Job-to-Job Flows and the Consequences of Job Separations*

Preliminary and Incomplete

Bruce Fallick
Federal Reserve Board
bruce.fallick@clev.frb.org

John Haltiwanger
University of Maryland
haltiwan@econ.umd.edu

Erika McEntarfer
U.S. Census Bureau
erika.mcentarfer@census.gov

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Abstract

This paper extends the literature on the earnings losses of displaced workers to provide a more comprehensive picture of the earnings and employment outcomes for workers who separate. First, we compare workers who separate from distressed employers (those contracting rapidly) and those who separate from stable or growing employers. Second, we distinguish between workers who do and do not experience a spell of joblessness. Third, we examine the full distribution of earnings outcomes from separations – beyond the impact on the average worker. We find that earnings outcomes from separations that lead to employment at a new firm depend much less on whether a job separation is associated with a distressed employer than on whether the separator experienced a substantial jobless spell after the separation. We also find that, conditional on not being recalled in a period, separating workers are from distressed employers exit non-employment to new firms more quickly than other separators. These findings may partly reflect that workers separating from growing firms are more likely to be recalled, which is consistent with distressed separators being less likely to wait around to be recalled as the likelihood of being recalled from a distressed firm is low.

I.   Introduction

The empirical literature on the relationship between job mobility and earnings dynamics emphasize two distinctly different patterns. On the one hand are findings that job mobility yields increases in earnings for workers.[1] This view emphasizes that, especially for young workers, building a career (or finding a career) often involves job mobility. On the other hand, the displaced worker literature emphasizes the persistent earnings losses associated with workers who separate from distressed firms (firms undergoing major downsizings through plant closings or large contractions).[2] For such displaced workers, an important element of adjustment is that it takes time to find new matches, so it is argued that displacement is often followed by a spell of joblessness. In a related fashion, separations beget separations as the new matches made after the initial displacement are relatively unstable.

These two views are not inherently in conflict but they do offer quite different perspectives on the impact of economic turbulence on the career path of workers. It is well known that worker flows in terms of accessions and separations are very large in dynamic economies like the U.S. The average accession and separation rates are around 18 percent per quarter in the U.S.[3] About a third to a half of that worker reallocation is associated with job reallocation – the reallocation of employment opportunities across employers – while the remainder is due to the many other events that produce worker transitions in the labor market. Given the turbulence of workers and jobs, it is important to understand the implications of this turbulence for the earnings and employment outcomes of the workers involved.

The existing literature already provides some guidance for the reconciliation of these two views on job separations. This lies in distinguishing between displaced

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[1] See for example, Topel and Ward (1992), and Brown, Haltiwanger and Lane (2006).
[2] See, for example, Jacobson, Lalonde and Sullivan (1993), Schoeni and Dardia (1997), and McKinney and Vilhuber (2003), Lengermann and Vilhuber (2002).
[3] See Haltiwanger, Hyatt, McEntarfer and Sousa (2012). These rates are from the LEHD program and are from a 28 state sample of U.S. states. Their estimates are that job flows account for about a third of the worker flows. The accession and separation rates are measured as the cumulative flows of accessions and separations at the establishment level as a percent of total matches in the quarter. Davis, Faberman and Haltiwanger (2012) report accession and separation rates at about the 15 percent level from adjusted JOLTS statistics. They report that job flows account for about half of worker flows using the integrated JOLTS and BED data.

separators and workers who choose to make a job change to improve their outcome in the labor market. In like fashion, it is necessary to distinguish between separations that yield subsequent spells of joblessness from separations that yield direct job-to-job flows. However, while these factors have already been studied in a limited fashion, what is missing is a comprehensive picture of the earnings and employment outcomes for workers that separate.[4] In this paper, we push towards a more comprehensive picture on a number of dimensions. First, we examine the differences between the workers who separate from distressed employers (who are often referred to in the literature as displaced workers) and those who separate from stable or growing employers. Second, we distinguish between those workers that make direct job-to-job transitions and those that experience a spell of joblessness. Third, we examine the full distribution of earnings and employment outcomes from separations – not only the average outcome.

Our primary finding is that the most critical factor for earnings outcomes is whether a worker makes a quick transition to a new job. Workers that experience a substantial spell of nonemployment following a separation experience significantly worse earnings outcomes.[5] We find that the growth rate of the separating firm is less critical (although it plays some role) once we control for the duration of nonemployment experienced by a separating worker. We find that all job separators, including those from distressed and closing firms, do well if they find new work fairly quickly; earnings penalties for job change are concentrated among those separators who do not. These findings hold true both in years with strong labor markets and years with weak labor markets.

We also find that, conditional on not being recalled in a period, workers separating from distressed firms are more likely to exit non-employment to a new firm in that period compared to other separators. In a closely related fashion, separating workers at distressed firms are more likely to make a direct within quarter job-to-job flow to a new firm than other separators. In interpreting these findings, it is important to emphasize the role of recalls. Workers who separate from growing firms are much more

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4 A recent paper by Haltiwanger, Hyatt, Kahn and McEntarfer (2017) examines the earnings gains from job-to-job flows.
5 Using data for Portugal, Carneiro and Portugal (2006) find that earnings losses are larger for displaced workers who experience a spell of joblessness. Hijzen, Upward and Wright (2008) find the same for the United Kingdom.

likely to be recalled. Our finding of greater likelihood of exiting non-employment to another firm for distressed separators is consistent with such workers not waiting around to be recalled. For these and other reasons we discuss, our findings are not inconsistent with the observations in the literature that indicate that the layoff-separation ratio is higher for rapidly contracting firms and the associated finding that workers who have been laid off are more likely to enter unemployment than are other separators.[6]

As in the previous literature, we find wide dispersion in earnings outcomes for job separators. For example, the typical (median) separator in 2005 from a slowly growing firm who makes a within-quarter job-to-job transition sees a change in earnings about 4 percent above that of a non-separator, but a worker at the 10th percentile sees a 0 percent relative earnings loss and a worker at the 90th percentile sees a 25 percent relative earnings gain. A prolonged spell of joblessness has an adverse impact on the median and also yields a somewhat larger dispersion of outcomes. For example, for a worker who separates from a slowly growing firm who experiences 4 quarters of observed nonemployment, at the median the earnings change (relative to stayers) is -22 percent; at the 10th percentile it is -30 percent and the 90th percentile is +11 percent. With such broad dispersion in earnings outcomes, we must be careful in generalizing too much from results for the average or median separator.

One challenge that we face in examining the earnings and employment outcomes for all separators is that unobserved heterogeneity inherently plays a more critical role for the full distribution of separators than for the separators from distressed firms. The displaced worker literature has argued that the separations from plant closings and firms with large contractions are likely employer-induced and exogenous to the worker. The same argument does not apply for all separators. We control for a variety of firm and worker characteristics given our longitudinal matched employer-employee data. We find that our results are robust to considering a variety of different sub-groups that are arguably more homogenous with respect to, among other things, labor force attachment. Our earnings analysis (both using OLS and quantile regressions) uses a first difference specification to abstract from unobserved heterogeneity that yields level differences in

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6 Moreover, the correspondence between firm distress and layoffs or worker displacements is not perfect. See Flaaen, Shapiro, and Sorkin (2017); Cooper (2013); and Von Wachter, Handwerker and Hildreth (2009).

earnings across workers.

This paper proceeds as follows. Section II describes the LEHD data infrastructure used in this analysis. Section III presents the measurement methodology for tracking separations and employer-to-employer flows in the administrative data. Section IV presents the descriptive analysis of the consequences of job separations. Section V discusses the formal models and results. Concluding remarks for this preliminary draft are provided in Section VI.

II. Data

We analyze the employment and wage consequences of job separations using data housed at the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. The LEHD program maintains a variety of survey and administrative data from a number of state and federal agencies. For this analysis, we chiefly exploit administrative data that combines a worker's employment and wage history with information about the firm available from state-level unemployment insurance (UI) wage data and the Quarterly Census of Employment and Wages (QCEW) data. Both UI and QCEW data are available for states in partnership with the LEHD program, currently all 50 states and the District of Columbia. A thorough discussion of the LEHD data is provided in Abowd, Haltiwanger, and Lane (2004) and in Abowd et. al. (2006); a brief description follows.

State-level unemployment insurance (UI) data contain quarterly earnings for employees covered by state unemployment insurance systems, over 96% of private sector employment. A firm, as defined in this analysis, is a collection of workers who share a common unemployment insurance system identifier. Individual wage records are then linked across quarters to create individual work histories. The firm identifier on the UI records is used to link to information on the firm available in the QCEW data, which contains information on the industry and location of the firm. A limited list of worker demographics, namely sex and date of birth, are available from links to the Census administrative data, providing a virtual universe of information about age and gender.

From this administrative data we construct a panel of linked employer-employee observations, pooling the wage histories from five large LEHD states: California, North

Carolina, Oregon, Washington, and Wisconsin.[7] From this pooled data we create a sample of job separators, namely workers with at least one year of job tenure who experience a job separation in one of three reference quarters – 1999:2, 2001:2, 2005:2, and 2009:2 – that span a variety of macroeconomic conditions. We include in our sample both male and female workers, age 25-55 at the time of separation. We impose an additional restriction that the separating job is the worker's "main" job, i.e., the worker's primary source of earnings during the year previous to the separation. We identify a separation in a quarter when a worker switches to another job in the same or adjacent quarter or separates into non-employment in the adjacent quarter. Even though we focus on separators and stayers from these states, we track the earnings outcomes on a national basis. That is, for a worker that separates from one of our five states we use all available national LEHD data infrastructure to track earnings and employment outcomes.

We categorize these job separations by whether or not the separation is from a distressed firm. We define a 'distressed firm' here as one that experienced a 30-percent or larger employment loss in the year ending in the quarter subsequent to the separation. This is similar to the 'distressed firm' definition used in Jacobson, LaLonde, and Sullivan (1993) (hereafter JLS) and includes firm closures as well as firms experiencing large staff reductions.[8] Although some of these separators may have been quits or firings for cause, the overwhelming majority are likely separations that would not have occurred in the absence of the displacement event.[9] We further divide distressed firms into those that closed (i.e., employment fell to zero) and "fast-contracting" firms, whose employment remains positive. We break out the remaining separations by the growth rate of the firm, described in more detail below.

