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ABSTRACT

Labour Mobility in German Establishments during the COVID-19 Crisis: Panel Data Analyses with Special Reference to Short-Time Work and Working from Home

Using 21 waves of German high-frequency establishment panel data collected during the COVID-19 crisis, we investigate the effects of short-time work (STW) and working from home (WFH) on hiring, firings, resignations and excess labour turnover (or churning). Thus, we enquire whether STW avoids firings as intended by policymakers and is associated with unintended side effects by subsidising some establishments and locking in some employees. Additionally, where it was feasible, establishments used WFH to continue working without risking an increase in COVID-19 infections and allowing employed parents to care for children attending closed schools. While much of the literature investigating the effects of STW and WFH remains descriptive, we conduct panel data analyses. We apply data and methods that allow for the dynamic pattern of STW and WFH during the pandemic. Furthermore, our data include relevant establishment-level variables, such as the existence of a works council, employee qualifications, establishment size, the degree to which the establishment was affected by the COVID-19 crisis, industry affiliation and a wave indicator for the period the survey was conducted. Our results show the important influences of STW and WFH on employment during the pandemic. By means of STW, establishments are able to avoid an increase in involuntary layoffs, and hiring decreases significantly. In contrast, WFH is associated with a rise in resignations.

JEL Classification: C23, J21, J23, J58, J63

Keywords: short-time work, working from home, labour mobility, COVID-19, panel analysis, high-frequency establishment data

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1. Introduction

National governments responded to the economic shocks following the dramatic collapse of Lehman Brothers and the emergence of the COVID-19 virus with a bundle of measures to avoid the fact that the response of unemployment mirrored the change in gross domestic product. In Germany and other countries, the main instrument adopted by the labour market was short-time work (STW) at an unprecedented level. Where feasible, remote work or working from home (WFH) was used to continue working without risking an increase of COVID-19 infection and allowing employed parents to take care of their children attending closed schools. Prior to the COVID-19 crisis, the pros and cons of both STW and WFH had been discussed in the literature (Bloom et al., 2015, Cahuc et al., 2018; Bellmann and Hübler, 2021). Although a huge bulk of the literature has been devoted to studying the effects of WFH, analyses of their effects on the demand for employees are missing. As already noted, e.g., by Davis et al. (2012) and Lazear and Spletzer (2012), recessions impede worker mobility. With respect to labour demand, Haltiwanger et al. (1992) have already pointed to the importance of reallocation not only during a crisis. Such an analysis requires the consideration of hiring, voluntary and involuntary layoffs and churning (or excess labour turnover).

As administrative data from, e.g., the Federal Employment Agency, are available only with delay and do not completely include the relevant variables, surveys among the establishment representatives must be conducted. Using a unique establishment survey *Establishments in the COVID-19 Crisis (BeCovid)*, which was designed by the Institute for Employment Research (Institut für Arbeitsmarkt- und Berufsforschung, IAB), partially in cooperation with the Federal Institute for Occupational Safety and Health (Bundesanstalt für Arbeitsschutz- und Arbeitsmedizin, BAuA) and the excellence cluster ECONtribute of the universities of Cologne and Bonn, to assess how establishments were affected by the pandemic-induced economic crisis and which strategies they pursued to cope with its ramifications (Bellmann et al., 2022).

This paper contributes to the literature investigating the effects of STW and WFH on the labour reallocation measures mentioned. We enquire whether STW avoids involuntary layoffs as intended by policymakers. However, the studies conducted before the pandemic do not consider unintended side effects not only of STW but also of WFH on hiring as well as layoffs and excess labour turnover. As the usage of WFH increased substantially during the pandemic, it is necessary to include a respective variable in an analysis of STW. Moreover, the differentiation of layoffs into involuntary and voluntary layoffs is important since the related literature shows that individuals have different experiences with WFH, which leads them to quit, even though employers intend to keep them “on board”.

While much of the literature investigating the effects of STW and WFH remains descriptive, we conduct panel data analyses. To the best of our knowledge, we are the first to use high-frequency establishment data in the context of a labour market analysis. As the usage of STW and WFH is dynamic during the pandemic, this aspect of the data is of utmost importance. Furthermore, our data include relevant establishment-level variables, such as the existence of a works council, employee qualifications, the establishment size, the degree to which the establishment was affected by the COVID-19 crisis, the affiliation with an industry and a wave indicator for the period the survey was conducted. Finally, we present the results of a number of robustness checks.

Our results are important because they close research gaps and enhance our knowledge about the effects of STW and WFH heavily used during the pandemic and corroborate some of the hypotheses about their impact while rejecting others. We demonstrate that by means of STW, establishments are able to avoid a hike in involuntary layoffs while hiring decreases. In contrast, WFH is associated with a rise in voluntary layoffs or resignations. Finally, interactions between STW and WFH are negatively correlated with recruitment. The adoption of STW and WFH also has various other effects on the components of labour mobility.

The remainder of the paper is structured as follows: Section 2 summarises the related literature on various labour reallocation measures and develops the hypotheses to be tested. Thereby, special reference is devoted to the role of STW and WFH. Section 3 describes the dataset. In Section 4, our empirical strategy is outlined. Section 5 shows some descriptive statistics, and Section 6 presents the econometric results. In Section 7, we analyse whether the results are robust for subsamples, and Section 8 briefly concludes.

2. Related literature and hypotheses

The COVID-19 pandemic severely affected the German economy from March 2020 onwards. In the second quarter of 2020, real GDP decreased by 9.5 percent. However, the development was very turbulent: In the third quarter of 2020, real GDP increased by 9.0 percent (Statistica, 2022). The Employment Outlook provided by the OECD (2022) reveals an unprecedented rebound of economic activity recorded in many countries in 2021. During the pandemic, labour is not fully employed, but firms sell all their supply in the market for goods, meaning that classical, not Keynesian, unemployment prevails and buyers on the goods market are rationed (Malinvaud, 1977). As in the Great Recession, up to more than 1.4 million employees used the STW scheme during the COVID-19 crisis, the number of employees receiving STW allowances reaching approximately 6 million. Furthermore, there were large differences at the sectoral level: In the Great Recession of 2008/09, STW was used mainly in manufacturing but in the COVID-19 crisis, it was utilised in accommodation and food services (Federal Employment Services, 2022).

