Declining Migration within the US: The Role of the Labor Market

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Abstract

Interstate migration has decreased steadily since the 1980s. We show that this trend is not related to demographic and socioeconomic factors, but that it appears to be connected to a concurrent secular decline in labor market transitions—i.e. the fraction of workers changing employer, industry or occupation. We explore a number of reasons for the dual trends in geographic and labor market transitions, including changes in the distribution of job opportunities across space, polarization in the labor market, concerns of dual-career households, and changes in the net benefit to changing employers. We find little empirical support for all but the last of these hypotheses. Specifically, using data from three cohorts of the National Longitudinal Surveys spanning the 1970s to the 2000s, we find that wage gains associated with employer transitions have fallen, while the returns to staying with the same employer have not changed. We favor the interpretation that, at least from the 1990s to the 2000s, the distribution of outside offers has shifted in a way that has made labor market transitions, and thus geographic transitions, less desirable to workers.

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I. Introduction

Declines in internal migration since the mid-2000s have attracted the attention of researchers and the public because they coincided with a dramatic housing market contraction and deep economic recession (Batini et. al. 2010, Frey 2009, Kaplan and Schulhofer-Wohl 2013). In earlier work, we demonstrated that these declines are in fact the continuation of a longer-run trend rather than solely a cyclical phenomenon (Molloy, Smith and Wozniak 2011). Specifically, internal migration within the United States has fallen continuously since the 1980s, reversing the upward trend that occurred earlier in the 20th century. Falling migration may be troubling if it is symptomatic of a broader decline in dynamism within the United States. Some have noted a secular downtrend in the amount of "labor market churning" (Davis, Faberman, Haltiwanger 2012; Hyatt and Spletzer 2013), and declining internal migration may be another product of the same underlying phenomenon. Perhaps less troubling, declining internal migration could simply be an expected outcome of demographic trends such as the aging of the population. The decline in migration might even warrant optimism rather than concern if it signals a diminished need for migration. For example, improved matching between individuals and their jobs and locations may have led to a more efficient allocation of workers across the US.

In this paper, we assess explanations for the secular decline in migration, focusing on factors that may have played a role throughout the entire thirty year period.[1] We begin by examining the correlation of migration with a number of demographic and socioeconomic factors in a simple OLS regression framework. For within-county migration, the decline in migration since the 1980s is reduced by half once we control for the age distribution of the population and

[1] We use the terms "secular" and "long-term" trend to emphasize that the decline in migration is not cyclical and has lasted for a considerable period of time. Of course, thirty years is still a relatively short period in the context of US economic history. Rosenbloom and Sundstrom (2004) document an increase in internal migration in the US from 1900 to 1970, which they attribute to rising educational attainment.

homeownership. By contrast, the decline in interstate migration is invariant to controlling for these factors, as well as to controlling for many other demographic and socioeconomic characteristics. Thus, the results point to a substantial drop in the probability of interstate migration that is common among all demographic and socioeconomic groups in the model.

We then proceed to investigate other explanations for the decline in long distance moves. Several pieces of evidence suggest that the labor market has played a key role in the migration decline. First, survey respondents report that interstate moves tend to be related to labor market reasons rather than other reasons, such as life-cycle events or housing-related factors. Second, other measures of churning in the labor market—specifically employer changes and industry and occupational mobility—have also trended down during this period and these declines are also not explained by changes in demographics. Third, we present evidence that labor market transitions, particularly employer-switching, and geographic mobility are strongly correlated at both the individual and state level. Finally, we show that adjusting for the downward trend in labor market transitions reduces the downward trend in interstate migration in a way that the demographic and socioeconomic factors do not.

In sum, the descriptive evidence suggests that an explanation for the long-run decline in migration should be related to the labor market—in particular, the decline in labor market transitions—rather than to the housing market or to compositional changes within the population.[2] Because the decline in labor market transitions is apparent for workers who remain in the same state as well as for workers who change states, the most plausible explanations for the dual declines in labor market and geographic transitions are ones that are rooted in the labor

[2] Interstate migration has declined even for individuals where no one in the household is in the labor force, suggesting that some explanations unrelated to the labor market may also matter. However, this group is a small proportion of all migrants.

market.[3] Consequently, we examine a number of potential causes related to the labor market including changes in the distribution of employment across different types of occupations, a rise in the proportion of dual-earner households, and job-lock associated with rising health care costs. We find little empirical support for these hypotheses, leading to a more general theory that some costs or benefits of making a labor market transition have changed over time.

In order to bring some evidence to bear on changes over time in the cost and benefits of making a transition in the labor market, we turn to data from three cohorts of the National Longitudinal Surveys (NLS) spanning the late 1960s to late 2000s. We find a decline in the wage gain associated with changing employers, but no change in the wage gain associated with staying at the same employer (i.e. the return to firm-specific tenure). We find qualitatively similar results in the Current Population Survey (CPS) and Panel Study of Income Dynamics (PSID). Although our evidence is only descriptive, it suggests that the distribution of outside offers relative to a worker's current wage has shifted in a way that makes labor market transitions—and hence geographic transitions—less desirable to workers.

We push a little further on this idea by examining the relationship between wages and external labor market conditions, as in Beaudry and DiNardo (1991). Whereas the conditions that mattered most for wages in the 1980s and 1990s were the best conditions since a worker was hired, the conditions that mattered most for wages in the 2000s were those in the year of hire. Thus, implicit contracts between workers and firms appear to have changed in a way that causes wages to be renegotiated less frequently. We lean towards an interpretation that firm-specific heterogeneity in wages is smaller than it used to be, perhaps because workers' shares of profits have become smaller or because

[3] Moreover, migration flows are too small to account for the decrease in labor market transitions.

differences across firms in productivity or profits have narrowed. The resulting decrease in job changing may have brought about a decline in long-distance migration as fewer people move to take a new job.

In short, the most plausible reasons for the dual declines in geographic mobility and labor market transitions are ones that indicate a diminished benefit to making such transitions, not a higher cost of doing so. However, at this stage we view our evidence as intriguing, but speculative. As these trends seem to have become an enduring feature of the US economy, further research is needed to shed light on the mechanisms driving these declines.

II. Is the decline in migration related to demographic and socio-economic trends?

The long-run decline in migration can be seen clearly in Figure 1, which plots statistics from the Current Population Survey (CPS).[4] Prior to the 1970s, annual migration rates fluctuated around a stable mean, with longer-distance moves less common than shorter-distance moves. During the 1970s, however, rates of moving across any distance began to decrease and declines since then have been dramatic. The rate of moving across a long distance has fallen by a larger percentage than the migration rate for short distances. Specifically, the interstate migration rate in 2011 was 53 percent below its 1948-1971 average, while the rates of moving between counties within the same state and of moving within the same county fell 44 and 36 percent, respectively, over the same period.[5]

[4] The CPS provides the longest possible annual time series on migration rates for the post-war US. Details on the construction of this series can be found in Molloy and Wozniak (2011).

[5] The CPS may overstate the decline in interstate migration since the 1990s due to a change in imputation procedures (Kaplan and Schulhofer-Wohl 2012a, Koerber 2007). However, we show elsewhere that both a corrected CPS series and series from other data sources also show pronounced declines in migration over the last three decades (Molloy, Smith and Wozniak 2011).

A natural explanation for the observed decline in migration is changing demographic or socio-economic trends, as they have slowly been shifting in favor of groups with lower mobility rates. For instance, the share of the population between the ages of 20 and 34 fell considerably from the 1980s to the 2000s, and these individuals tend to move more frequently than average across both short and long distances (see Table 1). However, migration rates for all age groups fell noticeably, suggesting that the age distribution of the population alone cannot explain the entire decline in migration. Another trend that has received much attention is the rise in homeownership, which could depress migration since homeowners are less mobile than renters. But the migration rates of both homeowners and renters fell from the 1980s to the 2000s (Table 1), suggesting that this trend cannot account for the aggregate decline either.[6]

We can more formally assess the importance of age and homeownership in accounting for the trend in aggregate migration by estimating an individual-level regression that pools data from all years and includes year fixed effects. The fixed effects reflect average migration in each year after controlling for the other variables in the regression. To illustrate, the upper panel of Figure 2 shows the coefficients of the year fixed effects from regressions of within-county migration including no controls (the solid line) and including controls for age and homeownership (the dashed line). The slope of the dashed line is noticeably flatter than that of the solid line; the solid line falls by 2.2 percentage points from the 1980s to the 2000s, while the dashed line falls by 1.1 percentage points.[7] Thus, declining shares of young people and renters can account for about half of the decrease in migration within counties over this period.

[6] One concern with these statistics is that the CPS does not record homeownership status in the previous year. However, using the PSID Bachmann and Cooper (2012) document declines in mobility among all four possible combinations of tenure: renter-renter, homeowner-homeowner, renter-homeowner and homeowner-renter.

[7] The CPS did not include the migration question in 1985 or 1995. Prior to 1981, the CPS only asked migration questions in 1964-1971 and 1975. The data also contain far fewer relevant covariates in that time period; for

The bottom panel of Figure 2 shows the same exercise where the dependent variable is interstate migration. In this case, the trends in the year coefficients are very similar. The solid line falls by about 1.2 percentage points from the 1980s to the 2000s, and the dashed line falls by 0.9 percentage points. Consequently, it seems that the trends in age and homeownership are less successful at accounting for migration over long distances than they are at accounting for migration over short distances. Intuition for this result can be seen in Table 1. Differences in migration rates across groups are greater for within county migration than for interstate migration, so the same demographic trends account for a larger share of the aggregate decline in within county migration.

Of course, a number of other demographic and socioeconomic factors could be responsible for the decline in aggregate interstate migration. Ganong and Shoag (2012) find that a slowdown of low-skilled workers migrating to areas with high house prices can help to explain geographic wage convergence from 1980 to 2010. While the interstate migration rate of workers without a high school degree has slowed substantially, so have the migration rates of workers at all levels of education (see Table 1). Thus, including education in the regressions described above does not noticeably change the estimated year coefficients. A related possibility is that the decline in interstate migration could reflect a slowing in population flows across different regions of the country as many metropolitan areas in the South and West have become relatively more expensive. Indeed, Table 2 shows that net migration in the Pacific Census division (which comprises California, Oregon and Washington) switched from net inflows in the 1980s to net outflows in the 2000s. However, net migration patterns into other Census divisions have not changed much. Rather, in most divisions both inflows and outflows have decreased.

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example housing tenure was first asked in 1976. Therefore, it is not possible to extend the analysis of this section back to periods before the 1980s.

To pursue the role of demographic and socioeconomic trends a little further, we include a large number of covariates in the regression described above: gender, educational attainment, race, marital status, presence of children, real income, and indicators for divorced heads with children, employment status, self-employment status, metropolitan area status, and Census division.[8] As shown in Figure 2, these variables do not explain any additional portion of the declines in within-county or interstate migration. Of course, because these estimates are based on simple correlations and not on exogenous variation, one should be wary of making a strongly causal interpretation. To the extent that the coefficient of a given variable might be smaller than its true causal effect, our estimates will understate the role of observables in declining migration. (If for some reason the coefficient were larger than its true causal effect, our estimates – which are already small – would overstate the role of observables.) It is difficult to think of reasons the coefficients on observable characteristics in the migration regression would be biased downward by a large amount. For example, being young would have to be correlated with an unobservable characteristic that lowers migration. We therefore think these results suggest strongly that compositional changes among the variables in the regression are not the main causes of the trend in migration. Cooke (2011) and Kaplan and Schulhofer-Wohl (2013) also find that demographics and other observable characteristics can account for little of the decrease in interstate migration from the 1990s to the 2000s.

In sum, a sizable portion of the downward trend in within-county migration is related to the aging of the population and the rise in homeownership whereas the trend in interstate migration is not related to these, or any other demographic and socioeconomic factors that we

[8] Specifically, we control for real income with indicators for quintiles of the distribution across all years of household income relative to the consumer price index. Thus, shifts in the distribution of real income over time are allowed to affect aggregate migration rates.

observe in the CPS. Consequently, we turn to other explanations for the decrease in long-distance migration over the past thirty years.

III. Connections between migration and the labor market

Migration is often linked to transitions in the labor market such as starting a new job or retiring from the labor force. This connection is particularly clear for migration over longer distances, which generally entails a change of local labor markets. Consistent with this notion, Figure 3 shows that CPS respondents most commonly cite job-related reasons as the explanation for an inter-state move, whereas these reasons are much less important among respondents who moved over shorter distances. Interestingly, job-related inter-state migration has trended down from 2000 to 2010 more noticeably than the other reasons. The reason for moving was not asked in years prior to 2000, so it is difficult to say whether the decrease in employment-related mobility since 2000 is part of a longer-run trend.

