Czech Kurzarbeit: Evidence from the First Pandemic Wave

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Abstract

We describe the firm-type structure of the use of the main Czech *kurzarbeit* program (called Antivirus B) during the spring 2020 pandemic wave. Evidence based on the Structure of Earnings Survey shows large participation gaps in favor of large employers, and disproportionately high intensity of use of the program by manufacturing companies, in particular those exhibiting a declining wage bill already prior to the pandemic. Compared to other industries, manufacturing is thus able to 'cover' by *kurzarbeit* support the largest share of the decline in hours worked between the 2nd quarters of 2019 and 2020, with the exception of the hospitality and culture industries, which were directly affected by pandemic measures, such as restaurant closures.

1. Introduction

Since the Great Recession, *kurzarbeit* programs have been used all over Europe to help employers retain their employees during sharp temporary declines in demand.[1] In April 2020, during the recent Covid-19 pandemic, a *kurzarbeit* program was activated for the first time in the Czech Republic, under the program title *Antivirus*. The so-called 'regime-A' of the Antivirus program supported companies (primarily in the hospitality industries and in culture) that had to shut down their operation directly due to pandemic measures, such as closures of restaurants. The 'regime-B' program was a larger, general type of *kurzarbeit* policy.

In this paper, we present an analysis of the structure and intensity of use of the main Czech *kurzarbeit* program, Antivirus B, based on the Structure of Earnings Survey (SES), which allows us to ask informative descriptive questions related to companies' past performance as well as to look within companies at the structure of changing hours of work. We establish that the SES provides a representative picture of the participation in this program and focus our analysis on the 2nd quarter of 2020. We find that large Czech companies, i.e., those with over 1,000 employees, display participation rates in the program close to 40 percent, which is about twice the level of participation among companies with fewer than 250 employees. Conditioning on industry and region in a regression analysis does not affect these size-related participation gaps. Even conditional on size, the coverage of industries varies widely. Naturally, the share of all firms in the economy that participate in the program is highest in hospitality industries and in culture. Next, high coverage rates are also found in manufacturing and several other industries. We also find that companies with over 50 employees draw support corresponding to a somewhat lower share of their pre-pandemic wage bill compared to companies with under 50 employees.

We find that manufacturing firms not only use the program with high probability, but that they use it more intensively (to cover a higher share of their wage bill) than firms from other industries. Ultimately, almost two thirds of the overall CZK support ends up in manufacturing firms. Manufacturing firms with over 250 employees represented 13 percent of work hours in Czech enterprise employment in the 2nd quarter of 2019, but they received 60 percent of the CZK support provided by the Antivirus B program in the 2nd quarter of 2020. When we express the participation of companies in terms of employee full-time equivalents supported by the program, manufacturing accounts for three quarters of the supported FTE-equivalent employment. As a result, manufacturing firms were able to support the largest share of the pandemic drop in hours from the *kurzarbeit* program, compared to employers from other industries. Specifically, hours worked dropped between the 2nd quarters of 2020 and 2019 by over 60 percent in hospitality industries, by about 40 percent in culture, while in manufacturing, hours declined by about 20 percent. In manufacturing, as well as in hospitality and culture, about a third of this drop in hours was covered by the *kurzarbeit* program. In all other industries, the share of the drop covered is substantially lower: one-fifth at the most and close to zero in several industries. We also find that firms that experienced a drop in their wage bill during 2019, until the 1st quarter of 2020, i.e., just before the pandemic hit, also participated in the program more often. This explains some of the size-related participation gap discussed above.

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[1] See Mittag and Pertold (2020) for a review of the existing literature on the pre-pandemic *kurzarbeit* programs.

