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Labor Force Transitions, Employment, and Occupational and Earnings Attainment

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Abstract

This paper presents an analysis of changes in occupational status and hourly earnings after workers experience a spell of nonemployment, during a period of stable but slow economic growth and a recessionary period. In addition, an effort is made to identify factors associated with changes in occupational status and hourly earnings, including a possible link between changes in these outcome measures. The results indicate only small net differences between the occupational status and hourly earnings of workers observed before and after a period of nonemployment once the characteristics of workers are controlled. Overall, the greatest differences in outcome measures were observed between the 2004 through 2007 and the 2008 through 2011 periods. Workers during the latter period experienced substantial declines in occupational status and hourly earnings, most likely a consequence of the economic upheaval associated with the Great Recession.

Keywords: Employment; Labor Market; Low-Wage Work; Unemployment/Nonemployment; Great Recession

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INTRODUCTION

This study seeks to describe and analyze the labor force experiences of men and women during the 2004 through 2011 period, which included the 2007 to 2009 Great Recession. Specially, this study seeks to determine whether the occupational and earnings attainment of men and women changed upon reemployment, after a period of nonemployment, whether from unemployment or labor force nonparticipation. Several studies report reduced wages and lower net worth upon reemployment (see Stevens, 2001; Dickens, et al., 2017; Gruber, 2001). Since occupational attainment is intermediate to earnings attainment, it should follow that similar effects should be observed for the former, and subsequently influence earnings outcomes. I know of no empirical study that has sought to evaluate these associations using a quantitative metric for occupation that would allow for comparisons between prior employment and post-reemployment status. This paper seeks to provide such an analysis.

The 2000 decade was anchored by two recessions, in 2001 and in 2007 through 2009, and a period of slow recovery but stable economic growth in between. My interest is in studying how different were labor instability and the socioeconomic circumstances of workers associated with the 2007 through 2009 recession from those prevalent during the period immediately preceding it. The statistical record is very clear on higher levels of unemployment of longer duration, and the diminishing social and economic positions of individuals and households. It has been suggested that the Great Recession was consequential for employment status, occupational position, earnings and wealth accumulation, and career trajectories (Grusky, Western, and Wimer, 2011; Kalleberg, 2017). The unemployment rate reached its highest point at 10 percent and the jobless rate—unemployment and labor force nonparticipation combined—reached 18 percent during the period (Bruyere, 2012; Kalleberg, 2017). Occupational careers were delayed or altered; and contingent worker arrangements and multiple job holdings increased as a share of total employment; and wages and job quality declined (Hout, 2011; Kalleberg, 2017). While the general rate of joblessness reached a historic high during the Great Recession, the population subgroups who seem to

have been most harmed by the recession include younger workers at the beginning of their careers; mature white men; African Americans; Hispanics; recent immigrants in manufacturing; and men and women in retail sales (Hout, Levannon, and Cumberworth, 2011; Brand, 2015; Kalleberg, 2017).

Yet, it is not clear from this general description of the economic upheaval caused by the Great Recession how extensive were its effects on the employment and occupational attainment of individuals relative to those observed in other recessions, and during more stable economic conditions. This paper explores this issue further by focusing on the impact of labor force transitions on occupational and earnings attainment during two 48-month periods, as observed via the 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP). As is well known, disruptions in employment, whether due to a delay in the launching of an occupational career, a spell of unemployment, nonparticipation, or most likely both, can have serious consequences for occupational placement, occupational mobility, and job quality. These types of disruptions over the life course can alter career trajectories with respect to specific occupational pursuits and the accumulated compensation and rewards a worker could acquire over her working life (see Brand, 2015, for reviews). This study seeks to further illuminate the dynamics and consequences of spells of nonemployment on occupational and earnings attainment during a period of stable economic conditions to those occurring during a period of great economic upheaval, as occurred during the Great Recession of 2007 through 2009.

The labor market is dynamic, constantly changing in response to prevailing economic conditions (Boon, et al., 2008; Palumbo, 2010). Moreover, even under conditions of full employment, new firms are emerging, others are expanding, contracting, and closing; while the supply of labor also expands and contracts because of new entrants and declines as a result of separations due to deaths and retirements. This study focuses on the 2004 through 2011 period, which covers an initial period of near full employment and slow to modest economic growth; followed by a substantial recessionary period, the Great Recession, characterized by substantial job losses; and a period of economic recovery characterized by declining unemployment. I explore the extent of employment-nonemployment-reemployment

transitions during this period, and the impact of these transitions on occupational and earnings attainment for men and women differing in age, educational attainment, ethnic background, nativity, and citizenship.

BRIEF LITERATURE REVIEW

A recent report indicates that during the 2007 through 2009 period a total of 15.4 million workers were displaced, up from 8.3 million during the 2005 through 2007 period; and 6.9 million long-term workers lost their jobs versus 3.6 million during 2005 through 2007. In fact, rates of job loss during the Great Recession are the highest the Bureau of Labor Statistics (BLS) has ever reported (see Borbely, 2011). In addition, displaced workers during the recent recession experienced longer periods of unemployment and had lower rates of re-employment than in previous periods. Job displacements were highest in manufacturing, followed by wholesale and retail trades, and construction.

Borbely (2011) also reports that 49 percent of long-term displaced workers who lost their jobs during the recent recession were re-employed in 2010. This contrast to more than 60 percent of long-term displaced workers reported for periods extended back to the early 1980s. Workers displaced from health and related industry sectors were more likely to be reemployed, and reemployed in the same sectors they were displaced from, at 39 percent. With respect to occupations, workers in management, professional, and related occupations were the most likely to be reemployed in January 2010, at 60 percent, and workers in these occupations were also more likely to be reemployed in the same broad occupational categories, at 41 percent. It was noted that workers in production, transportation, and moving occupations were the least likely to be reemployed, at 40 percent, with only one in five of these workers reemployed in the same occupation.

Finally, Borbely (2011) summarizes results on the wages of long-term full-time wage and salary workers who were reemployed during the three years after being displaced from similar jobs, reported for January 2002, 2004, 2008, and 2010. The later date covers workers displaced and reemployed during and immediately after the Great Recession. In three of the reporting periods, 52 percent or more workers experienced declines in earnings, while in one period (January 2004) 55 percent of workers experienced

increases in earnings. It is clear, considering the percentage of workers who gained or lost earnings, that the period of the Great Recession was not notably different from other periods. Other studies of whether earnings decline after re-employment report very different conclusions.

Farber (2011) provides the most exhaustive study to date on the impact of unemployment on wages upon re-employment, and provides further empirical insights on the underlying causes of changes in wages. He also uses data from the Discouraged Worker Surveys (DWS) conducted from 1984 to 2010 to investigate the incidence and consequences of job loss from 1981 to 2009. He reports that rising unemployment, declines in full-time work, longer periods of unemployment, and reductions in earnings upon re-employment all appear to be associated with recessionary periods. He notes, however, that these indicators were noticeably higher during the 2007 through 2009 recessionary period. There is a cyclical pattern to declines in earnings with recessionary periods having the highest, and the 2007 through 2009 period in particular had the highest of all periods. Workers who became re-employed earned on average 17.5 percent less, and full-time workers earned 21.8 percent less. Two other findings from this study are worthy of note. First, shifts from full time to part time upon a job loss and subsequent re-employment accounts for a substantial portion of earnings loss of full-time workers. Finally, Farber reports that job losers not only experienced lost earnings upon re-employment, but they could also experience foregone earnings loss, that is, earnings increases they would have accrued had they not lost their job.

There are several features of the DWS of which readers should be aware in evaluating its suitability for studying wage changes at re-employment for job losers. First, it covers only job losses that are linked to decisions made by the employer, such as “slack work, plant closing, or position/shift abolished” (Farber, 2011, p. 5). Thus job quits and firings are not included. Second, the DWS covers only one involuntary job loss of an individual worker. There is the possibility that earnings measured after unemployment may not be for the first job at re-employment. Finally, it is not possible to consider whether the duration of unemployment affected the type of job and wage level at re-employment. For these reasons, special care should be taken to ensure compatibility.

Dickens et al. (2017) use the 1996, 2001, 2004, and 2008 panels of SIPP to study trends in earnings losses or gains at re-employment after a spell of unemployment. They point out that their results demonstrate the economic consequences of job loss among involuntary job losers during a period of economic boom (1996), slow recovery from the 2001 recession (2001 panel), a period of slow but normal economic growth (2004), and the period of the Great Recession (2008). First, they report that in all instances, workers who became re-employed after a period of unemployment were substantially likely to experience declines in monthly earnings of at least 25 percent between the job held before unemployment and the job held in the first month after re-employment. Workers who were unemployed for eight or more months experienced even greater wage declines, with those unemployed eight or more months experiencing earnings declines of 47 percent. Second, they found that the percentage change in earnings from job held at first wave to the mean monthly earnings in all the months following re-employment also showed losses but seem to indicate an upward shift toward pre-unemployment levels.

This study raises several important methodological issues that compromise the reliability of reported results. Specifically, the methodological decisions underlying the sample selection across panels, the measurement of key variables, and the analytical strategy are not transparent. It is for these reasons, and the fact that this analysis covers the same set of relationships using two of the SIPP panels this study uses, that an extended discussion of this study's methodology is warranted.

First, the timeframe for observing transitions, employment to unemployment and unemployment to re-employment are not identical across panels. The 1996 and 2004 waves are 48 months in length, 2001 is 36 months, and 2008 is 64 months in length. One result is that comparison across samples may not be reliable, because the period of exposure to change varies, whether from employment to unemployment or unemployment to employment. Exposure to a change in status increases with the length of the observation window. Thus, one is least likely to observe change in the 2001 panel, and more likely to observe change in the 2008 panel. In addition, calculating percentage differences in earnings between, say, the job held in the first wave, or the job held at re-employment, to the average monthly earnings to the end of each panel would vary as a direct consequence of the differing length of each individual panel.

Further, unless one focuses specifically on workers who held the same job for the remainder of the panel after re-employment, it is possible that spells of unemployment or nonparticipation could intervene before the last job held. But here again, the important point is that differences in the length of each panel compromises one's ability to make inferences based on cross-panel comparisons.

Second, SIPP provides detailed information on two jobs, but does not indicate which job is the primary job. Approximately 65 percent of respondents report only one job, which, in this instance, one can consider their primary jobs. The remaining respondents report two jobs, but one cannot assume which job is the primary job. SIPP staff recommend that researchers use weeks worked, wages, or both to identify the primary job. Unfortunately, the identification of the primary job has to be done for each wave, because the specific jobs designated as "job1" or "job2" can change, and so can the hours and wages associated with each job. Dickens et al. (2017) provide no indication that they were aware of this issue, particularly in observing changes in wages that involve changes in work intensity. The possibility of a worker switching between part-time and full-time status before or after a spell of unemployment is a distinct possibility. This type of switching would definitely affect observed wage differences, particularly when hours and weeks worked are not properly controlled. Thus, we are left with the question of whether changes in wages were driven by changes in work intensity or actual changes in the quality of the job held, such as changes in job authority or loss of seniority, autonomy, or changes in occupational status.

