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# Surviving the Corona:

How did European firms cope with the crisis? Evidence from Danish, German, and Norwegian surveys

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# 1 Introduction

The Covid-19 crisis is of unprecedented nature. In Europe, the pandemic triggered a series of lockdowns that brought many sectors of the economy to a halt, disrupting the activities of firms across different industries. The severity and duration of these lockdowns varied across countries, with some implementing strict measures to curb the spread of the virus, while others adopted more lenient approaches. Despite the differences in their responses, there was a common trend of increased public expenditures to support households and firms. These measures included direct financial assistance, tax relief, and support for furloughed workers, among others. In this report, we examine how European firms perceived and responded to the crisis.

Understanding how firms behave and adapt their expectations in a period of crisis is crucial for policymakers and economists, as it provides insights into the drivers of economic growth and the resilience of firms. By understanding how firms react to and adjust to crises, policymakers can design more effective policy responses that mitigate the impact of economic shocks on businesses and individuals. In the case of the Covid-19 pandemic, the crisis has been particularly disruptive due to its global reach and the scale of the measures taken to contain its spread. The pandemic has highlighted the vulnerability of businesses to exogenous shocks and the importance of being able to adapt and respond to changing circumstances. By examining how European firms responded to the pandemic, we can gain valuable insights into the factors that shape firms' behavior during crises and the implications for long-term growth and prosperity. Ultimately, this can inform future policy decisions aimed at improving the resilience of firms and the broader economy.

In this report, we focus on an understudied aspect of the crisis which is the perception of the crisis' effects by firms during the pandemic. There is little knowledge about how firms assessed the situation and adjusted their expectations accordingly during the different stages of the pandemic. How did firms react and adjust their behavior in the midst of the crisis? Did this alter their long term expectations and investment strategies? What were the effects of the governmental response on them? Can we see lasting effects of the crisis and could it impact long term growth? To answer those questions, we leverage and combine unique survey data from Denmark, Germany, and Norway to understand how European firms adjusted their expectations and behavior. We also study how governmental measures taken during the crisis and targeted toward firms affected firms' expectations and behaviors.

**Related Literature.** This report adds to the literature examining the impact of Covid-19 on firms. A large part of this literature documents the disruptive effects at the beginning of the pandemic, finding a large, however, dispersed decline in firms' sales Bloom, Fletcher, and Yeh (2021) and Kozeniauskas, Moreira, and Santos (2020). Accordingly, also the early response of firms, in-

cluding (temporary) closures, layoffs, and investment cuts, was found to be strong and heterogeneous along various firm characteristics Alekseev et al. (2023), Alstadsæter et al. (2020), Bartik et al. (2020b), Kozeniauskas, Moreira, and Santos (2020), and Seiler (2021). Based on firms' expectations at the end of 2020, Barrero et al. (2021) provide indications for the persistence of the pandemic-induced sales and employment reallocation. A growing body of literature also studies the effects of the various government support schemes for firms.<sup>1</sup>

A special role in the firms' responses to the pandemic is attributed to their expectations and uncertainty. Altig et al. (2020) and Baker et al. (2020) document a spike in various measures of economic uncertainty during the first months of the pandemic. Not surprisingly, Covid-19 significantly impacted firms' expectations Hassan et al. (2020) and Meyer, Prescott, and Sheng (2022). Balduzzi et al. (2020) find a strong downward revision in sales growth expectations of Italian firms, which is further amplified for credit-constrained firms. How these expectations affect firms' behavior has been elicited in a number of survey-based studies. Bartik et al. (2020a) find that predictions on the duration of the pandemic differed greatly among small U.S. businesses and that these expectations impact the likelihood for reopening or remaining open. Using the same survey, Balla-Elliott et al. (2022) show further that expectations on future demand affects firm's decisions to prolong their business closures. Using the Ifo Business Survey (IBS), Lautenbacher (2020) finds that changes in firm's business expectations at the onset of the pandemic affect their employment and investment decisions, while these decisions are unrelated to changes in uncertainty. Employing the same survey, Buchheim et al. (2022) find that, in particular, firms expecting a longer shutdown duration are more likely to react with deferrals and cancellations of investments, as well as layoffs, at the beginning of the pandemic. This report complements the existing literature, which focuses primarily on the first year of the pandemic, by tracking firms' development in three European countries over the entire course of the pandemic.

The rest of the report is organized as follows. Section 2 describes the data collection, the sample, and the questionnaires. The subsequent sections present our main results: Section 3 focuses on how firms assessed the crisis and modified their expectations; Section 4 describes how firms actually reacted and to what extent their behavior was aligned with their early expectations; Section 5 analyzes whether governmental support and institutional background affected firms' expectations and behavior; Section 6 explores dynamics and heterogeneity in terms of behavior based on the initial impact of the pandemic on firms; Section 7 provides complementary analyses for Denmark and Norway, and compares the results with Germany; and Section 8 concludes.

<sup>1</sup> For example, Bennedsen et al. (2022) study a furlough scheme in Denmark. For the employment effects of the U.S. Paycheck Protection Program see, e.g., Autor et al. (2022) and Granja et al. (2022).

## 2 The surveys

The core data come from three surveys conducted in Germany, Denmark, and Norway between October 2019 and June 2022. The sample sizes of those surveys are 10,222, 2,488, and 4,372, respectively.

**German survey.** For Germany, we use the ifo Business Survey (IBS). The IBS is a monthly, incentivized survey launched in 1949, which covers a representative sample of around 9,000 German firms in the four main sectors: manufacturing, construction, retail/wholesale, and services. The survey serves as an input for the most recognized German business cycle indicator, the ifo Business Climate Germany, and has been shown to be highly predictive for a number of further macroeconomic indicators Lehmann (2022). In the vast majority of firms, the survey is answered by individuals at the management level, such as the firm's owners, CEOs, members of the executive board, or heads of departments Sauer and Wohlrabe (2019). For a more detailed survey description see Sauer and Wohlrabe (2020).

For our analyses, we use the 33 survey waves from October 2019 to June 2022 covering in total 10,022 firms (retail/wholesale: 2,694, services: 4,059, manufacturing: 3,269) with, on average, 5,846 firms per survey wave. The three sector-specific surveys IBS-IND (2022a), IBS-SERV (2022a), and IBS-TRA (2022a) are harmonized according to Link (2020). We exclude the construction sector from our analysis because the main construction industry covered by the IBS was affected differently by the Covid-19 crisis than the rest of the economy and accounts for only 5% of the German gross value added.

Table 5 compares the average firm size and sector distribution of our German firm sample to the distribution of German firms according to administrative data. The sector distribution of our sample (column 4) is comparable to the population of German firms and is closest to the distribution of German firms weighted by the number of employees (column 6). Regarding firm size, the distribution of firms in our sample ranges between the unweighted and employee-weighted German firm size distribution as depicted at the bottom of Table 5 but there is an over-coverage of medium-sized firms in our sample. These findings are in line with Hiersemenzel, Sauer, and Wohlrabe (2022) who provide more extensive discussion on the representativeness of the IBS sample. In Section 6 we reweight the German firm sample by firm size and the sectors' share in the gross value added following Sauer and Wohlrabe (2020). The reweighting exercise has no significant impact on our results, which confirms that the unweighted sample suitably represents the dynamics in the German economy.

**Danish survey.** For Denmark, we use two surveys developed for the purpose of research on the Covid-19 crisis. The first survey was administrated from April to June 2021 and consists of 10,642 respondents. The second survey was carried out between June and August 2021 and consists of 2,488 respondents. Participants were recruited via an email account called *e-boks*, which Danish firms use to receive official communications from the public sector. As an incentive, firms were offered an anonymized benchmark report in exchange for their participation in the survey. The response rate of the survey was 12.76%, which corresponds to 2,787 firm-level observations. Minimal sample restrictions were imposed: Firms should be private sector firms and employ at least five workers in 2019, and declare having a sufficient knowledge of the firm's pay policy. Finally, responses with incoherent answers where respondents contradicted themselves were deleted. Overall, compared to the population of firms in Denmark the sample over-represents larger (33 vs. 42 employees), older (17 vs. 21), and more productive firms (88,000 EUR vs. 95,000 EUR). The sample was reweighted to better match population characteristics. The survey also contained an attention question.<sup>2</sup>

**Norwegian survey.** For Norwegian businesses, we use data from the member survey of the Norwegian Confederation of Enterprises (NHO), Norway's largest organisation for employers with over 30,000 member firms, covering over 600,000 FTEs. The member survey is normally conducted quarterly with both fixed and variable questions. It was sent out more frequently during the Covid-19 pandemic and contained additional questions specifically related to the pandemic. The data we use in this report consists of 18 surveys that were administered from 20 March 2020 to 9 May 2022. The surveys were sent out to every member firm. It is voluntary to respond and firms receive no financial compensation for responding. The number of respondents varies by wave from 2,197 to 4,372 firms, and the composition of respondents in terms of sector and firm size differs as well. NHO's member firms cover a large part of the Norwegian economy, but some sectors are under- or over-represented compared to the total economy, both in terms of FTEs and number of firms. Comparing the composition of NHO member firms with the Norwegian economy, the over-represented sectors are in particular the manufacturing sector (11.9% of NHO compared to 3.9% of the economy) and construction (17.6% vs. 12.4%). This is also the case if we consider number of FTEs rather than firms. Within the service sector, the accommodation and food services is over-represented (16.4% of firms in NHO vs. 3.1% in the economy), and the under-represented are real estate (0.9% in NHO vs. 10.3% in the economy) and professional, scientific and technical activities (5.6% vs. 11.4%). In the natural resources firms agriculture, forestry and fishing are under-represented (3.2% of NHO member firms compared to 11.6% in the economy), but less in terms of FTEs (2.2% vs. 2.6%).

<sup>2</sup> For more details on the sample, see Table 1 of Bertheau et al. (2022)

## 2.1 Surveys structure

**German survey.** The monthly questionnaire of the IBS consists of a set of standard questions regarding current and expected economic conditions, as well as additional questions that are included on a one-off, quarterly, biannual, or annual basis. Besides the standard questions, we utilize the set of additional questions regarding the Covid-19 crisis, that was included in the waves from March 2020 to March 2022 and has already been used in prior research Balleer et al. (2024), Buchheim et al. (2022), and Buchheim, Krolage, and Link (2022). The questions include the firms' expectations, as well as their impact and handling of the crisis. The full set of questions used in our analysis can be found in Appendix A.1.