However, many other measures of labor market transitions have decreased during the same period that long-distance migration trended down. In Figure 4, we plot the fraction of the population 16 and older that changed employers, changed industry, or changed occupation from the previous year.[9] These statistics are all from the March supplement to the CPS.[10] All three

[9] We estimate these transition rates using March CPS microdata as provided by the Unicon Research Corporation. The sample that we use drops individuals who have imputed values for occupation, industry, occupation last year, industry last year, or number of employers in the previous year. For 1988 and later, we also drop individuals who have any imputed responses for the March supplement as indicated by the "suprec" variable. We have found that this sample selection criteria corrects for discrete jumps in transition rates that appear in some years as well as for changes in the imputation of migration. Because the March CPS microdata provided by IPUMS do not allow users to correct for this form of imputation, we favor estimates derived from Unicon data.

[10] Similar to Stewart (2007), we measure job-to-job transitions based on the reported number of employers in the previous year. The exact question asked to the CPS respondent is "How many employers did you work for in the previous calendar year?" The CPS question further instructs that if the respondent worked for more than one employer at the same time, it should only count as one employer. Hence, respondents who report working for 2 or more employers in the previous year have likely transitioned across jobs at some point in the year. We also find a

flows trended down from the early 1980s to the late 2000s.[11] These trends are consistent with statistics compiled by Davis, Faberman and Haltiwanger (2012), who document downward trends in hires, layoffs and quits from 1990 to 2010 based on the Business Employment Dynamics (BED) database and the Job Openings and Labor Turnover Survey (JOLTS); with Moscarini and Thomsson (2007) who document a decline in occupation switching in the CPS since the mid-1990s; and with Hyatt and Spletzer (2013), who document declines in job creation and destruction, hiring and separation rates, and monthly job-to-job transitions since at least the mid-1990s in numerous sources (BED, Longitudinal Employer-Household Dynamics program, CPS, and JOLTS).

We suspect that the simultaneous declines in migration and many measures of labor market transitions may be more than coincidental, so we perform several tests to better understand just how closely the two trends are connected. We begin by calculating the contribution of changing demographic and socioeconomic factors to the decline in labor market transitions. This exercise is similar to the one described in the previous section, except that the dependent variable is one of the three labor market transitions shown in Figure 4. If the observables were to explain the decline in labor market transitions, the trends in migration and labor market transitions would not likely be related since we reject an important role for these same observables in the migration decline. The results are shown in the three panels of Figure 5. Just as with interstate migration rates, demographic and socioeconomic characteristics are unable to explain much of the decrease in these labor market transitions.

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downward trend in job-to-job transitions when using the response to the question whether an individual is working for the same employer as in the previous month, which is available in the monthly CPS from 1994 onwards.

[11] Although the rates of changing occupation and industry are quite similar, the workers who change industry are not necessarily the same as those who change occupation: from 1980-2010, about 15 percent of workers who change industry do not change occupation, and also about 15 percent of workers who change occupation do not change industry.

To demonstrate the link between migration and job transitions more concretely, Figure 6 shows a scatter plot of the change in the fraction of individuals in a state who changed firms from the 1980s to the 2000s against the change in the rate of migration into that state over the same period. The graph shows a very strong positive correlation: states like Florida and Texas that experienced very large drops in the fraction of workers who changed firms also experienced the largest decreases in in-migration.

To explore further, we regress annual migration rates for a state on a variety of variables measuring labor market transitions as well as other variables related to the labor market, state and year fixed effects, and other demographic controls. All control variables are calculated from the March supplement to the CPS, but we use both the CPS and IRS data, which are computed from changes in the address of tax filers, to compute migration rates for the dependent variable.[12] The results are shown in Table 3. We find a statistically significant, positive relationship between the fraction of a state's population that changed firms in the previous year and fraction that moved into the state. We also find a positive relationship between migration and both occupation and industry changing, although these estimates are not as precise. As shown by the last row of the table, the labor market transition variables combined explain about 0.5 percentage point of the 1.1 percentage point decline in interstate migration from the 1980s to the 2000s. The only other significant variable in the table—the homeownership rate—accounts for only about 0.1 percentage point of the decline in migration. Results are roughly similar using statistics from the IRS to measure migration rather than the CPS—job transition variables explain about one half of the decline in migration—thus, the importance of declining job transition rates is apparent regardless of whether migration is measured in CPS or IRS data. The IRS result is instructive

[12]Additional controls are: the fraction of the state unemployed, the log of average annual income for the state, and the fraction of the state that is young (under 21) and of prime working age (21-64).

because, as we show in our 2011 paper, the imputation of migration in the CPS exaggerates the decline in long-distance migration compared to other data sources.

We can get a different perspective on the connection between migration and labor-market transitions by including labor market transitions in the migration regressions described above.[13] As shown in Figure 7, controlling for changes in employer, industry and occupation makes the downtrend in interstate migration a little less steep. Whereas the average migration rate with no controls falls by 1 percentage point from the 1980s to the 2000s, adding these three controls reduces this drop to 0.8 percentage points. Taken literally, these results suggest that decreases in job transition rates account for about one fifth of the decline in interstate migration. Although this estimate suggests a smaller role for labor market transitions than implied by the cross-state regressions of Table 3, Moscarini and Thomsson (2007) show that typical measures of occupation and job switching suffer from high degrees of measurement error, which could attenuate their estimated contribution in the individual-level regressions. Because the cross-state regressions are based on average labor market transitions at the state level, they may smooth through some of the noise that is present at the individual level. Regardless of the exact magnitudes, we find a strong connection between the decline in interstate migration and the decline in labor market transitions over the past thirty years using a variety of approaches.

IV. Possible causes of the secular decline in migration and labor market transitions

The fact that labor market transitions and geographic migration are correlated does not explain *why* these flows have been falling. In this section, we discuss five mechanisms that could be behind both trends. We focus on common explanations for the two trends both because a

[13] The sample used in this regression is a little smaller because industry, occupation, and firm changes are only defined for individuals who were employed in the previous year.

simple explanation is intuitively appealing but also because the evidence in the previous section suggests that these two trends are linked.

One explanation for declining migration has been suggested by Kaplan and Schulhofer-Wohl (2013). They propose a model built on the assumption that the range of occupations and industries has become more similar across metropolitan areas—that is, that the "world has become flatter"—and that, if true, migration rates would fall because fewer persons need migrate to a different area to find employment in a specific industry or occupation. They also argue that the incidence of "experimental" migration for amenity reasons has declined perhaps because people now better understand an area prior to moving, perhaps due to improvements in communication technology such as the internet or lower travel costs. In support of the first argument, they show that occupations and industries have become less concentrated by state over the past 20 years and that the variance across areas in the average wage for an industry or occupation has fallen. Although this theory may explain the decline in migration, it does not have a clear prediction for changes in labor market transitions over time. On one hand, a greater variety of local job opportunities would seem to lead to *higher* rates of employer, industry, and occupation changes, because switching jobs is less costly if it does not also require a change of location. On the other hand, a wider variety of job opportunities in various industries and occupations could improve the match between a worker and firm, reducing the need for further job transitions down the road. We conclude that the Kaplan and Schulhofer-Wohl explanation may account for a portion of the observed decline in migration, but it is not clear that it can also account for the simultaneous decline in migration and labor market transitions. Given the strong relationship between geographic migration and these transitions, it seems worthwhile to search for a single factor that can explain the trends in both variables. This is particularly true for young

workers for whom the return to experimentation with sectors and locations is high. We will focus on young workers in the next section and provide further analysis related to this hypothesis then.

A second hypothesis for the dual declines in migration and labor market transitions is related to the long-run structural shift in the distribution of occupations. Specifically, the share of adults in lower-skill/lower-paying jobs (e.g. food service, personal care services, cleaning services) and higher-skill/higher-paying jobs (e.g. professional, managerial, and design jobs) have both grown, while the share of adults in middle-skill/middle-paying jobs (e.g. administrative, manufacturing, and sales jobs) has fallen.[14] This "hollowing out" or polarization of the occupational distribution is thought to be due to the expanded use of computers and greater ease of automation and off-shoring, which raises demand for higher-skill jobs, reduces demand for the middle-skill jobs, and may displace some workers formerly employed in middle-skill jobs into lower-skilled ones (Autor, Katz and Kearney 2008). This shift might have reduced migration if, in the past, less educated workers were likely to move to a different labor market to take middle-skill jobs. The elimination of large shares of these jobs could then lower migration rates by reducing the set of "migration worthy" jobs for less educated workers. However, we find no empirical support for this idea. While it is true that the percent of workers in middle-skill (defined as office administration and production jobs) occupations and manufacturing jobs are positively associated with migration (Table 3), the observed shifts in the distributions of occupation and industry are not large enough to explain much of the decline in migration. In addition, as shown in Table 1, the average inter-state migration rate of people with a high-school

[14] This classification is commonly used by those who research labor market polarization, e.g. figure 3 of Autor 2010. In this classification, "high-skill" jobs tend to offer higher wages and require higher education, and include manager, professional, and technician occupations. "Middle-skill" occupations are less likely to require a college degree than are high skill jobs, but also offer higher wages on average than "low-skill" jobs; they include sales jobs, office and administration jobs, production, craft, and repair jobs, and operator, fabricator, and laborer jobs. "Low-skill" occupations are service sector jobs, and include protective services, food preparation, building and grounds cleaning, and personal services.

degree (who were the group presumably most likely to engage in migration to switch from low- to middle-skill jobs) was not higher than that for individuals with more education in the 1980s, nor did it fall by more than for workers at other education levels. Additionally, job turnover rates tend to be higher for lower-skill, service and retail sector jobs,[15] so rising employment shares in the lower tail of the skill distribution should all else equal push up average rates of labor market transitions, and possibly also push up average migration rates if people in these sectors who experience job turnover are more likely to change locations in search of a new job.

A third possible explanation for the secular declines in migration and job transitions is a rising share of dual-earner households. When both spouses are employed, it can be more difficult to move long distances because both people must find a suitable job in the new location. Indeed, Costa and Kahn (2000) argue that the colocation problem of couples who both have a college degree has caused the college-education population to be concentrated in large cities. To assess this, Table 4 shows the fraction of individuals in households where both spouses are employed and their interstate migration rates. The fraction of individuals in dual-earner households did not increase from the 1980s to the 2000s, making this reason an unlikely candidate to explain the trend in migration. However, it is possible that only individuals who are invested in particular careers have joint-location issues with a spouse.[16] As a proxy for two-career households, we create an indicator for households where both spouses are employed in a professional or technical occupation. For individuals in these households, the probability of moving is, indeed, slightly lower than that of other employed individuals in this occupational

[15] For instance, from 2003-2010, on average 5 percent of CPS respondents who were employed in service or retail occupations in one month were not employed in the subsequent month, whereas for other occupations only 3 percent were subsequently not employed.

[16] For example, it is possible that many dual-earner households in the 1980s had one spouse who was not particularly attached to a career and who could therefore easily move to follow their spouse's job (Benson 2012). But as more and more women have developed true careers, changing locations may have become harder for more households.

category (Table 4). But the fraction of individuals in these households only rose from 2 percent in the 1980s to 3 percent in the 2000s, so this segment of the population is too small to affect aggregate migration in any meaningful way. The same is true for individuals in a household where both spouses work and have earnings in the top quintile of the earnings distribution. A larger fraction of individuals are in a household where both spouses work and have at least a college degree. But even in that case, the increase in the population share is not large enough to move aggregate migration by very much.[17] Moreover, the migration rates of individuals who are not in a dual-career household, however defined, also declined considerably over this 30-year period indicating that the decline is not limited to dual-career households.[18]

A fourth possibility is the rise in health care costs over the same period, which could prevent workers with employer-provided health insurance from taking a new job because it would require changing health insurance companies.[19] Table 4 shows that the fraction of individuals in a household where at least one person has an employer that paid for a group health plan did not change from the 1980s to the 2000s. And again, the migration rates of individuals in households without employer-provided health insurance also fell substantially.

V. Examining returns to employer tenure and labor market transitions over time

[17] When we include this measure of dual-career households in the OLS regressions described above, the trend in the estimated coefficients on the year dummy variables does not noticeably change.

