

# APPENDIX

## Appendix A: Robustness and Extensions

Our main conclusions are robust to different ways of estimating establishment premiums and match quality, as well as to alternative definitions of displacement. For easier exposition, we present the robustness checks in the pooled sample using our full sample including all worker types (with the exception of Appendix A.4, where we allow for different establishment premiums by worker type).

**A.1. Baseline Results – Full Sample.** Our main analysis in Section 5 focuses on the consequences of job displacement for low- and high-wage workers, respectively. We present the baseline results and the decomposition of wage losses in the full sample in Table A.1. Displaced workers on average face a reduced likelihood of employment of 40 percent one year and 13 percent six years after displacement. They also face strong and persistent wage losses of around 10 percent (columns (1) and (2)). Decomposing the displacement wage loss into its sources, we show that lost establishment premiums are the most important source of wage losses, accounting for around 50 percent of the overall wage loss (column (3)). In line with the results by worker type, losses in establishment- and occupation-specific human capital are similarly important in the short run, together explaining nearly 40 percent of the immediate wage loss, but their contribution declines over time (columns (4) and (5)). In contrast, the importance of missed opportunities for general human capital accumulation due to time away from work increases with time since displacement, representing about 20 percent of the wage loss six years after the layoff (column 6). Overall, losses in establishment premiums and human capital account for 95 percent of the overall wage loss from displacement immediately after the layoff and 83 percent after six years. The remainder is attributed to losses in match quality (column 7).

**A.2. Establishment Premiums from a Standard AKM Regression.** Table A.4, column (1.3), shows establishment premium losses when using standard AKM establishment fixed effects estimated without controls for establishment and occupation tenure. The estimated loss is somewhat larger than in our baseline estimates (Table A.4, column (1.2)). For example, six years after the layoff, losses in establishment premiums result in wage losses of 6.2 percent (67 percent of the overall wage loss) when using establishment fixed effects from the standard AKM regression, but these shrink to 5.0 percent (54 percent of the overall wage loss) when occupational and establishment tenure are included in the AKM regression. Thus, omitting controls for establishment and occupation tenure in AKM regressions appears to somewhat overstate the importance of establishment premiums in overall displacement wage losses.

**A.3. Establishment Premiums Using Six-Year Rolling Windows.** Our baseline specification estimates AKM establishment fixed effects in a single regression using observations over a 27-year period from 1984 to 2010. In Table A.4, column (1.4), we show establishment premium losses when AKM establishment fixed effects are estimated over six-year rolling periods, thus allowing establishment fixed effects to slowly change over time. Estimated displacement losses in establishment premiums are of roughly similar magnitude as our baseline estimates, in line with the finding by Lachowska et al. (2023) and Engbom, Moser and Sauermann (2023) that establishment fixed effects tend to be stable over time.

**A.4. Different Establishment Premiums by Worker Type.** A key assumption behind the AKM model is that low- and high-wage workers are paid the same establishment premium. This assumption has been questioned by, for example, Bonhomme et al. (2019) since it does not allow for the possibility that high-wage workers are able to extract higher rents from the establishment than low-wage workers. Differential establishment premiums for low- and high-wage workers could, in principle, contribute to the larger estimated losses in establishment premiums for low-wage workers when these are constrained to be the same for the two types of workers. To rule out this possibility, we re-estimate the extended AKM model and allow establishment fixed effects to vary by worker type. In Figure A.4, we show the decomposition of wage losses into their components using the estimates from this model. The losses in establishment premiums are very similar to those estimated in our baseline specification for both worker types. The smaller decline in establishment premiums following job displacement among high-wage workers is therefore not an artifact of restricting establishment premiums to be the same across worker types.

**A.5. Match Quality.** In our decompositions, we interpret the residual displacement wage loss not explained by losses in establishment premiums or losses in general and specific human capital as being due to valuable match quality. We also estimate match quality for each worker-establishment pair more directly, closely following Lachowska et al. (2020) and Woodcock (2015). In a nutshell, log-wages net of year effects, returns to potential experience, and establishment and occupation tenure are averaged within worker-establishment matches and then regressed on establishment and worker fixed effects.<sup>23</sup> The residuals of this regression are then defined as match quality, capturing

---

<sup>23</sup> Log wages net of year effects, potential experience, occupation and establishment tenure are estimated in two steps. We first regress log wages on year fixed effects to obtain log wage residuals net of year effects (step 1). We then regress the residual log wages from step 1 on the square and cube of potential experience, the square of (capped) occupation and establishment tenure, indicator variables whether occupation and establishment tenure are capped at ten years, as well as a match-specific fixed effect. We then subtract predicted returns to potential experience and occupation and establishment tenure from individual residual log wages to obtain log wages net of year effects, potential experience,

variation in (net) average worker-establishment wages after accounting for worker and establishment effects. This procedure continues to assume that match quality is orthogonal to worker and establishment fixed effects. It does, however, allow match quality to be correlated with potential experience, occupation and establishment tenure.

