Post-Layoff Reemployment: Heterogeneous Responses by Human Capital and Sociodemographic Profile

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Abstract This Technical Note investigates how individual characteristics related to human capital and sociodemographic profile influence the trajectory of Brazilian workers after mass layoff events. Using administrative data from RAIS and an event study approach, we analyzed differences in the effects on employability and income in two main dimensions: (1) human capital — formal education, occupation, and firm tenure; and (2) sociodemographic profile — sex, age, and wage level. The results indicate that workers with higher formal qualifications, despite having greater human capital, experience a slower return to formal employment and, when reemployed, occupy positions with lower remuneration compared to the pre-layoff period. In addition, women, older workers, and those with higher wages face greater difficulties in reemployment and more persistent wage losses. These findings show that the impacts of layoffs are not homogeneous and highlight the importance of more targeted policies that take into account the specific conditions of different groups when facilitating their return to the labor market.

The Brazilian labor market is marked by high levels of turnover and instability, even among formal workers. In this context, mass layoffs are adverse shocks of great magnitude, with persistent impacts on the occupational trajectories of affected individuals. In addition to immediate job separation, these events have long-term consequences on employment and income, affecting not only future insertion into the labor market but also the quality of the positions occupied after their return to the labor market.

Economic literature has shown that the effects of layoffs are not homogeneous. Different groups of workers experience the impacts of these shocks in different ways, conditioned by characteristics such as education, type of occupation, age, sex, and previous income. Such factors influence both the time needed for reemployment and the ability to recover lost income after dismissal. International and national evidence points to a pattern of inequality in post-dismissal recovery, which reinforces the need for investigations that consider multiple dimensions.

This Technical Note aims to analyze how different profiles of workers face the effects of mass layoffs, focusing on two central dimensions: (i) human capital, measured by level of education, occupation and tenure in the firm; and (ii) the sociodemographic profile, including sex, age, and previous wage level. The analysis seeks to highlight how these characteristics shape the processes of occupational transition and the patterns of wage recovery after dismissal.

The focus on heterogeneities deepens the findings of the first IMDS Technical Note (Pinho Neto et al., 2025), which estimated the average effects of mass layoffs on employment and wages. By incorporating analyses by individual characteristics, this study reveals that workers with higher qualifications face more difficulty in relocating to compatible positions, resulting in prolonged wage losses. Similarly, women, older

workers, and those with relatively high wages are more likely to remain out of the labor market and, when reemployed, tend to accept occupations with lower pay and less stability.

The results obtained have relevant implications for the design of public policies. The heterogeneity of the observed effects suggests the need for segmented policies that recognize the different barriers faced by different groups of workers, promoting more effective and equitable responses to large-scale layoff shocks.

1 Literature

The literature on the effects of mass layoffs indicates that the consequences for employment and wages are profound, persistent, and unequal. Two central explanatory axes are workers' accumulated human capital and the workers' sociodemographic profile.

1.1 Human Capital

International literature shows that the effects of layoffs depend critically on the type of human capital accumulated. Jacobson et al. (1993) show that terminated workers in the United States face lasting wage losses, especially if they were in long-term employment. Similar results are found by Davis and von Wachter (2011), who estimate losses of up to 20% of earnings over a decade for workers laid off during severe recessions. This pattern is often attributed to the low transferability of firm-specific skills acquired within the firm (Becker, 1964; von Wachter et al., 2011).

In contrast, general human capital is usually considered a protective factor. Hanushek et al. (2025) suggest that workers with broader training have a greater ability to adapt to new occupations and are less dependent on specific firm contexts. However, this pattern may not persist in segmented labor markets or in labor markets with low occupational mobility.

In the Brazilian case, evidence such as that of Carvalho et al. (2023) shows that workers in more qualified occupations, with greater intensity of specific skills, tend to remain out of the labor market longer after mass layoffs. Similarly, Martins Neto (2024) find that occupations intensive in routine tasks (typically less qualified) have better reemployment rates than occupations that are more intensive in cognitive skills, suggesting rigidity in the reallocation of more educated workers.

1.2 Sociodemographic Profile

Although less emphasized in the classic literature, sociodemographic factors have gained prominence in recent studies. Age, for example, influences the ability to re-enter the labor market, and older workers tend to face more persistent losses (Dix-Carneiro, 2014). The variable sex, in turn, is especially relevant when considering the differences in the trajectory after dismissal. Illing (2024) documents that, even controlling for occupational and wage characteristics, women face significantly higher wage losses after terminations, a difference attributed to lower reemployment rates, interruptions in work history, and greater likelihood of transitioning to lower-paying jobs.

These inequalities can be exacerbated by dynamics of productive restructuring. Félix et al. (2024) show that outsourcing and organizational reconfiguration processes tend to affect workers with less bargaining power more severely, often women, non-whites, and older workers. The interaction between these social characteristics and the type of occupation can deepen the penalties imposed by dismissals.

In addition, there is evidence that workers with higher income before dismissal face additional difficulties in relocating to positions with equivalent income, which contributes to more intense relative losses, even though reemployment rates are high (Autor et al., 2014; Gathmann & Schönberg, 2010).

2 Methodology

The methodology adopted in this Technical Note follows the same parameters established in NT2025/1, as summarized below:

2.1 Data

This study uses information from the Annual Report of Social Information (RAIS), which all formally registered companies in Brazil are required to complete annually. RAIS includes three main categories of data: (i) information on companies; (ii) records of employment relationships; and (iii) individual data on workers.

2.2 Identification of mass layoffs:

Only private companies with at least 30 active employment contracts on December 31 of the year prior to the shock and with open-ended contracts were considered. The firm was classified as affected by mass layoffs if it: (i) dismissed, on its own initiative, at least 30% of the workforce in the year of the shock; (ii) presented relative stability in the workforce in the two previous years (variation between 80% and 120%); (iii) did not reallocate 70% or more of those terminated to another establishment; (iv) had the first shock in the panel's reference period.

The treatment group includes workers dismissed in these companies with: (i) an active employment relationship in the reference year; (ii) minimum working hours of 40 hours per week; (iii) at least three years of tenure in the same employment relationship; (iv) age between 25 and 50 years in the reference year.

Such criteria ensure greater prior stability and reduce the risk of bias associated with voluntary dismissals, retirements, or educational transitions.

The control group is composed of workers with similar characteristics, employed in comparable companies that did not experience mass layoffs (reduction of less than 30% in the year of the shock).

2.3 Panel construction

The panel was developed to follow the trajectory of the selected workers in the treatment and control groups over a period of eight years, comprising three years before and five years after the reference year.

Eight independent panels were prepared, based on RAIS microdata for the period from 2004–2019, adopting the interval between 2007 and 2014 as the reference years.