**Danish survey.** The full questionnaire for Denmark can be found in the Online Appendix of Bertheau et al. (2022). The questionnaire is structured in 4 parts: background questions; questions about the adjustment of worker pay and the number of employees in 2020; a section on perceptions, attitudes and reasoning regarding layoffs; and finally a section on perceptions, attitudes and reasoning regarding adjustment of worker pay.

**Norwegian survey.** NHO's member survey consist of a set of standard questions, temporary questions, and Corona-related questions. The survey is structured as following: The first part contains common questions to all respondents on background characteristics, general market outlook and development in investments and workforce, and pandemic related questions. The next part consists of sector-specific questions. This report is based on a selection of questions that went to all sectors.



### 3 Short-term expectations and assessment of the crisis

This section presents evidence on how firms assessed the situation in the wake of the Covid-19 pandemic and how their perceptions evolved.

Table 1 displays the challenges caused by the Covid-19 pandemic firms reported to have posed a particular problem for them. Demand appears to be the main challenge for firms in the early stages of the pandemic, with the most mentioned problem being “*Declining demand*” in Denmark, “*Domestic sales*” and “*International sales*” ranking first and third respectively in Germany, and “*Lower demand*” being the most cited issue in Norway.

In Germany, the question was asked four times over a year, and we can therefore follow the development over time. The turnover (both domestic and international sales) was reported as most problematic by the firms at the start of the crisis. However demand-side issue became slightly less relevant by June 2021. On the contrary, supply and government restrictions were seen as a rising problem for firms, except in retail where the demand-side challenge was persistent throughout the period. This coincides with the phase-out of restrictions in many regions of Germany, which began in early March 2021 and depended on the regional number of Covid cases. The disruption of global supply chains due to the pandemic could also be at play here. Supply chain issues have been a significant challenge for firms around the world, and Germany has not been immune to this trend. The closure of borders and restrictions on travel have made it difficult for firms to source raw materials and components from abroad, leading to delays and shortages. This had a knock-on effect on production and delivery schedules, exacerbating the impact of the pandemic on firms’ operations. Supply was a particularly increasing challenge in the German construction industry, reaching an average grade of 3.7 over 5 in mid-2021.

There were also heterogeneities in how firms’ perceptions evolved during the pandemic. Between April 2020 and March 2022, firms participating in the ifo Business Surveys were asked to gauge the impact the Corona pandemic had on their business situation on a scale from -3 (very negative) to +3 (very positive). As shown in Figure 1, in the beginning of the pandemic, the impact was negative for all firms regardless of their size and sector, with an average impact of -1.5 points. However, the impact of the pandemic was perceived worse by smaller than by large firms (though not during the early months) and this gap widened somewhat during the pandemic, increasing heterogeneities along firm size. The retail sector also followed a particular trend: It was more heavily hit by government restrictions (the first wave lasted from March 2020 to early May 2020, and the second spanned from December 2020 to early March 2021) but also able to recover more quickly and catch up with the other sectors.

Overall, while all firms assessed the pandemic to have a very negative impact on their activities in

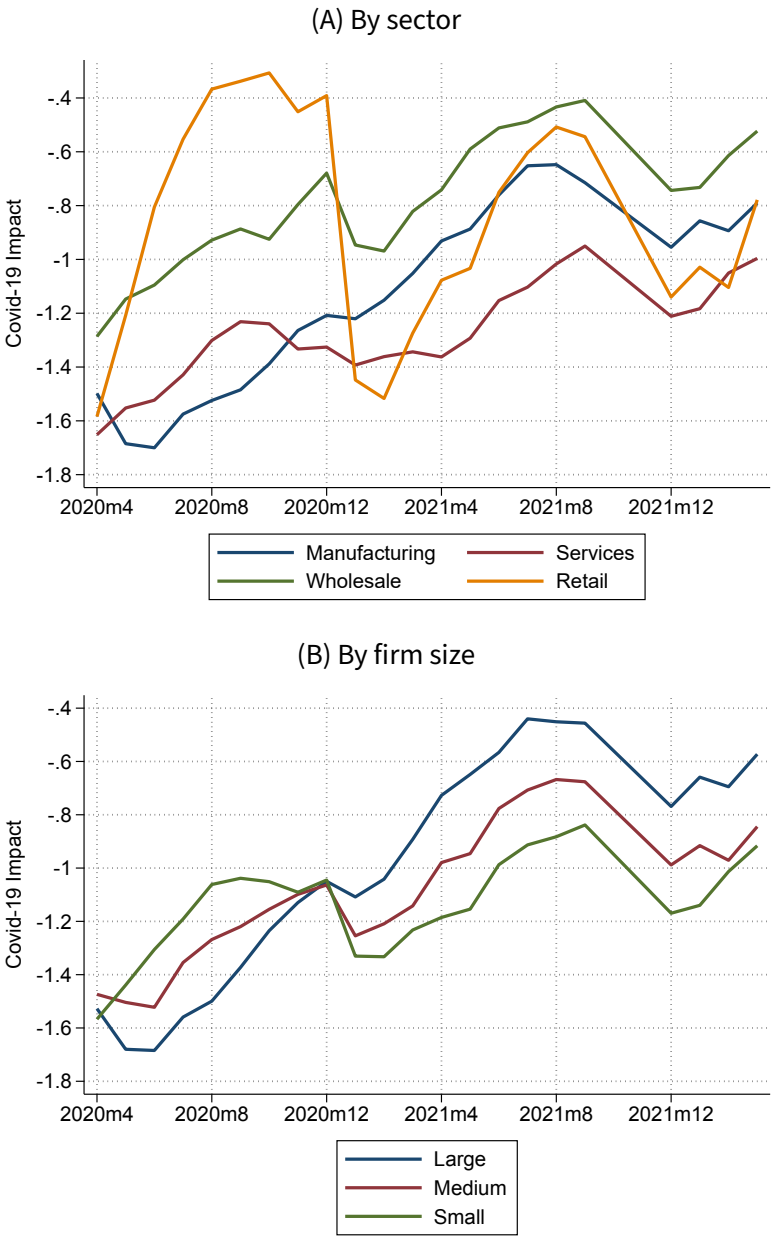
**Table 1: Ranking of challenges/reasons for decline in revenue due to the pandemic**

	<i>Denmark</i>	<i>Germany</i>	<i>Norway</i>
1	Declining demand	Domestic sales	Lower demand
2	Other reasons	Government restrictions	Changing rules
3	Covid administrative challenges	International sales	Adapting workplace or production to rules
4	Sell/buy international	Supply	Travel restrictions
5	Challenges of buying supplies	Personnel	Social distancing
6	Challenges external funding	Finance	Insufficient support measures
7			Home office
8			Access to input and delivery
9			Difficulty to understand support measures

Note: This table displays the challenges/reasons for decline in revenue by country mentioned by firms from the most severe to the least severe. For Denmark, the question was targeted to firms that reported revenue decline and asked them about the challenges that caused a decline in revenue. In the second survey, Danish forms could select more than one reason. For Germany, firms were asked to rate the degree of impairment (from 1 to 5). Norwegian firms were asked to select the options that had been the most challenging and could select more than one reason.

the first months of the pandemic, large firms were able to recover more quickly than smaller firms. There are several reasons why this might be the case. Larger firms may have had more resources and greater access to financial markets, allowing them to weather the economic downturn and pandemic-related disruptions more effectively than smaller firms. In particular, they could have had more flexibility to adjust their investments and employment plans. Additionally, larger firms may have been better positioned to take advantage of government support programs, which may have been less accessible or less effective for smaller firms. Finally, larger firms may have had more flexibility to adjust their business models and supply chains in response to changing market conditions and disruptions to global supply chains caused by the pandemic.

Figure 1: Impact of the Corona pandemic on business situation in Germany



Note: This figure displays the average response to the question “Is there any effect of the corona pandemic on your current business situation? Is it negative or positive?” —on a scale from -3 (negative) to +3 (positive)— by sector (Panel A) and firm size (Panel B) across time in Germany from April 2020 to March 2022.

## 4 Actual behavior and adjustments

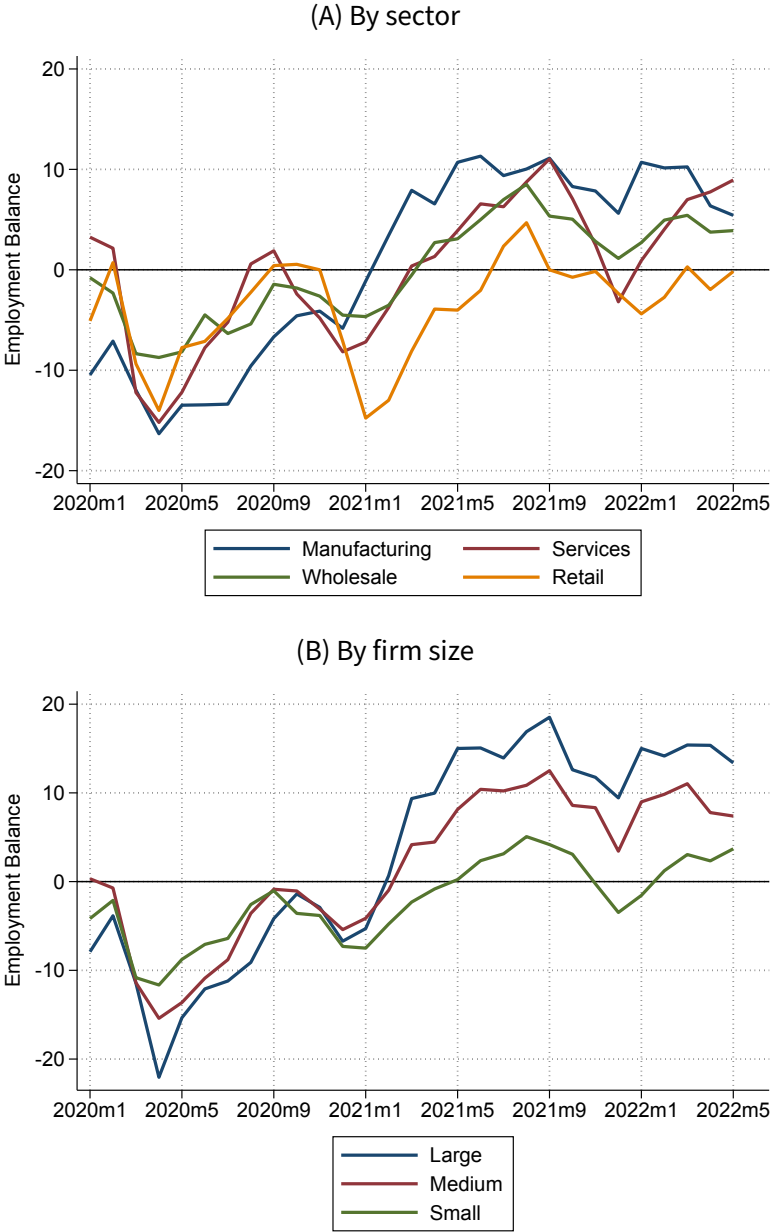
In this section, we try to shed more light on the patterns described in Section 3 and their evolution. In particular, we detail what were the actual responses of firms and how they adjusted their behavior during the different stages of the pandemic.