For comparison purposes, we also construct a sample of job stayers in the reference quarter; these are workers 25-55 who have at least one-year tenure with their

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7 We narrow the sample to these five states in part to reduce the size of the analysis as well as have the longest possible time series, as the availability of LEHD data for a particular year varies by state. Approximately 10 states have data available in the early 1990s.

8 We do not include in the sample employment separations that occur in administrative data due to firm ID changes or merger/acquisition events. We use the pattern of worker flows to identify separations and accessions due to such events and suppress the flows that result.

9 Because this categorization works less well for smaller firms, for all analysis where separations are broken out by the growth rate of the separating employer we restrict our analysis to firms with at least 50 employees.

main employer at the quarter of interest, and are continually employed with the same employer through the next three quarters. When considering the outcomes of separating workers we implicitly compare this group to the outcomes for stayers at firms with similar growth rates.

We construct these samples of stayers and separators for four quarters: 1999:2, 2001:Q2, 2005:Q2, and 2009:Q2 with an eye to comparing outcomes across years with different macroeconomic environments. The characteristics of the pooled samples in are described in Table 1. Relative to stayers, job separators are younger and less likely to be attached to a large firm. Distressed separators are older than separators generally, but are younger than stayers. The industry that contributed the largest share of distressed separators is manufacturing, with 30% of distressed separators coming from that sector. The sample is large, with over 4 million job stayers, nearly 3 million job separators, and just over 200,000 distressed separators.[10] Table 2 compares the distressed separators in each year.[11] The number of distressed separators in the recession years of 2001 and 2009 is, not surprisingly, substantially larger than in the expansion periods of 1999 and 2005.12 There is also a notable change in industry composition across the samples. For example, the 2001 sample has a much larger share of distressed separators from firms in the information sector, while the 2009 sample has a larger share from the construction industry.

III. Tracking Employer-to-Employer Flows in Administrative Data

As we discussed above, our goal here is to trace the job and earnings paths of workers following job separations. Our earlier work (Bjelland et. al., 2008) on employer-to-employer flows was restricted to job changes that occurred within the quarter of job

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10 Because the sample of job stayers is so large, for all analyses we use a 10% random subsample of stayers.

11 Although these workers are often referred to as 'displaced workers' in the literature, we will often refer to them as distressed separators (i.e., separators from distressed firms) for greater precision. Our job separator comparison groups likely also contain displaced workers that cannot be identified in the administrative data.

12 The reader may be surprised that the number of distressed separators is similar in the mild recession year of 2001 and the severe recession year of 2009. The reasons are two-fold. First, in using the second quarter of the year as the reference quarter, our sample misses the worst quarters for job losses of the Great Recession. Second, according to data from the Bureau of Labor Statistics' Business Employment Dynamics program, the net employment change in 2001 was more heavily weighted toward job losses vs. lack of job gains than was the net change in 2009.

separation. We found that on average 30% of main job separations were directly to another job, and that on average these job changes were associated with positive earnings growth for the worker. To generalize the implications of employer-to-employer flows for labor market dynamics, here we also study transitions to new jobs that include a spell of nonemployment. As evidence from the displaced worker literature suggests, the ability to retain -- as well as find -- new employment is important in the adjustment from a job separation. Note that the current analysis focuses on the first job upon re-employment.

In defining separations, we restrict ourselves here to main jobs, defined as the job that is the primary source of earnings in the quarter. Our previous work estimating employer-to-employer flows for all jobs found that over 95% of employer-to-employer flows were main job to main job flows, so this restriction simplifies the analysis while retaining almost all flows of interest.

We categorize worker flows by the duration of the spell of joblessness following a separation in the reference quarter. As quarterly wage data does not provide exact start and end dates for jobs, the duration of joblessness must be inferred from the pattern of quarterly earnings in the administrative data. An example is illustrative; Example 1 below provides a sample of a fictional wage record for a worker John Doe.

Example 1: UI Wage Record for John Doe

	Firm	Y1:Q1	Y1:Q2	Y1:Q3	Y1:Q4	Y2:Q1	Y2:Q2	Y2:Q3
John Doe	A	$6700	$5900	$3100				
John Doe	B			$4500	$5200			
John Doe	C					$2900		
John Doe	D							$3700

Employer-to-employer flows that occur within the same quarter are clearly the shortest transitions to new employment from a job separation we can identify in the data. In Example 1 above, John Doe experiences such a flow from A to B in the third quarter of the first year. There may be a short nonemployment spell associated with such a flow: If separations and accessions were uniformly distributed throughout the quarter, the implied average nonemployment spell is five to six weeks long. However, the average spell may in fact be shorter: The wage patterns during these transition quarters suggests a period of overlapping paychecks associated with these flows, with the sum of quarterly earnings across all employers higher during the quarter of transition than in surrounding quarters. This suggests relatively short or non-existent spell of joblessness between jobs.

When the accession to a new job occurs in the next quarter after the job separation, the worker is much more likely to experience a short spell of joblessness that we do not observe – about three months on average, again assuming a uniform distribution of separations and accessions in each quarter. In the example above, John Doe experiences this type of job flow from employer B to job C in the fourth quarter of year one.[13]

We categorize the remaining flows according to the number of full (that is, observed) quarters of joblessness.[14] It is only for these workers that we can state with

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13 For job flows that occur across several quarters we choose to identify the timing of the flow as occurring in the quarter of separation from a job.
14 Again, it is important to note that a worker for whom we observe a full-quarter of nonemployment most likely also did not work the entire quarter of his job separation, or job accession. If we again assume uniform distributions of separations and accessions, the average worker experiencing a job flow with one full-quarter of nonemployment observed experienced a six-month nonemployment spell.

confidence that they experienced a spell of joblessness. Additionally, between 5 and 18 percent of job separators in each sample have no observed positive UI wages in any state to the end of the time series in 2016:Q4. These would include those who found employment not covered by a state unemployment insurance system and those who dropped out of the labor force. Note also that a person who separates but returns to the same employer in the same or adjacent quarter would not be identified as a separation in our data, because no break in earnings from that employer would be apparent.

IV. Consequences of Job Separations: Descriptive Results

A. Nonemployment Following Job Separation

We begin by describing the distribution of separations by the duration of the spell of joblessness. Table 3a breaks out all job separations by the duration of joblessness associated with the transition into employment at a new employer for the pooled samples. In the four years of separation we examine, more than 1/3 of all job separators begin a new job within the same quarter as the separation, similar to the fraction of main job separations into new jobs in our previous work on employer-to-employer flows, even with the additional labor force attachment restriction.[15] Perhaps surprisingly, within each age/sex group the shares of workers separating from distressed firms who move to new jobs quickly is similar to that for separators generally. In addition, distressed separators are less likely to never be observed with positive earnings again in the time series. The demographic breakouts show expected patterns: younger workers are more likely to experience an immediate flow to new employment and are less likely to never be observed with earnings again. Importantly, Table 3 excludes workers who become re-employed at the same employer from which one separated ("recalls", for short). As we shall see below, recalls play an important role with quite different patterns across separators from distressed vs. non-distressed firms.

Table 3b compares the duration of joblessness after job separation by whether or not the worker separated from a distressed firm in each of the four samples separately. As expected, the share of job flows that do not involve an observed spell of nonemployment is greater in the expansion years 1999 and 2005 than in the two recession

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15 Bjelland et. al. (2008). In that paper, we only required the separating worker to be with that employer in the previous quarter, compared to the previous four quarters here.

years of 2001 and 2009. In each year, distressed separators are at least as likely as separators in general to experience only a short spell of nonemployment.

B. Earnings Consequences of Job Separations

Next we examine the earnings outcomes of job separations for separators generally and for separators from distressed firms. We focus on earnings outcomes for separating workers who accede to a new employer. Specifically, we examine the change in quarterly earnings between the separating job and the new acceding job.[16] We drop observations with log earnings changes outside of the interval (-1.2, +0.8).

Table 4a breaks out the 10th, 25th, 50th, 75th, and 90th percentiles of the log earnings change in real quarterly earnings, by the duration of joblessness, and also by whether or not the separator was departing from a distressed firm.[17] Earnings change for job stayers is shown for comparison. Median earnings growth both for all separators and for distressed separators experiencing a within-quarter flow to a new job is positive. The same is true for separators who are re-employed in the adjacent quarter. However, the median earnings consequences for separators who experience at least one full quarter spell of nonemployment are negative for both distressed workers and all job separators. Moreover, at each percentile the earnings changes for distressed separators are comparable to those for all separators.

The dispersion of earnings outcomes increases as the nonemployment spell lengthens: In particular, the bottom of the distribution falls as the duration of nonemployment rises. This pattern holds for both separators from both distressed and non-distressed firms.

Table 4b breaks out the median earnings changes by year. In all years, substantial earnings losses are seen only among those who experience at least one full quarter of nonemployment, among distressed separators as well as separators in general. As one would expect, the losses attendant upon nonemployment are more severe, and the gains

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16 We can only compare quarterly earnings for those workers who experience a full-quarter of employment in their new jobs, thus losing earnings changes associated with very short jobs.

17 Note that these are changes from the quarter before separation to the first full quarter of re-employment. The subsequent analyses concentrate on earnings changes from four quarters before the separation. In future editions we will consistently refer to the latter changes.

associated with "direct" job-to-job change are smaller, in the recession years than in the expansion years.

With regard to the earnings paths after separation over a longer horizon, Figure 1 compares earnings from the 2005 sample for separators from distressed firms relative to job stayers. The left panel shows earnings in 2010 dollars, while the right panel indexes the earnings of both groups to 2004:Q2=100 to emphasize the differences. In constructing these earnings paths, workers who have zero earnings in a quarter are included in the averages, so spells of joblessness contribute to lower earnings. Here, in the red line, we see substantial earnings losses relative to job stayers at the time of separation in 2005:2, with full recovery (or more) after about 5 years. The lower earnings for the separators for a number of years following a separation is a common finding in the displaced worker literature and is presumably driven by a combination of factors by both nonemployment and less desirable job matches upon re-employment.