2.4 Empirical Strategy

To analyze the reemployment trajectories of workers in the Brazilian formal labor market after a mass layoff and its impacts on individual outcome variables, we used an event study approach. The specification adopted is as follows:

$$y_{i,t} = \sum_{k=-3}^{5} \left[\alpha_k \mathbb{1}(t'+k) + \beta_k \mathbb{1}(t'+k) \cdot trat_i\right] + \eta_i + \sigma_t + u_{i,k,t}$$

where $y_{i,t}$ represents the variable of interest, which can be either a dummy that assumes a value of 1 if individual i is employed in year t, or the logarithm of the wage of individual i in December, conditional on being employed, and expressed in minimum wages of the respective year t[1]. The variables $\mathbb{1}(t'+k)$ are dummies that indicate the period (year) relative to to the pre-event period t', while $trat_i$ identifies whether individual i belongs to the group of workers affected by the mass layoff. The terms η_i and σ_t capture the fixed effects of individual and year, respectively, and $u_{i,k,t}$ represents the error term. Standard errors are clustered at the firm level to correct for potential correlations within firms.

The main coefficients of interest in this regression are represented by β_k, which expresses the change in the outcome variable between quarter $t'+k$ and the reference year as a result of the shock.

For heterogeneity analyses, the proposed spec-

[1]The balanced panel for the employment variable ensures that the sample continuously follows individuals over time, allowing the identification of the effects of dismissal on remaining in the formal labor market. For wages, we adopted an unbalanced panel to prevent income loss from being captured mechanically only by leaving the job, focusing on the impacts on earnings conditional on reemployment. This approach also makes it possible to analyze whether workers who return to the labor market do so with lower wages, on average.

ification is given by:

$$y_{i,t} = \sum_{k=-3}^{5} \Big[\alpha_k \mathbb{1}(t'+k) + \beta_k \mathbb{1}(t'+k) \cdot trat_i + \gamma_k \mathbb{1}(t'+k) \cdot het_i + \delta_k \mathbb{1}(t'+k) \cdot trat_i \cdot het_i\Big] + \eta_i + \sigma_t + u_{i,k,t}$$

where het_i are dummies associated with the heterogeneous characteristic het of individual i in the pre-shock period[2]. In this case, the coefficients γ_k express possible differentials in the evolution of the outcome variable $y_{i,t}$ according to heterogeneity het_i of pre-shock worker i, regardless of whether they have experienced a mass layoff event. The δ_k coefficients of the interaction between the period dummies relative to the pre-event year, the treatment dummy, and the heterogeneous characteristic of the workers are the most interesting in this equation. They express how the effect of a mass layoff shock in period k varies according to the heterogeneous characteristic explored.

3 Results

This section presents the effects of the exit from the private formal sector on the return to employment and income, focusing on two analytical axes: **Human Capital** and **Sociodemographic Profile**. All estimates are based on a comparison with a control group composed of workers with similar characteristics who did not experience a mass layoff event.

The analysis considers the years after the dismissal and separately examines the effects on formal employment and earnings — the latter restricted to individuals who return to the formal private sector. This approach allows for a differentiated assessment of both the **probability of reintegration into the labor market** and the **quality of the new occupation**, measured through the earnings observed after reemployment.

3.1 Human Capital

This section analyzes the effects of mass layoffs on the return to the formal private market, considering characteristics associated with workers' human capital. The analyses are structured around three main dimensions: education, tenure in the firm and previous occupation.

The results presented below distinguish the effects on employment and earnings, allowing a more precise understanding of how human capital conditions the impact of negative shocks in the labor market.

[2] In this study, we used the subscript i to represent the heterogeneous characteristics associated with individuals, for simplicity of notation. However, it is important to highlight that the heterogeneities explored refer, in reality, to the characteristics of the firm where the worker was employed before the mass dismissal event. Thus, the het_i variable should be interpreted as a proxy for the firm's conditions, allowing us to evaluate how different business contexts influence the impacts of mass layoffs.

3.1.1. Effect on Employment.

Education As illustrated in Figure 1, regardless of the level of education, the dismissed workers present persistent losses relative to the respective control group, within each educational group. The estimated losses are relatively higher for more educated workers, consistent with greater difficulty in reentering the private formal market or with a reduced supply of vacancies compatible with their level of qualification. It is important to note that the magnitudes presented are intragroup comparisons (treated vs. controls with the same schooling) and do not imply, by themselves, that mass layoff events harm more educated workers in absolute terms.

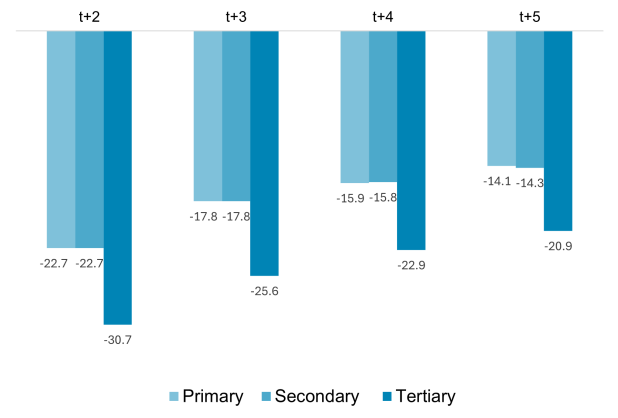

Figure 1. Effect on formal employment by education level after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A1 of the Appendix.

In terms of temporal dynamics, it is observed that the initial drop is relatively more pronounced for the group with higher education (about 30 p.p. in $t+2$) and, although there is partial recovery over time, the losses remain high at $t+5$ (approx. 21 p.p.). In contrast, individuals with complete primary or secondary education recovered more quickly: the drop in $t+2$ is smaller (about 23 p.p.) and, up to $t+5$, converges to lower levels (around 14 p.p.). The findings suggest that higher levels of education do not guarantee protection against the prolonged loss of formal employment, possibly due to obstacles to reemployment in occupations consistent with their education level. Workers with more education may also have longer contracts, which would increase the loss in case of dismissal.

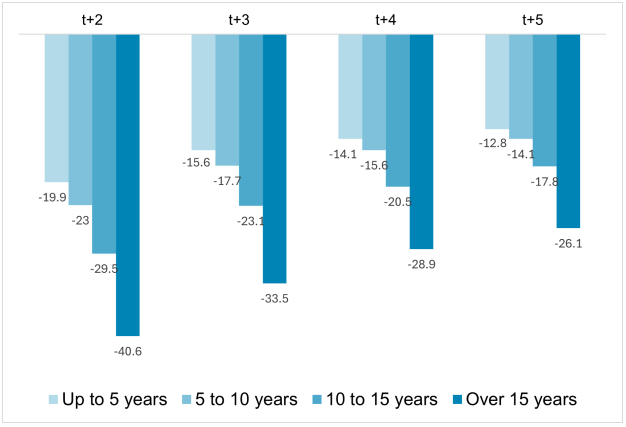

Figure 2. Effect on formal employment by tenure in the firm after a mass layoff.
Note: The estimated coefficients and the respective p-values are presented in Table A3 of the Appendix.