### 4.1 Employment

To face the impacts of a crisis, firms can usually react swiftly by adjusting their workforce. Panel A of Figure 2 displays the employment balance by sector in Germany. A positive employment balance indicates that more firms increased their number of employees than reduced them in a given month. In the IBS firms get asked monthly whether their workforce increased, stayed the same, or decreased. The employment balance ranges between +100 and -100 and is the difference between the share of firms answering “increase” and the share of firms answering “decrease”. We can see that the two primary declines in workforce development closely corresponded with the two main waves of government restrictions in the German economy. From Panel B of Figure 2, we can see that this decline affected both small and large firms, but that the recovery was mostly driven by large firms as smaller firms were less likely to increase their workforce. The manufacturing sector was more severely hit in the beginning of the pandemic. This can also be seen in Panel A of Figure 2. As the pandemic sustained, retail trade and the service sector had to decrease employment because of the continued lockdowns that forced firms to close their business temporarily.

Another way to look at this in more detail is to compare firms’ workforce development with how they assessed the pandemic’s impact on their businesses. Above we describe how firms assessed the impact of the Covid-19 pandemic on the business situation. In Figure 3, we compare this with a firm’s employment development. It appears that the higher the impact of the pandemic was on a firm’s business situation, the lower was the balance of employment at the start of the pandemic: Firms that assessed the pandemic to have a negative impact (-3) had a balance of employment of -33.5 in April 2020, while firms which declared that the pandemic had a positive impact (2 or 3) had a balance of employment of 17.1 in April 2020. However, regardless of the assessment of the Covid-19 impact all groups of firms saw a positive evolution of their employment balance. This trend was similar for all groups of firms, except for the most negatively impacted group that had an even greater growth in employment until August 2021 followed by another decline. In March 2022, most groups of firms had an employment balance between 0 and 14.5. It only remained slightly negative (-0.8) for the most negatively impacted firms. Therefore, while the impact of the Covid-19 pandemic on a firm’s business situation was negatively correlated with its employment balance at the start of the pandemic, all groups of firms experienced a positive evolution of their

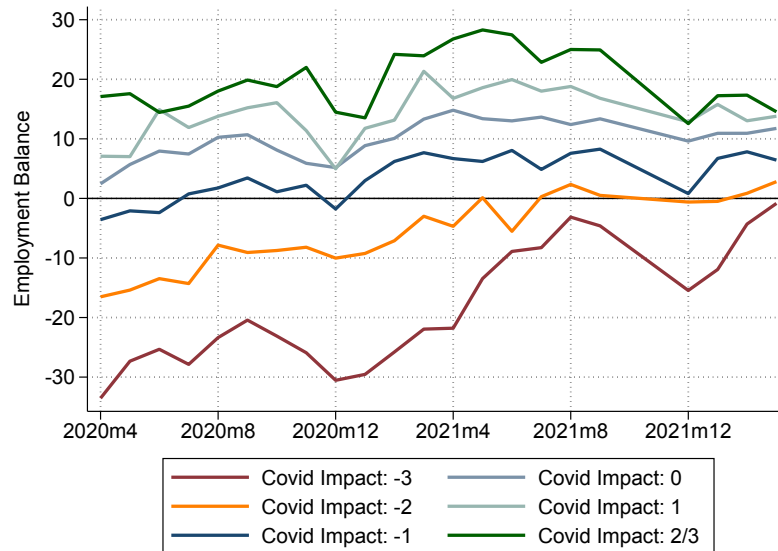
**Figure 2: Workforce development in Germany**



Note: This figure displays the employment balance in the current month of firms in Germany by sector (Panel A) and by firm size (Panel B). Firms get asked whether their number of employees decreased, stayed the same, or increased in the previous month. The employment balance is the difference between the percentage share of firms answering with “increase” and the share of firms answering with “decrease”. Hence, a positive employment balance indicates that more firms increased their number of employees than reduced them in a given month.

employment balance.

**Figure 3: Impact of the Corona pandemic on the business situation and employment development in Germany**



*Note:* This figure displays the employment balance by Covid-19 impact on the firms' current business situation in Germany from April 2020 to January 2022. Firms get asked whether their number of employees decreased, stayed the same, or increased in the previous month. The employment balance is the difference between the percentage share of firms answering with “increase” and the share of firms answering with “decrease”. Hence, a positive employment balance indicates that more firms increased their number of employees than reduced them in a given month.

**Short-time work.** At the beginning of the pandemic, there has been a high use of short-time work, even though this trend declined over time. From June 2020, German firms were asked nearly monthly about whether they were currently using short-time work. Overall, the share of firms reporting short-term work was around 45% in the beginning but declined throughout time, being below 10% from April 2022 on. In Figure 4, we can see that smaller firms were as likely as large firms to use short-term work at the start of the pandemic. As the pandemic unfolded, both small and large firms experienced a decrease in the use of short-time work, except in the first months of 2021 where small firms increased their share of short-time work (reaching a share up to 5p.p. higher than the one of large firms in February 2021). However, by 2022, both types of firms had reached some alignment in their use of short-time work. When looking at the responses by sector, we can see that once again the retail sector was much more responsive to government restrictions than other sectors.

Looking at the different sectors, manufacturing had a high share of short-time work in Germany at the beginning of the Covid-19 pandemic (this is in line with the higher impact on the business situation in early 2020), followed by the service sector—which stayed at one of the highest levels

but was topped by the retail sector during the first half of 2021.

Overall, it seems that short-time work was used by firms that were the most heavily affected by the pandemic, but that the use of short-time workers was only temporary and declined for all firms regardless of their size or sector.

## 4.2 Investment

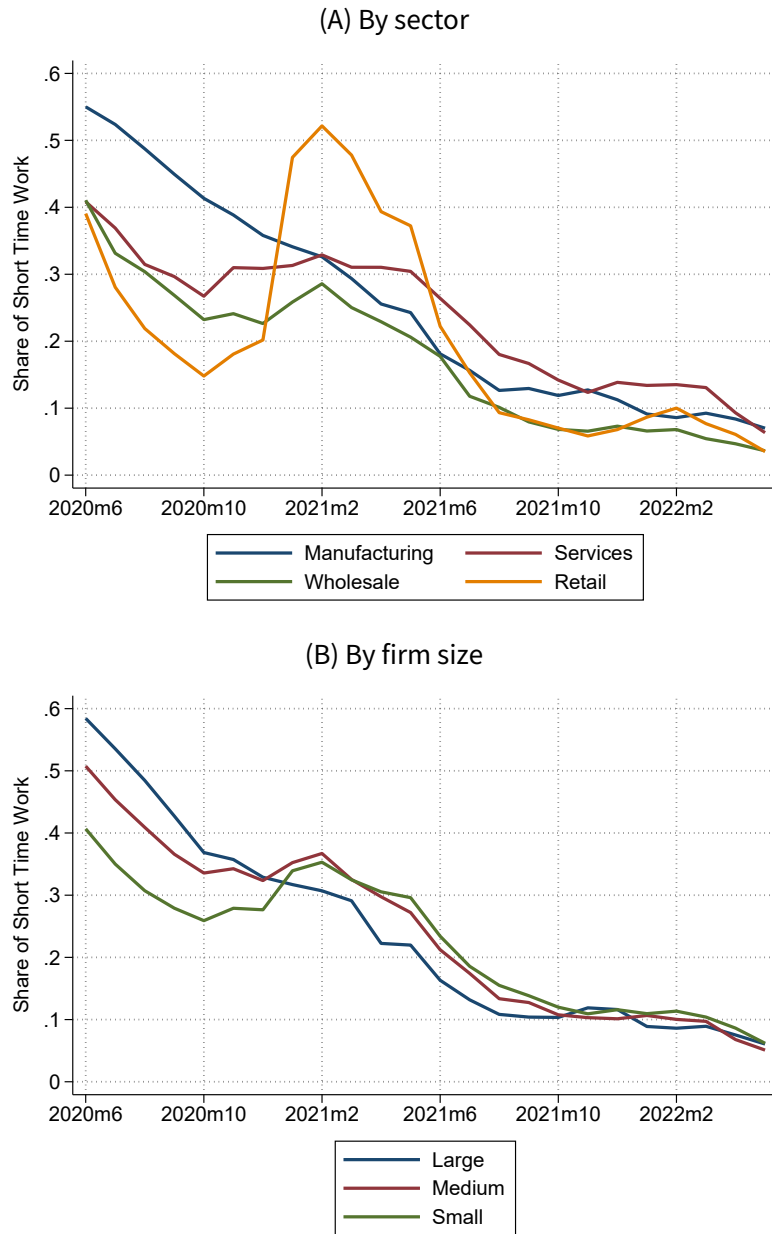
Another important consequence the Covid-19 crisis could have had on the economy is to alter investment decisions, in particular the long-term investment strategies. Indeed, reducing the level of investment is another option, besides adjusting employment levels, for firms to keep afloat during uncertain times. While this might help in the short run, in the long run lower investment levels are likely to have a negative impact on general economic development.