Not only during an economic crisis do a substantial proportion of employees separate from their previous employers to become unemployed or leave the labour force, while others enter the labour market and find a new job or search for new employment. Davis et al. (2006) and Davis et al. (2012) present several empirical aspects of labour market flows in the United States and find that business cycle swings mainly involve shifts in the distribution of employer growth rates rather than large shifts in hires, separations and layoffs conditional on employer growth. Furthermore, Davis et al. (2012) propose a hybrid view of labour market flows that incorporates aspects of several distinct theories of labour market dynamics, such as the seminal work by Mortensen and Pissarides (1994), Jovanovic (1979) and Moscarini (2005), considering various aspects of job search and learning. Lazear and Spletzer (2012) focus on the impact of recessions on mobility and, especially, churning.

Bellmann et al. (2018) find that hires and separations are lower in Germany than in the United States, a result that cannot be traced back to recalls because similar estimates from administrative data are obtained for both countries. This finding contrasts with that by Abowd et al. (1999) for France. Abowd and Kramarz (2003) argue that French firms rely on the hiring margin because of differences in employment institutions and associated adjustment costs. Furthermore, Bellmann et al. (2018) show that the relationship between employment growth, hires and separations in Germany is very similar to that found in the United States: Establishments that grow, increase hirings almost one-for-one with increased employment, and establishments that shrink increase separations immediately with reduced employment. First, resignations account for most separations for employment reductions of up to 30 percent. Second, the level of churning in Germany is low, limiting the scope for reduced hiring. Third, the heterogeneity of jobs within establishments prevents intrafirm mobility within.

The use of STW during the Great Recession 2008/09 represented the most significant experience with STW in many industrialised countries, mainly adopted in manufacturing with relatively strong protections for permanent employees (Eichhorst et al., 2022). Cyclical STW (konjunkturelles Kurzarbeitergeld) can be received from the Federal Employment Agency after application by employers claiming a temporary, unavoidable loss of work owing to economic factors or an unavoidable incident (§ 170 Social Code III). Other flexibility tools, such as the reduction of overtime,

working time accounts, and holidays, have to be depleted. During both the Great Recession and the COVID-19 crisis, the conditions, eligibility and duration were adopted because of the severity of the crises. Only employees covered by social security are eligible; thus, so-called mini-jobbers, solo self-employed and those entering the labour market for the first time are excluded. Empirical evidence has demonstrated that the effect of STW contributed to labour hoarding during the Great Recession (Dietz et al., 2010). Microeconometric evaluation has shown a pronounced "lock-in effect" because programme participants' search effectiveness decreased (relative to that of the unemployed) during programme participation as they less actively looked for a job (Kluve, 2010). Furthermore, Dauth et al. (2016) augment these analyses by including changes over time and the regional context. After the Great Recession, in conjunction with pacts for employment and competitiveness, STW contributed to a productivity increase in Germany because qualified employees were available without a timely recruitment process (Bellmann et al., 2016). Boeri and Bruecker (2011) found that the number of jobs saved was rather limited. Furthermore, the use of STW is highly dynamic (Scholz et al., 2011).

Using BeCovid-data, Kuhn et al. (2021) find empirical evidence that employers seek to distribute the loss of work equally among their labour force as means to retain qualified employees to reduce liquidity problems due to the pandemic and to maintain an efficient production level with a reduced workforce. However, Cahuc et al. (2018) demonstrate with French firm-level data that STW saved jobs in firms hit by powerful negative revenue shocks but not in firms hit less severely. Furthermore, Cahuc (2019) points out that if the costs that the employer has to bear for employees on STW are too high, employers will lay off too many employees in variable jobs. In contrast, low costs for employers may lead to an inefficient overuse of STW.

In Germany, prior to the pandemic, the number of employees WFH was smaller than that in other countries (Eurofound, 2020, Dingel and Neiman, 2020). Furthermore, potentials are often not used (Brenke, 2016). However, during the pandemic, establishments offer additional options for WFH, especially during the lockdown, to keep the number of infections at a low level. In line with international evidence (Aksoy et al. 2022), Boockmann et al. (2021) document that every study included in their meta-study found an increase in the usage of home offices, at least temporarily. For example, Bonin et al. (2020, 2021) show that the proportion of employees WFH roses from 24 percent in June 2019 to 36 percent in July/August 2020 and 45 percent in March/April 2021 to 38 percent in September 2021 after the home office duty expired (with considerable differences among employees with different qualification levels). Many employees, especially women, worked for the first time at home during the pandemic (Frodermann et al., 2021). Using BeCovid-Data, Bellmann et al. (2020a) show that until August 2020, 23 percent of all establishments newly introduced home offices, and 17 percent extended them. Furthermore, Bellmann et al. (2020b) find that the proportion of employees who could WFH increased from 27 percent before the crisis to 36 percent during the first lockdown to 38 percent in mid-October 2020. Thus, the development of WFH can be regarded as very volatile.

With analyses based on the Employment Survey 2018 of the German Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, BIBB) and the Federal Institute for Occupational Safety and Health (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, BAuA), Mergener (2020) shows that the opportunity for WFH increases with the extent of cognitive tasks at work, whereas it decreases if manual tasks and specific individual tasks such as catering, cleaning or care work have to be performed.

To understand decisions made by establishments and employees in favour of or against WFH, the pros and cons must be considered. The advantages of WFH include greater flexibility, less commuting time, a better work-life balance, a longer working time and a better accomplishment of certain tasks because of fewer interruptions (Arnold et al., 2015). Challenges are associated with cooperation within the team, data security, inappropriate tasks, missing technical equipment, presence culture,

and the blurring of work and private life (Grunau et al., 2019). The Federation of German Unions (Deutscher Gewerkschaftsbund, DGB, 2022) emphasises more stress, more overtime and more interruptions during leisure by employees WFH based on its own survey. The study conducted by Bellmann and Hübler (2021) reveals a heterogeneous influence of home office use on job satisfaction and work-life balance: WFH outside the contracted working hours, within strict working schedules and deadlines as well as without rules of conduct decreases job satisfaction and work-life balance. Magnier-Watanabe et al. (2022) find that an adequate workplace at home is the strongest predictor for job satisfaction with mandatory WFH in Japan.

Based on our brief literature survey, we formulate 4 major hypotheses about the impact of STW on various measures of labour demand (H1–H4).

Since establishments, at least in the short run, keep their number of employees constant, we state the following:

H1: *Establishments adopting STW hire fewer employees.*

Using the IAB Establishment Panel Survey for the period 1996–2020, Möller and Hohendanner (2021) show the reluctance of firms to hire employees during the pandemic.