Tenure As shown in Figure 2, workers with more than 15 years of tenure in the same firm are the most affected in terms of return to formal private employment, with reductions of 40.6 percentage points in $t+2$ and 26.1 p.p. in $t+5$ relative to the respective control group. In contrast, those with up to 5 years of tenure in the firm have a faster recovery, with a loss of 12.8 p.p. at $t+5$.

Taken together, the results suggest that longer tenures may increase vulnerability to exit shocks, possibly because they reflect older age, greater relocation frictions, and a relevant firm-specific human capital component that is not necessarily fully transferable to other firms. In addition, it is plausible that these workers had higher salaries before dismissal than those with shorter tenures, which may increase the cost of adjustment and make reintegration into formal private employment slower.

Occupation As illustrated in Figure 3, the effects of mass layoffs on the return to formal employment vary significantly according to previous occupation, especially in the final period of the analysis ($t+5$). Directors and managers face the largest losses, with a reduction of 21.6 percentage points, followed by professionals in the sciences and arts, with a drop of 21.1 percentage points. In contrast, less complex occupations

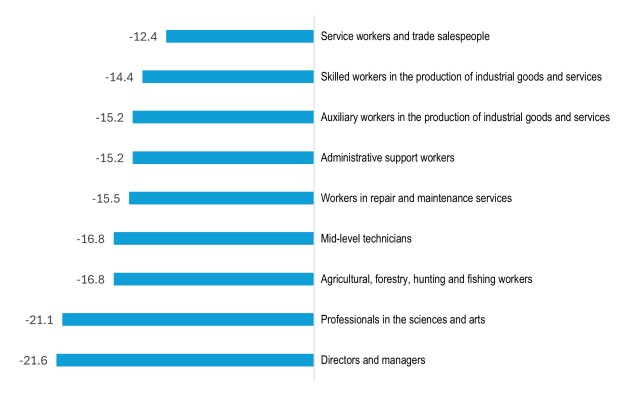

Figure 3. Effect on formal employment by occupation in the 5th year after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A5 of the Appendix.

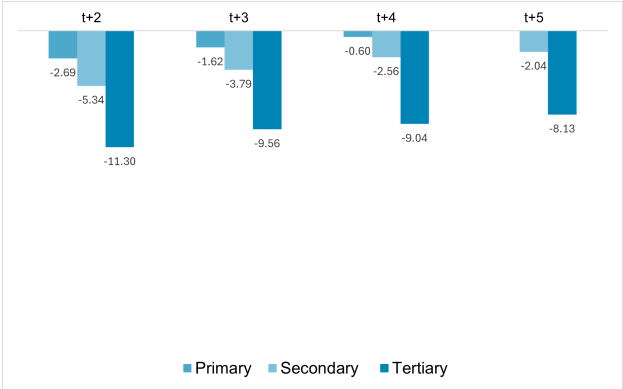

Figure 4. Effect on wages by education level after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A2 of the Appendix.

such as service and trade workers record more moderate losses, on the order of 12.4 p.p. The higher the position in the hierarchy, the greater the barrier to reemployment.

3.1.2. Effects on income.

Education As shown in Figure 4, after an episode of mass layoffs, the effects on wages in formal private employment remain negative over the analyzed horizon and differ by level of schooling. In particular, workers with higher education recorded the most persistent losses, around 11.3% in $t+2$ and still about 8.1% in $t+5$, which is consistent with greater difficulty in recomposing earnings in the return to the private formal market. For workers with secondary and primary education, the impacts are smaller and tend to dissipate more quickly: at $t+5$, losses are close to 2.0% (primary) and 2.6% (secondary). These results suggest that higher levels of schooling are associated with more persistent earnings losses in the post-dismissal period, possibly reflecting greater occupational downgrade, friction in finding vacancies compatible with qualifications, and slower wage adjustments. As for the effects on employment, it is worth mentioning that wage losses are intragroup comparisons (treated vs. controls with the same schooling), therefore, this does not necessarily mean that mass layoff events harm more educated workers.

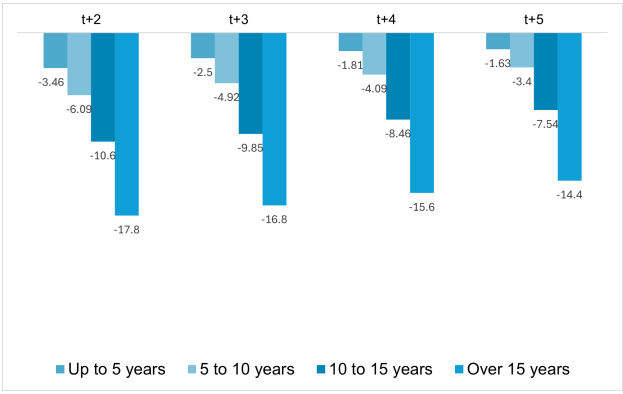

Figure 5. Effect on wages by tenure in the firm after a mass layoff event.
Note: The estimated coefficients and their respective p-values are presented in Table A4 of the Appendix.

Tenure Figure 5 shows a positive relationship between previous tenure in the firm and the magnitude of the wage loss upon returning to formal employment. Workers with 15 years or more of tenure in the firm show the largest reductions in earnings, with a drop of 14.4 percentage points in $t+5$. In contrast, those with less than 5 years of tenure experience significantly lower losses, on the order of 1.6 p.p. in the same period.

This pattern suggests that prolonged employment tenure is associated with greater difficulties in reemployment in occupations with equivalent levels of pay, resulting in a return to the labor market with lower remuneration than previously received.

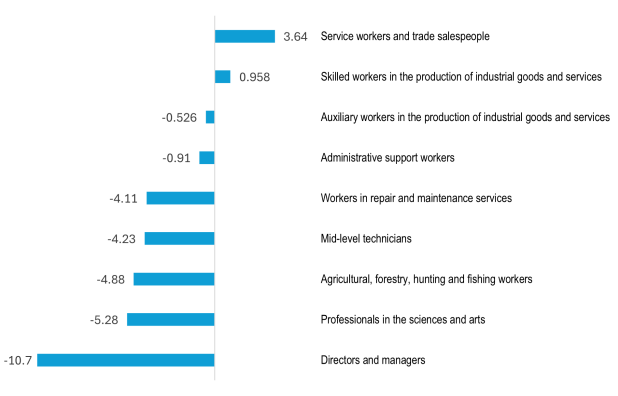

Figure 6. Effect on wages by occupation in the 5th year after a mass layoff event.
Note: The estimated coefficients and their respective p-values are presented in Table A6 of the Appendix.

