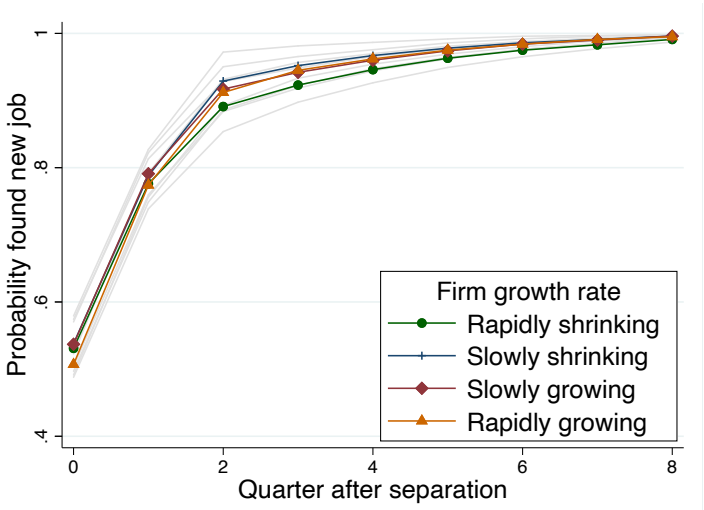
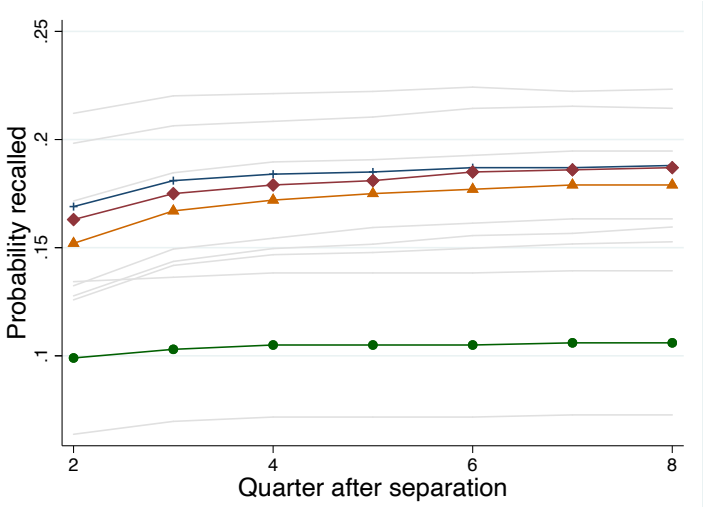
Appendix A Additional Figures and Tables

