AER: Insights 2023, 5(3): 393–408
https://doi.org/10.1257/aeri.20220006

The Unequal Consequences of Job Loss across Countries[†]

By Antoine Bertheau, Edoardo Maria Acabbi, Cristina Barceló, Andreas Gulyas, Stefano Lombardi, and Raffaele Saggio*

We document the consequences of losing a job across countries using a harmonized research design applied to seven matched employer-employee datasets. Workers in Denmark and Sweden experience the lowest earnings declines following job displacement, while workers in Italy, Spain, and Portugal experience losses three times as high. French and Austrian workers face earnings losses somewhere in between. Key to these differences is that southern European workers are less likely to find employment following displacement. Loss of employer-specific wage premiums explains a substantial portion of wage losses in all countries. (*JEL* J31, J63, J64)

Losing a job entails lasting negative consequences for a worker (Jacobson, LaLonde, and Sullivan 1993). This finding is among the most influential in labor economics because it provides a simple test of how well labor markets are functioning. More efficient labor markets reallocate workers more quickly and generate lower earnings losses after job displacement. Comparing the consequences of job loss across labor markets might therefore reveal which ones are functioning better than others and why.

* Bertheau: Norwegian School of Economics (email: bertheau.antoine@gmail.com); Acabbi: Universidad Carlos III de Madrid (email: eacabbi@emp.uc3m.es); Barceló: Banco de España (barcelo@bde.es); Gulyas: University of Mannheim (email: andreas.gulyas@uni-mannheim.de); Lombardi: VATT Institute for Economic Research Helsinki, IFAU Uppsala, IZA, and Uppsala Center for Labor Studies (email: stefano.lombardi@vatt.fi); Saggio: University of British Columbia and NBER (email: rsaggio@mail.ubc.ca). Amy Finkelstein was coeditor for this article. We are very grateful to four anonymous reviewers for their constructive comments that greatly improved the paper. We also thank Marcus Eliason, Simon Jäger, Patrick Kline, Claus Kreiner, Thomas Lemieux, Benjamin Schoefer, and Daphné Skandalis for helpful comments and seminar participants at Paris 8, VATT Institute for Economic Research Helsinki, LIER Helsinki, IFAU Uppsala, University of Copenhagen, Le Mans University, Banco de España, Catholic University of the Sacred Heart Milan, IMF, OECD, and participants at SOLE, Search and Matching Conference, AFSE, ESPE, EEA, EALE, SAEe, and the workshop BdE-CEMFI. Antoine Bertheau acknowledges financial support from the Danish National Research Foundation (Niels Bohr Professorship) and from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program: grant agreement 741467 FIRMNET and data access from the CASD and Denmark Statistics. Edoardo Acabbi gratefully acknowledges financial support from the Comunidad de Madrid (Programa Excelencia para el Profesorado Universitario, convenio con Universidad Carlos III de Madrid, V Plan Regional de Investigación Científica e Innovación Tecnológica), the Spanish Ministry of Science and Innovation, project PID2020-114108GB-I00, and the Fundacion Ramon Areces. Andreas Gulyas gratefully acknowledges financial support from the German Research Foundation (DFG) through CRC TR 224 (project A3). Stefano Lombardi gratefully acknowledges financial support and data access from IFAU Uppsala (project 157-2019). Raffaele Saggio thanks the Segretariato Ufficio Statistica at the Italian Ministry of Labour for providing the LOSAI data. The views and opinions in this paper do not necessarily reflect those of our employers.

[†] Go to https://doi.org/10.1257/aeri.20220006 to visit the article page for additional materials and author disclosure statement(s).

However, such comparisons remain challenging. Meta-analyses from existing research are often clouded by differences in the sample selection, the definition of the displacement event, and the econometric specifications. These discrepancies tend to deliver different estimates on the impact of job loss and thus complicate the interpretation of competing results reached by different studies.

This paper addresses these challenges by building a harmonized dataset that combines matched employer-employee administrative registers from almost three decades and seven countries characterized by a wide range of labor market institutions (Austria, Denmark, France, Italy, Portugal, Spain, and Sweden). Our focus is on assessing the labor market effects of job displacements, defined as the permanent loss of a long-term job due to mass layoffs or establishment shutdowns for economic reasons. By adopting a common research design, a common definition of the displacement event, and identical sample selection criteria, this work provides the first comparable estimates on the labor market consequences of job displacement across countries. These harmonized data and empirical methods are then used to disentangle the sources of displaced workers' pay losses both within and between countries.

The key insight of this paper is that the labor market consequences of losing a job are vastly different across Europe. Scandinavian countries experience the lowest earnings losses: five years after job displacement, earnings are about 10 percent lower than their predisplacement level. By contrast, the earnings of displaced workers from southern Europe (Italy, Spain, and Portugal) are around 30 percent lower than their predisplacement levels. Austrian workers experience earnings losses in between those of the Scandinavian and southern European countries, while French workers experience losses more similar to those of Scandinavian workers.

Interestingly, existing evidence leads to drastically different conclusions from ours. For instance, by comparing Leombruni, Razzolini, and Serti (2013) to Bennett and Ouazad (2020), one would conclude that Italian displaced workers suffer lower earnings losses than Danish ones. This highlights the importance of using a harmonized research design when conducting a cross-country analysis on the consequences of job loss.

Next, we show that a large part of the cross-country differences in earnings losses is due to different responses on the extensive margin. The probability of being nonemployed five years following displacement is 20 percentage points larger for displaced workers than for nondisplaced ones in Spain, Portugal, and Italy. The same estimate is only around 5 percentage points in Sweden, Denmark, and France, while it is roughly 9 percentage points in Austria. A key explanation for our findings is that a significant fraction of displaced workers from Italy, Portugal, and Spain permanently withdraws from the labor market following the displacement event. This effect appears more pronounced among women, a result that echoes the enormous differences in female employment rates observed within Europe (e.g., Christiansen et al. 2016).