Occupation Figure 6 reveals that five years after a mass layoff event, wage losses vary substantially according to the occupation previously held. The largest negative impacts are observed among directors and managers, with a drop of 10.7 percentage points, while agricultural workers show real gains, on the order of +3.6 percentage points.

3.2 Sociodemographic Profile

In this section, the effects of mass dismissal on reinsertion in the formal private market are examined based on the sociodemographic characteristics of workers. The analysis considers the cuts by sex, age group and previous salary level.

These dimensions are relevant because they capture structural inequalities in access to and permanence in the labor market, which can intensify in contexts of shock, such as the abrupt loss of employment. The distinction between effects on employment and on income makes it possible to assess not only the probability of returning to the formal private market, but also the quality of the relocation obtained by different population groups.

3.2.1. Effect on Employment.

Sex Figure 7 indicates that women face more severe impacts in returning to formal employment after a mass layoff event. At $t+5$, the loss for this group reaches 17.5 percentage points, whereas among men the magnitude is lower, at around 14 p.p.

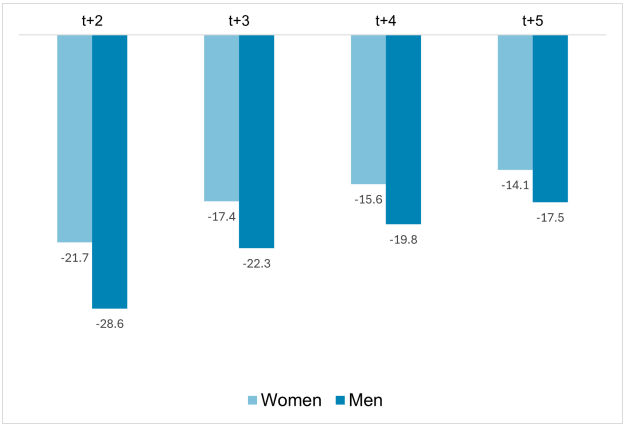

Figure 7. Effect on formal employment by sex after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A7 of the Appendix.

Age Group Figure 8 shows that workers aged 45 and over face the greatest difficulties in reentering the private formal market after an episode of mass dismissal. Losses in this group remain high even after five years, reaching 17.9 percentage points at $t+5$. In contrast, younger workers, especially those between the ages of 25 and 30, record significantly lower losses over the same period.

These results indicate that advanced age constitutes a persistent factor of exclusion in the formal labor market, possibly due to barriers such as age discrimination, lower adaptability to new functions or mismatch between accumulated experience and the requirements of available vacancies.

Wages Figure 9 shows that workers with higher incomes before dismissal face greater difficulties in reentering the private formal market. These results suggest that high-income workers encounter greater barriers to returning to the formal market, possibly due to the scarcity of vacancies compatible with their previous levels of remuneration, qualification, and professional experience.

3.2.2. Effect on Income.

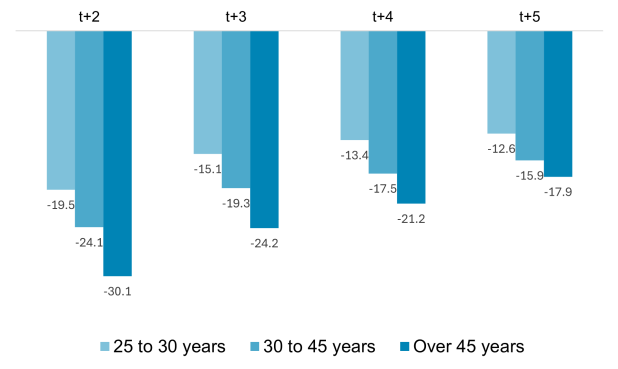

Figure 8. Effect on formal employment by age group after a mass layoff event.
Note: The estimated coefficients and their respective p-values are presented in Table A9 of the Appendix.

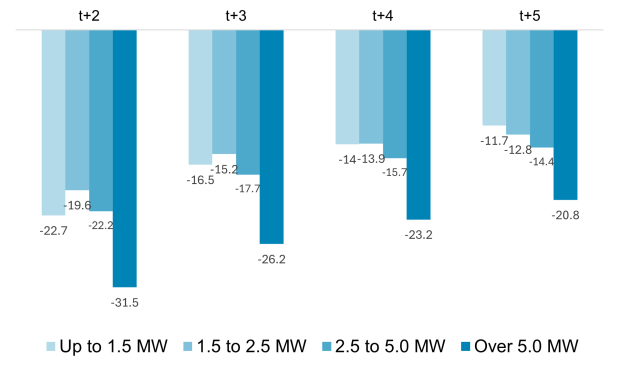

Figure 9. Effect on formal employment for minimum wages after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A11 of the Appendix.

Sex Figure 10 shows that the differences in income impacts between men and women are less pronounced than those observed in the return to formal private employment.

These results indicate that, although women face greater difficulties in reentering the formal labor market (as evidenced in Figure 7), the wage penalty after reemployment tends to be similar across genders, suggesting a distinct dynamic between the effects on access to employment and on earnings.

Age Group Figure 11 shows that the wage penalty after an episode of mass layoffs is more pronounced among older workers. At age 45 and over, the loss of income reaches 5.1 percentage points at $t+2$ and remains at 3.6 p.p. at $t+5$. Among the youngest, aged 25 to 30, the losses

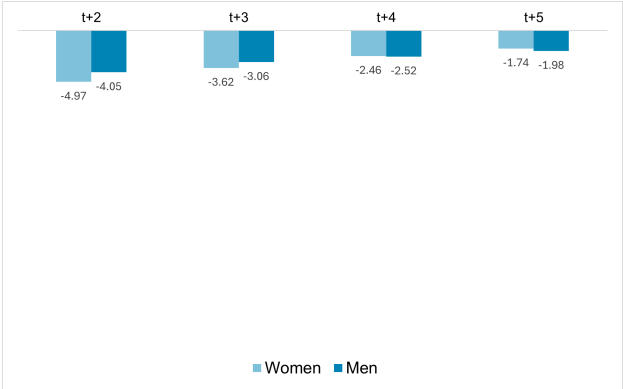

Figure 10. Effect on wages by sex after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A8 of the Appendix.

are smaller: 4.7 p.p. in $t+2$ and only 1.7 p.p. in t+5.