[18] Another way to look for evidence of this effect is to examine spouses' earnings relative to one another. The more unequal their earnings, the easier it should be for the household to move in pursuit of only one spouse's career. While we do find that income differentials between spouses have narrowed over time, the correlation with migration seems to be too small to account for much of the decline in aggregate migration—in our OLS regressions we find that controlling for earnings inequality between the head and the spouse (defined as the absolute value of the difference between head and spouse earnings divided by the sum of head and spouse earnings), does not noticeably change the trend in the coefficients on the year indicators.

[19] A rather extensive literature presents mixed findings on the extent to which healthcare-related "job lock" depresses job transition rates, though Gruber and Madrian (2001) argue that the most convincing evidence supports the job lock hypothesis. More recently, Garthwaite, Gross and Notowidigdo (2013) find evidence of health insurance related job lock among low skill workers in the 2000s. At the same time, there is more consistent evidence that the availability of employer-provided health insurance delays transitions to retirement and affects labor supply decisions of secondary earners (see also Madrian 2004).

The shortcomings of the theories considered above lead us to consider two more general explanations: that the benefits to staying with one's employer have risen, or that the benefits to changing employers have fallen. Either trend would lead to declines in job transitions, which is likely in turn to depress migration. In this section, we present empirical evidence on these trends using a panel of young workers assembled from three cohorts of the National Longitudinal Surveys.

After introducing our data, we look for evidence that returns to staying with one's employer have risen in the form of an increase in the return to firm-specific human capital relative to forms of human capital that are more portable across firms and geography (like occupation and industry). [20] For example, changes in the matching process between workers and firms may have caused workers to be matched earlier in their careers with an employer who offers them the best return on experience, thereby raising the average return to firm-specific human capital. Such improvements in matching technology might arise if the set of local employment opportunities becomes more diverse, as hypothesized by Kaplan and Shulhofer-Wohl (2013), or if there have been improvements in information that workers and firms possess during search. Improved worker-firm matches would imply that we should observe increased returns to firm-specific experience compared with earlier periods in which more workers labored at jobs with poorer match quality (Jovanovic 1979).

We then turn to the question of whether the net benefits (i.e. benefits minus costs) to transitioning across employers have declined. Even if the returns to firm-specific human capital

[20] We are not aware of any studies that have documented how returns to different types of human capital have *changed* over the last three decades. The literature on firm-specific, industry-specific, or occupation-specific human capital has focused mainly on identifying, differentiating, and understanding these forms of specific human capital at a particular point in time (or on average over many years), rather than estimating changes in the returns over time. Neal (1995) and Parent (2000) both argue that observed returns to job SHC are in fact driven by industry SHC. Recently, Kambourov and Manovskii (2009) find an important role for occupation SHC, echoing earlier arguments in Shaw (1984, 1987). Importantly, they find large returns to occupation SHC once the data have been corrected for a high degree of measurement error, on the order of a 20 percent return to 5 years of occupational experience.

have not changed, other aspects of the labor market may have led to a decline in job changing or other labor market transitions. For example, informational asymmetries between a worker's current employer and other potential employers may have become more pronounced over time as skills that are difficult to measure have become more important in determining a worker's performance. Also, technology may have become more firm-specific, implying that workers have more to lose when moving to a different firm. Corrado, Hulten and Sichel (2009) document that investment in "firm-specific" resources such as employer-provided worker training rose appreciably from the 1970s to the early 2000s. If the returns to training do not accrue smoothly over time, then wage returns to firm-specific training could show up primarily as wage differences across old and new jobs, rather than as a smooth increase in returns to job- or firm-specific experience.[21] Furthermore, some costs associated with changing jobs may have risen over time. Fujita (2012) proposes a model in which there is a secular increase in the risk of experience depreciation during an unemployment spell for all workers in an economy. Workers therefore become increasingly reluctant to separate from their firms and risk the loss of skill that would result from a failed transition to a new job. He argues that such a model can reconcile declining labor market turnover with stagnant wages and rising public anxiety about job security.[22]

V.1 Background on the National Longitudinal Survey

To explore the costs and benefits to changing employers, we assemble a panel of three cohorts from restricted-use versions of the National Longitudinal Surveys (NLS). Two

[21] This is consistent with evidence that employer-provided training has no more than modest impacts on wage growth (Krueger and Rouse 1998, Hellerstein and Neumark 1995).

[22] In his model, firms have bargaining power and early career match quality is unchanging over time, so there is no clear prediction for the returns to experience. Nevertheless, it implies diminishing job transitions, and consequently lower long-distance migration.

important advantages of this data source are that it spans a very long time period—over four decades—and that it includes information on four types of individual work experience, or tenure: industry-specific, occupation-specific, employer-specific, and location-specific.

Our sample includes data on young men from three NLS surveys: the NLS-Young Men (NLS-YM); the NLS-Youth 1979 (NLSY79), and the NLS-Youth 1997 (NLSY97).[23] We focus on results for men because the labor force participation of women changed markedly over these three decades and we are concerned that female labor force participants in the late 2000s are different in many unobservable ways from their counterparts in the late 1970s, which complicates cross-cohort comparisons. Because respondents in the latest waves of the NLSY97 are still young, we restrict each sample to respondents aged 22 to 29 to maintain comparability across the samples. Roughly speaking, our cohorts represent the labor market experiences of young workers during the 1970s (the NLS-YM), the 1980s and early 1990s (NLSY79) and the 2000s (NLSY97).

Although the details of data collection varied from survey to survey, all respondents were asked to provide complete job information (including the name of their employer) in each year of the survey. In addition, each survey provides identifiers for state and county of residence. We can therefore calculate years of tenure beginning with the first job reported in the survey for industry (3-digit), occupation (3-digit), employer, and state. We use the terms employer, job, and firm interchangeably. More detail on the construction of our experience variables is available in the Online Data Appendix, which also describes the cleaning procedures we followed to

[23]Results for young women are available upon request. There are three other NLS data sets that we do not use: the NLS-Older Men, the NLS-Mature Women, and the Children of the NLSY-79. The Mature Men were already older than our target age group of 22-29 when that survey began. The Children of the NLSY79 survey is small. It also became biannual as that cohort entered the labor market, limiting comparability with the cohorts with annual data.

minimize false industry and occupation switches resulting from disparities in how responses to those questions were coded from year to year in earlier survey waves.

Because our respondents are young, some may still be in school or not otherwise strongly attached to the labor market. Therefore we further restrict our sample to those with at least moderate labor force attachment, defined as having worked at least half the previous calendar year.[24] We also restrict the sample to those with complete data in a survey year for all variables of interest. Many respondents who report employment are nevertheless missing industry and occupation information, so this is a substantive restriction.

Table 5 shows basic summary statistics of the NLS samples. There are roughly 3000 unique respondents in the NLS-YM spanning 1966 to 1981, 4700 respondents in the NLSY79 spanning 1979 to 1994, and 2600 respondents in the NLSY97 spanning 2002 to 2009. The top rows of the table show that tenure in state rises a bit over the three cohorts while the fraction of the sample changing states in the previous year falls, illustrating the decline in geographic mobility. By contrast, the cohort averages do not show a downward trend in the fraction of NLS respondents that made a labor market transition in the previous year. This result is due to changes in the age distribution of the NLS within each sample period. As shown in Figure 8, when separated by age, we find downward trends in migration and all three types of labor market transitions over time in the two NLSY data sets.[25]

V.2. Returns to specific human capital in the NLS Data

Before turning to our estimates of returns to specific human capital (SHC), we first assess whether some forms of SHC are in fact less geographically portable than others. Table 6 presents

[24] In the 1997 cohort, we use weeks worked in the current year, which allows us to retain more of the sample.
[25] Comparable statistics for the NLS-YM have not yet been released by Census RDC reviewers.

descriptive evidence on this question. It shows the fraction of interstate movers that also changed industry, occupation or firm. In the oldest cohort, 77 percent of interstate movers also changed employers. It may be somewhat surprising that not all interstate movers changed employers. We have verified that this result is not driven by respondents who live in metropolitan areas that span state lines, but it is possible that it reflects workers in large firms with establishments in multiple states. More pertinent for our purpose is that fewer workers in this cohort—only about 60 percent—changed industry or occupation when they moved across states. In other words, individuals who moved across state lines were more likely to change jobs than to change occupation or industry, suggesting that firm-specific human capital is less portable across space than other forms of human capital. By and large, this result also holds for the two other cohorts, albeit to a smaller degree.[26] In unreported results, we also find that interstate movers change industry and occupation less often than they change employer in the CPS.[27] The statistics in Table 6 are also helpful because they illustrate that there is enough variation in employer changes, occupation changes, industry changes and geographic changes to identify the effects of each of these changes separately.

To calculate the return to each type of tenure, we estimate the following wage equation:

$$y_{ijt} = \beta_0 + \beta_1^j indten_{ijt} + \beta_2^j indten_{ijt}^2 + \beta_3^j occten_{ijt} + \beta_4^j occten_{ijt}^2 + \beta_5^j jobten_{ijt} + \beta_6^j jobten_{ijt}^2 + \beta_7^j locten_{ijt} + \beta_8^j locten_{ijt}^2 + X_{ijt}\beta_9^j + \Theta_t^j + \varepsilon_{ijt} \quad (1)$$

[26] The only exception to this statement is that the NLSY-79 tabulation shows a slightly higher rate of occupation changing than employer changing.

[27] In the CPS, less than half of interstate movers change firms—a number that suggests an even lower rate of employer changing with an interstate move than the NLS. However, details of CPS data collection could contribute to this higher rate. The migration question in the CPS measures a change in residence from March to March, while the employer change question refers to the number of employers in the previous *calendar* year (i.e. January to December). Consequently, individuals who in January or February move and change firms will count as migrants but not employer switchers.

The dependent variable is log hourly wages for respondent *i* on the main job in survey year *t*, which we deflate using the Consumer Price Index. The hourly wage is the "hourly rate of pay" variable constructed for each reported job by NLS administrators.[28] The *j* subscripts on the data and superscripts on the coefficients indicate the NLS data sets or subsamples: NLS-YM, NLSY79, NLSY97. X_{ijt} is a set of basic background controls that includes a dummy for Black race, a dummy for Hispanic ethnicity, age, age squared, and four educational attainment dummies (dropout, high school graduate, 1-3 years of college, 4+ years of college). Θ_t is a set of survey year dummies, which varies across the *j* data sets.

Table 7 presents estimates of the returns to a third year of tenure (experience) in our four categories of interest for men in the NLS samples. We focus on the third year of experience because average tenure in each sample is between two and three years. We report results from the NLSY97 both including and excluding the recession years of 2008-2009. However, it turns out that the estimates are little affected by whether these years are included.

While there is some variation in the returns to different types of experience across the three cohorts, we see little evidence of trends that would have led to reductions in migration or job market transitions over time. Specifically, returns to employer experience are economically small and generally insignificant for all three cohorts. This implies that rising returns to staying with one's employer cannot account for the simultaneous declines in labor market transitions and migration.

Meanwhile, the return to a third year of industry experience dips in the 1980s (NLSY79 cohort), but rebounds in the 2000s (NLSY97 cohort). Returns to a third year of occupation experience are substantial in both the earlier cohorts but become smaller and insignificant for the NLSY97 cohort. Thus, young workers in the most recent NLSY cohort may earn lower returns

[28] For more detail, see the "Wages" sections of the NLS User's Guide for each cohort.

to staying in their occupations relative to previous cohorts. In this case, we might expect changes in occupation to have become more frequent as the return to staying in the same occupation falls. However, neither the NLS nor the CPS shows a rise in occupation switching over time, so this result is something of a puzzle.

It is important to note that our results on returns to employer tenure are due to the fact that the regression controls for occupation and industry tenure. When we exclude those other forms of tenure, we find returns to employer tenure of roughly 5 percent in all three cohorts. Our results for returns to job tenure in the NLS-YM and NLSY79 are therefore broadly similar to those in Neal (1995) and Parent (2000), both of whom examine workers from similar time periods to our two earlier cohorts and find that the addition of industry tenure greatly reduces returns to job tenure. The results for the NLSY79 are qualitatively similar but smaller in magnitude as compared to those in Kambourov and Manovskii (2009) who find that returns to occupation tenure are highest when all three forms (industry, occupation, and job) are included.

The last row of Table 7 shows that the wage gain associated with an additional year of residence in the same state was negative in the first two cohorts. Our interpretation of this result is that individuals in these cohorts who remained in the same state were negatively selected—i.e. that even conditional on the covariates like education that we include in the regression, the unobserved characteristics of workers who move across state lines were associated with higher wage growth than those of individuals that remain in the same state. This type of selection appears to be less important in the NLSY97 than for the earlier cohorts.