2. The Czech *Kurzarbeit* Program and Our Data

According to the Czech Labor Act, employers experiencing a temporary drop in production due to external conditions can either lay off their employees (with severance pay) or can put them on temporary furlough with reduced pay. The Antivirus Program introduced by the government on April 6, 2020 allowed employers to receive government compensation equal to 60% or 80% of the labor costs associated with pandemic-related furloughs. The program was administered by District Labor Offices and provided the 80% level of support to employers who were directly affected by pandemic measures (Antivirus regime A), such as closure of restaurants or cultural events, and the lower 60% level of support to employers affected indirectly through temporary drops in demand for their output or supply of their inputs (Antivirus regime B). Almost 27 thousand employers (with 84 thousand supported employees) participated in Antivirus A during the 2nd quarter of 2020. During the same quarter, Antivirus B supported a similar number or employers, who were on average larger, and thus received support for over 340 thousand employees. Antivirus regime B thus corresponds to about 70% of the total Antivirus program outlays in the 2nd quarter of 2020.

Our analysis is based on the Czech Structure of Earnings Survey (SES), which collects information on hourly and quarterly wages and hours of work (as well as various types of absences) for all employees of a large well-defined sample of employers. We merge the survey data from the 1st quarter of 2020 (as well as earlier SES data) with the firm identity of the recipients of Antivirus support. Where available, we also add information from balance sheet data (the Czech Albertina database) on 2018 (pre-pandemic) labor productivity (value added per hour of work) and leverage (debt over equity). We study the 4,332 enterprise-sector (non-public) employers with at least 10 employees covered by the SES in 2020. Of these, 1,351 (31 percent) received support from Antivirus B in the 2nd quarter of 2020.

In the first step of our analysis, we verify that the industry and employer size structure of recipients within the SES reflects closely that in the rest of the economy.[2] This allows us to interpret our SES-based evidence (with appropriate sampling weights applied) as corresponding to the entire Czech enterprise sector (of firms with over 10 employees).

Table 1 shows the official, publicly available statistics on the number of participating employers by industry and on the industry shares on total Antivirus B CZK outlays in the 2nd quarter of 2020 (which were over 9 billion CZK). Manufacturing drew almost two thirds of the entire support. In our analysis, we ask to what extent this high share corresponds to the share of manufacturing on Czech employment, and to what extent it is due to a particularly high intensity of participation and/or use of the *kurzarbeit* program by manufacturing firms.

Comparing the structure of the SES with that of the SES support recipients, we find that employers with over 250 employees in culture, in administrative activities, in transportation, and in manufacturing have very high levels of participation: over 70 percent. We also find that employers with over 1,000 employees had participation rates of about 40 percent, which were almost twice as high as those of employers with under 250 employees. We quantify these gaps conditionally on multiple characteristics in our regression analysis in Section 4.

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[2] See Jurajda and Doleželová (2021) for these comparisons.

Table 1 Industry structure of support from the Antivirus B program, 2ⁿᵈ quarter of 2020

Industry CZ-NACE	Number of firms	Share of total CZK support (%)
A Agriculture, forestry and fishing	263	0,20
B Mining and quarrying	12	0,10
C Manufacturing	5 581	65,04
D Electricity, gas, steam and air conditioning supply	47	0,11
E Water supply; sewerage, waste management	183	0,25
F Construction	1 518	1,35
G Wholesale and retail trade; repair of motor vehicles	6 229	8,41
H Transportation and storage	1 752	7,19
I Accommodation and food service activities	2 646	3,10
J Information and communication	653	1,34
K Financial and insurance activities	180	0,29
L Real estate activities	718	0,58
M Professional, scientific and technical activities	2 297	3,07
N Administrative and support service activities	1 260	4,88
O Public administration and defense; social security	4	0,00
P Education	310	0,37
Q Human health and social work activities	2 310	2,27
R Arts, entertainment and recreation	334	0,83
S Other services activities	575	0,60
Total	26 872	100,00

3 The Structure of *Kurzarbeit* Use

3.1 Declining Hours of Work

The need for *kurzarbeit* support is clearly related to the overall drop in hours worked (by industry or employer). Declining hours of work can correspond to layoffs (or part-time reductions), to absences (paid or unpaid), and to paid furloughs compensated by the *kurzarbeit* programs. It is therefore natural to ask what share of the industry-specific decline in hours of work between the 2ⁿᵈ quarters of 2020 and 2019 is 'covered' by *kurzarbeit* support.

