

**THE INTERACTIONS OF WORKERS AND FIRMS
IN THE LOW-WAGE LABOR MARKET**

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EXECUTIVE SUMMARY

This paper presents an analysis of workers who persistently have low earnings in the labor market over a period of three or more years. Some of these workers manage to escape from this low-earning status over subsequent years, while many do not. Using data from the Longitudinal Employer Household Dynamics (LEHD) program at the U.S. Census Bureau, we analyze the characteristics of persons and especially of their firms and jobs that enable some to improve their earnings status over time.

Overall, the main results of this analysis are as follows:

- A significant fraction (about 12%) of prime-age adults in the United States with regular labor force attachment have very low earnings (i.e., \$12,000 per year or less) that persist over a period of at least three years;
- These low earnings are associated both with their own demographic characteristics (i.e., race/gender and where they were born) and many characteristics of the firms for which they work (i.e., industry, size, turnover and net employment growth rates, and firm wage premia);
- Of those with persistently low earnings, nearly half manage to escape this status in subsequent years, though earnings improve only partially for most of them (i.e., they continue to earn less than \$15,000 in at least some years);
- Of those with persistently low earnings, white males enjoy the highest subsequent earnings gains and highest rates of “escape” from this status of any race/gender group, while blacks endure the lowest improvements;
- Job and industry changes are associated with large percentages of the observed improvements in earnings, though a significant fraction (i.e., roughly a fourth to a

third) of all escapes from low-earning status also occur among those who stay on initial jobs;

- Most earnings improvements for low-earning women occur within the service sector – in areas such as financial services, health care and education - while a larger fraction of those for males occur in the “traditional industries” like construction, manufacturing, transportation and wholesale trade. Their escape rates, which are similar to most groups of men, illustrate the key point that service sector work can also provide a springboard to better earnings and employment outcomes;
- Significant parts of the lower subsequent earnings of black and other (mostly Hispanic) males among initial lower earners are accounted for by their lesser access than white men to high-quality jobs;
- Improvements in earnings for workers with successful job changes are due not only to better characteristics of the new firms for which they work, but also higher rates of return to the workers’ tenure and experience accumulated on the new job. This leads to both improvements in current earnings as well as increased wage growth over time; and
- Low-wage workers who start out in a temporary help agency certainly earn lower pay during the time they are employed by the agency, but job change for these workers is associated with higher subsequent wages and better job characteristics than is job change for other, similar, workers.

These findings have some important implications for the low-wage labor market. For one thing, *some degree of upward mobility for persistently low earners is certainly possible*, and in fact is being achieved – even if these improvements remain fairly modest

in most cases. Also, there is *no single path* for achieving earnings growth. Job changes are important to many who achieve earnings improvements, though staying on the job also works in a significant percentage of cases.

A range of characteristics also seems to be associated with these good jobs – including not only firm wage premia (the mark-up that some firms pay workers, particularly in unionized and highly concentrated industries) but also industry, firm size, rates of turnover and employment growth (which are observable). The findings suggest trying to place low earners into high-wage sectors, firms with low turnover, and larger firms that provide job ladders and possibilities of upward mobility.

The positive results found for temp agencies suggest that these or other types of labor market intermediaries assist low earners in making the transition to better job opportunities. The overall results also suggest a strong need to improve access to good jobs for many low earners - especially those who are not white males.

The paper's analysis is subject to a variety of limitations, such as selection issues and unobservable characteristics of workers and jobs. But we manage to mitigate some of these concerns with controls for person as well as firm fixed effects. Were data available on educational outcomes, hourly wages, and family/household structure (such as spouse's earnings and presence of young children), we could distinguish between the persistently low earners who might *choose* such a status voluntarily as opposed to those who face very constrained labor market opportunities. Therefore, an important item on our future work agenda is to use the link that is being established between these data and other household surveys, such as the Decennial Census of Population and the CPS, and to focus on workers who are clearly disadvantaged.

I. Introduction

As welfare reform was implemented throughout the U.S. in the late 1990's, millions of low-wage female workers entered the labor market. Concerns have been raised not only about their ability to find employment, but also about the levels of wages and benefits that they earn and their potential for earnings growth over time (e.g., Committee for Economic Development, 2000; Strawn *et. al.* 2001). Indeed, these factors will be critical determinants of the extent to which low-wage women will be able to escape poverty and achieve economic self-sufficiency for themselves and their families. And these issues are clearly just as relevant to low-wage male workers as to their female counterparts.

Yet some very fundamental questions remain about workers in low-wage labor markets in the 1990's and beyond. Among these questions are the following:

- To what extent do low-wage workers experience enough earnings growth over time to “escape” their low-wage or poverty status?
- Do the processes by which workers escape low-wage status differ across demographic groups – especially by gender and race?
- How important is wage growth *within* jobs, as opposed to mobility *across* jobs and employers, for those who escape low-wage status?
- What characteristics of *employers* contribute the most to success in the low-wage market, and which workers are matched to these employers? How important is the quality of that *match* for achieving success in the low-wage market, as opposed to individual skills and other attributes?

These issues are critical to the development of effective welfare-to-work policies, as well as policies for other low-wage workers (as funded by the Workforce Investment Act or more broadly). For instance, they are critical for understanding the extent to which job search and job placement strategies can be successful in helping low-wage workers escape poverty, or the extent to which placement or even training efforts should be targeted towards specific sectors and the skills that are relevant there.

Yet, despite the fairly fundamental nature of these questions, relatively little is known about these issues. The effect of turnover on wage growth has been studied using data from the National Longitudinal Survey of Youth (NLSY79) – such as those by Royalty (1998), Holzer and Lalonde (2000), and Gladden and Taber (2000). These studies clearly indicate the fairly positive effects of voluntary (or job-to-job) turnover on wage growth, and the more negative effects of involuntary (or job-to-nonemployment) turnover.¹ The returns to work experience for low-wage workers have also been documented in this work (particularly by Gladden and Taber and also by Burtless, 1995). But the lessons learned from this work are limited by the constraints of the dataset, which not only contains very little information on the characteristics of the employers of these workers but also is too small scale to analyze employment dynamics for different groups of low-wage workers, particularly adults. Furthermore, much of the data are from the 1980's, though low-wage labor markets have likely evolved a good deal since that time.

Other studies have focused on the role of employer characteristics or employer hiring behavior in determining which less-educated workers get hired into different kinds of jobs (e.g., Bishop, 1993; Holzer, 1996); and on the role of employers in the wage-determination process (Groschen, 1991; Abowd, Kramarz and Margolis, 1999; Abowd and

Kramarz, 1999; Lane *et. al.*, 2000). The latter, in particular, represent the latest in a long tradition of work that focuses on the “person” v. the “job”, and on the extent to which there are “good” v. “bad” jobs for the same less-skilled individuals.² Some of these papers have used data from particular surveys of employers and/or matched data on employers and some of their employees. However the first set of studies in this body of work used fairly small samples, often limited to particular firms or sectors of the workforce; while the work on larger samples has either been cross-sectional in nature or not focused on low-wage workers per se, or both.

This paper presents evidence on low-wage workers and their jobs and earnings from an important new source of data: data from the Longitudinal Employer-Household Dynamics program (LEHD) currently being compiled at the U.S. Census Bureau. The data from this program match the universe of Unemployment Insurance wage records over the 1990’s or earlier to data from the various household and economic surveys of the Census Bureau, as we describe below. The data have been transformed to allow us to analyze a wide range of issues regarding workers, their employers, and the interactions between them. Below, we use data from five states (California, Florida, Illinois, Maryland and North Carolina) over the 1990’s to consider these issues.

The next section below describes the LEHD data, especially from the five states included in this analysis. Next we describe the analyses which we present on these data, followed by the results. We close with a summary and the implications of the results presented here for welfare-to-work programs and for promoting the success of low-wage workers more broadly.

¹ See also Topel and Ward (1992).

II. LEHD Data

In this study we take advantage of the development of a new database at the US Census Bureau that permits us to fully describe the interactions between workers and firms. This new database enables us to match workers with past and present employers, together with employer and worker characteristics.

The core of the dataset is the Unemployment Insurance (UI) wage record file. Every state in the U.S. collects quarterly records of the employment and earnings of the UI covered workforce (approximately 98% of employment in each state). These data consist of an employer identification number, and an individual identification number and the earnings of that individual while employed. This permits the construction of a dataset longitudinal in both employers and employees, which have been extensively described and used elsewhere (See Burgess, Lane and Stevens, 2000). There are several advantages over household based survey data. In particular, the earnings are quite accurately reported: there are financial penalties for misreporting. The data are relatively current, and the dataset is extremely large. Since we have almost the full universe of employers and workers, we can longitudinally measure movements of individuals across earnings categories and across employers with a great deal of accuracy.³ In addition, information on industry, ownership, location, and firm size come directly from the employer, rather than self-reported by the individual. The LEHD program currently houses data from a number of states comprising 50 percent of total U.S. employment.

² This tradition includes the “dual labor markets” literature of the 1970’s (e.g., Doeringer and Piore, 1971) as well as the “efficiency wage” literature of the 1980’s (e.g., Katz, 1986).

³ The coverage in UI data is about 98 percent of total wage and salary civilian jobs. See Stevens (2000) for details about non-covered employment.

These data are markedly different from the household survey data that many researchers are familiar with. In particular, since the data are administrative in nature, many of the usual measures are not available. For example, earnings refer to quarterly earnings, and neither wage rates nor hours worked are typically available. In addition, UI data lack even the most basic demographic information on workers. However, the LEHD program at the US Census Bureau has worked to address these deficiencies by integrating the UI data with administrative data consisting of data on date and place of birth, gender, race and residency for almost all the workers in the data. In addition, the UI data are integrated with rich survey data such as CPS and the SIPP, providing rich survey information for a limited sample of individuals.

A major new advantage of the dataset is that LEHD staff have used the longitudinal and universal nature of the dataset to estimate jointly fixed worker and firm effects, using the methodology described in detail in Abowd, Lengerhmann and McKinnney (2001) and in Abowd, Creecy and Kramarz (2002). This work now permits, for the first time, the quantification of the contribution of individual and firm characteristics to earnings outcomes – determining that each contribute about equal amounts to explained earnings variation..

What are individual fixed effects? They can be thought of as human capital measures, or the market value of the portable component of an individual's skill and includes some factors that are often observable, such as years of education and sex; and some factors that are typically not observable even in rich survey data, such as innate ability, "people skills," "problem solving skills," perseverance, family background, and educational quality. Our ability to control for these hitherto unmeasurable individual

characteristics will enable us to address many of the selection issues that have plagued earlier researchers.

What are firm fixed effects? These can be thought of as the wage premia, or firm mark-up, associated with firm-specific factors, which may be due to a number of factors such as physical capital, organizational structure, managerial skills, rent sharing and unionization. The implication of such findings for our analysis is that this enables us to identify industries, or types of firms, that tend to offer higher premia and hence are better targets for job placements.

It is worth emphasizing just how important these new measures are. Traditional surveys of workers that measure the “kitchen sink” of demographic characteristics - such as education, occupation, age, sex, marital status and even include some firm characteristics such as firm size and industry – are typically able to explain some 30% of earnings variation. With these new measures of individual and firm-specific wage premia we are able to explain 90% of earnings variation.

In our analysis we use data for five large states, California, Florida, Illinois, Maryland and North Carolina – consisting of almost 1 billion quarterly observations, on some 58 million individuals and 3 million employers over the period 1992-99. We use a subset (summarized in Appendix Table 1) of workers aged 25-54 and with some labor force attachment in the 1993-95 period that we further describe below. This subsets the dataset to about 500 million observations on 19 million individuals and 1.2 million employers⁴. In order to reduce computational burden, we take a 5 percent random sample

⁴ These have been anonymised to protect the confidentiality of the individual. The analysis is for statistical purposes only, and a limited number of staff actually work with the data. Those staff have undergone FBI clearance, and are subject to a \$250,000 fine and/or five years in jail if any violation of confidentiality occurs.

of this larger dataset, which leaves us with about 1 million individuals. About 800,000 of these individuals are also observed with a labor force attachment in the 1996-98 period.

Later in the analysis, we want to compare the quarterly outcomes of those who began a new job sometime in 1995 that was different from the job held in 1994 with those who stayed on the same job. Of the 938,226 individuals in the dataset, the bulk stay with the same firm (i.e., 716,362); but 121,039 individuals change jobs over the period, and 100,825 are in neither group (i.e., they are individuals who do not show up in data in the subsequent period). To examine the outcomes of job changers and job stayers with equal precision, we choose a 50% random sample of job changers (60,520), and then randomly choose an equally number of job stayers. This gives a subset of 121,040 individuals, employed by a total of 90,857 employers, and 1,980,571 quarterly observations.

How does this sample compare with 1990 Census data? We compared the characteristics of the full sample of UI data in 1994 (with age and labor force restrictions) to the 1990 Census for all workers in our five states, with the same age restrictions. We report the results in the Appendix: briefly, UI data are very consistent with Census data. Just under half of the sample are female; about 69% White, 12% Black, and 20% “other”. Just under 20% are foreign born. The industrial distribution is also very similar. 17% of employment is in manufacturing, 14% in retail trade, and about 1/3 of all workers are in the service sector. Annualized earnings are similarly consistent: average earnings in the 1990 Census were \$35,393 while in UI data, they were about \$35,368.

III. Description of Analysis

Our primary interest in this work is to analyze the labor market experiences of low-wage workers, particularly focusing on the way in which their interactions with employers influence the extent to which they succeed or fail in this market. Clearly, an important first step is to identify which workers can be categorized as low-wage workers. The second step is to identify what is “success” or “failure” and the third to identify their employer and employer characteristics.