Figure 2 is similar to Figure 1 but divides distressed separators by the length of nonemployment following job separation, for all four samples. As was suggested by the results for earnings changes upon re-employment in Tables 4a and 4b, distressed separators who become reemployed in the same quarter as the separation see small and temporary earnings losses relative to stayers, while joblessness is associated with substantial and lasting losses. These breakouts for the all-separators group are not shown but have a similar distribution of outcomes by nonemployment duration.

These figures suggest that joblessness is a more important predictor of the earnings outcomes of job separations than displacement (at least than displacement defined using the administrative data on firms). Both distressed separators and non-distressed separators who experience no observed (full quarter) jobless spell do well relative to job stayers and well relative to their pre-separation earnings. In what follows, we focus on the earnings change to the first full quarter of re-employment, as in Table 4, but Figures 1 and 2 suggest that the role of nonemployment duration is important at longer horizons as well.

V. Nonemployment Duration and Earnings Outcomes: Regression results

The descriptive results described above suggest that nonemployment duration

after job separation is a critical predictor of the earnings consequences of job separations. Negative consequences of job separations appear to be highly concentrated among workers with at least one full-quarter of joblessness. Separators from distressed firms that have no observed jobless spell appear to do remarkably well, in some cases better than job stayers. However, there may be systematic differences between these populations of job separators that account for much of the differences suggested in the descriptive results. To explicitly account for these we examine nonemployment duration and earnings outcomes in a regression framework. For these analyses, in the spirit of JLS, we restricted our sample of separators for those who appear again our data with positive earnings within 8 quarters of the separation. As such, for the remainder of the analysis we focus on workers with fairly strong labor force attachment.

A. Nonemployment Following Job Separation

For the length of nonemployment after separation we estimate a competing-risks hazard model, in which the two risks are becoming re-employed at a new employer and becoming re-employed at the same employer from which one separated (recall). We assume that recalls dominate new jobs, so a worker recalled in a particular period is not in the risk set for taking a new job in that period. The probability of becoming re-employed at a new job at each duration of nonemployment, conditional on not already being re-employed, is modeled as

$$logit(new\ job\ in\ t\ |\ not\ reemployed\ before\ t\ and\ not\ recalled\ in\ t)_i$$
$$= \alpha_t + \beta_t X_i + \gamma_t Z_i + \mu_{it} \quad (1)$$

where X_i is a vector of worker characteristics that include age, sex, and tenure at separating firm and Z_i is a vector of characteristics of the separating firm, namely size, state, growth rate in the year prior to separation, and the growth rate of the industry within the state. The probability of recall is modeled analogously but the risk set for recalls includes all separators not reemployed before t, that is,

$$logit(recalled\ in\ t\ |\ not\ reemployed\ before\ t)_i$$
$$= \alpha'_t + \beta'_t X_i + \gamma'_t Z_i + \mu'_{it} \quad (2)$$

Of particular note, the growth rate of the employer in the year prior to separation is represented by five categories:

a. "Closed": Employment goes to zero.

b. Rapidly shrinking: -100% < change in employment < -30%

c. Slowly shrinking: -30% ≤ change in employment < 0

d. Slow growing: 0 ≤ change in employment < +30%

e. Rapidly growing: change in employment ≥ +30%

Table 6 shows the results of the analysis for the four different years. For each year, the table shows the difference in the probability of a transition (in percentage points) between a person who separated from firms of different growth rates and a person who separated from a rapidly growing firm.[18] The probabilities are evaluated at the means of the other covariates. Even controlling for observed differences in workers and firms and focusing on our sample of workers with fairly strong labor force attachments, we find that, for the most part, separators from distressed (closed or rapidly shrinking) firms tend to be faster to find employment at a new firm than separators from growing firms. This is especially true for the subsample of distressed separators whose firms closed (this holds in three of the four samples).[19] Importantly, we also find that workers from distressed firms are much less likely to be recalled, but conditional on not returning to their former employers, their rates of early re-employment via new firms are higher than for separators from non-distressed firms.[20]

There are several possible reasons why conditional on not being recalled, distressed separators have shorter durations of non-employment.   One is that workers from distressed firms anticipate the separation and begin searching for another job ahead of time.[21] This is consistent with job ladder models where workers at the bottom of the ladder are more likely to separate via a job-to-job flow (Haltiwanger, Hyatt, Kahn and McEntarfer (2017)). In this case, being at a distressed firm is an indicator of being at the bottom of the ladder.

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18 We do not report standard errors or confidence intervals here for expositional convenience. We note that the estimated standard errors on the coefficients of firm growth rates are very small.

19 The exception to this pattern is the 1999 sample. Note that, as indicated in Table 5, the number of separators from closed firms is considerably smaller than from the other groups of firms.

20 Closed firms are not necessarily permanently closed so workers can be recalled from closed firms.

21 The WARN Act requires most employers with more than 100 employees to give 60-day advance notice of a plant closure or mass-layoff event. Research into the impact on the WARN Act on post-displacement earnings and employment have generally found that the WARN act reduced the number of displaced individuals that experienced a jobless spell during the event (e.g. Addison & Blackburn, 1997).

Another important possibility is that the workers separating from distressed firms know that recall to their former employers is unlikely, and so search more intently for new jobs rather than wait to be recalled. Indeed, as noted, Table 6 shows that workers who separate from rapidly-shrinking employers are much less likely to be recalled. These findings are broadly consistent with Katz and Meyer (1990) and Fallick and Ryu (2007).[22]

There may be other factors at work as well. For example, the patterns in Table 6 may reflect a lessening of the 'lemon's effect' for separators from distressed firms: Potential employers might have greater confidence in the quality of the pool of workers separating from a closing firm, increasing the rate and quality of job offers.[23]

Another possible factor that may be at work is unobserved heterogeneity not captured by our controls despite our focus on workers with strong labor force attachments.[24] In order to evaluate the role of such heterogeneity we considered a variety of sub-groups analyses to either increase or decrease the presumed labor market attachment of the sample. Sub-groups we considered include separators observed with positive earnings within 4 quarters of separation (as opposed to 8 quarters in our main analysis), to men aged 35-44, and to workers with at least 5 years of tenure at the origin firm. We also tried moving in the other direction and restricted the sample to women aged 25-34 (the post-schooling ages with the highest fertility rates), in order to examine a group that may have lower labor force attachment. None of these restrictions significantly changed the result that distressed separators have lower observed incidence of nonemployment and are faster to find new jobs. These robustness exercises indicate that our results are not being driven by obvious differences in labor force attachment. Particularly important here is that the results are robust to workers re-employed within 4 quarters. In addition, because one would expect the mix of unobserved labor force

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22 Katz and Meyer (1990) and Fallick and Ryu (2007) estimate the competing risks framework in a proportional hazards setting. Given the nature of the data they need to group the data into discrete time periods as do we in our estimation. The logit specifications we consider are an alternative functional form capturing the same type of competing risks environment.

23 For recent discussions, see Carrington and Fallick (2017, p.697); and Flaaen, Shapiro, and Sorkin (2017, p.3). Recent work by Abraham et. al. (2017) suggests that unobserved heterogeneity is not accounting for observed duration dependence but it still might be important in distinguishing between separators.

24 The results in this paragraph are from an earlier version of the paper with a different sample. We are working on updating these results.

attachment – as well as other forms of unobserved heterogeneity -- among job losers to vary with the cyclical state of the labor market, the robustness of the findings across years argues against unobserved heterogeneity as an explanation for the patterns in Table 6.[25]

To close this section, it is useful to discuss our findings in light of the empirical literature regarding distressed separators, layoffs and unemployment. Two key findings from that literature are important in this context. First, the proportion of separations that are job losses – layoffs rather than quits – increases sharply with the rate at which a firm contracts (Davis, Faberman and Haltiwanger 2006, 2012). Second, job losers are more likely to become unemployed, and experience more unemployment, than job leavers (for example, Elsby, Hobijn and Sahin 2010). These two observations imply that separators from distressed firms should experience more unemployment, both in incidence and duration, than do separators from non-distressed firms.

Our findings are not inconsistent with these observations since our findings about distressed separators being more likely to exit nonemployment to a new firm are conditional on not being recalled. Moreover, recalls likely play an even larger result than suggested by Table 6. In our data, as discussed above, we cannot identify separations that end in recall within the quarter of separation or in the adjacent quarter. Thus, recalls associated with short durations of nonemployment are not captured in our sample. Such recalls after short durations of nonemployment are likely higher at growing firms. 26

B. Earnings Consequences of Job Separations

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25 In interpreting our results, it is important to highlight that our findings are about spells on nonemployment instead of unemployment. For example, using the matched monthly CPS data for the years 2004 and 2006 (bracketing one of our reference quarters in 2005), we find, as others have, that the rate of workers moving from employment to out of the labor force at high frequencies is quite high even for sub-groups with seemingly strong labor force attachment. In particular, even among employed men aged 35-44, a highly attached group, about 15 percent of separators each month leave the labor force. Of these, 38 percent said that they want a job. This suggests that movements out of the labor force may be an important element of the nonemployment we observe among even prime-aged males.

