economies

MDPI

Communication

What Predicts Long-Term Absenteeism, and Who Disappears from the Workforce When Enterprises Downsize?

Jarle Aarstad * and Olav Andreas Kvitastein

The Mohn Centre for Innovation and Regional Development, Western Norway University of Applied Sciences, P.O. Box 7030, NO-5020 Bergen, Norway; olav.andreas.kvitastein@hvl.no
* Correspondence: jarle.aarstad@hvl.no

Abstract: This paper primarily studies how wages predict long-term absenteeism in enterprises. In addition, it studies who disappears from the workforce when downsizing. Analyzing Norwegian enterprise data using dynamic unconditional quasi-maximum likelihood fixed-effects panel regression and general methods of moments panel regression with instrumental variables, we find that increasing average wages decreases average long-term absenteeism. As the effect barely abates the following year, it likely reflects highly skilled and motivated employees in good health receiving a wage premium and not a stimulus boosting overall work attitudes, which is likely short-lived. Wage inequality increases absenteeism, indicating that increasing low earners' wages relative to those earning high ones decreases absenteeism, but the effect is short-lived and disappears the following year. In addition, average age and education tend to decrease absenteeism, but female labor participation increases it, likely due to maternity leave. Also, increasing the workforce increases absenteeism, indicating that handling many new employees is challenging. When enterprises downsize, young and low earners initially disappear from the workforce, but the following year, older and high earners share the same fate.

Keywords: dynamic unconditional quasi-maximum likelihood panel regression; dynamic GMM panel regression; long-term absenteeism; average wages; wage inequality

Citation: Aarstad, Jarle, and Olav Andreas Kvitastein. 2024. What Predicts Long-Term Absenteeism, and Who Disappears from the Workforce When Enterprises Downsize? *Economies* 12: 13. https://doi.org/10.3390/economies12010013

Academic Editor: Corrado Andini

Received: 29 November 2023
Revised: 27 December 2023
Accepted: 28 December 2023
Published: 1 January 2024

1. Introduction

In the scholarly literature, there is a large body of research addressing issues that may affect absenteeism (e.g., Block et al. 2014; Chen et al. 2020; Dale-Olsen 2012; Markussen et al. 2011) and Winkelmann (1999) has specifically shown that employees earning high wages are less absent than those earning low ones. This study, taking an enterprise level of analysis examining panel data, elaborates on Winkelmann's finding in particular, and the following paragraphs address its contributions.

1.1. Contributions

First, by including different time lags, we study whether enterprises' average wages in a given year immediately affect absenteeism and whether the eventual effect persists or abates the following year. Our motive for addressing this approach is that it enables us to assess whether the absentee effect is due to a short-lived boost in overall work attitudes when wages increase. If the effect does not abate the following year, it likely reflects skilled and motivated employees in good health receiving a wage premium. In line with the latter argument, Aarstad and Kvitastein (2023) showed that average wages had an immediate positive effect on enterprises' operating revenues, and it barely abated the following year. Also, the latter argument aligns with previous research showing that absenteeism is negatively associated with employees' individual performance (e.g., Bycio 1992; Løkke and Krøtel 2020; Stumpf and Dawley 1981; Viswesvaran 2002). In other words, assuming that average wages reflect employees' individual performances at the outset, i.e., employees being inherently skilled

and motivated, the average wage effect on absenteeism will likely persist the following year, which our study enables us to assess.

Second, the paper analyzes whether the wages employees earn relative to their colleagues affect absenteeism. Hence, we study whether wage inequality—i.e., low earners' wages relative to those earning high ones—affects absenteeism. We do not rule out that increasing wage inequality, i.e., numerous low earners decreasing their wages relative to a small group of employees earning high ones, may decrease motivation and work attitudes among a large group of employees, increasing overall absenteeism. Decreasing wage inequality, i.e., increasing numerous low earners' wages relative to those few earning high ones, on the other hand, may have the opposite effect and increase motivation and work attitudes among a large group of employees, decreasing overall absenteeism. Taken together, we assume that wage inequality overall has a negative effect on absenteeism. Aarstad and Kvitastein, having examined and reviewed the concept of wage inequality (Aarstad and Kvitastein 2021), showed that it has a negative effect on enterprises' operating revenues (Aarstad and Kvitastein 2023). They argue that the negative effect of wage inequality on operating revenues is likely because of decreased motivation and work attitudes among a large group of employees, which aligns with our above reasoning. Having suggested how wage inequality likely increases absenteeism, we further aim to assess whether wage inequality has an immediate effect on absenteeism and whether the eventual effect persists or abates the following year. We do not have strong arguments for either a short or extended effect but do not rule out a likely short-lived effect, because changing the wage level among a large group of employees may not particularly reflect those highly motivated and inherently skilled, cf. our above arguing.