After conditioning on reemployment, we find that losses in daily wages for displaced workers are less dispersed when compared to earnings but still relatively heterogeneous, ranging from about 4 percent (Denmark) to 17 percent (Spain) five years after displacement. We then analyze the extent to which transitions from better- to worse-paying firms contribute to displaced workers' wage losses and whether these transitions differ across nations. We find that employer-specific wage policies

explain a remarkably large share of the observed wage losses for all countries. The share ranges from around 35 percent for Spain to almost 100 percent for Portugal. These results are thus in line with Schmieder, von Wachter, and Heining (2023) and Gulyas and Pytka (2020), who point to the importance of changes in employers' wage premiums in driving long-term wage losses from job displacement.

The remainder of the paper is structured as follows. Section I describes the data and the empirical methods used in the main analysis. Section II presents evidence on the heterogeneous impact of job loss across countries. Section III analyzes potential factors that can account for the cross-country differences depicted in Section II. Section IV concludes.

I. Harmonized Research Design

Do earnings losses due to job displacement differ across countries and, if so, by how much? Table A.1 in the online Appendix, which summarizes selected papers on job displacement, shows that this question is not readily answered by comparing existing studies. In particular, earnings loss estimates for a specific country tend to vary across papers. For example, available earnings loss estimates for France vary from 16 percent to 36 percent. The reason for these different estimates is that studies on the effects of job loss use different definitions of the displacement event, sample restrictions, control group, and time periods.

These differences in the research design cloud cross-country comparisons. For example, by comparing Leombruni, Razzolini, and Serti (2013) to Bennett and Ouazad (2020), one would conclude that Danish displaced workers face higher earnings losses than Italian workers. But the use of different sample restrictions (displaced workers' employers must have at least 30 employees versus no restriction on firm size) and different definitions of the mass layoff event (plant closure versus decline in firm size by over 30 percent) could also be driving the differences in the estimates. The definition of the control group is another important feature that tends to differ across papers. Some studies, like Jacobson, LaLonde, and Sullivan (1993) and Lachowska, Mas, and Woodbury (2020), impose that control workers remain *always* employed at the same employer. Online Appendix Table A.2 shows that imposing this tenure restriction on control workers in our analysis can double the estimated earnings losses from job displacement.

To overcome these limitations, we build a harmonized cross-country-matched employer-employee dataset by combining high-quality administrative registers from Austria, Denmark, France, Italy, Portugal, Spain, and Sweden. Online Appendix Table A.10 provides the data sources for each country. In our analysis we make sure to use the same variable definitions, sampling restrictions, and research design for each country. We use the resulting dataset to study job loss events due to mass layoffs occurring between at least the 1990s and the 2010s.[1] Specifically, we adopt an event study design akin to Schmieder, von Wachter, and Heining (2023), where workers displaced through a mass layoff are matched to similar workers who do not

[1] For Spain, data on job displacements are available from 2007 onward. Online Appendix Table A.4 shows that the extent of information available is comparable across countries. Country-specific details concerning the construction of the matched employer-employee dataset are reported in online Appendix C.

experience such an event. As we will detail, we select comparison (control) workers through propensity score matching and compute dynamic job loss effects by following workers up to five years before and after the job displacement event.

A. *Sample Selection and Definition of Main Outcomes*

Sample Selection.—To limit the influence of early retirement programs, we select workers who are at most 50 years old in the year preceding the job displacement event. We consider stable jobs by sampling workers with at least three years of tenure with their main employer in the year preceding the job displacement event. The unit of analysis for the employer is the establishment.[2] Moreover, to identify exogenous job separations due to mass layoffs, we further restrict our sample to workers employed in establishments with at least 50 employees at the end of the predisplacement year. Identical sampling restrictions are applied to the control workers as described below.

Definition of Main Outcomes.—We define earnings, deflated to 2010 EUR, as the sum of yearly labor earnings (possibly from different employers) before taxation. Labor earnings include overtime, bonuses, and severance payments when available. Wages are defined as daily earnings from the main employer and are computed as labor earnings over days worked. We do not have information on hours worked for all countries (see online Appendix Table A.4). A person is defined as employed if they have any positive labor earnings during the year. If the person is nonemployed in a given year, we impute zero earnings for that particular year as is typically done in the job displacement literature (e.g., Schmieder, von Wachter, and Heining 2023).

B. *Definition of Treated and Control Workers*

Treatment Group.—Let t^* be the year of a job displacement event. We define displaced/treated workers as those satisfying the following two conditions that seek to capture exogenous and permanent job separations: (i) workers separate from their main employer in t^* and (ii) employment at the current establishment drops by at least 30 percent in t^*.[3]

Restriction (ii) is aimed at alleviating concerns about mischaracterizing voluntary separations as layoffs.[4] The 30 percent threshold is standard in the mass layoff literature (see, e.g., Davis and von Watcher 2011; Flaaen, Shapiro, and Sorkin 2019) and includes plant closures. We additionally use explicit information on the reason

[2] The main employer is the establishment at which the worker's annual earnings are largest.

[3] To focus on permanent job separations, we drop from the analysis (i.e., from both treatment and control group) workers who are recalled by their main employer within five years from displacement. Moreover, to avoid classifying mergers or domestic outsourcing events as mass layoffs, we also exclude displacement events where more than 20 percent of workers jointly move to another firm.

[4] An analysis based on mass layoffs permits us to study plausibly exogenous separations but has the drawback that it selects only a subset of involuntary separations. However, we find that in general the share of workers subject to a mass layoff is relatively comparable across countries (see Table 1), suggesting that the differential representativeness of mass layoff workers across countries is not a primary concern for our results.

for job separation (layoff versus voluntary resignation) whenever the information is available.[5]

Control Group.—A potential control worker is someone who does not *concurrently* satisfy both conditions described to define a treated worker. To match each displaced worker to one worker selected from the pool of potential control workers, we partition the data by cells defined by calendar year, gender, and industry of the displaced workers. Within each cell, we then estimate a propensity score model via probit on the likelihood of being displaced. The model includes earnings measured in $t^* - 2$ and $t^* - 3$, age, tenure, and employer size in $t^* - 1$. We also match control and treated workers by contract type (temporary versus permanent) and full-time status, both measured at $t^* - 1$, whenever this information is available. We then apply a 1:1 nearest neighbor matching algorithm without replacement to assign one control worker to each treated worker. As is standard in the literature (e.g., Schmieder, von Wachter, and Heining 2023), the chosen control workers might be employed at a mass layoff firm but cannot experience a job displacement event themselves. See online Appendix B for further details.