In July 2021, German firms were asked how they plan their investment to change in 2021 compared to 2019 (pre-crisis level). Overall, 59% planned to neither increase nor decrease their investment level. Figure 5 shows 23% of the firms expected an increase in their investments and that 18% of the firms expected a reduction compared to pre-crisis level. Firm's size seemed to matter marginally: Large firms reported more increase in investment (+3.7 p.p) and less decrease in investment (-1.8 p.p.) than SMEs.

**Evolution of expected investments.** As part of the ifo Business Survey, companies are regularly asked about expected investment plans in the current year compared to the previous year. Figure 6 shows that in May 2020 companies in all sectors planned an investment reduction for 2020. In November 2020 there was still a negative balance for all sectors, but it was much larger in the manufacturing sector than in the other sectors. However, in the first half of 2021 all sectors caught up again, with positive investment plans for 2021. Worth noting, is that investments in the manufacturing sector were on balance higher than for service companies and wholesale sector. In the retail trade sector companies remained the most hesitant right into 2022.

This again suggests to have a closer look at the motives for investment restraints. For the ifo Business Survey, we can compare the results on the investment question (asked in July 2021 only) with a firm's assessment of the impacts of the Corona pandemic on its business situation. We classify firms into three groups based on their investment decision in July 2021 compared to 2019 (increase/decrease/unchanged) and compute the average score of Covid-19 impact for each group (based on the answer options -3 to +3). As reported in Figure 7, we find that a firm's decision to decrease investment is strongly connected to the overall impact the Corona pandemic had on the

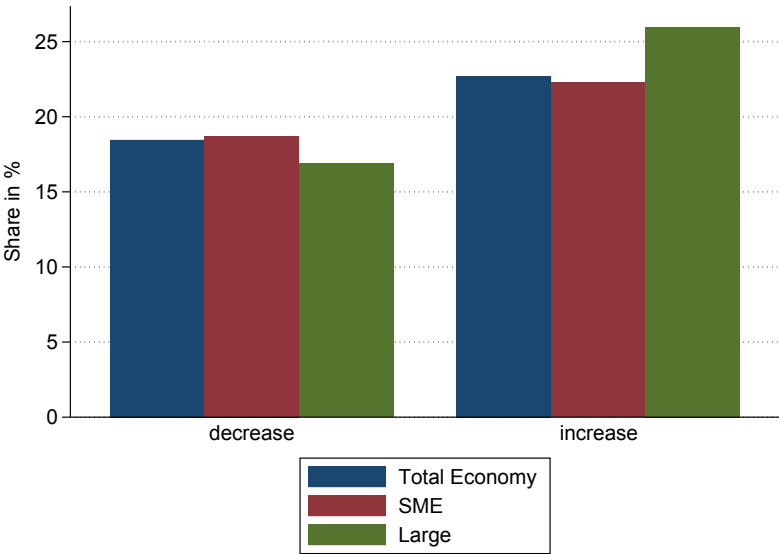
Figure 4: Short-time work in Germany



Note: This figure displays displays the share of firms in Germany currently using short-time work by sector (Panel A) and firm size (Panel B).

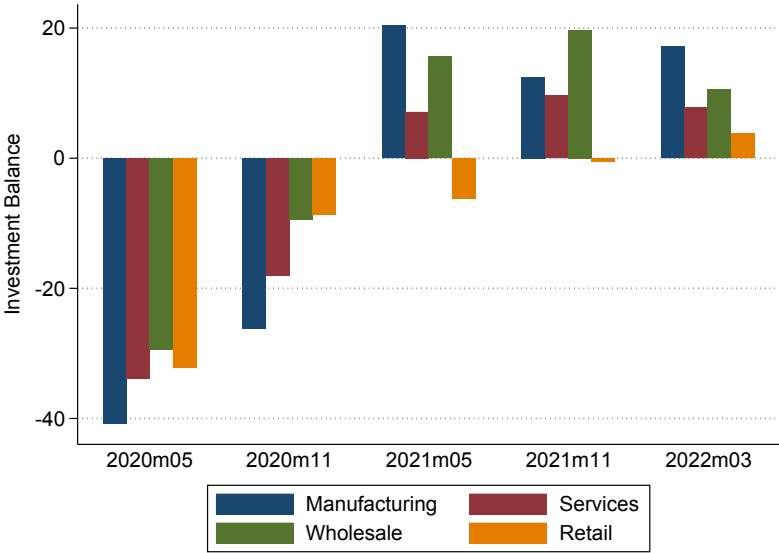


**Figure 5: Investment change in 2021 compared to 2019 (pre-crisis level), by size in Germany**



Note: This figure displays the percentage share of firms that planned to increase/decrease their investment in 2021 relative to 2019 (asked in July 2021) in Germany. Firms are additionally split into large, as well as small- and medium-sized firms. Appendix Figure 13 shows the breakdown by sector.

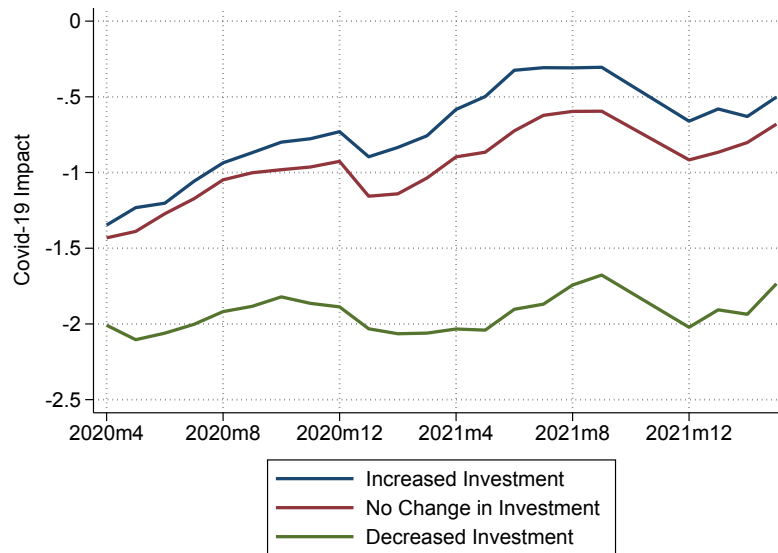
**Figure 6: Investment plans, by sector in Germany**



Note: This figure displays the investment balance of German firms in the current year by sector. Appendix Figure 14 shows the breakdown by firm size. Firms get asked twice a year whether their increase, stay the same, or decrease in that year. The investment balance is the difference between the percentage share of firms answering with “increase” and the share of firms answering with “decrease”. Hence, a positive investment balance indicates that more firms (planned to) increase their investments than reduce them in a given year.

firm's business situation. The average score of the effect the pandemic had on the business situation was throughout 2020 to March 2022 below -1.5 for companies planning to decrease investment. For companies planning to increase investment, that score ranged between -1.3 and -0.3. Interestingly, the average score for firms that did not plan any investment change was comparatively close to those with a planned increase. Therefore, firms that planned to decrease their investments in July 2021 were firms that were first hit more severely and for which this negative effect persisted until 2022. On the other hand, while firms that planned to increase their investments were hit at the start of the pandemic as well, they were also able to recover and mitigate the negative effects of the pandemic on their business activities.

**Figure 7: Assessment of the effect of Covid-19 pandemic on business situation by investment decision, in Germany**



*Note:* This figure displays the average response to the question “Is there any effect of the corona pandemic on your current business situation? Is it negative or positive?”—on a scale from -3 (negative) to +3 (positive) in Germany. Firms are grouped according to their planned change in investment in 2021 relative to 2019 (asked in July 2021).

## 5 Governmental response and institutional environment

In this section, we study the reactions of firms to different policies implemented during the crisis and how institutional factors interacted with those. As described in Section 4, companies relied heavily on short-time employment at the start of the pandemic. In Germany, short-time work is an employment subsidy paid by the German employment agency (Bundesagentur für Arbeit) to workers who are idle due to a temporary drop in demand below output potential. Firms must request the subsidy for their employees. In March 2020, the German government expanded the program so that firms can reduce hours without bearing any wage costs and social security contributions (see for instance Burda and Hunt (2011) for a detailed description of the policy). This policy could explain why we see a share of firms using short-time work higher than 40% — regardless — in June 2020 in Figure 4 Panel B.

**Credit constraints.** Other than relief measures from the government, an important channel that could affect firms' behavior and expectations during the pandemic is the role of banks. While most of the firms' costs hardly changed during the pandemic (such as personnel, rents, interest payments, etc.), revenues have plummeted for many, potentially affecting firms' liquidity.

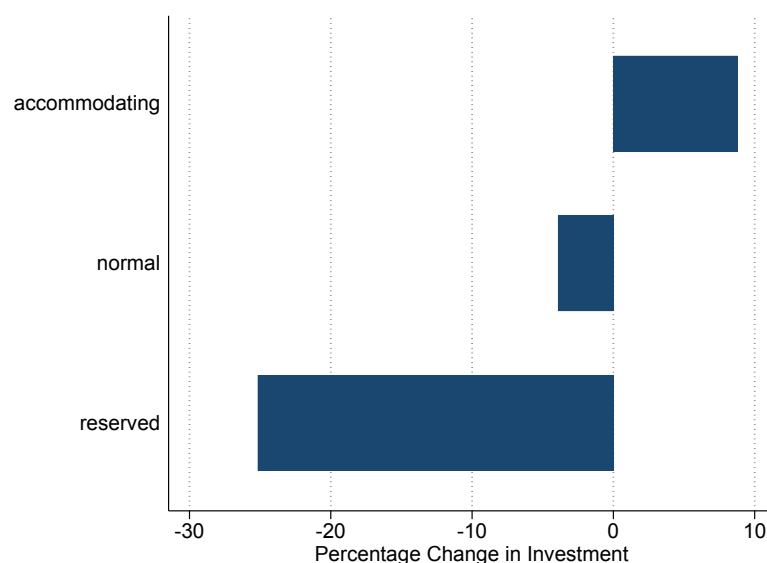
In September 2020, for example, 30% of the firms participating in the German ifo Business Surveys reported a decrease in their equity ratio (see Peichl et al. (2021) for more details). It is hence likely that more firms would try to negotiate loans with their banks, with the latter reacting with cautiousness because of the same uncertain economic environment. At the beginning of the Covid-19 pandemic, there was an increase in share of German firms conducting credit negotiations, but by 2021 the share dropped below pre-crisis level. Large firms were more likely to enter credit negotiations with their bank than smaller firms. However, if asked for the outcome, banks were more inclined to react in a restrictive manner if they negotiated with smaller firms. They were also more cautious with firms in the retail trade sector during the lockdown period.