We begin by developing a definition of low-wage workers that accurately captures a group facing persistent problems of low earnings. The literature has based such definitions on household-based surveys, such as the decennial census or CPS data – often using demographic information (such as education) or low hourly wages for identifying those with earnings difficulties. Because these are cross-sectional in nature, they are unable to capture whether workers are persistently low-wage. In particular, it might capture those with *transitory* earnings difficulties (such as those returning to the labor market after a lengthy absence, or those who have been recently displaced from higher-paying jobs). Our longitudinal data can identify whether workers have persistently low earnings. However, since we only have quarterly records to measure earnings, we cannot identify those with low hourly wages as opposed to those with few hours worked per quarter. Consequently, we face a different set of identification problems, such as the risk of including those with low earnings who have chosen *voluntarily* to work few hours (such as homemakers, students or the elderly),.

In order to develop a satisfactory definition, we need an analysis plan that correctly identifies workers with persistent difficulties but still allows their labor market

outcomes to improve over time. We also need to avoid selecting a sample based on observed outcomes since this would seriously bias any parameters that we estimate and distort any analysis in which we engage. We therefore define workers with persistently low earnings – *as those earning \$12,000 or less per year in real terms during a 3-year base period of 1993-95.*⁵ The 3-year period over which these low earnings are observed enables us to avoid those with transitory earnings problems. While the level of earnings defined here is quite arbitrary and somewhat low, we chose a level that implies poverty-level earnings, even after being supplemented by the Earned Income Tax Credit. We checked the robustness of this cutoff (and other, similar thresholds) by examining the characteristics of a sub-sample of workers whose UI earnings records were linked to the March CPS. The hourly wages, demographics and household income of this sample of workers also suggested persistent labor market problems from the more traditional, household survey based approach.⁶

To further ensure that we are targeting workers with persistent labor market difficulties not of their own choosing, we limit our sample to *prime-age* workers – i.e., those aged 25-54. In doing so, we omit age groups that are likely to contain large numbers of students or near-elderly individuals choosing to work part-time. While our sample might still include large numbers of homemakers who are working part-time, particularly while caring for children, we very often stratify our sample by gender (and/or race as well) to check whether or not our results hold for men as well as women (and for

⁵ Nominal earnings each year are adjusted by the Consumer Price Index for Urban Workers (CPI-U), with results presented in 1998 dollars. Since the CPI tends to overstate inflation somewhat, real earnings gains will be somewhat understated, as we note below. But comparisons across groups in tendency to escape low-earnings status or in real wage gains will not be affected by the upward bias in the CPI.

⁶ This earnings cutoff generated a sample of workers among whom the vast majority had no college education, most household incomes were under \$20,000, and hourly wages averaged about \$8 per hour. Details are available from the authors.

minority women as well as white women, where the latter are more likely to be more-educated women married to high earners). But, to ensure that workers have at least some consistent labor market attachment, we also limit the sample to individuals who have at least one quarter of earnings in each year of the analysis. Thus, we do not capture people who were unemployed or left the labor market for periods of a year or more.

The second step is to characterize “success” or “failure” in this labor market. We recognize that small and/or transitory increases in earnings above this cutoff level do not necessarily imply labor market success. Thus, we also define two intermediate categories of earnings: those with *partial low-earnings*, who might have earned above \$12,000 per year in one or more of the years in the base period, but never earned above \$15,000; or those with *partial non-low earnings*, who might have earned above \$15,000 but did not do so consistently. Those with consistent *non-low earnings* are thus those who earn above \$15,000 each year in the base period.

Having defined this sample and base period, we then analyze earnings outcomes during a *subsequent* period, and especially look for evidence that the earnings difficulties observed in the base period have eased somewhat. We do so in two ways: first, we analyze a subsequent 3-year period (i.e., 1996-98), and measure the extent to which workers with low earnings in the base period have either *partially or completely escaped* this status. We define “partial escapes” as those in which the individual had partially low or partially non-low earnings in the later period – i.e., earnings at least sometimes above \$12,000 but not consistently above \$15,000 per year. In contrast, “complete escapes” from low earnings status involves those who consistently earn above \$15,000 per year in the later period. It is worth reiterating that our data do not permit an analysis of whether

the escape is due to an increase in wages, and increase in hours, or some combination of the two.

A second way in which we analyze the subsequent labor market success of those with persistently low earnings in the base period is to compare earnings on jobs held during or after 1996 with those on jobs held before that time. Of course, the primary job held in 1996 may be the same one held earlier or a different one; consequently, we now define “job-changers” as those who began a new job sometime in 1996 that was different from that held in 1995, while “job-stayers” are those whose jobs were the same in both years.

The designation of low-earning status based on the 1993-95 period remains the same as before –i.e., we still stratify the sample into those with persistently low earnings in this period v. those whose earnings are higher; but we now measure labor market outcomes by earnings on first job held during the subsequent period (from 1996 quarter 1 to 1999 quarter 4) v. the last one held in the base period (from 1992 quarter 1 to 1995 quarter 4), where these two might be the same or different jobs.⁷ This analysis thus enables us to consider jobs of potentially shorter duration than in the earlier analysis, and to measure earnings levels and changes continuously rather than discretely (which enables us to avoid the problem of arbitrary categories mentioned above). The analysis now also focuses directly on the earnings of the primary job, rather than the total earnings of a 3-year period in which one or more jobs might have been held.

⁷ A sample of jobs that either begin or end within a certain period constitutes a random sample of jobs that do not suffer from the overrepresentation of longer-duration jobs in a sample taken at any point in time. Limiting those samples to those with low earnings during the base period has implications that we discuss below.

We thus address the third definitional issue posed by the use of this new dataset – that of defining their employer. Since workers might well have had more than one job in either or both of these 3-year periods, we follow the approach used by survey researchers and focus on their *primary* employer during each period – i.e., the one with whom they had the highest earnings per quarter in the most quarters during each period. Much of the analysis will then focus on those who had the same primary employer in both periods (i.e., “job-stayers”) as opposed to those whose primary employer had changed (i.e., “job-changers”). Earnings levels and changes that are reported also, by and large, refer to earnings derived from the primary employer. A similar analysis of industry changers and stayers will be included as well.

Having set up our definitions, we now proceed with a three-part analysis. First, we describe the demographic characteristics of workers in the different earnings categories during the 3-year base period of 1993-95 as well as the characteristics of the firms for which they work. Second, we analyze worker transitions into higher earnings categories between the 1993-95 and 1996-98 periods, particularly focusing on how these transitions are related to both worker and firm characteristics. Third, we compare the wage levels and changes for jobs held in 1995 and thereafter with the wage levels and change for jobs held in 1994 or earlier, for two groups of workers: those that are low earners during the 3-year base period and those that are not.

IV. Empirical Results

A. Workers and Jobs in the Base Period, 1993-95

We begin with an analysis of workers during the base period of 1993-95, during which workers are categorized as low earners or non-low earners (or some intermediate categories). We consider their own demographic characteristics, as well as those of their primary employers, during this time period as well. Earnings are in real, 1998, dollars.

Table 1 presents the distribution of workers in our sample of prime-age workers in five states across four mutually exclusive earnings categories: The four earnings categories are:

- 1) *Low* - i.e., earnings of \$12,000 or less (in 1998 dollars) in each of the 3 years;
- 2) *Partially Low* – i.e., with earnings above \$12,000 (in 1998 dollars) in at least one year but never above \$15,000;
- 3) *Partially Non-Low* – i.e., earnings above \$15,000 (in 1998 dollars) at least once but not in all three years; and
- 4) *Non-Low* – i.e., earnings above \$15,000 (in 1998 dollars) in all years.

The distribution is presented for all workers, and separately by gender and by age group (where “older” and “younger” workers are defined as those aged 35-54 and 25-34 respectively).

The results indicate that roughly 12 percent of prime-age workers during this time period consistently had very low earnings in the labor market. Another 6 percent or so have partially low earnings and 21 percent have partially non low-earnings. Thus, nearly 40 percent of the total sample exhibits annual earnings below \$15,000 for at least one of the three years.⁸

⁸ The fraction of workers with persistently low earnings is somewhat sensitive to how we limit the sample in terms of job attachment. Where we condition on at least two quarters of work each year instead of one, we find significantly smaller percentages of low earners. However, the qualitative results discussed below,

As expected, females are much more likely to have consistently low earnings than men (16 percent v. 8 percent respectively), as are younger workers relative to older ones (15 percent v. 11 percent). Still, the fractions of prime-age men and older workers with persistent low earnings are striking here, and implies that our results are not driven completely by women who are working part-time in order to raise small children.

How do these distributions vary by race as well as gender, and by location of birthplace (US v. foreign)? Table 2 presents additional distributions broken down by these demographic characteristics. Race/ethnic groups include white nonhispanics, black nonhispanics and all others, with the latter representing both Hispanics and Asians. The results show, again as expected, that blacks and other non-white minorities are much more likely than whites to suffer from persistently low earnings, as are foreign-born workers relative to those who are US-born. Within each racial group, women are more likely than men to be low earners, though the gap in incidence of low earnings between black women and black men is small.

Indeed, black men are more likely to suffer from persistently low earnings than are white women. It is likely that the latter group contains the largest fraction of individuals working part-time because of responsibilities in the home. The relatively weak earnings of black men may well represent their weak attachments to the labor market, which continued to deteriorate in the decade of the 1990's while those of black women grew stronger (Holzer and Offner, 2002). In contrast to blacks, the tendency of "other" men to have low earnings is significantly lower than that of "other" women, likely indicating a stronger attachment to the labor market for the men of these groups

in terms of the correlates of low earnings and escapes from low-earning status, are very robust to these sample changes.

relative to black men. Finally, while white men had the lowest incidence of consistently low earnings (6 percent), even for them the rates are not trivially low.

In what sectors of the economy are these workers with low-earnings most likely to be found? Table 3 presents data on the distribution of low-earnings workers across 2-digit nonagricultural industries, based on their primary employers during the period 1993-95.⁹ In the first column, we present the actual distribution across industries – i.e., the percentages of all low-earners found in each industry, ranked in descending order from highest to lowest among the 20 industries listed. In the second column, we present the percent of workers *within* each industry who are low-earners (rather than the distribution of low earners *between* industries). The two methods needn't generate identical rankings of workers across industries, since large industries without high concentrations of low-earners can still account for significant fractions of all such low earners in the labor market. Thus, the second category is a more accurate reflection of industries with low average wages (or at least large concentrations of low-wage workers), while the first reflects both relative wages and sizes of the industries themselves.

The results of Table 3 show that “eating and drinking places” account for the largest percentage of all low earners of any 2-digit industry (about 15 percent) and have the highest concentration of low earners within the industry (over 40 percent). More generally, we find that low earners are concentrated in a fairly small number of industries. In fact, three industries - eating and drinking, business services, and educational services - account for over a third of low earners, while seven industries

⁹ In addition is worth pointing out that a relatively large fraction of workers with low earnings are concentrated in agricultural industries. However, Agricultural workers are omitted because of their inconsistent coverage by the UI system across states. Mining is also omitted as a category because of its very small size, especially for low earners.

account for over half. Though business services are not generally low-wage industries, they include “temp” agencies, which account for the bulk of low earners within the industry.¹⁰ Education and health services are also not particularly low-wage industries, though they account for large fractions of low earners by virtue of their size and tendency to have particular occupations with large numbers of low-wage workers.¹¹

In contrast, a number of other industries – such as hotels and other lodging places, personal services, amusement services, and general merchandise stores – have large concentrations of low-earners within the industry but do not account for large fractions of low earners overall, apparently due to their relatively small sizes. Almost all industries with high concentrations of low earners are in the retail trade and service sectors, although there are a few important exceptions. In particular, apparel and textile products manufacturing has over 30% of its workers having consistently low earnings. Real estate is another field with a major concentration of low earners (13%), though this may also reflect a high degree of part-time work.

What are some other characteristics of firms that have large numbers of low earners? In Table 4 we consider the distributions of workers in each of our four earnings categories across categories of firms based on size, employment growth or decline (the “job flow” rate), a measure of turnover (the “churning rate”), and firm wage premia.

What are the reasons for including these measures of firm characteristics? Firm size is known to have a strong effect on average wages, even controlling for observable

¹⁰ Other more-detailed industries within business services include, but are not limited to, advertising; consumer credit reporting agencies; services to dwellings and other buildings; and computer programming and data processing. The percentage of low earners in the business services accounted for by temp agencies in the base period is 52%. In much of the analysis that follows, we focus on those working specifically for temp agencies within this category.

¹¹ Low-wage jobs in health care include nurses’ aides, home health aides, and orderlies. In education these jobs include janitors, cooks, and part-time bus drivers.

characteristics of workers (Brown *et. al.*, 1990).¹² Anecdotal evidence, as well as some empirical evidence (Theeuwes, Lane and Stevens, 1999) suggests that firm expansion and contraction are likely to affect worker outcomes. We therefore examine the effects of the “job flow rate” is a measure of net employment growth, measured as the change in employment between the beginning and end of a period divided by the average size of the firm over that period.¹³ We also use firm turnover as an observable firm characteristic likely to affect worker outcomes (Lane and Stevens, 2000). Here we use a measure of turnover net of that required for the firm to achieve a different employment level: “churning”. This is defined as the difference between the sum of accessions and separations, on the one hand, and the absolute value of job flows, on the other, all divided by the average size of the firm.¹⁴ The fact that job turnover is negatively correlated with wages is well-established in the literature on labor markets, though its direct causal effect is somewhat less clear.¹⁵ Finally, following the work of Kremer and Maskin (1996) which suggests a theoretical basis for the sorting of high workers to high wage firms and the work of Abowd, Kramarz and Margolis (1999) and Abowd, Kramarz and Finer (2000) which present empirical evidence in support of this, we examine the effect of the

¹² Our measure is one of firm size, not establishment size. However, single establishment firms employ 70% of all individuals.

