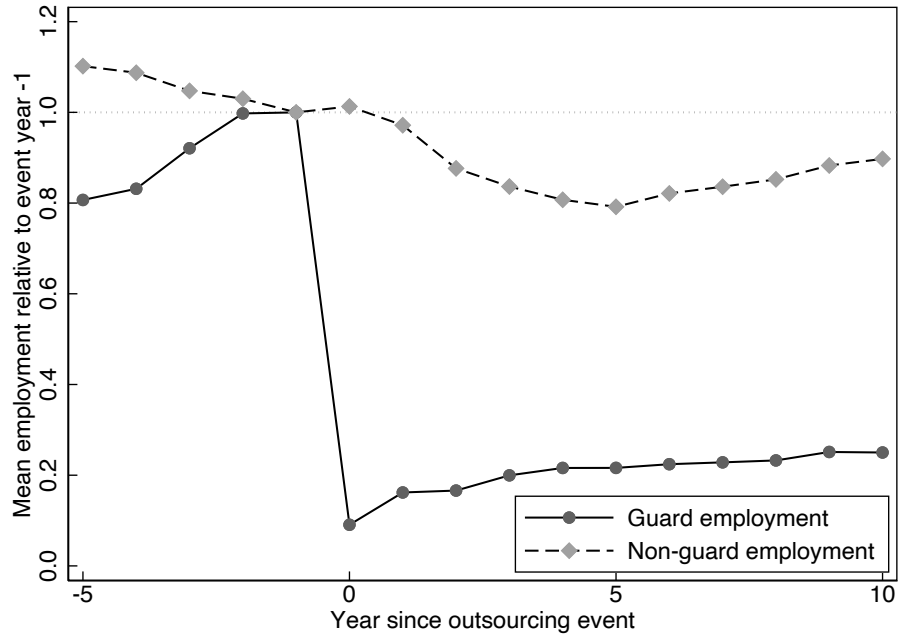


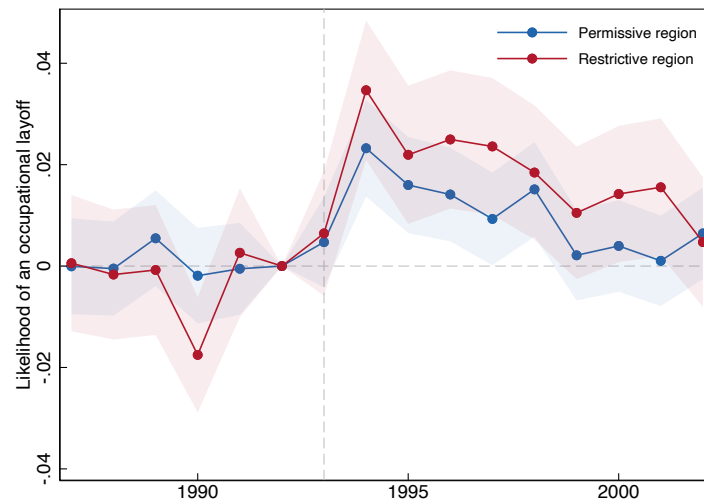
Online Appendix for
“The Displacement Effects of Domestic Outsourcing,”
by Mayara Felix and Michael B. Wong