Figure A.1: Duration of Nonemployment

(A) Job Changers



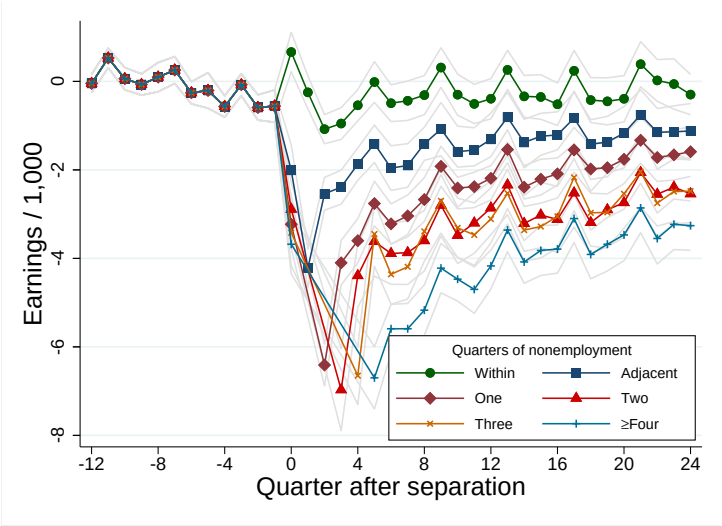
(B) Recalls



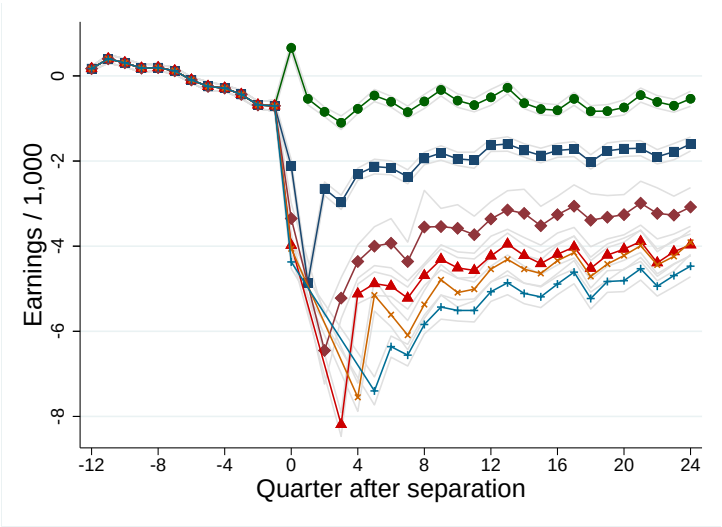
Notes: Panels (A) and (B) present the probability of exiting nonemployment by a given quarter after separation for job changers and recalls, respectively. The probability of a separator finding a new job in a given quarter after separation and the probability of a separator being recalled in a given quarter after separation are estimated by logistic regression. We then use these estimated probabilities to calculate the probability of finding a new job by a given quarter after separation conditional on never being recalled as well as the probability of being recalled by a given quarter after separation. Note that the sample excludes separators who do not return within eight quarters of the separation; thus, the probability of a job changer finding a new job within eight quarters conditional on not being recalled is one. Standard errors are clustered at the level of the employer in the reference quarter and the dotted lines represent the 95 percent confidence interval.

Figure A.2: Effect of Separation by Jobless Duration: Distressed vs. Non-Distressed Firms