The results reinforce the fact that greater age is associated not only with greater difficulty in reentering formal employment, but also with more persistent wage losses at the time of relocation. As with employment, age advances along with wage losses on return.

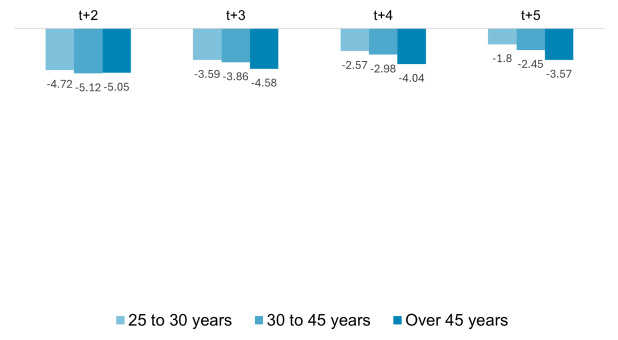

Figure 11. Effect on wages by age group after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A10 of the Appendix.

Wages Figure 12 shows that the wage penalty, after mass dismissal, is more severe among workers who occupied positions with higher income. Absolute income losses are progressively greater in the upper brackets of the previous salary.

This pattern suggests that replacement in the formal market tends to occur in occupations with lower pay, generating a more pronounced wage decrease for high-income workers. The greater rigidity in the adequacy between qualifications, accumulated experience and available vacancies can limit the possibilities of return at levels compatible with previous income.

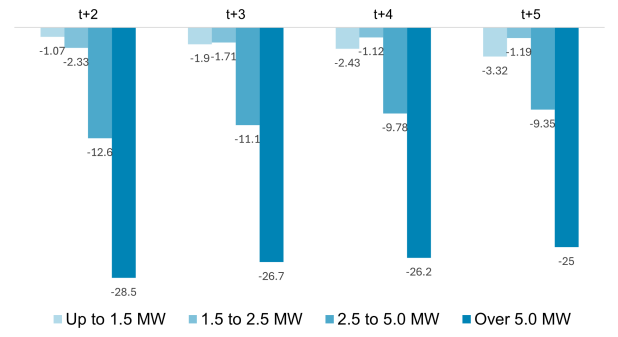

Figure 12. Effect on wages by income bracket after a mass layoff event.
Note: The estimated coefficients and the respective p-values are presented in Table A10 of the Appendix.

4 Conclusion

This Technical Note shows that mass dismissal shocks generate persistent effects on employment and income in the formal private sector and that these effects vary systematically according to the characteristics of workers. Throughout the text, the estimates are always constructed based on intragroup comparisons: for each cut of human capital (education, length of time in the firm, occupation) and sociodemographic profile (sex, age, salary range), dismissed workers are compared with a control group with similar characteristics within the same group. Thus, the differences in magnitude between groups should be interpreted as evidence of heterogeneity in the relative trajectories of recovery, and not as an indication that mass layoffs necessarily harm more (in absolute terms) workers with higher education or qualifications.

The results indicate that, for the various groups studied, the return to formal employment and the re-composition of income are incomplete even five years after the shock. In addition, in some segmentations, it is observed that workers in positions associated with greater human capital (e.g., higher education, occupations of greater complexity, and longer contracts) may face relevant frictions of relocation and a higher incidence of returning to positions with lower pay than that of the pre-dismissal period. On the sociodemographic axis, women, older workers, and those with higher previous salaries also have more unfavorable relative trajectories, suggesting additional barriers to reintegration and slower adjustments.

These findings underscore the fact that public policies for post-dismissal support should consider the diversity of obstacles faced by workers, rather than adopting uniform strategies. Labor intermediation programs, retraining, and hiring incentives can be most effective when designed to reduce specific relocation friction and mitigate lasting wage losses, reconciling speed in relocation with preservation of the quality of jobs obtained.

By deepening the understanding of heterogeneous reactions to adverse shocks in employment, this study contributes to the design of more accurate and equitable responses in the Brazilian labor market, highlighting the importance of policies that reconcile speed in reloca-

tion with the preservation of the quality of jobs obtained.

Suggested Citation

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References

Autor, D. H., Dorn, D., Hanson, G. H., & Song, J. (2014). Trade adjustment: Worker-level evidence. *Quarterly Journal of Economics*, *129*(4), 1799–1860. https://doi.org/10.1093/qje/qju026

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Carvalho, V. A. d., Moreira, D. M., & Gonzaga, G. (2023). Leavers and stayers after mass layoffs: Evidence from brazil [Mimeo].

Davis, S. J., & von Wachter, T. (2011). Recessions and the costs of job loss. *Brookings Papers on Economic Activity*, *2011*(2), 1–72.

Dix-Carneiro, R. (2014). Trade liberalization and labor market dynamics. *Econometrica*, *82*(3), 825–885.

Félix, R., Moreira, D., & Pimenta, D. (2024). The reallocation effects of domestic outsourcing [Mimeo].

Gathmann, C., & Schönberg, U. (2010). How general is human capital? a task-based approach. *Journal of Labor Economics*, *28*(1), 1–49. https://doi.org/10.1086/648545

Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2025). Adjusters and casualties: The anatomy of labor market displacement. *NBER Working Paper*, (31980).

Illing, M. (2024). The gender gap in earnings losses after job displacement. *Labour Economics*, *86*, 102483. https://doi.org/10.1016/j.labeco.2024.102483

Jacobson, L. S., LaLonde, R. J., & Sullivan, D. G. (1993). Earnings losses of displaced workers. *American Economic Review*, *83*(4), 685–709.

Martins Neto, P. R. (2024). Routine-biased technological change and employee outcomes after mass layoffs: Evidence from brazil [Mimeo].

Pinho Neto, V., Rocha, L., Bahia, M., Tafner, P., & Guimarães, S. (2025). *Trajetórias pós-demissão e desafios à recolocação profissional no mercado de trabalho brasileiro* (Nota Técnica No. 001-2025). Instituto Mobilidade e Desenvolvimento Social. Rio de Janeiro.

von Wachter, T., Song, J., & Manchester, J. (2011). Long-term earnings losses due to job displacement. *American Economic Review*, *101*(6), 2534–2560. https://doi.org/10.1257/aer.101.6.2534

Appendix

Table A1. Effect on employment in the formal sector in mass dismissal events, by educational level

Period	Primary	Secondary	Tertiary
t_{-3}	0.000250**	0.000108	-0.000431**
	(0.00012)	(0.0000999)	(0.00017)
t_{-2}	0.000262***	0.000194**	-0.000301*
	(0.0000849)	(0.0000879)	(0.000162)
t_{-1}	0.000146*	0.000107**	-0.000124
	(0.0000762)	(0.0000465)	(0.000115)
t_{+1}	-0.884***	-0.885***	-0.918***
	(0.00111)	(0.00157)	(0.00198)
t_{+2}	-0.227***	-0.227***	-0.307***
	(0.00432)	(0.00458)	(0.00459)
t_{+3}	-0.178***	-0.178***	-0.256***
	(0.00378)	(0.00391)	(0.00423)
t_{+4}	-0.159***	-0.158***	-0.229***
	(0.00329)	(0.00343)	(0.00437)
t_{+5}	-0.141***	-0.143***	-0.209***
	(0.00365)	(0.00334)	(0.00461)
$Constant$	0.904***	0.910***	0.924***
	(0.000187)	(0.000159)	(0.0000911)
Observations	17,527,194	17,923,941	7,662,123
R-square	0.434	0.419	0.408

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A2. Effect on wages in the formal sector in mass dismissal events, by educational level.