We then assess the role of losses in match quality in accounting for the overall displacement wage loss by estimating regression equation (3) with estimated match effects as the dependent variable. Using this method, the loss in match quality results in a wage loss of around 2 percent, or 20 percent of the overall wage loss, six years after the layoff (Table A.1, column (7)). Both the magnitude and the pattern in the loss in match quality are similar to the residual displacement wage loss presented in Section 5.2 (compare to Table A.1, column (6)). We report separate results for low- and high-wage workers in Tables A.2, column (7) and A.3, column (7). Whereas losses in match quality are negligible or even positive for low-wage workers, they amount to nearly 4 percent (or 25 percent of the overall wage loss) for high-wage workers. These findings corroborate the notion that the job ladder operates along the match quality margin for high-wage workers and along the establishment premium margin for low-wage workers.

**A.6. Displacement Effects due to Plant Closures.** Since workers who separated from the establishment in a mass layoff event may differ from workers who continue to work in the establishment, we repeat our baseline analysis for the subset of workers who were displaced because of an establishment closure as a robustness check. Following Hethey and Schmieder (2010), we define establishment closures as events where at least 80 percent of the workforce separates from the establishment. Plant closures comprise around 58 percent of our pooled mass layoff sample. Wage losses (Table A.4, column (2.1)) and declines in establishment premiums (Table A.4, column (2.2)) are similar for plant closures and mass layoffs, indicating that there is little such selection.

**A.7. Compositional Changes of Displaced Workers and Layoff Establishments over Time.** The increasing wage losses and losses in establishment premiums among low-wage workers after displacement could, in principle, reflect changes in the composition of displaced workers or displacing establishments. That is, even among low-wage workers, displaced workers may become increasingly negatively selected with regards to their worker characteristics. Similarly, the composition of establishments may change over time. For example, high-wage establishments may account for an increasingly large share of mass layoff establishments. Such shifts would result in larger losses in establishment premiums over time.

---

occupation and establishment tenure (step 2). Note that the linear terms of potential experience, occupation and establishment tenure are absorbed by the match-specific fixed effects.

We apply two approaches to assess the importance of such compositional changes. First, we categorize workers and establishments by the decile of their respective fixed effects distribution, resulting in a 10 x 10 matrix of cells. We then re-estimate our baseline regression for each two-year period, but we use the ratio between the number of displaced workers in a given worker-establishment cell in the initial 1988-1989 period and the number of workers in that cell in later periods as weights for later periods. This way, the reweighted sample of displaced and control workers in later periods resembles the sample in the first period in terms of the distribution of worker and establishment fixed effects. This approach has advantages as it non-parametrically and thus very flexibly controls for changes in the composition of worker and firm fixed effects in the full sample of displaced workers.

Secondly, we adopt an alternative method proposed by Schmieder et al. (2023) to account for multiple dimensions of composition changes. We first obtain an individual “treatment effect” of job loss for each individual by comparing wage (or establishment premium) change between four years before and three years after the layoff for each displaced worker with that of the matched control worker. In the second step, we regress these individual “treatment effects” on layoff year indicator variables in a single regression over all layoff years and account for compositional changes over time by controlling for worker fixed effects, levels of general experience (age and age squared), firm- and occupation specific tenure (linear and squared terms), education, establishment fixed effects and the industry of the layoff establishment. Each of these controls is measured prior to the layoff. An advantage of this approach is that we can account for compositional changes along additional dimensions.<sup>24</sup>

The results in Figure A.5 demonstrate that the increasing wage losses over time are not driven by compositional changes. The solid lines in Panel A and B of Figure A.5 depict our baseline estimates for the losses in wages and establishment premiums for low-wage workers (reported in Figure 10); the long-dashed and dashed-dotted lines display reweighted losses that hold the composition of displaced workers and mass layoff establishments constant over time and the short-dashed lines present results based on the Schmieder et al. (2023) method. If anything, both wage and establishment premium losses would have been somewhat larger if the composition of displaced workers and displacement establishments had remained constant over time. The increasingly large establishment premium losses therefore reflect lower establishment premiums of post-displacement establishments over time, and not higher establishment premiums of displacement establishments.