26 Another possibility is that the finding in the literature that job losers experience more unemployment is an artifact of respondents to household surveys like the Current Population Survey failing to report short or casual jobs (Abraham, *et al*, 2013). We investigated this possibility by deleting new jobs with particularly low quarterly earnings, or which lasted only one quarter. We also tried deleting jobs with temporary help firms or professional employer organizations (NAICS 5623), and adding separations that occurred in the other three quarters of the year (in case one quarter is prone to more short seasonal jobs than another). None of these alterations significantly changed our result

For earnings outcomes we estimate the change in log real earnings from four quarters before the reference quarter (e.g., from 1998:Q2 for the 1999:2 separators) to each quarter t following the reference quarter.

$$\Delta y_{it} = \alpha_t + \beta_t X_i + \gamma_t Z_{j(i)} + \lambda_t g_{j(i)} + \delta_t S_i g_{j(i)} + \mu_{it} \quad (2)$$

where Δy_{it} is the change in log real earnings to quarter t, relative to either one or four quarters before the reference quarter; X_i is a vector of worker characteristics that include worker age, sex, and tenure as of the reference quarter; $Z_{j(i)}$ is a vector of characteristics of the firm of employment as of the reference quarter, namely size, state, and the growth rate of the industry within the state; g_i is the categorical variable for the growth rate of the employer growth rate in the year prior to the reference quarter, as described above; and S_i is a dummy variable equal to 1 if the worker separated in the reference quarter.[27] This first difference specification implies that we are abstracting from unobserved heterogeneity that impacts the level of earnings. Workers may also be on different earnings trajectories, which we control for via observable worker and firm characteristics.

We estimate this equation separately for each quarter t, on a sample that includes a) workers who remain employed in t at the same employer as in the reference quarter (stayers), and b) workers who separated in the reference quarter and whose first subsequent quarter of re-employment at a different firm was in quarter t.[28] However, while the first quarter of re-employment is used to define the length of the nonemployment spell, we use the first full quarter of earnings in that job (i.e., quarter $t+1$) to define the change in earnings. That is, we estimate only the earnings change for separators for their first full quarter of re-employment, relative to workers who did not separate. For each duration of nonemployment, then, the vector of coefficients δ_t represents the earnings "penalty" for separators from each growth category of employer relative to stayers.

Table 7 and Figure 3 show the earnings penalties for separators from each growth category of firm relative to stayers, evaluated at the means of the other covariates,

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27 The omitted group in the main effects in "g" is g4 (fastest growing). In addition, the main effects in "g" do not include g0 (firm closed), because, by definition, no stayers are at firms that closed. The interaction term S*g includes all five growth categories.
28 As before, we exclude separators who are recalled here. Our objective is to quantify the earnings penalty of those that separate to a new job compared to stayers.

including the mean firm-growth category for stayers.[29] By and large, the average earnings penalty for separators is fairly small when the separators become re-employed within the same quarter. The penalty is larger for those who become re-employed in the adjacent quarter, that is, without a full quarter of nonemployment, and are greater still for those with at least one full quarter of nonemployment. There is no additional penalty for longer periods of nonemployment. Given that, as noted above, persons in the adjacent-quarter group probably experience an average nonemployment spell of well more than a month, while the group also includes some persons who experience no nonemployment, it appears earnings losses rise dramatically with the experience of a substantial spell of nonemployment.

In contrast to the importance of substantial nonemployment, we find little evidence that separating from a distressed firm – even a closing firm – is an important predictor of the earnings consequences of job separations conditional on length of nonemployment after separation. For workers who make a same quarter job-to-job flow, separators from firm closings have slightly worse earnings outcomes than other separators. But for all other nonemployment duration groups, workers who separated from distressed firms fare no worse than other separators.[30]

We also estimated quantile regressions of the same form as equation (2).   In order to meet requirements for disclosure, for these regressions we collapse the "firm closed" and "rapidly shrinking firm" categories into a single category.

The results are reported in panels A-E of Figure 4. At the 10th, 25th and 50th percentiles, the worsening of the earnings penalty as observed nonemployment duration increases is evident.   Distressed separators who switch jobs in the same quarter do as well as stayers at all of these percentiles. The earnings penalty for non-employment increases especially as a worker experiences a full quarter of non-employment. Moreover, at the 10th, 25th, and 50th percentiles, there is no systematic pattern of distressed separators faring worse than other separators. The top of the distribution exhibits somewhat different patterns especially at the 90th percentile. Consistent with the

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29 In Figures 3 and 4, workers who make a same quarter transition have a -1 for number of quarters of nonemployment, workers who obtain a job next quarter have a 0 for number of quarters of nonemployment and so on.
30 The results for firm closings in the 1999 and 2009 samples are somewhat in odds with this characterization, but not enough, we think, to alter the overall picture.

unconditional tabulations in Table 4a, separators of any type at both the 75th and 90th percentiles tend to fare better than stayers if they become re-employed in the same quarter. The 90th percentile especially stands out as exhibiting no systematic earnings penalty for persistent non-employment or sensitivity to the growth rate of the separating firm.

To summarize, then, throughout the distribution of earnings changes substantial losses upon separation are associated only with significant periods of nonemployment, and, conditional on duration of nonemployment, separators from distressed firms fare no worse than, and sometimes better than, other separators.

VI. Conclusions

Using a methodology developed for tracking employer-to-employer transitions (both direct transitions and transitions involving spells of nonemployment), we investigate the consequences of separations for both the duration of nonemployment spells and for earnings outcomes.[31]

We explore the role of job-to-job flows for the dynamics of earnings and employment outcomes. We find that accounting for direct job-to-job flows is critical in accounting for the earnings consequences of separations. We find that the distribution of earnings outcomes for workers who experience a separation is similar for workers who separate from distressed (i.e., rapidly contracting) firms and for those who separate from non-distressed firms. We find that a much more important indicator of the earnings consequences of the job separation is whether the separation yielded a spell of joblessness. Workers who become re-employed fairly quickly – without an observed quarter of nonemployment – do not lose much in terms of earnings, while there is a large earnings penalty for those who experience at least a quarter of nonemployment.

We also find that, conditional on not being recalled, displaced workers (separators from distressed firms) have a higher likelihood than other separators of moving to a new job without an observed spell of nonemployment, and remain faster to move into a new job even after a significant period of nonemployment. This pattern is robust to the

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31 A public domain version of job-to-job flows is now available at:
https://lehd.ces.census.gov/data/j2j_beta.html.

business cycle and a variety of worker and firm controls including focusing on sub-groups with very strong observed attachments to the labor force (e.g., workers who are re-employed within 4 quarters of separation). This finding is not inconsistent with the findings in the literature that displaced workers are more likely to experience layoffs and spells of unemployment: Importantly, this finding is conditional on not being recalled, and is consistent with workers separating from distressed firms not waiting to be recalled. Still, conditional on a separating worker moving to a new firm, "displaced" workers are more likely to have a job-to-job flow than workers at growing firms. This pattern is consistent with job ladder models where in this case being at a distressed firm is an indicator of being at the bottom of the job ladder.

References

Abowd, John M. Haltiwanger, John C., and Lane, Julia I., 2004. "Integrated Longitudinal Employee-Employer Data for the United States." American Economic Review Papers and Proceedings, 94(2): 224-229.

Abowd, John, Bryce Stephens, Lars Vilhuber, Fredrik Andersson, Kevin L. McKinney, Marc Roemer, and Simon Woodcock. "The LEHD Infrastructure Files and the Creation of the Quarterly Workforce Indicators" LEHD Technical Paper No. 2006-01.

Abraham, Katharine G., John Haltiwanger, Kristin Sandusky and James Spletzer, 2013, "Exploring Differences in Employment Between Household and Establishment Data", *Journal of Labor Economics*, vol 31, no.2, pt.2.

Bjelland, Melissa, Bruce Fallick, John C. Haltiwanger, and Erika McEntarfer, 2011, "Employer-to-Employer Flows in the United States: Estimates Using Linked Employer-Employee Data." *Journal of Business and Economic Statistics*.

Brown, Claire, John C. Haltiwanger, and Julia I Lane, Economic Turbulence: Is a Volatile Economy Good for America? (University of Chicago Press, 2006)

Burgess, Simon, Lane, Julia I., and Stevens, David, 2000. "Job flows, worker flows, and churning." *Journal of Labor Economics* 18(3): 473-502.

Carneiro, Anabela and Pedro Portugal, 2006, "Earnings Losses of Displaced Workers: Evidence from a Matched Employer-Employee Data Set" Banco de Portugal working paper #14-2006.

Carrington, William J., and Bruce Fallick "Why Do Earnings Fall with Job Displacement?" *Industrial Relations* 56(4), October 2017, pp.688-722.

Cooper, Daniel. 2014. "The Effect of Unemployment Duration on Future Earnings and Other Outcomes." Working Paper No. 13-8. Boston, MA: Federal Reserve Bank of Boston.

Davis, Steven J., Faberman, R. Jason, and Haltiwanger, John, 2006. "The Flow Approach to Labor Markets: New Evidence and Micro-Macro Links." *Journal of Economic Perspectives*, 20(3): 3-26.

Davis, Steven J., Faberman, R. Jason, and Haltiwanger, John, 2012, "Labor Market

Flows in the Cross Section and Over Time," *Journal of Monetary Economics*, 59 (1-18).

Davis, Steven J., John C. Haltiwanger, and Scott Schuh, *Job Creation and Destruction* (Cambridge, MA: MIT Press, 1996).

Elsby, Michael, Bart Hobijn and Asyegul Sahin, 2010, "The Labor Market in the Great Recession," *Brookings Papers on Economic Activity* (Spring), pp. 1-48.

Fallick, Bruce and with Keunkwan Ryu , 2007. "The Recall and New Job Search of Laid-off Workers: A Bivariate Proportional Hazard Model with Unobserved Heterogeneity", *Review of Economics and Statistics* 89(2), pp. 313-323.

Fallick, Bruce and Charles A. Fleischman, 2001, "The Importance of Employer-to-Employer Flows in the U.S. Labor Market," Finance and Economics Discussion Series #2001-18, Federal Reserve Board, Washington, DC.

Fallick, Bruce and Charles A. Fleischman, 2004, "Employer-to-Employer Flows in the U.S. Labor Market: The Complete Picture of Gross Worker Flows," Finance and Economics Discussion Series #2004-34, Federal Reserve Board, Washington, DC.

Flaaen, Aaron, Matthew D. Shapiro and Isaac Sorkin. 2015. "Reconsidering the Consequences of Worker Displacements: Survey versus Administrative Measurements" manuscript.