Finally, the authors indicate they use the weekly labor force codes to distinguish employment and unemployment. However, they also indicate a focus on workers who were involuntarily unemployed—persons laid-off or fired. It is not possible to identify the involuntary unemployed using the weekly labor force question as it only permits distinguishing between employment, unemployment, and nonparticipation. However, one can use wave-level questions to partially identify these individuals. Respondents are asked why they stop working for a specific employer during the reference period (wave), designated as ERSEND1; or why a respondent did not work during the reference period (wave), designated as ERSNOWRK. It is not clear which of these variables the authors used. The use of ERSEND1 requires the researcher to use information relevant to job 1, but the weekly data are not

directly relevant to job1. Further, if job2 is the primary job, ERSEND1 is irrelevant. ERSNOWRK seems relevant to respondents who did not have a job during the entire wave, and include employment-related reasons for not working that go beyond being laid-off or fired. In the end, one is left with “unemployed” as a general state without the ability to make finer distinctions.

CURRENT STUDY

The specific research question this paper seeks to answer is the extent to which workers are able to recover some or all of their occupational standings and earnings upon re-employment. Specifically, the current study extends previous work by linking changes in earnings after a period of nonemployment to changes in occupational attainment and other job related factors. Changes in earnings may be related to work intensity, such as changes in hours/weeks worked Farber (2011). Brand’s (2015) review of the literature on this issue reports that even at re-employment workers obtain jobs of low quality with respect to job authority, autonomy, and employer-specific benefits associated with tenure and high performance. These changes in job quality would surely have an impact on wages. Similarly, a change in occupation is also of particular interest because of its potential impact on wages, and career development and trajectory.

In seeking to assess the impact of re-employment on occupational attainment and wages, I focus on re-employment from both unemployment and nonparticipation. This approach differs from previous work, which focused only on unemployment. The sample used here covers individuals ages 18 to 64 years of age. Many of these individuals left the labor force temporarily, because of reasons related to health, family, schooling, discouragement, and retirement. As many as a third or more who indicate they left the labor force in one wave reappear as work force participants in subsequent waves. For these reasons, a comparison of the socioeconomic circumstances of the unemployed and nonparticipants at re-employment seems appropriate.

Data and Methods

I use the 2004 and 2008 panels of SIPP to further study changes in occupation and earnings after re-employment. The addition of the 2004 panel, covering a period of slow but stable economic growth,

provides the opportunity to evaluate the impact of the Great Recession on employment and the socioeconomic circumstances of individuals.

The SIPP contains extensive information on the activities of individuals based on their labor market position with respect to employment status and whether they own a business. Individuals were queried on both primary and secondary labor force activities, including whether they worked for an employer, owned a business, or worked for an employer and owned a business. The information provided for each of the employed/owner arrangements is organized around weeks, months, and waves as reference periods. Individuals are interviewed every four months about their activities in the previous four months. Some information is available only for a four-month (wave) period, other information is provided on a monthly basis, while other information is provided on a weekly basis. The information available for respondents covering selected reference periods includes whether the person experienced disruptions in employment (caused by lay-offs, quits, slow-downs), and nonparticipation; usual hours worked, hourly or monthly wages/salary, various forms of compensation such as unemployment; and changes in employment arrangement, such as adding/losing a job, adding/losing a business, and shifts between working for an employer and owning a business.

This analysis focuses only on individuals who work for an employer in a job designated as the primary job. Individuals who own businesses are excluded from the analysis. Respondents are asked to provide detailed information for up to two jobs. The SIPP does not identify which job is primary if more than one job is reported. Since two-thirds of respondents report having only one job during a wave, this becomes the primary job for these respondents. Primary job identification for respondents with two jobs can be operationally determined by using information on hours worked or wages earned. For the purposes of this study, the job in which the respondent worked the most hours is designated as “primary job.”

A weekly labor force classification is used to identify and track monthly changes in labor force status with respect to whether respondents are “employed,” “unemployed,” or “not in the labor force.” No effort is made to track weekly changes in labor force status because all other information relevant for this analysis is available only for months and waves. Thus, labor force transitions are constructed on a

monthly basis using the third week of each month as the point of reference. In the case of the 2008 panel, only the first 48 months of data are used in order that the two panels share a common observation window. It is important to establish a frame of reference in which respondents in each panel share a common observation period with respect to exposure to the risk of change in status.

The primary outcome measures used in this analysis include weekly earnings and two indicators of occupational attainment. The SIPP panels report monthly earnings for the respondent's main job, and usual hours work per week. This information is used to construct an average hourly wage measure. The occupational status measures used were developed by Hauser and Warren (1997), and later updated by Hout et al. (2015) using codes for 2010 that include additional occupations. Occupational education captures occupational returns to education, while occupational earnings captures earnings returns to occupational status. These measures capture, respectively, educational input to occupation, and earnings output from occupation, two of the most important components of socioeconomic attainment.

Efforts to quantify occupational standing have a long tradition in sociology, which began with Otis D. Duncan's, "A Socioeconomic Index for All Occupations" (1961). Duncan, and other researchers who subsequently followed him, recognized that the prestige valuation of an occupation by community members was substantially determined by the level of educational attainment associated with an occupation, and the monetary rewards derived from an occupation. These ideas led to the development of several approaches to operationalizing a socioeconomic index score that best represents the influences of prestige, education, and income. The Hauser-Warren Socioeconomic Index (HWSEI) is one of the most recent efforts in this regard (Hauser and Warren, 1997), and can be defined as the weighted sum of occupational education (occupational returns to education) and occupational earnings (earnings returns to occupation). These indicators are operationalized as follows. "Occupational education" is defined as "the percentage of people in the respondent's occupational category who had completed one or more years of college." "Occupational income" is defined as "the percentage of persons in occupations having lower standardized median earnings than the respondent's occupation" (see Hauser and Warren, 1997). Hauser and Warren also suggested that it would be appropriate to treat the measures as distinct variables in

empirical analyses in part because their individual relationship with other variables is not always the same.¹

This paper does not exclusively rely on gross tabulations comparing occupational and earnings attainment of workers during an initial period of employment to their attainment levels after a period of nonemployment. Also included are the results from multivariate analyses. Multivariate analyses are performed for two principal reasons. First, an effort is made to assess whether changes in occupational status and wages were sensitive to changes in other factors, such as the design features of the SIPP, characteristics of the job—such as full time/part time, class of worker, duration in nonemployment; and changes in occupational status. In other words, the interest is not just whether occupational status and wages changed, but also whether the changes are associated with the factors previously mentioned. Second, in tracking changes in labor force status over time using spells, it is important to control for unmeasured influences. This is accomplished by estimating fixed effects models because labor force spells are not independent of each other as they originate from a common source—the individual. In addition, as the number of spells per individual increases, it becomes very difficult to identify the origin of the spell.

The primary samples include 79,061 respondents from the 2004 panel and 78,327 respondents from the 2008 panel who were ever 18 to 64 years of age and who remained in each panel for at least 12 continuous months. Table 1 presents the weighted percentage distribution of the United States population, ages 18 to 64, by labor force status derived from the 2004 and 2008 SIPP panels. Overall, 71 percent of individuals in each panel experienced no change in labor force status during the 48-month observation period. For the 2004 panel, the 71 percent includes 68.1 percent with a job, 0.14 percent unemployed, and 31.7 percent not in the labor force. For the 2008 panel, the breakdown includes 66.01 percent with a job, 0.80 percent unemployed, and 33.19 percent not in the labor force. Unemployment is the least stable

¹Examples of the use of the two SEI components can be found in Liu and Grusky (2013); Weeden and Grusky (2005); and Wilson (2018).

Table 1. Percentage Distribution of Labor Force Spells by Labor Force Status for the 2004 and 2008 SIPP Panels

Number of Spells	Employed	Unemployed	Not in Labor Force	Total	
				Row	Column
2004 Panel					
No Transitions	68.13%	0.14%	31.73%	100%	71.82%
1–4 Transitions	58.43	8.58	32.99	100%	27.34
5+ Transitions	60.21	15.47	24.32	100%	0.84
Total Workers	65.41	2.57	32.02		2.457E8
					100%
2008 Panel					
No Transitions	66.01%	0.80%	33.19%	100%	71.43%
1–4 Transitions	53.38	17.21	29.41	100%	27.97
5+ Transitions	52.09	21.26	26.65	100%	0.67
Total Workers	62.39	5.52	32.09		2.552E8
					100%

Note: Sample only include respondents who participated in a SIPP panel for twelve continuous months.

category with less than one percent of respondents remaining in that category throughout the 48-month period. Two percentage points separate the employed and nonparticipant categories; where the 2004 have more employed and 2008 have more nonparticipants. However, in the case of individuals with jobs, it is important to note that being employed continuously does not mean that all these workers remained in the same job throughout the observation period. Job changes within or between firms could have occurred, involving changes in occupational title, job responsibilities, and changes in compensation packages. This analysis focuses only on month-to-month changes in labor force status. Thus, worker mobility absent a disruption in labor force status is not studied.

That the percentage of individuals who were employed and nonparticipants throughout the 48-month period appears stable, this should not be interpreted to mean that the Great Recession had no effect on changes in employment and unemployment. A comparison of the percentage distribution across labor force status for the 1–4 and 5+ labor force transition categories indicate that during the Great Recession the number of spells ending in employment were less in 2008 than in 2004, and the number of spells ending in unemployment were greater in 2008. Thus the Great Recession altered the ratio of employment to unemployment transitions; that is, transitions ending in unemployment became more numerous in the

2008 panel than the 2004 panel. This analysis focuses on only the 27 percent of respondents who experienced one to four labor force transition (see Table 1). By the fourth transition, all respondents had either switched to re-employment or remained out of the labor force. Respondents with five or more transitions represent fewer than one percent of the sample.

Tables 2 and 3 report the socioeconomic standings of workers at first wave employment and re-employment after experiencing a spell of unemployment or nonparticipation. Labor force nonparticipants are included in the discussion because a substantial number of these individuals will eventually return to the labor force after a temporary absence due to family, health, schooling, retirement, and/or discouragement. Individuals in the discouraged category are of particular interest, because most have had no success in finding work up to the time of the surveys. Unfortunately, the use of the weekly labor force status variable does not allow for the identification of discouraged workers as a distinct category. In addition, retirement for many workers is not permanent as approximately 50 percent of respondents who indicate they were retiring eventually reentered the work force in a subsequent wave of each panel, because of insufficient resources to maintain a standard of living or to pursue a different career opportunity.