¹³ For instance, if employment in a firm increases from 50 to 150, the job flow rate is $1 = (150 - 50) / 0.5 * (150 + 50)$ or 100 percent. Values, thus, represent percentage change in employment relative to *average* size over the period. This variable is bounded between -2 and 2 , where the endpoints correspond to firm exit and firm entry respectively.

¹⁴ This is a measure of worker turnover in excess of what is needed to accommodate the net employment change. For instance, using the same example as before, if the firm increases employment from 50 to 150 through 120 accessions and 20 separations, then the worker churning rate is $0.4 = [120 + 20 - \text{abs}(150 - 50)] / 0.5 * (150 + 50)$ or 40 percent. Values, thus, represent worker churning relative to *average* size over the period. This variable takes on only positive values and does not have an upper bound.

¹⁵ See Holzer and Lalonde (2000). Job turnover is clearly endogenous with respect to low wages across individuals, and may contribute to these low wages by reducing job tenure. However, firm-level turnover is likely more exogenous with respect to the earnings of individual low earners in those firms.

firm wage premium - a fixed firm effect which captures the amount each firm pays its worker above or below their market wage.¹⁶

The results of Table 4 clearly show that, compared to workers in other earnings groups, low earners are more heavily concentrated in small establishments than in larger ones - consistent with the earlier literature. Likewise, low earners are much more heavily concentrated in high-turnover establishments than in low-turnover ones. However, the relationship between net job flows and earnings is somewhat less clear. Low earners are relatively concentrated both among firms entering and exiting the market. They are also somewhat more concentrated among firms with significant positive or negative net employment growth (relative to those with modest amounts of either in the -.1 to .1 range).

The strongest relationship of all exists between the incidence of low earners and firm wage premia. For instance, about 70% of non-low earners work for firms whose wage premia are positive (a zero premium reflects the average employment-weighted firm). But among those who are consistently low earners, only about 16% work for firms with positive premia, while 24% of partially low earners do so. The preliminary evidence thus suggests that *the low earnings of workers are a result of two related factors: their own low level of skills and the disproportionately low wages paid by the firms for which they work*. Given this, plus the fact that these premia are highly correlated with industry and also with turnover and other firm characteristics (Krueger and Summers, 1987;

¹⁶ The firm wage premium is derived from a regression of log earnings on a full panel of individuals matched to firms, in equations that control for person fixed effects, experience interacted with gender and a full set of time dummies. The firm wage premia is the coefficient on the firm dummy variable in each case. See Abowd *et. al.* (2002) for a fuller description.

Holzer *et. al.*, 2002), this will be the single characteristic of firms that we will focus on most closely (though not exclusively) in our regression analysis below.

Overall, we see that persistently low earnings plague a fairly large percentage of prime-age adults in the U.S. workforce, and that their earnings difficulties are associated not only with personal characteristics but also with those of the firms and industries in which they work.

B. Transitions Over Time Across Earnings Categories

Until now, we have used data in our 3-year baseline period of 1993-95 to document the persistence of low earnings for certain workers and the association between low earnings and various worker and firm characteristics. We now turn to an analysis of which low earners subsequently succeed in the labor market, and the role played by firms and industries in their success. This analysis is based on the subsequent 3-year period, 1996-98, and on the transitions made by workers across earnings categories between those two periods. The role of the primary employer, and especially of changes in that employer across the two periods, will be highlighted.

We begin in Table 5 with the “transition matrix” for our four earnings categories across these two periods. The matrix tells us, conditional on which category a worker was in during the earlier period, what the probability is that they will be in each of the four categories during the subsequent period. The probabilities thus sum to one (horizontally) for each category in the 1993-95 period. Table 5a presents the entire matrix for all workers in the sample, while 5b presents the transition rates only for those who were initially low earners by various demographic breakdowns.

The results of Table 5a indicate that *almost half of those prime-age workers with very low earnings in the 1993-95 period make a transition into one of the other earnings categories in the latter period - though most are into intermediate earnings categories.* More specifically, 47% of those having earnings persistently under \$12,000 in the early period end up with earnings sometimes over that amount, and more than half of those occasionally earn more than \$15,000. But only 6% of the initial low earners consistently make over \$15,000.¹⁷ The extent to which such progress reflected unique characteristics of the late 1990's – such as tight labor markets, welfare-to-work policies, expanded supports for the working poor that might have induced more work effort, etc. – is not indicated here.¹⁸

Table 5b indicates that significant transitions out of persistent low earnings were achieved by all demographic subgroups in that population, but at somewhat different rates. For instance, *white males appear to have the highest rates of transition into non-low earnings, while blacks - and especially black males – have the lowest rates.* In particular, 10% of low-wage white males end up in non-low earnings status three years later, while only 4% of low-wage black females do the same. Understanding why the success rates of some who are persistently poor end up being better than others, and especially the role played by differential access to firms and jobs that offer better opportunities, is thus a primary goal for this work.

¹⁷ It is, of course, possible that very small amounts of wage growth pushed many individuals from just under the cutoff for partially low earnings to just above it. However, very few individuals in the low-earnings category were close to the margin of that category (e.g., in the \$11-12,000 range) in all years during the base period. Furthermore, the use of the CPI to deflate earnings over time tends to understate real wage growth and therefore generates a downward bias in the percentage of workers who escape the low-earnings category.

¹⁸ For an excellent set of papers on how the tight labor market and high productivity growth of the late 1990's affected workers see the volume edited by Krueger and Solow (2002). For a review of how these

In Table 6 we analyze the relationship between successful transitions out of persistent low earnings and the tendency to change jobs or industries. Among those with persistent low earnings in 1993-95, we identify three groups in the 1996-98 period:

- 1) Those whose earnings remain persistently low;
- 2) Those who “partially escape” low earnings, by earnings above \$12,000 or occasionally above \$15,000 (i.e., those who become have “partially low” or “partially non-low” earnings in this period); and
- 3) Those who “completely escape” and now consistently earn above \$15,000 per year.

We also identify a variety of other groups, based on the relationship between their primary jobs in the two periods: those who changed jobs across across the two periods v. those that did not; those who changed industries (as well as jobs) across the two periods v. those that did not; and those who initially were working with a temp agency and changed jobs v. non-changers in temp agencies. The latter begins our attempt to highlight the role of temp agencies in the low-wage labor market, and especially whether or not these agencies play some role in providing greater upward mobility to low earners than they otherwise would have on their own.¹⁹

In Table 6a, we present the probabilities of staying in low earnings, v. partially or completely escaping into higher earnings, conditional on whether or not they changed

forces, along with welfare reform and the expansions of the Earned Income Tax Credit affected poor single females see Blank and Schmidt (2001).

¹⁹ See Autor and Houseman (2002) and Lane and Wissoker (2002) for reviews of evidence and general discussion of these questions. While it is clearly that workers in temp agencies earn relatively lower wages and benefits than comparable workers, there have been continuing questions about whether or not the future earnings of temp workers are improved by the quality of job placements and any additional work experience generated for them by the temp agencies.

jobs, changed industries, or changed jobs through a temp agency. The sample is limited to those with persistently low earnings in the 1993-95 period. In Table 6b, we present the opposite conditional probabilities – i.e., the probabilities that individuals changed jobs, changed industries, or changed jobs through a temp agency, conditional on whether or not they have partially or fully escaped low earnings. Both sets of conditional probabilities are needed to highlight the role of changing jobs/industries and the role of temp agencies in improving success rates of persistent low earners. All results are presented for the entire sample of low earners and also by separate race/gender groups.

The results of Table 6a indicate that:

- Those who change jobs and especially industries have higher rates of transition out of low earnings than those who stay in the same jobs or industries;
- Those who change jobs through temp agencies also have higher rates of transition out, especially relative to non-job-changers in temp agencies (though the success rates of job-changers here seem comparable to those changing jobs/industries more generally);

Thus, the percentage of initially low earners who completely escape this status is 8% among changers and only about 3% among the non-changers. For white males, success rates among job/industry changers are 13% and roughly 4% among the non-changers. In contrast, the rates of complete escape for black males with persistently low earnings in the initial period are generally 6% among changers and 4% among non-changers. Interestingly, white males do no better than black males in escaping low-earning status among those who stay in their former jobs or even their former industries; it is their greater success than others when changing jobs that generates their higher rate of escape from low earnings overall.

The conditional probabilities in Table 6b shed further light on this issue. Overall:

- *Over three-fourths of those who completely escape low earnings did so through a job change, and nearly two-thirds of those who partially escape did so, while just over half of those who remained very low earners changed jobs;*
- *Nearly half of the complete escapers, and over a third of the partial escapers, changed industry (as well as job), while just a quarter of those who remained low earners changed industry.*
- The vast majority of workers in temp agencies ultimately changed jobs, and job change rates were virtually universal among those successfully escaping low earnings.

The data thus indicate that *changing jobs and especially changing industries are important components of achieving success in the low-wage labor market*. But a few important caveats are also in order. For one thing, many job changes and even industry changes do not result in successful escapes for low earners; thus changing jobs is no guarantee of success. Also, a significant fraction (i.e., one-fourth to one-third) of those who do escape do so on the jobs that they initially had. Thus, both avenues to success among low earners need to be explored in greater detail²⁰.

In Table 7 we present the distribution of initially low-earning across industries in the later (1996-98) period²¹. We present separate distributions for job-stayers, job-changers, and job changers through temp agencies, subdivided in each case by whether or not they escaped their low earnings (partially or completely). Thus, we present nine

²⁰ Of course, in these tables, as well as in the other descriptive statistics, we do not condition on the relative importance of the industry and job distribution within each group. Thus these results describe the absolute rather than the relative importance of different job characteristics as conduits to success.

distributions across all nonagricultural (and nonmining) 1-digit industries, as well as selected 2-digit industries. To interpret the results, it is important to compare the concentrations in specific industries across the nine groups, to see where successful or unsuccessful job-stayers or job-changers are most likely to be found.

A number of findings emerge from this table.

- *Among both job stayers and changers, those who are initially low earners subsequently do quite well in the “traditional” industries such as construction, manufacturing, transportation/communications/utilities (TCU) and wholesale trade.*

These are, of course, relatively high-wage industries, even after controlling for the personal characteristics of employees there (Krueger and Summers, 1987). Thus, initially low earners who stayed in their jobs and escaped low earnings are much more heavily concentrated in these sectors than in retail trade or the services; while those who changed jobs and escaped low earnings are more heavily concentrated in these sectors than the others as well.

- *Temp agencies seem to place a relatively large number of the initially poor in these industries, particularly manufacturing, and enjoy high success rates when they do.*

The concentrations of initially low earners in manufacturing are substantially higher among job changers through temp agencies than among job changers and stayers more broadly; and they are more than twice as likely to be concentrated there among those who escaped low earnings (either partially or completely) than among those who stayed. To a lesser extent, the same story can be found in TCU, wholesale trade, and the financial services (FIRE).

²¹ It is likely that the source as well as the destination industry matters for job changers, and we will examine this possibility in more detail in subsequent work.

- *Within manufacturing or the services, some sectors are clearly better than others from the vantage-point of initially low earners.* For instance, those who successfully escape low earnings are somewhat more concentrated in *health services* (and, to a lesser extent, *educational services*) than are those still poor: these are fairly good sectors for job stayers and also for job changers to enter. In contrast, those who are still low earners are more heavily concentrated in *apparel and other textile* industries than in any other manufacturing industry, regardless of whether they stayed on their jobs or changed them. The unsuccessful are relatively more concentrated in eating and drinking places than any other 2-digit industry, while those newly moving into the business services sector are heavily concentrated among those still earning little as well. Thus, temp agencies may serve as a successful launching pad to other industries, even though it does not confer immediate success on those entering it.

In Table 8, we continue to analyze the distributions of initially low earners who either subsequently succeeded or did not succeed in the labor market across industries in the later (1996-98) period. Now we do so separately for race/gender groups. Thus, Table 8a presents these distributions across 1-digit industries, while Table 8b does so for selected 2-digit industries.

The results of Table 8a indicate:

- *Males within each racial group are more likely than females to be found in the “traditional industries, especially among those completely escaping low earnings status.* For example, 15% of white males who completely escaped low wage were found in the manufacturing sector, compared with 10% of females. Similar, 24% of “other” males were in manufacturing, compared with 15% of “other” females. The opposite is true for

females in FIRE and the services. In fact, the latter two services account for about 50-60% of those escaping low earnings among women but 30-40% among men.

- *While the broad patterns of escape are similar across racial groups, some interesting differences emerge as well.* For instance, white males and other males (especially Hispanics) are more likely than other groups to escape low earnings through construction; other males are relatively most likely to escape through manufacturing; while TCU seems to work relatively well for black males. In contrast, black females escaping low earnings are relatively concentrated in the FIRE sector, while white and black females both do relatively well in the services also. In contrast, other females escaping low earnings are more likely found in manufacturing and even retail trade than white or black females.

These differences across race and gender lines can be explored in greater detail in Table 8b, which presents similar data for selected 2-digit industries - but only for those who escaped (partially or completely) their initial low earnings status.²² Here we get a somewhat clearer picture of the jobs and sectors through which different groups escape low earnings. For instance, the success of black men in the TCU sector can be seen in local passenger transit and motor freight transportation – i.e., *bus and truck driving* – as well as air transport (where they are presumably likely to be baggage handlers or in maintenance). White females in retail trade have somewhat higher success rates than other groups in general merchandise and food stores (i.e., *department stores and supermarkets*), while other males escape more frequently (though mostly partially) through the low-wage restaurant sector, perhaps by working long hours. In the services, white females do relatively well in *educational* services, black females in *health* and

²² The differences in industrial concentrations discussed here are generally significant statistically, due to the large sample sizes of the data.

social services. Black men, more than any other group, sometimes manage to escape low earnings while still in the business services (i.e., temp agency) sector.