Period	Primary	Secondary	Tertiary
t_{-3}	-0.0220***	-0.00683***	-0.0138***
	(0.00228)	(0.00248)	(0.0046)
t_{-2}	-0.0118***	0.00199	0.00369
	(0.00255)	(0.00209)	(0.00338)
t_{-1}	-0.00148	0.00573***	0.00908***
	(0.00159)	(0.00169)	(0.00293)
t_{+1}	-0.0528***	-0.0882***	-0.220**
	(0.00909)	(0.012)	(0.095)
t_{+2}	-0.0269***	-0.0534***	-0.113***
	(0.00299)	(0.00398)	(0.00735)
t_{+3}	-0.0162***	-0.0379***	-0.0956***
	(0.00297)	(0.00372)	(0.00764)
t_{+4}	-0.00602*	-0.0256***	-0.0904***
	(0.00337)	(0.00406)	(0.00817)
t_{+5}	0.000449	-0.0204***	-0.0813***
	(0.00367)	(0.00424)	(0.00847)
$Constant$	1.193***	1.413***	2.153***
	(0.000143)	(0.000142)	(0.000121)
Observations	15,484,274	16,001,716	7,005,658
R-square	0.788	0.811	0.842

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A3. Effect on formal employment after mass dismissal, due to length of time in the firm.

Period	Up to 5 years	5 to 10 years	10 to 15 years	Over 15 years
t_{-3}	6.71e-05	0.000170	0.000151	-6.85e-05
	(0.000112)	(0.000111)	(0.000113)	(0.000160)
t_{-2}	0.000162**	0.000216***	0.000226**	0.000122
	(7.80e-05)	(8.29e-05)	(8.79e-05)	(0.000185)
t_{-1}	0.000153***	9.62e-05*	0.000132*	-4.13e-05
	(4.79e-05)	(5.10e-05)	(7.24e-05)	(0.000109)
t_{+1}	-0.850***	-0.889***	-0.929***	-0.954***
	(0.00120)	(0.00112)	(0.00107)	(0.00142)
t_{+2}	-0.199***	-0.230***	-0.295***	-0.406***
	(0.00428)	(0.00398)	(0.00653)	(0.00876)
t_{+3}	-0.156***	-0.177***	-0.231***	-0.335***
	(0.00373)	(0.00347)	(0.00557)	(0.00853)
t_{+4}	-0.141***	-0.156***	-0.205***	-0.289***
	(0.00315)	(0.00311)	(0.00484)	(0.00849)
t_{+5}	-0.128***	-0.141***	-0.178***	-0.261***
	(0.00332)	(0.00313)	(0.00514)	(0.00921)
Constant	0.891***	0.911***	0.930***	0.932***
	(0.000227)	(0.000130)	(0.000118)	(9.42e-05)
Observations	15,047,064	16,735,752	6,195,609	5,141,943
R-square	0.437	0.415	0.404	0.413

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A4. Effect on wages in the formal sector after mass layoffs, due to time in the firm.

Period	Up to 5 years	5 to 10 years	10 to 15 years	Over 15 years
t_{-3}	0.00798***	0.00136	-0.00600	-0.00401
	(0.00227)	(0.00245)	(0.00434)	(0.00650)
t_{-2}	0.00490**	0.00551***	8.50e-05	0.00234
	(0.00246)	(0.00204)	(0.00305)	(0.00555)
t_{-1}	0.00790***	0.00558***	0.00366	-0.000366
	(0.00134)	(0.00176)	(0.00260)	(0.00586)
t_{+1}	-0.0529***	-0.0877***	-0.139***	-0.369***
	(0.00872)	(0.0115)	(0.0340)	(0.109)
t_{+2}	-0.0346***	-0.0609***	-0.106***	-0.178***
	(0.00258)	(0.00386)	(0.00781)	(0.0114)
t_{+3}	-0.0250***	-0.0492***	-0.0985***	-0.168***
	(0.00241)	(0.00374)	(0.00621)	(0.0116)
t_{+4}	-0.0181***	-0.0409***	-0.0846***	-0.156***
	(0.00277)	(0.00401)	(0.00643)	(0.0117)
t_{+5}	-0.0163***	-0.0340***	-0.0754***	-0.144***
	(0.00287)	(0.00421)	(0.00680)	(0.0130)
Constant	1.323***	1.424***	1.548***	1.837***
	(0.000166)	(0.000133)	(0.000112)	(8.97e-05)
Observations	13.047.069	14.989.784	5.699.776	4.761.731
R-square	0,838	0,855	0,867	0,869

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A5. Effect on formal employment after mass layoffs, by occupational group.

