The Effect of Unemployment on Household Composition and Doubling Up

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Abstract

Doubling up with family and friends is one way in which individuals and families can cope with job loss but there is still relatively little work on the extent to which people use co-residence to weather a spell of unemployment. This project uses data from the Survey of Income and Program Participation to provide evidence on the relationship between household composition and unemployment across working ages focusing on differences in behavior by educational attainment. Using the SIPP panels, I find that individuals who become unemployed are twice as likely to move in with other people. Moving into shared living arrangements in response to unemployment is not evenly spread across the distribution of educational attainment; it is most prevalent among individuals with the less than a high school degree and those with at least some college.

A Pew Research Center survey found that 13 percent of parents with grown children say that one of their adult sons or daughters has moved back home in the past year and about half of those living with their parents report doing so because of the recession (Pew Research Center 2009). Trends in the Current Population Survey (CPS) bear out this phenomenon: between 2008 and 2010 the number of multi-family households increased by 1.6 million and the number of young adults living with their parents increased by 8.4 percent (U.S. Census Bureau 2010). During the same period, the unemployment rate nearly doubled from 5 percent to 9 percent. While there is evidence that young men with low educational attainment are more likely to live with parents during spells of unemployment (Kaplan 2012) and that young adults in areas with high rates of unemployment are more likely to live with parents, (Card and Lemieux 1997; Kaplan 2012; Matsudaira 2010) there are few studies that take a broader perspective on relationship between doubling up and unemployment including adults of all ages and doubling up in a variety of forms. Doubling up is not just young adults living with their parents, single parents may move in with parents or grandparents, and families or individuals may move in with siblings or roommates.

Changes in employment status are likely to be positively related to changes in living arrangements through several mechanisms. Becoming unemployed lowers income and families may use shared living arrangements to access in-kind transfers. Shared living arrangements facilitate transfers of items such as food, shelter, and household goods but also allow for greater returns to scale in household production. In addition to lowering income, unemployment lowers barriers to moving making it easier for children to return to their parental home or siblings to move in together.

This paper examines the relationship between doubling up and unemployment for working age adults using the Survey of Income and Program Participation [SIPP]. I use the large sample sizes in the SIPP to examine two relatively rare events: unemployment and doubling up. I use the SIPP panel structure to estimate transition rates to doubled up living arrangements. I show that becoming unemployed is associated with a tripling of the probability that you move in with another household. The results further suggest that although doubling up is much more prevalent

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among those from lower SES groups, the relationship between unemployment and moving in with others is the strongest for young adults without a high school diploma and for those who have completed at least some college. The correlation between unemployment and doubling up remains even after controlling for individual fixed effects and is robust to controlling for change in marital status. Even with a robust set of controls and individual fixed effects, I cannot rule out a story in which changes in living arrangements cause changes in employment status. Some transitions into unemployment are likely exogenous but others are endogenous in the sense that people may become unemployed because they decide to move in with others. The SIPP data do not allow me to address this directly. However, there is evidence in Kaplan (2012) and Matsudaira (2010), who use a difference-in-difference analysis of employment and living arrangements at state level, that in general, causality runs from unemployment to change in living arrangements.

My results suggest many "boomerang children" are young, well-educated adults who move back in with their parents when they experience unemployment but that the very poor also use co-residence as a way to cope with a spell of unemployment. Though unemployment affects living arrangements for adults at both the bottom and the top of the distribution of educational attainment, the experience of doubling up is likely quite different for those at the bottom than it is for those at the top. I show that people with lower educational attainment move into a wide variety of types of living arrangements while those with a college degree mostly move in with parents or with roommates. I further show that half of people with less than a high school degree who move in with others end up in households with total household income below the median while nearly half of those with a college degree move into households with total household income in the top quartile.

1   Background on Resource Sharing and Living Arrangements

When facing a period of unemployment, families rely on a variety of mechanisms to help maintain well-being. Some sources of additional support, including public benefit programs and family transfers, have been studied extensively (see Altonji et al. 1992; 1996; 1997; Blank and Card 1991; Browning and Crossley 2001; Cullen and Gruber 2000; Dynarski and Gruber 1997; Gruber 1997; Haider and McGarry 2006; Rosenzweig and Wolpin 1993; 1994 among many others) however changes in household composition have been less extensively studied (Rosenzweig and Wolpin (1993; 1994) and Kaplan (2012) are exceptions). The option to move in with others may be particularly important for younger and poorer adults and who lack savings to cover expenses through a spell of unemployment.

There is substantial evidence that for young adults, higher income and lower local unemployment are associated with decreases in co-residence with parents (Assave et al. 2002; Card and Lemieux 1997; Ermisch 1999; Iacovou 2010; Kaplan 2012; Manacorda and Moretti 2006; Matsudaira 2010). Though increases in income among young adults increase the probability of leaving the parental home, increases in parental income are not clearly related to independent living (Ermisch 1999; Iacovou 2010; Manacorda and Moretti 2006,). Manacorda and Moretti (2006) use a change in the mandated retirement age for older Italian men to show that increases in parental income increase co-residence with their sons. Unemployment increases the likelihood that young less well-educated men move back home (Kaplan 2012) and periods of low earnings increase the probably of both parental transfers and co-residence (Rosenzweig and Wolpin 1993). Aggregate data from the US and Canada echoes the conclusions from studies using individual level data. Card and Lemieux (1997), Matsudaira (2010), and Kaplan (2012) show that fewer young adults live with parents in states with more favorable demand conditions. However, because these studies examine the stock of children living at home, they cannot identify whether young adults are more likely to return home when unemployment increases or whether young adults are less likely to leave

home when labor market conditions are poor. While the literature in the US emphasizes economic factors, the literature on home leaving in Europe emphasizes the importance of difference in preferences across countries, and in the welfare state in explaining the differences in new household formation across Europe (Assave et al. 2002; Iacovou 2010). Most of the work on young adults focuses solely on living with parents, however, living with roommates and boarders may also be a way in which young adults cope with spells of unemployment.

Work on the living arrangements of the elderly shows that, like young adults, higher incomes allow for independent living. By examining the effect of the expansion of the Social Security System and economic growth in the 20th century on the living arrangements of the elderly, several studies show that increases in resources available to the elderly enabled more of them to live independently (Costa 1999; McGarry and Schoeni 2000; Schwartz et al. 1984 among others). Fewer studies have looked at living arrangements across the life-cycle. London and Fairlie (2006) examine the relationship between the living arrangements of young children and state unemployment rates in both the CPS and the SIPP. Although their focus is on children, any relationship between living arrangements of children and state unemployment rates would be driven by choices of middle aged parents. Using SIPP data, they find that the probability of children living in shared living arrangements increases with the unemployment rate, consistent with doubling up, although the effects are not large. Haider and McGarry (2006) find co-residence to be a important mechanism of resource sharing among the poor. However, they do not find a systematic relationship between living arrangements and state unemployment rates in the CPS. Finally, Mykyta and Macartney (2010) examine doubling up during the Great Recession. While the focus of the paper is to describe trends in living arrangements during the Great Recession they do find some evidence that during the current downturn, being unemployed is associated with a higher probability of living in a doubled up household. Because they are not using data on transitions in living arrangements and employment they are unable to disentangle whether people who live in a doubled up household are more likely to become unemployed or whether unemployed people are more likely to double up.