Overall, we view Table 7 as showing little evidence that changes in the returns to different types of human capital can explain the concurrent declines in general labor market transitions and long-distance migration.

V.3 Changes in returns to transitions over time

We next consider how returns to labor market transitions may have changed across cohorts, which we view as a way of describing whether the benefits to making a labor market transition have changed over time. We are particularly interested in the return to changing employers, as reduced employer transitions have the potential to explain both declines in labor market transitions generally and declining migration. To this end, we estimate first-differenced versions of Equation (1).[29] The dependent variable is the change in the log wage and the key independent variables of interest is whether the individual changed employer in the last year. We also report coefficients on returns to the other three transitions: industry, occupation, and state.

The results are shown in Table 8. In the first cohort, changing employers was associated with approximately a 7 percent wage gain. This estimate is similar to that in the canonical Topel and Ward (1992) paper, which uses a sample that is quite different but dates from roughly the same time period. We estimate that the gain from changing employers is only half as large in the second cohort, although it is still statistically significant. By the NLSY97 cohort, the estimated gain from changing employers had declined to a statistically insignificant 2.5 percent, and it is even smaller when excluding the recession years. These results suggest that the return to changing employers may have declined over time, which would imply reductions in aggregate job changing and could in turn lead to declines in migration. Although it is difficult to rule out an alternative interpretation that the type of worker who changes employers now is of lower

[29] Taking the first difference of equation (1) suggests that we should also control for changes in age and each type of tenure, as well as the quadratic terms of each of these variables. In addition to the changes in these variables, we include the levels of all of the covariates in equation (1) because these characteristics are correlated with worker quality and, as discussed below, we do not want our results to be driven by changes in the quality of workers who make a labor market transition relative to those workers that remain with the same employer, industry or occupation. We also control for year effects. Our specification is similar to that in the classic Topel and Ward (1992) paper on returns to job transitions.

unobserved quality than in the past, this interpretation is made less likely by the inclusion of observed measures of quality such as education.[30]

In contrast to the wage gains associated with changing employers, the wage gains from changing occupations are substantially larger in the NLSY97 than in the earlier two cohorts, rising from essentially zero in the earlier two cohorts to 6 percent for the 97 cohort. This result is consistent with the decline in the return to occupation tenure reported in the previous section. To the extent that changing occupation is correlated with interstate migration (Table 6), the simultaneous decline in the return to occupation tenure and rise in the return to changing occupations should *raise* migration, working against the secular decline in the aggregate data.

V.4 Robustness of results from the NLS

A concern with the NLS results in Tables 7 and 8 is that they are based on a very young age group and so might not be representative of the general trends in the returns to tenure and labor market transitions. In the NLS-YM and the NLSY79, we can examine individuals up to age 37. Because returns to tenure tend to decline with tenure and older workers usually have more tenure, we find smaller returns to tenure for this group than we did for the younger group. Nevertheless, results are broadly similar in that we find no noticeable increases in returns to employer tenure from the first cohort to the second cohort. We also find similar returns to labor market transitions in the first and second cohorts when we include workers up to age 37.

[30] One might also wonder whether the cross-cohort changes documented in Table 9 apply similarly to all job changers. To assess this, we defined two classifications of workers: those who made a job transition that (likely) involved an intervening spell of non-work versus those who did not, and those who made an involuntary job transition versus those who did not. While we found suggestive evidence of some differences in returns to job changes for those whose switch was involuntary between the 1979 and 1997 cohorts (but not for those who changed through a spell of non-work), these are difficult to interpret – in part because of changes in the way NLSY respondents were asked about reasons for their job change over time. The composition of the pool of such job changers is also changing over time, as involuntary job changes have declined in parallel with the overall decline in job transitions. We leave the question of the role for reasons for job changing in these trends as an area for future research.

We can also use other datasets to examine the returns to tenure for older age groups. Specifically, the PSID, CPS, and Survey of Income and Program Participation (SIPP) all have information on employer tenure in various years. In each survey, the information comes from a direct question concerning the length of time the respondent has been working for their current employer or the start date at their current employer, so they might have more measurement error than the measures of tenure that we calculate in the NLS. In addition, none of these datasets have information about industry or location tenure, and only the SIPP has information about occupation tenure.[31] If these forms of tenure are correlated with one another and if the trends in the returns to these forms of tenure are different, then excluding the other forms of tenure may bias the estimates on return to employer tenure.[32] Nevertheless, we use PSID and CPS data to see whether the trends in the return to employer tenure are similar for different age groups and whether the NLSY results are comparable to changes found in other data. We tried a similar comparison with SIPP data but limitations on the survey years for which we had appropriate questions led us to drop that analysis.

Table 9 shows estimates of the return to employer tenure in the PSID and CPS for the same time periods of the NLS-79 and NLS-97, as well as the intervening time period for completeness. We also report returns to employer tenure from a comparable specification in our three NLS samples. In the PSID and CPS, we find similar trends over time in the return to employer tenure for older age groups as we find for young workers: estimates for the 2000s are either the same or lower than estimates for earlier time periods, providing no support for a

[31] While the job tenure and occupational mobility supplement asks respondents about their tenure at their current job, it does not specifically ask about tenure in an occupation or industry. However, the supplement does ask respondents whether they were working in the same occupation one year ago.

[32] For example, suppose that returns to firm-specific tenure are rising over time, returns to occupation-specific tenure are falling and firm-specific tenure is positively correlated with occupation-specific tenure. If we are unable to control for occupation-specific tenure, then the uptrend in firm-specific tenure will be biased downward.

decline in job transitions or migration on the basis of changing returns to tenure. When occupation, industry and location tenure are omitted from the NLSY, we obtain estimates of return to employer tenure that are quite similar to the PSID and CPS, further suggesting that the NLSY results are not unique to that data set.

Turning to the wage gain associated with changing employers, we can obtain estimates for older workers in the PSID. We use a specification similar to that in the NLS except that we cannot include indicators for occupation, industry, or location switching, nor can we control for occupation, industry, or location tenure. Also, we look at two-year wage changes because after 1997 the PSID was only collected every other year. As reported in Table 10, the most striking result is that the return to changing employers is larger in the 1995 to 2001 period than it was in either the earlier or later periods. Even so, there does appear to be a modest decline in the wage gain associated with changing employers from the 1980s to the 2000s for all but the 50-64 age group.[33] In that sense, these results are consistent with those found in the NLS.

VI. What is behind declining returns to job transitions?

To recap, we find that returns to firm-specific human capital have not changed appreciably since the 1970s, suggesting that the benefits that accrue from staying with one's employer have not changed over time. At the same time, the wage gains associated with changing employers have become smaller, consistent with the idea that the distribution of wage offers has shifted in a way that has made labor market transitions less desirable to workers. . One possible explanation for this type of change in the distribution of wages offers is the Kaplan and Schulhofer-Wohl (2013) argument that wage offers have become more similar across local

[33] This result is robust to excluding the 2007-2009 recession.

labor markets. However, the distribution of wage offers appears to have changed even for offers within the same geographic area. For example, job transitions have declined among individuals that did not change their state of residence (Figure 9).[34] Moreover, in unreported analysis of NLSY respondents who did not make a cross-state move during their time in the survey, we find a decline in the return to changing employers that is identical to the return estimated from the full sample. This result suggests that workers may be facing a less desirable set of outside options both across and within local labor markets.

One factor that could give rise to a narrowing in the distribution of wage offers (regardless of geographic location) relative to one's current offer is an increase in initial match quality over time. In this case, fewer outside options would be desirable and achieving a large wage gain by changing employers would be difficult, thus reducing the fraction of people who change employers. However, our results indicate that if match quality is improving over time, it is not reflected in the returns to firm specific human capital. Although it is possible to imagine such a scenario, we would find rising match quality coupled with flat returns to employer tenure something of a puzzle.

An alternate hypothesis is that the broader U.S. labor market may have changed in a way that narrows the distribution of offers that can be made to or received by workers irrespective of whether the offer arrives from the same local labor market or not. We can obtain some insight into the influence of the outside market on worker wages using a test developed by Beaudry and DiNardo (1991). They argue that in a spot market for labor, wages should be related to contemporaneous labor market conditions. If wages are primarily determined by long-term implicit contracts between workers and firms and workers are tied to the firm for the length of

[34] This is true at least since the mid-1990s and perhaps farther back, depending on how the trend line is drawn to adjust for the strongly cyclical nature of job transitions.

their employment spell, then wages should reflect labor market conditions at the time the worker was hired. Finally, if wages are determined by implicit contracts but workers are free to move between firms, then wages should be related to the best labor market conditions since the worker was hired. Using data from the PSID and CPS in the late 1970s and early 1980s, they find the strongest support for the implicit contract model with costless worker mobility. Grant (2003) finds similar results using the original cohorts of the National Longitudinal Surveys and the NLSY79.

Following these studies, we estimate a log wage equation that includes labor market conditions at three points in time: contemporaneous conditions, conditions at the time a worker started her current job, and the most favorable conditions that obtained from the time the job started to the present. We use the annual national unemployment rate for all individuals aged 16 and older as our measure of labor market conditions.[35] Other controls include age, age squared, employer tenure, and employer tenure squared. The PSID and NLSY specifications also include individual fixed effects, while the CPS specification includes educational attainment, indicators for non-white and ever-married, and industry and region fixed effects. The one notable difference between our specification and that in Beaudry and Dinardo (1991) is that our samples are long enough to include a quadratic time trend, so that our results are not driven by trends in unemployment and wages. Our main innovation over the earlier two papers is to examine whether the importance of external labor market conditions has changed over time.

We find evidence that it has, at least since the 1990s. As shown in Table 11, like the earlier two papers, we find that the minimum unemployment rate since a worker was hired had a large impact on wages in the 1980s and into the 1990s. This is true in all three datasets,

[35] Results are similar if we use state-level labor market conditions, allowing us to include year fixed-effects in the regression. However, we prefer the specification that uses national conditions because wage offers can come from outside of one's state of residence.

regardless of the age range included. Grant (2003) also finds a significant and statistically similar relationship in the 1970s and 1980s using the NLS original cohorts. However, in the 2000s the connection between wages and the minimum unemployment rate is much weaker, particularly for younger workers (and in the case of the CPS, the relationship changes sign).[36] At the same time, initial conditions seem to have become more important for wages, with magnitudes that are comparable to the correlation with the minimum unemployment rate in earlier decades.[37] Although the PSID and CPS show a significant correlation of the contemporaneous unemployment rate with wages in the 1980s and 1990s, its sign does not make sense; in the NLSY this coefficient is insignificant but has the expected sign.[38]

What do these results imply about the role of the employer-employee relationship in declining labor market and geographic transitions? One possibility is that the shift in implicit contracts (initial conditions mattering more than best conditions over the worker's tenure) is simply a symptom of declining geographic mobility. If workers are less able to move across markets, then initial labor market conditions should become more important than best labor market conditions. Although this interpretation is consistent with the results in Table 11, it cannot explain why labor market transitions have fallen even for workers who remain in the same labor market.

[36] In the PSID, the coefficient on the minimum unemployment rate in the 2000s falls to -0.017 and is insignificantly different from zero when the 2007-2009 recession is excluded. Otherwise, all estimates in Table 11 are robust to excluding that recession, as well as to omitting individuals whose current job has lasted less than one year (for whom initial conditions, best conditions and contemporaneous conditions are all the same).
[37] The estimate in the NLSY97 is marginally significant (at the 10% level).
[38] We find similar estimates in the CPS and PSID when excluding the other two measures of labor market conditions, so this result is not driven by a high degree of colinearity with the other two measures. We also find similar estimates when using state-level unemployment rates to measure labor market conditions and including year fixed effects, so the positive correlation between contemporaneous conditions and wages is estimated from cross-sectional rather than time series variation. Thus, we leave this result in the CPS and PSID as something of a puzzle. In the NLSY79, the contemporaneous unemployment rate has a negative and significant relationship with the wage when other unemployment rates are excluded. In the NLSY97, the coefficient on current unemployment alone is negative but not significant.