Since the aim of STW is to restrict the number of firings or layoffs of employees by reducing labour costs, we formulate:

H2: *Establishments using STW avoid an increase in the number of employees' involuntary layoffs.*

Because of the large scale of STW adoption, a control group for establishments that do not use STW is hardly impossible to construct. As already mentioned, to take into account that establishments with and without using STW differ in many other characteristics, we control for a bundle of firm-level variables. With respect to firings, the existence of a works council and the number of employees (as a proxy for the establishment size) are of special relevance. Collective bargaining plays a minor role in the pandemic, and works councils can be regarded as the key players at the plant level concerning labour demand during the crisis.

The joint consideration of H1 and H2 leads to an unclear assessment regarding the effect of STW on employee resignations. On the one hand, employees in establishments using STW might fear that the application of STW by their employer will lead to their dismissal if the situation does not soon improve. Therefore, those employees with job offers might hurry to accept these offers. Furthermore, every crisis creates new opportunities. However, employees using STW observe that their employers hesitate to hire during the crisis. In addition, the employer's decision to keep their employees with the help of STW schemes can be interpreted as a signal to the employees that the establishment seeks to continue the employment relationship. As in the pandemic, short periods of STW dominate (Federal Employment Service 2022) over the longer (albeit negative) perspective; thus, we formulate the following:

H3: *Employees in establishments using STW quit less often (voluntarily).*

Excess mobility or churning measures the extent to which establishments lay off more employees than is necessary to reduce the level of employment. Conversely, to what extent do establishments hire more employees than necessary to increase the level of employment?

According to STW regulations, employers are prohibited from substituting employees; that is, they are allowed to hire an employee with a fixed-term contract only for a reason. Thus, our hypothesis is the following:

H4: *Excess labour turnover or churning is lower in establishments using STW.*

This means that internal structural change is inhibited in establishments using STW. However, the public funding of further training during the usage of STW may be helpful to avoid the negative consequences of a conservation of the internal structure on firms' competitiveness; however, during the pandemic, it was used by only approximately 10 percent of the establishments using STW and 5 percent of the employees participating in STW schemes (Kruppe et al., 2022). As the existence of a works council exerts a negative impact on churning (Fackler et al., 2021), it is also an important control for this variable.

Against the background of our brief survey, we formulate 4 major hypotheses about the impact of WFH on various measures of labour demand (H5-H8). Since the pros and cons of WFH differ between establishments (e.g., according to their size, sectoral affiliation and the qualifications they demand of employees) and the employees for the development of our hypothesis, we focus on the most common arguments we found in the literature. Please note that we consider the combined impact of both WFH and STW later in conjunction with H9.

Many employees prefer WFH, e.g., to improve their work-life balance or avoid commuting, so that employers can fill their vacancies more easily by offering WFH. Following this argument, our hypothesis is stated as follows:

H5: *Establishments using WFH hire more employees.*

Since the aim of WFH during the pandemic was to continue the business operations in many but not in all sectors (Boockmann et al., 2022) without risking an increase in infections with COVID-19, we formulate the following:

H6: *Establishments using WFH decrease the number of involuntary layoffs.*

However, Bellmann and Hübler (2021) have argued and empirically shown that for some employees, the cons of WFH might outweigh its advantages, e.g., work-life balance considerations; therefore, we formulate:

H7: *Employees in establishments using WFH quit more often.*

The heterogeneity among employees with respect to their ability to cope with the challenges and to use the opportunities associated with WFH increases the likelihood of higher net growth in employment and the selectivity regarding the hiring and the (involuntary) layoff of employees in establishments that use WFH.

H8: *Excess labour turnover or churning is higher in establishments using WFH.*

Thus, the expected impact of STW on the dependent variables is the opposite of that of WFH.

Table 1 summarises the expected effects of STW and WFH as the variables of our main interest on the various labour demand variables.

Table 1: Hypotheses of the impact of the variables of main interest on various labour demand variables

As Mergener (2020) finds, the completion of cognitive tasks as well as academic and vocational qualifications are more often associated with WFH before the pandemic, and Bonin et al. (2020, 2021) and Bloom et al. (2022) corroborate this result during the pandemic, we state:

H9: *Establishments using both WFH and STW tend to hire more employees who are especially qualified.*

This hypothesis is tested by means of the inclusion of an interaction term into our regressions.

3. Data and definitions of variables

We use twenty-one waves of the employer survey "*Establishments in the COVID-19-crisis*" (BeCovid-Bellmann et al., 2022). These new data are representative of private sector establishments with at least one employer subject to social security contributions. The sampling frame was the establishment file of the Federal Employment Agency, which contains all establishments that have to submit employee notifications to the social security system. In the questionnaire, the respondents are asked to report not only socially insured employees but also civil servants, family workers and owners or proprietors. The sample is drawn via disproportionate sampling, stratified by establishments size (1–9, 10–49, 50–249 and 250+ employees) interacted with five broad economic sectors. Large establishments with more than 250 employees are defined as one stratum irrespective of the sector, resulting in a total of 16 strata. Initially, an establishment was rotated out of the sample after a maximum of six participants. Other reasons for dropping out of the (repeat) sample were no participation for seven straight waves after the first-time interview and an establishment's last participation being more than four waves ago. The survey started on August 3rd, 2020. The last wave is scheduled for the second half of August 2022. The data of the last wave we used are from the first half of May 2022. The number of successful interviews with representatives from the establishments sample was between 1,556 and 2,002. There is a great deal of variation in the wave-specific response rates ranging from 0.12 to 0.24 caused by the confluence of short field periods and seasonal effects due to vacation periods. The share of repeat respondents was between 0.46 and 0.70. Data collection was performed by *Kantar Public* and was carried out by computer-assisted telephone interviews (CATI). The definition and the measurement of variables of interest are provided in Table 2 (Definition and measurement of dependent variables) and Table 3.

Table 2: Definition and measurement of dependent variables

Table 3: Definition and measurement of control variables

The definition and the measurement of variables are provided in Tables 2 and 3. It is important to note that the dependent variables—hirings, firings and resignations—are related to the three weeks before the date of the survey. The size of the establishment is considered, including marginal part-time employees (so-called mini-jobbers), apprentices, civil servants, family workers and owners of the establishment. WFH includes establishments in which WFH is an option in principle, even if only for some of the employees. The variable unskilled considers the employers' perspective about the proportion of employees working in menial jobs that do not require a vocational qualification or corresponding experience.