Table 2 reports the status of workers who became re-employed after a spell of unemployment. The occupational status of workers in the 2004 panel remains stable, while hourly wages increased by 3 percent. By contrast, all of the socioeconomic indicators for the 2008 panel declined. Occupational returns to education decline 3 percent, while earnings return to occupational attainment declined 7 percent. The decline in hourly wages was more substantial at 12 percent. This value is less than a third of that reported by Dickens et al. (2017). A key question that will be addressed in the next section is whether the decline in hourly wages is associated with the declines in earnings returns to occupation.

Table 2. Change in Status between Wave One and Re-Employment After a Spell of Unemployment

Variable	At Wave One (1)	At Re-Employment (2)	Ratio (2)/(1)
2004			
Occupational Returns to Education	53.14%	52.76%	0.99
Earnings Returns to Occupation	38.01	37.64	0.99
Average Hourly Wages	\$13.67	\$14.14	1.03
2008			
Occupational Returns to Education	52.44%	51.03	0.97
Earnings Returns to Occupation	39.69	36.98	0.93
Average Hourly Wages	\$18.78	\$16.46	0.88

Source: 2004 and 2008 SIPP panels.

Table 3 reports values for the indicators when re-employment was preceded by nonparticipation. For occupational status, the results are similar to those reported for re-employment after unemployment, but the result for hourly wages increased from 3 percent to 11 percent in 2004. The 2008 results also show a 3 percent increase for occupational returns to education, but declines of 3 percent for earnings returns to occupational attainment, and a 6 percent decline in hourly earnings. Apparently some nonparticipants encounter fewer barriers to securing a job after re-entry. This is understandable since many left the labor force for reasons not related to job performance or slack labor conditions. Even so, it is clear that hourly wages also declined for nonparticipants in the Great Recession panel, but less than half that reported for the unemployed during the same period.

Table 3. Change in Status between Wave One and Re-Employment After a Spell of Non-Participation

Variable	At Wave One (1)	At Re-Employment (2)	Ratio (2)/(1)
2004			
Occupational Returns to Education	56.16%	56.08%	0.99
Earnings Returns to Occupation	37.70	37.47	0.99
Average Hourly Wages	\$13.61	\$15.06	1.11
2008			
Occupational Returns to Education	56.32%	58.28%	1.03
Earnings Returns to Occupation	37.86	36.64	0.97
Average Hourly Wages	\$18.13	\$17.12	0.94

Source: 2004 and 2008 SIPP panels.

The multivariate analysis provides a more rigorous evaluation of the effects of spells of nonemployment on changes in occupational status and earnings. Proposed analyses seek to evaluate whether (1) occupational status and earnings experienced net declines after a period of nonemployment (unemployment or nonparticipation); (2) whether the net declines were greater during the period of the Great Recession; and (3) whether net changes in occupational status and earnings are additionally affected by duration of nonemployment spells, switching between full and part time, and between public and private sector employment. Unfortunately, the SIPP surveys do not provide information in the main interview schedule on job authority, autonomy, seniority, or establishment-specific criteria that affect earnings, and thus their effects cannot be measured directly.

The multivariate analysis estimates a fixed effects covariate model of the following form:

$$\begin{aligned}
 \text{Log}(\text{STATUS}_{T+n}) &= \alpha_i + \beta_i \text{STATUS}_t \\
 &+ \beta_i \text{PANEL} + \sum_j^k \beta_i \text{LABOR}_j \\
 &+ \sum_l^m \beta_i \text{DESOC}_l \\
 &+ \sum_n^p \beta_i \text{PANEL}(x)Z_n + \sigma
 \end{aligned} \tag{1}$$

Where Log STATUS (T+N) represents Earning Returns to occupational Attainment and Average Hourly Wages at re-employment; STATUS(T) the lagged value of the dependent variables; Panel is one for the 2008 SIPP Panel; LABOR include a set of labor force characteristics, DESOC include a set of demographic and social characteristics of respondents; and the vector Z includes terms for the interactional effects of independent variables with panel year (2008) (see below).

The construction of the data files requires further explanation. Two subsamples are employed in the analysis. One sample included match pairs of individuals who became unemployed after the first wave of the 2004 or 2008 panels and subsequently became re-employed. The second sample included match

pairs of individuals who became nonparticipants after the first wave of the 2004 or 2008 panels and subsequently became re-employed. All relevant variables included are specific to each sample. For both sub-samples, the dependent variables include earnings return to occupation and average hourly earnings at re-employment ($t + n$). Hourly wages are expressed in 2012 dollars. The explanatory variables of spell duration, change in full-time status, and change in public sector employment, changes in occupational returns to education, and changes in earnings returns to occupation are not fixed at one point in time. The explanatory variables included are fixed (t) and include self-report of labor force status, change at seam (employment status changed at the boundary of two waves [seam]), become employed after unemployment, becoming employed after nonparticipation, age, education, sex, citizenship, nativity, and change residence. A more precise definition of all variables is reported in Table 4. Several variables require further comment. Self-report and change in labor force status at the junction of two waves are included to partially control for design effects of the SIPP. It is assumed that respondents are able to give more accurate information on their activities. Changes at the seam capture recall errors related to the accuracy of the timing of changes in labor force status. Self-report and seam change are measured at the time a transition occurred. The variables “employed after unemployment” and “employed after nonparticipation” acknowledges the fact that a respondent may initially become unemployed or a nonparticipant, but change labor force status, say from unemployed to nonparticipant or from nonparticipant to unemployed, before becoming re-employed. The duration of spell variable reflects the entire interval between an employment disruption and re-employment.

Table 4. Definition of Variables Included in Multivariate Analyses

Behrearn24	Average hourly earnings in the 4th month of Wave 1 for respondents who subsequently became unemployed.
Behrearn26	Average hourly earnings in the 4th month of Wave 1 for respondents who subsequently became labor force nonparticipants.
Beincome24	Occupational returns to education in the 4th month of Wave 1 for respondents who subsequently became unemployed.
Beincome26	Occupational returns to education in the 4th month of Wave 1 for respondents who subsequently became nonparticipants.
Occupational returns to education	Defined as “the percentage of individuals in the respondent’s occupational category who had completed one or more years of college.”
Earnings returns to occupational attainment	Defined as “the percentage of persons in occupations having lower standardized median earnings than the respondent’s occupation”
Rincome1	Ratio of earnings returns to occupational attainment during the 4th month of Wave 1 to that achieved in the first job obtained subsequent to a spell of unemployment.
Rincome3	Ratio of earnings returns to occupational attainment during the 4th month of Wave 1 to that achieved in the first job obtained subsequent to a spell of nonparticipation.
Reducat1	Ratio of occupational returns to educational attainment during the 4th month of Wave 1 to that achieved in the first job obtained subsequent to a spell of unemployment.
Reducat3	Ratio of occupational returns to educational attainment during the 4th month of Wave 1 to that achieved in the first job obtained subsequent to a spell of nonparticipation.
Panel year	Assigned a value of one if panel year is 2008, and zero if panel year is 2004.
Spell duration	Length of time (in months) that a respondent spent unemployed or not in the labor force.
Spell duration of 8+ months	Assigned a value of one if respondent’s spell of unemployment or nonemployment is greater than seven months.
Self-report	Assigned a value of one if the respondent self-reported information on her/his activities
Changed occurred at the intersection of waves (Seam)	Assigned a value of one if a labor force transition occurred at the juncture of two waves.
Change in full-time status	Is a class-level variable that defines whether a respondent (1) Remained full time (omitted category), (2) Switched from full to part time (3) Remained part time (4) Switched from part to full time.
Change in public employment	Is a class level variable that defines whether a respondent (1) Remained employed in the public sector (the omitted category), (2) Switched from public to private sector (3) Switched from private to public sector (4) Remained employed in the private sector.
Employed after nonparticipation (Trans1)	Assigned a value of one if respondent became employed from nonparticipation after having previously been unemployed.
Employed after unemployment (Trans2)	Assigned a value of one if respondent became employed from unemployment after having previously been a nonparticipant.
Demographic and social characteristics	Included in the model are ethnicity whites only omitted), male (female omitted), nativity, citizenship, residential mobility. All of these variables are self-explanatory, except ethnicity. The SIPP has adopted the convention of reporting only the ethnic identity of individuals who indicate they are members of only one race. Thus African Americans, Asians, American Indians, and Caucasians who self-identify as multi-racial are included in the “Others” category.

Appendix Tables A1 through A4 report results derived from estimating fixed effects covariance models for earnings returns to occupation under unemployment and nonparticipations, and average hourly wages also under unemployment and nonparticipation. The covariance structure of the estimation procedure allows for statistical tests of individual coefficients, and it also allows for statistical tests of differences between coefficients for 2004 versus 2008. The estimates reported in the appendix tables subsequently were transformed to derive estimated effects for each explanatory variable separately for the 2004 and the 2008 panels. The results are reported in Tables 5 through 8. The discussion first focuses on the effects of the labor force-related variables, followed by a discussion of variation of outcome measures by demographic and social characteristics.

Before results reported in Tables 5 through 8 are discussed, it would be beneficial to clarify the results as presented using Table 5 as an example. First, note that practically all of the coefficients reported for 2004 and 2008 in this table are identical. Recall that under a covariance model 2004 is the baseline, meaning that these coefficients represent the “main effects” of individual variables. On the other hand, the coefficients for 2008 are the products of the main effects (2004) times a dummy variable representing the 2008 panel (coded one). If the coefficients for 2008 are not statistically significant from the coefficients for the baseline (2004), then the coefficients for 2008 are regarded as being identical to those for 2004. If the interaction coefficient for the 2008 panel is statistically significant, then that coefficient is added to the 2004 baseline coefficient whether or not the latter is statistically significant.

Table 5. Factors Associated with Changes in Earnings Returns to Occupational Status Before and After a Period of Unemployment: Fix Effects Model Covariate Model

Variable	2004	2008
Earnings Return Occupation at t	2.9146* [@]	2.9146* [@]
Earnings Return Occupation at t + n	2.9025*	2.9025*
Self-Report	-0.0349	-0.0349
Spell Duration	0.0124	0.0124
From Nonparticipation	-0.0097	-0.0097
Change Public Employment		
Public Employment Not reported	NA	NA
Public to Private	-0.2396*	-0.2396*
Private to Public	-0.1562	-0.1562
Private to Private	-0.1802*	-0.1802*
Public to Public	Omitted	Omitted
Occupation Return Education	0.3788*	0.3788*
Change at Seam	0.0017	0.0017
Panel Year (2008)	NA	-0.0552
Change Full-Time Employment		
Full to Part	-0.1037	-0.1037
Part to Part	-0.1814*	-0.1814*
Part to Full	0.1040	0.1040
Full to Full	Omitted	Omitted
Spell Duration 8+Months	-0.0110	-0.0110
Age 18–24	-0.0267	-0.0267
Age 25–34	0.0872	0.0872
Age 35–44	0.0768	0.0768
Age 45–54	0.0353	0.0353
Age 55–64	Omitted	Omitted
Male	0.0888*	0.0888*
Less High School	-0.5102*	-0.5102*
High School	-0.3358*	-0.3358*
College 1–4 Years	-0.2235*	-0.2235*
BA/BS Degree	-0.0120	-0.0120
Advanced Degree	Omitted	Omitted
Citizen	0.0281	0.0281
Change Residence Panel	0.0483	0.0483
Native Born	0.0553	0.0553
African American Only	-0.0708	-0.0708
Hispanic	-0.0536	-0.0537
Asian Only	-0.0391	-0.0391
Others	-0.1295	-0.1295
White Only	Omitted	Omitted

Source: 2004 and 2008 SIPP panels: Appendix Table A1.