Golan, Amos, Lane, Julia I. and McEntarfer, Erika, 2007. "The Dynamics of Worker Reallocation Within and Across Industries." *Economica,* vol. 74(1), pages 1-20.

Haltiwanger, John, Henry Hyatt, Erika McEntarfer and Liliana Sousa, 2012. "Job Creation, Worker Churning and Wages for Young Businesses," mimeo.

Haltiwanger, John, Henry Hyatt, Lisa Kahn, and Erika McEntarfer. 2017. "Cyclical job ladders by firm size and firm wage." *American Economic Journal: Macroeconomics* (forthcoming).

Hijzen, Alexander, Richard Upward and Peter W. Wright, 2010. "The Income Losses of Displaced Workers", *Journal of Human Resources,* vol. 45(1), pp.243-269.

Jacobson, Louis, Robert LaLonde and Daniel Sullivan, 1993 "Earnings Losses of Displaced Workers." *American Economic Review*, vol. 83(4), pages 685-709.

Katz, Lawrence and Bruce D. Meyer. 1990. "Unemployment Insurance, Recall Expectations, and Unemployment Outcomes" *The Quarterly Journal of Economics*, 105(4), 973-1002.

Lengermann, Paul and Lars Vilhuber. 2002. "Abandoning the sinking ship: The composition of worker flows prior to displacement," LEHD Technical Paper TP-2002-11.

McKinney, Kevin and Lars Vilhuber. 2003. "Using linked employer-employee data to investigate the speed of adjustment in downsizing firms," LEHD Technical Paper TP-2006-03.

Schoeni, Robert F. and Michael Dardia, 1997 "Earnings Losses of Displaced Workers in the 1990s," JCPR Working Papers 8, Northwestern University/University of Chicago Joint Center for Poverty Research.

Topel, Robert and Michael Ward, 1992. "Job Mobility and the Careers of Young Men," *The Quarterly Journal of Economics*, MIT Press, vol. 107(2), pages 439-79, May.

Von Wachter, Till M., Elizabeth Weber Handwerker, and Andrew K.G. Hildreth. 2009. "Estimating the `True' Cost of Job Loss: Evidence using Matched Data from California 1991-2000." Center for Economic Studies Paper No. CES-WP-09-14. Suitland, MD: U.S. Census Bureau.

Table 1
Characteristics of Attached Job Separators and Attached Job Stayers
Pooled 1999, 2001, 2005, and 2009 Samples

	All Separators %	Distressed Separators %	Job Stayers %
Age at time of separation			
25-34	37.9	34.5	26.1
35-44	33.6	31.2	35.4
45-55	28.5	34.0	38.5
Sex			
Male	52.0	59.7	52.3
Industry of separation			
A: Natural Resources & Mining	1.5	1.6	1.3
B: Construction	6.6	9.6	4.6
C: Manufacturing	15.2	29.9	17.5
D: Trade, Transportation & Utilities	20.1	15.4	19.1
E: Information	3.8	4.5	3.6
F: Finance Activities	7.2	5.2	6.5
G: Prof & Business Services	15.7	19.9	10.6
H: Educational & Health Services	16.1	8.3	21.8
I: Leisure & Hospitality	7.7	3.9	5.2
J: Other Services	3.8	1.3	2.8
K. Public Administration	2.4	0.3	7.0
Size of Separating Firm			
Small Firm (<50)	34.5	n/a	25.0
Mid-size Firm (50-500)	31.6	72.0	28.2
Large Firm (>500)	34.0	28.0	46.8
N	2,837,000	205,000	4,176,000

Notes: Separators are workers from CA, NC, OR, WA, or WI with at least one-year tenure at the firm at time of separation. Distressed separators are those separating from a firm with at least 50 workers that lost 30% or more of its employment in the year ending in the quarter subsequent to the time of separation. Stayers are those attached workers with at least one-year tenure at their main job in the reference quarter and are employed for the entire quarter subsequent to the reference quarter. Data include observations that are missing industry information.

Table 2
Characteristics of Distressed Separators in Each Year

	Distressed Separators %			
	1999	**2001**	**2005**	**2009**
Age at time of separation				
25-34	34.0	37.0	31.9	33.0
35-44	37.2	35.1	35.0	31.9
45-55	28.8	27.9	33.2	35.1
Sex				
Male	55.6	58.9	58.0	63.8
Industry of separation				
A: Natural Res. & Mining	2.7	1.5	1.5	1.2
B: Construction	6.9	5.7	11.4	14.2
C: Manufacturing	33.9	30.8	23.2	29.5
D: Trade, Trans. & Utilities	13.8	16.1	15.1	15.9
E: Information	2.7	8.5	3.2	2.2
F: Finance Activities	7.3	4.2	5.5	4.9
G: Prof & Business Services	14.0	22.3	19.3	21.2
H: Educ. & Health Services	10.9	6.4	12.7	6.7
I: Leisure & Hospitality	5.7	3.0	5.4	3.1
J: Other Services	1.8	1.2	2.0	1.0
K. Public Administration	*	*	0.8	0.2
Size of Separating Firm				
Small Firm (<50)	n/a	n/a	n/a	n/a
Mid-size Firm (50-500)	70.6	72.6	77.5	69.9
Large Firm (>500)	29.4	27.4	22.5	30.1
N	41,000	66,000	29,000	69,000

*Suppressed

Notes: Separators are workers from CA, NC, OR, WA, or WI with at least one-year tenure at the firm at time of separation. Distressed separators are those separating from a firm with at least 50 workers that lost 30% or more of its employment in the year ending in the quarter subsequent to the time of separation. Stayers are those attached workers with at least one-year tenure at their main job in the reference quarter and are employed for the entire quarter subsequent to the reference quarter. Data include observations that are missing industry information.

Table 3a
Nonemployment Duration Following Separation: All Separators by Age and Sex
Pooled Years, Excluding Recalls
(percent)

	Re-employment same quarter	Re-employment subsequent quarter	One full-quarter of non-employment	2-3 quarters of non-employment	At least 4 quarters non-employment	No additional UI earnings observed	N
All Separators							
Age 25-34	41.0	24.9	7.8	7.0	13.1	6.2	961,000
Age 35-44	38.4	23.3	8.0	7.4	14.6	8.4	811,000
Age 45-55	32.8	21.5	8.2	7.7	15.1	14.7	655.000
Male	40.1	23.5	7.6	7.3	13.0	8.5	1,152,000
Female	35.5	23.4	8.4	7.4	15.4	10.0	1,276,000
Distressed Separators							
Age 25-34	39.1	24.8	8.8	8.3	13.7	5.2	65,000
Age 35-44	37.4	23.9	9.4	8.4	14.7	6.2	64,000
Age 45-55	32.3	22.4	9.5	9.0	16.4	10.5	56,500
Male	38.1	23.7	8.9	8.6	14.2	6.6	111,000
Female	34.1	23.8	9.7	8.5	16.0	8.0	74,000

Note: 'No additional UI earnings observed' indicates workers that are not observed having UI earnings in any of the included LEHD states by the end of 2010.

Table 3b
Nonemployment Duration Following Separation: Distressed vs. All Separations
Pooled Years, Excluding Recalls
(percent)

	Re-employment same quarter	Re-employment subsequent quarter	One full-quarter of non-employment	2-3 quarters of non-employment	At least 4 quarters non-employment	No additional UI earnings observed	N
All Separations 1999	42.6	25.4	7.5	6.8	12.3	5.4	629,000
Distressed 1999	44.5	26.8	9.2	6.7	9.6	3.3	37,000
All Separations 2001	38.8	25.1	8.0	6.8	14.6	6.8	663,000
Distressed 2001	36.9	26.0	9.8	8.4	14.2	4.7	61,000
All Separations 2005	41.8	23.4	7.8	6.9	11.7	8.4	610,000
Distressed 2005	44.9	23.9	8.3	7.3	9.8	5.8	27,500
All Separations 2009	26.8	19.2	8.5	9.2	18.4	17.8	526,000
Distressed 2009	27.1	19.5	9.1	10.4	21.2	12.6	60,000

Note: 'No additional UI earnings observed' indicates workers that are not observed having UI earnings in any of the included LEHD states by the end of 2010.

Table 4a

Real Quarterly Earnings Change, First New Job Relative to Separating Job
By Length of Non-Employment Spell After Separation
Pooled Years, Full-Quarter Earnings, Excluding Recalls
(100*log change)

All Attached Separators	10th	25th	50th	75th	90th
New job in same quarter	-39	-12	8	28	48
New job adjacent quarter	-54	-21	4	24	46
Full-quarter non-emp	-75	-41	-8	17	41
1-3 quarters non-emp	-76	-42	-9	18	44
>=4 quarters non-emp	-85	-51	-14	19	47
Distressed Separators					
New job in same quarter	-40	-14	5	24	44
New job adjacent quarter	-52	-22	2	22	43
Full-quarter non-emp	-69	-38	-9	17	36
1-3 quarters non-emp	-73	-41	-11	14	39
>=4 quarters non-emp	-84	-51	-17	13	40
Job Stayers	-28	-6	3	15	28

Note: All earnings changes are changes in real 2002 quarterly earnings. All percentiles, including medians, are fuzzed throughout the paper for confidentiality purposes. Stayers are those attached workers with at least one-year tenure at their main job in the reference quarter and are employed for the entire quarter subsequent to the reference quarter.