Figure A.1: Establishment employment before and after occupational layoff



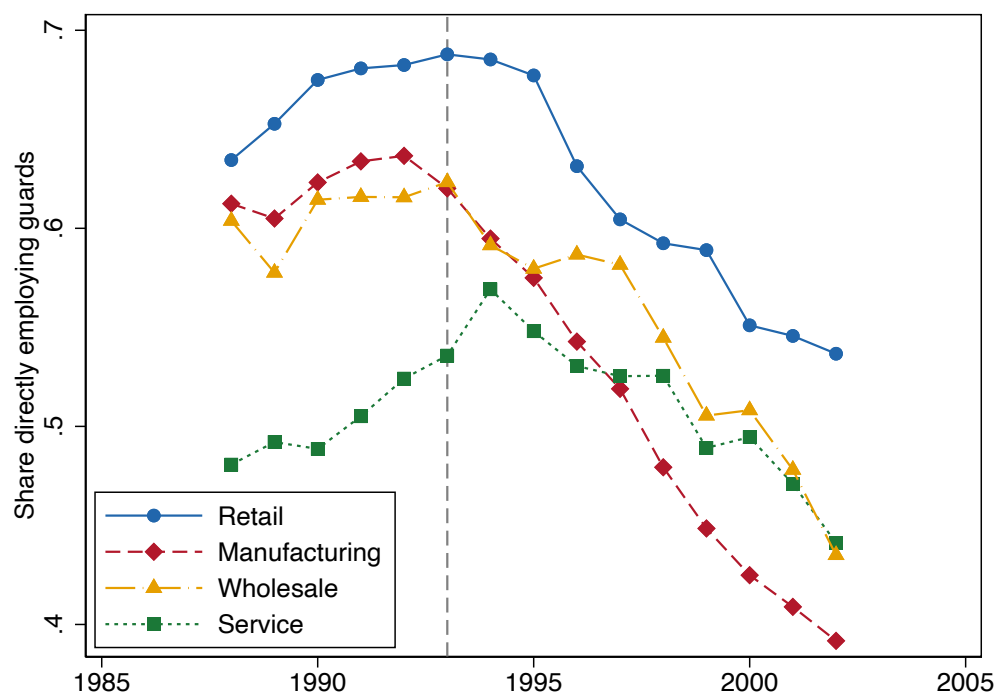
Note: Each series plots the mean employment among establishments with an occupational layoff at each event year, divided by its own mean at event year -1. Guard employment is the number of security guards; non-guard employment is total employment excluding security guards.

Figure A.2: Frequency of occupational layoffs by region restrictiveness



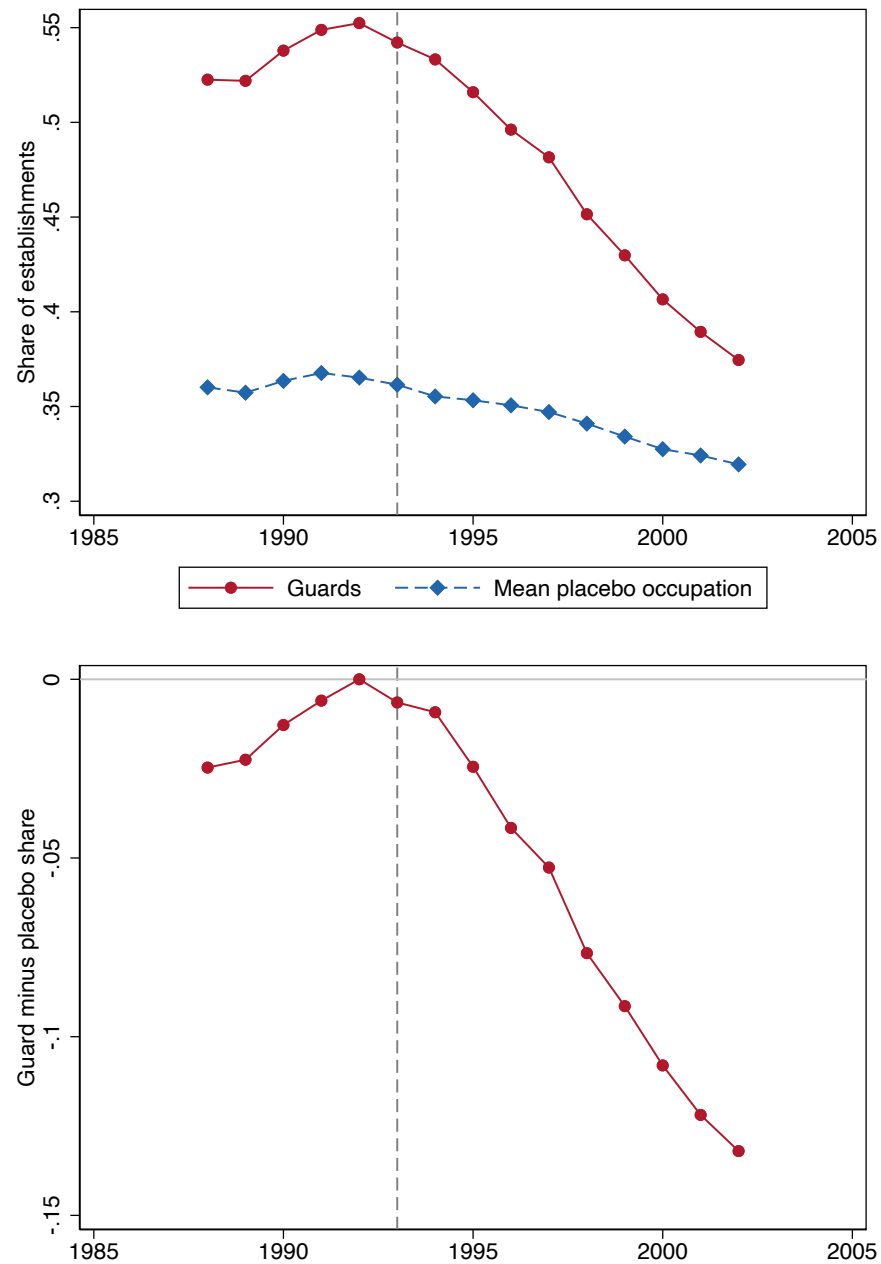
Note: This figure plots coefficients from a linear probability model with separate year fixed effects for restrictive and permissive regions. We cluster standard errors at the establishment level.