Symbols: *coefficient significant at .05 or greater; [@]difference between coefficients for “before unemployment” and “at re-employment” significant at .05 or greater; #difference between coefficients for 2004 and 2008 is significant at the .05 level or greater.

Labor Force Characteristics

Table 5 presents the effects of explanatory variables on earnings returns to occupation for the 2004 and 2008 panels. Overall the results indicate that, controlling for all relevant factors, earnings returns to occupation decline by about 2.3 percent at re-employment after a spell of unemployment for both time periods. Changes in full-time status and public employment also resulted in declines in earnings returns to occupation if the shift was to part-time or to private sector employment in 2008. Duration of an unemployment spell had no effect on earning returns, but changes in occupational returns to education had a strong positive effect.

Table 6 reports factors associated with changes in average hourly earnings at re-employment after a spell of unemployment. There is little or no difference in average hourly wages between before and after unemployment. The most notable difference is that between the 2004 and 2008 panels. The coefficient for panel year is statistically significant, and when added to the coefficients for average weekly earnings before and after unemployment the earnings for workers in the 2008 panel are approximately 81 percent less than the hourly earnings of workers in the 2004 panel, net of the influence of other relevant factors. Additionally, workers who maintain full-time or part-time status, or changed from full time to part time, experienced no further declines in hourly earnings. However, workers who shifted to full time from part time experienced an extraordinarily large decline in hourly wages. Public service workers who remained employed in that sector or who switched to that sector from the private sector experienced no further declines in hourly wages, whereas workers in the private sector or who switched from that sector experienced further declines in hourly earnings.

Table 6. Factors Associated with Changes in Average Hourly Earnings Before and After a Period of Unemployment: Fix Effects Model Covariate Model

Variable	2004	2008
Average Weekly Earnings @ t	3.2425* [@]	-2.5882* [@] #
Average Weekly Earnings @ t + n	3.2330*	-2.6185*#
Self-Report	-0.2717*	2.6158*#
Spell Duration	-0.0001	0.2120#
From Nonparticipation	-0.0382	0.6825#
Change Public Employment		
Public Employment not reported	NA	NA
Public to Private	-0.1281	1.0430#
Private to Public	-0.2784	-1.3082#
Private to Private	-0.1976	-1.9796#
Public to Public	Omitted	Omitted
Change Earnings Return Occupation	0.0267	-0.4385#
Change at Seam	0.0778	0.0778
Panel Year (2008)	Omitted	-5.8515*
Change Full-Time Employment		
Full to Part	-0.0228	.9856#
Part to Part	-0.3207	2.4020#
Part to Full	-0.0037	-57.0884#
Full to Full	Omitted	Omitted
Spell Duration 8+Mo	-0.0039	-1.0388#
Age 18–24	0.0361	0.0361
Age 25–34	0.0212	2.0804#
Age 35–44	0.1335	2.4152#
Age 45–54	-0.0504	-0.0504
Age 55–64	Omitted	Omitted
Male	0.1886	0.1886
Less High School	-0.7265*	-0.7265*
High School	-0.5943*	-0.5943*
College 1–4 Years	-0.4901*	-0.4901*
BA/BS Degree	-0.0715	-1.4099#
Advanced Degree	Omitted	Omitted
Citizen	0.3348	0.3348
Change Residence Panel	-0.0149	1.5824#
Native Born	-0.4526*	-1.8625*#
African American Only	-0.1717	-1.8883#
Hispanic	-0.1639	-0.1639
Asian Only	0.0400	-6.9891#
Others	-0.3099	-0.3099
White Only	Omitted	Omitted

Source: 2004 and 2008 SIPP panels: Appendix Table A2.

Symbols: *coefficient significant at .05 or greater; [@]difference between coefficients for “before unemployment” and “at re-employment” significant at .05 or greater; #difference between coefficients for 2004 and 2008 is significant at the .05 level or greater.

Previous works on changes in earnings after a period of nonemployment have focused exclusively on re-employment after a period of unemployment, ignoring the status of workers who became nonparticipants. As previously noted, many of these individuals eventually return to the labor force as unemployed or employed. Many of these individuals withdraw from employment due to changes in individual and family circumstances, such as illness, changes in non-work-related responsibilities, schooling, and retirement from a current job. Others may have exited employment sometime in the past, became discouraged and were no longer actively looking for work at the time of the survey. As with the unemployed, it would be of interest to know their occupational and earnings status at re-employment. Because a substantial number of these individuals voluntarily withdraw from the labor market, one would not expect their occupational status or earnings to be as adversely affected as would be the case for the unemployed.

Table 7 reports factors associated with changes in earnings returns to occupation for the 2004 and 2008 panels. For 2004, withdrawal from the labor force had no effect on earning returns to occupation upon a resumption of work. For 2008, however, this is not the case as earning returns increased 16 percent at re-employment. The difference between the panel years is limited to earning returns before nonparticipation occurred. Full-time status is the only other factor that affected earnings returns. Remaining full time or a shift to full time increased earnings returns, whereas remaining part time or a shift to part time substantially lowers earnings returns to occupation. On the positive side, changes in occupational returns to education and duration of a spell lasting eight or more months increased earnings returns to occupation. Why this is so is not clear; these findings might possibly be associated with non-work-related reasons for leaving the labor force initially.

Table 7. Factors Associated with Changes in Earnings Returns to Occupational Status Before and After a Period of Nonparticipation: Fix Effects Model Covariate Model

Variable	2004	2008
Earnings Return Occupation at t	2.8832* [@]	2.5959* ^{@#}
Earnings Return Occupation at t + n	2.8729*	2.8729*
Self-Report	-0.0158	-0.0158
Spell Duration	-0.0012	-0.0012
From Unemployment	-0.0470	-0.0470
Change Public Employment		
Public Employment Not Report	0.2764	0.2764
Public to Private	0.1418	0.1418
Private to Public	0.2015	0.2015
Private to Private	0.1465	0.1465
Public to Public	Omitted	Omitted
Change Occupational Return Education	0.2225*	0.2253* [#]
Change at Seam	0.0085	0.0085
Panel Year 2008	Omitted	0.3065
Change in Full-Time Employment		
Full to Part	-0.2559*	-0.2559*
Part to Part	-0.1237*	-0.1237*
Part to Full	0.0844	0.0844
Full to Full	Omitted	Omitted
Spell Duration 8+Mos	0.0104	0.1943 [#]
Age 18–24	-0.1900*	-0.1900*
Age 25–34	-0.0133	-0.0133
Age 35–44	-0.0478	-0.0478
Age 45–54	-0.0369	-0.0369
Age 55–64	Omitted	Omitted
Male	0.0342	0.0342
Less High School	-0.4430*	-0.4430*
High School	-0.3833*	-0.3833*
College 1–4 Years	-0.2769*	-0.2769*
BA/BS Degree	-0.0444	-0.0444
Advanced Degree	Omitted	Omitted
Citizen	0.0409	0.0409
Change Residence Panel	-0.0114	0.0114
Native Born	0.0625	0.0625
African American Only	0.0253	0.0253
Hispanic	-0.0110	-0.0110
Asian Only	0.0230	0.0230
Others	-0.0997	-0.0997
White Only	Omitted	Omitted

Source: 2004 and 2008 SIPP panels: Appendix Table A3.

Symbols: *coefficient significant at .05 or greater; [@]difference between coefficients for “before unemployment” and “at re-employment” significant at .05 or greater; [#]difference between coefficients for 2004 and 2008 is significant at the .05 level or greater.

Table 8 reports factors associated with changes in average hourly earnings for respondents who were initially nonparticipants after being employed. Average hourly earnings changed one percent or less at re-employment, and there are no differences in average hourly earnings between the 2004 and 2008 panel. The duration of a spell of nonparticipation of less than eight months is positively related to changes in hourly wages, but is strongly negatively related to spells that are eight months or more in duration in the 2008 panel. A respondent who initially exited to nonparticipation, but shifted to unemployment before becoming re-employed earned higher hourly wages in the 2004 panel but substantially lower wages in the 2008 panel. Finally, individuals who were able to remain full-time or part-time workers before and after a period of nonparticipation did not experience wage declines. Switching between full time and part time resulted in a decline in wages.

Demographic and Social Characteristics

Tables 5 through 8 also include the association of demographic and social characteristics with earnings returns to occupation and average hourly earnings under unemployment and nonparticipation. The discussion will focus on the two dependent variables separately, beginning with earnings return to occupational status under both unemployment and nonparticipation. As is clearly indicated in Tables 5 and 7, “Years of Schooling Completed” is the only variable that is statistically significant. Workers with less than college completion experienced a decline in earnings returns to occupation, and the decline decreases with education. There are no differences by panel year. Men experienced an increase in earnings returns to occupation in 2004, but not in 2008. Ethnicity, citizenship, residential mobility, and nativity had no effect in either panel, indicating that their effects were no different than the average.

Table 8. Factors Associated with Changes in Average Hourly Earnings Before and After a Period of Nonparticipation: Fixed Effects Model Covariate Model

Variable	2004	2008
Average Weekly Earnings @ t	2.4279* [@]	2.4386* ^{@#}
Average Weekly Earnings @ t + n	2.4195*	2.4195*
Self-Report	-0.0243	0.1352#
Spell Duration	0.0579*	0.0579*
From Unemployment	0.1364*	-0.1717*#
Change Public Employment		
Public Employment Not Reported	0.4069	0.4069
Public to Private	0.4508	0.4508
Private to Public	0.1399	0.1399
Private to Private	-0.0552	-0.0552
Public to Public	Omitted	Omitted
Change Earnings Return Occupation	0.0302	0.0184
Change at Seam	0.1205*	0.1205*
Panel Year 2008	Omitted	-0.4082
Change Full-Time Employment		
Full to Part	0.1424*	-0.3634*#
Part to Part	-0.1755	-0.1755
Part to Full	-0.2213*	-0.2213*
Full to Full	Omitted	Omitted
Spell Duration 8+Mo	-0.0669	-0.2545#
Age 18–24	-0.2938*	0.1076*#
Age 25–34	-0.2351*	0.3456*#
Age 35–44	0.0216	0.2016
Age 45–54	0.0557	0.0557
Age 55–64	Omitted	Omitted
Male	-0.0689	0.1914#
Less High School	-0.4466*	-0.4466*
High School	-0.5309*	-0.5309*
College 1–4 Years	-0.4130*	-0.4130*
BA/BS Degree	-0.0178	-0.2346#
Advanced Degree	Omitted	
Citizen	-0.0870	-0.0870
Change Residence Panel	-0.0102	-0.0102
Native Born	0.2087	0.2087
African American Only	-0.1956*	-0.1956*
Hispanic	-0.2612*	-0.2612*
Asian Only	0.1753	0.1753
Others	-0.1399	-0.1399
White Only	Omitted	Omitted

Source: 2004 and 2008 SIPP panels: Appendix Table A4.