Period	Dir. and managers	Prof. science and arts	Mid-level tech.	Adm. support	Serv. and sales	Agro and forestry	Skilled worker ind. good/serv.	Aux. worker ind. goods/serv.	Repair
t_{-3}	0.000346	-0.000399*	-0.000120	0.000288***	0.000265	0.00235***	-0.000276*	0.000790*	4.99e-05
	(0.000245)	(0.000220)	(0.000157)	(0.000111)	(0.000178)	(0.000734)	(0.000160)	(0.000460)	(0.000157)
t_{-2}	0.000388**	-0.000312	1.99e-05	0.000293***	0.000138	0.00172***	-1.89e-06	0.000989	0.000218*
	(0.000194)	(0.000194)	(0.000135)	(7.72e-05)	(0.000110)	(0.000622)	(0.000141)	(0.000612)	(0.000118)
t_{-1}	0.000322**	-0.000129	2.11e-05	0.000195***	0.000117	0.000773*	6.87e-05	-4.03e-05	7.55e-05
	(0.000128)	(0.000139)	(6.75e-05)	(4.84e-05)	(7.40e-05)	(0.000412)	(7.91e-05)	(0.000346)	(8.64e-05)
t_{+1}	-0.902***	-0.925***	-0.913***	-0.883***	-0.870***	-0.880***	-0.884***	-0.900***	-0.909***
	(0.00243)	(0.00234)	(0.00199)	(0.00154)	(0.00257)	(0.00458)	(0.00179)	(0.00189)	(0.00221)
t_{+2}	-0.326***	-0.312***	-0.256***	-0.235***	-0.199***	-0.255***	-0.236***	-0.248***	-0.229***
	(0.00616)	(0.00709)	(0.00828)	(0.00548)	(0.00708)	(0.0113)	(0.00602)	(0.00635)	(0.00690)
t_{+3}	-0.273***	-0.269***	-0.210***	-0.184***	-0.152***	-0.213***	-0.185***	-0.191***	-0.190***
	(0.00606)	(0.00715)	(0.00623)	(0.00490)	(0.00685)	(0.0119)	(0.00449)	(0.00555)	(0.00631)
t_{+4}	-0.241***	-0.237***	-0.186***	-0.167***	-0.140***	-0.191***	-0.161***	-0.165***	-0.165***
	(0.00618)	(0.00691)	(0.00625)	(0.00372)	(0.00604)	(0.0110)	(0.00400)	(0.00525)	(0.00652)
t_{+5}	-0.216***	-0.211***	-0.168***	-0.152***	-0.124***	-0.168***	-0.144***	-0.152***	-0.155***
	(0.00615)	(0.00721)	(0.00597)	(0.00385)	(0.00659)	(0.0104)	(0.00384)	(0.00538)	(0.00665)
Constante	0.910***	0.930***	0.924***	0.909***	0.901***	0.898***	0.904***	0.916***	0.923***
	(0.000182)	(0.000136)	(0.000199)	(0.000168)	(0.000367)	(0.000599)	(0.000209)	(0.000184)	(0.000229)
Observations	1,714,014	2,639,916	4,486,590	6,610,014	8,216,721	1,034,784	12,734,046	3,804,822	1,874,295
R-square	0.432	0.409	0.413	0.417	0.434	0.442	0.429	0.406	0.417

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A6. Effect on wages after mass layoffs, by occupational group.

Period	Dir. and managers	Prof. science and arts	Mid-level tech.	Adm. support	Serv. and sales	Agro and forestry	Skilled worker ind. good/serv.	Aux. worker ind. goods/serv.	Repair
t_{-3}	-0.0286***	-0.00558	-0.0108**	-0.00758***	-0.00812**	0.00236	-0.0241***	-0.00732	-0.0182***
	(0.00531)	(0.00551)	(0.00465)	(0.00290)	(0.00406)	(0.00837)	(0.00293)	(0.00521)	(0.00518)
t_{-2}	-0.0166***	0.00418	-0.00151	0.00377*	-0.00450	0.0100	-0.0108***	0.00155	-0.00246
	(0.00446)	(0.00498)	(0.00312)	(0.00224)	(0.00472)	(0.00782)	(0.00257)	(0.00549)	(0.00434)
t_{-1}	-0.00117	0.00899**	0.00681***	0.00554***	0.00313	0.0128*	-0.00174	0.00363	0.00253
	(0.00360)	(0.00443)	(0.00239)	(0.00209)	(0.00264)	(0.00671)	(0.00198)	(0.00482)	(0.00425)
t_{+1}	-0.351**	-0.0904	-0.184***	-0.0613***	-0.0431***	-0.0312	-0.0619***	-0.0941***	-0.0708**
	(0.147)	(0.0814)	(0.0535)	(0.0113)	(0.0116)	(0.0263)	(0.00953)	(0.0216)	(0.0327)
t_{+2}	-0.121***	-0.0807***	-0.0846***	-0.0688***	-0.00363	-0.00152	-0.0460***	-0.0859***	-0.0445***
	(0.00843)	(0.0116)	(0.00612)	(0.00561)	(0.00397)	(0.00917)	(0.00506)	(0.00540)	(0.00654)
t_{+3}	-0.115***	-0.0667***	-0.0697***	-0.0582***	0.00200	0.0190**	-0.0304***	-0.0632***	-0.0275***
	(0.00900)	(0.0121)	(0.00629)	(0.00399)	(0.00444)	(0.00916)	(0.00490)	(0.00547)	(0.00698)
t_{+4}	-0.104***	-0.0617***	-0.0626***	-0.0515***	0.0102**	0.0328***	-0.0178***	-0.0480***	-0.0101
	(0.00967)	(0.0124)	(0.00730)	(0.00422)	(0.00503)	(0.00873)	(0.00557)	(0.00639)	(0.00796)
t_{+5}	-0.107***	-0.0488***	-0.0528***	-0.0423***	0.00958*	0.0364***	-0.00910	-0.0411***	-0.00526
	(0.0106)	(0.0125)	(0.00703)	(0.00419)	(0.00580)	(0.00955)	(0.00595)	(0.00693)	(0.00878)
Constante	2.303***	2.225***	1.796***	1.412***	1.117***	1.074***	1.343***	1.352***	1.610***
	(0.000209)	(0.000188)	(0.000155)	(0.000155)	(0.000257)	(0.000490)	(0.000203)	(0.000231)	(0.000223)
Observations	1,533,652	2,429,018	4,084,884	5,901,457	7,234,466	905,147	11,272,348	3,432,252	1,700,555
R-square	0.860	0.837	0.838	0.854	0.799	0.773	0.782	0.810	0.801

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A7. Effect on formal employment after mass layoffs, by sex.

Period	Women	Men
t_{-3}	0.000332**	6.27e-05
	(0.000149)	(8.37e-05)
t_{-2}	0.000342***	0.000156**
	(9.68e-05)	(7.30e-05)
t_{-1}	0.000211**	8.93e-05**
	(9.92e-05)	(4.16e-05)
t_{+1}	-0.882***	-0.894***
	(0.00132)	(0.00142)
t_{+2}	-0.286***	-0.217***
	(0.00631)	(0.00377)
t_{+3}	-0.223***	-0.174***
	(0.00542)	(0.00326)
t_{+4}	-0.198***	-0.156***
	(0.00374)	(0.00299)
t_{+5}	-0.175***	-0.141***
	(0.00474)	(0.00307)
Constante	0.894***	0.917***
	(0.000216)	(0.000135)
Observations	12,264,300	30,856,068
R-square	0.444	0.415

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A8. Effect on wages after mass layoffs, by sex