In the German survey, firms are regularly asked about loan negotiations with banks. Figure 8 shows the average investment change in 2021 compared to 2019 for firms that assessed the Corona pandemic to have a negative effect on their activity and we group firms by whether they judged their bank to be accommodating, normal, or restrictive in terms of the loan negotiations. It appears that a firm's investment decision is highly related to their bank's behavior during the loan negotiation. Firms whose credit institute reacted accommodating, planned an average investment increase of 8.8%. On the other hand, companies with reserved banks planned to reduce their investment on average by 25.1%.

When looking at investment balance, we find that firms leaving loan negotiations with an accom-

modating behavior by their credit institute are significantly more likely to increase their investment than firms yielding a reserved reaction. They both start with a negative balance (plans to increase minus plans to reduce investment) in the beginning of the Covid-19 pandemic, however, firms with an accommodating (and normal) bank manner reached a positive investment balance during 2021, while those firms with reserved credit institutes continued to reduce their investment up to April 2022.

**Figure 8: Investment change, and banks behaviour on loan negotiation (firms with negative impact of Corona pandemic) in Germany**



*Note:* This figure displays the average (planned) percentage change in investments in 2021 relative to 2019 for German firms that reported a negative Covid-19 impact on their business situation in July 2021 and that have conducted credit negotiations with banks. The change in investments is displayed by the bank's behavior in those credit negotiations.

## 6 Heterogeneity analysis by Covid impact

In this section, we analyse firms' behaviors and expectations with respect to how their business activity was first affected by the Covid-19 pandemic in April 2020.

**Effects across sectors.** Table 2 shows that compared to the total economy, the retail and wholesale sector was more positively affected (16.3% of the retail and wholesale firms reported a positive impact of the Covid-19, compared to 9.6% for the total economy). It also appears that firm size did not matter that much: Even though small firms were more prone to report a very negative impact (i.e.,  $-3$ ), they did not report more overall negative impact (i.e.,  $-3$ ,  $-2$ , or  $-1$ ). Finally, the business situation in December 2019 also seems to be correlated with the Covid-19 impact in 2020, with firms which had a negative ( resp. positive) business situation in December 2019 reporting more negative (resp. positive) Covid-19 Impact in April 2020.

**Table 2: Sector and firm size distribution by Covid-19 impact in April 2020 on business situation, in Germany**

	<i>Covid-19 Impact April 2020</i>						
	-3	-2	-1	0	1	2	3
<i>Total</i>	32.5%	24.3%	23.3%	10.4%	5.1%	2.6%	1.9%
<i>Sector</i>							
Services	35.2%	20.4%	26.8%	12.3%	3.5%	0.8%	1.0%
Retail/Wholesale	37.0%	22.5%	17.0%	7.1%	7.6%	4.8%	3.9%
Manufacturing	26.1%	29.5%	25.1%	11.4%	4.4%	2.4%	1.1%
<i>Firm Size</i>							
Small (< 50)	34.7%	23.4%	21.6%	10.8%	5.2%	2.6%	1.8%
Medium (50 – 249)	30.0%	24.3%	25.7%	10.2%	5.1%	2.6%	2.2%
Large ( $\geq$ 250)	28.5%	28.4%	24.9%	9.3%	4.8%	2.5%	1.6%
<i>Business Situation December 2019</i>							
Negative	42.0%	30.3%	13.8%	6.3%	3.6%	2.4%	1.5%
Normal	34.1%	25.2%	22.5%	9.5%	5.1%	2.4%	1.3%
Positive	24.2%	19.5%	30.1%	14.5%	6.4%	2.6%	2.6%
N	1767	1319	1265	568	276	139	102

Note: This table displays the distribution of German firms with respect to their broader sector, size, and reported business situation in December 2019 by their reported Covid-19 impact on the business situation in April 2020.

Table 3 illustrates the persistence of the Covid-19 shock across the pandemic. Among firms that reported a negative impact of the pandemic on their business activity in April 2020, more than 60% of them still reported a negative effect of the Covid-19 in March 2022. This effect also stands for firms that reported a positive effect of the Covid-19 on their business activity in April 2020: They

were 2.5 times more likely to report a positive effect than the firms that were negatively affected in April 2020, and 1.8 times more likely to report a positive effect than firms that reported a neutral effect in March 2022.

**Table 3: Transition matrix Covid-19 impact from April 2020 to March 2022, in Germany**

<i>April 2020</i>	<i>Covid-19 Impact March 2022</i>			Total
	Negative	Neutral	Positive	
Negative	62.07	26.40	11.53	100.00
Neutral	32.06	50.79	17.14	100.00
Positive	35.25	35.25	29.50	100.00

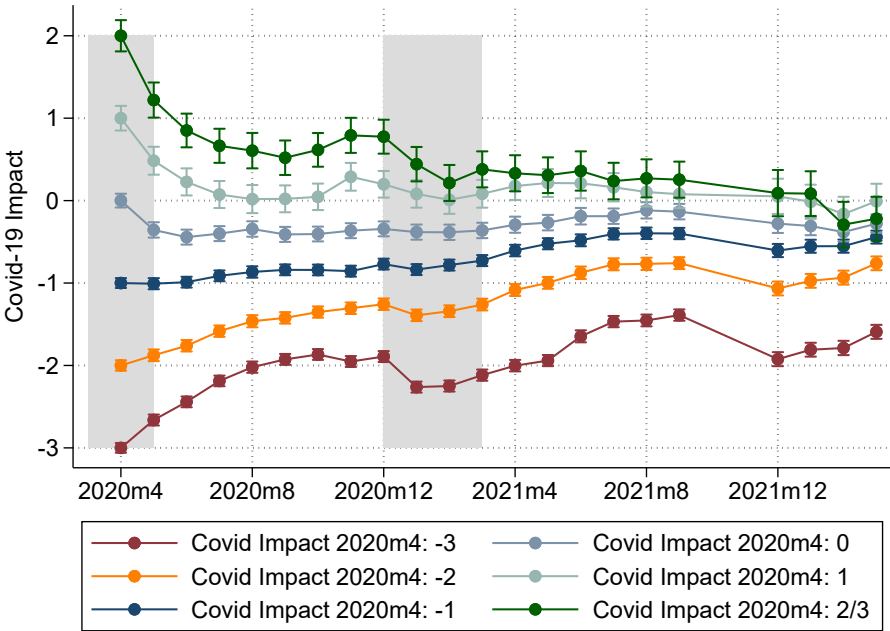
Note: This table displays the probabilities of transitioning from one level of Covid-19 impact to another between April 2020 to March 2022 in Germany, i.e., the probabilities for each level of Covid-19 impact in March 2022 conditional on the Covid-19 impact in April 2020.

**Dynamics.** Figure 9 allows to better understand the underlying patterns of those dynamics. It displays the evolution of the average Covid-19 impact by month grouping firms by their reported Covid-19 impact in April 2020. First, we see that firms converged in terms of the average Covid-19 impact they reported in May 2020 (with an average impact ranging between -1.5 and 0): Firms that reported a positive impact in April 2020 assessed the effect of the pandemic on their business activities as less and less positive. On the other hand firms that first reported a negative impact in April 2020 assessed the effect of the Covid-19 to be less and less negative.

Figure 9 also illustrates the effects of governmental measures on business activities. When the government implemented Covid-restrictions at the end of 2020, it affected all firms negatively regardless of the initial impact of the Covid-19 in April 2020. Firms that were on a positive trend saw a negative jump in their reported Covid-19 impact, while the restrictions accelerated the negative trend of firms that first reported a positive impact.

**Effects on employment.** In Figure 10, we look at the evolution of employment and the share of short-time work grouping firms by their reported Covid-19 impact in April 2020. It is striking to see the level of relative employment in the few months before firms assessed the impact of Covid-19. In Panel A, we can see that while all group-averages were close to 0 (i.e., having a similar number of employees as in the previous month) in November 2019, firms that reported a negative impact of the Covid-19 in April 2020 saw a sharp decline in their number of employees in March 2020. On the other hand, firms that reported a positive impact of the Covid-19 in April 2020 saw a rise in their number of employees in those same months. It took until July 2021 for all groups of firms to converge back to a group-average of 0. While most groups of firms stayed close to an average of 0,

Figure 9: Development of average Covid-19 impact by impact in April 2020, in Germany