Figure A.3: Direct guard employment among continuing establishments



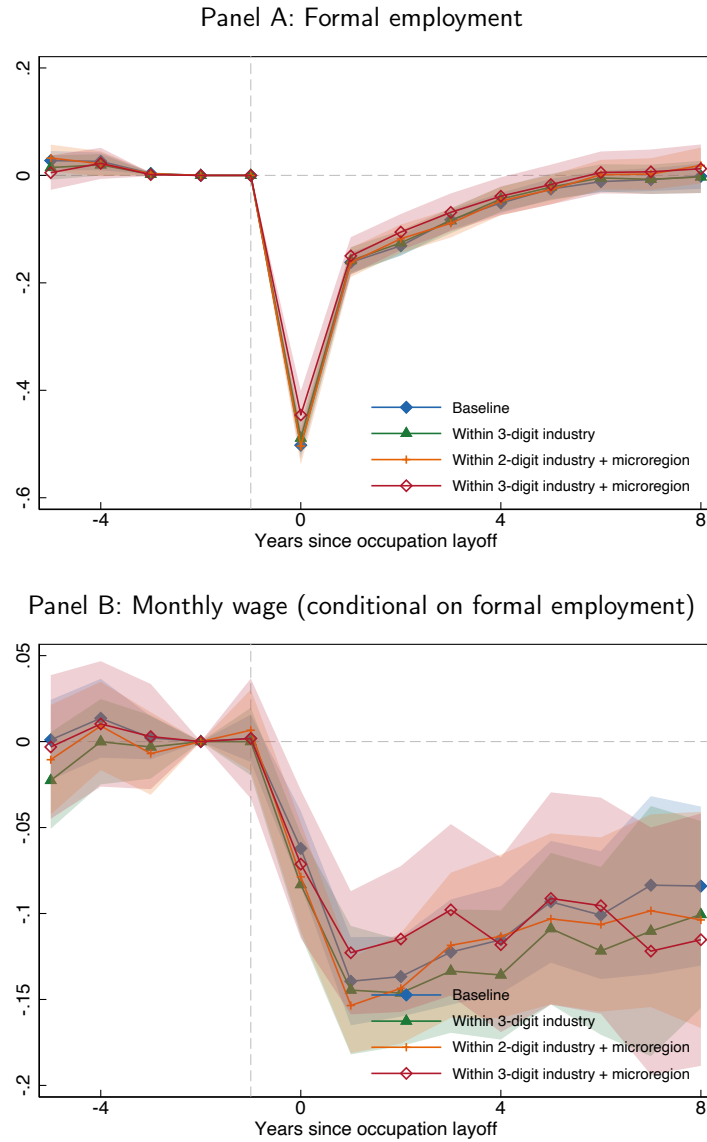
Note: The sample contains establishments observed in every year from 1988 through 2002 and with at least 50 employees. The figure plots the share directly employing guards by broad sector. The dashed line marks 1993.