Table 2 shows such evidence based on the SES data. One would expect supported firms to be under more pressure to reduce overall hours of paid work. This is indeed the case in most industries. For example, manufacturing firms (NACE category C), which received support from Antivirus B, cut their hours of work by almost 30 percent (28.4 to be precise), while those that did not receive support saw their hours of work drop by under 10 percent. However, in industries directly affected by pandemic closures (hospitality and culture, NACE codes I and R), as well as in some other industries, the drops in hours are strikingly similar among supported and un-supported employers, suggesting layoffs in unsupported firms.

Table 2 Change in hours worked between 2ⁿᵈ quarters of 2020 and 2019, by participation in Antivirus A/B

Industry CZ-NACE	Firms in regime A	Firms in regime B	Firms in regime A and B	Firms with no participation
A	92,3	95,4	94,1	97,5
B	96,2	83,9	97,9	94,9
C	92,8	71,6	77,4	92,2
D	82,8	97,0	85,8	101,0
E	91,0	92,9	90,3	97,0
F	94,7	97,1	89,0	95,8
G	79,7	86,8	75,4	93,9
H	85,7	83,0	87,7	91,0
I	47,2	54,2	43,9	47,5
J	82,7	92,1	60,5	102,7
K	98,6	89,8	86,9	98,4
L	85,4	98,7	81,4	98,1
M	83,1	87,2	74,5	98,0
N	64,1	68,4	59,8	80,7
O	92,9	*	*	97,4
P	100,1	92,6	103,0	98,8
Q	91,5	81,7	71,0	95,3
R	65,5	78,3	52,1	83,2
S	79,2	74,3	85,3	96,6

Note: For Industry Codes (CZ-NACE), see Table 1. * denotes no participating firms.

Figure 1 shows the structure of the industry-specific drop in hours worked (from Table 2); it decomposes the overall drop into absences, absences supported by Antivirus A or B, and the rest, i.e., reductions in contracts or layoffs. It is not surprising that the largest drop in hours worked occurred in the hospitality industries (NACE code I). Almost one half of this large drop corresponds to increasing absences, i.e. continued employment without work hours. Under 30 percent of the overall decline in hours corresponds to absences supported from Antivirus programs A or B (primarily A in this case). The situation in culture (R) is similar. With regard to manufacturing (C), the overall drop in hours worked is just under 20 percent (similar to Other activities (S) and Administrative activities (N)). However, manufacturing was able to support almost one third of its decline in hours worked from Antivirus (primarily B). Only culture and hospitality are similarly successful (from Antivirus A). The other most successful industries (Transportation (H), Other activities (S)) are able to cover one fifth of their hours decline from *kurzarbeit* sources. At the other extreme, in Administrative activities (N), hours decline strongly, but Antivirus support is limited, and thus layoffs and contract reductions are large.