4. Empirical Strategy

We start with descriptive statistics. As the number of missing values varies for each variable, we have to decide whether we should present for each variable the maximum available number of

observations or whether the number of cases should be the same for all determinants. The advantage of the first possibility is that the danger of a bias is less for each variable. The advantage of the second possibility is that the number of observations is the same for all used variables based on a specific specification. However, for each specification, we expect different sample sizes. At the centre of our discussion is whether and to what extent the establishments not only fire employees but also recruit new workers during the pandemic, a question that is neglected in most empirical investigations. Usually, the variation of the net firm size is considered. During an employment recession, more firms do not enlarge their firm size. We focus our descriptive statistics on the most interesting but less common case of companies where classical, not Keynesian, unemployment dominates during the pandemic, where labour is not fully employed but firms sell all their supply; in other words, the case where buyers on the market for goods and sellers on the market for labour are rationed at the same time (Malinvaud, 1977). We assume that during the COVID-19 crisis, both types of unemployment occur simultaneously.

The next step is to estimate regressions of employment functions. The problem is twofold. On the one hand, we must determine the measurement of the employment variable. On the other hand, we have to determine which variables are important for employment. Convincing specifications must be derived.

Of course, the employment variable depends on the establishment size. If they are used as the regressand, they must be explained by the number of employees as a proxy for the establishment size; otherwise, the absolute number of hirings, firings, resignations and churning must be divided by the number of employees.

An employment change rate results. Both approaches make sense. In the second case, it is assumed that the control variables influence not only the changes but also the firm size.

Our specifications are based on theoretical approaches from the literature and extended by further variables (see Section 2). The specifications are estimated wave by wave or as pooled regressions. In the latter case, cluster robust standard errors have been determined to consider broad company dependence. Alternatives are panel estimates. Breusch–Pagan tests show whether unobserved panel effects are revealed. The random effects approach is preferred because some of the control variables are broadly time-invariant.

In the last step, we carry out robustness tests. The objective is to discover whether specific characteristics and events influence the employment behaviour of companies. For this purpose, the sample is split, and we prove whether the results are stable or whether a heterogeneous outcome follows. We investigate

- where the number of recruitments is lower than that of layoffs - Table 7,
- which determinants are important for employment development in companies where the number of recruitments exceeds that of layoffs (and employee resignations) - Table 7,
- the reasons why the number of employees at the end of our waves is higher than that of our first wave and vice versa – Table 8,
- whether small companies (<=20 employees, 21 to 100 employees –Table 8) have reacted differently in their employment behaviour during the pandemic compared with all firms,
- whether the employment behaviour during the second lockdown period differs from that in all waves (wave 8 to 13 or wave 5 to 17) – Table 8, and
- whether companies adjusted their employment behaviour when vaccinations against the coronavirus were started and carried out (>= wave 8) – Table 8.

The allocation of breakdowns of the BeCovid sample to waves shows that there are overlaps. This means that no strict separations are possible, for example, between testing and vaccination effects. Therefore, we must exercise caution in interpreting some effects.

5. Descriptive statistics

Twenty-three waves of BeCovid are available starting in August 2020 and ending in May 2022. Our empirical analysis includes 21 waves. The first two waves are neglected because the definition of the variables differs from that in the following waves (Bellmann et al., 2022). The number of companies varies from wave to wave, although the core is the same. The total number is 27,195. Table 4 reveals information on the range of the dependent and possible control variables. Most of the latter are dummies. A summary of our central employment data is presented. For example, in Line 1, we find the average number of recruitments per wave and company (mean=1.04) at a standard deviation of 3.45. Not more than 203 employees were hired in a single firm in the total period.

Table 4: Descriptive statistics of dependent and control variables

Analogously, the data can be interpreted for fired workers and for those who have quit their jobs. One picture is clear: On average, fewer workers are fired than hired, but more have quit at a high standard deviation.

Compared with the period before the pandemic (Dettmann et al., 2021, p.147, 7.8-12.9 percent 2010-2020), we find that the churning rate (=churning/firm size) is lower (1.86 percent). Employers and employees try to reduce employment exchange due to strong uncertain development.

We observe strong fluctuations with remarkable outliers. The latter are not always detected for the same wave: new hires in wave 9, dismissals in wave 4, resignations in wave 13 and churning in wave 9. One reason might be the variability of the sample size from wave to wave. However, no clear allocation supports this idea. Observed or unobserved events may be responsible. For hiring and churning, the outliers in wave 9 may be explained by the beginning of the second lockdown in wave 8. This hint is not sustainable for the outliers of dismissals and resignations. The correlations between our employment variables are presented in Table 5.

Table 5: Correlations between employment variables

This means that all four employment variables are positively correlated. In particular, firm size is responsible for this result. Further influences must be considered.

6. Panel estimates

We estimate pooled and panel regressions with classical and cluster robust standard errors. In Table 6, only panel estimates with cluster robust standard errors are presented. Breusch-Pagan tests support this decision—cf. Table 6, line Prob > chibar2. They show significant unobserved panel effects with one exception. The results with the other three methods are similar. Therefore, we waive further discussion and focus on recruitment.

Table 6: Random effects panel estimates of different employment variables

First, we compare the hypotheses in Table 1 with the outcome of Table 6 of STW and WFH. Several hypotheses are confirmed. STW significantly reduces the hiring of new workers (H1), avoids involuntary layoffs, and makes workers significantly less ready to quit (H3). Since the effect of STW on involuntary layoffs is insignificant, we conjecture that STW is successful in avoiding a hike in

involuntary layoffs during the pandemic (H2). Short-time work is a signal that no permanent employment effects are expected. Both labour market sides are cautious in their adjustments. This confirms the results of former studies that analysed the effects during the Great Recession (Hübler, 2010).

The coefficient of WFH has the expected sign, but no significant WFH effects on hiring could be detected by our estimates in contrast to H5 and to the pooled estimates (not in the Tables). This might be due to the different possibilities of WFH across industries. Additionally, employers and employees do not always have the same interests in WFH. This cannot be the whole story because resignations and layoffs adjust with respect to WFH changes and are in line with the hypotheses. If employers and employees do not agree on their home-office strategy, employees tend to leave the company. The churning effects are mainly driven by hiring behaviour.

Overall, STW and WFH have reverse effects on employment with respect to recruitment. We expect that the former weakens the longer this instrument lasts, according to what we know from the German reunification (Hübler, 1997). The latter effects are less clear. Positive and negative effects can compensate for each other. On the one hand, more unpaid overtime work is observed with WFH (Bellmann and Hübler, 2020, Federation of German Unions, 2022). This means that fewer employees are required for the same output. On the other hand, the incidence of WFH is higher among skilled workers who are more in demand than among unskilled workers. The instrument of WFH is widespread during the pandemic, but its application in the future is open. In some sense, both measures are complementary from a short- and long-run perspective. Neither instrument seems relevant for layoff behaviour.