Figure A.4: Direct employment of guards and placebo occupations



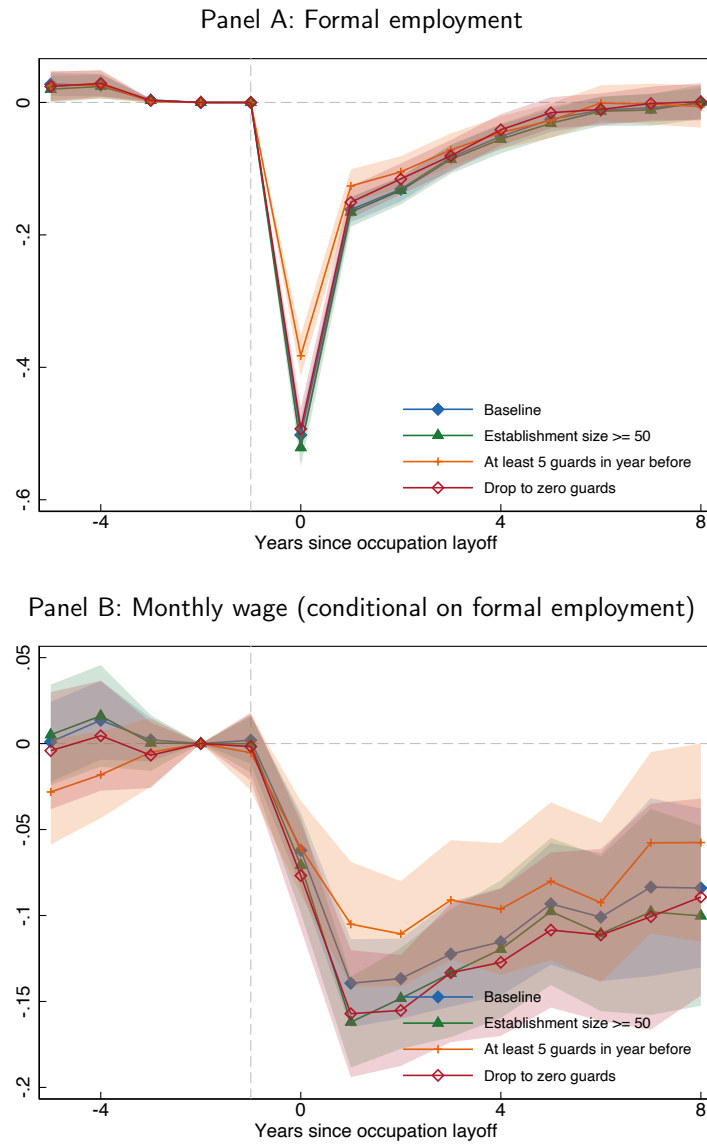
Note: Placebos are two-digit occupations observed in every sample year with 1992 prevalence between one-quarter and four times guard prevalence. The lower panel normalizes the guard-minus-placebo gap to zero in 1992.

Figure A.5: Effect of occupational layoff on incumbent guards, alternative matching strategies



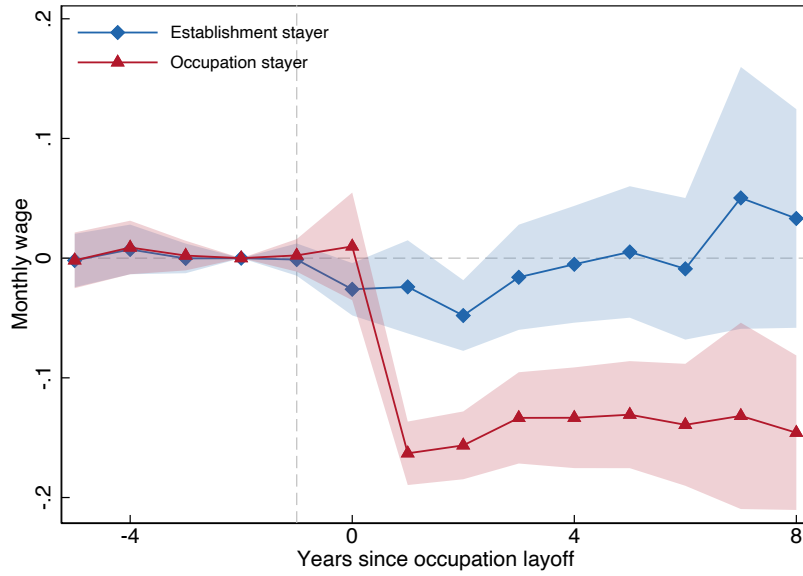
Note: Figure replicates Figure 2, Panels A and B, with alternative matching strategies. The baseline specification matches workers within the 2-digit industry and local regional court jurisdiction. The alternative specifications match within the 3-digit industry and local regional court jurisdiction (in green), within the 2-digit industry and microregion (in orange), and within the 3-digit industry and microregion (in red).