---

<sup>24</sup> Note that the sample using this approach differs from our baseline sample, as it reduces our sample to pairs where both treated and control workers are employed three years after the layoff, while in the first approach only one displaced and one control worker in each matching cell has to be employed.

## Appendix B: Within and Between Sector Decomposition

The increase in establishment premium losses following job displacement between the initial displacement period  $t = 0$  and the final displacement period  $t = 1$ ,  $E_1[\Delta\psi_{J(i)}] - E_0[\Delta\psi_{J(i)}]$ , can be decomposed into a within and a between sector component as follows:

$$E_1[\Delta\psi_{J(i)}] - E_0[\Delta\psi_{J(i)}] = \underbrace{E_1[\Delta\psi_{J(i)}|d_i = M] - E_0[\Delta\psi_{J(i)}|d_i = M]}_{\text{within manufacturing}} + \underbrace{\sum_{k \in L, H} \Pr_1(d_i = k)(E_1[\Delta\psi_{J(i)}|d_i = k] - E_1[\Delta\psi_{J(i)}|d_i = M]) - \Pr_0(d_i = k)(E_0[\Delta\psi_{J(i)}|d_i = k] - E_0[\Delta\psi_{J(i)}|d_i = M])}_{\text{between sectors}}.$$

$\Pr_t(d_i = k)$  is the probability of being re-employed in sector  $k$  in displacement period  $t$ , and  $d_i$  is a variable indicating whether the individual is re-employed in the manufacturing sector ( $k = M$ ), the low-knowledge service sector ( $k = L$ ) or the high-knowledge service sector ( $k = H$ ) after displacement. The between-sector component can be further decomposed into a component due to increased sectoral switching and a component due to increased gaps in establishment premiums across sectors:

$$\begin{aligned} \text{between component} &= \underbrace{\sum_{k \in L, H} (\Pr_1(d_i = k) - \Pr_0(d_i = k)) \overline{\text{gap}}_k}_{\text{increased sectoral switching}} + \\ &\quad \underbrace{\sum_{k \in L, H} \overline{\Pr(d_i = k)} (E_1[\Delta\psi_{J(i)}|d_i = k] - E_1[\Delta\psi_{J(i)}|d_i = M]) - (E_0[\Delta\psi_{J(i)}|d_i = k] - E_0[\Delta\psi_{J(i)}|d_i = M])}_{\text{increased gaps in sectoral wage premiums}} \end{aligned}$$

where

$$\begin{aligned} \overline{\text{gap}}_k &= 0.5 * (E_1[\Delta\psi_{J(i)}|d_i = k] - E_1[\Delta\psi_{J(i)}|d_i = M]) + \\ &\quad 0.5 * (E_0[\Delta\psi_{J(i)}|d_i = k] - E_0[\Delta\psi_{J(i)}|d_i = M]) \end{aligned}$$

is the gap in establishment premiums between sector  $k$  and the manufacturing sector averaged over periods  $t = 0$  and  $t = 1$  and

$$\overline{\Pr(d_i = k)} = 0.5 * \Pr_0(d_i = k) + 0.5 * \Pr_1(d_i = k)$$

is the probability of being re-employed in sector  $k$  after displacement averaged over periods  $t = 0$  and  $t = 1$ .

We decompose the change in establishment premiums between the first two two-year estimation periods of our “time-series” sample, 1988-1989 and 1990-1991 ( $t = 0$ ) and the final two two-year periods 2004-2005 and 2006-2007 ( $t = 1$ ). The estimated switching probabilities and establishment premium losses in each period that are used to compute the various decomposition components are presented in Table B.1. The estimates are based on equation (3) and reported coefficients are for the effects three years after displacement.