Another explanation for the results shown in Table 11 is that the distribution of outside options open to a worker has changed. For example, the component of wage differentials related to the firm's profits may be smaller—either because firms' bargaining power has increased or because the distribution of profits across firms has compressed. In this scenario, the "firm specific" component of wages would be smaller, reducing the incentive to change firms based on variation in this component of wages, and thereby causing implicit contracts to continue for longer periods of time. We are not aware of much evidence on how the distribution of firms' profits has changed over time.[39] As for factors that could have led to a decrease in worker bargaining power, a few candidates include the decline of unionization; the diffusion of formal human resources practices or monitoring technology, which could homogenize pay across firms; and intensified product market competition (perhaps related to globalization), which could reduce the rents available for firms to share with workers.[40]

We can gain some insight into whether the change in implicit contracting is related to a change in migration costs or to a change in the distribution of workers' outside options by examining individuals who moved across states lines. We would not expect a change in migration costs to affect the firm-worker arrangement for individuals who have demonstrated an ability to move, at least to a first approximation. By contrast, a shift in the distribution of outside options is more likely to affect workers similarly, regardless of their mobility. Since the CPS is a cross section, we can only examine groups of mobile workers in the PSID and NLSY. Results for those who migrate in the NLSY are consistent with those for the entire sample, in that the

[39] Dunne, Foster, Haltiwanger and Troske (2004) find that the dispersion across manufacturing plants of the plant-specific component of wages, which they use as a proxy for productivity, has widened since the 1970s. If productivity is related to profits, these results go against the hypotheses that the distribution of firm-specific profits has narrowed. However, the evidence is only from the manufacturing industry and wage differentials could reflect other factors besides productivity.

[40] For an example of how technology has allowed firms to monitor worker productivity in minute detail, see Moretti and Mas (2009).

negative correlation between wages and the minimum unemployment rate diminishes from the 1979 to 1997 cohort, while the negative correlation between wages and the initial unemployment rate becomes larger.[41] By contrast, the PSID shows no clear changes in implicit contracting over time for those who migrate. We conclude that the evidence is slightly more supportive of the interpretation that changes in the distribution of outside options, rather than changes in migration costs, are the factor underlying the shift in the correlation between wages and labor market conditions. Moreover, because the decline in job transitions for non-migrants begins somewhat later than the decline in interstate migration (as shown in Figure 9), and because the change in implicit contracting seems to have begun in the 2000s, we surmise that any changes in the distribution of outside options have been more pronounced in the last half of our period. Additional support for this idea can be found in Partridge et al. (2012). They find that after 2000, US workers are less likely to migrate to arbitrage demand shocks than they were in 1990. Instead, demand shocks are more likely to be met by changes in the local participation rate or decreasing local unemployment. One possible explanation, based on our analysis, is that such demand shocks may no longer generate the types of wage gains they had in the past, making them a less likely to motivate a long-distance move.[42] These ideas, as well as other potential explanations for the change in implicit contracting, are clearly an important avenue of further research.

VII. Conclusion

[41] We also found similar results for individuals who resided outside of their birth state at the onset of the survey, a group which likely faces lower migration costs than average.

[42] Partridge et al. (2012) also find "preliminary evidence that geographical mobility is increasingly tied to occupationally-based demand shocks." This echoes our finding that occupation change appears to have become an important driver of wage growth since the 1990s.

In this paper, we examine explanations for the secular decline in interstate migration since the 1980s. Demographic and socioeconomic factors can account for little of this decrease. By contrast, there is a strong empirical relationship between the downtrend in migration and downward trends in a variety of labor market transitions—i.e. a decline in the fraction of workers moving from job to job, changing industry, and changing occupation—that occurred over the same period. We explore a number of reasons why both types of flows might have diminished over time, including changes in the distribution of job opportunities across space, polarization in the labor market, and concerns of dual-career households. We find little empirical support for any of these hypotheses.

To gain further insight into the cause of the dual declines in migration and labor market transitions, we take a reduced-form approach to estimating the wage-related costs and benefits of changing firms. We find that the return to firm-specific human capital, a proxy for the cost of changing firms, has not changed appreciably since the 1970s. By contrast, the wage gains associated with changing employers have declined steadily over time. We establish these results using data from young workers in three cohorts of the NLS spanning the 1970s to the 2000s. Although the NLS provides the longest time period and richest set of control variables, we find similar results in the CPS and PSID.

Our results suggest that the distribution of wage offers has either shifted or narrowed in a way that makes labor market transitions – particularly transitions across employers – less advantageous to workers. Meanwhile, wage growth that accrues while a worker remains within the same firm has not changed. It is doubtful that an increase in the cost of migration can explain these trends because we find similar results for workers

who did not move across state lines. Rather, it seems that the interaction of workers with the external labor market has changed. In support of this interpretation, in the spirit of Beaudry and Dinardo (1991) we find that the connection between wages and labor market conditions at the time the worker was hired has strengthened, while the connection between wages and the best labor market conditions since hire has become weaker. We lean towards an interpretation that firm-specific heterogeneity in wages is smaller than it used to be, perhaps because workers' shares of profits have become smaller or because differences across firms in productivity or profits have narrowed. The resulting decrease in job changing may have brought about a decline in long-distance migration as fewer people move to take a new job.

Importantly, our analysis does not necessarily indicate that economic activity in the US has become less dynamic. Although we cannot definitively rule out a role for higher migration costs or other constraints on geographic and labor market transitions, our results are also consistent with the idea that fewer location and job changes are needed in today's economy. At this stage, we view our evidence on the reasons for the dual declines in geographic mobility and labor market transitions as intriguing, but speculative. As these trends seem to have become an enduring feature of the US economy, further research is needed to shed light on the mechanisms driving these declines.

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Table 1: Population Shares and Migration Rates by Selected Demographic and Socioeconomic Group

	Population Share		Within County Migration Rate		Interstate Migration Rate	
	1981-89	2002-12	1981-89	2002-12	1981-89	2002-12
Age						
Age 20-24	12.2	9.4	22.2	19.1	5.7	3.3
Age 25-34	25.0	18.6	16.8	15.2	4.3	3.0
Age 35-44	19.3	22.7	8.7	6.6	2.6	1.5
Age 45-54	27.5	34.8	4.6	3.8	1.5	0.9
Age 55+	16.5	14.9	2.8	2.2	0.9	0.6
Homeownership						
Renter	29.6	27.4	22.3	16.9	6.4	3.6
Homeowner	70.4	72.6	5.1	3.4	1.5	0.9
Educational attainment						
Less than high school	26.8	13.9	7.7	7.2	1.5	0.9
High school	38.1	30.6	8.3	6.3	2.2	1.1
Some college	16.3	26.5	9.9	6.4	3.1	1.5
College+	18.8	29.0	8.9	5.3	4.2	2.1

Note. Authors' calculations based on data from the March CPS. Sample includes all individuals age 20 and up that do not have imputed migration data. Educational attainment is only available for individuals age 25 and up.

Table 2: In-Migration, Out-Migration and Net Migration by Census Division

	In-Migration		Out-Migration		Net In-Migration	
	1981-89	2000-10	1981-89	2002-10	1981-89	2002-10
New England	2.7	2.3	2.8	2.6	-0.1	-0.3
Mid Atlantic	1.6	1.7	2.2	2.2	-0.5	-0.5
East North Central	1.7	1.6	2.4	1.9	-0.6	-0.3
West North Central	2.7	2.4	3.1	2.5	-0.4	-0.1
South Atlantic	4.1	3.4	3.2	2.9	0.9	0.5
East South Central	3.0	2.8	3.0	2.5	0.0	0.3
West South Central	3.3	2.4	3.1	2.2	0.2	0.3
Mountain	5.6	4.3	5.0	3.6	0.6	0.7
Pacific	2.6	1.7	2.3	2.0	0.3	-0.3

Note. Authors' calculations based on interstate migration data from the Internal Revenue Service.

Table 3: State-level relationship between job transition and migration rates

	CPS	IRS
	(1)	(2)
% changing firms	0.06**	0.04**
	(0.01)	(0.01)
% changing occupations	0.05	0.00
	(0.04)	(0.02)
% changing industries	0.05	0.04*
	(0.04)	(0.02)
% less than 24 years old	-4.07	-9.43**
	(3.69)	(2.01)
% 65 years old or older	-1.28	-9.16**
	(3.46)	(2.05)
% with no more than a high school degree	-2.58	0.67
	(1.55)	(0.87)
% homeowner	-5.51**	-0.02
	(1.31)	(0.84)
log(median wage)-log(25th pctile wage)	-0.57	0.08
	(0.61)	(0.22)
log(75th pctile wage)-log(median wage)	-0.41	-0.21
	(0.77)	(0.29)
% employed in middle-skill jobs	0.03	0.00
	(0.02)	(0.01)
% employed in manufacturing	0.02	0.01
	(0.01)	(0.01)
% living in HH with emp.-provided health care	0.02	0.01
	(0.01)	(0.01)
% living in a HH where both spouses work	-0.01	0.00
	(0.01)	(0.01)
Change in migration (1981-89 to 2002-2009)	-1.11	-0.43
Change due to job transition variables	-0.50	-0.24
Change due to other RHS variables except trends	-0.06	0.13

Note: Coefficients are from state-year level regressions of the percent living in a different state in the previous year on the listed variables, state and year fixed effects, state time trends, and the following additional variables: percent of the state that is male, white, or black; percent employed and unemployed; percent married; and percent living in a household with children. Included years are 1981-2009. Standard errors clustered at the state level are in parentheses. Contribution to change in the fraction moving states from all RHS variables is calculated by: 1) predicting migration for each state in each year based on all RHS variables, excluding job transition variables, state and year fixed effects and state time trends; 2) taking the weighted average across states for each year; 3) calculating the average for 1981-89 and 2002-09; 4) taking the difference over the periods. For the contribution due to the job transition variables, the same exercise is carried out using the first three variables in the table. For the first column, N=1377 (51 states and 27 years). For the second column, N=1296 (48 states and 27 years--data are not available for AK and HI).

Table 4: Population Shares and Migration Rates by Household Type

	Population Share		Interstate Migration Rate	
	1981-89	2002-12	1981-89	2002-12
Both spouses employed	30.5	30.3	1.9	0.9
All other	69.5	69.7	3.1	1.9
Both spouses employed and prof./tech. occ.	2.1	2.9	3.2	1.5
Other employed and prof/tech.	13.5	16.7	3.8	2.2
All other	83.1	78.8	2.6	1.4
Both spouses employed and in top quintile of earnings distribution	1.2	2.4	1.8	1.0
Other employed and in top quintile of earnings	18.5	16.3	2.5	1.6
All other	79.5	79.9	2.9	1.6
Both spouses employed and college degree or more	4.6	7.8	2.7	1.4
Other employed and college degree+	14.2	18.1	4.1	2.3
All other	78.9	70.7	2.6	1.5
Employer-provided health insurance in hhold	64.8	64.7	2.7	1.5
All other	35.2	35.3	3.0	1.8

Note. Authors' calculations based on data from the March CPS. Sample includes all individuals age 20 and up.

Table 5: Descriptive Statistics for the Samples of NLS and NLSY Men

	NLS-YM	NLSY79	NLSY97
Unique respondents	3000[a]	4784	2648
Tenure in state	5.61	6.642	6.735
	(3.74)	(3.66)	(3.676)
State change last year	0.057	0.056	0.049
	(0.232)	(0.23)	(0.216)
Log real wage	2.13	1.86	1.820
	(0.38)	(0.422)	(0.424)
Black	0.22	0.229	0.216
	(0.41)	(0.421)	(0.411)
Hispanic	0.055	0.164	0.216
	(0.228)	(0.37)	(0.411)
Age	25.4	25.444	24.274
	((2.21)	(2.24)	(1.791)
Highest grade completed=12	0.363	0.452	0.314
	(0.481)	(0.498)	(0.464)
Highest grade completed=13 to 15	0.194	0.202	0.272
	(0.395)	(0.402)	(0.445)
Highest grade completed=16+	0.209	0.165	0.255
	(0.407)	(0.371)	(0.436)
Employer tenure	2.50	2.581	2.429
	(2.39)	(2.41)	(2.271)
Industry tenure	2.81	2.688	2.580
	(2.41)	(2.395)	(2.263)
Occupation tenure	2.77	2.684	2.530
	(2.40)	(2.394)	(2.264)
Industry change last year	0.274	0.316	0.302
	(0.446)	(0.465)	(0.459)
Occupation change last year	0.292	0.319	0.320
	(0.455)	(0.466)	(0.466)
Change employer last year	0.443	0.376	0.378
	(0.497)	(0.484)	(0.485)

Notes: Sample from each data set is 22-29 year old high attachment individuals with non-missing data for wage equations in subsequent tables. High attachment defined as working 26 or more weeks in the previous calendar year. Cells show unweighted means. Standard deviations are in parentheses. All tenure variables represent continuous years of tenure in current position. Industry and occupation tenure defined in part based on edited industry/occupation change measures per discussion in Data Appendix. Log wages are in constant dollars using the 1982-1984 CPI average. [a] indicates number rounded for confidentiality purposes.