This paper extends the literature on the living arrangements in three important ways. First, I examine the relationship between living arrangements and unemployment across working ages and across levels of educational attainment rather than focusing on only young adults or the elderly. Second, I take a broader approach to living arrangements, considering not only living with parents but also living with roommates or in other extended family living arrangements. While living with parents is the most common form of doubling up, more complicated living arrangements are also common, particularly for poor families. Third, because I use data on transitions, I am able to focus on people who have lived independently and are moving into a shared living arrangement rather than those who have never left the the parental home. This distinction is particularly important for young adults if "failing to launch" and "boomeranging" home have a different relationship to employment status. Young adults who have never left home may have weaker labor force attachment because they do not need to pay for housing while young adults who have left the parental home may be forced to return when they become unemployed because they can no longer afford to live independently.[1] I do not examine the decision to leave home and instead focus on the decision to move in with others after a period of living independently. More broadly, using transitions in employment and living arrangements allows me to examine whether becoming unemployed is correlated with moving in with others disentangling this effect from whether individuals who already live with others are more likely to become unemployed.

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[1]Kaplan (2012) and Matsudaira (2011) show that in the aggregate, the causal arrow seems to go from unemployment to living with parents but, using aggregate data, they cannot examine this separately for people who have never left home and for people who return home.

2 Data and Descriptive Statistics

I use the 1996, 2001, 2004, and 2008 SIPP panels.[2] Each SIPP panel is a nationally representative sample of the civilian noninstitutionalized population of the US and lasts between 2.5 and 4 years. People selected into the sample are interviewed every four months. The SIPP is a series of longitudinal surveys–within each panel, an original sample member who moves to a new address will be interviewed at the new address. In addition, the individuals with whom they reside at the new address are interviewed as long as they continue living with an original sample member. The SIPP is useful for studying living arrangements, particularly arrangements that may not be long lasting because of its high frequency of data collection.

2.1 Doubling Up in SIPP

In this analysis I classify households according to whether they are co-residing with other related or unrelated individuals. A family can be doubled up in three different ways: (1) a family is doubled up if they live with a child age 25 or over; (2) a family is doubled up if they live in a three generation household even if the middle generation is less than 25 years old; (3) a family is doubled up if they live with a non-child relative or non-relative age 18 or over. I do not count people who live with an unmarried partner or with foster children as doubled up unless they also fit into one of the above three categories. I count households who live with an adult child as doubled up only if the child is age 25 or over, an age cutoff consistent with the classification used in the Pew Report on multi-generational households (Pew Research Center 2010). Counting only those children age

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[2]I use Waves 10-12 of the 1996 panel covering the period after 1998 when welfare reform had been fully implemented. I do so to avoid interactions with changes in the rules for living arrangements associated with the switch from AFDC to TANF. This switch in welfare policy imposed work requirements, froze benefits at current family size, and expanded benefits for married mothers. There is mixed evidence that this switch affected living arrangements (Bitler et al. 2006).

25 or older allows me to avoid concerns about endogenous school attendance decisions. Because I restrict the sample to individuals 25 and older, the age cutoff for children living at home does not affect the results.

Figure 1 shows the fraction of households living in a shared living arrangement over time. The breaks in the table are due to gaps between the 1996 and 2000 SIPP panels and the 2004 and 2008 SIPP panels. Over the entire period, about 14 percent of households–about 16,000,000 households–are doubled up in one of the three ways described above. The household figures correspond to approximately 20 percent of all individuals in the U.S. living in a doubled up household. The fraction of doubled up households grows slightly over time from under 14 percent of households to over 15 percent of households, increasing by over 1.5 million households, with most of the increase occurring in the 2008 panel. These increases are consistent with the increases noted using the American Community Survey (Pew Research Center, 2010).[3] Figure 1 also describes particular subgroups of doubled up households. It shows the fraction of households that are doubled up because of the presence of adult children and the fraction of three generation households. These are exclusive categories–three generation households contain adult children but are only included in the count of three generation households. The fraction of households containing an adult child increases from about 7 percent to over 8.5 percent of all households, with most of the increase occurring after 2004. The fraction of three generation households is relatively constant over time–a little over 3 percent–though slightly higher in the 2008 panel.

[Figure 1 about here.]

Table 1 shows the fraction of individuals over 25 who live in a doubled up living arrangement

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[3]The classification in this paper differs in two respects from that used in Mykyta and Macartney (2010). First, I count all three generation households as doubled up, even if the middle generation is under 18. Second, I only count households with children as doubled up if the child is 25 or older, rather than counting all children over 18. Even with the differences in methodology, the levels and distribution of doubling up in this paper are broadly consistent with their results.

by the age, educational attainment, race/ethnicity, and marital status of the individual.[4] Nearly 30 percent of young adults age 25-34 live in a doubled up household of any type, 5.48 percent live in a three generation household, and 11.38 percent live in a household containing adult children. The remaining 12 percent of young adults 25-34 in doubled up households live with related individuals other than parents or with roommates. Over one half of the young adults who live in a doubled up household live with parents either in a two or three generation household. Doubling up is prevalent across adult ages but young adults and the elderly are the mostly likely to live in a doubled up household and those 35-44 are the least likely to double up. However, even in the 35-44 age group, 17 percent of individuals live in a doubled up household. The form of doubling up also varies by age. Young adults, those age 55-64, and the elderly are most likely to live in a doubled up household that contains an adult child. For older adults this is likely a care-giving arrangement while those 55-64 are in the so-called "sandwich generation" some of whom live with elderly parents and others of whom live with children.

[Table 1 about here.]

There is a steep gradient in doubling up by educational attainment. One third of individuals with less than a high school diploma live in a doubled up household. Individuals with less than a high school education are twice as likely as those with a college degree to be doubled up. The fraction of individuals living in three generation households decreases with educational attainment–living in a three generation households is extremely rare (only about 2 percent) for individuals with a college education. While doubling up is less common for individuals with more schooling, living in a household with an adult child is relatively common across educational attainment groups with between 6 and 12 percent of individuals living with an adult child. There are also large differences in the prevalence of doubling up by race. Whites are the least likely to live

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[4]The measure of Hispanic overlaps with race and includes all individuals who describe their origin as Hispanic.

in a doubled up household. One in five whites lives in a doubled up household compared to nearly one in three non-whites. Three generation families are particularly unusual for whites–the fraction of whites living in three generation households is about half that of non-whites.

Doubling up is much more common for people who are unmarried than for people who are married. Living with adult children is most common for widowed people–likely older widows and widowers who are receiving care from their adult children–and the never married–likely young adults living with parents. While living with adult children is less common for married individuals than for unmarried individuals, this living arrangement accounts for about 40 percent of all doubling up among the married. Living in a three generation household is the most common for those who are separated–likely because recently separated adults may move in with their parents for a period after their separation.