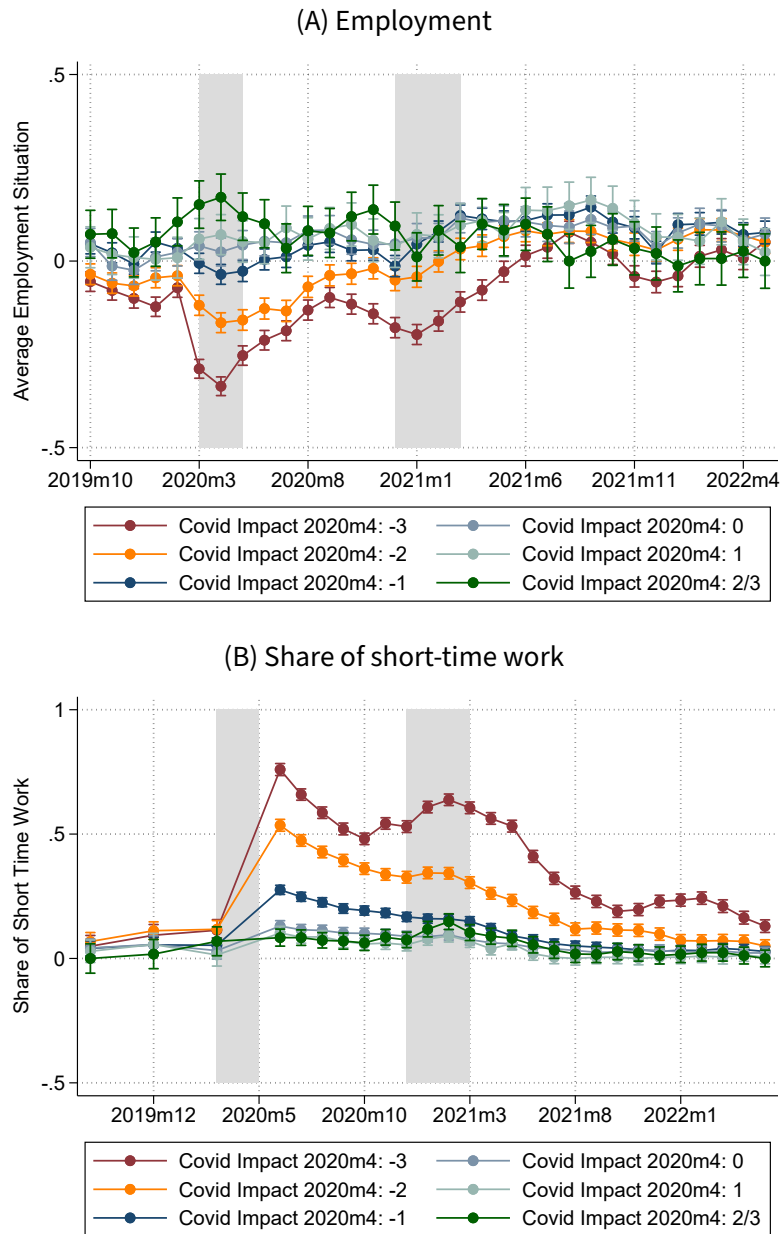


Note: This figure shows the evolution of the average Covid-19 impact on the current business situation from April 2020 to March 2022 in Germany. Firms are grouped by their reported Covid-19 impact in April 2020. Because of the small number of answers, options 2 and 3 are merged. Grey-shaded areas are months in which the retail sector was (partly) closed due to Covid- restrictions. Confidence-bands represent the 95%-significance level.

firms that witnessed the most negative impact (i.e., -3 or -2) of the Covid-19 in April 2021 took some time to catch up, still recruiting less than in the previous month until July 2021. Panel B displays the share of firms using short-time work in each group. It shows that not only firms that were the most negatively affected laid-off employees but also turned to more and more short-time work to cope with the uncertainty of the pandemic.

**Reweighted data.** When we re-weight the sample according to the sector’s share in the gross value added, as well as with firms’ size (by employees for Manufacturing, by revenues for Services and Trade) following Sauer and Wohlrabe (2020), we see that firm size mattered in how firms were affected by the Covid-19 pandemic in April 2020: Large firms were more likely to be negatively impacted (83% of large firms were negatively affected), and medium-sized firms were the ones less negatively affected (76% of them). However, firm size did not really matter for being positively affected. We can see similar patterns as with the un-weighted data for the sector and the business situation in December 2019. Results are similar in terms of dynamics and effects on employment, implying that the reweighting does not substantially matter for our results and that our findings are robust and representative of the German economy.

Figure 10: Employment development by Covid impact in April 2020, in Germany



Note: This figure shows the employment development from April 2020 to March 2022 of German firms grouped by their reported Covid-19 impact on their current business situation in April 2020. Panel A displays the average of answers to a qualitative question on the number of employees compared to the previous month with answer options being coded as  $\{-1, 0, 1\}$ . Panel B displays the share of firms currently using short-time work in each group. Until June 2020 this question was asked only quarterly and only in the manufacturing survey. Grey-shaded areas are months in which the retail sector was (partly) closed due to Covid-restrictions. Confidence-bands represent the 95%-significance level.



**Table 4: Sector and firm size distribution by Covid-19 impact in April 2020 on business situation – in Germany, reweighted data**

	<i>Covid-19 Impact April 2020</i>						
	-3	-2	-1	0	1	2	3
<i>Total</i>	29.4%	23.2%	26.9%	12.7%	4.4%	1.8%	1.6%
<i>Sector</i>							
Services	28.1%	19.6%	32.1%	15.9%	2.7%	0.4%	1.2%
Retail/Wholesale	34.6%	22.4%	17.9%	7.0%	8.3%	5.1%	4.7%
Manufacturing	29.1%	29.6%	22.1%	9.9%	5.5%	2.8%	1.1%
<i>Firm Size</i>							
Small (< 50)	31.0%	22.4%	26.2%	12.5%	4.3%	1.5%	2.1%
Medium (50 – 249)	25.1%	20.7%	30.3%	16.2%	4.2%	1.9%	1.7%
Large (≥ 250)	31.4%	27.9%	23.7%	9.0%	4.8%	2.2%	1.0%
<i>Business Situation December 2019</i>							
Negative	40.2%	32.0%	16.2%	4.4%	3.3%	2.7%	1.3%
Normal	31.1%	26.2%	24.9%	10.2%	4.5%	1.9%	1.1%
Positive	22.9%	16.3%	32.2%	20.2%	4.5%	1.6%	2.4%
N	1664	1234	1184	537	264	134	100

Note: This table displays the distribution of German firms with respect to their broader sector, size, and reported business situation in December 2019 by their reported Covid-19 impact on the business situation in April 2020.

## 7 Comparison with Denmark and Norway

**Similar assessment of the crisis.** As shown in Table 1, more than half of the respondents in Denmark that reported a decline in revenue selected “Declining demand” as one of the reasons for this drop in revenue. This trend is particularly salient for firms in the manufacturing, services, and trade sectors. In Norway, demand posed the largest challenge mainly in the service sector and among small firms.

**Employment response.** In Denmark, firms also resorted to layoffs to cope with the pandemic’s effects. Firms were asked between April and June 2020 whether their company had carried out any layoffs. On average, 14% of firms replied that there had been layoffs, with the highest share in manufacturing (18%) and construction (19%). The lowest share of firms with layoffs is to be found in the trade sector. The share of firms reporting layoffs were higher in large firms (20%) compared to small and medium sized firms (14%).

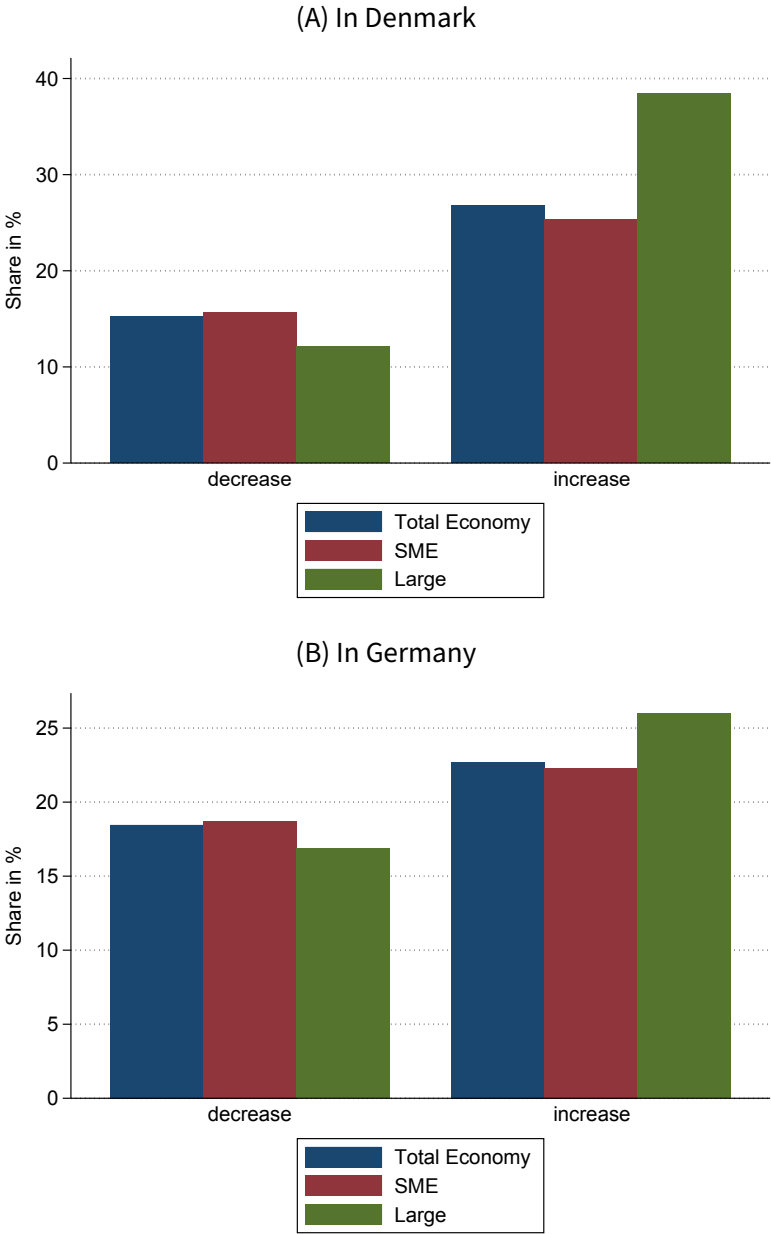
Norwegian firms also had sector-specific trends. Firms were asked in total ten times between March 2020 and February 2021 about whether their firm had carried out layoffs due to the Corona virus. In the survey, firms in the service sector were the ones to report the most that they had layoffs because of the pandemic. By the end of the time series, 24% of the respondents in the service sector have had pandemic-layoffs, against 15% on average for all respondents.

**Investment response.** Similarly to Germany, Danish firms were asked in the second survey wave how they planned their investments to change in 2021 compared to 2019. As shown in Figure 11, results are remarkably close to those for Germany: 58% answered that investment would remain “unchanged”, while 27% planned to increase and 15% to reduce investment. However, discrepancies arise between countries when looking at a more granular level: While in Germany there was only a small difference between large firms and SMEs, large companies in Denmark were significantly more inclined to increase their investment compared to SMEs (38% vs 25%).

