Yes	No	No
Observations	28940309	28940309	28940309	28940309	28940309	28940309
Individuals	1814074	1814074	1814074	1814074	1814074	1814074

Notes: Sample is young adults aged 18 to 31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t - 1$, to living with a parent in quarters $t + 1$ and $t + 2$. All specifications include age, quarter, and county fixed effects; census block demographic characteristics; and county-quarter unemployment rates and median home prices. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is the FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$ *** $p < .00001$.

Appendix

A.1 Identifying Parental Co-residence in the CCP/Equifax

To identify when young adults co-reside with parents, we employ the address match variable in the CCP/Equifax, which allows us to link together credit reports of individuals living at the same street address, including apartment number.⁴⁴ Our goal is to construct a co-residence variable that takes the value of one when the young adult is inferred to live with parent(s), and zero otherwise; this variable forms the basis for $movein_{it,t+1}$, as well as the duration of co-residence.

We begin by matching to the CCP/Equifax information from the Current Population Survey (CPS) on relationships between household members. We construct a set of age pairs where there is at least a 90 percent probability that the relationship is parent-child, and code observations in which young adults share an address with an older adult in one of these age pairs as a young living with a “likely parent.”⁴⁵ We additionally sum the number of household members and the number of “likely parents” quarterly for each young adult in the sample in each quarter.

In the CCP/Equifax, “households” are defined simply as a group of individuals at the same address, while the CPS is able to restrict “households” to omit those in living arrangements such as dormitories and institutional housing. Thus, using only the “likely parent” variable we find a small number of unusually large households, and we would tend to over-identify parent-child relationships. Therefore, we use the following algorithm to modify the “likely parent” variable and identify parental co-residence. First, we examine each individual’s spell at a given address (henceforth a “person-location” spell) and calculate the standard deviation of household size. We omit from the sample all individuals where the standard deviation of household size is above the 99th percentile of that distribution. Second, we calculate the the median number of “likely parents” throughout the person-location spell, and code individuals as “living with a parent” only if the

⁴⁴As described in Lee and van der Klaauw (2010) “An address change occurs when the majority of data providers report a new address, where more reliable data providers are given more weight.”

⁴⁵Our definition of a “child” includes individuals labeled child, step-child or foster child of the household head/spouse.

median is less than or equal to two. Third, we examine the fraction of the Census block that includes group quarters housing, and we only code individuals as “living with a parent” only if there are no group quarters on the block. Henceforth, we will refer to this set of restrictions as our algorithm for identifying parent-child relationships in the CCP/Equifax.

We chose our primary algorithm for identifying parent-child relationships in the CCP/Equifax by matching to the trends in parental co-residence found in the CPS. To do so, we calculate the fraction of adults ages 18-31 living with a parent for March, June, September and December of each year in both the CPS and CCP/Equifax. In order to match the two, we must take into account the fact that the credit report data is not representative of the United States population like the CPS data, but instead is representative of the population of individuals *with credit reports*. Since flows of young adults into this sample may change over time as credit markets and economic conditions change, the composition of the credit report data sample members changes over time. Moreover, because we restrict the sample to individuals who are in the sample at least eight consecutive quarters, there are no inflows into the sample after 2011. In practice, this means that the age composition of the credit report sample varies over time, and in particular, becomes older after 2011, because it is not refreshed by new, typically younger, entrants into the credit market. Thus, we chose from several thousand alternative algorithms for identifying a parent-child match by minimizing the root mean-squared difference between the age-adjusted residuals of trends in parental co-residence in the CPS and the CCP/Equifax.⁴⁶

Figure A.1 displays both the level and age-adjusted residual trends in parental co-residence in the CCP/Equifax and CPS. Figure A.1 (a) displays the raw trends, and indicates we are able to match the general trends in parental co-residence found in the CPS fairly closely, although the CCP/Equifax tends to slightly overstate parental co-residence. Once we make the age adjustment,

⁴⁶Possible alternate algorithms we considered include restricting by the number of household members (between 5 and 30), the number of likely parents (between 2 and 10) and the fraction of the block that is group quarters (between 0 and 100 percent). In practice, there was very little difference in resulting trends in co-residence, because these modification affect relatively few individuals. The root mean squared errors ranged from 0.000767 and 0.000976.

displayed in figure A.1 (b) the match is improved, and we are able to capture both the seasonality in parental co-residence and the general upward trend, which provides support for the ability of our algorithm to correctly identify parent-child relationships. However, we are careful to note that since our data is not representative of the population at large, but instead is representative of individuals with credit reports, even the age-adjusted trends would not necessarily be expected to match perfectly. An important caveat to our analysis is that our results should be interpreted as applying only to the population of young adults with credit reports.