Figure A.6: Effect of occupational layoff on incumbent guards, alternative definitions



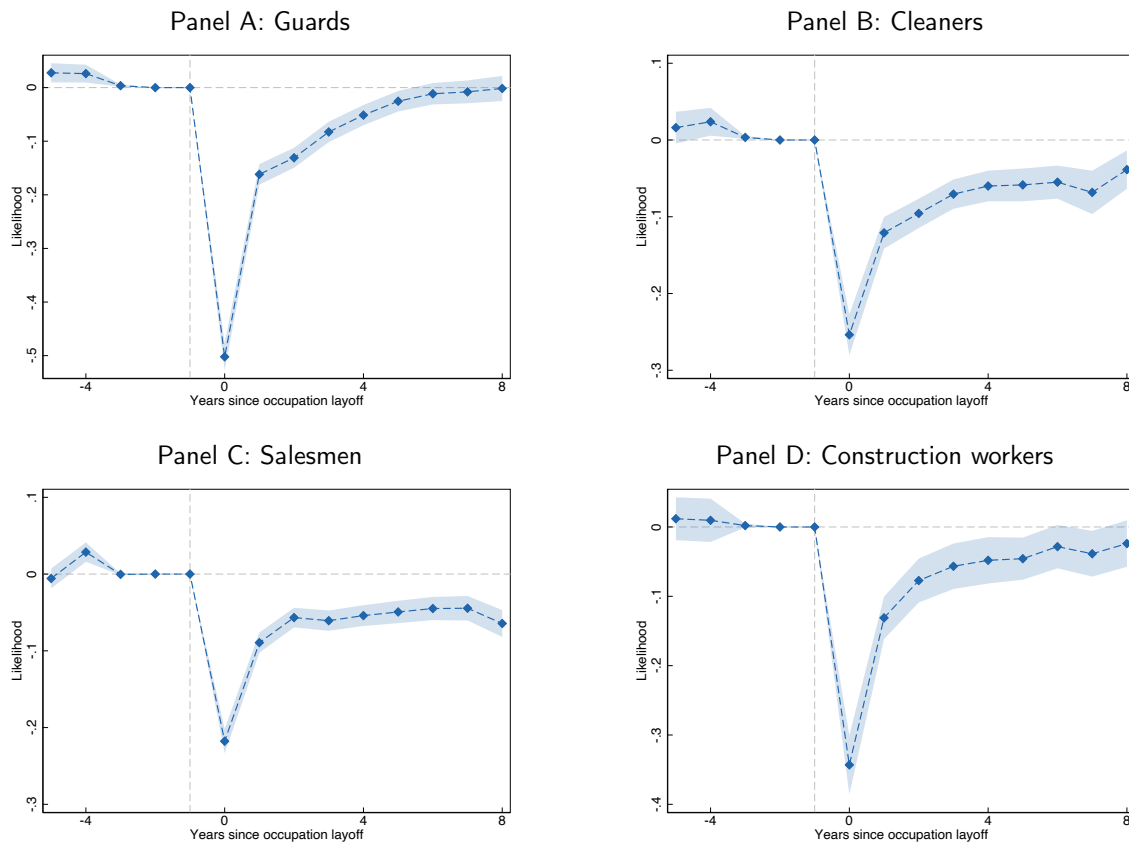
Note: Figure replicates Figure 2, Panels A and B, with alternative definitions of occupational layoffs. The alternative specifications restrict to outsourcing establishments with at least 50 employees (in green), at least 5 security guards (in orange), or consider events where the number of security guards drops to zero (in red).