Symbols: *coefficient significant at .05 or greater; @difference between coefficients for “before unemployment” and “at re-employment” significant at .05 or greater; #difference between coefficients for 2004 and 2008 is significant at the .05 level or greater.

There is more variation in the association of the demographic and social characteristics on average hourly wages by year, whether from unemployment or nonparticipation. Level of education is the only variable in which the effects are consistent by year for both unemployment and nonparticipation. In fact the effects of education are similar to those reported for earnings returns in size and direction; except workers with BA/BS degrees also experienced declines in wages under nonparticipation. With respect to unemployment, workers aged 25 to 44 experienced increases in hourly earnings in the 2008 panel; under nonparticipation, 19- to 34-year-olds experienced declines in wages in the 2004 panel, but increases in earnings during the 2008 panel. African Americans and Asians experienced declines in earnings during the Great Recession. However, under nonparticipation, African Americans and Hispanics experienced declines in wages in both time periods. Finally, under unemployment a change in residence increased the likelihood of an increase in earnings during the Great Recession. However, being native born resulted in a decline in hourly wage in both time periods.

DISCUSSION

The fundamental questions the analysis presented in this paper sought to answer include (1) Do workers experience a decline in occupational status and/or earnings when they become re-employed after a period of nonemployment? And are the declines greater during a recessionary period? The descriptive results previously reported indicate declines did occur in recessionary and non-recessionary periods, with the declines greater during the former period. Results from the multivariate analyses provide further insight, indicating that declines in occupational status (earnings returns to occupation) and average hourly wages were conditional on the characteristics of workers. The net differences of occupational status and hourly wages before nonemployment and re-employment are less than 3 percent. Surprisingly, the small difference between average hourly wages before and after unemployment is completely overshadowed by the substantial difference between the 2004 and 2008 panels, as indicated by the coefficient for panel year (2008). When evaluated at the mean, the coefficient of (-5.8515) (see Table 6) for panel year (2008) implies a decline of 96 percent in wages from 2004.

The factors that appear to contribute mostly to declining occupational status and hourly wages include full-time status, public sector employment, educational attainment, age, and ethnic status. The effects of these variables, in size and direction, are not constant across the dependent variables. Education and full-time status are the only variables that negatively affect occupational status and wages whether workers become re-employed from unemployment or nonparticipation.

With regard to hourly wages, two other variables require comment. The results for unemployment indicate that workers who were initially unemployed but entered re-employment through nonparticipation experienced increased wages upon reentry. Some of these workers were likely discouraged workers re-entering the labor force. The other variable is included in the wage equation for nonparticipation, where workers who were initially nonparticipants but became re-employed after a spell of unemployment were likely to experience an increase in wages in the 2004 panel, and a decrease in wages in the 2008 panel.

The result from the multivariate analysis does not provide an unambiguous answer to the questions posed earlier, namely, Did workers experience declines in occupational status and hourly earnings upon reemployment? In order to provide a more precise answer to this question, I rely on predicted values for occupational status and hourly wages derived from the estimation of equation (1). The predicted values are based on the values of variables with coefficients that achieved statistical significance at the .05 level or greater. Table 9 compares the occupational status and hourly wages of workers employed during the first wave of the SIPP panels with the predicted values of these variables representing their status at re-employment.

Table 9. Summary Estimates of Earnings Returns to Occupation and Average Weekly Wages: Median Values

Source	2004	2008
Unemployment		
Earnings Return Occupation		
At Wave 1 (T)	38.014	39.674
At Reemployment (T+N)	38.181	37.383
Ratio ((t+n)/(t))*100	100.4	94.23
Average Hourly Wage		
At Wave 1 (T)	13.738	18.793
At Reemployment (T+N)	14.021	4.614
Ratio ((t+n)/(t))*100	102.1	24.6
Nonparticipation		
Earnings Return Occupation		
At Wave 1 (T)	37.697	37.797
At Reemployment (T+N)	38.042	39.102
Ratio ((t+n)/(t))*100	100.9	103.5
Average Hourly Wage		
At Wave 1 (T)	13.631	18.219
At Reemployment (T+N)	14.792	15.026
Ratio ((t+n)/(t))*100	108.5	82.5

Source: 2004, 2008 SIPP, Appendix Tables A1–A4. Average Hourly Wages are expressed in 2012 dollars. Estimates for (t + n) are predicted values derived from the estimation of equation (1), the effects of variables that achieved statistical significance at least at the $p > .05$ level.

It is clear from Table 9 that earnings returns to occupation or hourly wages did not decline after workers experienced a spell of nonemployment, whether from unemployment or nonparticipation, during the period covered by the 2004 panel. The results for the period covered by the 2008 panel are very different. First, earnings return to occupation experienced a 6 percent decline if workers became re-employed after being unemployed. More significant is the fact that hourly wages declined 75 percent and 18 percent, respectively, if re-employment occurred after unemployment or nonparticipation. These values are much higher than the level indicated by the descriptive statistic (see Tables 2 and 3) and findings reported by previous studies.

IMPLICATIONS

Although an effort was made to expand the discussion of “loss” after a period of nonemployment to include wages lost after nonparticipation and loss of occupational status, the results do not provide clear unambiguous conclusions. All previous studies agree that on average workers lost after experiencing

a period of nonemployment. But whether a worker actually does experience “loss” depends on her/his labor market position and other relevant attributes. Since, to my knowledge, no other study has addressed the question of loss in a multivariate context, it is difficult to judge the substantive import of the findings. No effort was made to assess the effects of nonemployment beyond the initial period of re-employment. Thus, it is not possible to determine whether workers were able to recover occupational status or hourly earnings losses in subsequent months or years. A life cycle perspective covering a worker’s entire labor experience is perhaps the most appropriate way to determine the extent to which employment disruptions affect workers’ occupational and earnings attainment.

Previous work provide clear evidence that industry matters both with respect to exposure to nonemployment and the odds of reemployment (see Borbely, 2011). I decided not to include industry of work in the analysis, because one would have to construct a cross-classification of industries recognizing changes in industry affiliation before and after an employment disruption. An eight- to ten-category industry breakdown of major industries could easily become unmanageable. And a smaller grouping of major industries, say four to five, would be too crude to draw firm conclusions. There are other solutions that could be attempted but their discussion would be beyond the scope of this paper.

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APPENDIX TABLE 1A. Fixed Effects Covariance Model for Earnings Returns to Occupational Attainment Before and After a Spell of Unemployment

The GLIMMIX

Procedure

Model Information

	WORK.TOT
Data Set	AL
Response Variable	seiinc_24
Response Distribution	Gaussian
Link Function	Log
Variance Function	Default
Weight Variable	wpfinwgt1
Variance Matrix	Diagonal Restricted Maximum Likelihood
Estimation Technique	Likelihood
Degrees of Freedom Method	Residual

Class Level
Information

Class	Levels	Values
id	2986	not printed
tfull	4	2 3 4 6
tclass	4	2 3 4 5
Age1	5	2 3 4 5 6
educ	5	1 2 3 4 5

Number of Observations Read	56743
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Number of
Observations Used 2999

Fit Statistics

-2 Log Likelihood 26501.15
 AIC (smaller is better) 26623.15
 AICC (smaller is better) 26625.78
 BIC (smaller is better) 26988.29
 CAIC (smaller is better) 27049.29
 HQIC (smaller is better) 26754.63
 Pearson Chi-Square 4.47E+09
 Pearson Chi-Square / DF 1520038

Parameter Estimates

Effect	tfull	tclass	Age1	educ	Estimate	Error	DF	Standard t Value	Pr > |t|
Intercept					2.9025	0.1591	2939	18.24	<.0001
beseiinc24					0.01213	0.000805	2939	15.07	<.0001
self					-0.03495	0.03425	2939	-1.02	0.3076
spelldur					0.01248	0.0103	2939	1.21	0.2258
trans1					-0.00976	0.0378	2939	-0.26	0.7962
tclass		2			-0.2396	0.09253	2939	-2.59	0.0097
tclass		3			-0.1562	0.09257	2939	-1.69	0.0917
tclass		4			-0.1802	0.0645	2939	-2.79	0.0052

tclass	5	0	.	.	.	.
reducat1		0.3788	0.0221	2939	17.14	<.0001
seam		0.001768	0.03286	2939	0.05	0.9571
sippy		-0.05529	0.2197	2939	-0.25	0.8013
tfull	2	-0.1037	0.05772	2939	-1.8	0.0724
tfull	5	-0.1814	0.08304	2939	-2.18	0.029
tfull	4	0.104	0.05677	2939	1.83	0.0671
tfull	6	0	.	.	.	.
spelldur2		-0.01104	0.009736	2939	-1.13	0.257
Age1	2	-0.02679	0.07403	2939	-0.36	0.7174
Age1	3	0.0872	0.05714	2939	1.53	0.1271
Age1	4	0.07688	0.05878	2939	1.31	0.1911
Age1	5	0.03537	0.05911	2939	0.6	0.5497
Age1	6	0	.	.	.	.
sex		0.0888	0.03513	2939	2.53	0.0115
educ	1	-0.5102	0.1088	2939	-4.69	<.0001
educ	2	-0.3358	0.06614	2939	-5.08	<.0001
educ	3	-0.2235	0.05178	2939	-4.32	<.0001
educ	4	-0.01202	0.04987	2939	-0.24	0.8095
educ	5	0	.	.	.	.
citizen		0.02819	0.1024	2939	0.28	0.7831
mover		0.04837	0.07216	2939	0.67	0.5027
native		0.05533	0.07979	2939	0.69	0.4881
ethnic2		-0.07089	0.05136	2939	-1.38	0.1676
ethnic3		-0.05365	0.06604	2939	-0.81	0.4166
ethnic4		-0.03912	0.08164	2939	-0.48	0.6319
ethnic5		-0.1295	0.09618	2939	-1.35	0.1782
sippy*ethnic2		-0.03838	0.07868	2939	-0.49	0.6257
sippy*ethnic3		0.01085	0.08706	2939	0.12	0.9008
sippy*ethnic4		0.0931	0.1246	2939	0.75	0.4549
sippy*ethnic5		0.1783	0.1265	2939	1.41	0.1589
sippy*sex		-0.01768	0.04925	2939	-0.36	0.7196