What accounts for the differential success rates in escaping low earnings that different race/gender groups enjoy across different industries? Few answers appear directly in these data, though some clues can be found in a broader range of literature. The declining presence of black men in manufacturing has been well noted, and is sometimes attributed to higher skill requirements there associated with new technologies; yet this can hardly account for why white and other (Hispanic) males who initially have low earnings can still do fairly well in this sector. The growing concentrations of remaining construction and manufacturing jobs in smaller/nonunion establishments, suburban areas, and smaller towns may help to explain this trend, to some extent.²³ Perhaps the relatively high-paying jobs as truck or bus drivers have experienced these changes to a much lesser extent and remain more accessible to black men. The good experiences that some black men have had with temp agencies has been documented by Young (2002). The relatively greater presence of black women in health services and social services, while white women are more heavily found in educational services, could reflect the long-term effects of employment contacts and networks established years ago, as well as the more recent choices of these workers.

These differences also raise major questions about the extent to which public and private labor market intermediaries (through job placement services, job developers and the like) should seek to reinforce these differences in mechanisms or “level the playing

²³ For evidence on the declining representation of black men in manufacturing jobs, and on the effects of growing suburbanization of these jobs see Bound and Holzer (1993), Kasarda (1995), Wilson (1996) and Holzer (1996). For descriptions of the growing presence of Hispanics in manufacturing, and of more

field”, by improving the access of underrepresented groups to the same good jobs that do not require much skill. We return to this issue below.

Before concluding this section, we turn in Table 9 to the distributions of initially low earners across categories of firms based on size, job flow rates (i.e., net growth), churning (turnover), and firm wage premia (the firm mark-up due to a variety of factors such as rent-sharing, unionization, greater capital intensity). As before, we analyze job stayers and job changers separately, and also those who have or have not escaped low earnings status within each of these groups.

As expected, escape rates from low earnings status are higher in large firms, those with low turnover, and those with high wage premia. Somewhat interestingly:

- *Larger firms are better places to escape poverty by staying but not by changing jobs*, perhaps reflecting the importance of having internal job ladders for the former process; and
- *Not surprisingly, low earners are heavily concentrated in firms that have low-wage premia*, reinforcing the notion introduced earlier that the characteristics of jobs can be an important factor determining earnings outcomes.
- *High wage premia are more useful for those changing jobs than those staying in their previous ones*, perhaps indicating that those who start off with initially low earnings in any firm have more difficulty getting on a career ladder within high-wage firms than if they enter from the outside.

Overall, this section confirms that individuals who were persistently low earners during the base period of the earlier 1990’s have often managed to at least partially

favorable views of employers towards immigrants than African-Americans see Waldinger (1987) and Kirschenman and Neckerman (1991).

escape this status in the later 1990's. Some groups – i.e., white males – escape their low earnings more frequently than others, especially blacks. Job and industry changing are frequently used as mechanisms for doing so, though those who stay on their earlier jobs can sometimes be successful as well – especially when these jobs are located in large firms and/or highly-paying sectors. Specific industry and firm characteristics often are associated with movements out of low earnings, though somewhat different pathways are taken by successful members of different demographic groups. Finally, we see that temp agencies play important roles in helping low earners transition to better jobs, especially those located in manufacturing and other traditional high-paying sectors in the economy.

C. Analysis of Stayers and Changers in Specific Jobs

The previous section provided evidence on transitions out of low-earnings status in successive 3-year periods. However, this analysis suffers from some limitations. For one thing, by focusing on the primary jobs within a 3-year period, we might miss some of the effects associated with shorter spells of employment. This framework is not suited for analyzing the important effects of *tenure*, through which improvements in wages for those staying on the same jobs are most likely to occur. The direct relationship of *earnings*, rather than annual incomes, to tenure and other characteristics of workers and jobs should be analyzed more directly by considering jobs on a quarter-by-quarter basis, looking at continuous measures of earnings levels and changes rather than discrete categories that are somewhat arbitrarily drawn.

In this section we once again consider jobs held during a base period before or during 1995 v. a subsequent period that begins in 1996. But instead of considering fixed 3-year blocks of time, we analyze the last job held during the base period and the first one

held subsequent to that one. If the two jobs are the same, the person is considered a job-stayer; if they are different, (s)he is a job-changer, as noted above.

In Table 10 we present summary data on quarterly earnings among those holding jobs during the base period and afterwards, separately for job-changers and stayers. To maintain continuity with the earlier analysis, and to provide ex-ante measures of low earnings status that are themselves not dependent on any labor market outcomes that occur subsequently, we use the same definitions as before to categorize workers as initially low earners or non-low earners – i.e., whether or not they earned less than \$12,000 a year for each of the 3 years during the base period.^{24 25} We also provide results for all workers and then for subgroups by race/gender.

The results of Table 10 indicate that low earners were paid approximately \$1200 per quarter during the base period, while non-low-earners were paid an average of just over \$4,000 initially. Job stayers earned significantly more than job changers among non-low earners, indicating some non-random selection into these different job mobility groups; while the base period earnings of low earners are comparable across stayers and changers.

Furthermore, all groups of workers enjoyed higher quarterly earnings in the subsequent period than in the base period. Average earnings among all job-stayers grew by about 6% for non-low earners across the two periods and by nearly 15% for low earners. But, among both groups, job changers improved their earnings by more than job stayers; and this difference is particularly pronounced among the initially low earners. In

²⁴ In this section, we limit the sample of low earners in the base period to those who were in the persistent low earnings category during the entire base period. In other words, those with “partially low” or “partially non-low” earnings are included with the non-low earners.

fact, earnings grew by 10% for non-low earning job changers and *by 39% for low-earning job changers* across these two periods. And, considering the results separately by race and gender, we note again that white males earn considerably more than other groups among non-low-earners and among low earners in the subsequent period, but not among low earners initially; these results imply that *low-earning white males gained more from changing jobs than any other race/gender group*.

Of course, job changing does not always generate significant improvements in earnings, as we noted in the earlier section; and it is well-known that involuntary job changes (especially job displacements) are often associated with major wage losses (e.g., Holzer and Lalonde, 2000). Thus, the mean wage increases implied by Table 10 might mask considerable variation in wage increases within each of the groups considered.

In Table 11 we present data on the distribution of real wage increases for job changers v. stayers who had low earnings during the 3-year base period. The increases are now measured at percent changes in earnings²⁶, so magnitudes differ slightly from those implied in Table 10. The changes are also measured two ways. We first examine the differences in earnings averaged over all quarters in the base and subsequent periods. However, since these earnings could reflect work that only spans part of a quarter, we also examine and also as the difference between the first full quarter of the subsequent period v. the last full quarter of the base period, thus avoiding tenure effects in both measures. In other words, since all

²⁵ Of course, this definition implies that the earnings during the *base* period (as opposed to the subsequent period) will be heavily affected by this sampling definition, and that the sample itself is partly drawn on the basis of outcome measures. We discuss this issue further below.

²⁶ changes in log quarterly earnings

The results of Table 11 indicate that mean and median wage enjoyed wage growth on average (reflected by the increased mean), but that workers near the bottom of the distribution (the 25th percentile) did suffer wage losses. Earnings growth for job changers was higher on average than for job stayers, but also covered a greater range, with job changers at the bottom suffering greater wage loss and job changers at the top enjoying greater wage growth than did stayers.

In Tables 12 and 13 we consider summary data on two more characteristics of workers and their jobs, separately for the initially low earners and non-low earners in the base and subsequent periods, for all workers and by race/gender. In Table 12, we consider data on quarters of job tenure acquired by workers; while in Table 13 we present data on the firm wage premia.

The results of Table 12 indicate that non-low earners accumulate more job tenure than do low earners, which might well contribute to the higher earnings of the latter than the former. It is also clear that job stayers accumulate more tenure in the subsequent period than do job changers, which is clearly a direct consequence of staying on the job. Thus, at least part of the relatively larger wage gains experienced by job changers is offset by higher tenure of the stayers - assuming that such tenure is rewarded in their jobs.

The tenure of job changers in the subsequent period lags behind that of the base period, because outcomes in the subsequent period are more likely to be truncated by the end of the sampling period, because the start date of the job spell for changers is likely to be after the start date of the job spell for stayers. This is true for changers in both the non-low and low earnings categories. It is also unclear from these data whether or not low

earners react somewhat to improved job opportunities with longer relative tenures on the subsequent job after they change jobs and improve their earnings.²⁷

We also note that higher job tenure is *not* a major source of the generally higher wages earned by white males relative to other groups that we observed in Table 10. Among non-low earners, the tenure of white males and females is quite comparable, while among low earners the measure is generally higher for white females. Indeed, the tendency of females to have higher tenure than males is observed within all race groups and virtually all groups of earners. On the other hand, the tenure of blacks and other workers tend to lag a bit behind those of whites, and the low tenure earned by black males among low earners is especially noteworthy.

The data in Table 13 indicate that the firms in which non-low earners work pay considerably higher wage premia – in other words, they pay a premium over and above the typical wage for workers of a given skill level. In fact, across the board, low-earnings workers, on average, work for firms that pay negative wage premia - which no doubt contributes to the observed differences in earnings between the two groups. The firm premia stay constant among job-stayers (by definition) and also among non-low earning job-changers. However, there is a noteworthy improvement in firm wage premia among low-earning job-changers - with a 9-log point increase in that average premium (roughly equivalent to a 9% gain). Indeed, the gap in job quality between low and non-low earners decreases from 39 to 30 points²⁸, or by nearly a fourth. This will likely help to account for some of the higher wage growth experienced by low earners, as we will see below.

²⁷ The tenure gap (between low and non-low earners) rises over time among the job-stayers and declines over time among the job-changers in absolute terms, but not percentage terms in Table 12. Whether or not the gap would narrow if the subsequent jobs among the job-changers were less heavily truncated by the ending of the sample period cannot be ascertained.

And the gain in the firm wage premium for white males among the low-earners (15 log points) is again considerably higher than that for any other race/gender group among them, no doubt contributing to their relatively greater wage gains as well.

To analyze the net effects of these various person and firm characteristics on the wage gains of initial low-earners across these two periods, we present results from several regressions in Tables 14 and 15.²⁹ The regressions take the standard form of a log earnings equation:

$$1) \ln(\text{EARN})_{ijt} = a + bX_i + cX_j + dX_{it} + fX_{jt} + gX_{ijt} + u_{ijt}$$

where EARN represents the quarterly earnings of person i in firm j in quarter t ; and the X represent characteristics of the person and/or job. Thus the X_i and X_j represent time-invariant characteristics of each - such as the fixed wage premia of the person and firm respectively, as well as the worker's race and gender and the firm's industry; the X_{it} and X_{jt} represent time-varying characteristics of each, such as experience for the former and size/turnover/job flows for the latter; and the X_{ijt} represent time-varying characteristics of the match between the two - most notably, job tenure.³⁰

Because we are particularly interested (in this paper) on examining differences in earnings across different types of workers, we estimate the equations across person-quarters for each of the relevant samples³¹. In Table 14, we present results for initial low earners who are job-stayers, while in Table 15 we present results those who are job-changers. The latter are presented separately in their base period and subsequent period

²⁸ The difference between -.32 and .07 vs. the difference between -.23 and .07.

²⁹ Comparable results for non-low earners are available as well for comparison purposes.

³⁰ No time dummies (i.e., X_t) were included in these equations, as they are quite highly correlated with measured job tenure. Thus, it is very difficult to sort out the effects of tight labor markets and other aggregate effects over time in these results. But all equations include state dummies in addition to the independent variables listed in the text. Separate estimates of all of these results by state indicate broadly similar patterns of results and are available upon request.

respectively in parts a and b of the table. Of course, the sample of low-earners during the *base period* (but not the subsequent period) is drawn on the basis of the outcome variable, which implies that estimates for that period could be heavily biased relative to the true parameters for the full population of low-earners (which would also include transitory low earners that are, by definition, excluded from this sample). However, the results accurately reflect the effects of person and job characteristics on earnings *for this particular sample*, and therefore can be used for comparison purposes with the fully unbiased results on subsequent jobs for the same set of workers.³²

For each set of regressions, four specifications are presented, including: 1) the fixed and time-varying characteristics of the individuals, such as race/gender, experience and experience-squared, and the fixed wage premium for that person;³³ 2) tenure and tenure-squared are added;³⁴ 3) the firm wage premium is added, as the single best measure of firm effects on wages; and 4) other fixed and time-varying characteristics of the firm are added. In addition, the equations for job changers (Table 15) include two additional specifications – one that adds a dummy variable to equation 2) for whether or not the worker was employed by a temp agency in the base period, and one that adds this

³¹ We defer more dynamic longitudinal analysis to subsequent research.

³² Even the regression estimates for initially low-earning *job-stayers* might be somewhat biased by the requirement that individuals in the sample had to have low earnings for three consecutive years. However, the biases should be less severe in this case, as that requirement is lifted for all quarters beyond the base period. Since the job held in this sample is the same in the base and subsequent periods, and tenure is measured in that job across the two periods, we present a single set of estimates for initially low-earning job stayers across both periods. However, we have estimated separate equations for the base and subsequent period as well for this group, and the unbiased results for the subsequent period are qualitatively similar to the ones described below.

³³ Since person and firm fixed effects have been estimated on a full sample of workers outside of this sample, we can include other fixed characteristics of the person (such as race and gender) and of the firm (such as industry) along with these fixed effects in any equations estimated with this sample. But the estimated effects of race/gender as well as industry must then be interpreted as those that go beyond the fixed wage characteristics of the workers and firms in question. A full description of these individual fixed effects is provided in Abowd, Lengermann and McKinney (2002).

dummy to equation 4). Though no controls for education or cognitive skills are included directly in these equations, the inclusion of person-specific fixed effects likely controls for these important personal characteristics.