Table A.1: Baseline Results - Full Sample

	Employment (1)	Wage (2)	Establishment Premium (3)	Returns to Occupation Tenure (4)	Returns to Establishment Tenure (5)	Returns to Experience (6)	Residual (Match Quality) (7)
$\tau=-6$	-0.004 (0.000)	0.004 (0.001)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.003 (0.001)
$\tau=-5$	-0.003 (0.000)	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)
$\tau=-4$							
$\tau=-3$	0.000 (0.000)	-0.008 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.008 (0.000)
$\tau=-2$	0.000 (0.000)	-0.018 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.018 (0.001)
$\tau=-1$	0.000 (0.000)	-0.027 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.027 (0.001)
$\tau=0$	-0.388 (0.000)	-0.103 (0.001)	-0.049 (0.001)	-0.027 (0.000)	-0.014 (0.000)	-0.006 (0.000)	-0.007 (0.001)
$\tau=1$	-0.247 (0.000)	-0.104 (0.001)	-0.053 (0.001)	-0.025 (0.000)	-0.011 (0.000)	-0.010 (0.000)	-0.005 (0.001)
$\tau=2$	-0.195 (0.000)	-0.103 (0.001)	-0.054 (0.001)	-0.018 (0.000)	-0.009 (0.000)	-0.013 (0.000)	-0.008 (0.001)
$\tau=3$	-0.169 (0.000)	-0.101 (0.001)	-0.054 (0.001)	-0.012 (0.000)	-0.007 (0.000)	-0.015 (0.000)	-0.012 (0.001)
$\tau=4$	-0.152 (0.000)	-0.099 (0.001)	-0.053 (0.001)	-0.008 (0.000)	-0.006 (0.000)	-0.016 (0.000)	-0.016 (0.001)
$\tau=5$	-0.142 (0.000)	-0.096 (0.001)	-0.051 (0.001)	-0.004 (0.000)	-0.005 (0.000)	-0.018 (0.000)	-0.018 (0.001)
$\tau=6$	-0.130 (0.000)	-0.092 (0.001)	-0.050 (0.001)	-0.002 (0.000)	-0.004 (0.000)	-0.019 (0.001)	-0.017 (0.001)

Notes: The table reports event study estimates of the effects of job displacement from the manufacturing sector on employment, wages, and its sources (establishment premium column (3); returns to occupation tenure in column (4); returns to establishment tenure in column (5); returns to experience in column (6); the residual (match quality) in column (7)). Estimates are based on equation (3). The establishment wage premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. For the procedure to estimate wage losses due to occupation and establishment tenure and experience, see Section 4.3.3. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff. Levels of significance are \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



Table A.2: Decomposition of Wage Losses - Low-wage Workers

	Wage (1)	Establishment Premium (2)	Returns to Occupation Tenure (3)	Returns to Establishment Tenure (4)	Returns to Experience (5)	Residual (Match Quality) (6)	Match Quality (Lachowska et al., 2020) (7)
$\tau=-6$	0.001 (0.001)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.002 (0.000)
$\tau=-5$	-0.003 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.002 (0.001)	0.001 (0.000)
$\tau=-4$							
$\tau=-3$	-0.007 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.007 (0.001)	0.000 (0.000)
$\tau=-2$	-0.016 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.016 (0.001)	0.000 (0.000)
$\tau=-1$	-0.025 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.025 (0.001)	0.001 (0.000)
$\tau=0$	-0.090 (0.002)	-0.061 (0.001)	-0.030 (0.000)	-0.011 (0.000)	-0.006 (0.000)	0.019 (0.002)	0.010 (0.001)
$\tau=1$	-0.092 (0.002)	-0.067 (0.001)	-0.027 (0.000)	-0.009 (0.000)	-0.012 (0.001)	0.023 (0.002)	0.004 (0.001)
$\tau=2$	-0.092 (0.002)	-0.070 (0.001)	-0.020 (0.000)	-0.008 (0.000)	-0.015 (0.001)	0.021 (0.002)	0.001 (0.001)
$\tau=3$	-0.086 (0.002)	-0.070 (0.001)	-0.014 (0.000)	-0.006 (0.000)	-0.017 (0.001)	0.021 (0.002)	-0.001 (0.001)
$\tau=4$	-0.082 (0.002)	-0.067 (0.001)	-0.009 (0.000)	-0.005 (0.000)	-0.019 (0.001)	0.018 (0.002)	-0.003 (0.001)
$\tau=5$	-0.079 (0.002)	-0.065 (0.001)	-0.005 (0.000)	-0.004 (0.000)	-0.020 (0.001)	0.016 (0.002)	-0.004 (0.001)
$\tau=6$	-0.075 (0.002)	-0.064 (0.001)	-0.003 (0.000)	-0.003 (0.000)	-0.022 (0.001)	0.018 (0.002)	-0.006 (0.001)