The specification of Column 2 in Table 6 is the same as that in Column 1, plus the interaction STW*WFH. The positive and weakly significant effect of WFH on new hires (p-value=0.055) is overcompensated by the negative interaction effect of STW*WFH (p-value=0.063). If the regressand is measured by hirings/(firm size) instead of hirings, the interaction effect STW*WFH is more obvious (p-value=0.007 – not in the Tables). H9 in Section 2 is not supported by our investigation. This can be explained as follows. Skilled and unskilled workers can participate in STW programs. During this phase, recruitment was low for both groups. During and after this time, WFH can be considered an option for employees with cognitive tasks and the absence of specific tasks that cannot be accomplished from home (Mergener, 2020, Bonin et al., 2021). Typically, these employees are qualified. In the case of STW expiring, unskilled workers are often fired, while skilled workers are not. Labour hoarding for the latter is typical. They can WFH perhaps with reduced working hours and the perspective of more hours when the economic situation improves. Thus far, STW*WFH=1 is typical for qualified employees. In other words, we expect that hiring and STW*WFH are negatively correlated, which is not compatible with H9. Skill shortage hinders the hiring of this type of labour. If the interaction is neglected, as in Column 1 of Table 6, no significant WFH effects are revealed (p-value=0.142).

In summary, the comparison of Columns 3 and 5 shows that STW has no effects on firings but has negative effects on resignations and churning. The WFH usually signals the opposite of that of STW. Our estimates do not support H9. The influence of STW and WFH does not differ fundamentally during the COVID-19 period from that during other crises.

In addition to our two variables of main interest, STW and WFH, we investigate the relevance of firm size. As expected in Section 5, the estimates confirm a highly significant influence on hiring. However, the importance is less obvious for firing and resignations, whether pure scale effects or substantial reasons are responsible, and whether large firms had a lower propensity to lay off during the pandemic. From a theoretical perspective, we can argue that in large establishments, workers are

less inclined to leave their jobs than in small firms, especially taking wages into account. This is also an empirical result in Germany, independent of the coronavirus crisis (Schasse, 1991).

Further important results are as follows:

- Increasing recruitment is observed if the impact of the pandemic is positive, and the opposite effect is revealed if the pandemic has a negative impact, which is a plausible result.
- Foreign ownership and no or low exports foster recruitment. International-oriented companies are less affected by the pandemic in their employment strategy than native firms; thus, stronger employment growth is observed.
- Firms with a high percentage of unskilled workers recruited more employees than others due to the strong mobility of this group. Firms with a high percentage of skilled people tend to engage in labour hoarding as they did during the Great Recession (Bellmann/Hübler, 2014, Hübler, 2010). They were convinced that after the COVID-19 crisis, their skill-shortage problem would increase significantly if they did not take precautions.
- Works councils dampen employment growth. Unions and especially works councils are more interested in stabilisation than an expansion of the firm size from a short- and a long-run perspective. Firms that are free of codetermination show a higher degree of employment fluctuation (Hübler, 2003). Other studies show that the churning rate is lower in firms with works councils than in others (Beckmann/Bellmann, 2002, Fackler et al., 2021). This was confirmed in our investigation.
- Among the industries, Agri(cultural), Sales, Cater(ing), Info(rmation), Econ(omic) services, Other services and Educ(ation) show that more employees were hired during the pandemic than in other sectors – cf. Table 6.

One interesting sector is Cater(ing), which was especially affected by lockdowns and short-time work. On the one hand, many employees left their jobs because they have expected only bad conditions and chances in this field in the future. On the other hand, employers were cautious in their arrangements for the future.

We should emphasise that no panel effects could be detected for resignations. It seems plausible that resignation behaviour, determined by workers, differs from hiring and involuntary layoff behaviour, which is mainly determined by the firms. Companies react faster than employees to coronavirus-related short-term changes. This is also expressed by the wave effects. In the hiring estimates, we find significant wave effects in contrast to the resignation estimates. However, we should stress that the wave effects in the layoff estimates are negligible. Companies concentrate their short-run adaptation behaviour on hiring, not firings.

7. Robustness or heterogeneity?

In Section 6, we presented a clear picture of the important influences on employment during the COVID-19 crisis. Our estimates reveal that the STW results are largely in agreement with those from studies using data before the pandemic. STW dampens short-run new hires. However, WFH effects are ambiguous. In both cases, we do not know whether the results are the same for subgroups during the pandemic. We focus our discussion on recruitment functions because, among our four employment variables, new hires are most important for further development during the COVID-19 pandemic.

We distinguish between companies that have a positive and those that have a negative growth in firm size since the beginning of the coronavirus crisis. The split follows two principles. In the first, we use only information from the first and the last wave, and in the second, the assignment is carried out wave by wave. Panel estimates under principle 2 can be found in Table 7. Four constellations of inequality are distinguished:

hirings > firings (3)	→	hirings < firings + resignations (2)
↓		↓
Hirings > firings + resignations (4)		hirings < firings (1)

Figures in parentheses indicate the columns of Table 7. We compare these results among each other and with those of Column 1, Table 6.

Table 7: Random effects panel estimates of recruitment for subgroups

The hiring dampening impact of STW is strong in expanding companies—cf. line STW and Column 3 of Table 7 and Column 1 of Table 8, respectively. If resignations are also considered—see Column 4 of Table 7—the dampening impact is weaker and only slightly significant. We suppose that resignations are not completely considered in STW behaviour but rather replaced by new hires if possible.

Table 8: Random effects panel estimates of recruitment for further subgroups

No effect can be observed in shrinking firms—cf. Column 1, line STW of Table 7. Alternative estimations analogous to Column 1 of Table 8 are not possible because the number of observations is too low. It should be noted that among the firms with hirings<firings, a negative employment effect by resignations results with respect to new hires. Firms try to use STW as long as possible. However, employees rate the economic situation as unfavourable and, therefore, leave the firm. Such a situation is likely the preliminary stage of layoffs.