sippy*educ		1	0.1331	0.1428	2939	0.93	0.3517
sippy*educ		2	0.05066	0.09119	2939	0.56	0.5786
sippy*educ		3	0.08702	0.07228	2939	1.2	0.2288
sippy*educ		4	-0.00277	0.06816	2939	-0.04	0.9676
sippy*educ		5	0	.	.	.	.
sippy*Age1		2	-0.1349	0.1041	2939	-1.3	0.1952
sippy*Age1		3	-0.127	0.07754	2939	-1.64	0.1016
sippy*Age1		4	-0.0469	0.07807	2939	-0.6	0.5481
sippy*Age1		5	-0.1114	0.07911	2939	-1.41	0.1592
sippy*Age1		6	0	.	.	.	.
sippy*mover			-0.1096	0.1006	2939	-1.09	0.2758
sippy*citizen			-0.00921	0.1325	2939	-0.07	0.9446
sippy*native			-0.01066	0.1022	2939	-0.1	0.917
trans1*sippy			-0.00762	0.05697	2939	-0.13	0.8936
sippy*tfull	2		-0.08483	0.07772	2939	-1.09	0.2752
sippy*tfull	3		0.02349	0.1098	2939	0.21	0.8306
sippy*tfull	4		0.01095	0.08349	2939	0.13	0.8957
sippy*tfull	6		0	.	.	.	.
beseiinc24*sippy			0.000916	0.001122	2939	0.82	0.4146
spelldur*sippy			-0.00975	0.0152	2939	-0.64	0.5211
seam*sippy			0.03657	0.04538	2939	0.81	0.4204
sippy*tclass		2	0.1551	0.1346	2939	1.15	0.2492
sippy*tclass		3	0.01142	0.1481	2939	0.08	0.9386
sippy*tclass		4	0.1685	0.1009	2939	1.67	0.0951
sippy*tclass		5	0	.	.	.	.
reducat1*sippy			-0.02284	0.02858	2939	-0.8	0.4241
sippy*spelldur2			0.01049	0.01439	2939	0.73	0.4663
self*sippy			0.0275	0.04712	2939	0.58	0.5595
Scale			3048650	.	.	.	.

**Type III Tests of
Fixed Effects**

Fixed Effect	Degree of Freedom	N	Chi-sq	p-value / Significance Level	
beseinc24	1	2939	227.13	<.000	1
self	1	2939	1.04	0.307	6
spelldur	1	2939	1.47	0.225	8
trans1	1	2939	0.07	0.796	2
tclass	3	2939	3.05	0.027	5
reducat1	1	2939	293.63	<.000	1
seam	1	2939	0	0.957	1
sippy	1	2939	0.01	0.933	9
tfull	3	2939	4.47	0.003	9
spelldur2	1	2939	1.29	0.257	0
Age1	4	2939	1.31	0.265	5
sex	1	2939	6.39	0.011	5
educ	4	2939	13.98	<.000	1
citizen	1	2939	0.08	0.783	1
mover	1	2939	0.45	0.502	7
native	1	2939	0.48	0.488	1
ethnic2	1	2939	1.91	0.167	6
ethnic3	1	2939	0.66	0.416	6
ethnic4	1	2939	0.23	0.631	9
ethnic5	1	2939	1.81	0.178	2
sippy*ethnic2	1	2939	0.24	0.625	7
sippy*ethnic3	1	2939	0.02	0.9	8
sippy*ethnic4	1	2939	0.56	0.454	9
sippy*ethnic5	1	2939	1.99	0.158	9
sippy*sex	1	2939	0.13	0.719	6
sippy*educ	4	2939	0.77	0.544	2
sippy*Age1	4	2939	1.05	0.378	4

sippy*r*mover	1	2939	1.19	0.275	8
sippy*r*citizen	1	2939	0	0.944	6
sippy*r*native	1	2939	0.01	0.917	0
trans1*sippy	1	2939	0.02	0.893	6
sippy*r*tfull	3	2939	0.45	0.715	8
beseiinc24*sippy	1	2939	0.67	0.414	6
spelldur*sippy	1	2939	0.41	0.521	1
seam*sippy	1	2939	0.65	0.42	4
sippy*r*tclass	3	2939	1.45	0.225	6
reducat1*sippy	1	2939	0.64	0.424	1
sippy*r*spelldur2	1	2939	0.53	0.466	3
self*sippy	1	2939	0.34	0.559	5

sippy=0

The MEANS Procedure

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
beseiinc24		38.0147406		1368	6	980342.74
seiinc_24		37.8262623	2.9655113	1368	6	980342.74
pseiinc_24		38.1811211	0.9434776	1368	6	980342.74
seincome_24	Linear Predictor	161.4553125	3.1967569	1368	6	980342.74
-----			-----	-----		-----

sippy=1

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----

beseiinc24		39.6743631				
		3	3.8313141	1631	8	122916.59
		37.0051521				
seiinc_24		3	0.9434776	1631	8	122916.59
		37.3828063				
pseiinc_24		3	2.837942	1631	8	122916.59
	Linear	141.2976543				
seincome_24	Predictor	9	4.6335971	1631	8	122916.59

APPENDIX TABLE 2A. Fixed Effects Covariance Model for Average Hourly Wages Before and After a Spell of Unemployment

The GLIMMIX
Procedure

Model Information

Data Set	WORK.TOT AL
Response Variable	hrearn_24
Response Distribution	Gaussian
Link Function	Log
Variance Function	Default
Weight Variable	wpfinwgt1
Variance Matrix	Diagonal Restricted Maximum
Estimation Technique	Likelihood
Degrees of Freedom	
Method	Residual

**Class Level
Information**

Class	Levels	Values
id	2986	not printed
tfull	4	2 3 4 6
tclass	4	2 3 4 5
Age1	5	2 3 4 5 6
educ	5	1 2 3 4 5

Number of Observations Read	56743
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Number of
Observations Used 2999

Fit Statistics

-2 Log Likelihood 27092.37
 AIC (smaller is better) 27214.37
 AICC (smaller is better) 27217.00
 BIC (smaller is better) 27579.50
 CAIC (smaller is better) 27640.50
 HQIC (smaller is better) 27345.84
 Pearson Chi-Square 4.69E+09
 Pearson Chi-Square / DF 1594904

The GLIMMIX
Procedure

Parameter Estimates

Effect	tfull	tclass	Age1	educ	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept					3.233	0.4633	2939	6.98	<.0001
behrearn24					0.009453	0.002222	2939	4.25	<.0001
self					-0.2717	0.1123	2939	-2.42	0.0156
spelldur					-0.00011	0.03457	2939	0	0.9975
trans1					-0.03821	0.1278	2939	-0.3	0.765
tclass		2			-0.1281	0.3067	2939	-0.42	0.6762
tclass		3			-0.2784	0.3491	2939	-0.8	0.4253
tclass		4			-0.1976	0.2298	2939	-0.86	0.3899

tclass	5		0	.	.	.	.
reducat1			0.0267	0.09807	2939	0.27	0.7854
seam			0.07782	0.1106	2939	0.7	0.4819
sippy			-5.8515	1.3171	2939	-4.44	<.0001
tfull	2		-0.02283	0.1836	2939	-0.12	0.901
tfull	3		-0.3207	0.2874	2939	-1.12	0.2646
tfull	4		-0.00376	0.1965	2939	-0.02	0.9847
tfull	6		0	.	.	.	.
spelldur2			-0.00391	0.03289	2939	-0.12	0.9054
Age1		2	0.03611	0.2382	2939	0.15	0.8795
Age1		3	0.02122	0.1935	2939	0.11	0.9127
Age1		4	0.1335	0.186	2939	0.72	0.473
Age1		5	-0.05035	0.1948	2939	-0.26	0.796
Age1		6	0	.	.	.	.
sex			0.1886	0.1194	2939	1.58	0.1143
educ		1	-0.7265	0.305	2939	-2.38	0.0173
educ		2	-0.5943	0.1924	2939	-3.09	0.002
educ		3	-0.4901	0.1668	2939	-2.94	0.0033
educ		4	-0.07152	0.1543	2939	-0.46	0.6431
educ		5	0	.	.	.	.
citizen			0.3348	0.2384	2939	1.4	0.1602
mover			-0.01485	0.2218	2939	-0.07	0.9466
native			-0.4526	0.2161	2939	-2.09	0.0363
ethnic2			-0.1717	0.1787	2939	-0.96	0.3367
ethnic3			-0.1639	0.2198	2939	-0.75	0.456
ethnic4			0.04003	0.2315	2939	0.17	0.8627
ethnic5			-0.3099	0.3412	2939	-0.91	0.3637
sippy*ethnic2			-1.7166	0.5124	2939	-3.35	0.0008
sippy*ethnic3			-0.854	0.5846	2939	-1.46	0.1442
sippy*ethnic4			-6.9491	0	2939	#NAME?	<.0001
sippy*ethnic5			-0.7735	0.7042	2939	-1.1	0.2721
sippy*sex			0.1675	0.2227	2939	0.75	0.4521

sippy*educ		1	-0.8887	0.9225	2939	-0.96	0.3355
sippy*educ		2	0.1276	0.3177	2939	0.4	0.688
sippy*educ		3	-0.2744	0.3063	2939	-0.9	0.3705
sippy*educ		4	-1.3384	0.4217	2939	-3.17	0.0015
sippy*educ		5	0	.	.	.	.
sippy*Age1	2		0.9744	0.894	2939	1.09	0.2758
sippy*Age1	3		3.0592	0.6908	2939	4.43	<.0001
sippy*Age1	4		2.2817	0.6135	2939	3.72	0.0002
sippy*Age1	5		0.5589	0.6505	2939	0.86	0.3903
sippy*Age1	6		0	.	.	.	.
sippy*mover			1.5824	0.7258	2939	2.18	0.0293
sippy*citizen			1.2598	0.7038	2939	1.79	0.0736
sippy*native			-1.2338	0.4142	2939	-2.98	0.0029
trans1*sippy			0.7217	0.2274	2939	3.17	0.0015
sippy*tfull	2		1.0064	0.2722	2939	3.7	0.0002
sippy*tfull	3		2.4277	0.3665	2939	6.62	<.0001
sippy*tfull	4		-57.9421	5.3756	2939	-10.78	<.0001
sippy*tfull	6		0	.	.	.	.
behrearn24*sippy			0.02079	0.003523	2939	5.9	<.0001
spelldur*sippy			0.212	0.05371	2939	3.95	<.0001
seam*sippy			0.01974	0.2048	2939	0.1	0.9232
sippy*tclass	2		0.2324	0.5493	2939	0.42	0.6722
sippy*tclass	3		-1.3298	0.578	2939	-2.3	0.0215
sippy*tclass	4		-1.802	0.3111	2939	-5.79	<.0001
sippy*tclass	5		0	.	.	.	.
reducat1*sippy			-1.0349	0.2908	2939	-3.56	0.0004
sippy*spelldur2			-0.4652	0.1366	2939	-3.4	0.0007
self*sippy			2.8875	0.3663	2939	7.88	<.0001
Scale			4197635	.	.	.	.