(A) Distressed

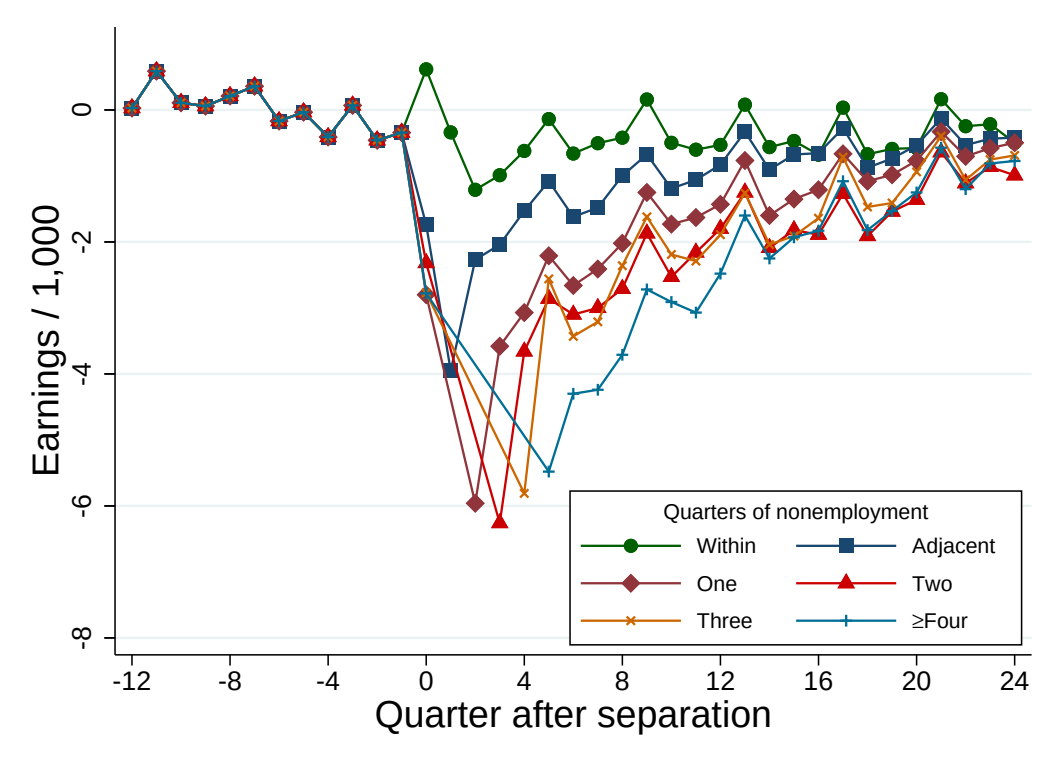


(B) Non-Distressed



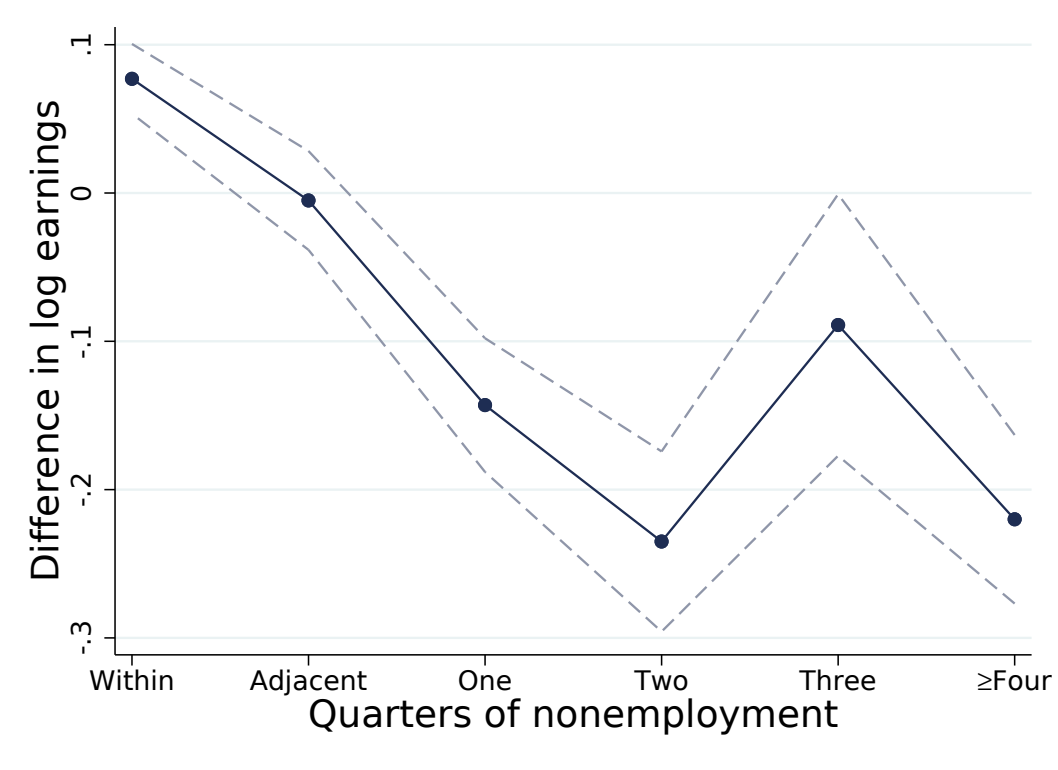
Notes: The figure presents the estimated earnings consequences of a job separation by firm health (distressed and non-distressed) and duration of nonemployment. The results are derived from a sample that excludes recalls but includes all other stayers and separators. The sample corresponds to reference period 2005:2. The figure displays estimates obtained from equation (3). Panel (a) plots δ^{1kN} (also shown in Figure 3) and panel (b) plots δ^{0kN} against the quarter relative to displacement. Standard errors are clustered at the level of the employer in the reference quarter and the solid gray lines depict the 95 percent confidence interval around the estimates.