Figure A.7: Effect of occupational layoffs on establishment and occupation stayers



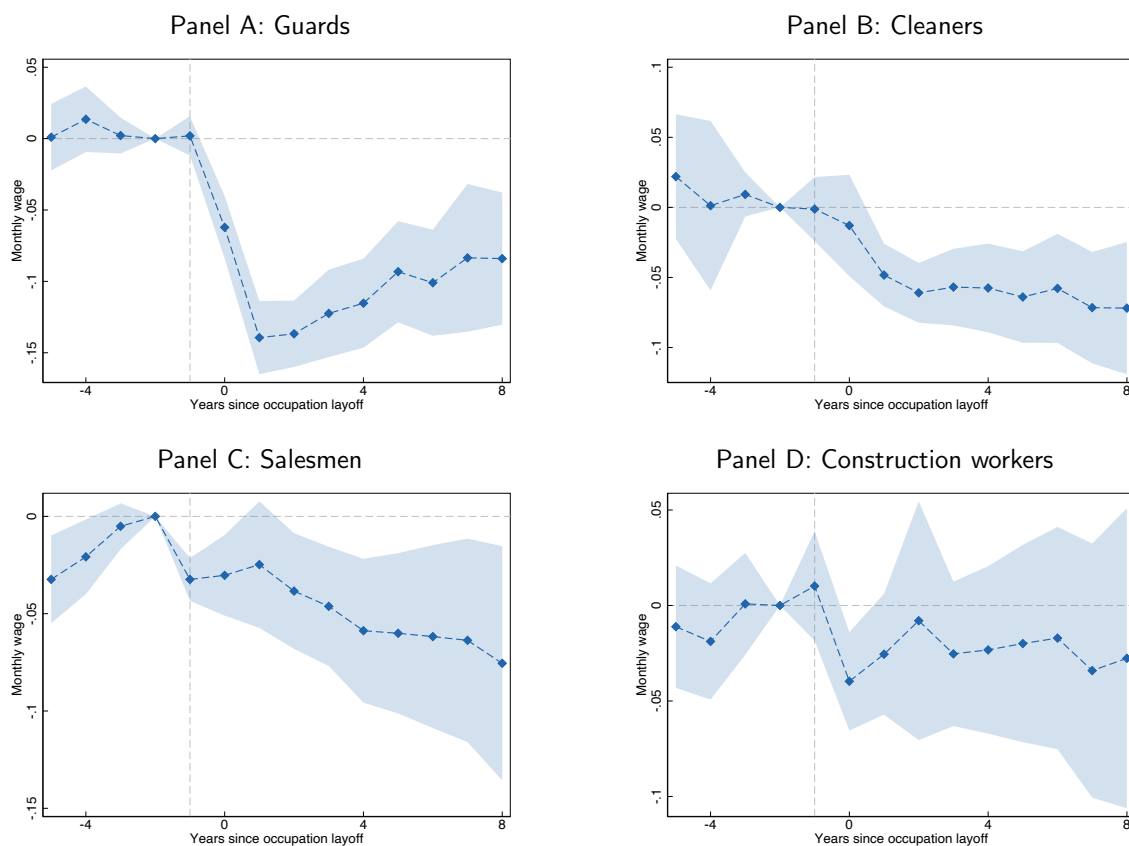
Note: Figure plots coefficient δ_k from the difference-in-differences specification in equation (1), measuring the impact of a firm occupational layoff on incumbent direct-hire security guards, where the control group consists of similar workers in establishments that did not have an occupational layoff. The outcome variable is monthly wage, measured as a fraction of wage two years prior to the outsourcing event, and observations are included only if either (a) the worker remains at the same establishment or (b) the worker remains in the same occupation. Our sample includes all occupational layoffs, as identified by sudden drops in an establishment security guard count, between 1990 and 2000. We include controls for individual and year fixed effects, and time-varying demographics. Shaded bands indicate 95% confidence intervals, with standard errors clustered at the establishment level, computed by a pairs cluster bootstrap (200 replications).