Notes: The table reports event study estimates of the effects of job displacement for low-wage workers on wages and its sources (establishment premium column (2); returns to occupation tenure in column (3); returns to establishment tenure in column (4); returns to experience in column (5); the residual (match quality) in column (6); and match quality as estimated in Lachowska et al. (2020) in column (7)). Estimates are based on equation (3). The establishment wage premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. For the procedure to estimate wage losses due to occupation and establishment tenure and experience, see Section 4.3.3. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff. Levels of significance are \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A.3: Decomposition of Wage Losses - High-wage Workers

	Wage (1)	Establishment Premium (2)	Returns to Occupation Tenure (3)	Returns to Establishment Tenure (4)	Returns to Experience (5)	Residual (Match Quality) (6)	Match Quality (Lachowska et al., 2020) (7)
$\tau=6$	0.006 (0.002)	0.002 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.004 (0.002)	-0.005 (0.001)
$\tau=5$	0.001 (0.002)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001 (0.002)	-0.004 (0.001)
$\tau=4$							
$\tau=3$	-0.011 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.011 (0.001)	0.000 (0.000)
$\tau=2$	-0.025 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.025 (0.001)	-0.001 (0.000)
$\tau=1$	-0.037 (0.002)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.036 (0.002)	-0.001 (0.000)
$\tau=0$	-0.118 (0.002)	-0.029 (0.001)	-0.026 (0.000)	-0.019 (0.000)	-0.006 (0.000)	-0.036 (0.002)	-0.031 (0.002)
$\tau=1$	-0.121 (0.002)	-0.031 (0.001)	-0.024 (0.000)	-0.015 (0.000)	-0.010 (0.001)	-0.040 (0.002)	-0.030 (0.002)
$\tau=2$	-0.121 (0.002)	-0.031 (0.001)	-0.018 (0.000)	-0.012 (0.000)	-0.013 (0.001)	-0.047 (0.002)	-0.031 (0.002)
$\tau=3$	-0.124 (0.003)	-0.031 (0.001)	-0.013 (0.000)	-0.010 (0.000)	-0.015 (0.001)	-0.055 (0.003)	-0.032 (0.002)
$\tau=4$	-0.125 (0.003)	-0.030 (0.001)	-0.009 (0.000)	-0.008 (0.000)	-0.017 (0.001)	-0.062 (0.003)	-0.035 (0.002)
$\tau=5$	-0.125 (0.003)	-0.030 (0.001)	-0.005 (0.000)	-0.006 (0.000)	-0.019 (0.001)	-0.065 (0.003)	-0.036 (0.002)
$\tau=6$	-0.122 (0.003)	-0.029 (0.001)	-0.003 (0.000)	-0.005 (0.000)	-0.020 (0.001)	-0.065 (0.003)	-0.038 (0.002)

Notes: The table reports event study estimates of the effects of job displacement for high-wage workers on wages and its sources (establishment premium column (2); returns to occupation tenure in column (3); returns to establishment tenure in column (4); returns to experience in column (5); the residual (match quality) in column (6); and match quality as estimated in Lachowska et al. (2020) in column (7)). Estimates are based on equation (3). The establishment wage premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. For the procedure to estimate wage losses due to occupation and establishment tenure and experience, see Section 4.3.3. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff. Levels of significance are \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A.4: Robustness and Extensions