Moreover, the average expected investment increase was much higher in Denmark than in Germany, both for smaller and large firms. Overall, it amounted to 40% in Germany and 55% in Denmark. On the other hand, there was almost no difference between the average decrease in both countries (45% in Germany vs. 48% in Denmark). As a result, the net investment increase was 7% in Denmark compared to just 1% in Germany.

Regarding sector-specific trends, manufacturing and wholesale trade were the only sectors expecting higher average net investments in Germany. On balance, firms in the other sectors planned

**Figure 11: Investment change in 2021 compared to 2019 (pre-crisis level), by size**



*Note:* This figure displays the percentage share of firms that planned to increase/decrease their investment in 2021 relative to 2019 (asked in July 2021) for Denmark (Panel A) and Germany (Panel B). Firms are additionally split into large, as well as small- and medium-sized firms. Panel B is a replication of Figure 5. Appendix Figure 13 shows the breakdown by sector for Germany.

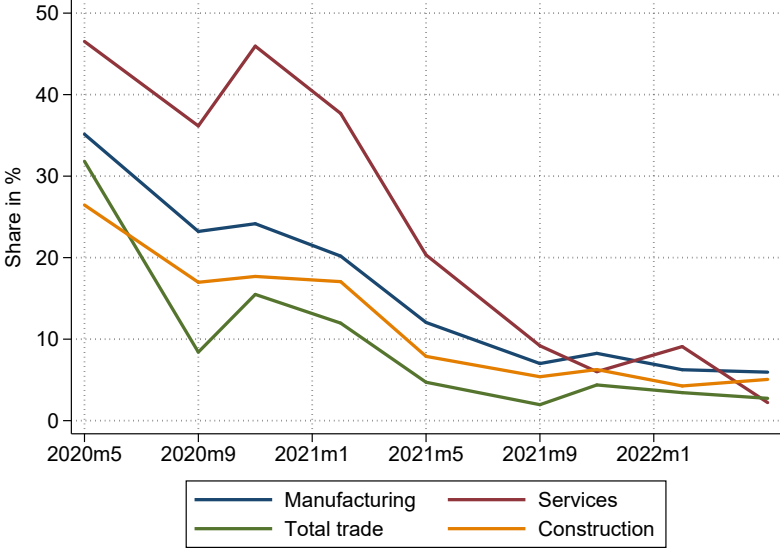
negative net investment compared to 2019. As described above, the service and retail trade sector were also on average more negatively affected during the time of the questionnaire. In Denmark, the net investment change was positive for all sectors.

In Norway, there was a similar trend of a sharp negative shift in investment plans at the start of the pandemic, however Norwegian firms started to become optimistic again later than German firms. In the NHO survey, member firms were asked about their outlook on investments, both for the current year and the upcoming year. The question regarding the next year was asked from May 2020 until May 2022 and begins with an average of 37% firms expecting lower investments the next year. Between November 2020 and February 2021, the share of firms expecting lower investments was halved (from 32% to 15%) meanwhile the “increasing”-share doubled (from 9% to 19%), suggesting that firms were pessimistic about investments in 2021, but optimistic for 2022. Throughout 2021 and 2022, the “unchanged”-share was broadly increasing.

**Governmental response.** In Norway, the government changed the existing furlough scheme in March 2020, so that employers only paid their workers two days of salary (instead of 15), and the government paid the remaining 18 days (followed by unemployment benefits). Workers could both be full-time or part-time on furlough. Figure 12 shows that during the first year of the time series, furlough was the most frequent measure for downsizing, used by at most 36% of the firms in the survey in the first observation. The share was highest in the services sector (46,5% in May 2020).

**Credit constraints.** As in Germany, in Denmark large firms were also less inclined to negotiate credit with a bank but when they did their credit institutes were more likely to react accommodating.

**Figure 12: Furlough, by sector in Norway**



*Note:* This figure shows the share of Norwegian firms that responded they in the next three months would carry out furloughs (asked 9 times between May 2020 to May 2022). In March 2020, the Norwegian government changed the existing furlough scheme so that employers only paid their workers two days of salary (instead of 15), and the government paid the rest 18 days (followed by unemployment benefits). Workers could both be full time or part-time on furlough. During the first year of the time series, furlough was the most frequent measure for downsizing, used by at most 36% of the firms in the survey in the first observation. The share is highest in the services sector (46,5% in May 2020).

## 8 Conclusion

This report presents evidence on how firms in Denmark, Germany, and Norway reacted during the Covid-19 pandemic. We show that the Covid-19 pandemic had a significant impact on firms in Europe, with Germany being no exception. At the start of the pandemic, the main challenges for firms were demand-driven, but this shifted to supply-related challenges over time. All firms were hit by the pandemic, regardless of their size, but large firms were able to recover more quickly than small firms. The decline in workforce in all sectors was most prominent when government restrictions were implemented, and the subsequent recovery was mainly driven by large firms.

While the most severely affected firms had lower employment levels at the start of the pandemic, all firms were able to recover a balance in employment. Short-time work was heavily used at the start of the pandemic but declined as the pandemic unfolded, although it took more time for small firms. Investment plans declined for firms in all sectors at the start of the pandemic, and investments decreased for the most severely affected firms but increased for those that were able to recover quickly.

We document that banks played a key role in accommodating credit negotiations, and for a non-negligible part of firms negatively affected in April 2020, there was a persistence of this negative shock.

Firms in Denmark and Norway experienced similar demand issues and sector-specific trends. However, Denmark differed from Germany in that firms had higher expected investments on average, and large companies were more likely to increase investments.

By 2022, firms in Europe had converged in terms of Covid-19 impact, while the most impacted firms continued to use more short-time work. Overall, we show that the Covid-19 pandemic was a challenging time for firms in Europe, but with the right support and strategy, many were able to recover and adapt to the changing circumstances.

## References

- Alekseev, G., S. Amer, M. Gopal, T. Kuchler, J. W. Schneider, J. Stroebel, and N. Wernerfelt (2023). “The effects of COVID-19 on US small businesses: evidence from owners, managers, and employees”. *Management Science* 69.1, pp. 7–24.
- Alstadsæter, A., B. Bratsberg, G. Eielsen, W. Kopczuk, S. Markussen, O. Raaum, and K. Røed (2020). “The first weeks of the coronavirus crisis: Who got hit, when and why? Evidence from Norway”. *NBER Working Paper No. 27131*.
- Altig, D., S. Baker, J. M. Barrero, N. Bloom, P. Bunn, S. Chen, S. J. Davis, J. Leather, B. Meyer, E. Mihaylov, et al. (2020). “Economic uncertainty before and during the COVID-19 pandemic”. *Journal of Public Economics* 191, p. 104274.
- Autor, D., D. Cho, L. D. Crane, M. Goldar, B. Lutz, J. Montes, W. B. Peterman, D. Ratner, D. Villar, and A. Yildirmaz (2022). “An evaluation of the paycheck protection program using administrative payroll microdata”. *Journal of Public Economics* 211, p. 104664.
- Baker, S. R., N. Bloom, S. J. Davis, and S. J. Terry (2020). “Covid-induced economic uncertainty”. *NBER Working Paper No. 26983*.
- Balduzzi, P., E. Brancati, M. Brianti, and F. Schiantarelli (2020). “The Economic Effects of COVID-19 and Credit Constraints: Evidence from Italian Firms’ Expectations and Plans”. *IZA Discussion Paper No. 13629*.
- Balla-Elliott, D., Z. B. Cullen, E. L. Glaeser, M. Luca, and C. Stanton (2022). “Determinants of small business reopening decisions after COVID restrictions were lifted”. *Journal of Policy Analysis and Management* 41.1, pp. 278–317.
- Balleer, A., S. Link, M. Menkhoff, and P. Zorn (2024). “Demand or Supply? Price Adjustment Heterogeneity during the COVID-19 Pandemic”. *International Journal of Central Banking* 20.1, pp. 93–157.
- Barrero, J. M., N. Bloom, S. J. Davis, and B. H. Meyer (2021). “COVID-19 is a persistent reallocation shock”. *AEA Papers and Proceedings* 111, pp. 287–291.
- Bartik, A. W., M. Bertrand, Z. Cullen, E. L. Glaeser, M. Luca, and C. Stanton (2020a). “The impact of COVID-19 on small business outcomes and expectations”. *Proceedings of the national academy of sciences* 117.30, pp. 17656–17666.
- Bartik, A. W., M. Bertrand, F. Lin, J. Rothstein, and M. Unrath (2020b). “Measuring the labor market at the onset of the COVID-19 crisis”. *NBER Working Paper No. 27613*.
- Bennedsen, M., B. Larsen, I. Schmutte, and D. Scur (2022). “The Value of Preserving Job Matches During a Crisis”.