Figure 1 The structure of the drop in hours worked between 2nd quarters of 2020 and 2019 by industry (NACE)
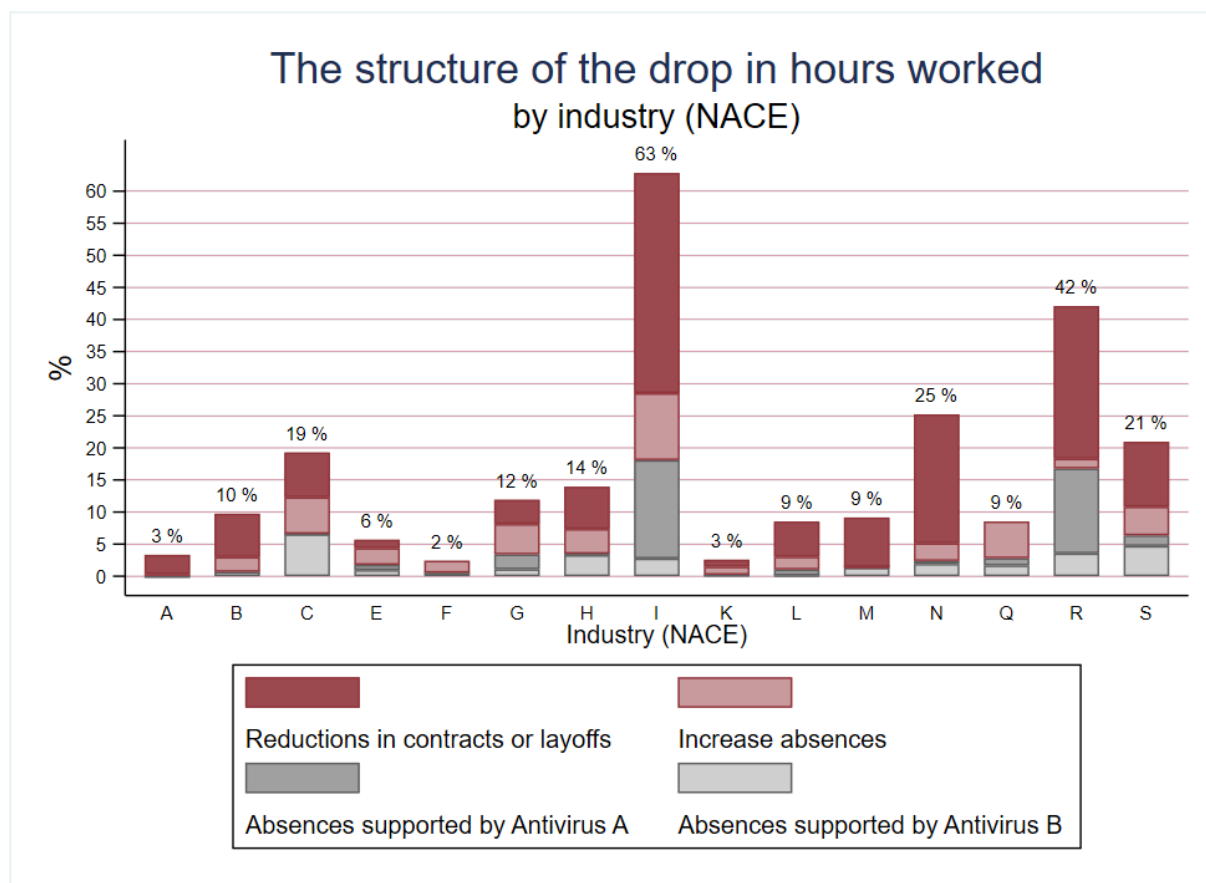
Note: For Industry Codes (CZ-NACE), see Table 1.

3.2 Part-time Use of *Kurzarbeit*

To understand the extent of program coverage, it is useful to know not only the total number of employees supported, but also the corresponding full-time-equivalent number, i.e. the sum of part-time furlough supported, expressed in full-time-contract counts. To answer this question, we use the SES data to approximate the employee-specific share of full-time contracts supported by the Antivirus B program.[3] This also allows us to address the question of whether the high share of the manufacturing industry on total *kurzarbeit* support (Table 2) is in part due to manufacturing firms asking for support for a larger share of employee contracts (higher number of days of support per week) than employers from other industries.

Table 3 shows the FTE structure of employee support by industry. In total, Antivirus B supported over 340 thousand employees, and this support adds up to about 80 thousand supported full-time employment contracts over the 2nd quarter, i.e., firms, on average, asked for about one-fourth of their employee contracts to be supported from the *kurzarbeit* program.

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[3] See Jurajda and Doleželová (2021) for details of the approximation procedure, which adds up close to correct aggregates of support at the firm level.