**Type III Tests of
Fixed Effects**

Fixed Effect	Degree of Freedom	N	Chi-sq	p-value / Significance Level
behrearn24	1	2939	18.09	<.000
self	1	2939	5.85	0.015
spelldur	1	2939	0	0.997
trans1	1	2939	0.09	0.765
tclass	3	2939	0.31	0.821
reducat1	1	2939	0.07	0.785
seam	1	2939	0.49	0.481
sippy	1	2939	99.05	<.000
tfull	3	2939	0.42	0.738
spelldur2	1	2939	0.01	0.905
Age1	4	2939	0.44	0.781
sex	1	2939	2.5	0.114
educ	4	2939	4.41	0.001
citizen	1	2939	1.97	0.16
mover	1	2939	0	0.946
native	1	2939	4.39	0.036
ethnic2	1	2939	0.92	0.336
ethnic3	1	2939	0.56	0.456
ethnic4	1	2939	0.03	0.862
ethnic5	1	2939	0.83	0.363
sippy*ethnic2	1	2939	11.22	0
sippy*ethnic3	1	2939	2.13	0.144
sippy*ethnic4	1	2939	Infy	<.000
sippy*ethnic5	1	2939	1.21	0.272
sippy*sex	1	2939	0.57	0.452
sippy*educ	4	2939	3.85	0.004
sippy*Age1	4	2939	13.32	<.000

sippy*r*mover	1	2939	4.75	0.029
sippy*r*citizen	1	2939	3.2	0.073
sippy*r*native	1	2939	8.88	0.002
trans1*sippy	1	2939	10.07	0.001
sippy*r*tfull	3	2939	42.91	<.000
behrearn24*sippy	1	2939	34.82	<.000
spelldur*sippy	1	2939	15.57	<.000
seam*sippy	1	2939	0.01	0.923
sippy*r*tclass	3	2939	16.28	<.000
reducat1*sippy	1	2939	12.67	0
sippy*r*spelldur2	1	2939	11.59	0
self*sippy	1	2939	62.15	<.000

The SAS System
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sippy=0

The MEANS Procedure

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
behrearn24		13.7380228		1368	69	80342.74
hrearn_24		14.2096190	0.8069451	1368	69	80342.74
phrearn24		14.0208005	0.9652683	1368	69	80342.74
phrearn_24	Linear Predictor	135.7853809	0.3968012	1368	69	80342.74
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sippy=1

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
behrearn24		18.7925749 14	0.38505	1631	81	22916.59
hrearn_24		16.4876352 12	0.0582927	1631	81	22916.59
phrearn24		4.6136666 0	0.4302967	1631	81	22916.59
phrearn_24	Linear Predictor	30.4357702 2	0.8413269	1631	81	22916.59
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APPENDIX Table 3A Fixed Effects Covariance Model of Earnings Returns to Occupational Attainment Before and After a Spell of Nonparticipation

The GLIMMIX
Procedure

Model Information

Data Set	WORK.TOT AL
Response Variable	seiinc_26
Response Distribution	Gaussian
Link Function	Log
Variance Function	Default
Weight Variable	wpfinwgt1
Variance Matrix	Diagonal
Estimation Technique	Restricted Maximum Likelihood
Degrees of Freedom Method	Residual

Class Level
Information

Class	Levels	Values
id	3328	not printed
tfull	4	2 3 4 6
tclass	5	0 2 3 4 5
Age1	5	2 3 4 5 6
educ	5	1 2 3 4 5

Number of Observations Read	56743
Number of Observations Used	3344

Fit Statistics

-2 Log Likelihood	29972.08
AIC (smaller is better)	30098.08
AICC (smaller is better)	30100.58
BIC (smaller is better)	30482.14
CAIC (smaller is better)	30545.14
HQIC (smaller is better)	30235.59
Pearson Chi-Square	5.27E+09
Pearson Chi-Square / DF	1606386

Parameter Estimates

Effet	tfull	tclass	Age1	educ	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept					2.8729	0.2733	3282	10.51	<.0001
beseiinc26					0.01132	0.000692	3282	16.37	<.0001
self					-0.01585	0.03008	3282	-0.53	0.5982
spellldur					-0.00121	0.009618	3282	-0.13	0.9

trans2			-0.04707	0.04085	3282	-1.15	0.2493
tclass	0		0.2764	0.249	3282	1.11	0.267
tclass	2		0.1418	0.3282	3282	0.43	0.6657
tclass	3		0.2015	0.3164	3282	0.64	0.5242
tclass	4		0.1465	0.2571	3282	0.57	0.5689
tclass	5		0	.	.	.	.
reducat3			0.2225	0.01296	3282	17.16	<.0001
seam			0.008477	0.03016	3282	0.28	0.7787
sippy			0.3065	0.3967	3282	0.77	0.4399
tfull	2		-0.2559	0.05736	3282	-4.46	<.0001
tfull	3		-0.1237	0.05567	3282	-2.22	0.0263
tfull	4		0.08435	0.04671	3282	1.81	0.071
tfull	6		0	.	.	.	.
spelldur2			0.01035	0.008845	3282	1.17	0.2421
Age1		2	-0.19	0.06193	3282	-3.07	0.0022
Age1		3	-0.01329	0.04697	3282	-0.28	0.7772
Age1		4	-0.04784	0.04959	3282	-0.96	0.3347
Age1		5	-0.03694	0.05169	3282	-0.71	0.4749
Age1		6	0	.	.	.	.
sex			0.03417	0.03016	3282	1.13	0.2573
educ		1	-0.443	0.09954	3282	-4.45	<.0001
educ		2	-0.3833	0.0593	3282	-6.46	<.0001
educ		3	-0.2769	0.04521	3282	-6.12	<.0001
educ		4	-0.04448	0.04143	3282	-1.07	0.2831
educ		5	0	.	.	.	.
citizen			0.04096	0.08412	3282	0.49	0.6264
mover			-0.01144	0.05868	3282	-0.19	0.8455
native			0.06247	0.0649	3282	0.96	0.3358
ethnic2			0.02536	0.04833	3282	0.52	0.5998
ethnic3			-0.011	0.05286	3282	-0.21	0.8352
ethnic4			0.02198	0.07133	3282	0.31	0.758
ethnic5			-0.09971	0.08984	3282	-1.11	0.2672

sippy*ethnic2			-0.00979	0.07707	3282	-0.13	0.899
sippy*ethnic3			-0.07125	0.08916	3282	-0.8	0.4243
sippy*ethnic4			0.0724	0.1042	3282	0.69	0.4873
sippy*ethnic5			0.1342	0.1469	3282	0.91	0.361
sippy*sex			-0.03881	0.0473	3282	-0.82	0.412
sippy*educ		1	-0.01248	0.1645	3282	-0.08	0.9395
sippy*educ		2	0.08994	0.09507	3282	0.95	0.3442
sippy*educ		3	0.05751	0.07007	3282	0.82	0.4119
sippy*educ		4	0.01437	0.06139	3282	0.23	0.8149
sippy*educ		5	0	.	.	.	.
sippy*Age1		2	0.0856	0.09461	3282	0.9	0.3656
sippy*Age1		3	-0.00703	0.07242	3282	-0.1	0.9227
sippy*Age1		4	0.01667	0.07728	3282	0.22	0.8293
sippy*Age1		5	0.003333	0.08005	3282	0.04	0.9668
sippy*Age1		6	0	.	.	.	.
sippy*mover			0.06011	0.09397	3282	0.64	0.5224
sippy*citizen			-0.07782	0.1326	3282	-0.59	0.5573
sippy*native			0.04561	0.09976	3282	0.46	0.6476
trans2*sippy			-0.0002	0.05817	3282	0	0.9973
sippy*tfull		2	0.06423	0.08049	3282	0.8	0.4249
sippy*tfull		3	0.01754	0.08605	3282	0.2	0.8385
sippy*tfull		4	-0.128	0.08208	3282	-1.56	0.1191
sippy*tfull		6	0	.	.	.	.
beseiinc26*sippy			0.002789	0.001134	3282	2.46	0.014
spelldur*sippy			-0.00859	0.01523	3282	-0.56	0.5728
seam*sippy			-0.0606	0.04722	3282	-1.28	0.1994
sippy*tclass		0	-0.6505	0.3466	3282	-1.88	0.0607
sippy*tclass		2	-0.7129	0.6054	3282	-1.18	0.239
sippy*tclass		3	-0.47	0.472	3282	-1	0.3195
sippy*tclass		4	-0.5025	0.3628	3282	-1.39	0.1661
sippy*tclass		5	0	.	.	.	.
reducat3*sippy			0.1839	0.02868	3282	6.41	<.0001

sippy*spelldur2	-0.00742	0.01405	3282	-0.53	0.5975
self*sippy	0.01125	0.04754	3282	0.24	0.8129
Scale	3565060	.	.	.	.