A.2 Construction of Debt Measures

We measure delinquency based on information about amounts past due on different categories of accounts, which is recorded as past due 30-59 days, 60-89 days, 90-119 days, 120-149 days, and 150 days plus. The 150 days plus category also includes accounts which are in collections. CCP/Equifax additionally includes information on accounts which are in serious derogatory status, which is an account which has had bankruptcy in the past 7 years.⁴⁷ We convert the information on amounts past due into an indicator variable for delinquency status based on whether or not an individual is delinquent on any loan in that category of debt (or overall). If an individual is delinquent on multiple accounts, we assign the individual to the status of the loan with the most severe category of delinquency. Since our data on moving behavior is quarterly, for the cases where we are interested in the length of time past due, we turn the measure of delinquency into a quarterly variable: current on account, past due 30-90 days, or past due 90 days or more.

Examination of the data indicates that in some cases, accounts are first reported as past due by

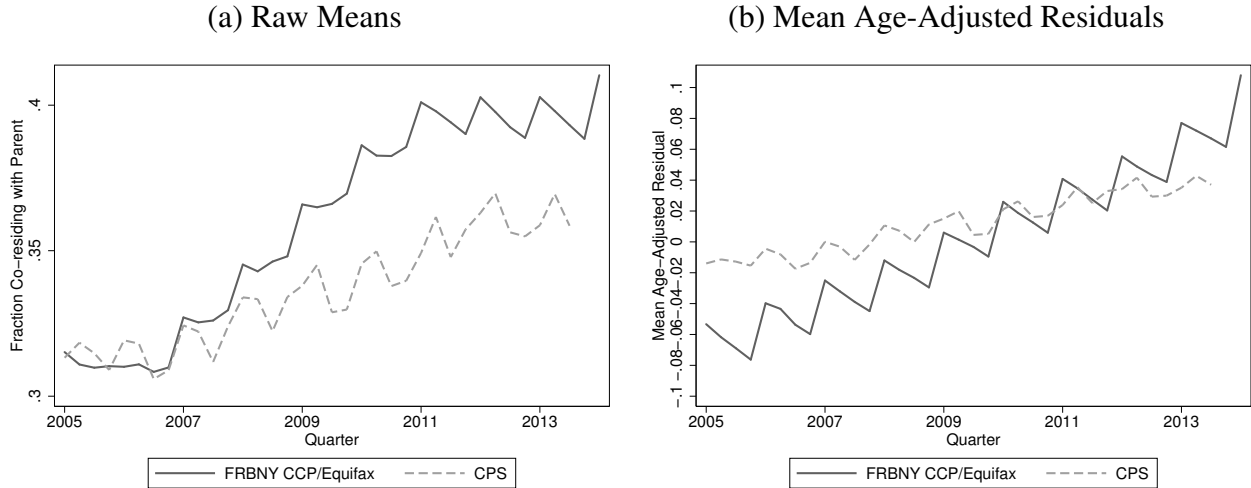
⁴⁷“Serious derogatory” events on accounts include repossession, charge-off, collection, bankruptcy, foreclosure, among others. Balances that are serious derogatory remain on the credit report for seven years, so for our sample these marks are absorbing states that may not reflect the young adult’s current financial state. Second, since many lenders charge off loans with such events, excluding “serious derogatory” balances allow us to better align with lender-reported delinquency measures. In addition, consumer debt collection litigation is available in many states. Judgments are rarely paid off in full, in spite of the fact that judgments are often lower than actual amounts (Hynes, 2008), so including serious derogatory balances would result in a deceptively high amount owed.

120 or more days (or more). Because of the panel nature of our data, we can use this information to infer whether that individual was also mildly past due (30-89 days) the previous quarter, but the status was not reported by the creditor. For credit cards, autos, and mortgages this occurs approximately 10 percent of accounts which are past due appear in the credit report as 120 or more days past due. For student loans, approximately 20 percent of accounts initially appear as 120 days past due. This adjustment does not qualitatively alter our results, and we believe it yields a more accurate and up-to-date measure of delinquency, since some loan issuers may not report delinquency in a timely fashion, or every quarter..

Our main loan balance measure is the total balance in each category of debt, which is the sum of balances on all separate accounts an individual holds in those categories. Some of those accounts are jointly held, shared, or co-signed, and we adjust the total balance to reflect the fact the individual is only responsible for part of the balance. In particular, assign fifty percent weight to joint, shared and co-signed accounts. For example, if an individual had \$10,000 in individually held student loan debt, and \$8,000 in jointly held student loan debt, we would assign that individual \$14,000 in total student loan debt.