Figure A.8: Effect of occupational layoff on incumbent employment, other occupations



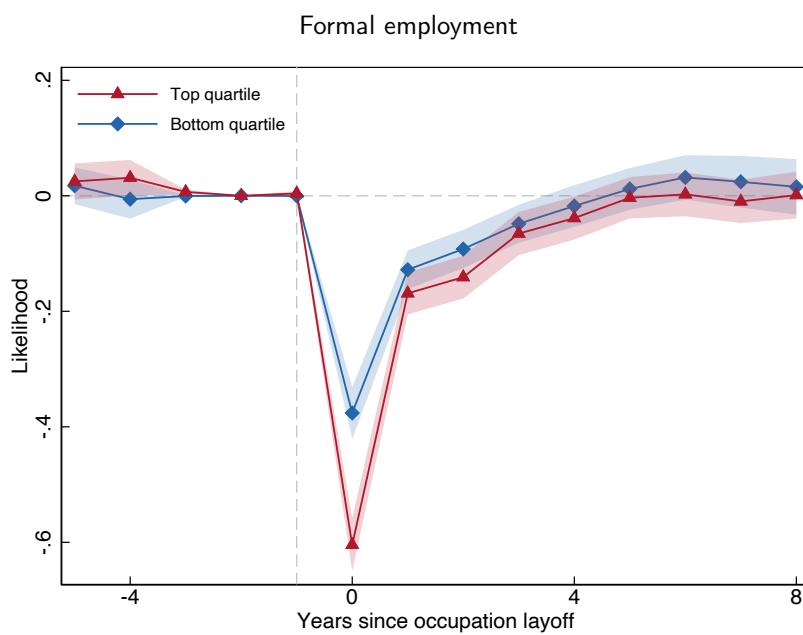
Note: Figure replicates Figure 2, Panel A, for occupational layoffs in other occupations.

Figure A.9: Effect of occupational layoff on incumbent wage, other occupations



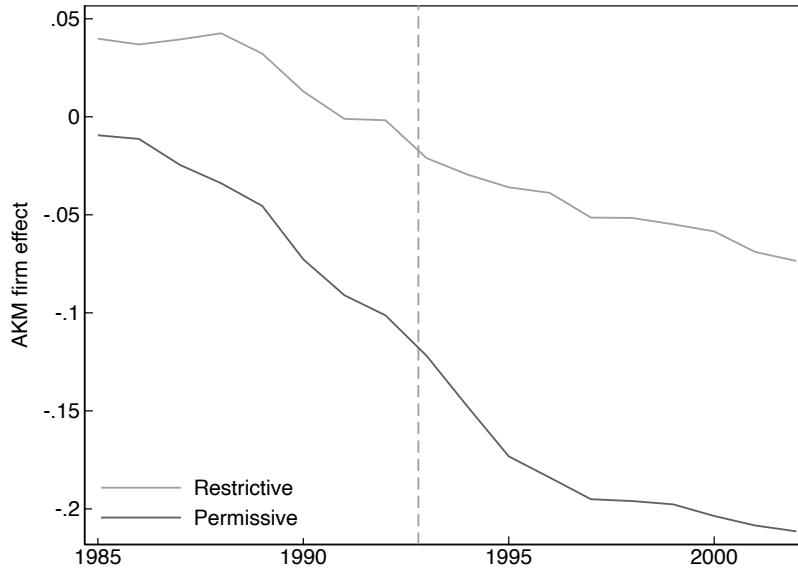
Note: Figure replicates Figure 2, Panel B, for occupational layoffs in other occupations.

Figure A.10: Effect of occupational layoff on incumbent employment, by initial firm wage premia



Note: Figure replicates Figure 2, Panel A, using subsamples that include only workers initially in the top and bottom quartile of the AKM firm effects distribution, respectively.

Figure A.11: Trends in average firm-specific wage premia among security guards



Note: Figure plots the trend in the mean AKM firm effect among security guards, averaged over microregions in our estimation sample with equal weights, separately for permissive and restrictive regions.