No specific result of STW could be detected for small firms with 21 to 100 employees compared with the estimates in Columns 2–4 of Table 7. The effect is highly significant, and the sign of the STW coefficient is the same. For firms with 20 or fewer employees, the result is similar—not presented in the Tables—although the absolute estimated coefficient is definitely smaller. If we restrict the estimation to the lockdown phase—cf. Table 8, Column 3—and if we split between the pre-vaccination and the vaccination phase—cf. Table 8, Column 4 and 5—no peculiarities appear. The sign of the coefficient and significance is the same for these three estimates. However, we should emphasise that the absolute effect in Column 4 (-0.516) is larger than in Columns 3 and 5 (-0.249 and -0.344, respectively). This means that in the early stages of COVID-19, the negative recruitment effect was larger than in later stages. Whether this is due to lockdown and vaccinations appear doubtful. We hypothesise that in later phases of COVID-19, expectations about further development were less uncertain than in early phases. Therefore, the firms were more cautious than in the beginning. They were more reserved at recruitment.

We can conclude that in the short run, STW is a successful instrument for bridging current problems but only for companies that have good economic perspectives, insofar our outcome in Section 6 is not robust for all companies during the COVID-19 crisis.

The evaluation of WTH differs. In Section 6, we found that this instrument has no clear influence on hiring behaviour, with a tendency towards more employment if firms allow WTH, if employees are ready for WFH and if this is possible from a technical perspective. Now, we look at the estimates for specific subsamples analogously to STW. By and large, the results are robust. Two exceptions should be mentioned. First, establishments that have more employees hired in a wave than fired plus resignations show slightly significant and positive employment effects if WTH is usual and the estimated coefficient (Column 4, line WFH in Table 7: 0.343) is five times larger than that of all establishments (Column 1, line WFH in Table 6: 0.07). The second exception, we found, is for establishments with 21–100 employees. In this case, the hiring effect of WTH is negative and

significant at a 5 percent level—cf. Table 8, Column 2, line WFH. In summary, WTH had no clear positive or negative impact on new hires from August 2020 to May 2022. The situation for small firms is worse in this context, while expanding firms are favoured with respect to growth.

Apart from our two major interests, we should mention some secondary results:

- During lockdown works councils had no influence on recruitments. This is interesting because for other subgroups (cf. Table 8, Column 2), in other phases (cf. Table 8, Columns 5) and in other fields (cf. e. g. Table 8, Column 1; Heywood et al. 2017, Jirjahn 2009) the importance is obvious. It seems that during lockdown positive and negative recruitment effects have compensated each other.
- In small firms, apprenticeship training reduces new hires, while in expanding companies, there is no impact.
- Exports reduce the employment in growing companies, while during the lockdown, no such effects could be shown, line export.
- Establishments with a high share of unskilled workers favour the growth of firm size, while this could not be observed during the lockdown.
- During the vaccination period, in contrast to the pre-vaccination period, we find a recovery of the employment level in hotels and restaurants (Cater), education (Educ), wholesale and retail, maintenance (Sale), and other services. For the construction sector (Constr), the finance and insurance sector (Finance), the transportation and storage sector (Transp) and interest groups, especially advocacy groups (Advoc), the estimations do not show obvious differences between these two periods.

By and large, the subgroup analysis has shown that the results of subgroups are robust compared with those for the total economy. However, some estimates reveal a different picture; in other words, the COVID-19 crisis has yielded winners and losers.

8. Conclusions

The COVID-19 pandemic's first impact on the labour market was the adoption of STW and other job retention schemes at an unprecedented level. This raises the question of the extent to which the associated and intended locking-in of employees decreases the job chances of new entrants to the labour market and those employees recently laid off. Using a comprehensive empirical approach to investigate the effects of STW on hiring, firings, resignations and churning, we are also able to include WFH as the second characteristic of the pandemic. With the newly generated BeCovid data, we are able to control for a bundle of observed establishment-level variables. The high-frequency establishment-level data allow the estimation of panel analysis models for 21 waves. The results corroborate expectations about the unintended side effects of STW and WFH. As policymakers intend, a hike in involuntary layoffs could be avoided. Therefore, WFH usually exhibits opposite but not always significant signs of the regression coefficients compared to STW; that is, STW reduces hiring and resignations, but WFH increases resignations. Thus far, the impact of STW and WFH provides a similar picture during the COVID-19 pandemic as in other periods. Finally, interactions between STW and WFH are negatively correlated with hiring. Thus, after STW expires, qualified employees perform cognitive tasks that can be accomplished while WFH is hoarded, perhaps with reduced working time but good perspectives for when the economic situation improves. Despite the negative impact of STW on churning, which shows that STW contributes to labour hoarding by means of a lock-in effect, the use of WFH options by qualified employees leads to a change in the qualification structure of establishments allowing employees to WFH.

As Cortes and Forsythe (2022) show that the pandemic has exacerbated pre-existing inequalities. Therefore, further research requires more detailed information about the individuals being hired or laid off or switching jobs. This can be obtained from the matching of BeCovid data and administrative

records on STW and full employment biographies (vom Berge et al., 2021). These data will come in for the period after the pandemic, opening up avenues for fruitful research. An example could be the estimation of wage and job tenure functions that include individual and establishment effects (Cornelißen and Hübler, 2011).

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Table 1: Hypotheses about the impact of the variables of main interest on various labour demand variables

	Independent variable	
Dependent variable	**STW**	**WFH**
Hirings	- (H1)	+ (H5)
Involuntary layoffs	0 (H2)	- (H6)
Quits	- (H3)	+ (H7)
Churning	- (H4)	+ (H8)

Remark: In parentheses reference is made to the hypotheses H1-H8 developed in section 2 of this paper.

Table 2: Definition and measurement of dependent variables

Variables	**Definition**	**Scale**
Hirings (H)	Number of hirings during the last three weeks	discrete
Firings (F)	Number of dismissals during the last three weeks	discrete
Quits (Q)	Number of quits during the last three weeks	discrete
Churning (C)	H+F+Q - |H-F-Q|	continuous

Table 3: Definition and measurement of control variables

Variables	Definition	Scale
Firm size	Number of employees at present according to respondent	discrete
Small	=1, if size of establishment <= 10 employees	dummy
Unskilled	Number of employees for menial jobs	discrete
Apptrain	=1, if establishment is currently training apprentices	dummy
Export	=1, if establishment is an exporting establishment	dummy
Foreign	=1, if establishment is in foreign ownership	dummy
Impac_neg	=1, if the Covid-19 crisis is currently having predominantly negative effects or roughly equal negative and positive effects to the establishment	dummy
Impac_pos	=1, if the Covid-19 crisis is currently having predominantly positive economic effects or roughly equal negative and positive effects to the establishment	dummy
STW	=1, if establishment has employees currently working short-time	dummy
Woco	=1, if establishment has a works council	dummy
WFH	=1, if remote working is an option at principle	dummy
Industry		
Agric	=1, if agriculture and forestry, mining/enery/water	dummy
Constr	=1, if construction industry	dummy
Sale	= 1, if wholesale and retail, maintenance	dummy
Transp	=1, if transportation and storage	dummy
Cater	=1, if catering industry	dummy
Info	=1, if information and communcation	dummy
Finance	=1, if finance- and insurance services	dummy
Econ services	=1, if economic/scientific services, liberal professions	dummy
Advco	=1, if advocacy groups	dummy
Other services	=1, if other not mentioned services	dummy
Educ	=1, if education, health and social services	dummy