Table 6
Fraction of Interstate Movers that Changed Employer, Industry or Occupation

	NLS-YM	NLSY79	NLSY97
Employer	0.77	0.74	0.74
Occupation	0.62	0.78	0.70
Industry	0.57	0.70	0.60

Notes: Sample from each data set is 22-29 year old high attachment individuals with non-missing data on employer, occupation, industry, and state transitions as defined in Table 7. High attachment defined as working 26 or more weeks in the previous calendar year. Cells show unweighted means.

Table 7: Implied Returns to a Third Year of Tenure for Men Ages 22-29

NLS Cohort:	NLS-YM	NLSY79	NLSY97	NLSY97
Industry tenure	0.0226*** (0.0069)	0.0052 (0.0057)	0.0265** (0.010)	0.0236* (0.012)
Occupation tenure	.0269*** (0.0061)	0.0343*** (0.005)	0.0174 (0.0123)	0.022 (0.015)
Employer tenure	-.0012 (0.0071)	0.0151* (0.006)	0.0028 (0.0146)	-0.0020 (0.017)
State tenure	-.0130*** (0.0041)	-0.010** (0.003)	-0.0032 (0.004)	-0.0052 (0.0058)
Observation years	1966/71, 73, 75, 76, 78, 80, 81	1979-1994	2002-2009	2002-2007

Notes: Cells show implied returns to three years of tenure in designated category, holding other characteristics constant. Returns are calculated from Column [1] specifications in wage equation table. High employment attachment defined as working 26 or more weeks in the previous calendar year.
*** indicates significance of level coefficient at the .1% level, ** at the 1% level, and * at the 5% level.

Table 8: Wage Equation Returns to Labor Market and Geographic Transitions

NLS Cohort:	**NLS-YM**	**NLSY79**	**NLSY97**	**NLSY97** Omit 2008-2009
Industry change	-0.004	0.0177	-0.0287	-0.0158
	(0.0227)	(0.0159)	(0.0268)	(0.0381)
Occupation change	-0.0183	-0.0014	0.0684*	0.0913*
	(0.0213)	(0.0149)	(0.0266)	(0.0397)
Employer change	0.0716***	0.034*	0.0254	0.0106
	(0.0203)	(0.0157)	(0.0226)	(0.0325)
State change	0.0109	-0.0546	-0.0066	0.0598
	(0.0494)	(0.0292)	(0.0304)	(0.0435)
N obs	5533	17323	6496	3414

Notes: Male, 22-29 high attachment sample. Dependent variable is annual change in log hourly wage. Covariates include black, Hispanic, 4 education dummies, aged-squared, the change in age squared, the change in all four tenure variables, the change in the squares of all four tenure variables, and year dummies.

Table 9: Returns to Employer Tenure by Age in the PSID, CPS and NLSY

	PSID			CPS			NLSY	
	1982-1994	1995-2001	2003-2009	1983, 1987, 1991	1996, 1998, 2000, 2002, 2004	2006, 2008	1979-1994	2002-2009
Men								
22-29	0.042	0.027	0.041	0.053	0.030	0.033	0.048	0.042
30-39	0.021	0.020	0.019	0.035	0.020	0.012	0.053	-
40-49	0.016	0.020	0.010	0.026	0.021	0.021		
50-64	0.016	0.017	0.018	0.024	0.024	0.018		

Notes: Cells report implied returns to a third year of tenure from log wage equations that include employer tenure and its square, but omitting variables related to industry, occupation and state tenure (since these are not available in all datasets). Each cell is a separate regression using the indicated age group, data set, and data period. Standard errors are available upon request.

Table 10: Returns to Changing Employer by Age in the PSID

	1983-1994	1995-2001	2003-2009	2003-2007
Men				
22-29	0.044	0.123	-0.055	0.037
	(0.021)	(0.044)	(0.048)	(0.049)
30-39	0.060	0.054	0.025	-0.012
	(0.013)	(0.030)	(0.028)	(0.031)
40-49	0.020	0.091	-0.072	-0.010
	(0.018)	(0.041)	(0.025)	(0.027)
50-64	0.002	0.008	-0.063	0.003
	(0.020)	(0.052)	(0.030)	(0.036)

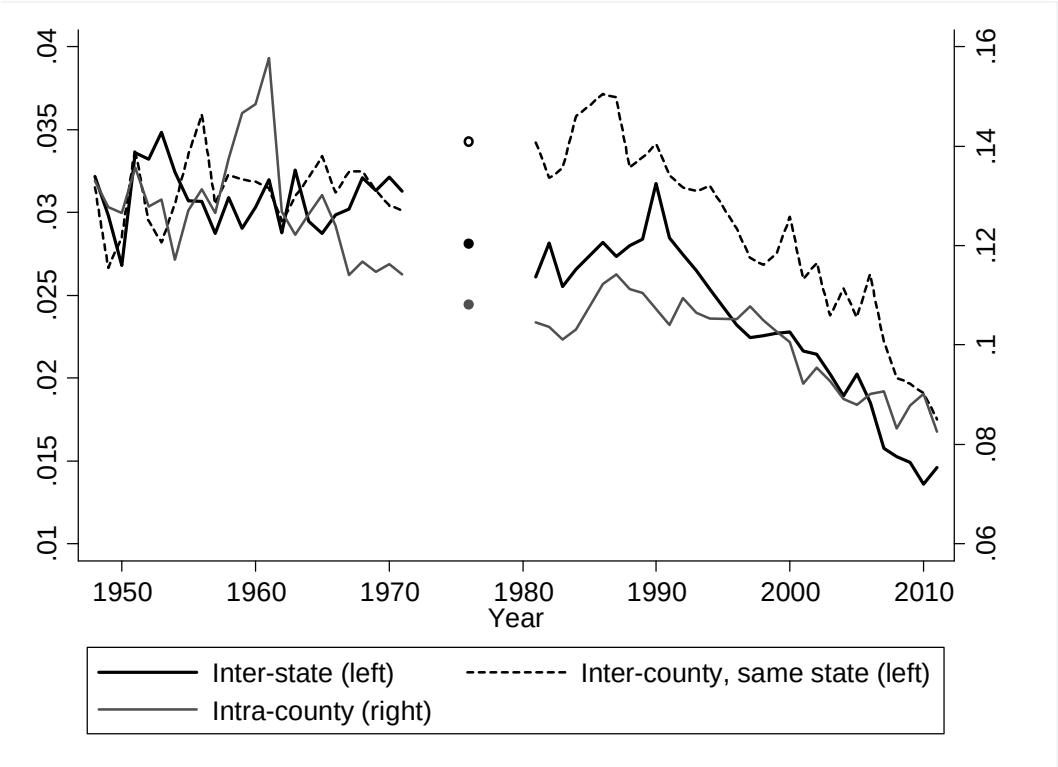
Notes: Each cell reports the coefficient estimate on an indicator for whether an individual changed employer in the previous two years, where the dependent variable is the change in the individual's log wage over the previous two years. Other controls include age, age squared, tenure squared, indicators for educational attainment and race, and the 2-year changes in tenure, tenure squared, and age squared. Regressions estimated separately for each age group and time period, and the sample is restricted to men.

Table 11: Nested Tests of Contracting Models

Data	PSID	PSID	CPS	CPS	NLSY79	NLSY79	NLSY97
Age	21-64	22-29	21-64	22-29	22-37	22-29	22-29
Years	1981-2009	1981-2009	1979-2008	1979-2008	1979-1994	1979-1994	2002-2009
UR[current]							
1980s	0.013**	0.004	0.013**	0.023**			
	(0.002)	(0.004)	(0.003)	(0.007)	-0.003	-0.001	
1990s	0.019**	0.024**	0.043**	-0.041	(0.003)	(0.003)	
	(0.003)	(0.009)	(0.009)	(0.026)			
2000s	0.004	-0.013	0.005	-0.028			-0.007
	(0.004)	(0.011)	(0.007)	(0.016)			(0.009)
UR[began]							
1980s	0.004	-0.004	0.003	0.006			
	(0.004)	(0.008)	(0.004)	(0.008)	-0.008	-0.005	
1990s	0.003	-0.023*	0.004	-0.007	(0.004)	(0.005)	
	(0.004)	(0.010)	(0.006)	(0.013)			
2000s	-0.020**	-0.048**	-0.014**	-0.037*			-0.033
	(0.005)	(0.015)	(0.004)	(0.017)			(0.019)
UR[min]							
1980s	-0.029**	-0.011	-0.002	-0.030*			
	(0.008)	(0.011)	(0.005)	(0.013)	-0.029**	-0.032**	
1990s	-0.055**	-0.047**	-0.039**	0.043	(0.006)	(0.006)	
	(0.007)	(0.015)	(0.011)	(0.025)			
2000s	-0.029*	0.010	0.029**	0.069**			0.13
	(0.012)	(0.032)	(0.009)	(0.024)			(0.023)
Obs	43770	10541	64581	15012	33908	24824	6799

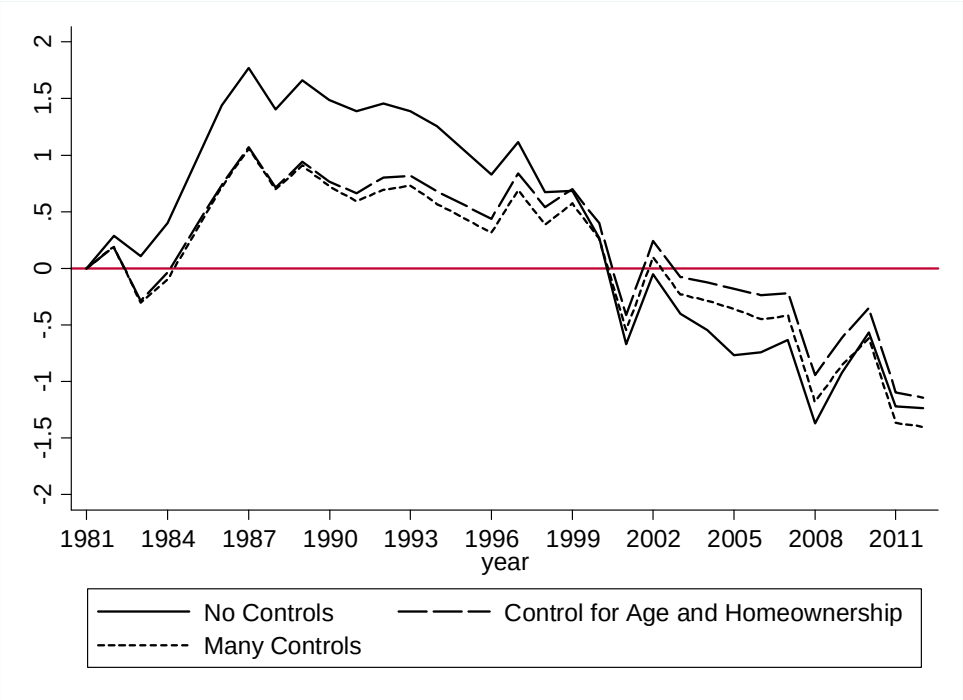
Note. UR[current] is national unemployment rate for all workers 16 and up in current survey year in NLSY. In PSID and CPS, UR[current] is national unemployment rate in previous calendar year. UR[min] is minimum of national unemployment rates from year job began to current survey year (in NLSY) and to past calendar year (in PSID and CPS). UR[began] is national unemployment rate in calendar year that job began (NLSY, CPS and PSID). All PSID and NLSY regressions include a quadric time trend, individual fixed effects, employer tenure, employer tenure squared, age and age squared. CPS regressions include a quadratic time trend, employer tenure and tenure squared, age and age squared, a dummy for having been married, for being non-white, dummies for educational status, industry, and region. In PSID and CPS, estimates by decade are estimated from a single regression with decade dummies and interactions of decade dummies with labor market conditions. Standard errors are clustered by individual in PSID and NLSY; standard errors in CPS are robust standard errors. ** indicates significance at the 1% level and * at the 5% level.

Figure 1



Migration rates in the Current Population Survey from 1948 to 2011. Sample details are given in Molloy, Smith and Wozniak (2011).