Table 4b
Median Real Quarterly Earnings Change,
First New Job Relative to Separating Job,
By Length of Non-Employment Spell After Separation
Full-Quarter Earnings, Excluding Recalls
(100*log change)

All Attached Separators				
	1999	**2001**	**2005**	**2009**
New job in same quarter	11	4	12	3
New job in adjacent quarter	10	0	5	0
Full-quarter non-emp	-1	-13	0	-16
Two or three quarters non-emp	-1	-15	-8	-11
Four or more quarters non-emp	-6	-16	-11	-18
Distressed Separators				
New job in same quarter	9	2	11	2
New job in adjacent quarter	11	-3	5	0
Full-quarter non-emp	9	-17	-6	-12
Two or three quarters non-emp	-3	-20	-8	-9
Four or more quarters non-emp	-6	-23	-13	-16
Job Stayers	6	1	7	0

Table 5
Separators By Year

	1999	2001	2005	2009
# Separators in Sample by Firm Growth Rate				
Total				
Firm closed	4,600	5,300	2,300	4,700
Rapidly shrinking firm	36,500	60,500	27,000	64,000
Slowly shrinking firm	181,000	177,000	172,000	210,000
Slowly growing firm	199,000	190,000	213,000	98,500
Rapidly growing firm	28,000	21,500	17,500	11,500
# Separators from Closed Firms by Duration				
Same quarter	1,500	2,000	1,000	1,300
Adjacent quarter	1,552	1,667	586	1,200
1 full quarter non-emp	850	550	200	400
2 quarters non-emp	200	300	100	250
3 quarters non-emp	60	150	80	250
4 quarters non-emp	60	100	40	150

1999 sample	New job observed in the same quarter	New job observed in subsequent quarter	One full-quarter of nonemployment before re-employment	Two full quarters of nonemployment before re-employment
Firm Type (excluding recalls)				
Firm closed	-6.8	9.0	25.3	8.2
Rapidly shrinking firm	5.0	3.9	3.8	-0.5
Slowly shrinking firm	3.6	-2.7	1.6	0.1
Slowly growing firm	4.6	-3.3	-2.1	-0.5
Rapidly growing firm	Reference group			
Pr(transition)	44.4%	43.3%	33.2%	33.4%
Firm Type (recalls)				
Firm closed	n/a	n/a	-48.5	-55.0
Rapidly shrinking firm	n/a	n/a	-14.2	-11.9
Slowly shrinking firm	n/a	n/a	-3.0	-2.0
Slow growing firm	n/a	n/a	-13.3	3.6
Rapidly growing firm	Reference group			
Pr(transition)	n/a	n/a	51.6%	20.1%

2001 sample	New job observed in the same quarter	New job observed in subsequent quarter	One full-quarter of nonemployment before re-employment	Two full quarters of nonemployment before re-employment
Firm Type (excluding recalls)				
Firm closed	9.4	15.8	8.0	5.3
Rapidly shrinking firm	-1.4	1.9	3.3	0.6
Slowly shrinking firm	3.5	1.1	2.5	-1.4
Slowly growing firm	2.3	1.4	-0.6	-1.6
Rapidly growing firm	Reference group			
Pr(transition)	41.3%	43.2%	32.7%	27.1%
Firm Type (recalls)				
Firm closed	n/a	n/a	-33.3	-5.8
Rapidly shrinking firm	n/a	n/a	-15.0	-2.6
Slowly shrinking firm	n/a	n/a	-5.0	0.3
Slow growing firm	n/a	n/a	-0.81	2.5
Rapidly growing firm	Reference group			
Pr(transition)	n/a	n/a	40.7%	11.4%

Table 6, continued
Differences in Re-Employment Transition Rates across Firm Types (percentage points)

2005 sample	New job observed in the same quarter	New job observed in subsequent quarter	One full-quarter of nonemployment before re-employment	Two full quarters of nonemployment before re-employment
Firm Type (excluding recalls)				
Firm closed	8.6	13.8	3.6	3.8
Rapidly shrinking firm	3.4	3.9	3.6	3.5
Slowly shrinking firm	1.1	-0.7	1.2	0.5
Slowly growing firm	0.9	-0.3	-1.0	-1.4
Rapidly growing firm	Reference group			
Pr(transition)	44.4%	43.0%	33.0%	28.1%
Firm Type (recalls)				
Firm closed	n/a	n/a	-54.1	-46.1
Rapidly shrinking firm	n/a	n/a	-8.5	-8.0
Slowly shrinking firm	n/a	n/a	4.1	-0.8
Slow growing firm	n/a	n/a	3.3	-2.3
Rapidly growing firm	Reference group			
Pr(transition)	n/a	n/a	34.6%	11.8%

2009 sample	New job observed in the same quarter	New job observed in subsequent quarter	One full-quarter of nonemployment before re-employment	Two full quarters of nonemployment before re-employment
Firm Type (excluding recalls)				
Firm closed	7.1	19.1	4.8	5.0
Rapidly shrinking firm	2.3	2.8	1.3	1.6
Slowly shrinking firm	2.4	2.0	2.0	2.2
Slowly growing firm	2.2	3.3	1.9	1.4
Rapidly growing firm	Reference group			
Pr(transition)	28.6%	28.7%	23.4%	17.8%
Firm Type (recalls)				
Firm closed	n/a	n/a	-65.9	-16.6
Rapidly shrinking firm	n/a	n/a	1.8	-4.8
Slowly shrinking firm	n/a	n/a	9.6	-1.3
Slow growing firm	n/a	n/a	9.7	0.0
Rapidly growing firm	Reference group			
Pr(transition)	n/a	n/a	31.4%	10.0%

Table 7
Change in earnings relative to stayers,
four quarters before reference quarter to first full quarter of re-employment,
excluding recalls
(percentage points)

1999 Sample	Firm closed	Rapidly shrinking firm	Slowly shrinking firm	Slowly growing firm	Rapidly growing firm	Mean
New job same quarter	-10	4	-3	-3	1	**-2**
New job next quarter	2	-8	-9	-12	-13	**-8**
1 quarter nonemployment	-6	-12	-20	-21	-21	**-16**
2 quarters nonemployment	-26	-17	-16	-15	-13	**-17**
3 quarters nonemployment	7	-11	-23	-19	-13	**-12**
4 quarters nonemployment	-37	-22	-23	-23	-22	**-25**
Mean	**-11**	**-11**	**-16**	**-16**	**-14**	

2001 Sample	Firm closed	Rapidly shrinking firm	Slowly shrinking firm	Slowly growing firm	Rapidly growing firm	Mean
New job same quarter	-5	3	-3	-4	2	**-2**
New job next quarter	-11	-8	-12	-12	-12	**-11**
1 quarter nonemployment	-21	-18	-20	-22	-22	**-20**
2 quarters nonemployment	-20	-22	-24	-23	-18	**-21**
3 quarters nonemployment	-26	-16	-23	-22	-18	**-21**
4 quarters nonemployment	-25	-23	-25	-24	-24	**-24**
Mean	**-18**	**-14**	**-18**	**-18**	**-16**	

2005 Sample	Firm closed	Rapidly shrinking firm	Slowly shrinking firm	Slowly growing firm	Rapidly growing firm	Mean
New job same quarter	-2	4	-2	-3	-2	**-1**
New job next quarter	-7	-7	-11	-11	-12	**-10**
1 quarter nonemployment	-16	-18	-19	-22	-15	**-18**
2 quarters nonemployment	-17	-20	-22	-22	-19	**-20**
3 quarters nonemployment	-19	-15	-23	-22	-14	**-18**
4 quarters nonemployment	-15	-30	-25	-23	-23	**-23**
Mean	**-13**	**-14**	**-17**	**-17**	**-14**	

2009 Sample	Firm closed	Rapidly shrinking firm	Slowly shrinking firm	Slowly growing firm	Rapidly growing firm	Mean
New job same quarter	-12	3	-4	-6	-7	**-5**
New job next quarter	-16	-8	-13	-13	-9	**-12**
1 quarter nonemployment	-19	-15	-19	-20	-16	**-18**
2 quarters nonemployment	-18	-16	-20	-21	-16	**-18**
3 quarters nonemployment	-15	-14	-19	-20	-9	**-16**
4 quarters nonemployment	-24	-21	-24	-23	-22	**-23**
Mean	**-17**	**-12**	**-17**	**-17**	**-13**	

Figure 1

Left panel: Real Quarterly Earnings of Distressed Separators vs. Stayers, 2005 Sample. Y-axis: Thousands of $2010. X-axis: Quarter. Vertical line at 2005q2. Legend: All Stayers, Destressed Separators.

Right panel: Real Quarterly Earnings of Distressed Separators vs. Stayers, 2005 Sample. Y-axis: 2004:2 = 100. X-axis: Quarter. Vertical line at 2005q2. Legend: All Stayers, Destressed Separators.