Third, the paper assesses causality by carrying out estimation with instrumental variables (we will explain further details shortly, but for excellent summaries, please see, e.g., Arellano and Bond 1991; Arellano and Bover 1995; Li et al. 2021; Roodman 2009). For instance, we cannot rule out that absenteeism affects wages and wage inequality instead of vice versa, and the appropriate use of instrumental variables partakes to account for the issue of reverse causality.

Fourth, we also include and research the important control variables of enterprises' gender distribution, specifically the proportion of female vs. male employees, average age, average education, and change in full-time employment. As our measure of absenteeism does not distinguish between reasons for it due to sickness or maternity leave, the control variable of the proportion of female employees in the enterprise accounts for this important issue. Concerning age, perhaps somewhat surprisingly, Winkelmann (1999) found that employees over 30 were less absent than younger colleagues. However, a plausible explanation can be that age reflects loyalty, and older employees with health issues tend to disappear from the workforce. Altogether, this may indicate, perhaps somewhat counterintuitively, that absenteeism decreases as a function of average age. Winkelmann (1999) moreover found that blue-collar workers had relatively high absenteeism, which may indicate that education plays a role. Accordingly, controlling for average education, we assume that the variable may negatively affect absenteeism. Winkelmann (1999) finally found that large enterprises had higher absenteeism than enterprises with less than 20 employees. Therefore, we assume that enterprises increasing their number of employees will experience increasing absenteeism. A possible reason for this potential association is the challenge of handling many new employees.

Fifth, the paper aims to assess who disappears from the workforce when enterprises downsize their number of employees. In the empirical section, we explain this issue in detail, but briefly, the study makes indirect inferences by particularly assessing how average wages and average age change in enterprises when they downsize the workforce. To our knowledge, we are unaware of other studies taking similar approaches, and in the absence of an extended body of literature and a lack of strong theoretical arguments, we take an explorative approach when researching the topic. Having said that, we do not find it unlikely that those employees probably contributing most to absenteeism, i.e., those

earning low wages and young employees, may be among those first to disappear from the workforce when enterprises downsize. Moreover, research has indicated that inexperienced and young employees have lower performance than more experienced and older colleagues (Aarstad et al. 2021; Aarstad and Kvitastein 2023; Bell et al. 2011),[1] making it tempting to initially lay off the first group when downsizing the workforce. Another issue is that seniority is the main rule when laying people off in Norway, i.e., young and inexperienced employees tending to earn relatively low wages are initially laid off. On the other hand, downsizing can also imply that employees are not replaced when someone, for instance, retires, which ceteris paribus implies that the enterprise remains with a relatively young workforce earning relatively low wages. In the empirical section, we assess which opposing arguments are most likely to be a dominating factor.

1.2. Definition of Absenteeism and Outline

In this study, absenteeism is the average portion of an enterprise's full-time employees compensated in a given year by the Norwegian Government relative to their sum of wages. The Government compensates total wage losses when employees are absent long-term, and such data are available for this study, making the empirical measure feasible.[2] Accordingly, the study researches long-term absenteeism as the major dependent variable. For instance, assuming an enterprise had two employees in a given year, where one, because of long-term absenteeism, was granted 5% government compensation of her/his sum of wages, and the other 10%, the average long-term absenteeism for that particular enterprise that particular year would be 7.5%.

In the following sections, we elaborate on the study's methodology and present empirical results. In the final section, we discuss the empirical findings, address the study's limitations, and suggest avenues for future research.