C. *Summary Statistics*

Table 1 presents descriptive statistics of the matched sample along with sample sizes.[6] For each country in the study, the matching algorithm returns treated and comparison workers with well-balanced observable characteristics. In our sample, workers are, on average, between 33 and 38 years old, and between 34 percent and 48 percent are women. Treated and control workers are employed at the same employer for an average 5 to 10 years, depending on the country. Most workers work full time (81 percent to 89 percent) and on a permanent employment contract (6 percent to 15 percent have a fixed-term employment contract).

Comparing across countries, we observe that most variables are relatively balanced. However, some differences exist, such as in length of tenure. Table 1 further shows the percentage of workers involved in a mass layoff in a given year across the countries analyzed. According to this measure, the share of workers undergoing mass layoffs and fulfilling our sample restrictions is around 2 percent per year for most countries in our sample. Given that the definition of mass layoffs is common across countries, the fact that treated workers represent very similar shares of our samples further supports the validity of our analysis.

[5] This information is available for Spain and Italy. The main results are unaffected when we do not use the reason for job separation for these countries, and thus we only focus on mass layoffs identified from administrative data (see online Appendix Figure A.4). This result further suggests that focusing only on separations generated from mass layoffs measured from administrative data delivers representative estimates on the effects of job displacement (see the previous footnote and Flaaen, Shapiro, and Sorkin 2019).

[6] In France, Italy, and Spain, we do not have access to the universe of administrative records but rather to a random sample of individuals with all their employment spells.

Table 1—Descriptive Statistics, Matched Sample

	Denmark		Sweden		Italy		Spain		Austria		France		Portugal	
	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control
Panel A. Data structure														
Years of job loss	1983–2017		1994–2016		1993–2016		2007–2019		1987–2018		1994–2016		1992–2017	
Universe of data	Yes		Yes		No (6.5%)		No (4%)		Yes		No (8%)		Yes	
Panel B. Worker characteristics														
Earnings in $t^* - 3$	40.3	40.2	32.9	32.8	23.1	23.1	22.2	22.1	29.3	29.3	28.6	28.8	14.6	14.7
(EUR, thousands)	(23.9)	(23.5)	(15.9)	(15.9)	(16.4)	(15.6)	(9.2)	(8.9)	(11.3)	(11.5)	(17.0)	(18.0)	(10.9)	(11.2)
Age	33.7	34.2	36.7	36.7	37.8	37.7	38.2	38.0	38.2	38.1	37.3	37.5	35.8	35.8
	(9.0)	(9.1)	(7.9)	(7.9)	(7.6)	(7.8)	(6.8)	(6.9)	(7.8)	(7.8)	(7.5)	(7.6)	(7.6)	(7.7)
Female	0.37	0.37	0.34	0.34	0.40	0.40	0.41	0.41	0.42	0.42	0.36	0.36	0.48	0.48
Tenure	5.8	5.8	7.2	7.2	4.7	4.7	6.7	6.6	7.3	7.3	6.6	6.6	10.4	10.4
	(3.8)	(3.8)	(4.8)	(4.8)	(1.4)	(1.3)	(3.9)	(3.8)	(4.3)	(4.3)	(5.1)	(5.0)	(7.2)	(7.2)
Temporary contract	–	–	–	–	0.06	0.06	0.14	0.15	–	–	0.09	0.09	0.13	0.13
Full time	0.81	0.81	–	–	0.86	0.85	0.87	0.86	–	–	0.88	0.88	0.89	0.89
Panel C. Employer characteristics														
Industry:														
Manufacturing	0.38	0.38	0.42	0.42	0.36	0.36	0.26	0.26	0.47	0.47	0.44	0.44	0.53	0.53
Services	0.34	0.34	0.33	0.33	0.31	0.31	0.59	0.59	0.13	0.13	0.33	0.33	0.38	0.38
Other	0.28	0.28	0.26	0.26	0.33	0.33	0.15	0.15	0.41	0.41	0.23	0.23	0.09	0.09
Establishment size	369	343	383	379	364	357	342	361	323	310	319	341	337	326
	(603)	(632)	(669)	(829)	(284)	(291)	(789)	(812)	(373)	(516)	(434)	(539)	(494)	(601)
Percent of workers involved in a displacement event	2.84		1.25		3.41		1.80		2.58		0.70		1.88	
Number of workers (thousands)	201.91	201.91	108.58	108.58	66.07	66.07	14.71	14.71	55.82	55.82	28.64	28.64	171.14	171.14
Number of firms (thousands)	7.13	10.01	6.62	15.70	22.61	28.36	13.25	13.70	1.16	5.84	8.62	19.21	7.97	44.93

Notes: Averaged worker and employer characteristics in the matched sample, with t^* denoting the year of job loss for the treated group. Earnings are measured in $t^* - 3$, and all other variables in $t^* - 1$. The industry groups were matched at more disaggregated country-specific level but have been reaggregated in the table for presentation purposes. Earnings are deflated and reported in 2010 thousand euros. Standard deviation in parentheses. Percent of workers involved in a displacement event reports the average share of displaced workers in relation to the overall number of workers in a given year.

II. The Consequences of Job Loss across Countries

This section documents the consequences of job loss across Europe in terms of total yearly earnings, employment, and log daily wages.

A. *Event Study Model*

Let i index a treated or matched control worker, t_i^* be the calendar year when the displacement event occurs, and k be the number of years since displacement. We estimate the following event study model separately for each country:

$$(1) \qquad y_{it} = \alpha_i + \lambda_t + \sum_{k=-5}^{k=5} \gamma_k \mathbf{1}\{t = t_i^* + k\} + \sum_{k=-5}^{k=5} \theta_k \mathbf{1}\{t = t_i^* + k\} \times \text{Displaced}_i + X_{it}'\beta + r_{it},$$

where y_{it} measures our dependent variable, which is total yearly earnings, employment status, or log daily wages in year t; $Displaced_i$ is an indicator variable equal to one for treated workers who lose their job in a displacement event; and X_{it} includes age squared. The worker fixed effects α_i control for time-invariant worker characteristics, and λ_t are calendar year fixed effects. Under the assumption of parallel trends between the treated and control units, the coefficients of interest, θ_k, capture the causal effect of job loss at event time k. The coefficients $\{\theta_k\}$ are normalized relative to θ_{-3}. Standard errors are clustered at the worker level.