	<u>Baseline Sample</u>				<u>Plant Closure Sample</u>	
	Wage (1.1)	Est. Premium Extended AKM (1.2)	Est. Premium Standard AKM (1.3)	Est. Premium Six- year Rolling (1.4)	Wage (2.1)	Est. Premium (2.2)
$\tau=-6$	0.004 (0.001)	0.001 (0.000)	0.001 (0.000)	0.003 (0.000)	0.005 (0.001)	0.002 (0.000)
$\tau=-5$	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.001)	0.000 (0.000)
$\tau=-4$						
$\tau=-3$	-0.008 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.009 (0.001)	0.000 (0.000)
$\tau=-2$	-0.018 (0.001)	0.000 (0.000)	0.000 (0.000)	-0.001 (0.000)	-0.019 (0.001)	0.000 (0.000)
$\tau=-1$	-0.027 (0.001)	0.000 (0.000)	0.000 (0.000)	-0.002 (0.000)	-0.027 (0.001)	0.000 (0.000)
$\tau=0$	-0.103 (0.001)	-0.049 (0.001)	-0.062 (0.001)	-0.039 (0.001)	-0.103 (0.001)	-0.047 (0.001)
$\tau=1$	-0.104 (0.001)	-0.053 (0.001)	-0.066 (0.001)	-0.041 (0.001)	-0.105 (0.001)	-0.052 (0.001)
$\tau=2$	-0.103 (0.001)	-0.054 (0.001)	-0.067 (0.001)	-0.042 (0.001)	-0.103 (0.001)	-0.054 (0.001)
$\tau=3$	-0.101 (0.001)	-0.054 (0.001)	-0.067 (0.001)	-0.043 (0.001)	-0.101 (0.001)	-0.053 (0.001)
$\tau=4$	-0.099 (0.001)	-0.053 (0.001)	-0.065 (0.001)	-0.043 (0.001)	-0.099 (0.002)	-0.052 (0.001)
$\tau=5$	-0.096 (0.001)	-0.051 (0.001)	-0.063 (0.001)	-0.042 (0.001)	-0.098 (0.002)	-0.051 (0.001)
$\tau=6$	-0.092 (0.001)	-0.050 (0.001)	-0.062 (0.001)	-0.042 (0.001)	-0.095 (0.002)	-0.050 (0.001)

Notes: The table reports event study estimates of the effects of job displacement on wages and the establishment premium. Estimates are based on equation (3). Columns (1.1) and (1.2) present the baseline estimates presented in Figure 4, Panel A. Column (1.3) displays coefficients estimated based on the baseline sample but with establishment premiums estimated in a standard AKM model without controls for establishment and occupation tenure as dependent variable. The sample in columns (2.1) and (2.2) consists only of plant closures defined as mass layoff establishments in which at least 80 percent of employees left the establishment. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff. Levels of significance are \*  $p<0.10$ , \*\*  $p<0.05$ , \*\*\*  $p<0.01$ .

Table B.1: Parameter Estimates

Switching Probabilities		Establishment Premium Losses	
$\Pr_0(d_i = M)$	-0.280	$E_0[\Delta\psi_{J(i)} d_i = M]$	-0.012
$\Pr_0(d_i = L)$	0.176	$E_0[\Delta\psi_{J(i)} d_i = L]$	-0.073
$\Pr_0(d_i = H)$	0.048	$E_0[\Delta\psi_{J(i)} d_i = H]$	-0.040
$\Pr_1(d_i = M)$	-0.391	$E_1[\Delta\psi_{J(i)} d_i = M]$	-0.049
$\Pr_1(d_i = L)$	0.287	$E_1[\Delta\psi_{J(i)} d_i = L]$	-0.214
$\Pr_1(d_i = H)$	0.062	$E_1[\Delta\psi_{J(i)} d_i = H]$	-0.071

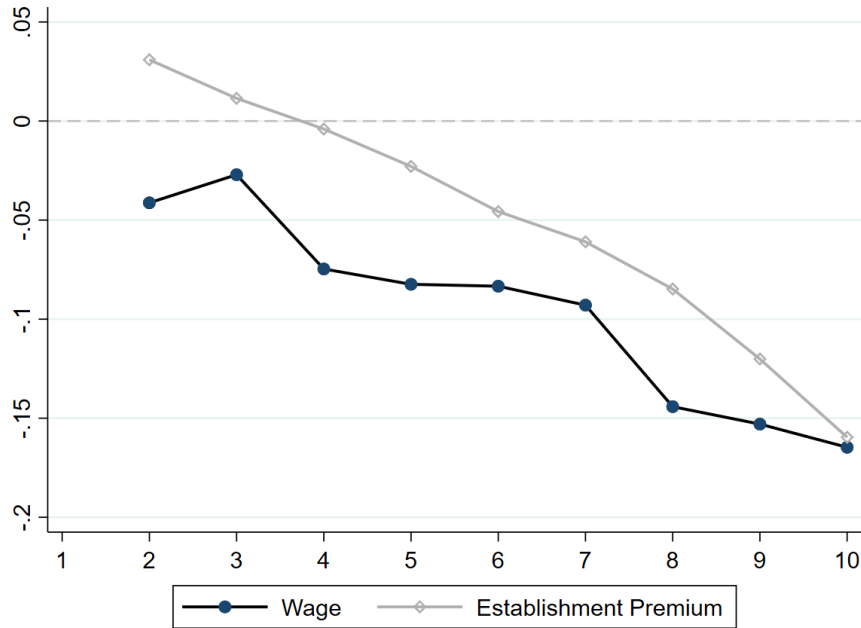
Notes: The switching probabilities and establishment premium loss estimates are based on equation (3). Reported coefficients are for the effects three years after displacement.  $M$  denotes the manufacturing sector,  $L$  the low-knowledge service sector and  $H$  the high-knowledge service sector. Period 0 represents the two two-year periods 1988-1989 and 1990-1991, and period 1 denotes the final two two-year periods 2004-2005 and 2006-2007.