Figure 2

Figure 3
Estimated Four-Quarter Earnings Change Relative to Stayers
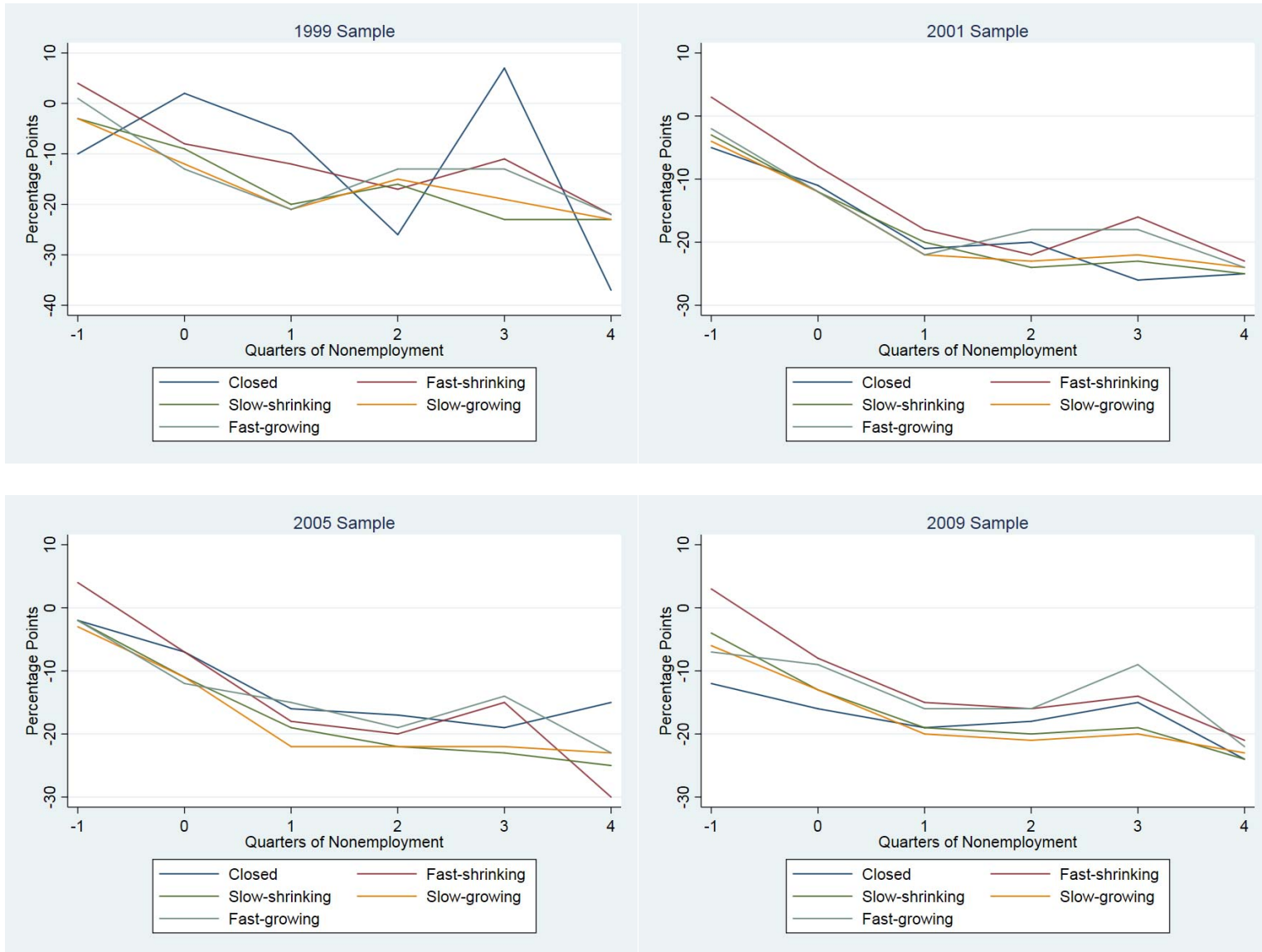
Figure 4
Earnings Change Relative to Stayers
10th, 25th, 50th, 75th, 90th quantiles