B. *The Unequal Consequences of Job Loss across Countries*

Figure 1 shows the effects of job displacement across countries, while Table 2 reports the point estimates and standard errors observed at $k = 1$ and $k = 5$. The figure reveals substantial cross-country heterogeneity regarding the impact of job loss. Starting from labor market earnings, panel A shows that despite large and persistent effects of job displacement in all countries, workers displaced in northern European countries suffer substantially lower losses in total earnings. One year after displacement, postdisplacement earnings are 20 percent lower compared to earnings measured in the predisplacement years. Remarkably, this effect is twice as large in southern Europe. Five years after displacement, northern European workers still suffer a 10 percent loss in total earnings compared to a 30 percent loss for their southern European counterparts. Austrian workers face earnings losses somewhere in between, while French workers have earnings losses more similar to what was observed in the Scandinavian countries.

Panel B further highlights that a large part of the cross-country differences is driven by different responses on the extensive margin. Five years after displacement, the probability of being nonemployed is approximately 20 percentage points higher for displaced workers in Italy, Spain, and Portugal relative to their respective control group.[7] Conversely, the effect on employment is much more attenuated and amounts to roughly 5 percentage points in Scandinavian countries as well as France. The employment effect in Austria is somewhere in the middle and amounts to about 10 percentage points. More generally, these estimates on employment align with an older literature that has found very heterogeneous employment dynamics across countries (see, e.g., Blanchard and Portugal 2001; Nickell, Nunziata, and Ochel 2005).

By contrast, wage losses, which are computed only for the subset of employed workers, are less dispersed across countries relative to what is observed for earnings. Yet, we still find a fair degree of heterogeneity also regarding the impact of job loss on wages.[8] Losses in wages are lowest in Denmark (around 4 percent) and largest in

[7] The pattern of the event study coefficients for employment in Portugal looks slightly different because its underlying matched employer-employee dataset (*Quadros de Pessoal*) only provides a snapshot of the labor market in October. Given our definition of displacement event, displaced workers in this country are thus employed by the long-term employer up to October of $t^* - 1$ but are always either nonemployed or employed by a different employer in t^*. Shifting the event time for Portugal by one year does not qualitatively affect our main results.

[8] Panel C shows a spike in the wages during the job displacement year for some countries. This happens when the drop in days worked is larger than the relative loss in earnings, which typically occurs due to extra payments received by workers upon job displacement such as severance payments or accumulated leave time (see, e.g., Lachowska, Mas, and Woodbury 2020 for a similar pattern).

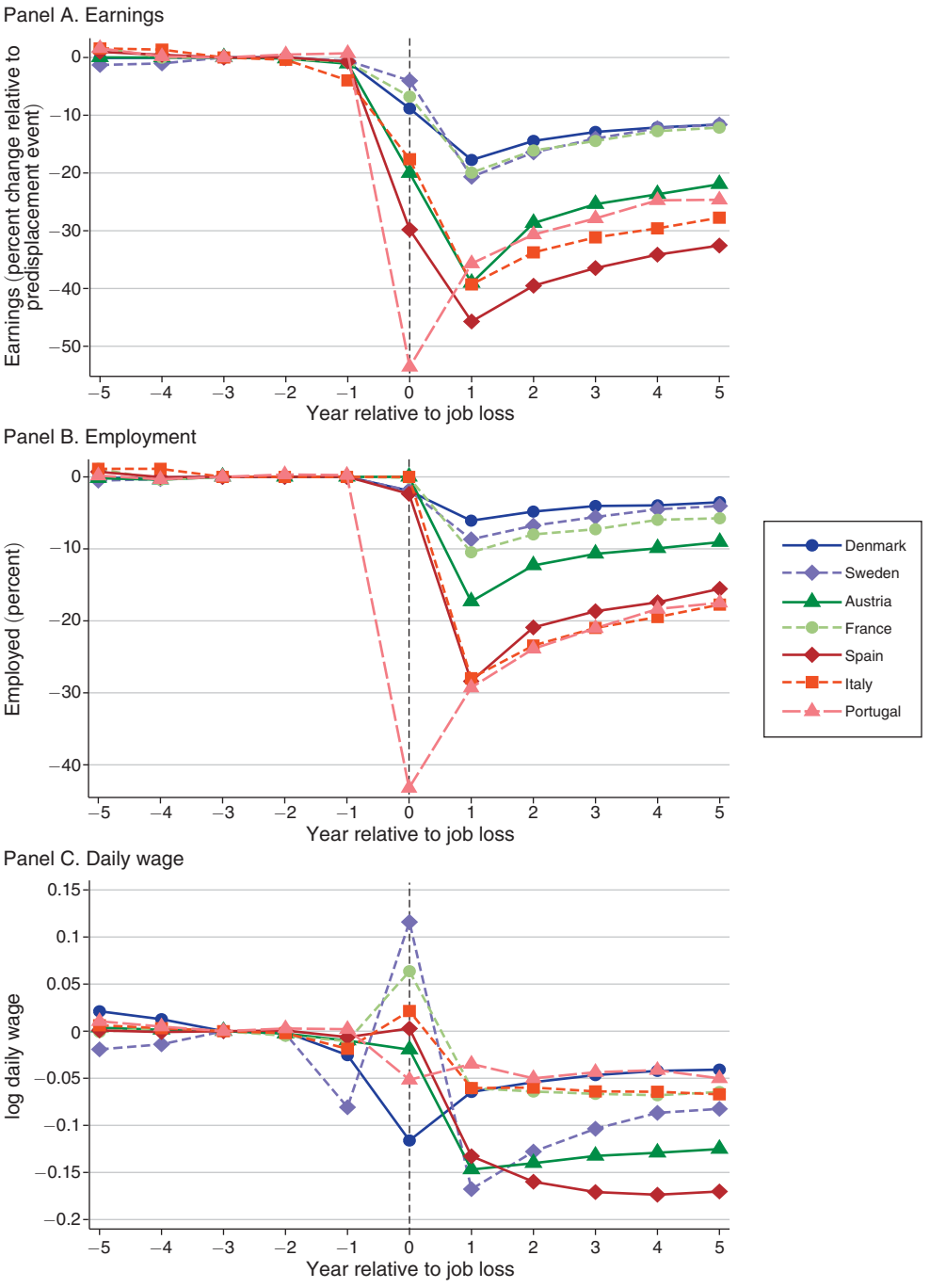

FIGURE 1. THE EFFECT OF JOB LOSS ACROSS COUNTRIES

Notes: The figure shows event study estimates of the job loss effects from equation (1). Estimates are relative to $t^* - 3$, where t^* is the job loss year. The coefficients in panel A are rescaled using average predisplacement labor earnings. The outcome in panel B is an indicator equal to one if a worker has at least one day of work in the corresponding year. Point estimates and standard errors are displayed in Table 2.