Table 3 The full-time-equivalent count of employees supported by Antivirus B in the 2ⁿᵈ quarter of 2020, by industry and firm size (employment)

Industry CZ-NACE	Employer size according to number of employees				
	10-49 employees	50-249 employees	250-999 employees	over 1000 employees	Total
A	5	5	*	*	10
B	0	*	73	44	117
C	2 620	8 757	20 086	27 957	59 420
D	*	28	43	21	92
E	87	181	21	67	356
F	228	146	48	119	541
G	1 822	676	644	331	3 473
H	1 423	1 262	1 202	2 387	6 274
I	471	382	552	289	1 694
J	387	213	71	91	762
K	24	47	34	27	132
L	14	8	2	*	24
M	244	670	235	13	1 162
N	76	1 061	668	848	2 653
O	*	*	*	*	*
P	18	14	10	160	202
Q	528	407	627	15	1 577
R	3	120	208	284	615
S	1062	102	22	*	1 186
Total	9 012	14 079	24 546	32 653	80 290

Note: For Industry Codes (CZ-NACE), see Table 1. * denotes a data cell where there were no additional absences in the 2ⁿᵈ quarter 2020 relative to a year earlier or no recipient of *kurzarbeit* support. In this analysis, one full-time contract corresponds to 3 months (a quarter) of work.

Table 3 implies that medium-sized and large manufacturing firms received 60% of the support when support is expressed in full-time equivalents. This is close to their overall share on the CZK aggregate Antivirus B outlays. For comparison, these firms corresponded to 13 percent of hours worked in the enterprise sector, and thus their support is almost 5 times higher than their employment share. Overall, manufacturing corresponds to three quarters of the total number of supported full-time equivalents.

4. Regression Analysis of Program Participation and Intensity of Use

In this section, we simultaneously quantify the association of several firm characteristics with the probability of participating in Antivirus B and with the intensity of use of the program measured as the share of the firm's pre-pandemic wage bill covered by the program. Our first step is to regress the indicator for program participation (in 2ⁿᵈ quarter of 2020) on company size (employment), industry, region, and on the share of secondary- and tertiary-educated employees.[4] We then additionally control for the presence of a collective agreement (at the company or industry level) and for pre-pandemic leverage and productivity. Table 4 presents

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[4] We present least squares regressions, but obtain near-identical findings based on the Logit model.

the coefficient estimates. Company size has a strong association with program participation, and the conditional participation gaps reported in Table 4 are similar to unconditional gaps reported in Section 2. Firms with over 1,000 employees have a 40 percentage point higher probability of participating compared to firms with under 50 employees. These are very large gaps against the average participation rate of 31 percent. Firms in most industries were less likely to draw support than manufacturing firms; the main exceptions are the directly affected hospitality and culture industries. The higher share of college-educated employees is associated with lower probability of participation, as are higher productivity and leverage. Regional location and collective agreements do not predict program participation.

Table 4 Probability of Antivirus B participation, least squares estimates with robust standard errors