Figure A.1: Returns to Establishment and Occupation Tenure



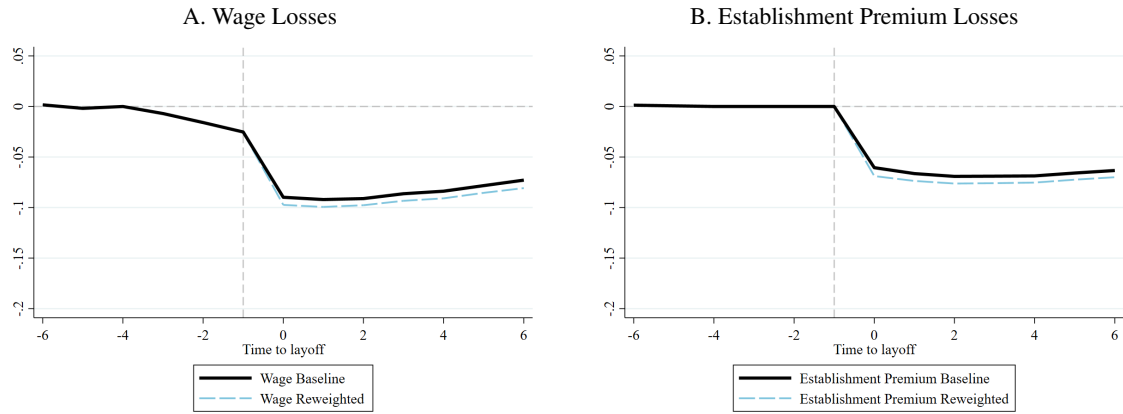
Notes: The figure shows returns to years of establishment tenure in Panel A and to occupational tenure in Panel B as estimated in the extended AKM model specified in equation (2) in Section 4.2. Low-wage workers are defined as workers whose worker fixed effect falls into the bottom tercile of the distribution of worker fixed effects and high-wage workers as workers whose worker fixed effects fall into the top tercile.

Figure A.2: Displacement Losses by Establishment Premium Decile



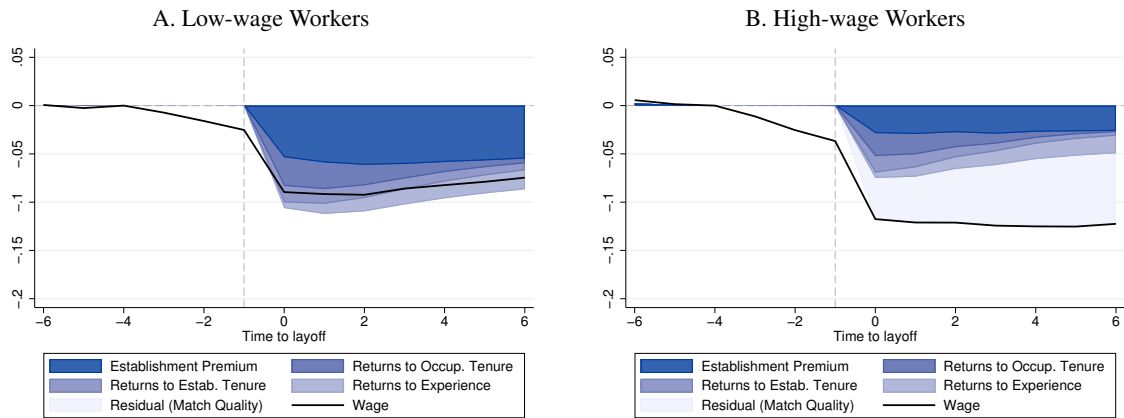
Notes: The figure reports event study estimates of the effects of job displacement on wages and establishment premiums by displacement establishment premium decile. Estimates are based on equation (3) and reported coefficients are for the effects three years after displacement. The establishment wage premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. Deciles are defined over the universe of establishments and workers, including establishments in the service sector. There are no establishments in the lowest decile (1) in the manufacturing sector. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff.