Figure A.3: Inclusion of Individual-Specific Time Trend



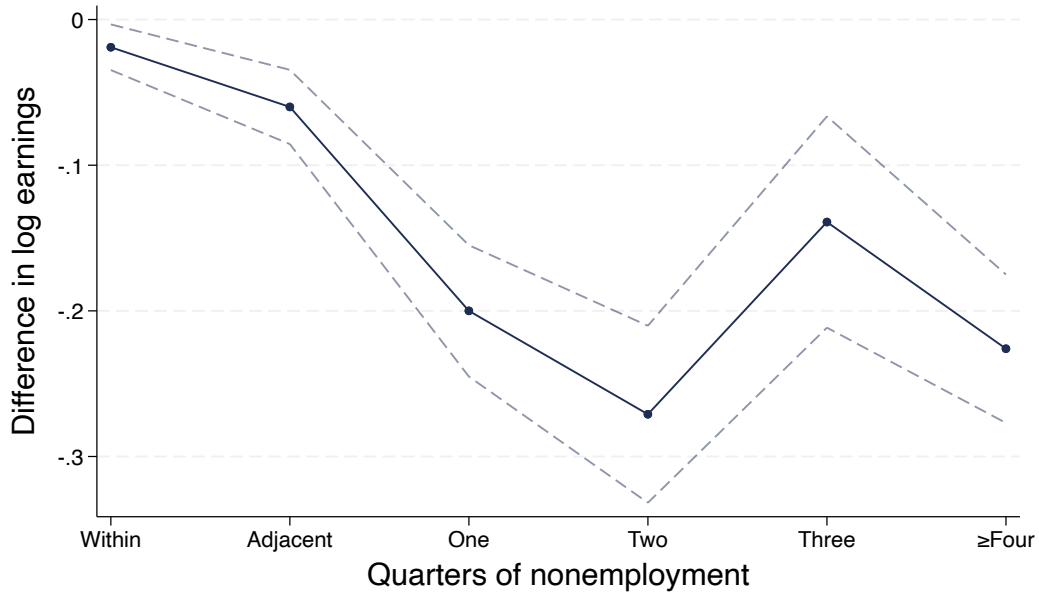
Notes: The figure presents the estimated earnings consequences of displacement by duration of nonemployment. The results are derived from a sample that excludes recalls but includes all other stayers and separators. The sample corresponds to reference period 2005:2. The figure displays estimates obtained from a modified version of equation (3), which also includes a linear individual-specific time trend. This figure plots δ^{1kN} against the quarter relative to displacement.

Figure A.4: Earnings Losses Controlling for Prior Nonemployment Duration



Notes: This figure presents the predicted earnings penalties for distressed separators relative to stayers, evaluated at the means of the other covariates. The estimates are obtained from equation (4), with the duration of nonemployment after previous separation added to the vector of covariates. Earnings prior to separation are measured four quarters prior to separation and earnings post-separation are measured one quarter after re-employment. Results are presented for Ordinary Least Squares (OLS). The horizontal axis denotes the duration of time spent in nonemployment prior to re-employment. Standard errors are clustered at the level of the employer in the reference quarter and the dotted lines represent the 95 percent confidence interval.

Figure A.5: Earnings Change Regression with Origin Firm Fixed Effects



Notes: This figure presents coefficient estimates from a modified version of equation (4), which includes a fixed effect for the origin firm. Earnings prior to separation are measured four quarters prior to separation and earnings post-separation are measured one quarter after re-employment. The horizontal axis denotes the duration of time spent in nonemployment prior to re-employment. Standard errors are clustered at the level of the employer in the reference quarter and the dotted lines represent the 95 percent confidence interval.

Table A.1: Durations of Nonemployment for Workers with Two Displacement Events: Non-Distressed Separators

	(1)	(2)
Duration of previous nonemployment	0.0256	0.0209
	(0.00193)	(0.00217)
Correlation	0.0552	0.0448
Covariates included	no	yes
observations	103000	103000

Notes: This table presents estimates in which we regress the number of quarters spent in nonemployment following the current separation on the the number of quarters spent in nonemployment following the most recent job separation. This is for the sample of non-distressed separators. Columns 1 and 2 do not and do include a vector of additional covariates. Standard errors are clustered at the level of the origin firm. We also present the correlation between the duration spells. For the columns with covariates, we first residualize both the current and past duration of nonemployment on the covariates and then present the correlation between the residualized values.