Explanatory variable	Model			
	(1)	(2)	(3)	(4)
Company size (relative to 10-49 employees)				
50-249 employees	0,145***	0,170***	0,146***	0,166***
250-999 employees	0,325***	0,323***	0,325***	0,316***
over 1000 employees	0,408***	0,405***	0,405***	0,395***
CZ-NACE (relative to Manufacturing)				
A Agriculture, forestry and fishing	-0,331***	-0,325***	-0,322***	-0,328***
B Mining and quarrying	-0,189*	-0,144	-0,187*	-0,150
D Electricity, gas, steam and air conditioning supply	-0,268***	-0,257***	-0,270***	-0,263***
E Water supply; sewerage, waste management.	-0,283***	-0,264***	-0,284***	-0,267***
F Construction	-0,231***	-0,202***	-0,223***	-0,203***
G Wholesale and retail trade; repair of motor vehicles	-0,013	-0,020	-0,014	-0,017
H Transportation and storage	0,021	0,039	0,029	0,039
I Accommodation and food service activities	0,382***	0,429***	0,382***	0,431***
J Information and communication	-0,257***	-0,267***	-0,258***	-0,263***
K Financial and insurance activities	-0,311***	-0,234***	-0,311***	-0,230***
L Real estate activities	-0,209***	-0,223***	-0,210***	-0,222**
M Professional, scientific and technical activities	-0,157***	-0,068	-0,158***	-0,066
N Administrative and support service activities	-0,050	-0,074	-0,050	-0,069
O Public administration and defense; social security	-0,357*	0,002	-0,356*	-0,000
P Education	-0,103	-0,204*	-0,104	-0,203*
Q Human health and social work activities	-0,059	0,146**	-0,060	0,143**
R Arts, entertainment and recreation	0,241***	0,309***	0,240***	0,313***
S Other services activities	-0,129**	0,284**	-0,130**	0,286**
Region (relative to Hl. M. Praha)				
Středočeský	-0,064*	-0,026	-0,064*	-0,026
Jihočeský	-0,036	-0,010	-0,036	-0,012
Plzeňský	0,008	0,033	0,008	0,033
Karlovarský	0,073	0,119	0,073	0,118
Ústecký	0,005	0,044	0,005	0,042
Liberecký	0,028	0,055	0,027	0,054
Královéhradecký	0,014	0,073	0,013	0,071
Pardubický	-0,018	-0,002	-0,018	-0,004

Jihomoravský	-0,028	-0,024	-0,028	-0,026
Vysočina	0,029	0,046	0,029	0,045
Olomoucký	0,044	0,046	0,044	0,044
Moravskoslezský	-0,015	0,020	-0,016	0,018
Zlínský	0,043	0,103*	0,043	0,103*
Share of secondary-educated employees	0,042	-0,034	0,043	-0,036
Share of tertiary-educated employees	-0,255***	-0,307***	-0,255***	-0,308***
Collective agreement *(yes)*	-0,002	-0,017		
Leverage *2018*		-0,144**		-0,142**
Labor productivity *2018*		-0,0001*		-0,0001*
Higher-level collective agreement			-0,020	-0,011
Constant	0,391***	0,440***	0,392***	0,441***
N	3 972	2 862	3 972	2 862
Prob > chi2	0,000	0,000	0,000	0,000
R^2	0,210	0,201	0,210	0,201

* p < 0,05, ** p < 0,01, *** p < 0,001

We also estimated a regression of the type presented in Table 4 only based on manufacturing companies. The size effects were similar to those in Table 4. The automobile industry is the sub-manufacturing group that has the highest program participation rates, conditional on all other controls.

Next, Table 5 presents similar regressions but based only on recipients of support. In Table 5, the outcome variable is the share of the pre-pandemic (1st quarter 2020) wage bill that is covered by Antivirus B in the 2nd quarter of 2020. We find that companies with over 50 employees draw support that is about 6 percent lower (expressed in wage bill shares) than companies with fewer than 50 workers. Firms with a high share of a college-educated workforce draw funding less intensively (again, as expressed in wage bill shares).

Table 5 The share of the firm pre-pandemic wage bill covered by Antivirus B, least squares estimates with robust standard

Explanatory variable	Model	
	(21)	(22)
Company size (relative to 10-49 employees)		
50-249 employees	-0.057***	-0.057***
250-999 employees	-0.057***	-0.059***
over 1000 employees	-0.063***	-0.067***
CZ-NACE (relative to Manufacturing)		
A Agriculture, forestry and fishing	-0.048**	-0.044**
B Mining and quarrying	-0.052***	-0.055***
D Electricity, gas, steam and air conditioning supply	-0.029*	-0.032*
E Water supply; sewerage, waste management.	-0.038**	-0.039**
F Construction	-0.031*	-0.023
G Wholesale and retail trade; repair of motor vehicles	0.009	0.010
H Transportation and storage	-0.019**	-0.013
I Accommodation and food service activities	0.235***	0.235***
J Information and communication	0.031	0.031