2. Methodology

2.1. Data and Sample

To study our research questions, we analyzed Norwegian register enterprise panel data from 2008 to 2014 provided by Statistics Norway. The period was the longest available when we applied for the data in 2017 as a part of a larger research project. They are linked with register person-level data, also provided by Statistics Norway, aggregated to an enterprise level. At the outset, the raw data included all private sector enterprises across all industries, but the sample criteria explained below resulted in a reduced unbalanced panel with 7552 enterprises and 35,910 enterprise-year observations.[3]

We identified employees at year t as those working full-time that year and working full-time in the same enterprise the previous year, i.e., year t_{-1}. Following this size assessment, the first year an enterprise had at least 20 employees, it was included in the panel. We limited the size to 20, since enterprises that are too small, e.g., with only a few employees, are likely to fluctuate relatively much concerning the concepts we measure during the study period. At the same time, we wanted to include relatively small entities, e.g., with 20 employees, since they represent a large share of Norwegian enterprises. For each subsequent year, observations of those same enterprises were included if they had ten employees at minimum (the motive was to exclude enterprises that were too small yet include those smallest ones that may shrink in size after being included the first year). Enterprises with operations at more than one plant were excluded from the panel to prevent potential noise in the data from mergers, acquisitions, and demergers.

2.2. Variables

In the Introduction, we defined and explained our measure of average long-term absenteeism in the enterprise, which we measure at year t. Formally, the Norwegian Government covers wage compensation related to long-term sickness, maternity leave, paternity leave (which is much shorter than maternity leave), and leave related to adoption (which is very low, since the relative number of adoptions in Norway is low).

Average wages take the mean of each full-time employee's total wages, including eventual government compensation, at year t. We apply 2014 prices by using Statistics Norway's wage index inflator.

We use the Gini (1936, 1997) index to measure wage inequality in each enterprise at year t. The concept is defined as 1-2L, where L represents the area under the Lorenz (1905) curve. L sorts employees' wages in increasing order and reflects the cumulative amount standardized from 0 to 1 on a vertical scale. Theoretically assuming that one employee in an enterprise earned all the wages (and the others earned nothing), the Gini index would be 1 (since L would be 0). If all earned exactly the same, the Gini index would be 0 (since L would be 0.05).

The proportion of female employees is measured by dividing the number of women in each enterprise at year t by all employees in the same year. The average age at year t is modeled straightforwardly, as is the average education at year t, which at a person level ranges from one (no elementary education) to nine (doctorate or equivalent). Also, enterprise size in full-time employees at year t is measured straightforwardly according to our above explanation. All continuous variables are log-transformed using the natural logarithm. We include year dummies as controls in all models but do not report on their statistical details.

3. Results

3.1. Results concerning the Proportion of Long-Term Absenteeism

In Table 1, the proportion of long-term absenteeism at year t is the dependent variable. Leszczensky and Wolbring (2019) recommend checking for different time lags in panel regressions. Also, we have argued that including different time lags enables us to assess the immediate and lagged effects of the independent variables that we include in the study. Therefore, Model A includes independent variables at year t and t_{-1} using Kripfganz's (2016) dynamic unconditional quasi-maximum likelihood fixed-effects panel regressions with robust standard errors (MLR).[4] Model B retains significant and borderline significant regressors (average education at year t_{-1} is borderline significant when removing other non-significant regressors, which is why we include it).

The data in Models A and B show that average wages decrease long-term absenteeism. The effect increases somewhat the following year, but the coefficient is borderline significant and relatively low in absolute value. Wage inequality has an increasing short-lived effect on long-term absenteeism, leveling off the following year (indicated by the negative effect at year t_{-1}). Female labor participation increases long-term absenteeism. Increasing average age and education decreases absenteeism the following year, the latter finding being borderline significant. Finally, increasing employment increases absenteeism, and there is even a borderline significant effect the following year.

Model C includes significant regressors at year t from the previous model. Econometrically, it uses the dynamic two-step Arellano-Bover/Blundell-Bond GMM panel technique with instruments (ABB) and independent variables as endogenous regressors (see Arellano and Bond 1991; Arellano and Bover 1995; Li et al. 2021; Roodman 2009).[5] Our motive for also applying ABB is that MLR does not account for potential immediate reverse causality, i.e., potential reverse causality at year t. Nonetheless, Model C confirms the previous findings and also generates non-significant post-estimation tests that indicate valid instruments (for an overview, see Li et al. 2021).[6] An unreported ABB model, including operating revenues at year t adjusted to 2014 prices using Statistics Norway's consumer price index inflator and log-transformed using the natural logarithm, shows a non-significant effect.

Table 1. Dynamic unconditional quasi-maximum likelihood fixed-effects panels (Models A and B) and dynamic two-step Arellano-Bover/Blundell-Bond GMM panel with instrumental variables (Model C). The proportion of absenteeism at t is the dependent variable.