Characteristics associated with lower SES such as having less education, being non-white, and being unmarried are associated with higher probabilities of doubling up. However, doubling up is not rare even among those with a college education with almost 15 percent of these individuals being doubled up. The form that doubling up takes does differ by SES with adult children making up a larger proportion of total doubling up for those with at least a high school education than for those with less than a high school degree. About twice as many individuals with less than a high school degree live with adult children as individuals with a college degree. However, the education differences in living in a three generation household, are much larger with nearly three times as many individuals with less than a high school degree living in three generation households relative to individuals with a college degree.

Examining the simple correlation between doubling up and unemployment is complicated by the fact that employment is an individual characteristic while doubling up is a characteristic of the household. To look at the univariate correlation between unemployment and doubling up, I generate a household level variable for unemployment and examine the relationship between living in a doubled up living arrangement and having at least one unemployed individual in the

household. Only 5 percent of non-doubled up households contain an unemployed person while 13 percent of doubled up households have an unemployed family member. Of all households containing an unemployed person, nearly 28 percent are doubled up compared to only 13 percent of households in which no one is unemployed.

3   Transitions in Living Arrangements in SIPP

Doubling up is more common among households in which someone is unemployed but this need not imply that people move in with others when they become unemployed. Because the SIPP is a longitudinal dataset, it allows me to examine transitions in both employment status and living arrangements. Looking at the relationship between transitions to doubled up living arrangements and unemployment is complicated because transitions in employment status and living arrangements are only observed for original sample individuals. The employment transitions of all potential people with whom an individual could double up are not observed. I cannot simply regress the change in the unemployment status of all household members between t and t+1 on the whether or not the household becomes doubled up between t and t +1 because of the unobserved transitions in employment status for people not in the SIPP sample. Those individuals who move in because they are unemployed will be observed, but those who become unemployed and do not move into a SIPP household will not be observed. If unemployed people are more likely to move in with others, these unobserved spells of unemployment that do not result in doubling up will bias the estimates of the effect of unemployment on doubling up away from zero.

To estimate the relationship between transitions in living arrangements and transitions in employment status, I examine the employment status and living arrangement transitions of original SIPP sample members. These individuals will be followed regardless of their employment status and living arrangements. I examine two sets of transitions in living arrangements. First, I examine how becoming unemployed affects the probability that original SIPP sample members move into

households with others. Second, I examine the receiving families. I estimate the relationship be-tween unemployment the probability that original SIPP sample members receive a new person in the household. All original SIPP members who are not doubled up at time t are at risk of moving in with another household and at risk of having someone move in with them. In the first case, I examine the relationship between the characteristics of the original SIPP sample members and the probability that they move in with other individuals and become doubled up. In the second case, I examine the relationship between the characteristics of the original SIPP sample members and the probability that someone moves in with them and they become doubled up.

The analytic sample includes all original sample individuals who are age 25 or older in the SIPP and who are not doubled up in time t. If in the original wave of a SIPP panel, a family contains a married couple in which each individual is age 25 or over, then each individual is part of my sample. I restrict my analysis to individuals over 25 because it allows me to abstract from potentially endogenous decisions about attending college.[5] I include only original sample members because other individuals will not be followed if they move. I keep all observations for the same individual as long as they meet the above characteristics. The final sample contains 190,221 individuals averaging 6.88 observations per person. Table 2 shows the characteristics of the sample. The sample, on average, is 50 years old, 85 percent of the sample is white, and 70 percent is married. About 40 percent of the sample has a high school education or less and about 60 percent has at least some college. Slightly more than half of the sample is female.

[Table 2 about here.]

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[5]The relationship between employment status and doubling up is relevant for younger age groups–particularly for individuals who do not attend college. Restricting my sample by age allows me to avoid endogenous sample selection rules. Kaplan (2012) analyses the relationship between unemployment and living with parents for younger men who never attend college. He also discusses on the implications of selecting a sample by educational attainment.

3.1 Transitions in the SIPP

In the 1996, 2001, 2004 and 2008 SIPP panels, individuals are interviewed every fourth month and report about the current month and the prior three months. There are more transitions reported in the month in which the interview takes place than in the three months in which interviews do not take place (Moore 2008). Some of this so-called "seam bias" is likely the result of the Census imputing missing data but it may also arise because respondents' forget the timing of events and tend to report constant responses within the wave. These seam biases apply not only to unemployment transitions but also to household composition. To avoid spurious transitions resulting from seam bias in household composition and unemployment reporting, I include only the fourth reference month (see Grogger (2004) as another example of this strategy). Using only the fourth reference month effectively means that I am examining transitions in employment status and household composition over a four month period. This choice limits the number of transitions that I observe but it also allows for some time after an individual becomes unemployed to change living arrangements.

3.1.1 Transitions in Employment

I measure employment in the fourth reference month of each wave. Individuals are counted as employed if they had at least one paid job in the month, unemployed if they have not have a paid job all month because they are unable to find work or on layoff, and are out of the labor force if they do not have a paid job for other reasons.[6] Individuals become unemployed if they are employed in time t and unemployed in time t+1.[7] Because transitions happen over the four month period

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[6]I exclude all people with imputed employment status to avoid spurious transitions.

[7]The other possible transition to unemployment can come from being out of the labor force in t and unemployed in t+1. This transition is possible if individuals begin looking for a job or if they got a job and lost a job at some point in the four months between SIPP interviews. I check whether results are robust to including the out of the labor force to unemployed transitions and if results are

between waves, some people who become unemployed have been unemployed for as many as four months–if they lost their job in the fourth month of wave t and remain unemployed in wave t+1. On average in the sample, one percent of people become unemployed and people who become unemployed have been unemployed for an average of three months. Becoming unemployed leads to a large decline in monthly income. On average, people who become unemployed experience an over $2000 decline in monthly household income when they become unemployed. The mean change in income for those who do not become unemployed is an increase of $36.

3.1.2 Transitions to Doubling Up

Most individuals who are doubled up are observed from the beginning of the panel in a doubled up living arrangement. However, there are about 14,000 observations in which individuals move into a doubled up household. I split this sample of people who become doubled up into two groups: individuals who move in and individuals with whom someone else moves in. The number of people who transition to doubling up because they move in to a new household is 2376 compared with 11871 who double up because someone moves in with them. The sample of those who move in is smaller for two reasons. First, there is more attrition among movers than among people who do not move–more stable households are overrepresented in the data. Second, if individuals who move in with others tend to move in with larger households then there will be fewer people who move in with others than people who live in households in which someone moves in. For example, if a young adult is living alone and moves in with her parents, one person (the daughter) would move in with others, but two people (the parents) have someone move in with them. In the tables in this section, I weight individual characteristics using the individual weights in the period after doubling up (t+1). Since weights are attrition adjusted this should help with the attrition problem. However, if attrition is more common among unemployed people who move than among unemployed people robust to including only currently employed people in the sample. Coefficients and standard errors are reported in the notes of the regression tables.

who do not move, as one would expect, attrition would bias the main results toward zero–that is I would underestimate the effect of unemployment on moving in with others.