Table 2—Job Loss Effects on Earnings, Employment, and Wages

	Earnings		Employment		Log daily wages	
Denmark						
$k = 1$	−17.85	(0.155)	−6.07	(0.074)	−0.07	(0.002)
$k = 5$	−11.52	(0.196)	−3.59	(0.092)	−0.04	(0.002)
Observations (thousands)	4,295		4,295		3,701	
Sweden						
$k = 1$	−19.61	(0.240)	−8.30	(0.104)	−0.16	(0.003)
$k = 5$	−11.40	(0.329)	−4.12	(0.116)	−0.08	(0.003)
Observations (thousands)	2,247		2,247		2,169	
Austria						
$k = 1$	−39.00	(0.247)	−17.42	(0.186)	−0.15	(0.002)
$k = 5$	−21.96	(0.297)	−9.11	(0.217)	−0.12	(0.002)
Observations (thousands)	1,192		1,192		1,119	
France						
$k = 1$	−19.56	(0.431)	−10.68	(0.235)	−0.06	(0.003)
$k = 5$	−12.25	(0.626)	−5.70	(0.320)	−0.07	(0.004)
Observations (thousands)	577		577		542	
Italy						
$k = 1$	−39.58	(0.386)	−27.95	(0.223)	−0.06	(0.002)
$k = 5$	−27.86	(0.507)	−17.63	(0.274)	−0.07	(0.003)
Observations (thousands)	1,526		1,526		1,304	
Spain						
$k = 1$	−45.71	(0.551)	−28.40	(0.429)	−0.13	(0.005)
$k = 5$	−32.56	(0.672)	−15.55	(0.514)	−0.17	(0.006)
Observations (thousands)	302		302		277	
Portugal						
$k = 1$	−35.45	(0.286)	−29.15	(0.156)	−0.03	(0.002)
$k = 5$	−24.45	(0.332)	−17.32	(0.176)	−0.05	(0.002)
Observations (thousands)	3,491		3,491		2,692	

Notes: The table reports the coefficients θ_1 and θ_5 from the event study model, (1), for each country. k denotes the years since displacement. The point estimates on earnings are rescaled by the average earnings measured in the predisplacement years, and the coefficients on earnings and employment are multiplied by 100. Standard errors are reported in parentheses and are clustered at the individual level. The number of person-year observations is in thousands.

Spain with an effect that is about four times larger compared to what we observe in Denmark. In online Appendix Table A.9, we find that after accounting for selection on reemployment using insights from Lee (2009), the cross-country heterogeneity in wage losses appears consistent with our main results on earnings displayed in Figure 1, panel A.

Online Appendix Figure A.1 shows that Italy is the only country with a remarkable time trend in the job loss effects, while online Appendix Figure A.2 shows that when estimating the effects of job displacement separately by men and women, the remarkable differences in earnings losses across countries remain unaltered.[9] Finally, using the estimates from Schmieder, von Wachter, and Heining (2023),

[9] Italian workers suffered earnings losses of around 25 percent in the 1990s but of 40 percent in the 2010s. Online Appendix D shows that these larger earnings losses observed over time for Italy appears to be due to

online Appendix Table A.6 shows that earnings losses in Germany are comparable to those observed in Austria.

All in all, when interpreting earnings losses as a proxy for how well labor markets are functioning, we obtain the clear conclusion that northern European labor markets are more efficient in reallocating workers to new jobs, with limited earnings losses five years following the displacement event. By contrast, workers in Spain, Portugal, and Italy face significantly higher earnings losses due to displacement, which persist well after the job displacement event. Finally, wage losses, despite being less dispersed compared to earnings losses, are still quite diverse across Europe but without a clear north-south divide as the one observed for earnings.

III. Understanding the Effects of Job Loss across Countries

This section addresses the following questions that arise in light of the evidence shown in Section II. First, are the differences in reemployment probabilities of displaced workers across countries driven by permanent withdrawals from the labor market or by the fact that displaced workers reallocate to very unstable jobs? Second, what is the role of employer-specific wage premiums in driving wage losses due to displacement, and is this role different across countries? Section A provides evidence concerning the first question, while Section B answers the last two.

A. *Explaining Differences in Employment*

Figure 2 displays the percentage of displaced workers who remain nonemployed in a given year following the displacement event. To maximize comparability across countries, we focus on the cohort of workers displaced in the year 2010.[10] The results are also presented in table format in online Appendix Table A.7. Figure 2, panel A shows remarkably different patterns across countries. Only about 20 percent of displaced workers in Sweden, Denmark, and France were not able to find a new job in the year right after the displacement event. This fraction is much higher, between 30 percent and 40 percent for workers in Italy and Spain, and is even higher in Portugal. Over time, these differences do not converge. The figure highlights that between 15 percent and 25 percent of workers in Spain, Italy, and Portugal never reentered the labor market five years postdisplacement.

Interestingly, we detect a similar pattern while computing the hazard rates for the sample of displaced workers who *eventually* found a job within five years from displacement (see Figure 2, panel B). For instance, while in France only 5 percent of returning displaced workers did not enter the labor market within two years from displacement, in Portugal this fraction is almost 30 percent. More generally, according to Figure 2, panel B, the nonemployment duration among displaced workers who eventually returned to the labor market remains significantly longer among southern European displaced workers.

displaced workers being increasingly more likely to obtain lower-paying temporary jobs following job displacement, consistent with the findings of Woodcock (2020) for Germany.

[10] The results based on the full set of available mass layoff years are qualitatively similar.