Table 4: Descriptive statistics of dependent and control variables

Variable	Obs	Mean	Std. dev.	Min	Max
Hirings	27,195	1.044457	3.448042	0	203
Firings	26,349	.254393	1.692371	0	88
Quits	18,730	2.096476	25.44382	0	1615
Churning	18,730	1.456594	5.524221	0	406
Firm size	27,195	77.78191	185.0781	1	6509
Unskilled	27,195	12.69428	51.40158	0	2450
Apptrain	27,195	.5003493	.5000091	0	1
Export	27,195	.1162714	.320556	0	1
Foreign	27,195	.0547895	.2275731	0	1
Impac_neg	27,195	.6920022	.4616741	0	1
Impac_pos	27,195	.3328921	.4712569	0	1
STW	27,195	.1933444	.3949279	0	1
Woco	27,195	.2097077	.4071074	0	1
Industry					
Agric	27,195	.023497	.1514784	0	1
Constr	27,195	.0801986	.2716054	0	1
Sale	27,195	.1940063	.395441	0	1
Transp	27,195	.034749	.1831469	0	1
Cater	27,195	.0462217	.2099688	0	1
Info	27,195	.0300791	.170808	0	1
Finance	27,195	.021401	.1447196	0	1
Econ services	27,195	.1746645	.3796868	0	1
Advoc	27,195	.02107	.1436205	0	1
Other services	27,195	.0280199	.1650326	0	1
Educ	27,195	.175547	.3804413	0	1
Small	27,195	.3081817	.4617505	0	1
WFH	27,195	.6393822	.4801886	0	1
Wave	27,195	12.22809	5.290516	3	23

Data Source: IAB-BeCovid

Table 5: Correlations between employment variables

	Hirings	Firings	Quits	Churning
Hirings	1.0000			
Firings	0.3667*	1.0000		
Quits	0.1273*	0.0351*	1.0000	
Churning	0.9016*	0.2931	0.1481*	1.0000

*Data Source: IAB-BeCovid. *** $\alpha \leq 0.001$; ** $\alpha \leq 0.01$;* $\alpha \leq 0.05$*

Table 6: Random effects panel estimates of different employment variables

Variable	Hirings	Hirings with STW*WFH	Firings	Quits	Churning
Firm size	0.007***	0.007***	0.391	-0.016	0.014***
Apptrain	-0.005	-0.004	-0.058	1.750**	0.082
Export	-0.332***	-0.329***	-0.118*	-1.006	-0.676***
Foreign	0.486***	0.482**	0.427**	3.053	0.721*
Impac_neg	-0.120**	-0.121**	0.074**	0.839	0.010
Impac_pos	0.109*	0.109*	-0.007	-1.113*	-0.034
STW	-0.408***	-0.308***	0.002	-2.265*	-0.467***
Woco	-0.299*	-0.300*	-0.094	4.287**	-0.520*
Unskilled	0.006*	0.006*	0.006**	0.049**	0.386+
Industry					
Agric	0.358**	0.361**	0.053	9.450	0.348
Constr	0.060	0.061	0.100	-0.407	0.026
Sale	0.180**	0.180**	-0.008	0.948	0.359*
Transp	0.314	0.310	0.034	0.754	0.485
Cater	0.362***	0.343***	0.033	0.917	0.520**
Info	0.209*	0.205*	-0.048	-0.927	0.204
Finance	-0.147	-0.155	-0.022	8.951	-0.783*
Econ services	1.284***	1.283***	0.713***	1.778*	1.943***
Advo	0.034	0.029	-0.033	-0.899	0.146
Other services	0.240**	0.236**	0.013	2.160	0.446*
Educ	0.383***	0.382***	-0.025	0.451	0.893***
Wave					
4	-0.319*	-0.319*	0.032	-2.293	-0.379
5	-0.531***	-0.531***	0.040	-3.972	-0.903***
6	-0.509***	-0.510***	0.054	-3.179	-0.736**
7	-0.432**	-0.434**	0.066	-3.628	-0.672*
8	-0.683***	-0.687***	0.045	-2.289	-0.810**
9	-0.576***	-0.577***	-0.047	-2.801	-0.870**
10	-0.489***	-0.492***	-0.001	-0.765	-0.628*
11	-0.576***	-0.579***	-0.017	-2.890	-0.720**
12	-0.551***	-0.554***	-0.017	-4.058	-0.910***
13	-0.436**	-0.438**	0.014	-3.069	-0.754**
14	-0.507***	-0.509***	0.006	-4.049	-0.912***
15	-0.829***	-0.831***	0.069	-3.835	-0.527
16	-0.526***	-0.527***	-0.020	-3.703	-0.667*
17	-0.318*	-0.319*	0.401+	-4.331	-0.459
18	-0.512***	-0.513***	0.009	-3.695	-0.684*
19	-0.616***	-0.616***	-0.010	-3.223	-0.839**
20	-0.755***	-0.756***	-0.013	-4.261	-1.115***
21	-0.584***	-0.587***	-0.018	-4.109	-0.842**
22	-0.669***	-0.671***	-0.008	-4.544	-0.853**
23	-0.649***	-0.650***	0.105	-2.843	-0.871*
Small	-0.705***	-0.704***	-0.240***	-1.304**	-0.718***
WFH	0.070	0.103	-0.058	1.624***	0.061
STW*WFH		-0.157			
_cons	1.034***	1.017***	0.150*	3.147	1.056**
N	27195	27195	26499	18730	18730
Rho	0.5571	0.5569	0.6887	0.6939	0.7752
Wald chi2	1721.69	1734.92	247.61	128.09	749.37
Chibar2(1)	2793.16	2789.08	2609.37	0.00	832.53
Prob > chibar2	0.0000	0.0000	0.0000	0.4846	0.0000