Figure 2
Within County Migration



Interstate Migration

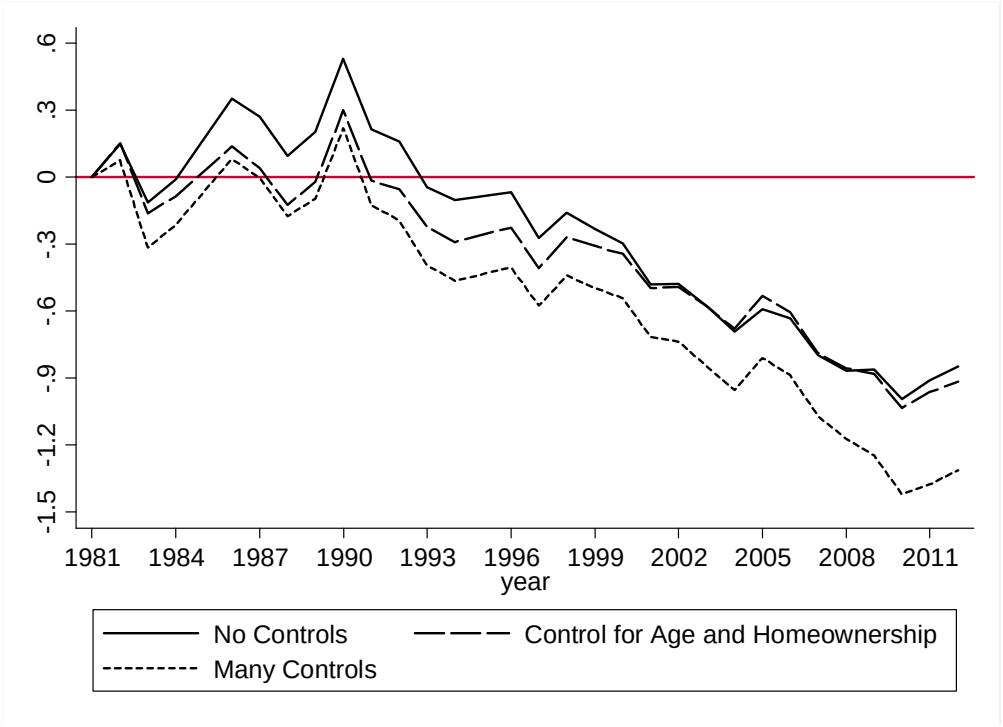
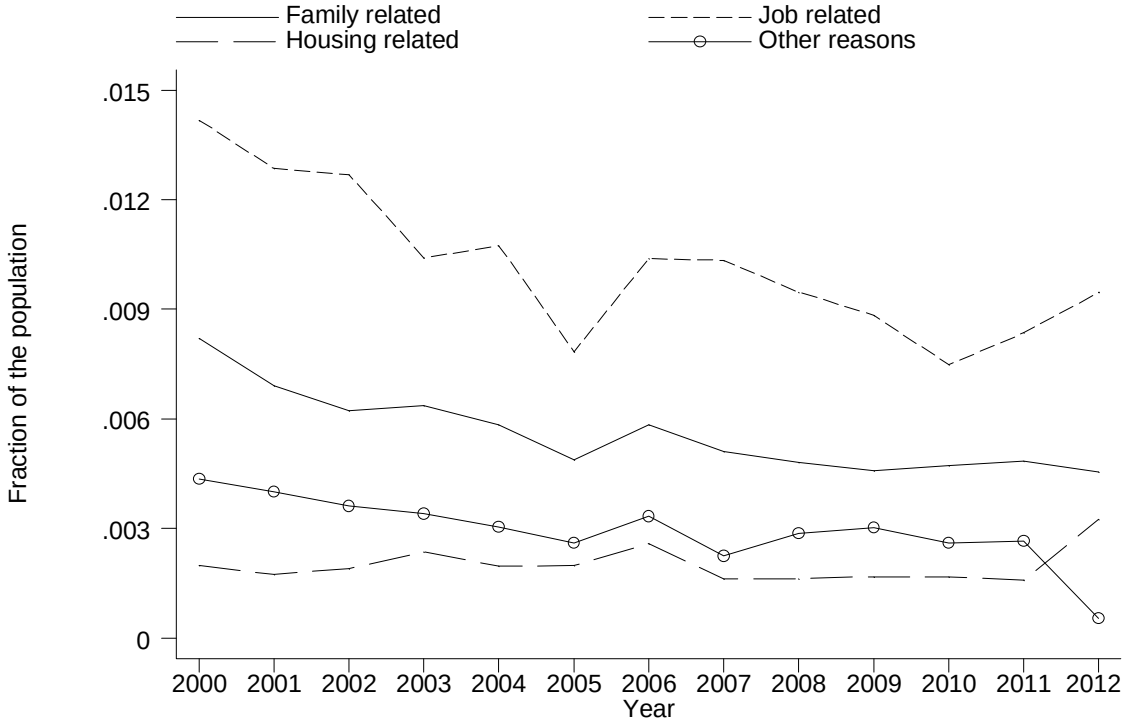


Figure 3
Reasons for Migration
Interstate Migration



Within County Migration

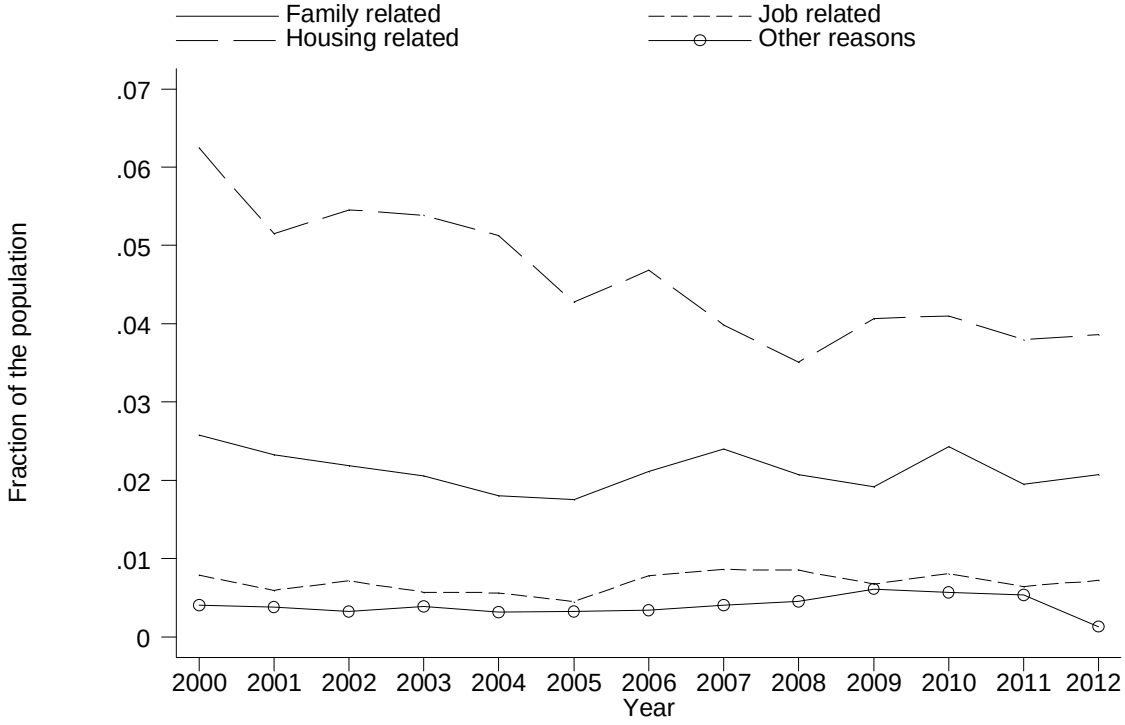


Figure 4
Employer, Occupation and Industry Transitions

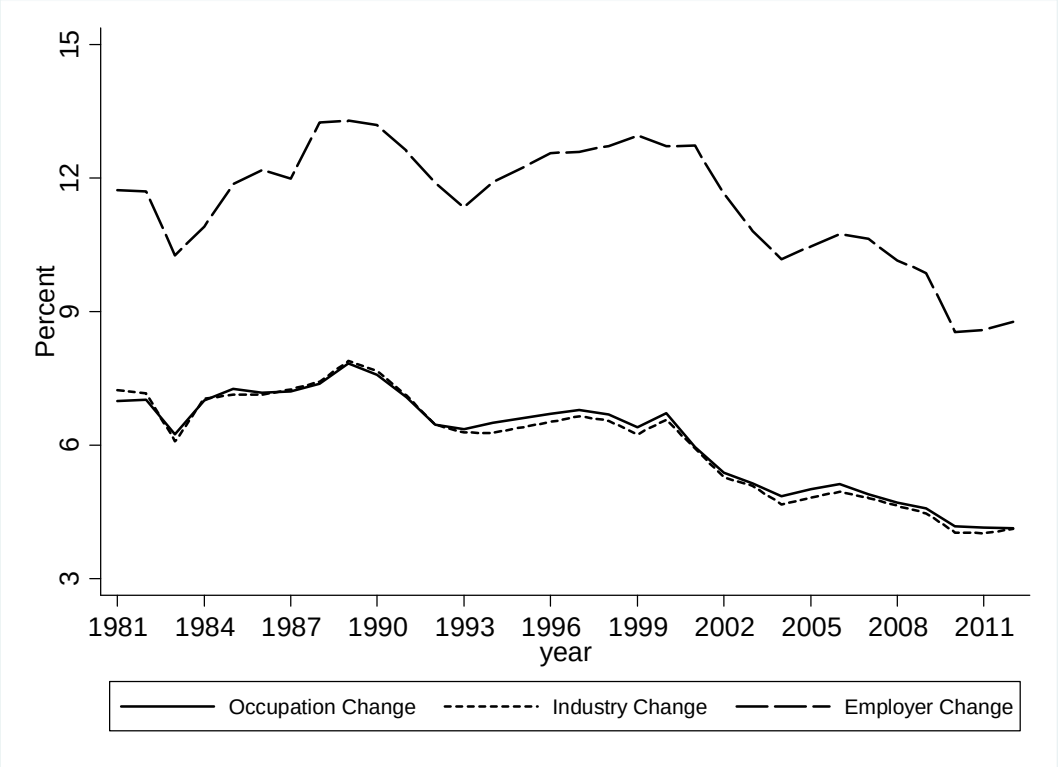
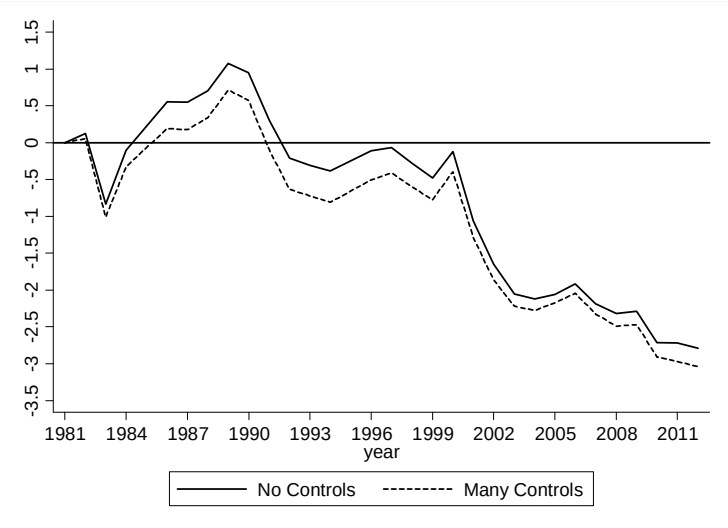