K Financial and insurance activities	-0.040***	-0.039***
L Real estate activities	-0.008	-0.007
M Professional, scientific and technical activities	-0.008	-0.008
N Administrative and support service activities	-0.011	-0.009
O Public administration and defense; social security	-0.023	-0.027
P Education	0.044	0.042
Q Human health and social work activities	0.002	0.002
R Arts, entertainment and recreation	0.160***	0.160***
S Other services activities	0.043	0.043
Region (relative to Hl. M. Praha)		
Středočeský	-0.017	-0.016
Jihočeský	-0.010	-0.011
Plzeňský	-0.006	-0.006
Karlovarský	0.007	0.006
Ústecký	-0.008	-0.009
Liberecký	0.015	0.014
Královéhradecký	0.001	-0.000
Pardubický	-0.019	-0.020
Jihomoravský	-0.015	-0.015
Vysočina	-0.014	-0.014
Olomoucký	-0.023*	-0.024*
Moravskoslezský	-0.022*	-0.023**
Zlínský	-0.023*	-0.023*
Share of secondary-educated employees	-0.016	-0.015
Share of tertiary-educated employees	-0.083**	-0.082**
Collective agreement *(yes)*	-0.006	
Higher-level collective agreement		-0.019*
Constant	0.155***	0.155***
N	1 253	1 253
Prob > chi²	0.000	0.000
R²	0.289	0.290

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Regressions based only on recipients of support from Antivirus B.

Next, we estimate models corresponding to Tables 4 and 5 where we have additionally conditioned on the pre-pandemic evaluation of wage bills in companies. These models thus ask whether companies that had already experienced declining employment and/or wage rates before the on-set of the pandemic were more likely to receive support motivated by pandemic relief. The answer is that they were. More specifically, we measure the relationship between program participation and the company wage bill evolution between the 1st quarter of 2019 and the 1st quarter of 2020 (we obtain near-identical results when using the evaluation between the 1st and last quarters of 2019). About 15 percent of firms in the SES reports a drop in wage bills of over 10 percent in this period; 25 percent of firms reports a rise in wage bills of over 10 percent. We obtain a statistically significant coefficient of about -0.3, suggesting that a drop in the wage bill of 10 percent increases the chances of kurzarbeit support by 3 percent, i.e., by about a tenth relative to the average support probability of 31 percent. Furthermore, the

inclusion of this additional variable reduced the size coefficients reported in Table 4 by about 10 percentage points. Clearly, larger firms are more likely to receive support in part because large firms were more likely to have experienced difficulties already in 2019. As other coefficients are not materially affected, we do not report the entire estimated models. When we estimate these regressions based only on manufacturing firms, the pre-pandemic wage-bill-evolution coefficient varies between -0.4 and -0.5 across the estimated coefficients, i.e., it is substantially larger than that based on all industries. We also find similar effects when excluding from the analysis those companies that experienced a wage-bill growth during 2019.

In the next step, we add the wage-bill evolution control to specifications estimated in Table 5. The coefficient estimate is again statistically significant and negative. Its value implies that a ten percent decline in pre-pandemic wage bills is associated with one-third of a percentage point lower intensity of use (expressed in the 1st quarter 2020 wage bill share covered). These effects are thus much smaller compared to those on participation. However, controlling for pre-pandemic evolution of wage bills eliminates any size-related differences in the intensity of *kurzarbeit* use. Again, these effects are larger within manufacturing.