Overall, the results of Tables 14 and 15 are largely as expected. White males generally earn more than females and/or minorities (though not in each case in every subsample); returns to general experience and tenure with an employer are usually positive and sometimes show the expected diminishing returns; and both fixed personal and firm effects have positive effects on individual earnings. The addition of industry, size, and other characteristics to the equations show some significant effects even after controlling for fixed firm effects, though their effects are much stronger without including the latter control.³⁵ The addition of the full range of firm characteristics to these equations usually accounts for an additional 20 percent or so of the variance in earnings explained in these equations (as measured by the R-squared).

It is noteworthy that returns to virtually all of these characteristics are highest for job-changers in their new jobs. Thus, the new jobs into which job-changers move reward personal characteristics more fully, and the characteristics of the firms themselves matter more as well. Of course, these higher returns can imply higher or lower net wages, depending on the exact characteristics of the person and the job.

The size of the coefficient on the firm fixed effect is also worth discussion. In particular, in Table 14, the coefficient for stayers is about .654, while for changers (Table

³⁴ The squared terms represent the quadratic functional form for experience and tenure, which is commonly used in the estimation of log earnings equations.

³⁵ The rationale for including industry and other variables even after controlling for the firm wage premium is that the former might capture differences across firms in benefits or in wage inequality that the latter misses. Details on which of these measures have significant effects on wages, either with or without the controls included for the firm wage premium, are available from the authors.

15a) it is .868. Since the coefficient for the full sample, without restrictions, is 1, this can be interpreted as the degree to which this subset of workers is able to capture wage premia from the firms for which they work.

One characteristic which is clearly rewarded more heavily after job changes is tenure on the job. Figure 1 plots out the returns to job tenure for job-stayers and job-changers, before and after the latter move.³⁶ The results are quite striking:

- *For initially low-income workers, returns to tenure are positive but modest for job-stayers, averaging about 1-2 log points per year in real terms;*
- *Returns to tenure for job-changers are mildly negative on their early jobs but very strongly positive in their new ones.* Indeed, these returns imply earnings increases of nearly 20 points over the first year and about 30 points over the first two years.

The very weak returns to tenure in the base period imply that many of these jobs were truly “dead-end”, and generated a strong incentive to change jobs, while the much higher returns afterwards suggest strong incentives to remain with these newer firms. Table 12 indicates, in fact, that tenure improves somewhat for low-earning job-changers (relative to others) on their new jobs, though the full extent of any such improvement is difficult to measure here (because of the right-side truncation of the data noted above).

Do these returns to tenure differ significantly across demographic groups or jobs? We have calculated separate returns to tenure by race/gender group and by industry and firm size among those with initially low earnings. Our results indicate that men generally enjoy higher returns than women, and that a few industries (such as construction)

³⁶ We use coefficients from equation 2) to generate these graphs.

generate higher returns than most others.³⁷ But otherwise there is no strong or consistent pattern to these returns, and they seem to account for little of the differences in average tenure across groups that we observed in Table 12. Given the literature on determinants of job turnover that we mentioned earlier (e.g., Holzer and Lalonde), this is perhaps not very surprising – as many characteristics of individuals enter into their decisions to stay/leave their jobs and their employers’ decisions to retain/discharge them.

The addition of firm characteristics to these equations in columns 3) and 4) of Table 15a illustrate another point:

- *Firm characteristics account for 30-40% of the earnings gaps of black males, and about 35-45% of the gaps of other males, relative to white males subsequent to a job change*³⁸.

Thus, job characteristics help to account for a good portion of observed earnings differences among these men, but much less of the differences between men and women within racial groups.

Another important finding emerges from Table 15 with regards to temp agencies:

- *Those low earners who worked with temp agencies in the base period and who then changed jobs earn about 8 log points more on their subsequent jobs than do others, while they were earning 9 log points less while working at the agencies; and*

³⁷ Details on these estimates are available from the authors. We find no evidence of lower returns to tenure for blacks than whites, even though they have lower mean tenure on average. This is consistent with a higher rate of involuntary terminations among blacks than whites, as found by Ferguson and Filer (1986) and also Jackson and Montgomery (1986).

³⁸ This is based on a comparison of the dummy variable for these groups before and after firm characteristics have been added.

- *Both of these differentials are almost fully accounted for by the characteristics of the jobs in each case*, since both effects effectively disappear when job characteristics are added to the model.

Even more than the earlier results, these conclusively show that temp agencies help place low earners into better subsequent jobs, even though the earnings they receive while working for the agencies are somewhat meager. Whether this implies that a broader range of low-income workers could benefit from the services of temp agencies, or from other labor market intermediaries, is harder to claim, since it is possible that those most likely to benefit have already been selected (by themselves, welfare-to-work administrators, or others) into these agencies. We discuss this more fully below; but, in the meantime, the fact that temps generate positive subsequent effects for the low-income workers whom they currently employ is important for the debate on these agencies that is currently raging.

Finally, what do these regression results imply about our ability to explain the very strong improvement in average earnings enjoyed by job-changers who initially had very low earnings? To answer this question, we decomposed the earnings gains for job-changers using the well-known Blinder-Oaxaca decomposition, in which overall changes in the means of the dependent variable are attributed either to changes in the means of independent variables or to changes in estimated parameters.

Overall, *both the improvement in returns to experience and tenure, as well as the characteristics of the jobs attained account for major portions of this overall wage gain - though a fairly large portion of the improvement is also unexplained by these equations.*³⁹

³⁹ The decomposition attributes the change in mean of log earnings for job changers with low earnings in the base period to changes in mean characteristics of the individuals and changes in returns to these

Interestingly, the firm characteristics that matter most are the *levels* of wages in firms and on these jobs, while returns to tenure represent *changes* in these levels over time. Thus, both the current levels of earnings and their potential for improvement are important determinants of successful job changes for those with initial low earnings.

Before concluding, we return to an issue noted earlier – namely that changing jobs entails some costs as well as gains. Tenure is clearly reduced substantially by those who change jobs, and even wages are reduced for a significant fraction of those changing jobs. In addition, those who change jobs clearly lose some earnings because of lost employment time in between jobs.

Are these losses substantial? Table 16 presents data on quarters of lost employment time for the initial low earners who change jobs.⁴⁰ The results are also presented separately for “winners” and “losers” in terms of earnings – i.e., for those with significant earnings increases after the job change v. those without such gains – since the former are more likely to be changing jobs voluntarily and therefore might suffer a shorter spell without employment between jobs.⁴¹

The results indicate that the losses in employment time are not insubstantial – the median time spent out of work is 3 quarters and the mean about 4 quarters, with no

characteristics between the two periods. The results from this decomposition are that: 5 percent of the overall change in mean log earnings can be attributed to changes in the mean of fixed individual characteristics between the two periods; similarly, changes in the mean of fixed firm characteristics, experience and tenure accounts for 25, 10 and 3 percent, respectively. Changes in the returns to fixed individual characteristics, fixed firm characteristics, experience and tenure accounts for –33, –27, 52 and 46 percent respectively. These numbers together with the fraction of change that can be attributed to the change in constants between the two periods, which accounts for 21 percent and which can be interpreted as the fraction of change that cannot be accounted for by observable factors, add up to 100 percent.

⁴⁰ Lost employment time is defined as the sum of full quarters of non-employment between job in base period and job in subsequent period and the estimated fraction of non-employment in the first quarter at new jobs and in the last quarter at old job. Fraction of quarter non-employed in first and last quarter is estimated by comparing income levels in those quarters with adjacent quarters.

⁴¹ The percentage of job changers among initial low earners who fit the definition of being an earnings “loser” here is 35%.

obvious pattern across race/gender groups. Lost employment time is somewhat higher (about 9%) for earnings losers than for winners, though the differences here are not dramatic. Either way, the loss of employment time is quite high relative to durations of unemployment/nonemployment that are usually observed for more typical samples of workers.⁴²

Of course, lost employment time likely reflects certain job search or labor force choices among the nonemployed as well as the direct consequences of the decision to leave the previous job. Some of this loss might thus be the choice of the workers themselves. Nevertheless, when factored in along with losses in observed wages for some of these workers, it is clear that job change does not generate earnings improvements universally, and should not be viewed as a panacea for low earnings in the market. Instead, it can be viewed as a successful strategy for many (though not all) of those who select to take it, particularly those who have access to subsequent jobs that are better than their previous ones.

V. Conclusion

In this paper, we have analyzed the earnings of persistently low earners, and how they change over time. In particular, we analyze long-term patterns of earnings growth and transitions out of low-earning status. We focus particularly on the role played by firm characteristics, such as industry, firm size, firm wage premia, and other measures that represent the quality of jobs and firms to which low earners have access. We do this

⁴² Part of the reason for the apparently long jobless durations here is that we focus on the non-employed rather than the unemployed, where the former can include people who spend some each year out of the labor force. Also, even by this definition, lost employment time for initial low-earners is more than twice as

analysis using the LEHD data from the U.S. Census Bureau, which will ultimately combine the universe of UI wage records for each state with data from the household and economic censuses.

Overall, the main results of this analysis are as follows:

- A significant fraction (about 12%) of prime-age adults in the United States with regular labor force attachment have very low earnings (i.e., \$12,000 per year or less) that persist over a period of at least three years;
- These low earnings are associated both with their own demographic characteristics (i.e., race/gender and where they were born) and many characteristics of the firms for which they work (i.e., industry, size, turnover and net employment growth rates, and firm wage premia);
- Of those with persistently low earnings in the base period, nearly half manage to escape this status in subsequent years, though earnings improve only partially for most of them (i.e., they continue to earn less than \$15,000 in at least some years);
- Of those with persistently low earnings in the base period, white males enjoy the highest subsequent earnings gains and highest rates of “escape” from this status of any race/gender group, while blacks endure the lowest improvements;
- Job and industry changes are associated with large percentages of the observed improvements in earnings, though a significant fraction (i.e., roughly a fourth to a third) of all escapes from low-earning status also occur among those who stay on initial jobs;

high as that for non-low earners in our sample. For more evidence on lengthy non-employment spells among minorities or low-wage workers see Clark and Summers (1982) or Juhn *et. al.* (1991).

- Most earnings improvements for low-earning women occur within the service sector – in areas such as financial services, health care and education - while a larger fraction of gains for males occur in the “traditional industries” like construction, manufacturing, transportation and wholesale trade;
- Significant parts of the lower subsequent earnings of black and other (mostly Hispanic) males among initial lower earners are accounted for by their lesser access than white men to high-quality jobs, although this finding did not extend to other demographic groups;
- Improvements in earnings associated with successful job changes for these workers are largely due to improvements in the returns to experience and job tenure associated with the new jobs, and also to the better characteristics of the new firms for which they work – i.e., improvements in both the current levels of earnings and their rates of improvement over time; and
- Temp agencies are associated with lower pay for low earners while they work for them but higher subsequent wages and better job characteristics afterwards. This might indicate that temp agencies facilitate a better transition process, or that temp agencies have access to better jobs.

These findings have some important implications for the low-wage labor market. For one thing, *some degree of upward mobility for persistently low earners is certainly possible*, and in fact is being achieved – even if these improvements remain fairly modest in most cases. Also, there is *no single path* for achieving earnings growth. Job changes are important to many who achieve earnings improvements, though staying on the job also works in a significant percentage of cases. What matters most is not job mobility *per*

se but whether or not the individual ends up in a good job, either with or without an intervening job change.

A range of characteristics also seems to be associated with these good jobs – including not only firm wage premia (which are not observable to workers or labor market practitioners) but also industry, firm size, rates of turnover and employment growth (which are observable). Thus, it is useful to try placing low earners into high-wage sectors, firms with low turnover, and larger firms that provide job ladders and possibilities of upward mobility.

The fairly positive results observed here for low earners who have worked with temp agencies might also lead us to suggest that more workers should work with such agencies, or at least with some type of labor market intermediary organization. Of course, any such recommendation is subject to the strong caveat that these agencies may work for some but not for others, and that those for whom they are successful may already be self-selecting into them. On the other hand, the results here do provide some useful labor market information for intermediaries that are working with low earners, and they are supportive of the ongoing efforts of temp agencies with their current workforces.

The results also suggest a strong need to improve access to good jobs for many low earners – especially those who are not white males. Unfortunately, this analysis provides no direct evidence on what limits access for to such jobs for many groups. On the other hand, a wide literature already exists on the barriers that minority and especially blacks face to gaining better jobs. These barriers include employer discrimination (especially at smaller establishments and those with lots of white customers); “spatial mismatch” associated with poor transportation to or information about suburban job

openings for those in inner-city areas; weak employment networks and early work experience; etc. (Holzer 1996, 2000). The results here do suggest that efforts by labor market intermediaries and other policymakers to reduce these barriers and improve access to better jobs for blacks could bear important fruit in labor market outcomes for these low-earning groups.

The analysis presented above suffers from a variety of limitations as well. As noted, potential selection issues limit the extent to which we can advocate any particular labor market path for those not already taking it. Many important characteristics of workers here are not observable – most notably measure of skill, such as education and cognitive skills. While these attributes are likely captured in the worker fixed effects for which we control, it would be useful to have more direct measures of them. On the other hand, many of our observed differences across groups in labor market outcomes can be found even after controlling for person fixed effects; and differences between white males and females, or between blacks and other minorities (especially Hispanics), certainly cannot be attributed to omitted skill measures.⁴³

Having data on educational outcomes, hourly wages, and family/household structure (such as spouse's earnings and presence of young children) would certainly help us distinguish between the persistently low earners who might *choose* such a status voluntarily, as opposed to those who face very constrained opportunities in the labor market. Therefore, an important item on our future work agenda is to more fully integrate these data and other household surveys, such as the PUMS data of the Census and the

⁴³ Neal and Johnson (1996) attribute much of the lower earnings of blacks relative to whites to the lower education and test scores of the former. But this explanation cannot account for lower earnings or success in escape among blacks than Hispanics, who generally have lower educational attainment and lower test scores than blacks. It also cannot explain differences between males and females within each racial group.