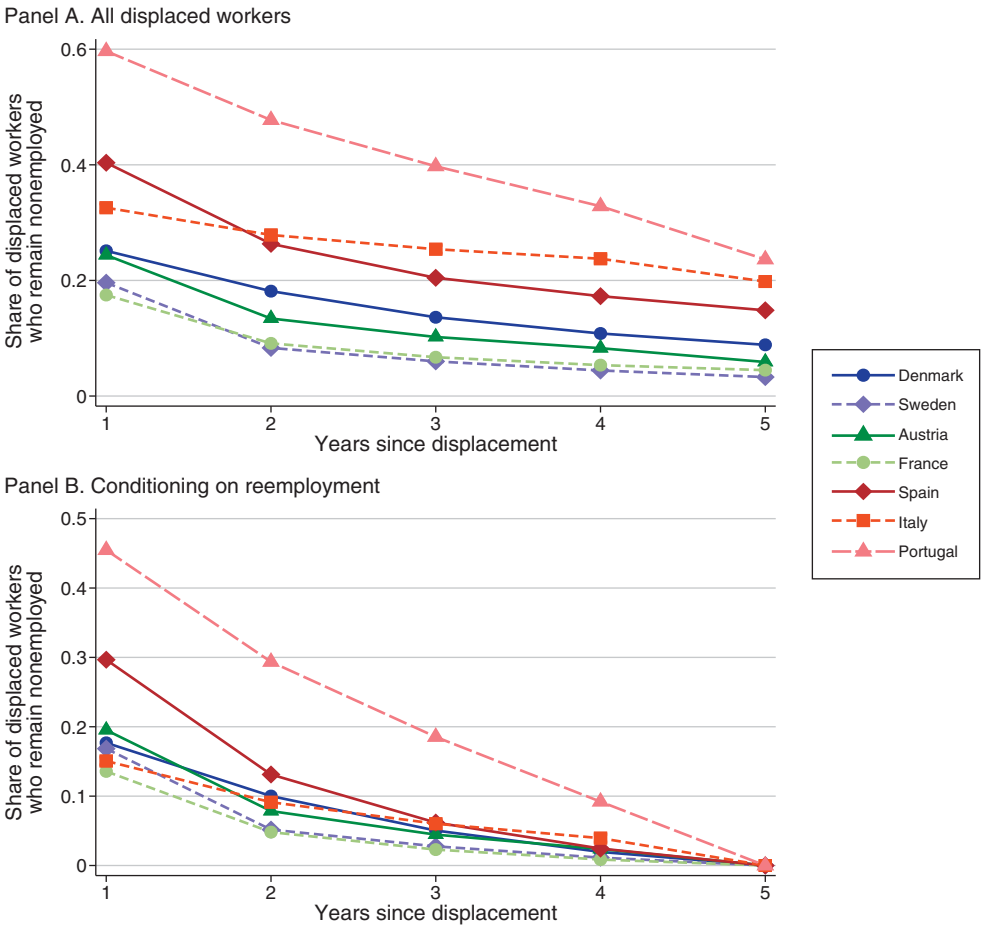

FIGURE 2. SHARE OF DISPLACED WORKERS WHO REMAIN NONEMPLOYED

Notes: In panel A, we take the set of workers who suffered a displacement event in 2010 and plot the fraction of them who remain nonemployed (i.e., have not entered the labor market yet) in each of the five years that followed the job displacement event. Panel B reports the same fraction among those displaced workers who eventually find a job within five years from the displacement event. Online Appendix Table A.7 shows the numbers reported in each panel.

To quantify the overall importance of permanent displacement from the labor market in driving our effects on employment, we estimate equation (1) using as an outcome a dummy equal to one if worker i is not employed in year t and remains nonemployed in all subsequent periods (online Appendix Figure A.8). Withdrawals appear to explain a significant fraction of the overall employment effects (e.g., they account for about 75–80 percent of the employment effect observed for Italy, Spain, and Portugal). Online Appendix Table A.8 additionally shows that permanently displaced workers are systematically more likely to be women and that this gender gap is particularly large in southern European countries.[11]

[11] For instance, in Italy the permanently displaced workers are 10 percentage points more likely to be women, whereas this number is around 2–3 percentage points in Sweden and Denmark.

In conclusion, the evidence presented here shows that a key explanation for our effects on employment is that displaced workers from southern European countries have a greater chance of being *permanently* displaced from the labor market following displacement. This effect appears to be more pronounced among women. Even after conditioning on reemployment, workers from Italy, Portugal, and Spain still experience significantly longer nonemployment durations following displacement.

Differences in Observed Characteristics, Employment Coverage, and Institutions.—Online Appendix B shows that the cross-country differences in observed characteristics do not explain much of the heterogeneous effects of job displacement depicted in Figure 1, panel A. In online Appendix D, we also show that differences in coverage of self-employment or public jobs across countries are unlikely to account for the bulk of the different employment responses displayed in Figure 1, panel B. Finally, additional analyses on the potential role of institutions are reported in the working paper version of this article (see Bertheau et al. 2022).

B. *The Role of Employer-Specific Wage Premiums*

We now focus on the extent to which transitions from better- to worse-paying firms contribute to displaced workers' wage losses and whether these transitions differ across countries. Two recent studies indicate large cross-country differences in workers' ability to find similarly well-paying firms after job displacement. Lachowska, Mas, and Woodbury (2020) show that displaced workers in Washington State during the Great Recession did not face a particularly significant loss of employer-specific wage premiums. In contrast, Schmieder, von Wachter, and Heining (2023) show that in Germany many displaced workers move to worse-paying firms, which explains a large fraction of their wage losses.

Despite Schmieder, von Wachter, and Heining (2023) partly reconciling the different results found for Germany and Washington State, the fact that these two studies use somewhat different sample restrictions and econometric specifications, as illustrated in online Appendix Table A.1, makes it hard to draw firm conclusions on the importance of employer quality in explaining wage losses. Does the ability of displaced workers to find similarly well-paying jobs significantly differ across countries? To answer this question, we exploit our harmonized research design to perform a cross-country comparison of the fraction of wage losses that can be attributed to transitions to worse-paying firms after job loss.