- Bertheau, A., M. Kudlyak, B. Larsen, and M. Bennedsen (2022). “Why Firms Lay Off Workers instead of Cutting Wages: Evidence from Matched Survey-Administrative Data”. Available at SSRN 4267332.
- Bloom, N., R. S. Fletcher, and E. Yeh (2021). “The impact of COVID-19 on US firms”. *NBER Working Paper No. 28314*.
- Buchheim, L., J. Dovern, C. Krolage, and S. Link (2022). “Sentiment and firm behavior during the COVID-19 pandemic”. *Journal of Economic Behavior & Organization* 195, pp. 186–198.
- Buchheim, L., C. Krolage, and S. Link (2022). “Sudden stop: When did firms anticipate the potential consequences of COVID-19?” *German Economic Review* 23.1, pp. 79–119.
- Burda, M. C. and J. Hunt (2011). “What Explains Germany’s Labor Market Miracle in the Great Recession?” *Brookings Papers on Economic Activity* 42.1, pp. 273–335.
- Granja, J., C. Makridis, C. Yannelis, and E. Zwick (2022). “Did the paycheck protection program hit the target?” *Journal of financial economics* 145.3, pp. 725–761.
- Hassan, T. A., S. Hollander, L. Van Lent, M. Schwedeler, and A. Tahoun (2020). “Firm-level exposure to epidemic diseases: Covid-19, SARS, and H1N1”. *NBER Working Paper No. 26971*.
- Hiersemenzel, M., S. Sauer, and K. Wohlrabe (2022). “On the Representativeness of the ifo Business Survey”. *CESifo Working Paper No. 9863*.
- IBS-IND (2022a). “Ifo Business Survey Industry Industry 1/1980 – 06/2022”. *LMU-ifo Economics & Business Data Center, Munich*.
- IBS-SERV (2022a). “Ifo Business Survey Service Sector 10/2004-06/2022”. *LMU-ifo Economics & Business Data Center, Munich*.
- IBS-TRA (2022a). “Ifo Business Survey Trade 1/1990 – 06/2022”. *LMU-ifo Economics & Business Data Center, Munich*.
- Kozeniauskas, N., P. Moreira, and C. Santos (2020). “Covid-19 and firms: Productivity and government policies”. *CEPR Discussion Paper No. DP15156*.
- Lautenbacher, S. (2020). “Subjective uncertainty, expectations, and firm behavior”. *ifo Working Paper No. 349*.
- Lehmann, R. (2022). “The forecasting power of the ifo business survey”. *Journal of Business Cycle Research*, pp. 1–52.
- Link, S. (2020). “Harmonization of the ifo business survey’s micro data”. *Jahrbücher für Nationalökonomie und Statistik* 240.4, pp. 543–555.
- Meyer, B. H., B. Prescott, and X. S. Sheng (2022). “The impact of the COVID-19 pandemic on business expectations”. *International Journal of Forecasting* 38.2, pp. 529–544.



Peichl, A., S. Lautenbacher, J. Miethe, S. Rumscheidt, S. Sauer, and S. Steffens (2021). "Eigenkapitalentwicklung im Zeichen der Coronakrise". *Impulse der Wirtschaftspolitik, ifo-Studie im Auftrag der IHK für München und Oberbayern, ifo Institut, München*.

Sauer, S. and K. Wohlrabe (2019). "CEO or Intern- Who Actually Answers the Questionnaires in the ifo Business Survey?" *CESifo Forum* 20.02, pp. 29–31.

– (2020). *ifo Handbuch der Konjunkturumfragen*. 88. ifo Beiträge zur Wirtschaftsforschung.

Seiler, P. (2021). "Firms' investment decisions in response to the COVID-19 pandemic: Causal evidence from Switzerland". *Covid Economics* 73, p. 81.

# A Appendix

## A.1 German survey questions

### Standard Questions

The following set of questions, which are asked regularly in the IBS, are used in this report (English translation of German original).

Q1: Current Business Situation:

Current situation: We evaluate our current business situation as [1] good, [0] satisfactory, or [-1] bad.

Q2: Workforce Development:

Trends in [last month]: Compared to [two months ago] our workforce has [1] increased, [0] remained roughly the same, or [-1] decreased.

Q3: Short-time Work [quarterly frequency for manufacturing only; monthly frequency from June 2020 on for all sectors]:

We currently have short-time work  
 yes  no

Q4: Credit Negotiations [quarterly frequency]:

We have conducted credit negotiations with banks in the past 3 months  
 yes  no  
If yes, the banks behaved:  
 accommodating  
 normal  
 reserved

Q5: Investments This Year [biannual frequency]:

We expect our investments in the current year to [1] increase, [0] stay roughly the same, or [-1] decrease [this year compared to last year].

### Additional Questions Regarding the Covid-19 Crisis

The wording of the additional questions related to the Covid-19 crisis in the IBS were as follows:

AQ1 COVID-19 Impact [asked monthly from April 2020 – September 2021 and December 2021 – March 2022]:

Do you realize an effect of the Corona pandemic on your current business situation? Is this effect negative or positive?

negative  -3  -2  -1  0  +1  +2  +3 positive

AQ2 Adverse Effect of COVID Crisis [asked June 2020 (online panel only), November 2020 (full sample), February 2021 (full sample), and June 2021 (online panel only)]:<sup>3</sup>

Due to the COVID-19 crisis, we are currently experiencing adverse effects in the following areas:

a) Finances (e.g. liquidity):

No adverse effects      Large adverse effects

b) Domestic sales (e.g. demand, order situation):

No adverse effects      Large adverse effects

c) International sales (e.g. demand, order situation):

No adverse effects      Large adverse effects

d) Personnel (e.g. absences, exemptions, shortage):

No adverse effects      Large adverse effects

e) Supply (e.g. supply chains, warehousing):

No adverse effects      Large adverse effects

f) Government restrictions (e.g. closures, hygiene concepts):

No adverse effects      Large adverse effects

AQ3 Expected Change in Investments in 2021 compared to pre-Crisis Levels [asked in July 2021]:

How do you expect your investments to change in 2021 compared to 2019 (pre-crisis levels)?

<sup>3</sup> This question was asked in the online panel only two out of four times due to space limitations on the paper-based questionnaires. In our sample, the online panel of the IBS is used by, on average, 81% of the responding firms in a given month.

No change  Increase by \_\_\_ %  Decline by \_\_\_ %

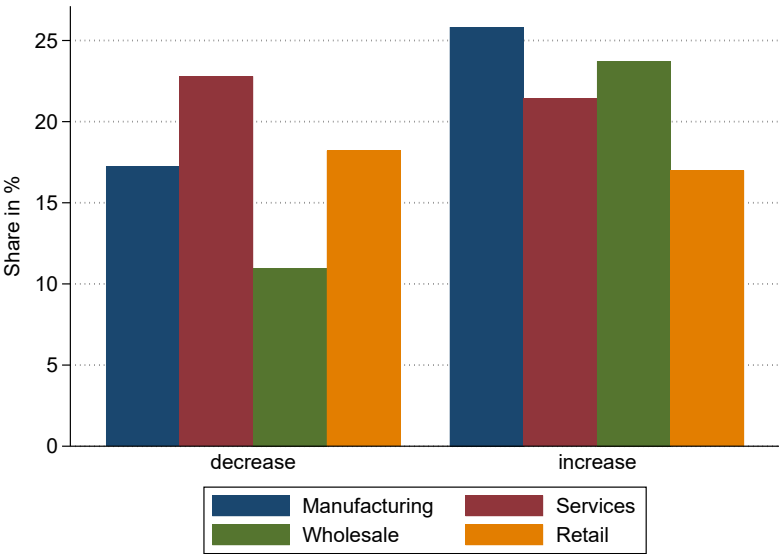
## A.2 Additional Figures and Tables

**Table 5: Distribution of German firms by sector and size**

Industry	ifo Business Survey				Distribution of German Firms by		
	Small	Medium	Large	Total	Count	Employees	Value Added
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Manufacturing	12.17	14.88	9.96	37.01	10.61	29.51	36.46
Energy, Water, & Waste	0.57	0.26	0.12	0.95	3.49	2.59	5.44
Retail, Wholesale, & Repair of Motor Vehicles	21.13	6.50	1.84	29.47	26.07	24.38	19.74
Transportation & Storage	1.79	1.40	0.74	3.94	4.74	8.30	6.35
Accommodation & Food Services	2.80	1.11	0.09	4.00	10.32	6.95	2.01
Information & Communication	3.78	1.62	0.68	6.08	5.79	5.53	8.26
Real Estate Activities	0.93	0.27	0.07	1.26	7.58	1.87	3.94
Professional, Scientific, & Technical Activities	9.73	2.11	0.47	12.31	21.71	9.50	10.35
Administrative & Support Services	2.73	1.41	0.84	4.98	9.70	11.37	7.46
<b>Total</b>	<b>55.64</b>	<b>29.55</b>	<b>14.80</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
Distribution of German Firms by							
Count	96.55	2.73	0.72	100.00			
Employees	35.24	16.55	48.21	100.00			
Gross Value Added	23.60	15.46	60.94	100.00			

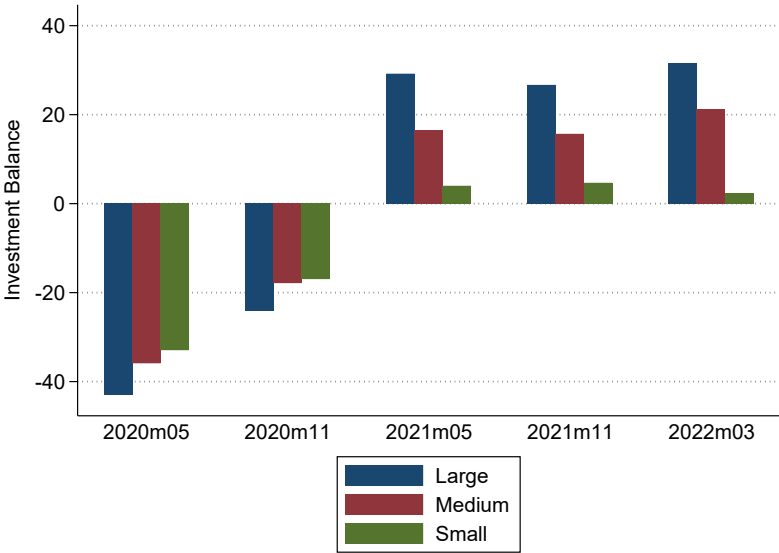
Note: This table compares the average distribution of German firms in our sample waves to administrative data based on the 2020 Statistics on Small and Medium-sized Enterprises (“Statistik für kleine und mittlere Unternehmen”) provided by the Federal Statistical Office (EVAS Code 48121). The firm size categories are: small: 0-49 employees; medium: 50-249 employees; large: 250+ employees.

**Figure 13: Investment change in 2021 compared to 2019 (pre-crisis level), by sector in Germany**



*Note:* This figure displays the percentage share of German firms that planned to increase/decrease their investment in 2021 relative to 2019 (asked in July 2021). Firms are additionally split into sectors. Figure 5 shows the breakdown by firm size.

**Figure 14: Investment plans, by size in Germany**



*Note:* This figure displays the investment balance of German firms in the current year by size. Figure 6 shows the breakdown by sector. Firms get asked twice a year whether their increase, stay the same, or decrease in that year. The investment balance is the difference between the percentage share of firms answering with “increase” and the share of firms answering with “decrease”. Hence, a positive investment balance indicates that more firms (planned to) increase their investments than reduce them in a given year.