Period	Women	Men
t_{-3}	-0.000387	-0.0133***
	(0.00216)	(0.00235)
t_{-2}	0.00301*	-0.00344
	(0.00168)	(0.00232)
t_{-1}	0.00583***	0.00324**
	(0.00155)	(0.00157)
t_{+1}	-0.0560***	-0.0831***
	(0.0114)	(0.0101)
t_{+2}	-0.0405***	-0.0497***
	(0.00312)	(0.00372)
t_{+3}	-0.0306***	-0.0362***
	(0.00307)	(0.00348)
t_{+4}	-0.0252***	-0.0246***
	(0.00320)	(0.00397)
t_{+5}	-0.0198***	-0.0174***
	(0.00327)	(0.00431)
Constante	1.308***	1.518***
	(0.000108)	(0.000135)
Observations	10,729,024	27,769,336
R-square	0.878	0.853

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A9. Effect on formal employment after mass layoffs, by age group

Period	25 to 30 years	30 to 45 years	Over 45 years
t_{-3}	0.000306**	0.000210**	-0.000195
	(0.000125)	(8.40e-05)	(0.000118)
t_{-2}	0.000377***	0.000250***	-3.22e-05
	(9.48e-05)	(6.57e-05)	(8.61e-05)
t_{-1}	0.000227***	0.000139***	3.12e-05
	(5.48e-05)	(5.05e-05)	(6.33e-05)
t_{+1}	-0.853***	-0.895***	-0.921***
	(0.00154)	(0.0013)	(0.00127)
t_{+2}	-0.195***	-0.241***	-0.301***
	(0.00372)	(0.00391)	(0.00621)
t_{+3}	-0.151***	-0.193***	-0.242***
	(0.00289)	(0.00346)	(0.00604)
t_{+4}	-0.134***	-0.175***	-0.212***
	(0.00274)	(0.00306)	(0.00578)
t_{+5}	-0.126***	-0.159***	-0.179***
	(0.00262)	(0.00316)	(0.00680)
Constante	0.900***	0.915***	0.906***
	(0.000148)	(0.000139)	(0.000207)
Observations	9,632,475	26,658,567	6,829,326
R-square	0.413	0.423	0.45

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A10. Effect on wages after mass layoffs, by age group

Period	25 to 30 years	30 to 45 years	Over 45 years
t_{-3}	0.0200***	-0.01000***	-0.0308***
	(0.00223)	(0.00212)	(0.00271)
t_{-2}	0.0185***	-0.00212	-0.0187***
	(0.00197)	(0.00201)	(0.00260)
t_{-1}	0.0151***	0.00326**	-0.00588***
	(0.00151)	(0.00147)	(0.00182)
t_{+1}	-0.0731***	-0.0714***	-0.114***
	(0.0107)	(0.00816)	(0.0319)
t_{+2}	-0.0472***	-0.0512***	-0.0505***
	(0.00312)	(0.00332)	(0.00426)
t_{+3}	-0.0359***	-0.0386***	-0.0458***
	(0.00293)	(0.00318)	(0.00454)
t_{+4}	-0.0257***	-0.0298***	-0.0404***
	(0.00327)	(0.00363)	(0.00495)
t_{+5}	-0.0180***	-0.0245***	-0.0357***
	(0.00348)	(0.00393)	(0.00558)
Constante	1.362***	1.479***	1.520***
	(0.000143)	(0.00012)	(0.000111)
Observations	8,490,496	23,930,195	6,077,669
R-square	0.817	0.865	0.883

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A11. Effect on formal employment after mass layoffs, by income bracket (minimum wage).

Period	Up to 1.5 MW	1.5 to 2.5 MW	2.5 to 5.0 MW	Over 5.0 MW
t_{-3}	0.000603**	0.000160	-0.000199**	-0.000632***
	(0.000268)	(0.000126)	(9.46e-05)	(0.000197)
t_{-2}	0.000546***	0.000211***	9.94e-07	-0.000428**
	(0.000170)	(7.86e-05)	(9.57e-05)	(0.000178)
t_{-1}	0.000324***	0.000128***	-3.60e-05	-0.000213*
	(0.000103)	(4.73e-05)	(3.94e-05)	(0.000125)
t_{+1}	-0.855***	-0.865***	-0.894***	-0.933***
	(0.00129)	(0.00155)	(0.00109)	(0.00176)
t_{+2}	-0.227***	-0.196***	-0.222***	-0.315***
	(0.00778)	(0.00418)	(0.00450)	(0.00574)
t_{+3}	-0.165***	-0.152***	-0.177***	-0.262***
	(0.00679)	(0.00377)	(0.00381)	(0.00499)
t_{+4}	-0.140***	-0.139***	-0.157***	-0.232***
	(0.00479)	(0.00346)	(0.00351)	(0.00531)
t_{+5}	-0.117***	-0.128***	-0.144***	-0.208***
	(0.00593)	(0.00357)	(0.00326)	(0.00572)
Constante	0.877***	0.902***	0.918***	0.929***
	(0.000398)	(0.000203)	(0.000140)	(9.75e-05)
Observations	7,475,463	11,285,010	13,314,708	11,045,187
R-square	0.457	0.425	0.407	0.406

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A12. Effect on formal wages after mass layoffs, by income bracket (minimum wage)

Period	Up to 1.5 MW	1.5 to 2.5 MW	2.5 to 5.0 MW	Over 5.0 MW
t_{-3}	-0.116***	-0.00790***	-0.0298***	-0.0647***
	(0.00708)	(0.00243)	(0.00281)	(0.00589)
t_{-2}	-0.0874***	-0.00412	-0.0152***	-0.0402***
	(0.00634)	(0.00304)	(0.00256)	(0.00422)
t_{-1}	-0.0550***	0.00101	-0.00980***	-0.0265***
	(0.00510)	(0.00159)	(0.00199)	(0.00324)
t_{+1}	-0.0281***	-0.0532***	-0.139***	-0.436***
	(0.00844)	(0.00826)	(0.0159)	(0.120)
t_{+2}	-0.0107*	-0.0233***	-0.126***	-0.285***
	(0.00591)	(0.00228)	(0.00565)	(0.00845)
t_{+3}	-0.0190***	-0.0171***	-0.111***	-0.267***
	(0.00641)	(0.00257)	(0.00370)	(0.00792)
t_{+4}	-0.0243***	-0.0112***	-0.0978***	-0.262***
	(0.00639)	(0.00298)	(0.00384)	(0.00840)
t_{+5}	-0.0332***	-0.0119***	-0.0935***	-0.250***
	(0.00692)	(0.00331)	(0.00382)	(0.00898)
Constante	0.774***	1.087***	1.457***	2.265***
	(0.000625)	(0.000152)	(0.000139)	(0.000116)
Observations	6,372,814	9,942,433	12,021,017	10,162,096
R-square	0.590	0.417	0.465	0.735

Note: Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$