Calculating Employer Fixed Effects.—For each country, we focus on the sample of workers with positive earnings and estimate an Abowd-Kramarz-Margolis (AKM) model (Abowd, Kramarz, and Margolis 1999) for log daily wage as follows:

$$y_{it} = \alpha_i + \psi_{J(i,t)} + \lambda_t + X_{it}'\beta + u_{it}, \tag{2}$$

where $J(i,t)$ is the main employer of worker i in year t, α_i and $\psi_{J(i,t)}$ are worker and establishment fixed effects, λ_t are year indicators to adjust for macroeconomic conditions, and X_{it} is a cubic polynomial in age. To alleviate the concern that job loss might directly contribute to the estimates of the establishment effect in the

AKM model, when estimating equation (2) we exclude treated and control workers defined in Section B. Our focus is on the estimates of $\psi_{J(i,t)}$, which captures the time-invariant wage policy component for a given employer, which we denote as the employer-specific wage premium. As the employer-specific wage premiums correlate with productivity, they can be interpreted as capturing rents accrued by the worker from the current job (Card, Cardoso, and Kline 2016).

After estimating the AKM model, we first reestimate the event study model (1) by using $\hat{\psi}_{J(i,t)}$ as an outcome. The interaction terms in the event study model return the change in the employer-specific wage premiums for displaced workers relative to their matched control workers, *k* years following displacement. Next, following Lachowska, Mas, and Woodbury (2020), we take the ratio of the job displacement effect on the employer-specific wage premium relative to the overall job displacement effect on log wages. This gives a measure of the share of wage losses explained by changes in employer-specific wage premiums.[12]

Job Displacement Effects Due to Loss of Employer-Specific Wage Premiums.— Table 3 shows the estimated loss of employer-specific wage premiums (column 1), the total job loss effects on wages (column 2), and the resulting share explained by employer-specific wage premiums (column 3). The results highlight that the loss of employer-specific wage premiums is very important in explaining overall wage losses across all countries. Five years after displacement, the change in employer-specific premiums explains between 35 percent and 60 percent of wage losses in Austria, Denmark, Italy, Spain, and Sweden. In France this share is almost 70 percent, and in Portugal it reaches 100 percent. Online Appendix Table A.5 additionally shows that changes in employer-specific wage premiums matter in explaining the cyclicality of job loss effects.

Overall, these results suggest that the transition of displaced workers from better- to worse-paying employers is an important factor in explaining the wage losses due to displacement observed within each country. This result echoes the seminal work of Jacobson, LaLonde, and Sullivan (1993), who hypothesize that a potential factor behind permanent wage losses following displacement is the loss of firm-specific rents that displaced workers accumulated with their employer before experiencing a layoff. Table 3 thus confirms this original conjecture and provides a quantitative assessment on the importance of firm-specific rents in driving the wage losses of displaced workers across very diverse labor markets. The importance of firms in driving wage losses of displaced workers highlighted by Table 3 is consistent with recent evidence that has shown that firm wage policies represent an important feature of today's labor markets for several countries (Card et al. 2018; Song et al. 2019).

IV. Conclusion

Using a harmonized research design applied to matched employer-employee datasets, we document striking differences of the impact of job loss across seven

[12] To compute the share of wage losses explained by losses in employer-specific pay premiums, we reestimate the effect of job loss on log wages within the subsample of person-year observations where the associated employer belongs to the so-called largest connected set associated to equation (2) (see, e.g., Card, Heining, and Kline 2013).

Table 3—Loss of Employer-Specific Wage Premiums

	AKM employer wage premium (1)		Log daily wage (2)		Ratio (3)
Denmark					
$k = 1$	−0.025	(0.001)	−0.063	(0.002)	0.40
$k = 5$	−0.018	(0.001)	−0.040	(0.002)	0.44
Observations (thousands)	3,674		3,674		
Sweden					
$k = 1$	−0.027	(0.001)	−0.098	(0.003)	0.28
$k = 5$	−0.026	(0.001)	−0.051	(0.003)	0.51
Observations (thousands)	1,937		1,937		
Austria					
$k = 1$	−0.061	(0.001)	−0.105	(0.002)	0.58
$k = 5$	−0.064	(0.001)	−0.112	(0.002)	0.57
Observations (thousands)	1,048		1,048		
France					
$k = 1$	−0.025	(0.002)	−0.036	(0.003)	0.70
$k = 5$	−0.030	(0.002)	−0.044	(0.004)	0.68
Observations (thousands)	489		489		
Italy					
$k = 1$	−0.023	(0.001)	−0.053	(0.002)	0.43
$k = 5$	−0.028	(0.002)	−0.057	(0.003)	0.49
Observations (thousands)	1,262		1,262		
Spain					
$k = 1$	−0.023	(0.003)	−0.097	(0.004)	0.24
$k = 5$	−0.045	(0.004)	−0.129	(0.006)	0.35
Observations (thousands)	259		259		
Portugal					
$k = 1$	−0.029	(0.001)	−0.029	(0.002)	1.00
$k = 5$	−0.044	(0.001)	−0.043	(0.002)	1.01
Observations (thousands)	2,525		2,525		

Notes: The table reports estimates from the event study model, (1), with k denoting the time since the job displacement event. Column 1 reports results where AKM employer fixed effects is used as the dependent variable. Column 2 reports results where the log daily wage is used as the dependent variable. The resulting share of losses in log daily wages due to losses in employer-specific wage premiums is shown in column 3. Effects on log daily wages are calculated with the subsample of displaced (and matched control) workers whose employer at time t belongs to the within-country largest connected set of firms associated with equation (2). Standard errors, clustered at the individual level, are reported in parentheses.

European countries. While earnings losses five years after job displacement are around 10 percent in northern European countries, they are almost 30 percent in southern European countries, with Austrian workers facing losses in between and French workers' losses being more similar to those of northern European workers. Crucially, these earnings differences appear to be driven by differences in reemployment probabilities since a significant fraction of displaced workers from Italy, Portugal, and Spain are unable to reenter the labor market postdisplacement. This effect is more pronounced among women.