**Type III Tests of
Fixed Effects**

Fixed Effect	Degree of Freedom	N	Chi-sq	p-value / Significance Level	
beseiinc26	1	3282	267.82	<.000	1
self	1	3282	0.28	0.598	2
spelldur	1	3282	0.02	0.9	0
trans2	1	3282	1.33	0.249	3
tclass	4	3282	1.3	0.268	8
reducat3	1	3282	294.6	<.000	1
seam	1	3282	0.08	0.778	7
sippy	1	3282	0.33	0.563	5
tfull	3	3282	10.18	<.000	1
spelldur2	1	3282	1.37	0.242	1
Age1	4	3282	3.18	0.012	9
sex	1	3282	1.28	0.257	3
educ	4	3282	19	<.000	1
citizen	1	3282	0.24	0.626	4
mover	1	3282	0.04	0.845	5
native	1	3282	0.93	0.335	8
ethnic2	1	3282	0.28	0.599	8
ethnic3	1	3282	0.04	0.835	2
ethnic4	1	3282	0.09	0.758	0
ethnic5	1	3282	1.23	0.267	2
sippy*ethnic2	1	3282	0.02	0.899	0
sippy*ethnic3	1	3282	0.64	0.424	3

sippy*ethnic4	1	3282	0.48	0.487	3
sippy*ethnic5	1	3282	0.83	0.361	0
sippy*sex	1	3282	0.67	0.412	0
sippy*educ	4	3282	0.36	0.84	3
sippy*Age1	4	3282	0.35	0.846	1
sippy*mover	1	3282	0.41	0.522	4
sippy*citizen	1	3282	0.34	0.557	3
sippy*native	1	3282	0.21	0.647	6
trans2*sippy	1	3282	0	0.997	3
sippy*tfull	3	3282	1.25	0.29	9
beseiinc26*sippy	1	3282	6.04	0.014	0
spelldur*sippy	1	3282	0.32	0.572	8
seam*sippy	1	3282	1.65	0.199	4
sippy*tclass	4	3282	1.33	0.254	6
reducat3*sippy	1	3282	41.14	<.000	1
sippy*spelldur2	1	3282	0.28	0.597	5
self*sippy	1	3282	0.06	0.812	9

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sippy=0

The MEANS Procedure

Variable	Label	Mean	Median	N	Sum Wgts
-----		-----	-----	-----	-----
beseiinc26		37.6967628	0.9434776	2139 10	255452.88
seiinc_26		37.5626932	0.9434776	2139 10	255452.88

pseiinc_26		38.0415000				
		3	2.5613037	2139	10	255452.88
seincome_26	Linear Predictor	165.5944671				
		10	4.2291289	2139	10	255452.88
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sippy=1

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
beseiinc26		37.7972560				
		3	0.9434776	1205	6	443730.29
seiinc_26		38.6019176				
		3	0.9434776	1205	6	443730.29
pseiinc_26		39.1026888				
		3	2.1182399	1205	6	443730.29
seincome_26	Linear Predictor	168.0489425				
		10	2.9129235	1205	6	443730.29
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APPENDIX TABLE 4A. Fixed Effects Covariance Model for Average Hourly Wages Before and After a Spell of Nonparticipation

The GLIMMIX
Procedure

Model Information

Data Set	WORK.TOT AL
Response Variable	hrearn_26
Response Distribution	Gaussian
Link Function	Log
Variance Function	Default
Weight Variable	wpfinwgt1
Variance Matrix	Diagonal
Estimation Technique	Restricted Maximum Likelihood
Degrees of Freedom Method	Residual

Class Level
Information

Class	Levels	Values
id	3328	not printed
tfull	4	2 3 4 6
tclass	5	0 2 3 4 5
Age1	5	2 3 4 5 6
educ	5	1 2 3 4 5

Number of Observations Read	56743
Number of Observations Used	3344

Fit Statistics

-2 Log Likelihood	28560.15
AIC (smaller is better)	28686.15
AICC (smaller is better)	28688.65
BIC (smaller is better)	29070.21
CAIC (smaller is better)	29133.21
HQIC (smaller is better)	28823.66
Pearson Chi-Square	4.24E+09
Pearson Chi-Square / DF	1293250

Parameter Estimates

Effect	tfull	tclass	Age1	educ	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept					2.4195	0.6191	3282	3.91	<.0001
behrearn26					0.008465	0.00063	3282	13.43	<.0001
self					-0.02427	0.05344	3282	-0.45	0.6497
spelldur					0.05787	0.01364	3282	4.24	<.0001
trans2					0.1364	0.06074	3282	2.25	0.0248
tclass		0			0.4069	0.5965	3282	0.68	0.4952
tclass		2			0.4508	0.6892	3282	0.65	0.5131
tclass		3			0.1399	0.7337	3282	0.19	0.8488

tclass	4		-0.05522	0.6189	3282	-0.09	0.9289
tclass	5		0	.	.	.	.
reducat3			0.03017	0.04881	3282	0.62	0.5366
seam			0.1205	0.0529	3282	2.28	0.0227
sippy			-0.4082	1.0937	3282	-0.37	0.709
tfull	2		0.1424	0.07339	3282	1.94	0.0525
tfull	3		-0.1755	0.09699	3282	-1.81	0.0705
tfull	4		-0.2213	0.1048	3282	-2.11	0.0348
tfull	6		0	.	.	.	.
spelldur2			-0.06599	0.01309	3282	-5.04	<.0001
Age1		2	-0.2938	0.1084	3282	-2.71	0.0068
Age1		3	-0.2351	0.08978	3282	-2.62	0.0089
Age1		4	0.02163	0.08392	3282	0.26	0.7967
Age1		5	0.05574	0.08996	3282	0.62	0.5356
Age1		6	0	.	.	.	.
sex			-0.0689	0.05357	3282	-1.29	0.1984
educ		1	-0.4466	0.1484	3282	-3.01	0.0026
educ		2	-0.5309	0.0998	3282	-5.32	<.0001
educ		3	-0.413	0.08094	3282	-5.1	<.0001
educ		4	-0.01788	0.07633	3282	-0.23	0.8149
educ		5	0	.	.	.	.
citizen			-0.08706	0.1569	3282	-0.55	0.5789
mover			-0.01017	0.1231	3282	-0.08	0.9342
native			0.2087	0.1296	3282	1.61	0.1075
ethnic2			-0.1956	0.09208	3282	-2.12	0.0337
ethnic3			-0.2612	0.1126	3282	-2.32	0.0204
ethnic4			0.1753	0.1276	3282	1.37	0.1697
ethnic5			-0.1399	0.1836	3282	-0.76	0.446
sippy*ethnic2			0.0887	0.1354	3282	0.65	0.5126
sippy*ethnic3			-0.1151	0.1856	3282	-0.62	0.5353
sippy*ethnic4			0.2718	0.1642	3282	1.65	0.0981
sippy*ethnic5			0.009277	0.2936	3282	0.03	0.9748

sippy*sex			0.2603	0.08338	3282	3.12	0.0018
sippy*educ		1	-0.00687	0.2744	3282	-0.03	0.98
sippy*educ		2	0.05029	0.1434	3282	0.35	0.7258
sippy*educ		3	-0.08416	0.1206	3282	-0.7	0.4852
sippy*educ		4	-0.2346	0.1064	3282	-2.21	0.0275
sippy*educ		5	0	.	.	.	.
sippy*Age1		2	0.4014	0.1813	3282	2.21	0.0269
sippy*Age1		3	0.5802	0.1318	3282	4.4	<.0001
sippy*Age1		4	0.02557	0.1411	3282	0.18	0.8562
sippy*Age1		5	0.09716	0.1432	3282	0.68	0.4975
sippy*Age1		6	0	.	.	.	.
sippy*mover			0.3566	0.2177	3282	1.64	0.1016
sippy*citizen			0.04933	0.2634	3282	0.19	0.8514
sippy*native			0.2339	0.2035	3282	1.15	0.2504
trans2*sippy			-0.3081	0.09877	3282	-3.12	0.0018
sippy*tfull		2	-0.5058	0.1288	3282	-3.93	<.0001
sippy*tfull		3	0.05681	0.1401	3282	0.41	0.6851
sippy*tfull		4	-7.6359	4.3196	3282	-1.77	0.0772
sippy*tfull		6	0	.	.	.	.
behrearn26*sippy			0.003724	0.00088	3282	4.23	<.0001
spelldur*sippy			-0.0331	0.02424	3282	-1.37	0.1721
seam*sippy			0.02972	0.07973	3282	0.37	0.7094
sippy*tclass		0	-0.2869	1.0398	3282	-0.28	0.7827
sippy*tclass		2	-0.3012	1.7075	3282	-0.18	0.86
sippy*tclass		3	0.2256	1.2423	3282	0.18	0.8559
sippy*tclass		4	-0.07351	1.0688	3282	-0.07	0.9452
sippy*tclass		5	0	.	.	.	.
reducat3*sippy		6	-0.1876	0.09464	3282	-1.98	0.0475
sippy*spelldur2			0.01835	0.02416	3282	0.76	0.4475
self*sippy			0.1595	0.07947	3282	2.01	0.0449
Scale			1703380	.	.	.	.

**Type III Tests of
Fixed Effects**

Fixed Effect	Degree of Freedom	N	Chi-sq	p-value / Significance Level	
behrearn26	1	3282	180.29	<.000	1
self	1	3282	0.21	0.649	7
spelldur	1	3282	18	<.000	1
trans2	1	3282	5.04	0.024	8
tclass	4	3282	2.16	0.07	8
reducat3	1	3282	0.38	0.536	6
seam	1	3282	5.19	0.022	7
sippy	1	3282	3.87	0.049	3
tfull	3	3282	4.35	0.004	6
spelldur2	1	3282	25.43	<.000	1
Age1	4	3282	6.52	<.000	1
sex	1	3282	1.65	0.198	4
educ	4	3282	15.51	<.000	1
citizen	1	3282	0.31	0.578	9
mover	1	3282	0.01	0.934	2
native	1	3282	2.59	0.107	5
ethnic2	1	3282	4.51	0.033	7
ethnic3	1	3282	5.38	0.02	4
ethnic4	1	3282	1.89	0.169	7
ethnic5	1	3282	0.58	0.446	0
sippy*ethnic2	1	3282	0.43	0.512	6
sippy*ethnic3	1	3282	0.38	0.535	3
sippy*ethnic4	1	3282	2.74	0.098	1
sippy*ethnic5	1	3282	0	0.974	8
sippy*sex	1	3282	9.75	0.001	8
sippy*educ	4	3282	1.77	0.131	7

sippy*Age1	4	3282	9.35	<.000	1
sippy*mover	1	3282	2.68	0.101	6
sippy*citizen	1	3282	0.04	0.851	4
sippy*native	1	3282	1.32	0.25	4
trans2*sippy	1	3282	9.73	0.001	8
sippy*tfull	3	3282	6.61	0	2
behrearn26*sippy	1	3282	17.9	<.000	1
spelldur*sippy	1	3282	1.87	0.172	1
seam*sippy	1	3282	0.14	0.709	4
sippy*tclass	4	3282	0.34	0.849	2
reducat3*sippy	1	3282	3.93	0.047	5
sippy*spelldur2	1	3282	0.58	0.447	5
self*sippy	1	3282	4.03	0.044	9

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sippy=0

The MEANS Procedure

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
behrearn26		13.6318865		2139	102	55452.88
hrearn_26		15.0455252	0.1711707	2139	102	55452.88
phrearn26		14.7915673	0.0483122	2139	102	55452.88
phrearn_26	Linear Predictor	144.5781189	0.0950108	2139	102	55452.88
		121	0.7583999	2139	102	55452.88
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sippy=1

Variable	Label	Mean	Median	N		Sum Wgts
-----			-----	-----		-----
behrearn26		18.2186066 13	0.14845	1205	64	43730.29
hrearn_26		17.2344295 12	0.0524878	1205	64	43730.29
phrearn26		15.0264142 12	0.9332822	1205	64	43730.29
phrearn_26	Linear Predictor	106.4241883 88	0.6857782	1205	64	43730.29
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