Table 7: Random effects panel estimates of recruitments for subgroups

Variable	Firings > Hirings	Hirings < Firings + Quits	Firings < Hirings	Hirings > Firings +Quits
Firm size	0.005	0.007***	0.009***	0.007***
Apptrain	0.045	0.049	-0.140	-0.185
Export	-0.607**	-0.367*	-0.487***	-0.348*
Foreign	0.335	0.487*	0.691***	0.658*
Impac_neg	0.041	-0.121	-0.180*	-0.209
Impac_pos	0.013	0.141*	0.114	0.142
STW	-0.141	-0.456***	-0.623***	-0.569*
Woco	-0.831*	-0.320*	-0.499***	-0.470*
Unskilled	0.011*	0.007	0.005	0.008**
Industry				
Agric	0.008	0.570**	0.378	-0.034
Constr	-0.092	0.112	-0.036	-0.165
Sale	-0.026	0.237*	0.157	0.132
Transp	-0.179	0.278	0.448	0.551
Cater	0.115	0.303**	0.726***	1.005***
Info	0.343	0.365**	0.021	-0.155
Finance	-0.119	0.133	-0.693*	-0.262
Econ services	1.593***	1.681***	2.035***	1.559***
Advoc	0.194	0.180	-0.249	-0.429
Other services	-0.224	0.196	0.237	0.504
Educ	-0.073	0.354*	0.332*	0.473*
Wave				
4	-0.133	-0.185	-0.572*	-1.078*
5	-0.123	-0.441**	-1.098***	-1.537**
6	0.201	-0.298	-1.158***	-1.939***
7	0.058	-0.081	-0.931**	-1.968***
8	-0.294	-0.423*	-1.389***	-2.502***
9	-0.229	-0.213	-1.244***	-2.505***
10	0.079	-0.170	-1.105***	-2.354***
11	-0.161	-0.154	-1.240***	-2.662***
12	0.040	-0.152	-1.267***	-2.652***
13	-0.240	-0.004	-1.058***	-2.420***
14	0.026	-0.032	-1.198***	-2.719***
15	0.197	-0.551**	-1.740***	-2.822***
16	0.261	0.097	-1.327***	-2.929***
17	0.196	0.318	-0.986***	-2.493***
18	0.167	-0.077	-1.304***	-2.569***
19	0.080	-0.105	-1.476***	-2.967***
20	-0.038	-0.124	-1.745***	-3.378***
21	-0.176	-0.024	-1.413***	-2.943***
22	0.456	-0.101	-1.638***	-3.154***
23	0.157	-0.016	-1.562***	-3.220***
Small	-0.221*	-0.649***	-0.837***	-1.013***
WFH	0.016	-0.039	0.098	0.343*
_cons	0.139	0.637**	2.222***	3.419***
N	2123	12794	13916	6253
Rho	0.8158	0.5582	0.5581	0.4959
Wald chi2	82.81	1007.90	753.54	453.11

*Data source: IAB-BeCovid . *** $\alpha \leq 0.001$; ** $\alpha \leq 0.01$; $\alpha \leq 0.05$. Table 2 and Table 3 provide detailed explanations of all variables*

Table 8: Random effects panel estimates of recruitments for further subgroups

Variable	Growth company	21-100 employees	Lockdown: w8-w13	No vaccinations: wave < 8	Vaccinations: wave > 8
Firm size	0.007***	0.017***	0.007***	0.005**	0.007***
Apptrain	-0.002	-0.240***	-0.090	-0.021	0.013
Export	-0.345***	-0.199**	-0.189	-0.431*	-0.258**
Foreign	0.502***	0.394**	0.537**	0.601*	0.466**
Impac_neg	-0.131*	-0.133**	-0.140*	-0.051	-0.120*
Impac_pos	0.138**	0.134**	0.186**	0.050	0.105*
STW	-0.436***	-0.446***	-0.249***	-0.516***	-0.344***
Woco	-0.320**	-0.277***	-0.138	-0.007	-0.345**
Unskilled	0.009**	0.018***	0.006	0.008	0.006*
Industry					
Agric	0.365**	0.117	0.334*	0.303	0.347**
Constr	0.042	0.058	0.252*	-0.118	0.092
Sale	0.183**	0.136*	0.214*	0.138	0.174**
Transp	0.289	0.044	0.326	-0.160	0.403
Cater	0.359***	0.389**	0.091	0.172	0.349***
Info	0.234*	0.316**	0.213	0.277	0.191*
Finance	-0.046	-0.108	0.118	0.054	-0.123
Econ services	1.323***	1.290***	1.100***	1.656***	1.205***
Advoc	0.052	0.159	0.161	0.064	0.049
Other services	0.237**	-0.093	0.261*	-0.002	0.265**
Educ	0.338***	0.097	0.456***	0.314	0.385***
Wave					
4	-0.248*	-0.198	(empty)	(base)	(empty)
5	-0.459***	-0.480***	(empty)	-0.331**	(empty)
6	-0.489***	-0.228	(empty)	-0.578***	(empty)
7	-0.335*	-0.366**	(empty)	-0.575***	(empty)
8	-0.580***	-0.361**	(empty)	-0.531***	(empty)
9	-0.667***	-0.541***	-0.084	(empty)	-0.035
10	-0.407**	-0.391***	(omitted)	(empty)	0.068
11	-0.473***	-0.167	0.082	(empty)	0.150
12	-0.479***	-0.331**	0.007	(empty)	0.077
13	-0.335*	-0.222	0.002	(empty)	0.101
14	-0.414**	-0.343**	0.047	(empty)	0.205
15	-0.789***	-0.575***	(empty)	(empty)	0.138
16	-0.434**	-0.129	(empty)	(empty)	-0.176
17	-0.194	-0.004	(empty)	(empty)	0.124
18	-0.413**	-0.389**	(empty)	(empty)	0.331*
19	-0.525***	-0.364**	(empty)	(empty)	0.137
20	-0.698***	-0.633***	(empty)	(empty)	0.032
21	-0.499***	-0.477***	(empty)	(empty)	-0.108
22	-0.611***	-0.487*	(empty)	(empty)	0.062
23	-0.446	-0.250	(empty)	(empty)	-0.021
Small	- 0.750***	(empty)	-0.634***	-0.876***	-0.690***
WFH	0.067	-0.136*	0.001	0.123	0.040
_cons	0.998***	0.454**	0.410**	1.099***	0.406**
N	22443	9562	10608	5599	21596
Rho	0.5731	0.4891	0.4966	0.6535	0.5384
Wald chi2	1668.95	.	.	.	.

*Data source: IAB-BeCovid . *** α ≤ 0.001; ** α ≤ 0.01; α ≤ 0.05. Table 2 and Table 3 provide detailed explanations of all variables*