In table 3, I compare the characteristics of individuals in these two groups and individuals who do not become doubled up at all. Table 3 shows that SIPP sample members who move into another household are younger than those who accept a new person into their household and younger than those who do not double up. They are also less well-educated. Fifteen percent of individuals who move in with others have less than a high school education compared with 16 percent of individuals with whom others move in and 11 percent of individuals who do not doubled up. Sixteen percent of individuals who move in with others have a college education compared with 21 percent of individuals with whom someone moves in and 30 percent of individuals who do not double up. Those who move to a doubled up living arrangement are also more likely to be non-white than those who remain in a traditional family structure.

[Table 3 about here.]

The differences in marital status between groups shows that those who move in with others are about half as likely to be married and twice as likely to be never married, divorced, or separated than those people with whom others move in and those individuals who remain not doubled up. Nearly 70 percent of individuals who are not doubled up are married compared with 62 percent of individuals with whom someone moves in and only 38 percent of individuals who move in with others. Those who move in with others are about 40 percent more likely to come from being single or single with kids than those who do not double up and those with whom others move in. Those who have someone move in with them actually look quite similar to those who do not become doubled up in terms of living arrangements prior to someone moving in. In particular, they are equally likely to be single or married with kids. Twenty percent of individuals who are not doubled up or who are in receiving households are single compared with over 40 percent of those who move in with others. Table 3 shows the fraction of individuals who become unemployed

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among those who do not double up, who have someone move in with them, and who move in with others. Overall transitions to unemployment are small but they are higher among those who move in with others than among those who do not double up. Six percent of individuals who move in with others also become unemployed compared to only one percent of those who are not doubled up.

4   Empirical Strategy

I use transitions in employment and living arrangements to estimate the relationship between individual unemployment and moving in with others. I do not estimate the effect of individual characteristics on receiving a new person in the household. If individuals who become unemployed are more likely to move in with others, then examining the effect of individual characteristics on the probability of accepting a new individual into the household is problematic because I do not observe the employment transitions of the person who moves into the household. For this reason, I focus only on the effect of individual characteristics on the probability that an individual moves in with others.[8] I estimate equations in the form of:

$$\text{Pr(Move in)}_{it} \;\; = \;\; \beta_1 \text{Unemployed}_{it} + \beta_2 X_{it} + \beta_3 year_t + quarter_t + panel_t + \epsilon_{it} \qquad (1)$$

[8]I have estimated (1) and (2) on the outcome of receiving a new household member. When estimating (1) the coefficient on unemployment is positive and significant showing that becoming unemployed increases the probability of receiving a new household member by 50 percent. However, when I estimate equation (2), and in all subsequent estimates using individual fixed effects, the coefficient on unemployment is much smaller and statistically insignificant. The differences between the results with and without fixed effects for the receiving households suggest that the coefficient estimates without fixed effects are biased upwards by the unobserved transitions of the people who enter the household. Hence, analysis on these transitions is excluded from the paper.

where I regress moving in with others between time t and time t+1 on becoming unemployed between t and t+1, controlling for individual characteristics measured at time t including educational attainment, gender, race, marital status, age group, housing tenure, number of children, as well as a linear time trend, with panel and quarter fixed effects.

I use a linear probability model to estimate the effect of unemployment on doubling up. Angrist and Pischke (2009) argue in favor of using linear models for discrete choice dependent variables, however, because the probability of the outcome is low, the use of a linear model is not standard. My choice of models is complicated by the fact that I compare results from models with and without individual fixed effects. Estimating linear probability models with individual fixed effects is standard. However, non-linear models with individual fixed effects are inconsistent for small T, large N because of the incidental parameters problem (see Lancaster, 2000 for a review). When T is between 6 and 8 (it is 6.88 on average in this sample), the full maximum likelihood logit with fixed effects is biased upward (Greene 2008). The conditional logit can be used to estimate a nonlinear binary choice model with fixed effects. The fixed effects are captured in a sufficient statistic which conditions the likelihood function, similar to how fixed effects are differenced out in a linear model. However, because the model is non-linear and the fixed effects are not estimated directly, this model does not allow for a straightforward computation of marginal effects.

As a robustness check on my results, I have estimated all models using a logit or conditional logit (for fixed effects models). For my main results, I report the coefficients from the linear probability model which can be interpreted as marginal effects. I also report the odds ratios from the logit model which are the ratio of the odds of moving in with others for those who become unemployed (P_1) relative to the odds of moving in with others for those who do not become unemployed (P_0):

$$\exp(\beta_{unemployed}) = \frac{\frac{P_1}{1-P_1}}{\frac{P_0}{1-P_0}}$$

However, because the probability of doubling up is very small (that is both P_1 and P_0 are close

to zero), the odds ratio is close to the relative risk ratio. In this way the marginal effects from the linear probability model can be compared to the odds ratio from the logit and conditional logit model.

Using only the characteristics of the original SIPP sample individuals is important in accounting for the missing data problem in which employment transitions for non-sample individuals are not observed uniformly. In particular, it is not possible to include the characteristics of the individuals with whom a SIPP sample person moves in. For those individuals who move in with others I do observe the characteristics of the people with whom they choose to move in. However, I do not observe characteristics of the people with whom they do not chose to live. For those individuals who do not move in with others, I do not know any of the characteristics of individuals in the network which they could potentially access–these characteristics are truly unobservable. Because of the unobservable characteristics of individuals with whom SIPP sample members could move in, I must be cautious in interpreting the coefficients. Any correlation between the characteristics of the SIPP individual moving in and the person with whom the SIPP individual moves in will be picked up in the estimated coefficients. For example, the coefficient on educational attainment is picking up the effect of education on doubling up if individuals who move in with others are more likely to have low educational attainment and/or if individuals who accept others into their household are more likely to have low educational attainment. The correlation between the characteristics of individuals who move in with others and those who receive them into their household is particularly problematic with the time invariant characteristics such as educational attainment and race. I include these coefficients to control for time invariant characteristics that are correlated with employment status and doubling up but do not interpret the size of the coefficients. The employment transitions suffer from the same caveat. However, while the likelihood of experiencing a spell of unemployment is likely correlated among people who choose to live together, the realization of unemployment is likely far less correlated. There are certainly situations in which a father and son get laid off from the same plant but these cases are unlikely to be the norm.

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Equation (1) includes race, education, age, marital status, gender, housing tenure and number of children; observable characteristics that affect the probability that individuals will move in with someone and the probability that they become unemployed. However, there are many other observable and unobservable characteristics that I have not controlled for. In particular, individuals with closer family networks may have more unstable work trajectories because they know they can rely on family members. If this is true, the coefficient on becoming unemployed is biased upwards in (1). To control for unobserved characteristics that may affect the probability that a person experiences a job loss and the probability that they move in with friends or family, I estimate the following model with individual fixed effects:

$$\text{Pr(Move in)}_{it} = \beta_1 \text{Unemployed}_{it} + \beta_2 X_{it} + \beta_3 year_t + quarter_t + \alpha_i + \epsilon_{it} \qquad (2)$$

where α_i is a fixed effect for individuals. I regress changes in living arrangements between time t and time t+1 on unemployment, controlling for age, a linear time trend, quarter of the year fixed effects, and individual fixed effects. Individual fixed effects control for any time invariant characteristics that affect unemployment and moving in with others. Including individual fixed effects also reduces omitted variable bias from the unobservable characteristics of individuals with whom a SIPP sample member could co-reside. The individual fixed effects in (2) control for any characteristics of individuals with whom a SIPP sample member could co-reside that are fixed over time. Because of the short panels in the SIPP, these characteristics only need to be fixed over an average of a few years.