Table A.1: Guard occupational layoffs relative to other occupations

	(1)	(2)
Guard $\times$ Post	0.0269*** (0.0024)	0.0381*** (0.0094)
Guard $\times$ Post $\times$ tradeable share		0.0133 (0.0182)
Guard $\times$ Post $\times$ tariff exposure		0.1054* (0.0607)
Establishment-occupation FE	Yes	Yes
Establishment-year FE	Yes	Yes
Observations	3.08e+06	3.08e+06
R^2	0.6214	0.6214

Notes: The outcome is an occupation-specific layoff indicator. All models use Paper A's entropy weights and cluster standard errors by microregion. Post begins in 1994. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Tariff exposure measures regional exposure to Brazil's trade liberalization, following [Kovak \(2013\)](#) and [Dix-Carneiro and Kovak \(2017\)](#).

Table A.2: Descriptive Statistics, Matched worker sample

Worker characteristics in year t-1	Impacted worker (1)	Control worker (2)
Male	0.97 (0.16)	0.98 (0.14)
Years of schooling	5.4 (2.8)	5.1 (2.8)
Imputed age	41.7 (10.2)	42.6 (10.8)
Tenure	5.2 (4.7)	4.9 (4.5)
Average monthly wage (2017 \$R)	2440 (1475)	2361 (1510)
Establishment Size	516 (880)	494 (1010)
Firm FE	0.25 (0.28)	0.23 (0.30)
Sector:		
Manufacturing	0.32	0.32
Industrial utility	0.13	0.13
Retail	0.12	0.12
Wholesale	0.04	0.04
Finance	0.00	0.00
Service	0.12	0.11
Medical	0.03	0.02
Mining	0.03	0.03
Construction	0.04	0.04
Real estate and transportation	0.13	0.14
Other	0.04	0.04
<i>N</i>	12199	12199

Notes: Entries give means, with standard deviations in parentheses, of worker characteristics measured in the year before the event ($t - 1$), for the matched sample used to estimate the effects of occupational layoffs on incumbent guards. Column (1) reports displaced (impacted) workers and column (2) their matched control workers; the matching procedure is described in Section 4.1. Sector entries give the share of workers employed in establishments of each sector. Average monthly wages are expressed in 2017 reais. Firm FE is the AKM firm effect introduced in Section 5.1. *N* reports the number of workers in each group.

Table A.3: Effects of occupational layoffs on incumbent workers

	Years since occupational layoff		
	Y0 (1)	Y1 (2)	Y5 (3)
Formally employed	-0.502 (0.013)	-0.162 (0.010)	-0.025 (0.010)
Formally employed in same occupation	-0.763 (0.007)	-0.400 (0.010)	-0.118 (0.010)
Formally employed in contract firm	0.002 (0.001)	0.075 (0.005)	0.041 (0.005)
Monthly wage (relative to base year)	-0.062 (0.011)	-0.139 (0.013)	-0.093 (0.018)
Log monthly wage	-0.079 (0.010)	-0.190 (0.011)	-0.118 (0.016)
Firm AKM FE effect	-0.032 (0.005)	-0.082 (0.006)	-0.055 (0.010)
As fraction of wage losses	41%	43%	47%

Notes: Entries give estimated effects of occupational layoff on the indicated outcome in the year of the layoff (Y0), one year after (Y1), and five years after (Y5). Employment effects are estimated on a balanced sample of incumbents and their matched control workers. Wage effects are estimated conditional on workers remaining in RAIS. Wage losses due to firm effects shown both as log points and as a percentage of wage losses (e.g., $-0.032/-0.079 = 41\%$ in column (1)). Standard errors, clustered at the base-year establishment level, are in parentheses; for the two wage rows they are computed by a pairs cluster bootstrap (200 replications).

Table A.4: Establishment-level predictors of security guard outsourcing decisions, 1993-1998

	Dependent variable: Outsourcing decision			
	(1)	(2)	(3)	(4)
Log(estab size)	-0.005 (0.006)			
Log(estab mean wage)		0.056*** (0.009)		
Log(estab mean guard wage)			0.014 (0.010)	
AKM firm FE				0.081*** (0.017)
N	7,564	7,564	7,564	7,564
R ²	0.04	0.05	0.04	0.04

Notes: The dependent variable is an indicator for an establishment-level outsourcing decision between 1993 and 1998. Each column reports a separate regression using the listed establishment characteristic; standard errors are in parentheses.