	Model A	**Model B**	**Model C**
Dependent variable at t_{-1}	0.155 *** (0.017)	0.153 *** (0.017)	0.190 * (0.077)
Dependent variable at t_{-2}			0.031 (0.021)
Average wages at t	−1.14 *** (0.154)	−1.11 *** (0.144)	−1.62 *** (0.166)
Average wages at t_{-1}	0.283 † (0.145)	0.273 † (0.143)	
Wage inequality at t	0.133 * (0.053)	0.128 * (0.051)	0.402 *** (0.080)
Wage inequality at t_{-1}	−0.188 *** (0.053)	−0.186 *** (0.052)	
Proportion of female employees at t	0.231 *** (0.035)	0.224 *** (0.033)	0.366*** (0.068)
Proportion of female employees at t_{-1}	−0.020 (0.033)		
Average age at t	0.306 (0.271)		
Average age at t_{-1}	−0.797 ** (0.271)	−0.584 * (0.234)	
Average education at t	−0.110 (0.280)		
Average education at t_{-1}	−0.432 (0.283)	−0.435 † (0.260)	
Full-time employees at t	0.218 *** (0.047)	0.205 *** (0.047)	0.241*** (0.050)
Full-time employees at t_{-1}	0.057 (0.037)	0.071 † (0.037)	
Year dummies included	Yes	Yes	Yes
Wald χ^2			197,064.1 ***
Second-order z-value [a] /p-value			−0.22/0.823
Hansen J test of over-id./p-value			24.6/0.216
Diff-in-Hansen (exl. group)/p-value			16.5/0.350
Diff-in-Hansen (difference)/p-value			8.13/0.149
Number of instruments			34
N enterprise-year obs./enterprises	18,343/4754	18,534/4809	19,712/5755
Min./avg./max. obs. per enterprise	2/3.85/5	2/3.85/5	1/3.43/5

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Two-tailed tests for regressors and robust standard errors are in parentheses. [a] Arellano–Bond test for zero autocorrelation in first-differenced errors.

3.2. Results concerning Average Wages and Average Age for Downsizing Enterprises

Table 2 only includes observations where enterprises have downsized the number of full-time employees over the last two years, i.e., the number of employees at year t is lower than at year t_{-2}. It includes average wages and average age at year t as dependent variables in Models A and B, respectively.[7]

Table 2. Dynamic unconditional quasi-maximum likelihood fixed-effects panels.

	Model A	**Model B**
Dependent variable	Average wages at t	Average age at t
Dependent variable at t_{-1}	0.669 *** (0.084)	0.745 *** (0.057)
Full-time empl. at t	−0.074 *** (0.014)	−0.064 *** (0.005)
Full-time empl. at t_{-1}	0.049 ** (0.017)	0.044 *** (0.008)
Year dummies included	Yes	Yes
Full-time empl. at $t < t_{-2}$	Yes	Yes
N enterprise-year obs./enterprises	5283/1954	5283/1954
Min./avg./max. obs. per enterprise	2/2.70/5	2/2.70/5

** $p < 0.01$, *** $p < 0.001$. Two-tailed tests for regressors and robust standard errors in parentheses.

Model A shows a negative association between full-time employment at year t and average wages in the same year in the enterprise and a positive association at year t_{-1}. The findings imply that the more enterprises have downsized in the number of full-time employees, the higher the average wages of those remaining in the workforce are at year t, indicating that low earners are initially laid off (Model A).[8] The following year, at t_{-1},

the wages of those still in the workforce are reduced, indicating that high earners are subsequently laid off or retired (Model A).[9] Similarly, older employees remain in the workforce at year t as a function of downsizing, which indicates that the young ones are initially laid off (Model B). However, the following year, at t_{-1}, the average age of those still in the workforce is reduced, indicating that older employees are subsequently laid off or retired (Model B).

4. Discussion and Conclusions

This study's primary aim, taking an enterprise level of analysis analyzing Norwegian panel register data, was to assess how different facets of employees' wages are likely to affect long-term absenteeism. Another aim was to assess who disappears from the workforce when enterprises downsize in terms of employment.