A.3 Appendix Figures and Tables

Figure A.1: Matching Trends in Parental Co-residence in the CPS and Credit Report Sample



Notes: Displayed are quarterly means and mean age-adjusted residuals of the fraction of young adults co-residing with parents. Source is the Current Population Survey basic monthly data for March, June, September and December and the FRBNY Consumer Credit Panel/Equifax. Parental co-residence is defined by the relationship with the household head (child, stepchild or foster child) in the CPS and was inferred based on age differences between adults with credit reports residing at the same address in the FRBNY Consumer Credit Panel/Equifax, as described in the text.

Table A.1: Effect of Demographic and Other Variables on Transitions Into Co-residence

	(1) Pooled	(2) Indiv. FE	(3) Pooled	(4) Pooled
<i>Dependent Variable: Movein_{it,t+1}</i>				
% Black (NH)	-0.001369*** (0.000106)	0.002340*** (0.000242)	-0.001310*** (0.000106)	-0.001119*** (0.000113)
% Hispanic	0.000012 (0.000160)	0.002535*** (0.000314)	0.000045 (0.000160)	-0.000034 (0.000171)
% Other	0.002214*** (0.000235)	0.003719*** (0.000428)	0.002225*** (0.000235)	0.002126*** (0.000251)
% Male	0.000071 (0.000286)	-0.000399 (0.000479)	0.000058 (0.000286)	0.000282 (0.000304)
Median Income	-0.000084*** (0.000011)	-0.000237*** (0.000017)	-0.000085*** (0.000011)	-0.000106*** (0.000012)
% Enrolled Undergrad	0.021576*** (0.000386)	0.026631*** (0.000414)	0.021573*** (0.000386)	0.020871*** (0.000418)
% Enrolled Grad	0.016978*** (0.001158)	0.003220 (0.001574)	0.016934*** (0.001158)	0.018941*** (0.001258)
% Less than HS	-0.001148 (0.000474)	-0.006021*** (0.000759)	-0.001089 (0.000474)	-0.000983 (0.000506)
% High School	-0.001826* (0.000464)	-0.009807*** (0.000757)	-0.001760 (0.000464)	-0.001772 (0.000495)
% Some College	0.000523 (0.000482)	-0.010255*** (0.000762)	0.000573 (0.000482)	0.000621 (0.000515)
% College	0.004648*** (0.000684)	-0.009758*** (0.001034)	0.004654*** (0.000684)	0.004800*** (0.000729)
Constant	0.017471*** (0.000783)	0.000804 (0.000822)	0.016912*** (0.000783)	0.003906*** (0.000579)
Observations	28940309	28940309	28940309	24703093
Individuals	1814074	1814074	1814074	1792944

Notes: Table reports coefficients for Census block demographic characteristics omitted from table 2. Sample is young adults age 18-31 living alone in quarter t . The dependent variable is an indicator which is equal to one if an individual transitioned from living alone in quarters t and $t-1$, to living with a parent in quarters $t+1$ and $t+2$. All specifications include age, quarter, and county fixed effects. Standard errors adjusted for clustering at the person level are in parentheses. Main data source is FRBNY Consumer Credit Panel/Equifax, with control variables as described in text. * $p < .0001$, ** $p < .00005$, *** $p < .00001$.

Table A.2: Mean of Demographic Characteristics by Credit Card Limit Reduction Status

	No Credit Limit Cut	Credit Limit Cut
<i>Race</i>		
White (Non-Hispanic)	0.727	0.718
Black (Non-Hispanic)	0.081	0.084
Hispanic	0.116	0.122
Other	0.076	0.077
<i>Age</i>		
Age	25.9	26.8
<i>Male</i>		
Male	0.492	0.491
<i>Enrollment</i>		
Undergraduate Enrollment	0.059	0.057
Graduate Enrollment	0.016	0.016
<i>Education</i>		
Less than High School	0.165	0.172
High School	0.264	0.270
Some College	0.284	0.283
College	0.183	0.176
Post-Secondary	0.104	0.097
<i>Median Income</i>		
Median Income	39699	42379
<i>Unemployment Rate</i>		
Unemployment Rate	6.932	6.762
<i>Median Home Price</i>		
Median Home Price	186,635	192,504

Notes: Table reports means of demographic characteristics for individuals who have credit cards and did not experience (first column) or experienced (second column) credit card limit reductions in the sample period.