Focusing on wages, a key factor in driving wage losses following job displacement is reallocation to worse-paying employers. Specifically, the share of wage losses explained by losses in AKM employer-specific wage premiums ranges from

35 percent for Spain to basically 100 percent for Portugal. This result thus enriches a recent but still inconclusive literature that has analyzed the role of employer-specific wage policies in driving the wage losses following displacement (Lachowska, Mas, and Woodbury 2020; Schmieder, von Wachter, and Heining 2023; Gulyas and Pytka 2020).

What can these results tell us about welfare? While an analysis on earnings losses is not equivalent to an analysis on income or consumption losses (e.g., Dobkin et al. 2018; Fadlon and Nielsen 2021), we note that the countries where the earnings losses due to displacement tend to be the lowest (Denmark, Sweden) are also those where the welfare state tends to be the most generous. Conversely, the largest earnings losses are observed in countries (Italy, Spain, Portugal) where the generosity of the welfare state tends to be the lowest (Boeri 2011). This suggests that our ranking of countries in terms of earnings losses might be preserved when also looking at income or consumption losses. However, this is clearly only speculative, and a rigorous analysis on the effects of job loss on comparable measures of consumption and income across countries represents an interesting avenue for future research.

All in all, the vastly different earnings trajectories following a job loss documented in this paper should be informative for policymakers and academics alike. Our results reveal that labor markets appear to function better in some countries than others. European policymakers should thus focus on policies that could reduce these differences, which appear even more striking when focusing on particular groups of workers, like women.

REFERENCES

Abowd, John, Francis Kramarz, and David Margolis. 1999. "High Wage Workers and High Wage Firms." *Econometrica* 67 (2): 251–333.

Bennett, Patrick, and Amine Ouazad. 2020. "Job Displacement, Unemployment, and Crime: Evidence from Danish Microdata and Reforms." *Journal of the European Economic Association* 18 (5): 2182–220.

Bertheau, Antoine, Edoardo Maria Acabbi, Cristina Barcelo, Andreas Gulyas, Stefano Lombardi, and Raffaele Saggio. 2022. "The Unequal Consequences of Job Loss across Countries." NBER Working Paper 29727.

Bertheau, Antoine, Edoardo Maria Acabbi, Cristina Barceló, Andreas Gulyas, Stefano Lombardi, and Raffaele Saggio. 2023. "Replication data for: The Unequal Consequences of Job Loss across Countries." American Economic Association [publisher], Inter-university Consortium for Political and Social Research [distributor]. https://doi.org/10.3886/E172381V1.

Blanchard, Olivier, and Pedro Portugal. 2001. "What Hides Behind an Unemployment Rate: Comparing Portuguese and US Labor Markets." *American Economic Review* 91 (1): 187–207.

Boeri, Tito. 2011. "Institutional Reforms and Dualism in European Labor Markets." In *Handbook of Labor Economics*, Vol. 4B, edited by David Card and Orley Ashenfelter, 1173–236. Amsterdam: Elsevier.

Card, David, Ana Rute Cardoso, and Patrick Kline. 2016. "Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women." *Quarterly Journal of Economics* 131 (2): 633–86.

Card, David, Ana Rute Cardoso, Jörg Heining, and Patrick Kline. 2018. "Firms and Labor Market Inequality: Evidence and Some Theory." *Journal of Labor Economics* 36 (S1): 13–70.

Card, David, Jörg Heining, and Patrick Kline. 2013. "Workplace Heterogeneity and the Rise of West German Wage Inequality." *Quarterly Journal of Economics* 128 (3): 967–1015.

Christiansen, Lone, Huidan Lin, Joana Pereira, Petia Topalova, and Rima Turk. 2016. "Unlocking Female Employment Potential in Europe: Drivers and Benefits." International Monetary Fund Departmental Paper 2016/002.

Davis, Steven, and Till von Wachter. 2011. "Recessions and the Costs of Job Loss." *Brookings Papers on Economic Activity* 41 (2): 1–72.

▶**Dobkin, Carlos, Amy Finkelstein, Raymond Kluender, and Matthew J. Notowidigdo.** 2018. "The Economic Consequences of Hospital Admissions." *American Economic Review* 108 (2): 308–52.
▶**Fadlon, Itzik, and Torben Heien Nielsen.** 2021. "Family Labor Supply Responses to Severe Health Shocks: Evidence from Danish Administrative Records." *American Economic Journal: Applied Economics* 13 (3): 1–30.
▶**Flaaen, Aaron, Matthew Shapiro, and Isaac Sorkin.** 2019. "Reconsidering the Consequences of Worker Displacements: Firm versus Worker Perspective." *American Economic Journal: Macroeconomics* 11 (2): 193–227.
Gulyas, Andreas, and Krzysztof Pytka. 2020. "Understanding the Sources of Earnings Losses after Job Displacement: A Machine-Learning Approach." Unpublished.
Jacobson, Louis S., Robert J. LaLonde, and Daniel G. Sullivan. 1993. "Earnings Losses of Displaced Workers." *American Economic Review* 83 (4): 685–709.
▶**Lachowska, Marta, Alexandre Mas, and Stephen A. Woodbury.** 2020. "Sources of Displaced Workers' Long-Term Earnings Losses." *American Economic Review* 110 (10): 3231–66.
Lee, David S. 2009. "Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects." *Review of Economic Studies* 76 (3): 1071–102.
Leombruni, Roberto, Tiziano Razzolini, and Francesco Serti. 2013. "The Pecuniary and Non-Pecuniary Costs of Job Displacement—The Risky Job of Being Back to Work." *European Economic Review* 61 (C): 205–16.
Nickell, Stephen, Luca Nunziata, and Wolfgang Ochel. 2005. "Unemployment in the OECD since the 1960s. What Do We Know?" *Economic Journal* 115 (500): 1–27.
▶**Schmieder, Johannes F., Till von Wachter, and Jörg Heining.** 2023. "The Costs of Job Displacement over the Business Cycle and Its Sources: Evidence from Germany." *American Economic Review* 113 (5): 1208–54.
Song, Jae, David J. Price, Fatih Guvenen, Nicholas Bloom, and Till von Wachter. 2019. "Firming Up Inequality." *Quarterly Journal of Economics* 134 (1): 1–50.
Woodcock, Simon D. 2020. "The Effect of the Hartz Labor Market Reforms on Post-unemployment Wages, Sorting, and Matching." IZA Discussion Paper 13300.