4.1. A Discussion of the Findings and Their Contributions to the Literature

A large body of literature has researched issues likely to affect absenteeism (e.g., Block et al. 2014; Chen et al. 2020; Dale-Olsen 2012; Markussen et al. 2011) and Winkelmann (1999) particularly showed that employees earning high wages are less absent than those earning low ones. Consistent with this literature, we found that increasing average wages had an immediate decreasing effect on long-term absenteeism in the same year. Moreover, as a novel finding to our knowledge, we found that the effect barely abated the following year. Our short- and long-term results align with Aarstad and Kvitastein (2023), showing that average wages also had an immediate positive effect on enterprises' operating revenues, which did not abate the following year. Also, our results align with other research showing that absenteeism is negatively associated with employees' performance (e.g., Bycio 1992; Løkke and Krøtel 2020; Stumpf and Dawley 1981; Viswesvaran 2002). In other words, finding that the wage effect on long-term absenteeism persisted the following year likely reflects high-performing employees in good health being inherently skilled and motivated at the outset receiving a monetary premium, and not a stimulus boosting overall work attitudes, which is likely short-lived.

Second, we found that wage inequality increased long-term absenteeism. The finding indicates that increasing low earners' wages relative to those earning high ones decreases absenteeism. Similarly, Aarstad and Kvitastein (2023) found that wage inequality decreased enterprises' operating revenues; hence, a novel contribution in our study is illuminating that the concept also has a negative effect on long-term absenteeism. Having said that, the effect was short-lived, as it abated the following year, and a possible explanation is that increasing numerous low earners' wages did not per se boost long-term motivation leading to higher performance. In other words, changing the wage level among a large group of employees may not particularly reflect those highly motivated and inherently skilled, but we nonetheless encourage future research to unpack what may be the genuine reasons for the short-lived effect that we observed.

Third, by carrying out estimation with instrumental variables, we showed that average wages and wage inequality genuinely affected long-term absenteeism (e.g., Arellano and Bond 1991; Arellano and Bover 1995; Li et al. 2021; Roodman 2009). However, having said that, we do not rule out reverse causality, and in particular, we expect that employees' long-term absenteeism will likely have a negative wage effect, which future research should investigate.

Fourth, we showed that average age and education as important control variables tended to decrease absenteeism. Our finding concerning age aligns with Winkelmann (1999), who showed that employees over 30 years old were less absent than younger colleagues, yet the results from both studies may be counterintuitive. However, likely explanations are that old employees have high loyalty, and seniors with health issues tend to disappear from the workforce. Our finding that average education tended to decrease long-term absenteeism may have different explanations. First, it may reflect the fact that highly educated employees have a relatively healthy lifestyle, and second, it may be that educated employees are

less prone to work conditions likely to increase the probability of long-term absenteeism. Our finding aligns with Winkelmann (1999), who showed that blue-collar workers had relatively high absenteeism as an indicator of a relatively low education level. Female labor participation as another important control variable unsurprisingly increased long-term absenteeism, and we have previously argued that it is likely related to maternity leave, which is much longer than paternity leave. Also, increasing the workforce in the number of employees increased long-term absenteeism. The finding aligns with Winkelmann (1999), who showed that large enterprises had higher absenteeism than enterprises with less than 20 employees. A crucial distinction between the studies, however, is that our findings showed that increasing the workforce appears to be challenging, as it affects long-term absenteeism, but not necessarily enterprise size at the outset per se.

Fifth, we found that young employees and low earners initially disappeared from the workforce when enterprises downsized, but the following year, older and high earners appeared to share the same fate. Hence, tenured employees, as indicated by being older and earning higher wages, are not immune to disappearing from the workforce in the long run. To our knowledge, the findings are novel and accordingly contribute to an emerging field that we argue merits increasing attention in future research. To theorize, it seems that employees with relatively low tenure, as indicated by earning relatively low wages and being relatively young, are the first to be laid off when enterprises downsize. A possible reason is that inexperienced and young employees have lower performance than more experienced and older colleagues (Aarstad et al. 2021; Aarstad and Kvitastein 2023; Bell et al. 2011), making it tempting to initially lay off the first group when downsizing the workforce. Another issue is that seniority is the main rule when laying people off in Norway, i.e., young and inexperienced employees tending to earn relatively low wages are initially laid off. On the other hand, downsizing can also imply that employees are simply not replaced when someone, for instance, retires, which ceteris paribus implies that the enterprise remains with a relatively young workforce earning relatively low wages.