Appendix B Discussion of Additional Results

B.1 Quantifying the Importance of Nonemployment

Panel A of Figure A.2 reproduces Figure 3, showing the estimated effects on earnings for distressed separators; i.e., it plots the estimates of δ^{1kN} from equation (3). Panel B A.2(B) presents the analogous coefficients δ^{0kN} for nondistressed separators. Comparing the two panels of Figure A.2 indicates that the duration of time spent in nonemployment is predictive of post-separation earnings outcomes while the health of the employer is not.

In order to further quantify this statement, we estimate two restricted versions of equation (3) and compare their explanatory power to that of the unrestricted model. In the most restrictive model, we do not allow for differential effects of separations by either employer type or duration of nonemployment. Formally, we require that $\delta^{jkN} = \delta^{k}$. In the intermediate model, we allow the effect of separation to differ by the health of the firm but not by duration of nonemployment. Formally, we require that $\delta^{jkN} = \delta^{jk}$. To quantify the explanatory power of each model, we implement the fixed effects estimation using a within estimator, which allows us to interpret the resulting R-squared as the proportion of within individual variation explained by the model. All specifications are estimated on the same sample described for the estimation of equation (3).

The results indicate that the most restrictive model, in which the effects of separations do not vary by employer type or nonemployment duration, explains 3.7 percent of the within individual variation in earnings (that is, the R-square is 0.037). As expected, we find that allowing the effect of separation to vary by employer type, but not by nonemployment duration, adds virtually no explanatory power to the model, increasing the R-squared by only 0.005 percent. In contrast, the unrestricted version in equation (3) , which allows the effects of separation to vary by nonemployment duration, explains about 6.9 percent more of the within individual variation than the most restrictive model. While the overall increase in explanatory power may be considered modest, clearly the differential effects of separation by nonemployment duration are far more important than the differential effects by firm health.

B.2 Competing Risks Hazard Model of Nonemployment Duration

We estimate a competing-risks hazard model where 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, in the sense that a worker recalled in a particular quarter is not in the risk set for taking a new job in that quarter, while a worker taking a new job in a given quarter is in the risk set for being recalled in that quarter. We use the same categories of nonemployment duration as we have throughout, and finer categories of firm employment growth that disaggregate nondistressed firms into three distinct categories (slowly shrinking, slowly growing, and quickly growing). We model the probability of becoming re-employed at a new job at each duration of nonemployment, conditional on not already being re-employed, as

$$\begin{aligned} prob(\text{new job in t}|\text{not reemployed before t and not recalled in t})_i = \\ \alpha_t + \beta_t X_i + \gamma_t Z_{j(i)} + \lambda_t g_{j(i)} + \mu_{it} \end{aligned} \tag{B.1}$$

and the probability of recall analogously as

$$prob(\text{recalled in t}|\text{not reemployed before t})_i = \alpha'_t + \beta'_t X_i + \gamma'_t Z_{j(i)} + \lambda'_t g_{j(i)} + \mu'_{it} \tag{B.2}$$

where, X_i is a vector of worker characteristics that includes age, sex, and tenure at the separating firm; Z_i is a vector of characteristics of the separating firm, namely, size, state, and the growth rate of the industry within the state; and $g_{(j(i))}$ is an indicator variable for the category of firm growth (rapidly shrinking, slowly shrinking, slowly growing, and rapidly growing).

From these two models we then obtain predicted probabilities for each of the four growth rate categories evaluated at the mean of all other covariates. We use these predicted probabilities to construct the cumulative distribution function (CDF) of time until re-employment, that is, the probability of exiting nonemployment by a given quarter after separation.

The results are displayed in Figure A.1. Panel (A) displays the CDF for new jobs (conditional on no recall) and illustrates that the duration of time spent in nonemployment is unrelated to the growth of the firm from which the worker separated. Panel (B) shows analogous results for recalls, where there are markedly different patterns for distressed and other separators. As expected, individuals who separate from rapidly shrinking firms are far less likely to be recalled. The greater likelihood of a spell of nonemployment for distressed separators is driven by their lower probability of recall.