This paper is focused on the relationship between employment transitions and doubling up. However, changes in marital status are also likely to be correlated with doubling up. For example, an individual may get divorced or separated and move in with his or her parents, or an elderly parent may become widowed and move in with her children. Since marital status transitions may be directly tied to changes in living arrangements, I would expect a stronger correlation between

doubling up and changes in marital status than between doubling up and employment transitions which may not be directly related to changes in living arrangements. Changes in marital status may also be correlated with changes employment status–that is a person could get divorced, move in with parents, and become unemployed as a result of this move. To show that changes in marital status are not driving the main results, I conduct a series of robustness checks to control for changes marital status. These specifications are discussed in section 5.1 and table 6. The results suggest that marital status is not driving the main results but, I cannot fully disentangle cause and effect when marital status, living arrangements, and employment status change at the same time.

5 Results

Table 4 shows the results of estimating (1). The first column shows the results using a linear probability model and the second column shows the odds ratios from a logit model. The results in columns 1 and 2 show that becoming unemployed increases the probability that you move in with another household from 0.2 percent to 1.4 percent. The odds ratio from the logit model suggests that the odds of doubling up are about four time larger when an individual experiences a spell of unemployment relative to when they do not. The odds ratios suggest smaller effects than the linear probability models but the change in odds is still statistically significant and large.

[Table 4 about here.]

Consistent with the distribution of doubling up by educational attainment; moving in with others is associated with having less education. These coefficients come with the caveat outlined above that they include any correlation in demographic characteristics among movers in and those with whom they move in. Individuals who are not married are more likely to move in with others as are renters and men (although gender is not statistically significant in the logit model). People with children in the house are less likely to move in with others. Young adults age 25-34 and those

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without a high school diploma are the most likely to move in with others. These results show that even after controlling for demographic characteristics, becoming unemployed is correlated with moving into doubled up living arrangements, increasing the probability by 1.2 percentage points or about seven fold.

Table 5 shows the results from estimating (2) with individual fixed effects. Columns 1 and 2 show the effect of unemployment on moving in with others using a linear probability model and a conditional fixed effects logit model respectively. In each case, the results show that including individual fixed effects decreases the magnitude of the coefficient on being unemployed by about half but it remains statistically significant. Using the linear probability model, the coefficient implies that becoming unemployed triples the probability of moving in with others even after controlling for unobserved characteristics using individual fixed effects. The odds ratio from the conditional logit suggests an increase in the odds of doubling up by about 2. As with the results without individual fixed effects, the odds ratios suggest slightly smaller though still statistically significant effects of unemployment on moving in with others.

The results from (2) show that the coefficient on unemployment estimated in (1) was biased upwards. Families who are closer emotionally or geographically may be more likely to experience unemployment and experience doubling up. This correlation may explain why the coefficients on unemployment in the regression of moving in with others were reduced in the fixed effects estimation. If geographic proximity and emotional closeness are time invariant, the individual fixed effects will absorb this correlation. In addition, the correlation in unemployment across families is also important. The probability of becoming unemployed is likely correlated across extended families. If individuals in the same family or in the same group of friends are more likely to be in the same industry, or, even more broadly, have similar educational attainment, probabilities of becoming unemployed are likely correlated across family and friend networks. The fixed effect controls for that part of the correlation that is time invariant. The fixed effects also control for characteristics like housing tenure at time t and education that are correlated with higher probabilities of

doubling up.

[Table 5 about here.]

The fixed effect results are evidence that unemployment is correlated with an increase in the probability of moving in with others. However, fixed effects do not control for all potential forms of unobserved correlation and unobserved heterogeneity. It is possible that the probability of becoming unemployed changes in a similar way for SIPP sample individuals and for the network of people with whom they would consider co-residing. In this way, there may still be some unobserved correlation between the unemployment of SIPP sample members and individuals in their family or friend network that is not controlled for by using fixed effects. In addition, unemployment may not be exogenous. Individuals my become unemployed because they choose to move in with others. I would expect these remaining sources of unobserved heterogeneity to bias the coefficients away from zero.

5.1   Marital Status

Individual fixed effects also do not control for individual characteristics that vary over time. Marital status may change over time and is likely related to changes in living arrangements. It may also be related to changes in employment status. If unemployment is often the result of a change in marital status that is accompanied by changes in living arrangements, then the coefficients on unemployment in (2) will be biased away from zero. In order to examine the robustness of my results to examining changes in marital status I follow two complementary strategies. First, I include transitions in marital status as regressors in (2) to see if including changes in marital status changes the coefficient on unemployment. I include dummy variables for getting divorced, becoming widowed, and getting separated. By including changes in marital status in my regressions with individual fixed effects, I can examine whether the relationship between unemployment and moving in with others from (2) is merely picking up the correlation between changes in marital status,

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employment status, and living arrangements. Results from this specification are shown in table 6, column 1 and 2 for the linear probability model and the conditional fixed effects logit model respectively. As I would expect, the effect of transitions in marital status on moving in with others is large. For example, getting separated increases the probability of moving in with others by over 5 percentage points. Though smaller in magnitude, becoming widowed or divorced also increases the probability of moving in with others. However, even after controlling for these changes in marital status, the coefficient on unemployment is stable and remains statistically significant. The linear probability model coefficient indicates a tripling of the probability of moving in with others.

As a second check on the robustness of my results to changes in marital status, I estimate the effect of unemployment on a set of individuals for whom marital status is constant between two waves. I break this group into a single sample, in which individuals remains single between time t and time t+1, and a married sample in which both members of the couple are SIPP sample members and remain married to each other between time t and time t+1. The married sample is separated into men and women and I examine the effect of own unemployment and spousal unemployment on changes in living arrangements. The results are shows in table 6, columns 3, 4 and 5. Column 3 shows the single sample, column 4 shows married women, and column 5 shows married men. The coefficient on unemployment for the single sample suggests that for this group, becoming unemployed triples the probability of moving in with others. The coefficients of unemployment for the married sample are lower but the probability of moving in with others is also lower. The coefficient on own unemployment for men and spouse unemployment for women suggest that when the husband in a married couple becomes unemployed, the probability of moving in with others increases three fold. There are no statistically significant effects of female unemployment in stably married couples. Both of these specifications suggest that unemployment has an effect on doubling up above and beyond changes in marital status. Because these changes in marital status increase the odds of moving in with others substantially, in what follows, I include the categorical variables for changes in marital status in the regression results.