A. 10th Percentile
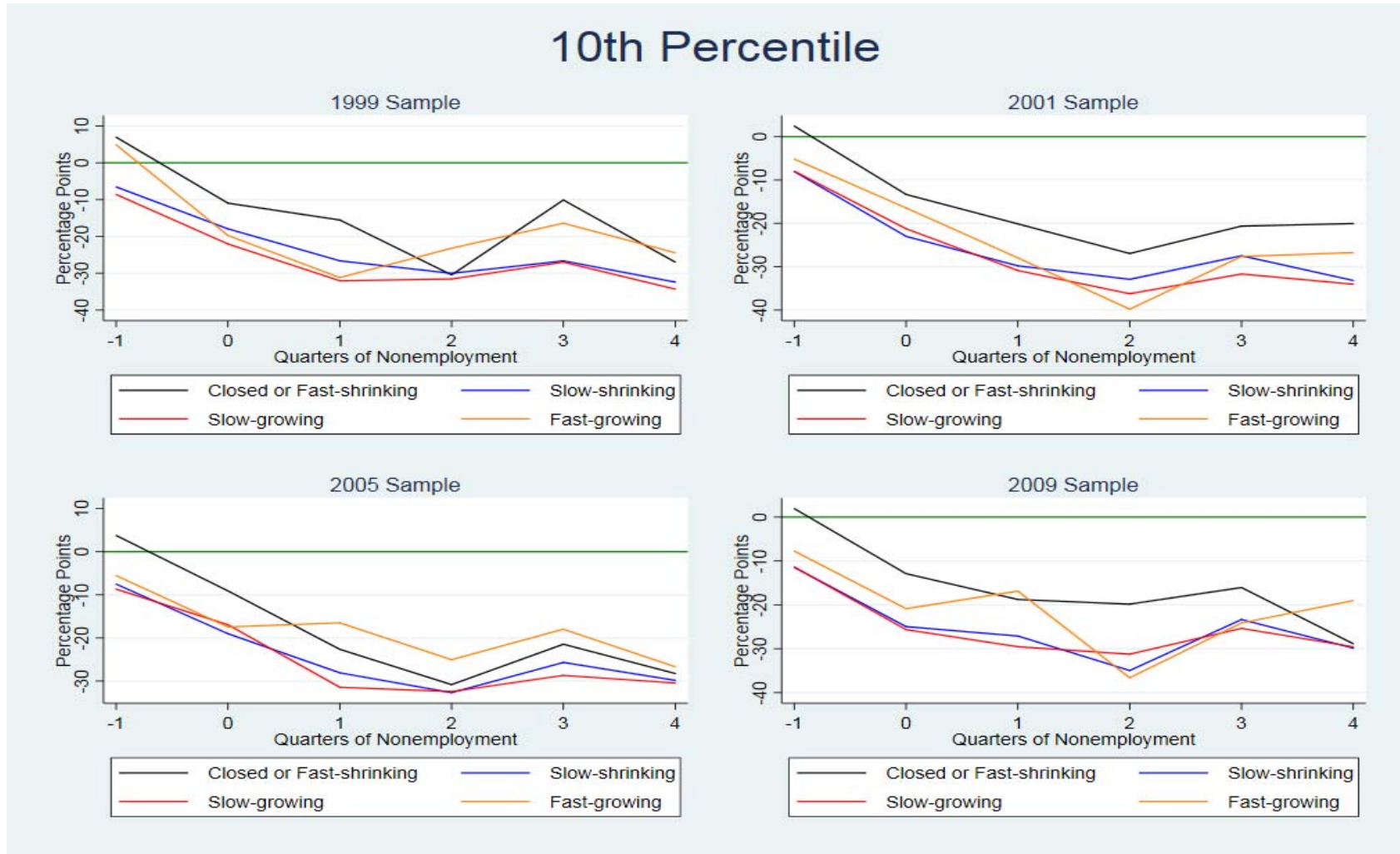
B. 25th Percentile

25th Percentile
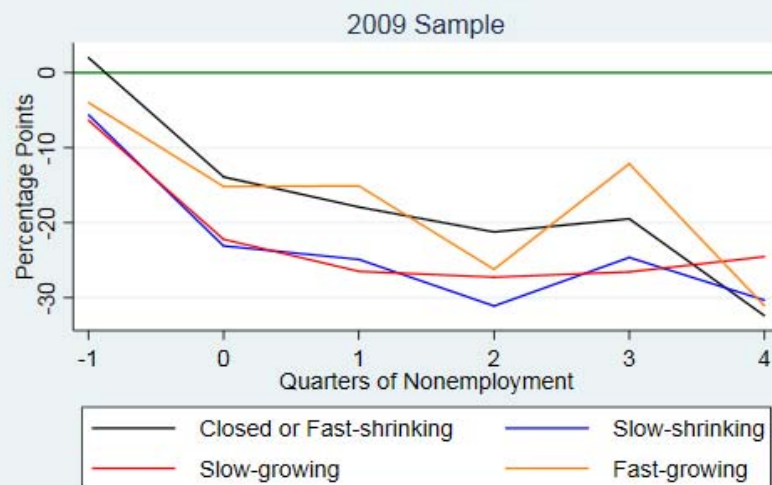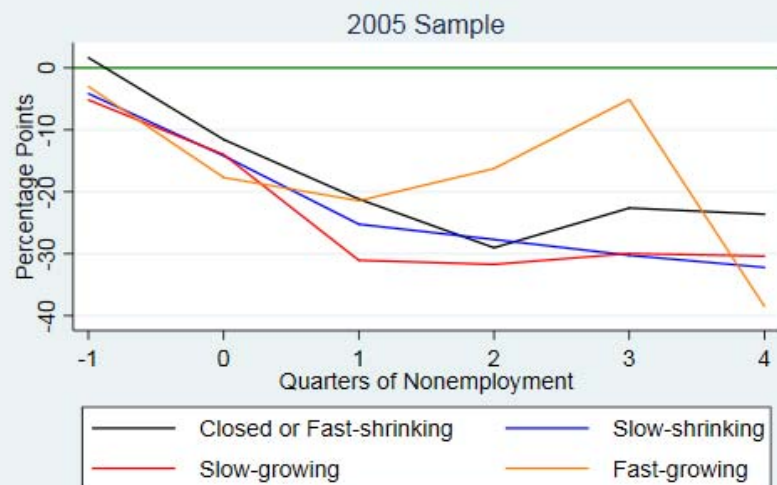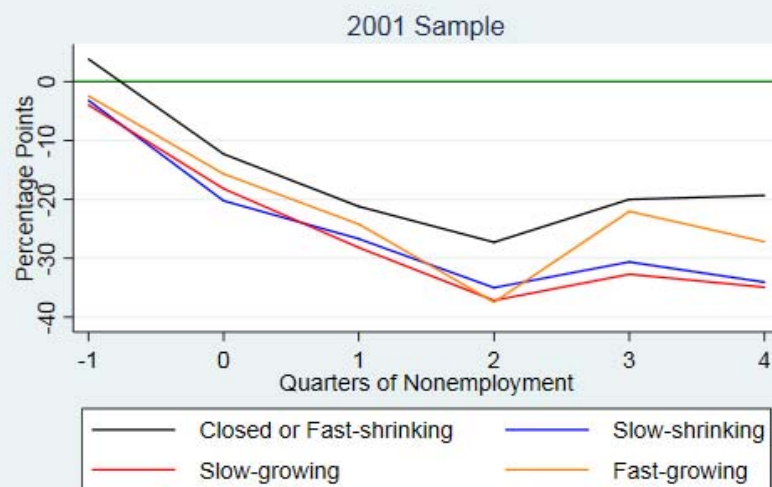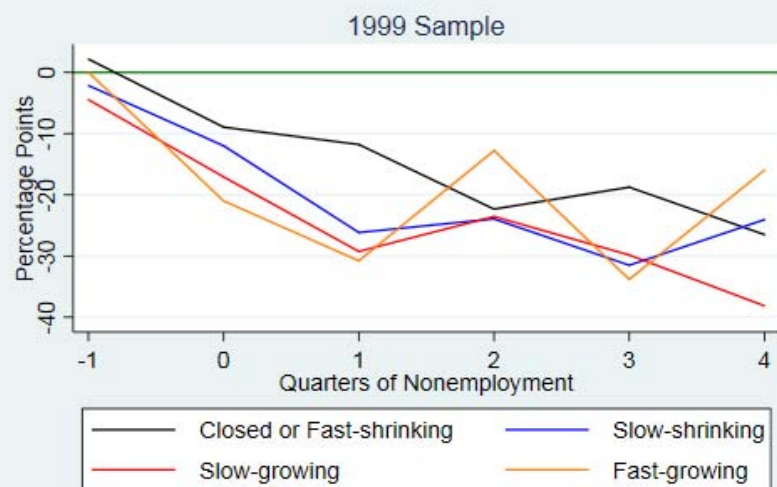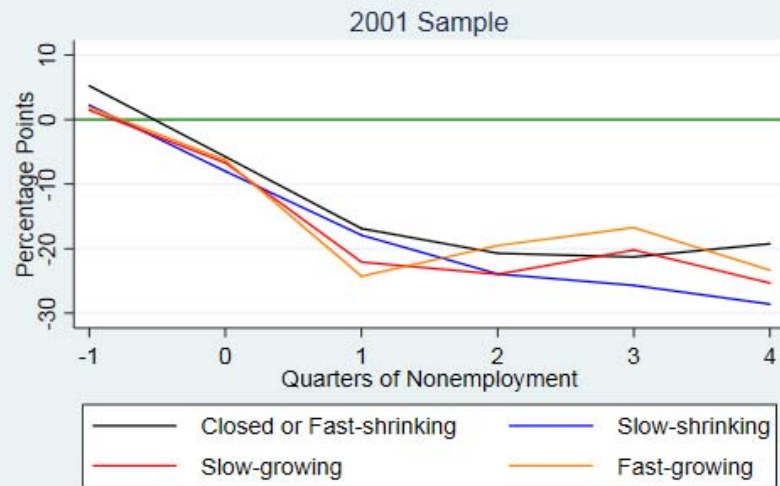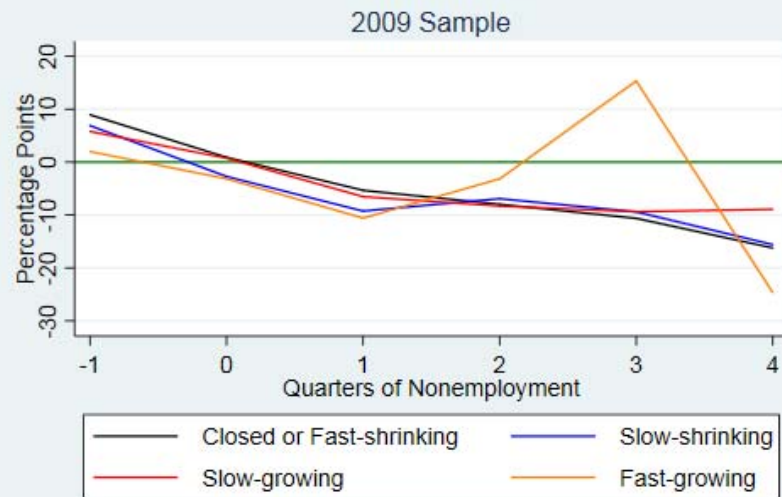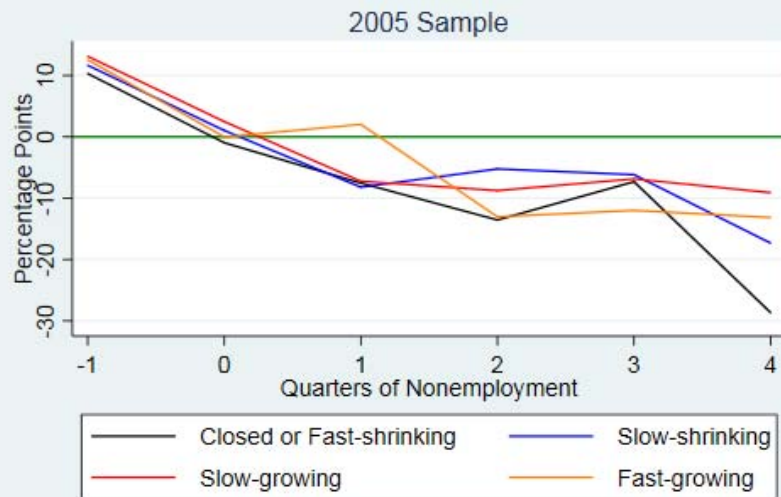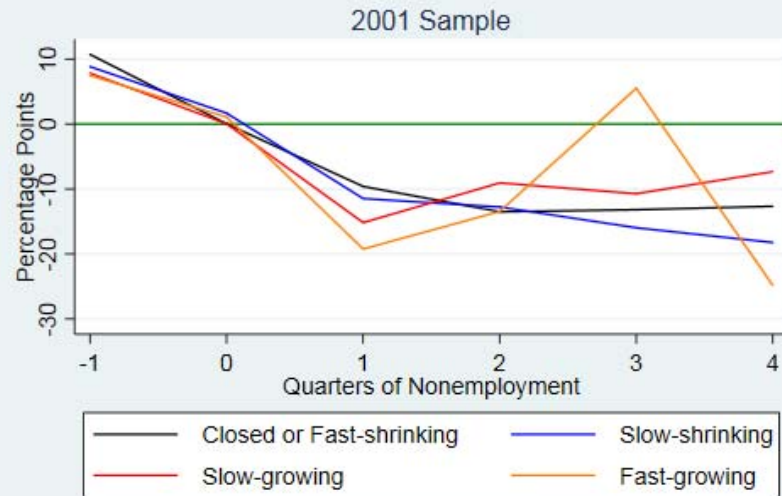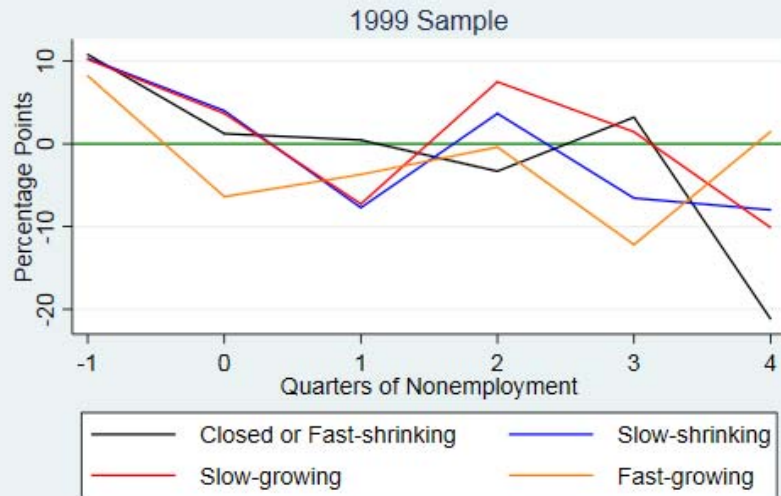
C. 50th Percentile
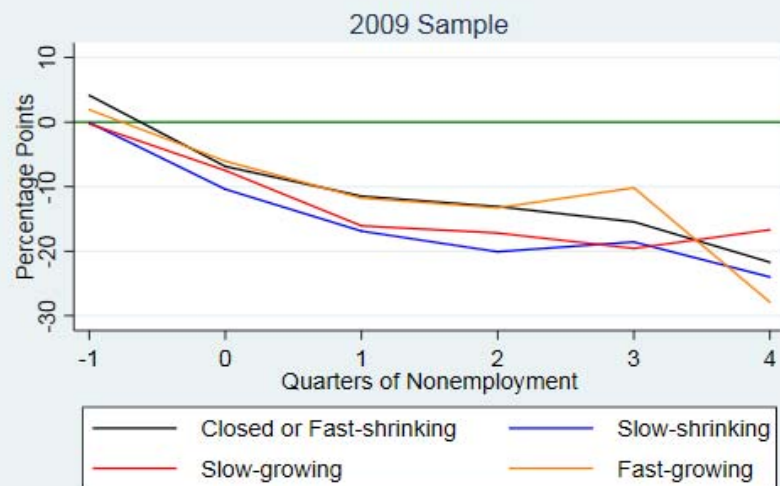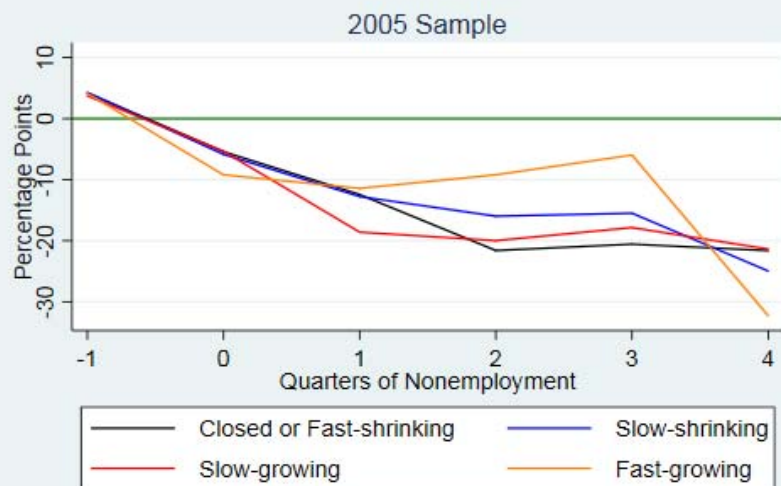
D. 75th Percentile

75th Percentile

1999 Sample

2001 Sample

2005 Sample

2009 Sample

E. 90th Percentile

90th Percentile