CPS, to focus more clearly on groups that are really poor. This analysis will also indicate the extent to which we can rely on administrative data alone (for example, from UI wage records) for making these inferences, rather than on linked administrative-survey data which are harder to develop.

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Table 1: Distribution of workers across earnings category in 1993-95.

	Low earnings*	Partially low earnings*	Partially non-low earnings*	Non-low earnings*	All
All	12.22	5.81	20.54	61.44	100.00
Female	16.03	7.44	21.41	55.12	100.00
Male	8.78	4.34	19.75	67.13	100.00
Older**	10.81	5.20	17.48	66.51	100.00
Younger**	14.50	6.80	25.49	53.21	100.00

* A worker is defined as having *low earnings* if real (deflated by CPI-U) annual earnings from all employers are below \$12,000 (in 1998 U.S. dollars) in all three years. A worker is defined as having *partially low earnings* if total annual earnings are below \$15,000 in all three years. A worker is defined as having *partially non-low earnings* if total annual earnings are above \$15,000 in at least one but not all three years. A worker is defined as having *non-low earnings* if total annual earnings are above \$15,000 in all three years. Only workers who reports earnings in at least one quarter in each of the three years and who are between 25 and 54 years old in 1994 are included in the sample.

** The “Older” category includes workers who are between 35 and 54 in 1994 and the “Younger” category includes workers who are between 25 and 34 years old.

Table 2: Distribution of workers across earnings categories in 1993-95: by race/gender or place of birth.

	Low earnings	Partially low earnings	Partially non-low earnings	Non-low earnings	All
All	12.22	5.81	20.54	61.44	100.00
White Female	14.58	6.61	20.91	57.90	100.00
White Male	6.39	3.06	17.80	72.76	100.00
Black Female	19.00	9.01	22.28	49.72	100.00
Black Male	17.14	7.10	24.01	51.74	100.00
Other Female	19.16	9.34	22.60	48.90	100.00
Other Male	12.24	7.07	23.86	56.84	100.00
Foreign Born	14.19	8.06	23.26	54.49	100.00
US Born	11.78	5.32	19.94	62.96	100.00

Table 3: Distribution of low earners across industries in 1993-95.

Sic2 Industry*	Percentage of low earners located in each industry	Percentage of workers in each industry who are low earners
58 Eating and drinking places	14.62	40.69
73 Business services	11.46	22.43
82 Educational services	9.28	14.73
80 Health services	5.83	7.65
83 Social services	3.60	23.81
54 Food stores	3.56	17.57
59 Miscellaneous retail	3.53	20.86
53 General merchandise stores	3.43	22.71
17 Special trade contractors	3.08	11.07
70 Hotels, rooming houses, camps, and other lodging places	2.94	24.76
72 Personal services	2.39	30.71
79 Amusement and recreational services	2.36	22.45
23 Apparel and other textile products	2.34	30.31
51 Wholesale trade—non-durable goods	2.00	7.76
50 Wholesale trade--durable goods	1.65	4.30
55 Automotive dealers and gasoline service stations	1.62	10.19
65 Real estate	1.59	13.14
20 Food and kindred products	1.56	12.27
87 Engineering and management services	1.51	5.69
56 Apparel and accessory stores	1.28	21.32
All other industries	20.37	5.97

* Industry reflects the industry of the primary employer in the three-year period, where the primary employer is defined as the employer with which the worker has the highest earnings in the largest number of quarters in the three-year period.

Table 4: Distribution of workers across firm size, job flow rate, worker churning rate and firm wage premia categories in base period.

	Low earnings	Partially low earnings	Partially non-low earnings	Non-low earnings
	Firm size (Number of workers)*			
20 or fewer Employees	26.12	22.40	21.15	13.27
21 – 50 Employees	11.34	11.68	11.56	8.97
51 – 100 Employees	8.65	9.84	9.59	8.12
101 – 500 Employees	18.67	21.63	21.92	20.82
More than 501 employees	35.21	34.46	35.77	48.81
All	100.00	100.00	100.00	100.00
	Job flow rate (net increase or decrease in employment)**			
Firm exit	2.60	2.41	2.62	1.77
Contracted more than 100%	1.84	1.47	1.91	1.18
Contracted between 50 and 100%	2.83	2.33	2.41	1.37
Contracted between 10 and 50%	13.87	13.52	13.96	12.93
Employment change of less than 10%	48.64	50.54	48.34	60.22
Expanded between 10 and 50%	21.86	22.06	22.44	17.96
Expanded between 50 and 100%	3.70	3.14	3.59	1.77
Expanded more than 100%	1.86	1.74	1.82	0.86
Firm entry	2.80	2.79	2.90	1.93
All	100.00	100.00	100.00	100.00
	Worker churning rate (turnover at firm net of job change)***			
0 – 10%	4.07	6.32	13.18	30.50
10 – 20%	13.99	17.59	23.22	31.25
20 – 50%	32.66	39.11	35.66	26.68
50 – 100%	27.38	24.15	17.79	8.28
100 – 200%	14.36	9.40	7.43	2.62
More than 200%	7.53	3.42	2.71	0.68
All	100.00	100.00	100.00	100.00
	Firm wage premium****			
Less than -.15	66.96	50.13	28.15	15.41
Between -.15 and 0	16.82	23.96	19.60	14.85
Between 0 and .15	9.61	16.63	22.44	22.04
More than .15	6.60	9.28	29.81	47.69
All	100.00	100.00	100.00	100.00

(x,y] means that the category consists of values of the variable that is strictly greater than x and less than or equal to y.

* Firm size is defined as the average of beginning and end of period employment

** Job flow rate is defined as the change between beginning and end of period employment, divided by the average size. For instance, if employment in a firm increases from 50 to 150, the job flow rate is $1 = (150 - 50) / 0.5 * (150 + 50)$. Values, thus, represent percentage change in employment relative to *average* size over the period. This variable is bounded between -2 and 2, where the endpoints correspond to firm exit and firm entry respectively.

*** Worker churning rate is defined as the difference between the sum of accessions and separations on the one hand, and absolute job flows, on the other, divided by average size. This is a measure of worker turnover in excess of what is needed to accommodate the net employment change. For instance, using the same example as before, if the firm increases employment from 50 to 150 through 120 accessions and 20 separations, then the worker churning rate is $0.4 = [120 + 20 - \text{abs}(150 - 50)] / 0.5 * (150 + 50)$. Values, thus, represent worker churning relative to *average* size over the period. This variable takes on only positive values and does not have an upper bound.

**** Defined in text.

Table 5a: Transition matrix: distribution of workers across earnings categories in 1996-98 by earnings category in 1993-95.

1996-98	Low earnings	Partially low earnings	Partially non-low earnings	Non-low earnings	All
1993-95					All
Low	53.03	16.63	24.10	6.24	100.00
Partially low	16.68	25.58	39.65	18.10	100.00
Partially non-low	6.70	6.04	31.74	55.53	100.00
Non-low	0.50	0.51	9.36	89.63	100.00
All	7.40	4.36	16.44	71.80	100.00
					Female
Low	55.93	17.54	21.44	5.10	100.00
Partially low	17.04	28.01	38.10	16.85	100.00
Partially non-low	7.46	6.96	31.92	53.66	100.00
Non-low	0.67	0.67	11.15	87.51	100.00
All	10.28	6.01	18.43	65.28	100.00
					Male
Low	47.57	14.90	29.15	8.39	100.00
Partially low	16.06	21.43	42.28	20.22	100.00
Partially non-low	5.91	5.09	31.55	57.45	100.00
Non-low	0.37	0.39	8.02	91.22	100.00
All	4.81	2.87	14.65	77.67	100.00
					Young
Low	45.78	16.40	29.59	8.24	100.00
Partially low	16.20	19.09	43.69	21.01	100.00
Partially non-low	6.22	5.13	31.69	56.97	100.00
Non-low	0.63	0.70	12.09	86.57	100.00
All	8.49	4.95	21.34	65.22	100.00
					Old
Low	56.43	16.73	21.54	5.30	100.00
Partially low	16.90	28.63	37.74	16.73	100.00
Partially non-low	6.95	6.52	31.76	54.76	100.00
Non-low	0.46	0.46	8.64	90.44	100.00
All	7.03	4.16	14.81	74.00	100.00

Table 5b: Transition matrix: distribution of workers across earnings categories in 1996-98 by gender/race: for those with low earnings in 1993-95.

	Low earnings	Partially low earnings	Partially non-low earnings	Non-low earnings	All
White Female	56.40	16.47	21.61	5.52	100.00
White Male	46.85	13.06	29.85	10.24	100.00
Black Female	55.88	18.43	21.46	4.23	100.00
Black Male	53.96	15.38	25.50	5.15	100.00
Other Female	54.63	19.90	20.92	4.55	100.00
Other Male	44.22	17.53	30.58	7.67	100.00

Table 6a: Earnings transition rates by job/industry change: for those with low earnings in base period.

	Changed jobs? **							
	Yes				No			
	Still Low Earnings	Partial Escapers	Complete Escapers	All	Still Low Earnings	Partial Escapers	Complete Escapers	All
All	46.19	45.58	8.23	100.00	62.86	33.77	3.37	100.00
White Female	48.23	43.90	7.86	100.00	60.24	36.96	2.80	100.00
White Male	38.88	48.46	12.66	100.00	61.13	34.88	3.99	100.00
Black Female	53.80	41.28	4.92	100.00	63.53	34.40	2.07	100.00
Black Male	51.76	42.73	5.51	100.00	54.69	41.16	4.15	100.00
Other Female	46.57	46.63	6.80	100.00	65.11	31.87	3.02	100.00
Other Male	38.56	51.86	9.58	100.00	61.72	32.56	5.72	100.00

	Changed industries? **							
	Yes				No			
	Still Low Earnings	Partial Escapers	Complete Escapers	All	Still Low Earnings	Partial Escapers	Complete Escapers	All
All	43.66	47.36	8.98	100.00	57.56	37.53	4.91	100.00
White Female	45.36	46.15	8.49	100.00	57.11	39.32	3.57	100.00
White Male	36.62	50.06	13.32	100.00	57.69	37.35	4.96	100.00
Black Female	53.48	40.99	5.53	100.00	58.55	38.08	3.37	100.00
Black Male	49.81	44.82	5.37	100.00	49.15	44.87	5.98	100.00
Other Female	44.38	47.97	7.64	100.00	60.43	35.13	4.43	100.00
Other Male	35.88	53.58	10.53	100.00	53.80	38.05	8.15	100.00

	For those initially employed in temp agencies: changed jobs?							
	Yes				No			
	Still Low Earnings	Partial Escapers	Complete Escapers	All	Still Low Earnings	Partial Escapers	Complete Escapers	All
All	48.88	42.76	8.36	100.00	70.54	28.01	1.45	100.00
White Female	44.67	44.96	10.37	100.00	63.46	36.54	0.00	100.00
White Male	45.78	44.22	10.00	100.00	86.36	13.64	0.00	100.00
Black Female	50.76	42.61	6.63	100.00	66.07	30.36	3.57	100.00
Black Male	58.54	35.71	5.75	100.00	62.50	33.93	3.57	100.00
Other Female	44.44	46.78	8.77	100.00	59.63	38.53	1.83	100.00
Other Male	47.12	44.47	8.41	100.00	75.76	23.23	1.01	100.00

* A worker is in the "Still low earnings" category if earnings are low, as previously defined, also in 1996-98. A worker is in the "Partial escapers category" if earnings are partially low or partially non-low in 1996-98. A worker is in the "Complete escapers" category if earnings are non-low in 1996-98.

** If the worker has different dominant employers in 1996-98 and in 1993-95, then the worker has changed jobs. Consequently, if the 1-digit industries of the dominant employers are not the same in the two periods, then the worker has also changed industries.

Table 6b: Job/industry changes by transitions from low earnings in base period.

	Still low earnings	Partially Escapers	Complete Escapers
Percent of transitions that involve job change			
All	51.33	65.95	77.80
White Female	44.15	59.51	73.51
White Male	54.05	73.53	80.52
Black Female	65.17	70.06	78.66
Black Male	73.37	79.94	81.82
Other Female	44.74	59.95	78.41
Other Male	56.61	69.99	81.04
Percent of transitions that involve industry change			
All	25.28	36.47	45.48
White Female	20.52	31.53	40.07
White Male	29.64	45.35	50.86
Black Female	30.47	33.23	42.43
Black Male	41.44	50.52	47.66
Other Female	21.29	31.40	45.64
Other Male	28.20	39.47	49.82
Percent of transitions that involve job change; temp work in base period			
All	82.59	91.27	97.53
White Female	82.67	88.14	97.30
White Male	79.62	92.48	98.46
Black Female	89.04	92.21	100.00
Black Male	79.87	93.88	100.00
Other Female	80.42	90.40	93.75
Other Male	85.89	91.36	95.00

Table 7: Distribution across 1-digit and selected 2-digit industries in 1996-98 by transitions and job mobility: for those with low earnings in 1993-95.