5. Additional Analyses

We perform three additional analyses, reported in detail in Jurajda and Doleželová (2021). First, we use a subset of about 1,000 SES firms that also answered a survey focusing on new technologies (AI, robotics, automation) in late spring 2020 (see Jurajda and Bělín, 2020, for a description of the survey). Among the recipients of Antivirus support in this SES subsample, about two thirds of firms report that Antivirus support was helpful. Within the entire robotic-survey sub-sample, recipients of support report a 6 percent higher probability that they are forced to lay off a part of their workforce, which could be due to facing stronger demand shocks. However, this association is not present when we focus on the two thirds of recipients who report that the program was helpful. While such evidence falls short of a causal analysis of program effects, it is consistent with the program having positive effects on employment.

Second, we attempt to identify quasi-random sources of variation in program participation that would allow us to study the causal impact of program support on employment. A fundamental problem with the analysis of the causal effect of *kurzarbeit* participation on employment is that more affected firms (in terms of demand drops) are more likely to apply for *kurzarbeit* support. This problem exists across industries as well as within industries. One way to avoid this issue is to look for quasi-random administrative sources of variation in support.[5] We attempted to find such variation, but were not successful. Essentially, all applicants receive support. A small subset received support with extensive delays (of about a month), but we could not uncover any relationship between the delayed support (instrumented by District Labor Office identity) and the economic outcomes of interest. Hence, this study is entirely descriptive.

Third, we estimated regressions asking about the evolution (between the 1st half of 2019 and 2020) of hours worked and of hours on paid furlough at the worker level. These regressions confirm our main analysis at the firm level reported above in that the industry differences we find are preserved when we condition on occupational structure. Next, we find that the occupational structure of changing hours of work is similar in employers that receive *kurzarbeit*

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[5] For example, if some of the District Labor Offices are faster in awarding support or less strict in evaluating applications, one can compare similar employers applying to different DLOs and receiving different support.

support and those that do not, suggesting a common structure of demand shocks. However, the occupational structure of the change in paid furloughed hours is remarkably different between employers who do and do not receive Antivirus B support. While there is a distinct occupational pattern to furloughed hours evolution within firms that do not receive *kurzarbeit* support, there are (almost) no occupational differences in the evolution of furloughed hours within firms that do receive support. This suggests that recipients spread the *kurzarbeit* hours evenly across their workers, while non-recipients selectively allocate furlough pay relative to contract reductions across occupations.

6. Conclusion

In this paper, we study the firm-type structure of the use of the main Czech *kurzarbeit* program called Antivirus B. We find that manufacturing firms, especially large ones, not only use the program with higher probability, but they use it to cover a higher share of their wage bill, compared to firms from other industries. When we express the participation of companies in terms of employee full-time equivalents supported by the program, manufacturing accounts for three quarters of the supported FTE-equivalent employment. As a result, manufacturing firms were able to support the largest share of the pandemic drop in hours from the *kurzarbeit* program, compared to employers from other industries. We also find that firms that experienced a drop in their wage bill during 2019, until the 1st quarter of 2020, i.e., just before the pandemic hit, also participated in the program more often. This explains some of the size-related participation gap discussed above. This is particularly the case in manufacturing. It is therefore likely that pre-pandemic drops in demand (as reflected in declining wage bills, particularly those of manufacturing firms) are partly compensated by the pandemic relief offered in the Antivirus B program.

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Abstrakt

V tomto článku popisujeme strukturu čerpání programu Antivirus B na jaře roku 2020, tj. programu, který měl za cíl podporovat udržení zaměstnaneckých vztahů v průběhu pandemie Covid-19. Naše analýza, založená na Informačním systému o průměrných výdělcích a ukazuje, že firmy ve zpracovatelském průmyslu, obzvláště ty s mnoha zaměstnanci, čerpala podporu častěji a intenzivněji než jiné typy zaměstnavatelů. Díky tomu také zpracovatelský průmysl pokryl programem Antivirus B větší část pandemického propadu odpracovaných hodin než ostatní odvětví. Konečně ukazujeme, že firmy, které již před nástupem pandemie vykazovaly pokles objemu vyplacených mezd, jsou častěji příjemci podpory.