5.2 Age Groups and Educational Attainment

Table 4 shows that the probability of moving in with others varies substantially by age with young adults being the most likely to move in with others. Table 4 also shows that those with the lowest level of educational attainment are the most likely to move in with others and that renters are more likely to move in with others. Because unemployment is most likely to have an immediate effect on living arrangements for individuals without substantial savings, I would expect that the effect of unemployment on doubling up to be largest for young people, particularly those who have low educational attainment and for those who are just finishing college. Effects are also likely to be larger for renters than for people who own their home. In order to examine the differences in the effect of unemployment on doubling up by age, educational attainment, and housing tenure, I estimate the following regression where I interact unemployment with these characteristics. For example, for age groups, I estimate:

$$
\begin{aligned}
\text{Pr(Move in)}_{it} \quad = \quad & \beta_1 \text{Unemployed}_{it} * \text{Age Group}_{it} + \\
& +\beta_2 X_{it} + \beta_3 year_t + quarter_t + \alpha_i + \epsilon_{it} \qquad (3)
\end{aligned}
$$

I estimate (3) using three broad age groups 25-34, 35-64, and 65+. I include people over 65 because they are still at risk of moving in with others but in this age group, I would not expect unemployment to have explanatory power. I estimate similar models with educational attainment using four measures of educational attainment (less than high school, high school graduate, some college, college+). Because housing tenure may change as a consequence of moving in with others, I include interactions in housing tenure measured in the first wave of each SIPP panel. Table 7 shows the effect of unemployment on moving in with others by age group in panel A, educational attainment in panel B, and housing tenure in panel C.

Panel A of table 7 shows that the effect of unemployment on moving in with others is highest for young adults but that for those age 35-64, becoming unemployed also increases the probability of moving in with others. There is not an effect of unemployment on moving in with others for individuals over the age of 65. The effects by age are statistically different from one another. Panel B shows the effect on unemployment on moving in with others interacted with educational attainment. The results show that the effect of unemployment on moving in with others is largest for those with less than a high school degree and for those with at least some college. The effect of unemployment on moving in with others for high school graduates is smaller than for the other three groups, statistically different from the other three groups, and the effect for this group is not statistically different from zero. The effect of unemployment on moving in with others is not statistically different between individuals with less than high school, those with some college, and those who are college graduates. Panel C in table 7 explores the interaction between unemployment and housing tenure measured at the first wave of a SIPP panel. While the effect is larger for renters, differences between the groups are not statistically significant. Since unemployment is measured over a four month period, even people who own homes may move in with others when they become unemployed.

Taken together, the results are consistent with the idea that doubling up in response to unemployment measured over a four month period is most common for individuals who are the least likely to have substantial savings to fall back on–young adults and the least well-educated. Doubling up in response to unemployment is also common for those who have attended college. Young adults who have attended college may have few savings to fall back on when they become unemployed and may additionally be in the process of repaying student loans. These results suggest two patterns of doubling up in response to unemployment. Lower SES young adults who become unemployed double up with others. This is likely a form of resource sharing–to the extent to which they double up with other low SES individuals, it may benefit both parties. The results also point

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to the "boomerang kid" phenomenon that has been prevalent in the popular press of late in which college educated young adults move in with their parents. These results suggest that unemployment may be one reason why these young adults choose to move home. These results do not speak to the delayed transition to adulthood because young adults must separate from their parents first to be included in the above results.

The results in table 7 show similar effect sizes of unemployment on doubling up for individuals with lower and higher levels of educational attainment. However, they say little about the whether the experience of doubling up differs for these two groups. We would expect the least well-educated are less likely to find themselves in a comfortable living arrangement free of material hardship than those with a college degree. In particular, young adults with a college degree may find that moving in with parents or roommates comes with little hardship. To explore more fully the type of transitions in living arrangements that are being captured in the regression results, I examine characteristics of the households with whom individuals double up.

Table 8 shows the living arrangement transitions for young adults who move in with others for those without a high school degree and for college graduates. It shows, for example, that 10 percent of individuals who move in with others and have less than a high school degree go from being single before becoming doubled up to living with parents. It shows that the most common transitions for young adults with less than a high school education are (1) to move from being married with kids to a three generation household, (2) to move from being single with kids to living with related individuals other than parents, and (3) to move from being single to living with a parent. Moving from living with an unmarried partner to living with parents and from being single with kids to living in a three generation household are also common transitions. Table 8 also shows the living arrangement transitions for individuals with a college degree. It shows that 27 percent of college educated individuals who move in with others make the transition from living alone to living with parents. For young adults with a college education, the two most common transitions are moving from being single to living with parents, or moving from being single to living with

unrelated individuals–most likely roommates. These transitions are over twice as likely as any other transition. These simple cross-tabulations show that moving in with parents is common across SES. They also show that nearly all high SES young adults who move in with others move from living alone to either living with parents or living with unrelated individuals. For lower SES young adults, the range of transitions in living arrangements is more broad. They are less likely to be single before they become doubled up and they are more likely to live with family members, even beyond their parents when they do double up. The table also suggests that changes in marital status are likely important for this group and consequently marital status changes are included in the regressions in table 7.

[Table 8 about here.]

Table 9 examines the household income that individuals who move in with others experience after doubling up for those with less than a high school education and those with a college degree. It shows the quartile of household income of the household into which the individual moves. The purpose is to examine whether the experience of doubling up for individuals with low educational attainment differs from that of individuals with high educational attainment in the way we would expect if high SES individuals move in with other high SES individuals. Panel A shows that of the least well-educated, 60 percent of those who move in with others end up living in a household with income below the median. Panel B shows that over 40 percent of the college educated individuals who move in with others end up in a household in the highest income quartile and 75 percent of them end up in a household with income above the median.

[Table 9 about here.]

The differences between high SES and low SES individuals in both income and in the types of living arrangements that those who move in with others experience suggest that while the effect of unemployment on doubling up may be similar across these groups, the experience of doubling up differs widely. In particular, for the least well educated, they may be better off than they would

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be on their own but they are not "well off". They also seem to have greater heterogeneity in the types of living arrangements that they are likely to experience. For the college educated, moving in with others after experiencing unemployment most often means moving into a comfortable living situation either with parents or with roommates.

6 Conclusions

Numerous stories about job losses during the current recession and the increasing prevalence of "boomerang children", who return home after a period of independence, suggest that families live in multi-family homes to weather bad labor market shocks.[9] This paper explores the relationship between doubling up and unemployment empirically using the SIPP. As Mykyta and Macartney (2010) show using the CPS, I show that doubling up has increased in the SIPP since the beginning of the Great Recession. In particular, the fraction of households containing a child over the age of 25 has increased by about 1.5 percentage points since 2004. I show a strong relationship in the cross section between having an unemployed person in the household and living in a doubled up living arrangement. There are twice as many doubled up households among the unemployed than households without any unemployed household members.

The main contribution of the paper is to examine transitions in living arrangements in the SIPP panel. I use the high frequency employment and living arrangement data in the SIPP to examine the effect of unemployment on moving in with others. In the preferred specification, I use a linear probability models with individual level fixed effects and controls for changes in marital status, and show that becoming unemployed is associated with a tripling of the probability that an individual

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[9]"Facing a Financial Pinch, and Moving In With Mom and Dad," New York Times, March 2010; "Cramped quarters: As children postpone their departure, households get larger," The Economist, September 2010; "Doubling Up in Recession Strained Quarters," New York Times, December 2010

moves in with others.