Figure A.3: Composition Adjusted Losses - Low-wage Workers



Notes: The figure reports, for low-wage workers, event study estimates of the effects of job displacement on wages in Panel A and on the establishment premium in Panel B. Estimates are based on equation (3). The establishment wage premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. Low-wage workers are defined as workers with worker fixed effects in the bottom of the estimated AKM worker fixed effects distribution. The solid lines show the baseline wage and establishment premium losses equivalent to those presented in columns (1) and (2) of Table A.1. The long-dashed lines reweight the low-wage worker observations to reflect the establishment premium distribution of high-wage workers' displacement establishments. The sample consists of male workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff.

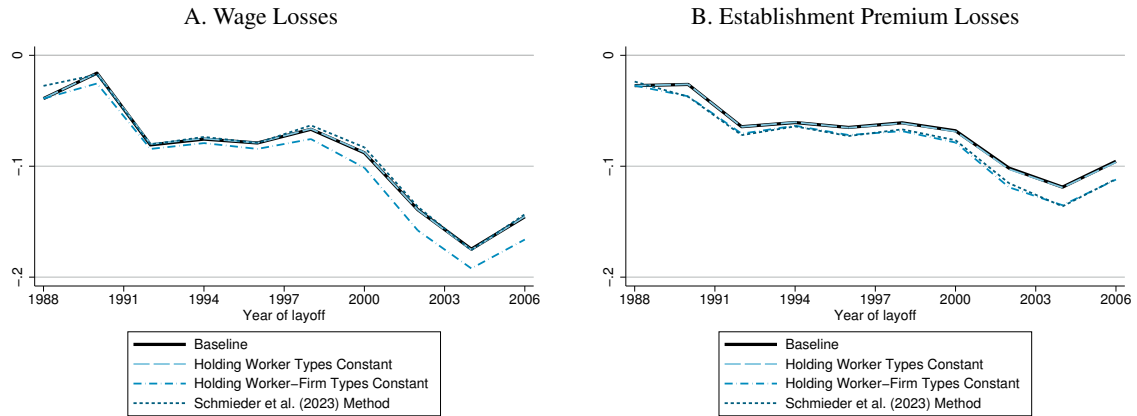
Figure A.4: Decomposition Allowing the Establishment Premium to Vary by Worker Type



Notes: The figure reports event study estimates of the effects of job displacement on wages and on five potential sources of wage losses (establishment premium, returns to establishment and occupation tenure, returns to experience and match quality) by worker type. Panel A reports the estimates for low-wage workers and Panel B for high-wage workers. Low- and high-wage workers are defined as workers with worker fixed effects in the bottom and top terciles of the estimated AKM worker fixed effects distribution, respectively. All estimates are based on equation (3), with the respective source as dependent variable. The establishment premium refers to the AKM establishment fixed effect as estimated using a variant of equation (2) in Section 4.2 that allows the establishment fixed effects to vary by worker type. The returns to establishment and occupation tenure are predicted using the respective estimates from the same AKM model and a worker's observed years of tenure. Tenure variables are capped at ten years of tenure. Losses in the returns to experience are estimated as described in Section 4.3.3. Losses in match quality are defined as the residual wage losses. The sample consists of male low- and high-wage workers displaced between 1990 and 2004 and their matched control workers. Both displaced and control workers are aged 25-50 with at least four years establishment tenure in the year of layoff.



Figure A.5: Composition Adjusted Losses over Time - Low-wage Workers



Notes: The figures show, for low-wage workers, event study estimates of the effects of job displacement on wages in Panel A and on the establishment premium in Panel B. Estimates are based on equation (3) and are estimated separately for each two-year period of layoffs taking place between 1988 and 2007. Reported coefficients are for the effects three years after displacement. The establishment premium refers to the AKM establishment fixed effect as estimated in equation (2) in Section 4.2. Low-wage workers are defined as workers with worker fixed effects in the bottom of the estimated AKM worker fixed effects distribution. The solid lines show the baseline wage and establishment premium losses equivalent to those presented in Figure 9, Panel B and C. The long-dashed lines reweight the composition of workers in each of the two-year periods to reflect the worker-type distribution in the first two-year estimation period (i.e. 1988 and 1989); the dashed-dotted line instead reweights the composition of workers to reflect the worker and establishment distribution in the first two-year estimation period. The short-dashed line applies the Schmieder et al. (2023) method to account for compositional changes. Both methods are described in more detail in Appendix A.7.