Figure 5
Occupation Changes



Industry Changes

Employer Changes

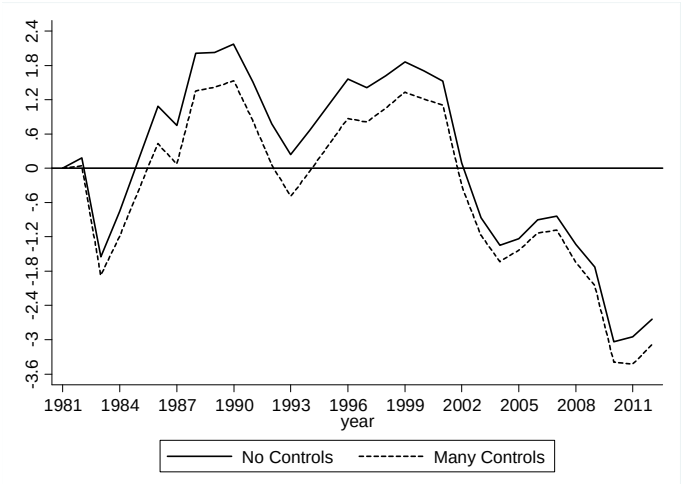


Figure 6
Changes in Job Changing and Changes in In-Migration by State

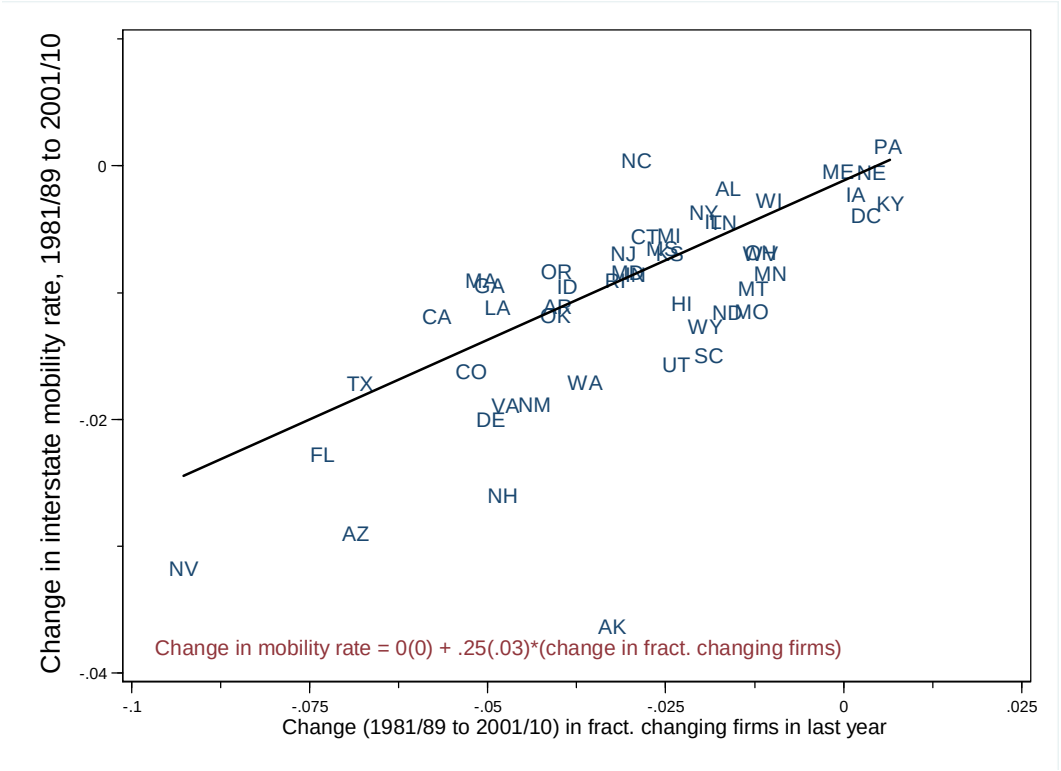
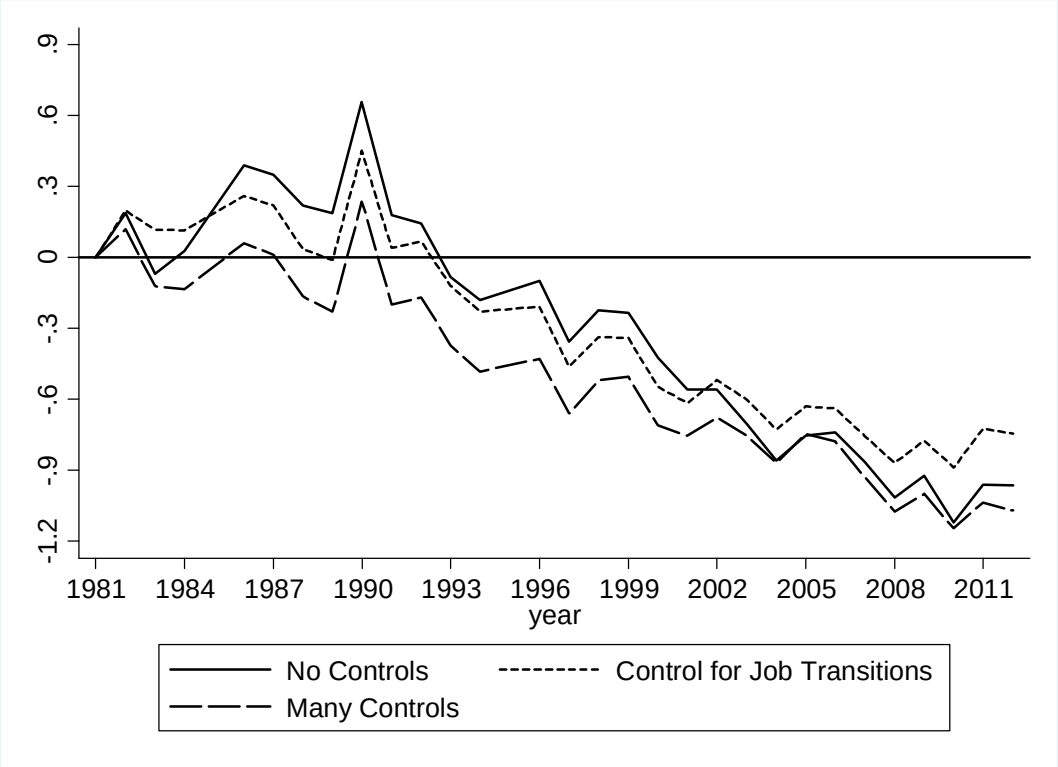


Figure 7
Interstate Migration



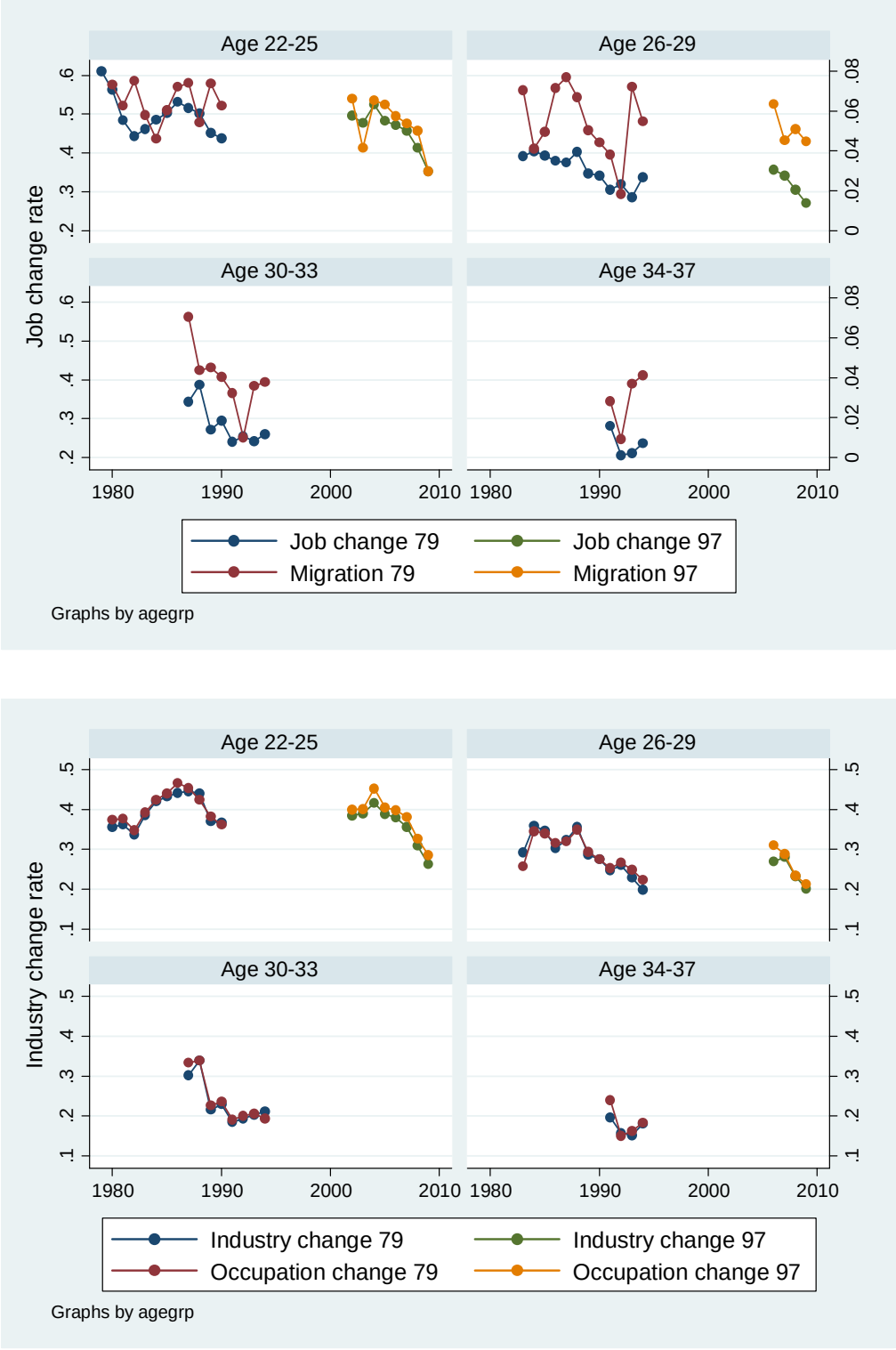
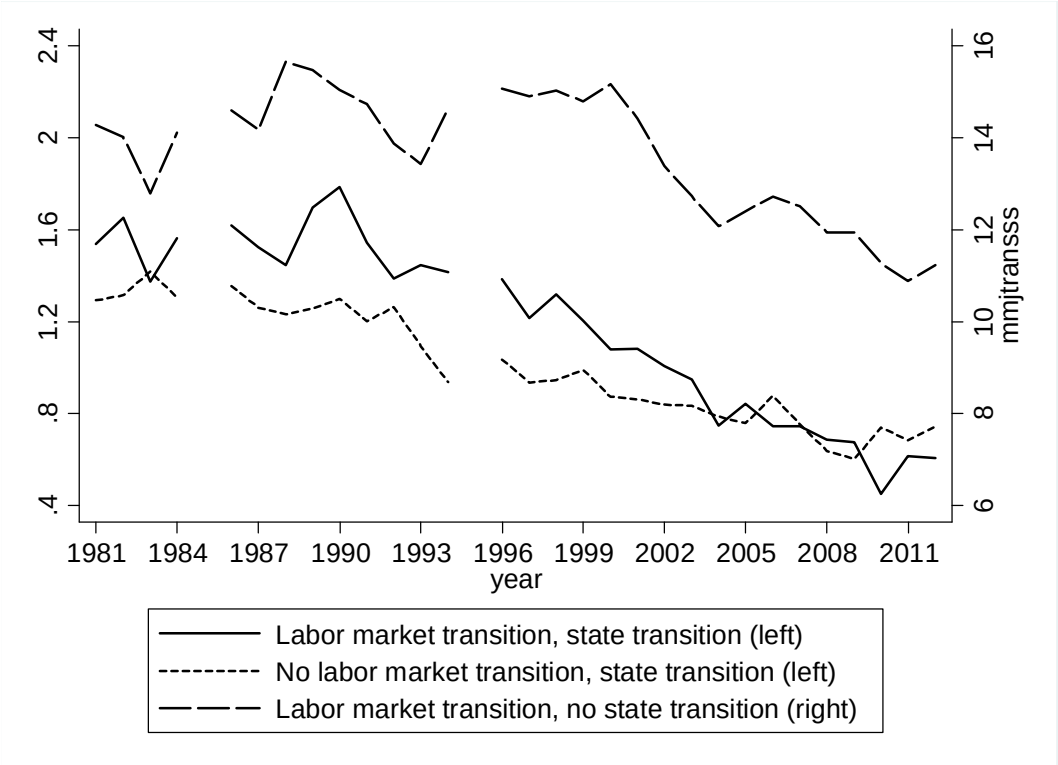


Figure 8. Top panel – rates of employer (job) changing and interstate migration in the NLSY79 and NLSY97, by age and year. Bottom panel – rates of industry and occupation changing in the same data, by age and year.

Figure 9: Interstate Migration and Labor Market Transitions



Note. Authors' calculations from the March CPS. Labor market transitions are defined as either a change in employer, a change in industry, or a change in occupation. State transitions are defined as a change in the individual's state of residence. Sample includes men age 25 to 64.