4.2. Managerial Implications

Finding that average wages have a long-term effect on absenteeism and wage inequality has a short-term effect is important information for managers, we argue. Based on our findings, we are careful to address specific recommendations concerning the wage policy, but our findings nonetheless show that the topic has implications for long-term absenteeism. It is worth noting that age and education also affect long-term absenteeism, but we cannot see that managers could or should adapt their workforce according to these concepts. On the other hand, managers should be aware of the negative effect an increased workforce has on long-term absenteeism and try to mitigate it as much as possible. Concerning our findings that young and low earners initially disappear from the workforce when enterprises downsize and that older and high earners share the same fate the following year, we do not address strong managerial implications. But having said that, we encourage managers to be aware of the findings if an unfortunate situation of downsizing were to happen.

4.3. Limitations and Future Research

A limitation of this study is that we measure average absenteeism, and future studies should aim to conduct multi-level analyses at an enterprise and person level. As such, they can, for instance, compare whether individual or average wages at an enterprise level are independent carriers of employees' absenteeism. Similarly, they can assess whether the long-term effect of downsizing decreases the wages of those remaining in the workforce, or whether those with high wages tend to be laid off or take out retirement. Also, future research should include data points after 2014 in the analyses, as we could not access that. However, we cannot see how recent data would substantially skew the statistical conclusions beyond our results, but including more lags enabled by a longer panel could have revealed findings that we, unfortunately, were constrained from researching.

As the study applied fixed-effects and first-difference estimators, we do not have information about eventual time-invariant enterprise and industry outcomes. Accordingly, using other methodologies, we encourage future research to, for instance, assess whether industry characteristics, e.g., capital- vs. labor-intensive industries, may moderate the outcome of the study's independent variables. Finally, we encourage future works to elaborate a stronger theoretical foundation concerning predictors of long-term absenteeism and employees' propensity to disappear from the work stock when enterprises downsize.

Author Contributions: Conceptualization, J.A.; methodology, J.A. and O.A.K.; software, J.A.; validation, J.A. and O.A.K.; formal analysis, J.A.; writing—original draft preparation, J.A. and O.A.K.; writing—review and editing, J.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Research Council of Norway, grant number 55070.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions by Statistics Norway.

Conflicts of Interest: The authors declare no conflicts of interest.

Notes

1 However, the effect tends to turn negative for high values, according to the studies.

2 On the other hand, short-term absenteeism is not covered by the Government but by the employer, and such data are unavailable for this study.

3 The regression models we present shortly include fewer observations because we, e.g., include lagged variables.

4 In addition to Kripfganz, please also see Leszczensky and Wolbring (2019), particularly pp. 845–46, for a general explanation of the estimation technique. An example of the generic Stata code we apply is xi: xtdpdqml y L(0/1).(x1 x2) x3 L.x4. . . i.year, vce(r), where y is the dependent variable, x1, x2, x3, x4. . . independent variables, and i.year is year dummies. As a default, the code includes the lagged dependent variable and executes fixed-effects regression.

5 In addition to Roodman, please also see Li et al. (2021), particularly Equation (3) p. 343, for a general explanation of the estimation technique. The Stata code in Model C, Table 1, is xtabond2 L(0/2).y x1 x2 x3 x4 i.year, gmm(L2.y x1 x2 x3 x4, lag(1 .) collapse) two robust. y is the dependent variable, x1 average wages, x2 wage inequality, x3 is the proportion of female employees, x4 is full-time employees, and i.year is year dummies.

6 Comparing MLR and ABB, Leszczensky and Wolbring (2019) show that the regression coefficient may deviate, which is also the case in our models, but without altering any statistical conclusion. Moreover, according to them, including regressors at t and t_{-1} may falsely induce non-significant estimates when using ABB.

7 In unreported models, we replicated Models A and B, Table 2, by including observations where the number of full-time employees at year t was lower than that at year t_{-1} and where the number of full-time employees at year t_{-1} was lower than that at year t_{-2}, respectively, but without altering any statistical conclusion. Following the same procedures, we also estimated wage inequality, the proportion of female employees, and average education as dependent variables in unreported models, but without reaching consistent empirical findings.

8 We cannot rule out that average wages at t reversely decrease employment at t, but an unreported ABB panel replication shows causality, as illustrated in Model A. Upon request, we can provide statistical details.