This paper provides evidence that co-residence with family members and with other unrelated individuals may be an important mechanism that workers use to weather a spell of unemployment. I show substantial heterogeneity in the effects. Much of the effect of unemployment on moving in with others is driven by the young, but there is also evidence that even middle age adults move in with others when they experience unemployment. One reason that the unemployment may affect living arrangements more for young people is that they are unlikely to have substantial savings, they are less likely to have a spouse who could increase their labor supply, and they are less likely to have been employed long enough to qualify for full unemployment benefits. This paper examines only the effect of unemployment on moving in with others over a four month period. An important extension is to look at the effect of lagged employment transitions on living arrangements, particularly for middle aged adults, to see if transitions to doubled up living arrangements become more common once savings and unemployment benefits have been exhausted. To further highlight the idea that the short term effect of unemployment on moving in with others is associated with having few resources to fall back on, the results explore differences in the relationship between doubling up and unemployment by educational attainment. I show that the effect of unemployment on moving into shared living arrangements is isolated to those with less than a high school degree and those with at least some college. These individuals, particularly young adults in these categories, are unlikely to have substantial savings. For the least well educated, their wages likely make precautionary saving difficult. For those who have attended college, student loan debt along with only a short period of time in the labor market may contribute to a lack of savings to fall back on.

Finally, the paper shows descriptive evidence that while the effects of unemployment on doubling up are similar for individuals with lower and higher levels of educational attainment, the experience of doubling up differs substantially for these groups. In particular, those with less than a high school education are much more likely to live in three generation households and with

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related individuals other than parents than those with a college degree. Almost everyone with a college degree who moves in with others makes a transition from being single to either living with parents or living with roommates. Further, after moving in with others, over 40 percent of individuals with a college degree live in high income households while 30 percent of those with less than a high school degree live in households in the lowest income quartile. While moving in with others may make individuals with a high school degree better off, even after doubling up, many of them remain in the bottom of the income distribution.

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Table 1: Characteristics of Individuals in Doubled Up Households

	% Doubled Up	% Three Gen	% Adult Children	% Unrelated	% Related
Age					
25-34	29.25	5.48	11.38	6.46	5.21
35-44	16.85	4.68	4.86	3.43	3.58
45-54	20.79	5.00	9.04	3.11	3.45
55-64	22.71	4.65	12.46	2.19	3.31
65-74	19.70	4.39	10.36	1.41	3.43
75-84	20.39	3.86	11.70	1.32	3.41
85+	24.10	3.23	15.28	1.25	4.26
Educational					
< High School	33.56	8.84	12.83	3.46	7.57
High School Grad	25.59	5.84	11.66	3.29	4.48
Some College	20.81	4.68	9.48	3.16	3.23
College +	14.83	2.41	6.46	3.59	2.22
Race/Ethnicity					
White	19.79	3.96	8.84	3.36	3.34
Black	31.16	8.10	12.96	3.30	6.58
Asian	31.92	9.31	12.34	4.29	5.62
Other	34.12	11.04	12.77	4.21	5.67
Hispanic	36.10	10.77	11.08	4.34	8.70
Marital Status					
Married	13.28	4.11	5.78	0.77	2.48
Widowed	29.24	6.75	15.63	2.00	4.71
Divorced	26.72	5.36	9.70	7.03	4.31
Separated	34.27	9.61	11.57	5.67	6.95
Never Married	46.44	5.49	20.88	11.28	7.88
Sex					
Male	22.74	4.06	10.30	4.06	3.95
Female	21.08	5.48	8.82	2.83	3.72
N	1,507,961	345,818	647,344	222,421	270,071

Includes all individuals 25+ in all reference months. Weighted using individual weights. Individuals who are living with an unmarried partner are listed under their legal marital status. Each sub-category is mutually exclusive. Individuals who live in households that combine two sub-categories are excluded which is why percentages and N's of sub-categories do not exactly sum to the total of all doubled up individuals.

Table 2: Summary Statistics

Variable	Weighted Means
Age	49.82
Female	0.53
Education	
Less than HS	0.10
HS Diploma or GED	0.28
Some College	0.32
College or More	0.29
Race	
White	0.85
Black	0.10
Asian	0.03
Other	0.02
Marital Status	
Married	0.69
Widowed	0.07
Divorced	0.11
Separated	0.02
Never Married	0.11
Unemployment	0.01
Doubling Up	
Move in with Others	0.002
Others Move in with You	0.009
N	1,017,744

Weighted using the SIPP individual weights.

Table 3: Characteristics of Individuals who Become Doubled Up

Time t Characteristics	Move in t+1	Not Doubled Up Time t	
		Someone Moves in t+1	Not Doubled Up t+1
Age	41*	47*	50
Female	50%*	54%*	53%
Education			
Less than HS	15%*	17%*	11%
HS Diploma or GED	32%*	30%*	27%
Some College	37%*	33%	32%
College or More	16%*	21%*	30%
Race			
White	76%*	80%*	85%
Black	16%*	13%*	10%
Asian	3%*	3%	2%
American Indian	5%*	4%*	3%
Marital Status t			
Married	38%*	62%*	69%
Widowed	7%	6%	7%
Divorced	19%*	15%*	11%
Separated	6%*	3%*	2%
Never Married	30%*	14%*	11%
Living Arrangements t			
Single	41%*	19%	20%
Married	14%*	23%*	32%
Single with Kids	13%*	9%*	6%
Married with Kids	20%*	33%	36%
Unmarried Partner	9%*	9%*	5%
Nonchildren under 18	3%*	7%*	1%
Become Unemployed t+1	6%*	2%*	1%

Weighted using time t+1 individual weights. Unweighted means and those using time t weights are similar.

*Denotes significant differences at 5% between move in (someone moves in) and those who remain not doubled up.