	Job stayers			Job changers			Job changers thru temp agencies		
	Still Poor	Partial Escape	Comp. Escape	Still Poor	Partial Escape	Comp. Escape	Still Poor	Partial Escape	Comp. Escape
Construction	3.00	4.39	7.98	3.81	6.39	7.37	3.81	6.22	5.43
Manufacturing	8.28	10.58	9.12	8.27	13.67	15.46	10.32	20.26	25.36
-Food and kindred products	2.81	1.77	0.83	1.20	1.25	1.07	1.05	2.03	2.90
-Apparel and other textile	2.29	2.09	0.41	2.48	1.71	0.51	1.91	1.38	0.36
-Printing and publishing	0.72	0.94	1.35	0.64	1.15	1.58	0.66	1.45	2.54
-Electrical and electronic equip.	0.27	0.78	0.62	0.46	1.40	2.11	0.85	2.68	1.81
-Other Mfg industries	2.18	4.99	5.91	3.49	8.16	10.20	5.85	12.74	17.75
TCU	2.22	3.15	4.66	2.92	4.74	5.50	2.37	5.35	6.52
-Local passenger transit	0.57	0.77	0.73	0.72	0.79	0.59	0.33	0.58	0.00
-Motor freight transportation	0.68	0.74	1.14	1.00	1.52	1.81	0.86	2.39	2.90
-Transportation by air	0.32	0.83	1.14	0.45	0.71	0.62	0.72	0.51	0.36
-Transportation services	0.31	0.37	0.52	0.30	0.51	0.59	0.20	0.51	0.72
-Other TCU	0.35	0.45	1.14	0.45	1.21	1.87	0.26	1.37	2.54
Wholesale	2.76	3.71	5.28	3.27	5.54	6.90	3.35	7.74	7.61
Retail	27.23	26.17	15.23	31.05	22.20	11.50	18.73	13.46	5.80
-General merchandise stores	2.62	2.98	1.86	3.17	3.06	1.46	1.84	1.38	0.73
-Food stores	3.46	4.53	2.49	3.73	2.81	1.22	2.04	1.67	0.00
-Eating and drinking places	13.90	11.76	5.08	16.71	8.61	3.09	10.91	4.92	2.18
-Miscellaneous retail	3.81	3.32	2.07	3.15	2.60	1.63	1.71	1.88	0.73
-Other Retail trade industries	3.44	3.59	3.73	4.29	5.12	4.10	2.23	3.62	2.18
FIRE	2.82	3.19	4.56	2.59	4.97	7.10	1.45	4.99	7.61
Services	51.58	47.51	49.84	47.07	40.81	43.16	59.26	40.30	38.41
-Hotels & other lodging places	2.40	2.31	2.38	3.45	2.42	1.48	1.71	1.08	0.36
-Personal services	3.01	2.16	1.66	2.41	1.51	0.83	1.32	0.65	0.36
-Business services	4.91	4.84	5.18	17.02	10.77	9.66	44.74	21.13	17.76
-Health services	5.28	7.34	7.36	5.81	9.03	10.46	2.89	6.29	6.52
-Educational services	20.02	18.78	21.03	6.02	5.02	7.76	1.71	2.60	3.26
-Social services	4.48	4.30	3.01	3.61	3.80	2.50	2.36	2.53	1.45
-Other Services	11.49	7.79	9.22	8.76	8.26	10.46	4.53	6.00	8.70
Public Administration	2.12	1.30	3.32	1.01	1.68	3.00	0.72	1.66	3.26
All	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8a: Distribution across 1-digit industries by race/gender and earnings transitions in 1996-98: for those with low earnings in base period.

	Constr.	Manuf.	TCU	Wholes	Retail	FIRE	Services	Public	All
Still Low Earnings									
White Female	1.60	4.56	1.99	2.65	32.77	3.21	51.43	1.79	100.00
White Male	8.79	5.73	4.19	3.42	27.25	3.03	44.91	2.69	100.00
Black Female	0.75	6.43	2.21	1.44	23.98	1.81	61.89	1.49	100.00
Black Male	9.03	7.31	5.10	3.05	23.88	2.17	48.32	1.14	100.00
Other Female	1.02	19.60	1.53	4.23	24.63	2.27	46.09	0.63	100.00
Other Male	6.13	15.00	2.90	4.15	33.13	1.95	36.26	0.48	100.00
Partial Escapers									
White Female	2.33	7.32	3.08	3.75	26.65	5.65	49.53	1.70	100.00
White Male	14.07	10.21	6.54	6.06	23.75	3.26	34.08	2.03	100.00
Black Female	0.68	10.71	4.09	2.66	17.87	4.95	56.86	2.18	100.00
Black Male	9.44	14.57	7.21	5.95	19.22	3.24	38.82	1.55	100.00
Other Female	1.53	22.23	2.49	5.88	21.46	3.58	42.04	0.79	100.00
Other Male	10.98	21.50	4.57	7.01	23.66	3.05	28.49	0.75	100.00
Complete Escapers									
White Female	3.29	10.01	3.04	4.07	11.69	8.27	56.33	3.29	100.00
White Male	13.59	14.68	6.34	7.92	13.43	4.92	35.95	3.17	100.00
Black Female	1.61	12.86	4.18	2.25	9.00	9.65	54.34	6.11	100.00
Black Male	7.28	13.79	11.11	8.05	11.11	5.36	39.85	3.45	100.00
Other Female	2.65	14.57	5.74	8.17	13.69	8.61	44.59	1.99	100.00
Other Male	13.46	24.24	7.00	10.77	13.11	2.33	27.83	1.26	100.00

Table 8b: Distribution across selected two-digit industries in 1996-98 among complete and partial escapers by race/gender: for those with low earnings in 1993-95.

	White Female	White Male	Black Femal e	Black Male	Other Female	Other Male
Manufacturing	7.66	11.08	10.92	14.48	21.46	21.88
-Food and kindred products	0.67	0.83	1.26	1.63	2.82	2.68
-Apparel and other textile products	0.88	0.41	1.54	0.52	5.15	2.80
-Printing and publishing	1.19	1.23	1.11	1.29	0.93	0.99
-Electrical and electronic equipment	0.85	0.76	0.92	0.95	2.55	2.30
-Other Manufacturing industries	4.07	7.85	6.08	10.10	10.00	13.11
TCU	3.07	6.50	4.10	7.65	2.82	4.91
-Local and interurban passenger transit	0.52	1.02	1.42	1.59	0.44	0.45
-Motor freight transportation & warehousing	0.70	2.74	0.43	2.84	0.36	1.83
-Transportation by air	0.60	0.84	0.77	1.59	0.60	0.74
-Transportation services	0.49	0.39	0.25	0.34	0.69	0.60
-Other TCU industries	0.76	1.51	1.23	1.29	0.73	1.29
Retail trade	24.75	21.74	17.02	18.31	20.68	22.20
-General merchandise stores	3.95	1.52	3.58	1.72	2.84	1.51
-Food stores	3.91	2.53	2.74	2.11	2.84	3.05
-Eating and drinking places	8.83	8.66	6.41	8.12	8.71	11.92
-Miscellaneous retail	3.68	2.51	1.57	1.55	2.71	1.56
-Other Retail trade industries	4.39	6.52	2.71	4.81	3.58	4.16
Services	50.39	34.44	56.61	38.93	42.29	28.39
-Hotels and other lodging places	1.61	1.77	3.54	2.32	3.42	2.82
-Personal services	2.12	0.80	1.85	0.90	2.31	0.97
-Business services	6.19	10.39	10.24	15.64	7.55	9.96
-Health services	12.17	3.07	16.68	4.55	8.42	2.50
-Educational services	15.94	5.43	8.82	4.51	9.77	2.28
-Social services	4.09	1.59	9.80	3.74	4.11	1.12
-Other Services industries	8.27	11.40	5.67	7.26	6.71	8.74
Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 9: Distribution of workers across firm size, job flow rate, worker churning rate and firm wage premia categories by job mobility and earnings transitions: for those with low earnings in 1993-95.

Limits of each category	Stayers			Job changers		
	Still low earnings	Partial escapers	Complete escapers	Still low earnings	Partial escapers	Complete escapers
Firm size (Number of workers)*						
20 or fewer Employees	29.34	23.61	19.48	21.43	18.11	16.35
21 – 50 Employees	9.86	10.35	9.84	10.94	11.94	11.41
51 – 100 Employees	6.78	7.54	7.77	8.53	10.25	10.05
101 – 500 Employees	15.54	18.15	18.45	19.70	23.15	23.37
More than 501 employees	38.48	40.34	44.46	39.39	36.56	38.82
All	100.00	100.00	100.00	100.00	100.00	100.00
Job flow rate (Net increase or decrease in employment)*						
Firm exit	2.83	2.86	2.66	3.70	3.00	2.74
Contracted more than 100%	1.09	1.09	0.64	1.58	1.20	0.79
Contracted between 50 and 100%	2.01	1.92	1.28	2.19	1.84	1.64
Contracted between 10 and 50%	14.08	13.97	11.93	14.92	13.14	13.00
Employment change of less than 10%	60.12	58.91	61.24	43.12	44.76	48.28
Expanded between 10 and 50%	16.87	17.81	20.34	23.41	24.85	25.97
Expanded between 50 and 100%	1.72	1.70	1.60	3.90	3.88	3.21
Expanded more than 100%	0.66	1.05	0.21	1.99	2.00	1.29
Firm entry	1.58	1.67	0.27	5.18	5.34	3.08
All	100.00	100.00	100.00	100.00	100.00	100.00
Worker churning rate (Turnover net of employment change)*						
0 – 10%	7.45	7.27	11.30	2.62	6.42	14.45
10 – 20%	21.57	23.38	27.45	9.33	17.13	26.45
20 – 50%	33.85	36.47	37.03	28.49	36.68	34.45
50 – 100%	21.22	21.10	16.47	29.28	22.72	15.00
100 – 200%	11.23	8.56	6.03	17.69	11.58	7.20
More than 200%	4.68	3.21	1.72	12.60	5.47	2.45
All	100.00	100.00	100.00	100.00	100.00	100.00
Firm wage premium**						
Less than -.15	72.49	62.32	40.27	69.83	39.28	20.30
Between -.15 and 0	15.19	21.03	23.71	16.54	22.62	18.11
Between 0 and .15	6.80	10.55	19.88	8.64	19.19	23.22
More than .15	5.52	6.10	16.15	4.99	18.91	38.38
All	100.00	100.00	100.00	100.00	100.00	100.00

* See notes in table 4 for definitions of each variable.

** Defined in text.

Table 10: Mean quarterly real earnings.

	Low-earners*		Non-low earners*	
	Base Period**	Subsequent Period**	Base Period**	Subsequent Period**
	Job changers***			
All	1,180	1,641	4,147	4,544
White-Female	1,108	1,574	3,747	3,996
White-Male	1,294	1,967	5,007	5,551
Black-Female	1,137	1,567	3,100	3,221
Black-Male	1,194	1,630	3,403	3,654
Other-Female	1,158	1,518	3,369	3,691
Other-Male	1,240	1,618	3,944	4,468
	Job stayers***			
All	1,177	1,348	4,868	5,181
White-Female	1,096	1,298	4,246	4,528
White-Male	1,262	1,439	5,951	6,317
Black-Female	1,140	1,293	3,630	3,865
Black-Male	1,292	1,468	4,234	4,520
Other-Female	1,167	1,297	3,875	4,133
Other-Male	1,327	1,463	4,600	4,925

* Low earnings if real (deflated by CPI-U) annual earnings are below \$12,000 (in 1998 U.S. dollars) in each year in 1993-95; else non-low earnings

** Earnings in base period reflect average full-quarter earnings in 1995 and prior at the last full-quarter job held in 1995; earnings in subsequent period reflect average full-quarter earnings in 1996 and onwards at the first full-quarter job held in 1996.

*** If first full-quarter employer in 1996 is different from last full-quarter employer in 1995, then the individual is defined as a job changer; else the individual is a job stayer.

Table 11: Changes in earnings for individuals with low earnings in base period.

	Mean	p25	p50	p75	Mean	p25	p50	p75
	Job changers				Job Stayers			
	Difference in average full-quarter log earnings in subsequent period and average full-quarter log earnings in base period							
All	0.30	-0.11	0.24	0.68	0.10	-0.08	0.07	0.26
White-Female	0.33	-0.08	0.28	0.71	0.12	-0.07	0.08	0.28
White-Male	0.40	-0.04	0.32	0.83	0.09	-0.10	0.07	0.26
Black-Female	0.24	-0.11	0.20	0.59	0.09	-0.07	0.06	0.25
Black-Male	0.26	-0.10	0.24	0.64	0.08	-0.11	0.04	0.23
Other-Female	0.24	-0.14	0.18	0.59	0.08	-0.08	0.07	0.26
Other-Male	0.24	-0.14	0.22	0.62	0.06	-0.08	0.06	0.23
	Difference between first full-quarter log earnings in subsequent period and last full-quarter log earnings in base period							
Total	0.27	-0.14	0.21	0.67	0.07	-0.15	0.01	0.19
White-Female	0.28	-0.17	0.19	0.67	0.11	-0.13	0.09	0.32
White-Male	0.36	-0.10	0.29	0.80	0.00	-0.17	0.01	0.13
Black-Female	0.20	-0.17	0.19	0.61	0.19	-0.07	0.09	0.32
Black-Male	0.23	-0.17	0.20	0.58	-0.01	-0.19	-0.01	0.16
Other-Female	0.25	-0.13	0.16	0.68	-0.01	-0.16	0.01	0.18
Other-Male	0.22	-0.16	0.16	0.65	0.00	-0.16	0.01	0.12

Table 12: Mean full-quarter tenure.

	Low-earners		Non-low earners	
	Base Period	Subsequent Period	Base Period	Subsequent Period
	Job changers			
All	5.71	4.84	7.93	6.62
White-Female	6.25	5.25	7.98	6.68
White-Male	5.29	4.45	8.00	6.67
Black-Female	5.36	4.77	7.90	6.48
Black-Male	4.77	3.87	7.51	6.03
Other-Female	5.85	5.04	7.94	6.64
Other-Male	5.38	4.62	7.77	6.65
	Job stayers			
All	8.13	14.92	10.45	19.29
White-Female	8.76	16.03	10.55	19.38
White-Male	7.57	13.73	10.48	19.40
Black-Female	7.89	14.57	10.46	19.27
Black-Male	6.63	12.07	10.23	18.76
Other-Female	8.28	15.39	10.44	19.27
Other-Male	7.13	13.16	10.15	18.91

Table 13: Mean of firm wage premium.