B.3 Linear Time Trends

The results of adding linear individual-specific time trends to our main specification in equation (3) are presented in Figure A.3. (We omit confidence intervals because computational constraints prevent us from clustering standard errors.) Although the earnings losses of distressed separators are slightly smaller and the strength of the association between duration of nonemployment and earnings losses is somewhat weaker than in our main results, qualitatively the relationship between duration of nonemployment and earnings losses is robust to the inclusion of the individual-level trend. We continue to find that average earnings losses are monotonically and strongly increasing in the duration of nonemployment. These results suggest that workers who spend more time in nonemployment were not simply on flatter earnings trajectories prior to separating.

B.4 Sensitivity Analysis on Samples and Specifications with JLS

As noted in Section 3.5, JLS found that nondistressed separators tended not to experience persistent earnings losses, in stark contrast to our findings. We explored a number of differences between our sample design and specification and those of JLS and found them to be unable to explain the difference in our main results. The possible explanations we explored (estimates not reported but available upon request) include:

- JLS included in their comparison group workers who were observed to separate and later returned to the same employer (recalls), while we omit these individuals.

- JLS included in their sample separators from firms that closed, while we omit these individuals.
- JLS restricted their sample to workers with at least six years of tenure, while our tenure restriction is three years.
- In pooling the sample across dates of separation, JLS hold coefficients constant over time, and therefore across macroeconomic conditions, whereas our separate samples allow those coefficients to vary.
- JLS's data do not allow them to follow workers who become re-employed in another state, while our data infrastructure allows us to track individuals who cross state lines.[34]

This sensitivity analysis suggests that the differences between our results for non-distressed separators and those in JLS are not due to differences in data quality, sample construction, or specification.

[34]In addition, JLS restricted their sample to workers with positive earnings in every calendar year, whereas we require positive earnings within eight quarters of separation. Von Wachter, Song, and Manchester (2009) show that the earnings losses for non-distressed separators are larger and more persistent when separators with zero annual earnings are included in the sample. JLS also appear to limit their sample of stayers to stayers at firms that experienced some separations. We have not replicated these sample restrictions, but we expect that the differences between them and our restrictions are too small to account for the large difference in estimated outcomes.

Appendix C Construction of Firm-Level Variables

C.1 AKM Firm Effects

To estimate the AKM firm fixed effect, we use data on the earnings of all workers who appear in the LEHD between 2002 and 2009. For each worker and each year, we identify the main employer (i.e., the employer that provides over 50 percent of total earnings in that year) and we calculate the annual earnings associated with that employer in that year as the average quarterly earnings across all quarters in which the worker had strictly positive earnings at the employer. Using these worker-by-year data we then regress log of annual earnings on an individual fixed effect, a firm fixed effect, year fixed effect, and the interaction between education, sex, and a third-order polynomial in age. To ease computational burden, we estimate this specification within nine distinct subsamples defined by the Census region in which the firm is located. Within each of these samples, we limit the sample to the largest connected set. To make the firm fixed effects comparable across Census regions, we normalize firm fixed effects by subtracting the mean value of the firm fixed effect for firms in the accommodation and food services industry. This normalization assumes that firms in this industry offer a pay premium of zero, on average.

C.2 Firm Productivity

We measure firm productivity using revenue and employment data from the Census Business Registrar and the Longitudinal Business Database (LBD). We measure productivity as log revenue per worker, which is a measure that has been commonly used to measure productivity at both the macro and micro level. While this is a relatively crude measure of productivity compared to total factor productivity (TFP), other research has found log revenue per worker is highly correlated with TFP within industries. We measure the productivity of each firm as the employment-weighted log revenue per worker between 2002 and 2009. We then calculate employment-weighted ranks within four-digit North American Industry Classification System (NAICS) industry codes. We are able to measure log revenue per worker for approximately 80 percent of firms in the LBD and the ranks are calculated within the universe of firms for which we can measure productivity between 2002 and 2009.