9 In an unreported model, we controlled for operating revenues at year t and t_{-1} adjusted to 2014 prices using Statistics Norway's consumer price index inflator and log-transformed using the natural logarithm, but without altering any statistical conclusion. An alternative explanation to laying off high earners or letting them retire is that real wages are reduced among those still in the workforce at t_{-1}. However, later in Model B, we observe similar findings concerning average age, which decreases at year t_{-1} but would otherwise increase if the employees were the same. Therefore, we also assume that a genuine interpretation is that high earners are laid off or retired at t_{-1}.

References

Aarstad, Jarle, and Olav A. Kvitastein. 2021. Do Operating Profits Induce a Wage Premium Equally Shared among Employees Earning High or Low Incomes? *Economies* 9: 81. [CrossRef]

Aarstad, Jarle, and Olav Andreas Kvitastein. 2023. Wage Inequality's Decreasing Effect on Enterprise Operating Revenues. *Economies* 11: 178. [CrossRef]

Aarstad, Jarle, Olav Andreas Kvitastein, and Marte C. W. Solheim. 2021. External shocks and enterprises' dynamic capabilities in a time of regional distress. *Growth and Change* 52: 2342–63. [CrossRef]

Arellano, Manuel, and Olympia Bover. 1995. Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics* 68: 29–51. [CrossRef]
Arellano, Manuel, and Stephen Bond. 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies* 58: 277–97. [CrossRef]
Bell, Suzanne T., Anton J. Villado, Marc A. Lukasik, Larisa Belau, and Andrea L. Briggs. 2011. Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management* 37: 709–43. [CrossRef]
Block, Jörn, Laszlo Goerke, José María Millán, and Concepción Román. 2014. Family employees and absenteeism. *Economics Letters* 123: 94–99. [CrossRef]
Bycio, Peter. 1992. Job-Performance and Absenteeism—A Review and Metaanalysis. *Human Relations* 45: 193–220. [CrossRef]
Chen, Jie, Chad D. Meyerhoefer, and Lizhong Peng. 2020. The effects of paid sick leave on worker absenteeism and health care utilization. *Health Economics* 29: 1062–70. [CrossRef]
Dale-Olsen, Harald. 2012. Sickness absence, performance pay and teams. *International Journal of Manpower* 33: 284–300. [CrossRef]
Gini, Corrado. 1936. On the measure of concentration with special reference to income and statistics. *Colorado College Publication, General Series* 208: 73–79.
Gini, Corrado. 1997. Concentration and dependency ratios. *Rivista di Politica Economica* 87: 769–92.
Kripfganz, Sebastian. 2016. Quasi–maximum likelihood estimation of linear dynamic short-T panel-data models. *The Stata Journal* 16: 1013–38. [CrossRef]
Leszczensky, Lars, and Tobias Wolbring. 2019. How to Deal With Reverse Causality Using Panel Data? Recommendations for Researchers Based on a Simulation Study. *Sociological Methods & Research* 52: 837–65. [CrossRef]
Li, Jiatao, Haoyuan Ding, Yichuan Hu, and Guoguang Wan. 2021. Dealing with dynamic endogeneity in international business research. *Journal of International Business Studies* 52: 339–62. [CrossRef]
Løkke, Ann-Kristina, and Sarah M. L. Krøtel. 2020. Performance evaluations of leadership quality and public sector leaders' absenteeism. *Public Management Review* 22: 96–117. [CrossRef]
Lorenz, Max O. 1905. Methods of Measuring the Concentration of Wealth. *Publications of the American Statistical Association* 9: 209–19. [CrossRef]
Markussen, Simen, Knut Røed, Ole J. Røgeberg, and Simen Gaure. 2011. The anatomy of absenteeism. *Journal of Health Economics* 30: 277–92. [CrossRef]
Roodman, David. 2009. How to do Xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal* 9: 86–136. [CrossRef]
Stumpf, Stephen A., and Patricia Kelly Dawley. 1981. Predicting Voluntary and Involuntary Turnover Using Absenteeism and Performance Indexes. *Academy of Management Journal* 24: 148–63. [CrossRef]
Viswesvaran, Chockalingam. 2002. Absenteeism and measures of job performance: A meta-analysis. *International Journal of Selection and Assessment* 10: 12–17. [CrossRef]
Winkelmann, Rainer. 1999. Wages, firm size and absenteeism. *Applied Economics Letters* 6: 337–41. [CrossRef]