Table 4: OLS Regression of Becoming Unemployed on Living Arrangement Transitions

| | Move In | |
	LPM (Coefficients)	Logit (Odds Ratios)
Mean Dependent Variable		0.002
(s.e)		(0.00005)
Become Unemployed	0.0120***	4.160***
	(0.00138)	(0.392)
Less than HS		
HS Diploma or GED	-0.000346	0.846**
	(0.000221)	(0.0586)
Some College	-0.000400*	0.815***
	(0.000222)	(0.0563)
College or More	-0.00147***	0.423***
	(0.000214)	(0.0364)
Married		
Widowed	0.00134***	2.466***
	(0.000208)	(0.269)
Divorced	0.00199***	2.405***
	(0.000208)	(0.166)
Separated	0.00460***	2.995***
	(0.000669)	(0.298)
Never Married	0.00258***	1.969***
	(0.000278)	(0.135)
Age 25-34		
Age 35-44	-0.00268***	0.481***
	(0.000226)	(0.0290)
Age 45-54	-0.00365***	0.296***
	(0.000225)	(0.0220)
Age 55-65	-0.00402***	0.231***
	(0.000241)	(0.0222)
Age 65-74	-0.00434***	0.164***
	(0.000244)	(0.0205)
Age 75-84	-0.00410***	0.223***
	(0.000272)	(0.0276)
Age 85+	-0.00250***	0.408***
	(0.000604)	(0.0712)
Female	-0.000228***	0.938
	(0.00008)	(0.0369)
Do no own home	0.00378***	3.574***
	(0.000187)	(0.214)
Number of Kids in Hhld	-0.000482***	0.822***
	(0.00007)	(0.0229)
Observations	976,535	976,535

Standard errors clustered at family level to account for correlation between siblings. Race, a linear time trend, quarter, and panel fixed effects are also included. Point estimates from a LPM using all transitions to unemployment and from using only an employed sample are 0.00908 (0.00101) and 0.0127 (0.00138) respectively. * significant at 10% ** significant at 5%; *** significant at 1%

Table 5: Fixed Effects Regression of Becoming Unemployed on Living Arrangement Transitions

	Move In	
	LPM (Coefficients)	Logit FE (Odds Ratios)
Mean Dependent Variable		0.002
(s.e)		(0.00005)
Become Unemployed	0.00517***	1.961***
	(0.00126)	(0.290)
Observations	976,535	8,203

Robust standard errors clustered at family level in parentheses.

Age, as well as a linear time trend, and quarter fixed effects are also included.

Point estimates from a LPM with fixed effects using all transitions to unemployment

and from using only an employed sample are 0.00378 (0.000942) and 0.00881 (0.00142).

* significant at 10% ** significant at 5%; *** significant at 1%

Table 6: Robustness to Changes in Marital Status for Fixed Effects Results

	(1)	(2)	(3)	(4)	(5)
	LPM (Coefficients) Whole Sample	Logit FE (Odds Ratios) Whole Sample	Single	LPM (Coefficients) Married Women	Married Men
Mean Dependent Variable		0.002	0.003	0.001	
(s.e)		(0.00005)	(0.0007)	(0.00002)	
Become Unemployed	0.00511***	1.973***	0.00869***	0.00103	0.00280*
	(0.00126)	(0.297)	(0.00293)	(0.00113)	(0.00165)
Spouse Becomes Unemployed				0.00314**	6.26e-05
				(0.00140)	(0.000773)
Widowed	0.00754***	3.244***			
	(0.00282)	(1.351)			
Divorced	0.0215***	5.497***			
	(0.00361)	(1.258)			
Separated	0.0515***	9.132***			
	(0.00632)	(2.005)			
Observations	976,535	8,203	238,890	263,395	265,166

Robust standard errors clustered at family level in parentheses.
Age, as well as a linear time trend, and quarter fixed effects are also included.
* significant at 10% ** significant at 5%; *** significant at 1%

Table 7: Heterogeneity in Fixed Effects Results

	Move In
	LPM (Coefficients)
Mean Dependent Variable	0.002
(s.e)	(0.00005)
Panel A. Interaction of Age and Unemployment	
Age 25-34	0.011***
	(0.003)
Age 35-64	0.003***
	(0.001)
Age 65+	-0.0006
	(0.007)
Panel B. Interaction of Education and Unemployment	
Less than HS	0.005*
	(0.003)
HS Grad	0.003
	(0.002)
Some College	0.006***
	(0.002)
College +	0.005**
	(0.002)
Panel C. Interaction of Housing Tenure on Unemployment	
Own	0.003***
	(0.001)
Not Owned	0.006***
	(0.002)

Robust standard errors clustered by family in parentheses. Age, changes in marital status, a linear time trend, and quarter fixed effects are also included. Differences in age are statistically significant. Differences between less than high school, some college, and college + are not statistically different from one another but are statistically different from high school graduates. Differences by housing tenure are not statistically different from one another. Differences by gender (not shown) are not statistically different from one another.

* significant at 10% ** significant at 5%; *** significant at 1%

Table 8: Living Arrangements for those who Move In

				Living Arrangement t-1			
Panel A. Less than High School							
Living Arrangement t	Single	Single Kids	Married	Married Kids	Non-Child Under 18	Unmarried Partner	Total
Adult Children	10%	2%	4%	4%	1%	8%	28%
Three Generation	0%	8%	0%	14%	1%	4%	27%
Other Related Individuals	5%	10%	3%	7%	1%	5%	31%
Unrelated Individuals	6%	4%	0%	3%	0%	2%	14%
Total	22%	23%	6%	28%	3%	18%	100%
Panel B. College or More							
Living Arrangement t	Single	Single Kids	Married	Married Kids	Non-Child Under 18	Unmarried Partner	Total
Adult Children	27%	1%	5%	2%	0%	4%	39%
Three Generation	2%	1%	2%	9%	1%	1%	15%
Other Related Individuals	7%	1%	5%	7%	1%	1%	21%
Unrelated Individuals	20%	2%	1%	2%	0%	2%	26%
Total	54%	5%	13%	20%	1%	8%	100%

Table 9: New Household Income Quartiles for those who Move In

Panel A. Less than High School	
Household Income Quartile	Percentage
Quartile 1	30%
Quartile 2	30%
Quartile 3	22%
Quartile 4	18%
Panel B. College or More	
Household Income Quartile	
Quartile 1	6%
Quartile 2	19%
Quartile 3	29%
Quartile 4	46%

Figure 1: Fraction of Doubled Up Households
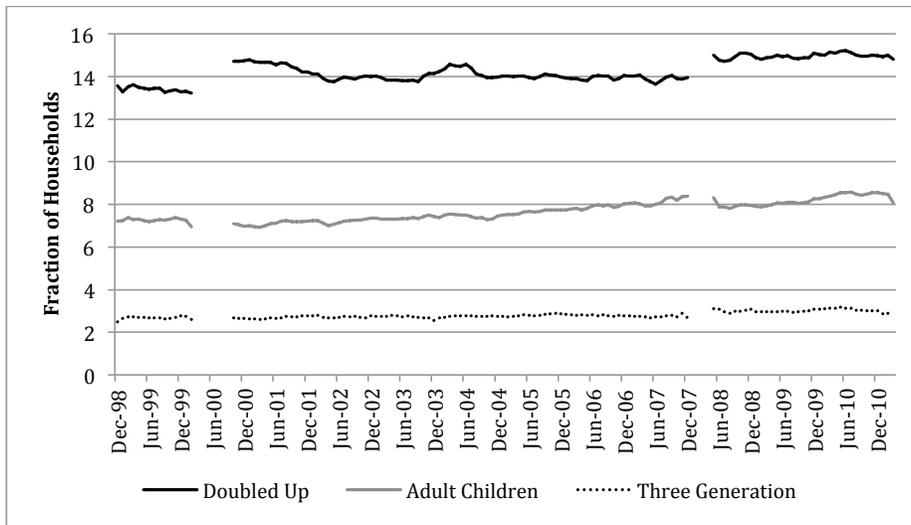
Pools all households in all reference months and weights using household weights.