	Low-earners		Non-low earners	
	Base Period	Subsequent Period	Base Period	Subsequent Period
			Job changers	
All	-0.32	-0.23	0.07	0.07
White-Female	-0.33	-0.25	0.05	0.04
White-Male	-0.35	-0.20	0.10	0.11
Black-Female	-0.26	-0.19	0.06	0.05
Black-Male	-0.33	-0.25	0.05	0.04
Other-Female	-0.29	-0.22	0.05	0.05
Other-Male	-0.35	-0.27	0.05	0.06
			Job stayers	
All	-0.33	-0.33	0.07	0.07
White-Female	-0.33	-0.33	0.03	0.03
White-Male	-0.38	-0.38	0.11	0.11
Black-Female	-0.26	-0.26	0.09	0.09
Black-Male	-0.39	-0.39	0.10	0.10
Other-Female	-0.28	-0.28	0.06	0.06
Other-Male	-0.34	-0.34	0.07	0.07

Note: that the two first and two last columns in the lower panel are the same by construction, since the firm has not changed and the wage premium is a fixed characteristics of the firm. The units are 1998 dollars.

Table 14: Regressions of log quarterly real earnings: job stayers with low earnings in base period, using data from both periods.

	(1)	(2)	(3)	(4)
White Women	-0.088 (13.55)**	-0.090 (13.92)**	-0.152 (26.27)**	-0.145 (24.57)**
Black Women	-0.024 (2.61)**	-0.026 (2.90)**	-0.142 (17.29)**	-0.140 (16.76)**
Black Men	0.078 (6.62)**	0.081 (6.94)**	0.072 (6.83)**	0.057 (5.43)**
Other Women	-0.039 (5.05)**	-0.041 (5.32)**	-0.116 (16.88)**	-0.122 (17.53)**
Other Men	0.077 (9.10)**	0.077 (9.17)**	0.031 (4.12)**	0.023 (2.97)**
Fixed person wage premium	0.383 (99.52)**	0.376 (97.50)**	0.587 (151.79)**	0.585 (150.36)**
Experience	0.008 (22.79)**	0.007 (21.45)**	0.012 (39.64)**	0.012 (40.46)**
Experience ² /100	-0.002 (9.99)**	-0.002 (9.97)**	-0.003 (17.08)**	-0.003 (17.52)**
Tenure		0.004 (3.08)**	0.002 (1.71)	0.002 (1.94)
Tenure ² /100		0.012 (2.18)*	0.016 (3.23)**	0.017 (3.44)**
Firm wage premium			0.654 (121.26)**	0.644 (110.01)**
Controls for additional firm characteristics***	No	No	No	Yes
Constant	6.855 (496.89)**	6.828 (466.55)**	6.957 (529.09)**	6.864 (456.61)**
Observations	59543	59543	59535	59321
R-squared	0.15	0.16	0.33	0.34

Absolute value of t statistics in parentheses

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

*** The additional firm characteristics controls that are suppressed in the table include 10 dummies for industry, 9 dummies for different job flow categories, 6 dummies for different worker churning categories. All specifications include State dummies.

Table 15a: Regressions of log quarterly real earnings in subsequent period: job changers with low earnings in the base period

	(1)	(2)	(3)	(4)	(5)	(6)
White Women	-0.262 (23.76)**	-0.268 (24.57)**	-0.235 (25.44)**	-0.237 (25.11)**	-0.266 (24.31)**	-0.237 (25.12)**
Black Women	-0.217 (14.63)**	-0.222 (15.12)**	-0.251 (20.19)**	-0.260 (20.54)**	-0.226 (15.38)**	-0.260 (20.47)**
Other Women	-0.272 (20.67)**	-0.277 (21.27)**	-0.261 (23.63)**	-0.258 (23.01)**	-0.276 (21.18)**	-0.258 (23.03)**
Black Men	-0.107 (6.00)**	-0.105 (5.92)**	-0.064 (4.24)**	-0.072 (4.78)**	-0.110 (6.19)**	-0.072 (4.73)**
Other Men	-0.155 (11.49)**	-0.158 (11.85)**	-0.099 (8.77)**	-0.088 (7.55)**	-0.156 (11.69)**	-0.088 (7.57)**
Fixed person wage premium	0.536 (67.42)**	0.518 (65.40)**	0.595 (88.19)**	0.593 (87.93)**	0.518 (65.48)**	0.593 (87.92)**
Experience	0.010 (18.41)**	0.009 (16.65)**	0.012 (24.52)**	0.012 (24.96)**	0.009 (16.72)**	0.012 (24.95)**
Experience ² /100	-0.003 (8.85)**	-0.003 (8.01)**	-0.003 (11.11)**	-0.003 (11.61)**	-0.003 (8.09)**	-0.003 (11.60)**
Tenure		0.056 (12.69)**	0.043 (11.48)**	0.044 (11.75)**	0.056 (12.73)**	0.044 (11.75)**
Tenure ² /100		-0.220 (6.95)**	-0.165 (6.15)**	-0.171 (6.38)**	-0.220 (6.97)**	-0.171 (6.38)**
Firm wage premium			0.868 (100.56)**	0.846 (85.71)**		0.846 (85.71)**
Temp industry in base period					0.078 (5.47)**	-0.011 (0.93)
Controls for additional firm characteristics	No	No	No	Yes	No	Yes
Constant	7.218 (324.91)**	7.048 (287.07)**	7.154 (343.47)**	7.146 (294.12)**	7.041 (286.43)**	7.147 (293.90)**
Observations	25638	25638	25607	25487	25638	25,487
R-squared	0.17	0.19	0.42	0.43	0.19	0.43

Absolute value of t statistics in parentheses

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

The additional firm characteristics controls that are suppressed in the table include 10 dummies for industry, 9 dummies for different job flow categories, 6 dummies for different worker churning categories. All specifications include State dummies.

Table 15b: Regressions of log quarterly real earnings in base period: job changers with low earnings in the base period

	(1)	(2)	(3)	(4)	(5)	(6)
White Women	-0.116 (15.43)**	-0.112 (14.96)**	-0.130 (18.31)**	-0.122 (17.04)**	-0.115 (15.28)**	-0.122 (17.04)**
Black Women	-0.054 (5.20)**	-0.052 (5.10)**	-0.091 (9.33)**	-0.083 (8.48)**	-0.052 (5.03)**	-0.083 (8.49)**
Other Women	-0.022 (2.44)*	-0.020 (2.23)*	-0.047 (5.62)**	-0.059 (6.94)**	-0.022 (2.47)*	-0.059 (6.96)**
Black Men	0.013 (1.11)	0.011 (0.93)	0.015 (1.39)	0.014 (1.34)	0.015 (1.34)	0.014 (1.32)
Other Men	0.037 (4.05)**	0.036 (4.04)**	0.033 (3.83)**	0.020 (2.24)*	0.034 (3.79)**	0.020 (2.23)*
Fixed person wage premium	0.253 (49.22)**	0.255 (49.54)**	0.347 (69.04)**	0.344 (68.79)**	0.255 (49.58)**	0.343 (68.76)**
Experience	0.005 (12.08)**	0.005 (12.63)**	0.007 (19.48)**	0.007 (19.90)**	0.005 (12.80)**	0.007 (19.91)**
Experience ² /100	-0.001 (3.58)**	-0.001 (3.82)**	-0.001 (6.51)**	-0.001 (6.81)**	-0.001 (3.96)**	-0.001 (6.83)**
Tenure		-0.020 (4.87)**	-0.014 (3.49)**	-0.012 (3.20)**	-0.021 (5.09)**	-0.012 (3.20)**
Tenure ² /100		0.094 (2.76)**	0.070 (2.19)*	0.065 (2.04)*	0.096 (2.84)**	0.064 (2.03)*
Firm wage premium			0.496 (71.28)**	0.524 (69.07)**		0.524 (69.01)**
Temp industry in base period					-0.090 (8.04)**	-0.015 (0.97)
Controls for additional firm characteristics	No	No	No	Yes	No	Yes
Constant	6.809 (488.90)**	6.864 (408.75)**	6.955 (436.98)**	6.962 (379.79)**	6.871 (409.00)**	6.961 (379.74)**
Observations	41772	41772	41710	41519	41,772	41,519
R-squared	0.07	0.07	0.17	0.19	0.07	0.19

Absolute value of t statistics in parentheses

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

The additional firm characteristics controls that are suppressed in the table include 10 dummies for industry, 9 dummies for different job flow categories, 6 dummies for different worker churning categories. All specifications include State dummies.

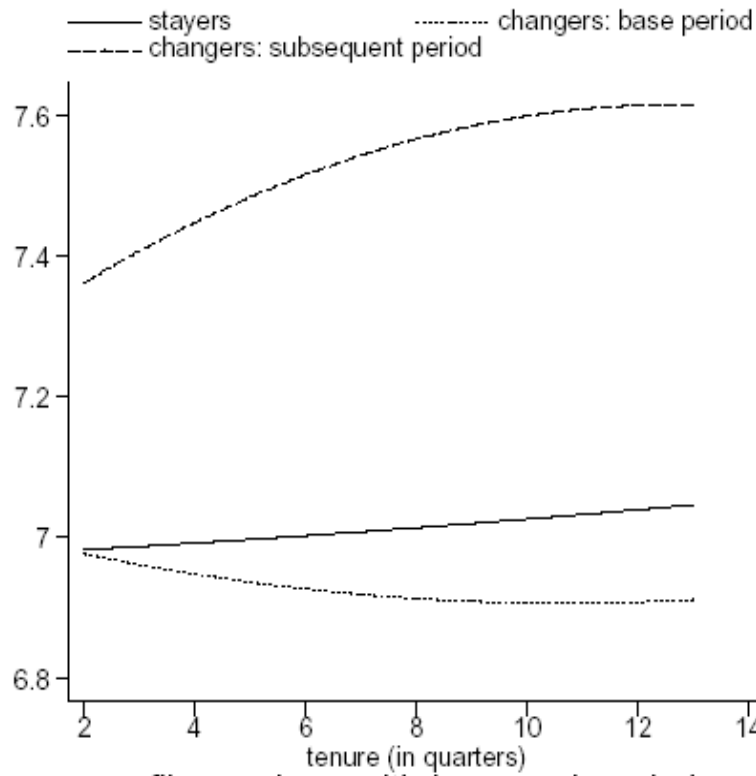
Table 16: Distribution of lost employment time: job changers with low earnings in base period.

	Mean	P25	P50	P75
			“Winners”*	
White-Female	3.60	1.10	2.67	5.00
White-Male	3.99	1.38	3.00	5.00
Black-Female	3.68	1.37	3.00	4.89
Black-Male	3.59	1.62	3.00	4.70
Other-Female	3.86	1.61	3.00	5.43
Other-Male	3.57	1.47	3.00	4.85
Total	3.71	1.30	3.00	4.97
			“Losers”*	
White-Female	4.09	1.67	3.09	5.36
White-Male	4.20	2.00	3.41	5.07
Black-Female	3.77	1.64	3.00	4.90
Black-Male	3.85	2.00	3.26	4.79
Other-Female	4.31	2.00	3.33	5.66
Other-Male	3.70	2.05	3.11	4.34
Total	4.03	1.93	3.15	5.00

Note: Lost employment time is defined as the sum of full quarters of non-employment between job in base period and job in subsequent period and the estimated fraction of quarter employed in first quarter at new jobs and last quarter at old job. Fraction of quarter employed in first and last quarter is estimated by comparing income levels in those quarters with adjacent quarters.

* “Winners” are those individuals whose earnings in the first full quarter at the new job are higher than earnings in the last full quarter at the old job. Correspondingly, “losers” are those whose earnings are lower in the first full quarter at the new job as compared to earnings in the last full quarter at the old job.

Figure 1



Wage-tenure profile: workers with low earnings in base period

Appendix

Table A1: Sample Description

	Observations	Individuals	Employers
Universe	854,593,228	57,823,057	2,913,197
Universe after age restriction	584,203,034	34,961,141	1,971,817
Universe after imposing labor force restriction	633,917,471	25,808,095	1,642,074
Universe after imposing labor force and age restriction	469,787,547	18,783,475	1,202,096
Total number in 5% sample		938,226	350,478

Table A2: Sample Characteristics Compared to Census Data

	Characteristics		Earnings	
	Census (1990)	UI Data (1994)	Census (1990)	UI Data (1994)
Female	46.26%	48.76%	\$24,939	\$26,877
Male	53.74%	55.38%	\$44,391	\$41,328
White	68.51%	69.95%	\$38,944	\$38,117
Black	11.04%	12.21%	\$26,444	\$24,482
Other	20.45%	20.87%	\$28,333	\$29,295
Foreign born	17.11%	19.80%	\$29,461	\$29,175
US Born	82.89%	84.34%	\$36,618	\$35,827
Agriculture	2.62%	2.55%	\$24,371	\$16,717
Mining	0.29%	0.22%	\$44,320	\$48,440
Construction	7.35%	5.93%	\$36,365	\$33,817
Manufacturing	17.66%	16.96%	\$36,753	\$38,155
Trans. & Utilities	7.68%	6.89%	\$39,878	\$41,775
Wholesale trade	4.68%	7.50%	\$40,741	\$42,757
Retail trade	13.74%	13.59%	\$26,463	\$24,095
FIRE	7.51%	7.09%	\$44,809	\$44,884
Services	33.09%	34.85%	\$34,469	\$34,902
Public Admin	5.38%	4.43%	\$38,793	\$37,426
All	100.00%	100.00%	\$35,393	\$35,368